



CI-0404

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

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">> Risers: 150 mm preferred.> Treads: 305 mm preferred.> 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.
Nosings	<ul style="list-style-type: none">> Stair nosings shall project not more than 38 mm and have no abrupt undersides.> 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.> 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">• Is located at the leading edge of the tread;• Is tonal contrasted with the tread and riser; and• Extends the full width of the tread.
Detectable Waning Surface	<ul style="list-style-type: none">> Detectable warning surfaces at the top of stairs shall be provided:<ul style="list-style-type: none">• At each landing incorporating an entrance into a stair system;• Where the regular pattern of a stairway is broken; and• Where the run of a landing not having a continuous handrail is greater than 2100 mm.> The detectable warning surfaces shall:



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	<ul style="list-style-type: none">• Extend the full width of the stair;• Have a depth of 920 mm (36 in), commencing one tread depth from the edge of the stair; and• 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.
Edge Drain	<ul style="list-style-type: none">> Tunnel stairs shall have concrete drainage side-gutters 40 mm deep by 80 mm wide, continuous with the tunnel floor gutters.> Gutter drains shall not be located at the bottom of tunnel stairs or in front of service doors or elevator doors.
Handrails	<ul style="list-style-type: none">> Handrails shall be provided on both sides of all stairs.> 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.> All anchorage and fittings shall also be galvanized.> 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.> 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.> 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">• Have the rail extension return to the post, floor or wall;• At the top of stairs, extend at least 300 mm (12 in) parallel to the floor surface;• 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



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	<p>mm (12 in) parallel to the floor surface;</p> <ul style="list-style-type: none"> • 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); • 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; • Be terminated in a manner that will not obstruct pedestrian travel or create a hazard; • Be designed and constructed such that handrails and their supports: • 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 • A uniform load not less than 0.7 kN/m (46.6 lb./ft.) applied in any direction to the handrail; • 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; • Be installed with a photoluminescent strip installed on an extruded aluminium base along the stair rise; and • Where stairs are wider than 2400 mm, one or more intermediate continuous handrails between landings shall be provided
Photoluminescent Strips	<p>> 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>



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FEATURE	DESCRIPTION
	photoluminescent strips.

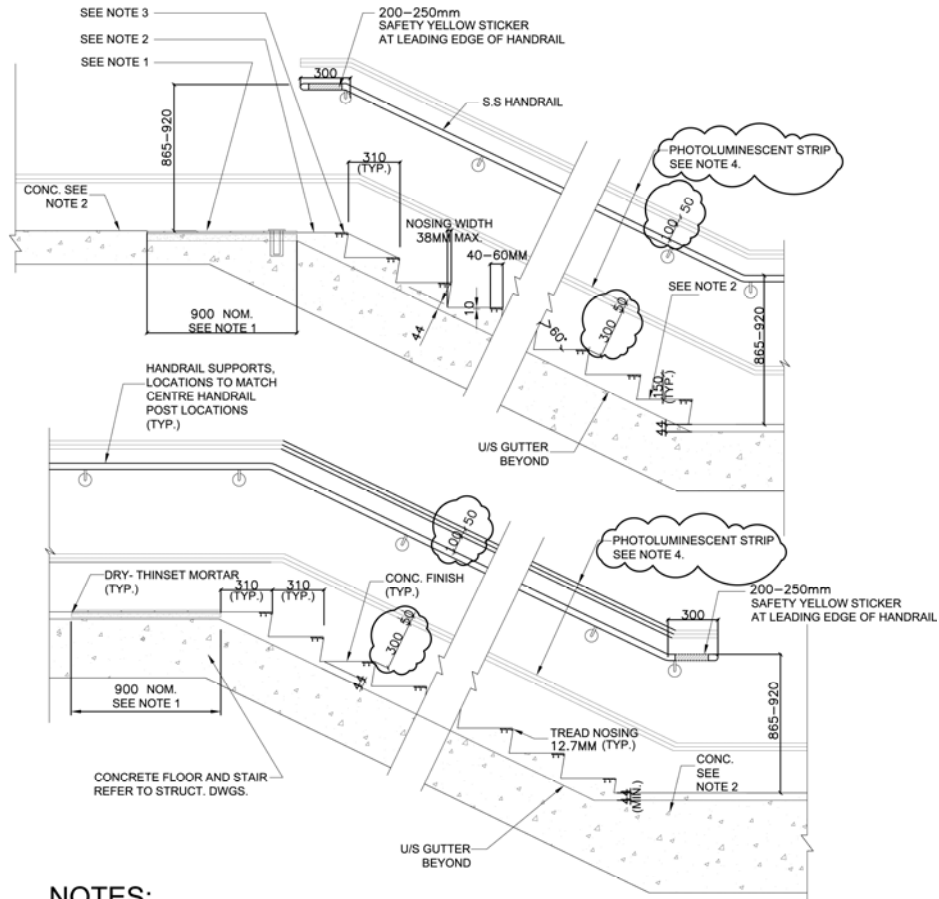
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TAB 4: STATION & TERMINAL BUILDING INFRASTRUCTURE
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FIGURE: TILES AT RAMP / STAIR APPROACH (SECTIONS)

SECTION:
Tab 4:
Station
Infrastructure

FIGURE:
Tiles at
Ramp / Stair
Approach
(Sections)



NOTES:

1. DETECTABLE WARNING SURFACE W/ CONTINUOUS RIDGES TO MEET CAN-CSA B651-04 ACCESSIBLE DESIGN STANDARDS. RIDGES SHALL BE INSTALLED PERPENDICULAR TO ROUTE OF TRAVEL; EXTENDING THE FULL WIDTH OF THE STAIR AND HAVE A DEPTH OF 900-920MM COMMENCING ONE TREAD DEPTH FROM THE EDGE OF THE STAIR.
2. CONCRETE - STEEL TROWEL WITH BRUSH FINISH
3. CAST IN SAFETY NOSING (50mm +/- 10mm) ON AN EXTRUDED ALUMINUM CARBORUNDUM BASE W/ EPOXY OR ABRASIVE FILLER/GRIT; EXTENDING THE FULL WIDTH OF THE TREAD REFER CSA B651-04 & CNIB STANDARDS FOR SLIP RESISTANCE & COLOUR CONTRAST REQUIREMENTS.

4. WALL MOUNTED PHOTOLUMINESCENT STRIP C/W ALUM. FRAME MADE OF CORROSION RESISTANT MATERIAL (ALUMINUM OR STAINLESS STEEL) IS TO BE SUPPLIED AND INSTALLED TO SUPPORT THE PHOTOLUMINESCENT STRIPS ALONG THE ENTIRE LENGTH (FOR BOTH STAIR AND HANDRAIL CONDITIONS). FASTENERS TO BE CORROSION RESISTANT (STAINLESS STEEL OR ALUMINUM) AND NOT VISIBLE. END CAPS TO BE VANDAL PROOF. (TYP. BOTH SIDES OF THE STAIR AND ABOVE THE HANDRAIL). ALIGN HANDRAIL PORTION TO LEADING EDGE OF HANDRAIL EXTENSION. REFER TO TAB 7 OF THE DRM FOR DETAILS.