



CI-0404

**TAB 4: STATION & TERMINAL BUILDING INFRASTRUCTURE**  
Stairs & Stair Enclosures



**BASIS OF CRITERIA**

Stair systems at GO installations not only provide a means of access and egress from platforms but also provide means of vertical travel and stairs form a route of travel for many people with disabilities, children, seniors, parents with strollers etc.

Poorly designed risers and nosing's can present tripping hazards, particularly to persons with prosthetic devices or those using canes. Cues to warn a person with low or no vision an upcoming set of stairs are vitally important who would benefit from colour and tonal contrasted nosing's and handrails, detectable landings and adequately illuminated stair systems.

Shall be clearly marked, located near the major circulations routes and offset from the direct route of travel so that they are not a hazard and easy to find. Stairs shall have uniform riser heights and tread depths; with nosing's, handrails, landings, etc., detectable by persons with vision loss.



CI-0404

**TAB 4: STATION & TERMINAL BUILDING INFRASTRUCTURE**  
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INTERIOR AND EXTERIOR STAIRS

*(ALL INTERIOR AND EXTERIOR STAIRS SHALL COMPLY WITH THESE REQUIREMENTS)*

| FEATURE                                           | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Perimeter Walls of Stairs and Elevator Vestibules | <ul style="list-style-type: none"> <li>&gt; Perimeter walls of stairs and elevator vestibules shall be fully glazed where possible.</li> <li>&gt; Stairwell walls shall have surface mounted photoluminescent strips at 0.3m above stair nosing's and landings. Strips to be installed continuously along entire length of stairwell wall transitioning in a continuous manner at tunnel level. Refer Tab 4 CI-0403 Tunnels for detailed information on stair/tunnel interface of photoluminescent strips.</li> <li>&gt; Photoluminescent strips are NOT required above stair nosing's at locations within the stairwell that are directly adjacent to open glazing areas with natural light.</li> </ul>                                                                                                                                                                                                                                                                                                 |
| Stairwell Openings                                | <ul style="list-style-type: none"> <li>&gt; Stairwell openings shall be extended across tunnels where possible for day-lighting and to reduce the apparent tunnel lengths.</li> <li>&gt; Concrete sealed walls to be protected by clear non-sacrificial anti-graffiti coating.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Handrails                                         | <ul style="list-style-type: none"> <li>&gt; Stair centre handrails shall terminate at landings to permit crossover.</li> <li>&gt; Stairwell walls (both sides) shall have surface mounted photoluminescent strips at 0.1m above top of handrail. Strips to be installed continuously along entire length of wall above the handrail terminating at the end of the handrail extension.</li> <li>&gt; Photoluminescent strips are NOT required above the handrail at locations in within the stairwell that are directly adjacent to open glazing areas with natural light.</li> <li>&gt; Exterior stair and ramp handrails shall commonly be Stainless Steel. All anchorage and fittings shall also be stainless steel or to match materiality of handrail. Mixing of materials is not recommended. Exterior stair and ramp handrails shall be smooth galvanized or stainless steel where continuity of handrail from interior to exterior is direct (to be determined on case-by-case basis).</li> </ul> |



CI-0404

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| FEATURE           | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <ul style="list-style-type: none"><li>&gt; Interior stair and ramp, tunnel stair, and bridge stair handrails and fastening shall be stainless steel.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                       |
| Stair Enclosures  | <ul style="list-style-type: none"><li>&gt; Stair enclosures can be stand alone or combined with elevator enclosures, where applicable.</li><li>&gt; Photoluminescent strips are NOT required above the stair nosing's or above the handrail at locations in within the stairwell that are directly adjacent to open glazing areas with natural light.</li><li>&gt; Island platform stair enclosure wall glazing shall extend for the full length of the stairwell, and where possible over the tunnel to provide daylight into the tunnel.</li></ul> |
| Trackside Glazing | <ul style="list-style-type: none"><li>&gt; On side platforms the trackside glazing shall be maximized, and the opposite side shall also be glazed, if accessible for maintenance, or it shall be a solid wall if requested by GO or the municipality (glazed walls are preferred as being graffiti resistant).</li></ul>                                                                                                                                                                                                                             |
| Floor Elevation   | <ul style="list-style-type: none"><li>&gt; Floor elevation to be set to provide positive slope from the doors to the platform</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                              |



CI-0404

**TAB 4: STATION & TERMINAL BUILDING INFRASTRUCTURE**  
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**STAIR MATERIAL**

*(ALL STAIR MATERIAL SHALL COMPLY WITH THESE REQUIREMENTS)*

| <b>FEATURE</b> | <b>DESCRIPTION</b>                                                                                                                                                                                                                                                                                                                                                            |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Floor          | <ul style="list-style-type: none"><li>&gt; Concrete floor, broom finished, sealed.</li></ul>                                                                                                                                                                                                                                                                                  |
| Base           | <ul style="list-style-type: none"><li>&gt; Concrete wall base, to be sandblasted finish, and sealed, no paint.</li><li>&gt; To prevent snow plough damage and salt deterioration of the superstructures, the base shall be 600 mm high (minimum) above the platform.</li><li>&gt; The top of the base shall slope on the exterior as a sill, away from the glazing.</li></ul> |
| Handrails      | <ul style="list-style-type: none"><li>&gt; Stair centre handrails shall terminate at landings to permit crossover.</li></ul>                                                                                                                                                                                                                                                  |



CI-0404

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STAIR ENCLOSURE

*(ALL STAIR ENCLOSURE WINDOW WALLS SHALL COMPLY WITH THESE REQUIREMENTS)*

| FEATURE    | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Structure  | <ul style="list-style-type: none"> <li>&gt; Frameless with silicone butt-joint glazing, with top and bottom stainless steel glazing channels.</li> <li>&gt; Structural steel framing shall not be exposed to the salt-corrosive atmosphere of the rail platform and must be contained within the building envelope. Fully glazed enclosures with stainless steel framing system. All exposed structural steel framing, including all anchors and fasteners, shall be non-corrosive. Ensure all exposed members are resistant to severe weather conditions and elements, including de-icing chemicals and salts. Provide appropriate protective coatings or cover plates as required.</li> </ul> |
| Glazing    | <ul style="list-style-type: none"> <li>&gt; Glazing shall be clear, fully-tempered, designed for local wind loads and high speed train turbulence (including door glazing).</li> <li>&gt; Glass in doors and sidelights that could be mistaken for doors shall have horizontal framing or decals and located as per CNIB guideline. Such decals shall be applied to glass surface. Decal colour to be highly visible.</li> </ul>                                                                                                                                                                                                                                                                |
| Cladding   | <ul style="list-style-type: none"> <li>&gt; Designed to minimum 1.0 kPa Reference Wind Pressure, with appropriate gust factor and wind pressure coefficients applied to the RWP.</li> <li>&gt; Cladding material, especially for canopies, soffits and fascia's must be designed for wind turbulence generated by high-speed trains.</li> <li>&gt; Roofing shall also resist train turbulence.</li> <li>&gt; Shingled roofs shall not be used on platform buildings (unless rigid material).</li> </ul>                                                                                                                                                                                         |
| Guardrails | <ul style="list-style-type: none"> <li>&gt; Guardrails shall be provided behind the window walls of stair and elevator wells, for safety in the event of glass breakage.</li> <li>&gt; Guardrails that come in contact with passengers, both interior and</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                            |



CI-0404

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*(ALL STAIR ENCLOSURE WINDOW WALLS SHALL COMPLY WITH THESE REQUIREMENTS)*

| FEATURE   | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | <p>exterior conditions, stainless steel to be used.</p> <ul style="list-style-type: none"><li>• Rectangular HSS or pipe guardrails shall be mounted on the inside face of columns.</li><li>• Where required due to column spacing, the guardrail shall be supported by intermediate stanchions fixed to the inside face of the base foundation wall.</li><li>• Height of guardrails: to code minimum above platform level;</li></ul> <p>&gt; Space for window washing shall be provided between columns/guardrails and glazing.</p> |
| Wiring    | <p>&gt; Both vertical and horizontal wiring conduits shall be concealed and integrated with the structure.</p>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Clearance | <p>&gt; The minimum acceptable platform edge clearance for stair enclosure buildings is 2.44 m, areas which do not meet the minimum stated platform edge clearance should be marked with a conspicuous yellow painted hatch augmented by warning signage indicating the reduced clearance. Reduced platform edge clearances should be approved by GO staff prior to design.</p>                                                                                                                                                     |



CI-0404

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ROOF DESIGN

*(ROOF DESIGN SHALL COMPLY WITH THESE REQUIREMENTS)*

| FEATURE                                       | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Live Loads                                    | <ul style="list-style-type: none"> <li>&gt; Live loads shall be determined in accordance with Part 2 and Part 4 of the Ontario Building Code</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Overhanging, sloped, vaulted, or arched roofs | <ul style="list-style-type: none"> <li>&gt; Overhanging, sloped, vaulted or arched roofs shall have snow guards and built-in concealed gutters, with heat-tracing if warranted, especially over door locations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Rain Water                                    | <ul style="list-style-type: none"> <li>&gt; Rainwater leaders, both vertical and horizontal, shall be concealed or recessed to provide protection against damage due to parking, snow clearing, vandalism, and corrosion. Sheet metal covers are not acceptable. At minimum, heavy gauge galvanized cover plates or guards shall be provided as a means of protection from damage and shall be designed accordingly</li> <li>&gt; Exposed rainwater leaders shall be designed as an integrated element of the building architecture and shall be properly detailed. All exposed fasteners are to be stainless steel or galvanized to match the material the leader is to be anchored to. Mixing of materials is not recommended.</li> <li>&gt; Rain water leader shall be connected to storm drainage system, wherever possible.</li> <li>&gt; Side platform stair enclosure roof gutters can have scuppers or rainwater leaders draining to an adjacent swale or ditch. Rainwater leaders shall spill onto splash pads or grilles flush-set into pavement (over granular 'French drains').</li> <li>&gt; Sheet metal covers are not acceptable: heavy gauge galvanized metal guards shall be designed accordingly.</li> <li>&gt; Island platform rain water leaders shall be connected to the storm water drainage system.               <ul style="list-style-type: none"> <li>• Drainage onto platforms or tracks is not permitted.</li> <li>• Storm drains under-crossing tracks shall be encased</li> </ul> </li> </ul> |



CI-0404

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| FEATURE | DESCRIPTION                                                                                                                                                                                              |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | according to Railway approval. <ul style="list-style-type: none"><li>• Roof sheet drainage is acceptable only for stand-alone pre-engineered platform shelters (GO standard platform shelters)</li></ul> |
| HVAC    | > Roof mounted HVAC equipment to be fully screened.                                                                                                                                                      |





CI-0404

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**LIGHTING**

*(LIGHTING SHALL COMPLY WITH THESE REQUIREMENTS)*

| <b>FEATURE</b>             | <b>DESCRIPTION</b>                                                                                                                                                                                                                           |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ceiling mounted luminaires | <ul style="list-style-type: none"><li>&gt; There shall be no ceiling mounted luminaires over stairwells due to maintenance access problems.</li></ul>                                                                                        |
| Ceiling Lighting           | <ul style="list-style-type: none"><li>&gt; Ceiling mounted lights shall not be used where maintenance would require special equipment.</li></ul>                                                                                             |
| Stair Lighting             | <ul style="list-style-type: none"><li>&gt; Stair lighting shall be recessed in the concrete walls below the handrails.</li><li>&gt; Stair lighting location shall be co-ordinated with placement of photoluminescent strip system.</li></ul> |



CI-0404

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MECHANICAL REQUIREMENTS

*(MECHANICAL REQUIREMENTS SHALL COMPLY WITH THESE REQUIREMENTS)*

| FEATURE      | DESCRIPTION                                                                                                                                                                                                                                                        |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ventilation  | <ul style="list-style-type: none"><li>&gt; Natural ventilation shall be provided, with louvers complete with fly screens, in door transoms and similarly in enclosure roof ends (gables).</li></ul>                                                                |
| Water Supply | <ul style="list-style-type: none"><li>&gt; Water supply to be provided to hose bibs at the platform level (see Mechanical Section for Design Requirements).</li><li>&gt; Water supply to be gravity drained for winter shut-off.</li></ul>                         |
| Pipes        | <ul style="list-style-type: none"><li>&gt; Any pipes exposed in tunnels to be insulated against condensation and integrated with the tunnel structure by recessing, etc., and galvanized protective covers.</li><li>&gt; Recess all pipes where possible</li></ul> |
| Mirrors      | <ul style="list-style-type: none"><li>&gt; Convex mirrors shall be placed at each stair landing.</li></ul>                                                                                                                                                         |



CI-0404

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COMMUNICATION REQUIREMENTS

*(MECHANICAL REQUIREMENTS SHALL COMPLY WITH THESE REQUIREMENTS)*

| <b>FEATURE</b>             | <b>DESCRIPTION</b>                                                                                                                                                                                                               |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Communication              | <ul style="list-style-type: none"><li>&gt; The architectural design shall accommodate CCTV cameras, the P/A system and related wiring conduits, including a pay telephone, if applicable.</li></ul> |
| Proof of Payment Equipment | <ul style="list-style-type: none"><li>&gt; Proof-of-payment fare equipment, if applicable, on 150 mm elevated bases.</li></ul>                                                                      |



CI-0404

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**DESIGN REQUIREMENTS**

The following requirements pertain to tunnel and exterior stairs, including stairs remote from buildings):

| FEATURE                   | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Risers & Treads           | <ul style="list-style-type: none"><li>&gt; Risers: 150 mm preferred.</li><li>&gt; Treads: 305 mm preferred.</li><li>&gt; The design shall not incorporate open risers; be slip resistant; have uniform treads and risers in any one flight and shall not alter significantly in run and rise in successive flights in any stair system.</li></ul>                                                                                                                                                                                                                                                                                                                                                                      |
| Nosings                   | <ul style="list-style-type: none"><li>&gt; Stair nosings shall project not more than 38 mm and have no abrupt undersides.</li><li>&gt; Where projecting, be sloped to the riser at an angle greater than 60° to the horizontal; and the radius of curvature at the leading edge of the tread not more than 13 mm.</li><li>&gt; Nosings shall have a cast-in safety insert on an extruded aluminum or carborundum base with epoxy or abrasive filler that is minimum 40 mm +/- 10 mm deep and which:<ul style="list-style-type: none"><li>• Is located at the leading edge of the tread;</li><li>• Is tonal contrasted with the tread and riser; and</li><li>• Extends the full width of the tread.</li></ul></li></ul> |
| Detectable Waning Surface | <ul style="list-style-type: none"><li>&gt; Detectable warning surfaces at the top of stairs shall be provided:<ul style="list-style-type: none"><li>• At each landing incorporating an entrance into a stair system;</li><li>• Where the regular pattern of a stairway is broken; and</li><li>• Where the run of a landing not having a continuous handrail is greater than 2100 mm.</li></ul></li><li>&gt; The detectable warning surfaces shall:</li></ul>                                                                                                                                                                                                                                                           |



CI-0404

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| FEATURE    | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | <ul style="list-style-type: none"> <li>• Extend the full width of the stair;</li> <li>• Have a depth of 920 mm (36 in), commencing one tread depth from the edge of the stair; and</li> <li>• The cane-detectable warnings on this surface shall be colour and texture contrasted with the adjacent surfaces. Raised ridges shall be placed perpendicular to the direction of travel.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Edge Drain | <ul style="list-style-type: none"> <li>&gt; Tunnel stairs shall have concrete drainage side-gutters 40 mm deep by 80 mm wide, continuous with the tunnel floor gutters.</li> <li>&gt; Gutter drains shall not be located at the bottom of tunnel stairs or in front of service doors or elevator doors.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Handrails  | <ul style="list-style-type: none"> <li>&gt; Handrails shall be provided on both sides of all stairs.</li> <li>&gt; Exterior stair and ramp handrails shall be smooth galvanized steel pipe, minimum 38 mm, and maximum 51 mm diameter, 915 mm above nosings or ramps.</li> <li>&gt; All anchorage and fittings shall also be galvanized.</li> <li>&gt; Tunnel stair or bridge stair handrails to be stainless steel 38 mm diameter, be mounted not less than 865 mm and not more than 965 mm high, measured vertically from a line drawn through the outside edges of the stair nosings.</li> <li>&gt; All anchorage and fittings shall also be stainless steel. Handrail ends shall extend in accordance with the OBC and the OBC Illustrated Guide, also for exterior stairs.</li> <li>&gt; Handrails shall be continuous around landings less than 2100 mm in length and placed on the inside edge of stairs; and               <ul style="list-style-type: none"> <li>• Have the rail extension return to the post, floor or wall;</li> <li>• At the top of stairs, extend at least 300 mm (12 in) parallel to the floor surface;</li> <li>• At the bottom of the stairs, continue to slope for a distance equal to the depth of one tread and then extend at least 300</li> </ul> </li> </ul> |



CI-0404

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| FEATURE                 | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | <p>mm (12 in) parallel to the floor surface;</p> <ul style="list-style-type: none"> <li>• Have a circular cross-section with an outside diameter not less than 30 mm (1.2 in) and not more than 40 mm (1.6 in), or any non-circular shape with a graspable portion that has a perimeter not less than 100 mm (4 in) and not more than 155 mm (6 in) and whose cross-sectional dimension is not more than 57 mm (2 in);</li> <li>• Have a clearance of at least 50 mm (2 in) between the handrail and any wall to which it is attached or immediately adjacent to;</li> <li>• Be terminated in a manner that will not obstruct pedestrian travel or create a hazard;</li> <li>• Be designed and constructed such that handrails and their supports:</li> <li>• Will withstand the loading values obtained from the non-concurrent application of a concentrated load not less than 0.9 kN (202 lb.) applied at any point and in any direction; and</li> <li>• A uniform load not less than 0.7 kN/m (46.6 lb./ft.) applied in any direction to the handrail;</li> <li>• Be tonal contrasted with their surroundings and provided with a colour contrasted strip at the leading edges of the handrail at the top and bottom of the stair system;</li> <li>• Be installed with a photoluminescent strip installed on an extruded aluminium base along the stair rise; and</li> <li>• Where stairs are wider than 2400 mm, one or more intermediate continuous handrails between landings shall be provided</li> </ul> |
| Photoluminescent Strips | <p>&gt; Tunnel walls (both sides) shall have surface mounted photoluminescent strips at 0.3m above finished tunnel floor. Strips to be installed continuously along entire length of tunnel transitioning in a continuous manner to all stairwells. Refer Tab 4 CI-0404 Stairs and Stairwells for detail information and figures on stair/tunnel interface of</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |



CI-0404

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Stairs & Stair Enclosures

| FEATURE | DESCRIPTION              |
|---------|--------------------------|
|         | photoluminescent strips. |