

## **ANNEX A – NUMBERING AND NAMING LEVELS**

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## **1 GENERAL**

- 1.1 Level numbering and naming shall be determined and agreed with the Authority at the initial stage of design and shall consider both labelling during construction and the labelling for operation, including signage.

## **2 LEVEL NUMBERING AND NAMING**

- 2.1 Allocation of level numbers to basements and floors follow the standard practice for Singapore. Grade or Ground floor is Numbered '01', one floor above ground is Numbered '02', Basement 1 is 'B1', Basement 2 is 'B2' etc.
- 2.2 Only primary levels are numbered. A primary level is distinguished by having a habitable floor served by lifts which commonly functions as, but is not limited to, one or more of the following:
- a. Entrance Level,
  - b. Concourse Level,
  - c. Platform Level,
  - d. Plantroom Level, or
  - e. Subway Level<sup>1</sup>

Note:

<sup>1</sup> Subway level – A level independent to the concourse level which serves as an underground pedestrian linkway connecting between entrances and/or KOPs to future developments; which can also be part of an Underground Pedestrian Network (UPN).

- 2.3 Level naming shall be standardised as follows:
- a. Firstly, the level number: '01', '02', 'B1', 'B2' etc.
  - b. Secondly, the functional name for the level, followed by the term "Level".
- 2.4 Intermediate levels are non-habitable and/or transitional spaces such as double slabs, ceiling access voids, staircase and escalator mid-landings/transfers, vent shaft transfers, etc. that are associated with/connected to primary levels. Such levels/spaces do not need to be assigned a level number.
- 2.5 Where such intermediate level occurs at certain areas within the primary level, they can be identified as part plans to the primary level plan.
- 2.6 An underplatform does not have an assigned level number but uses the same level number as the platform above.
- 2.7 Roofs to underground station box (including stairs and vent transfers at that level) do not need to be assigned a level number and shall be labelled as "Underground Station Roof Level".

## **ANNEX D-GUIDE TO THE LAYOUT OF THE TACTILE AND BRAILLE GUIDANCE SYSTEM IN MRT AND LRT STATIONS**

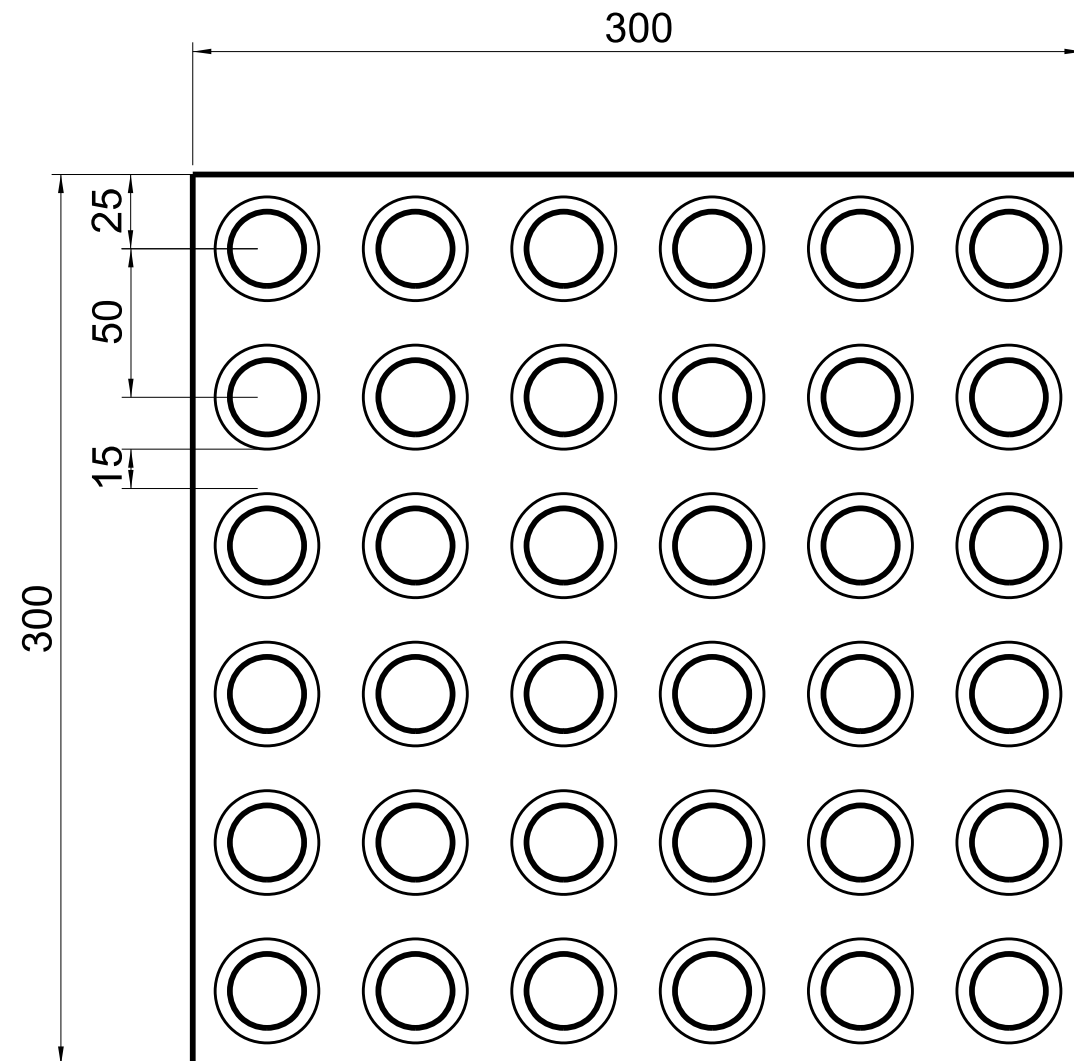
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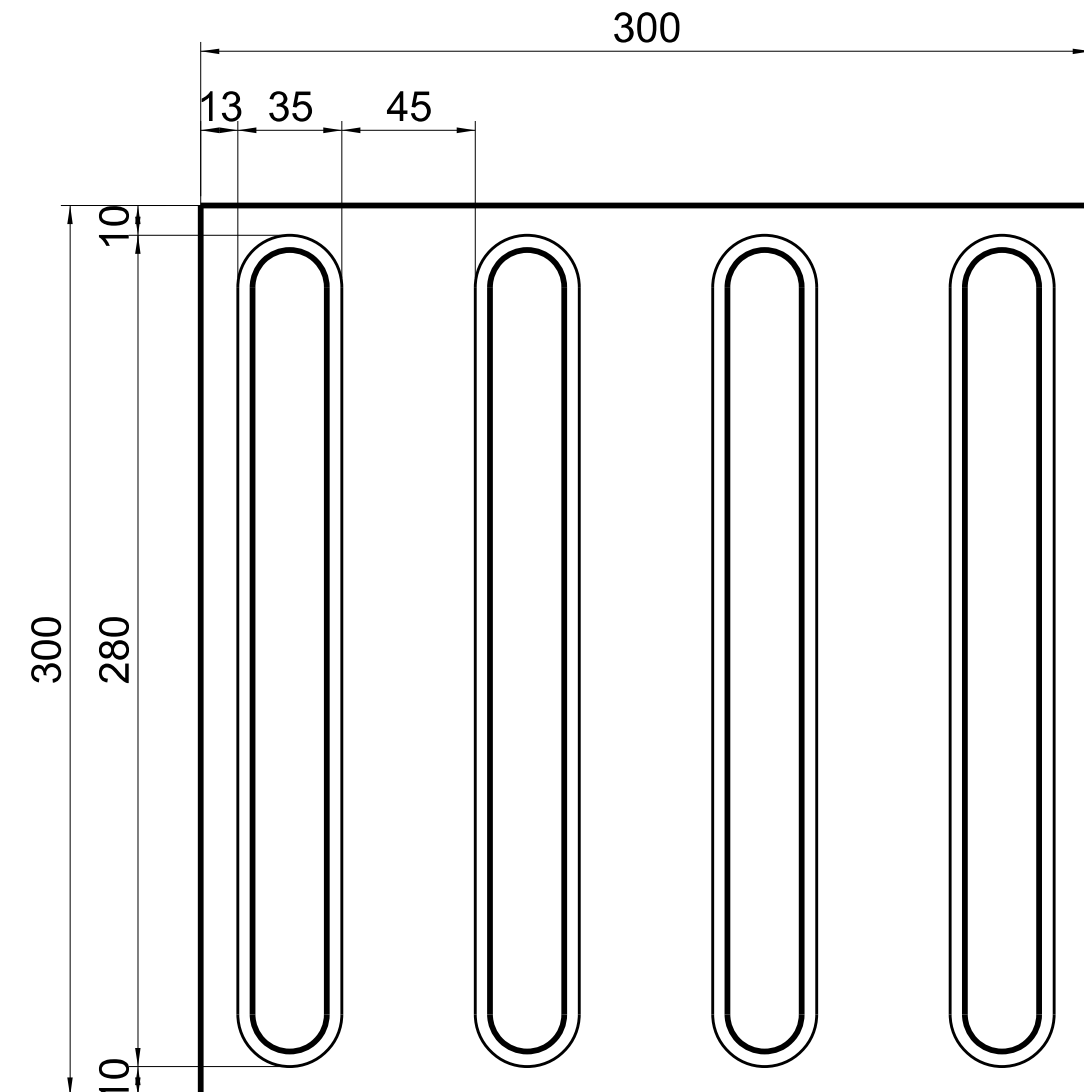
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# TACTILE TILES

# Tactile Tile Dimensions



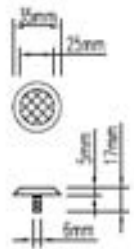
Decision Tile



Direction Tile

# Stainless Steel Tactile

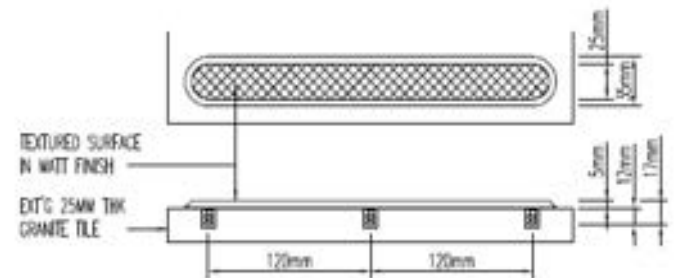
PROVIDE 50% COLOUR CONTRAST  
BETWEEN STUD/ STRIP  
AND SURROUNDING FLOORING



STAINLESS STEEL STUD

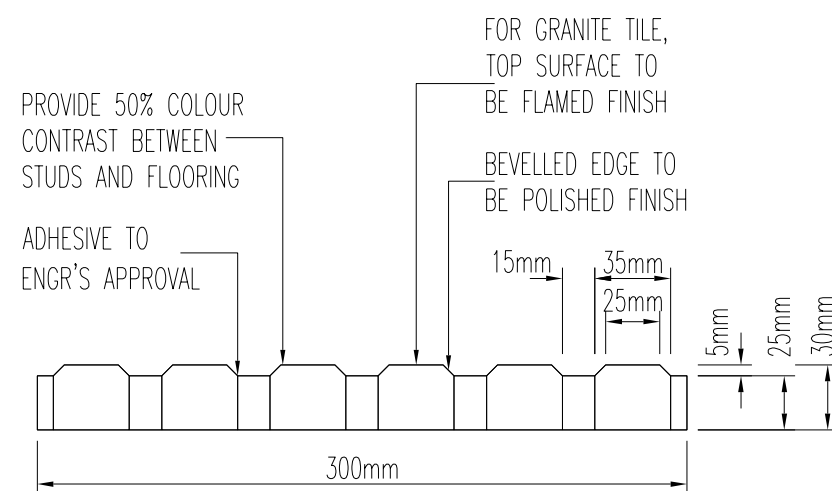
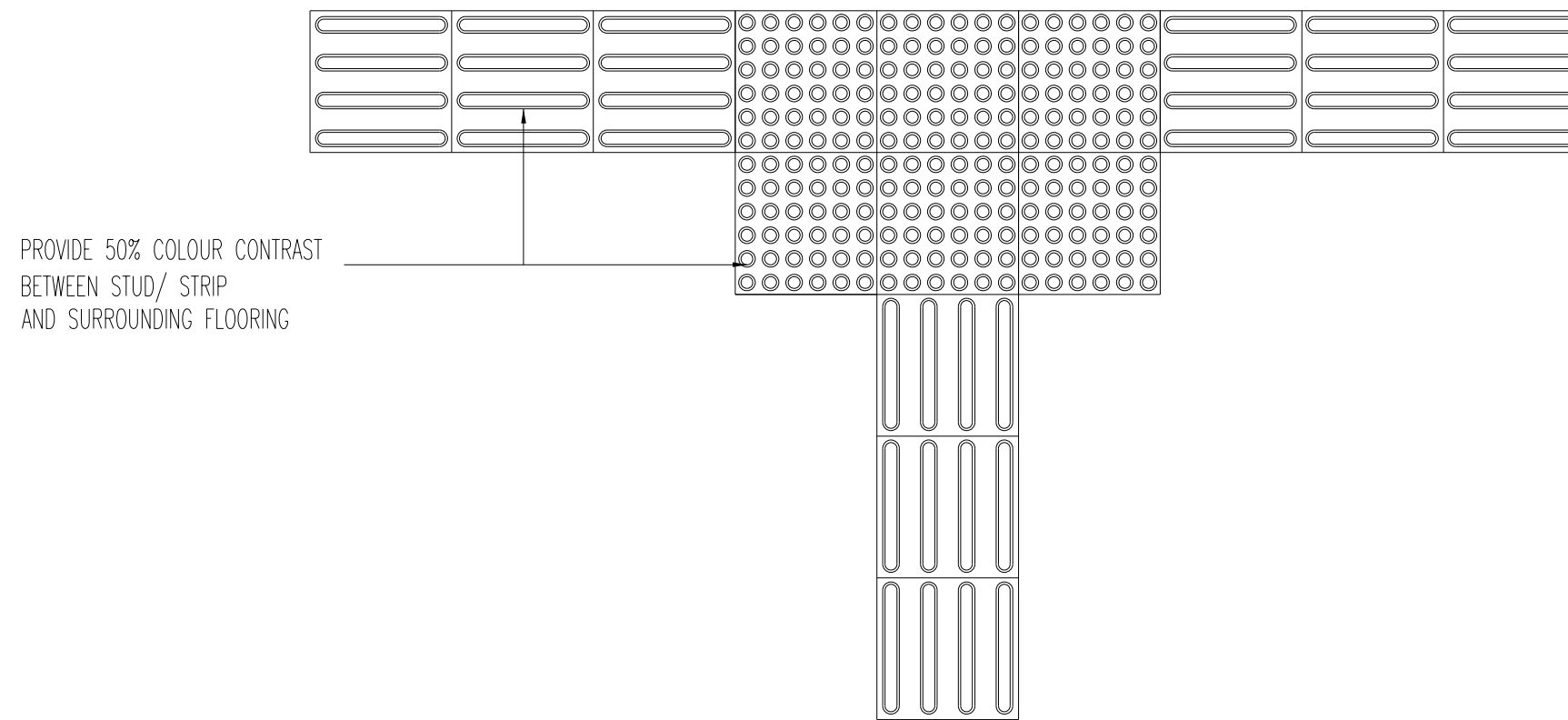


SECTION THRU' TILE  
(STAINLESS STEEL STUDS)

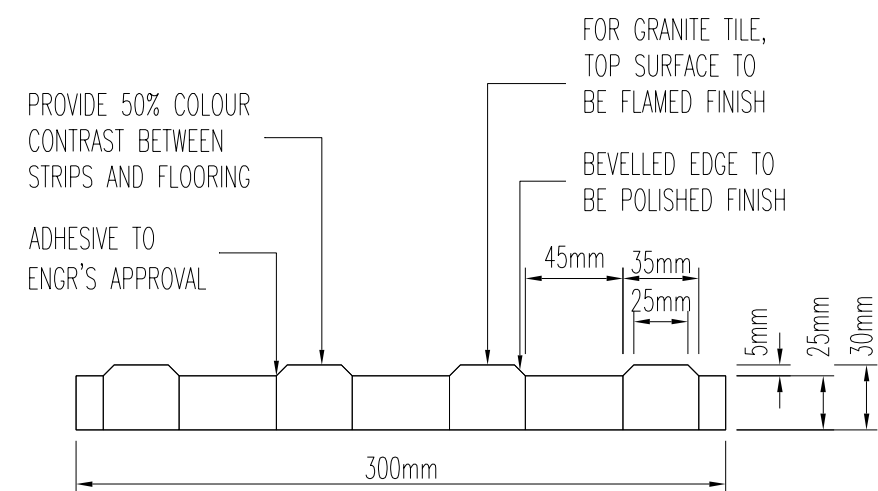


SECTION THRU' TILE  
(STAINLESS STEEL STRIP)

# Granite Tactile



SECTION THRU' DECISION TILE



SECTION THRU' DIRECTION TILE

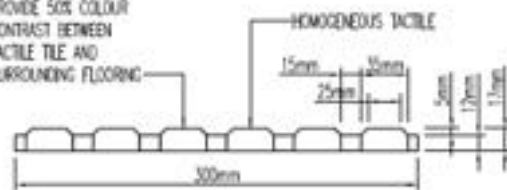


# Homogeneous Tactile

PROVIDE 50% COLOUR CONTRAST BETWEEN TACTILE TILE AND SURROUNDING FLOORING

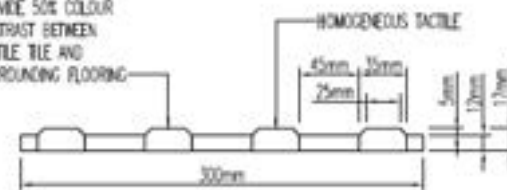


PROVIDE 50% COLOUR CONTRAST BETWEEN TACTILE TILE AND SURROUNDING FLOORING



SECTION THRU' DECISION TILE

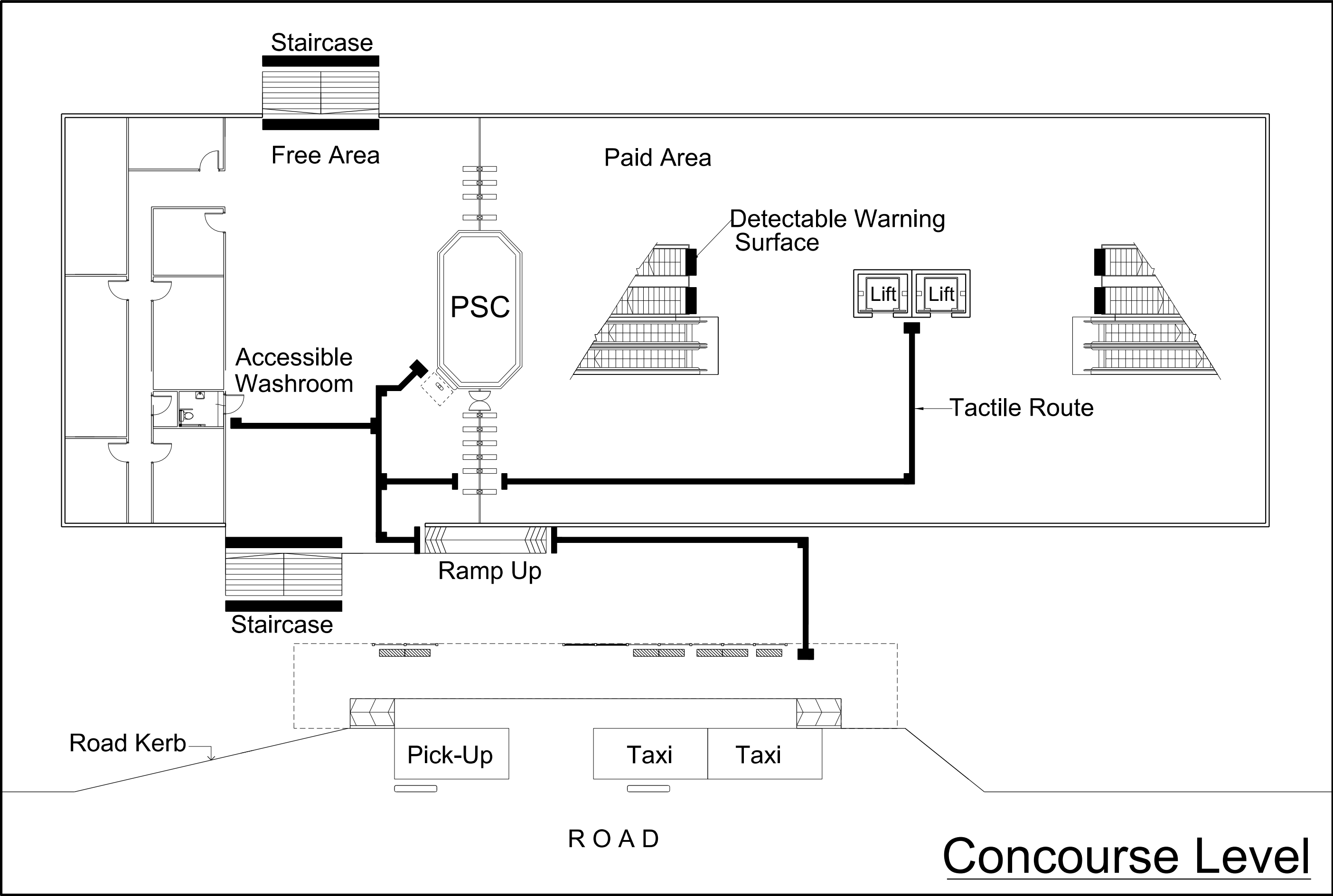
PROVIDE 50% COLOUR CONTRAST BETWEEN TACTILE TILE AND SURROUNDING FLOORING



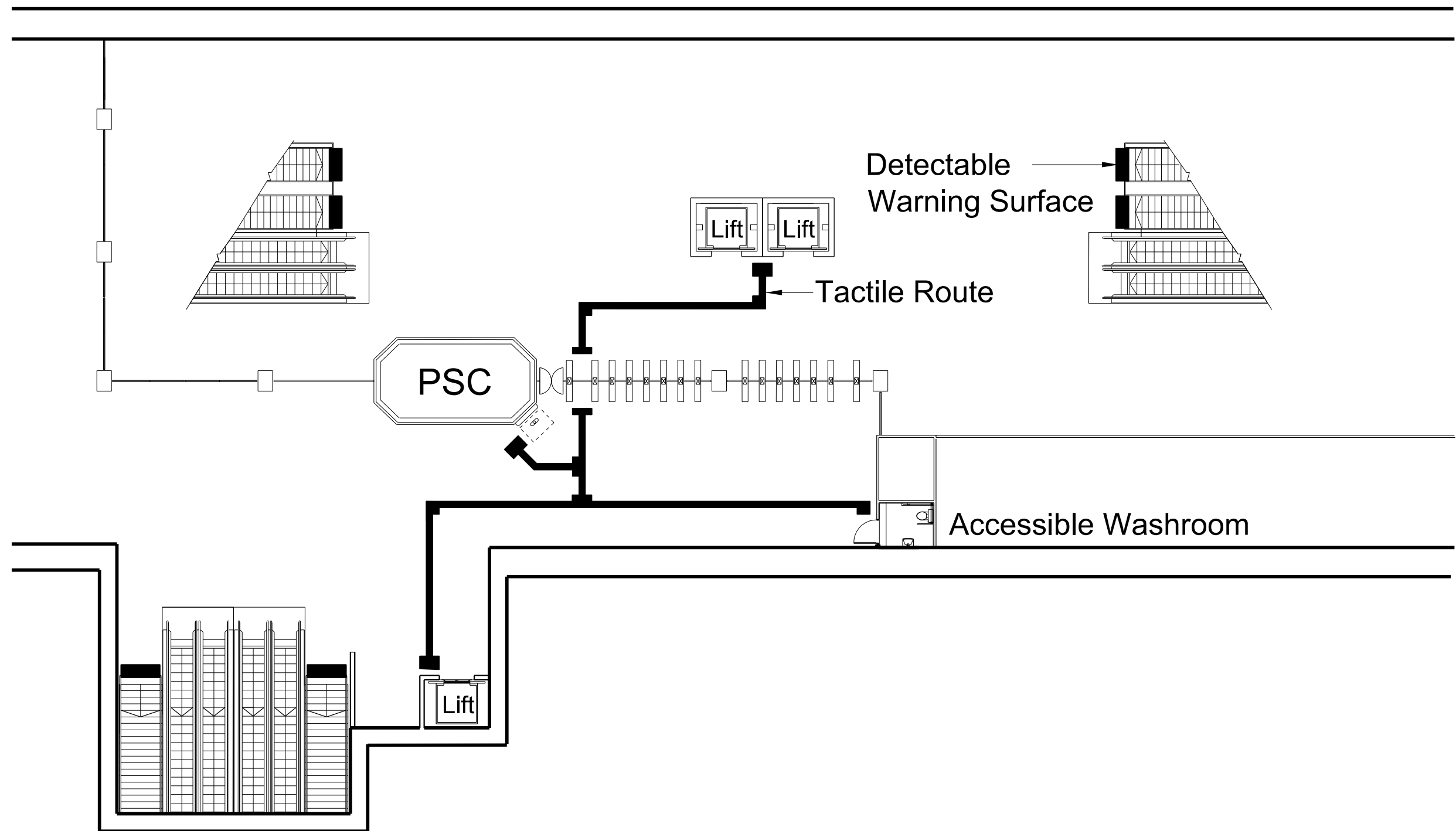
SECTION THRU' DIRECTION TILE

# TACTILE ROUTE

# At Typical Elevated Station



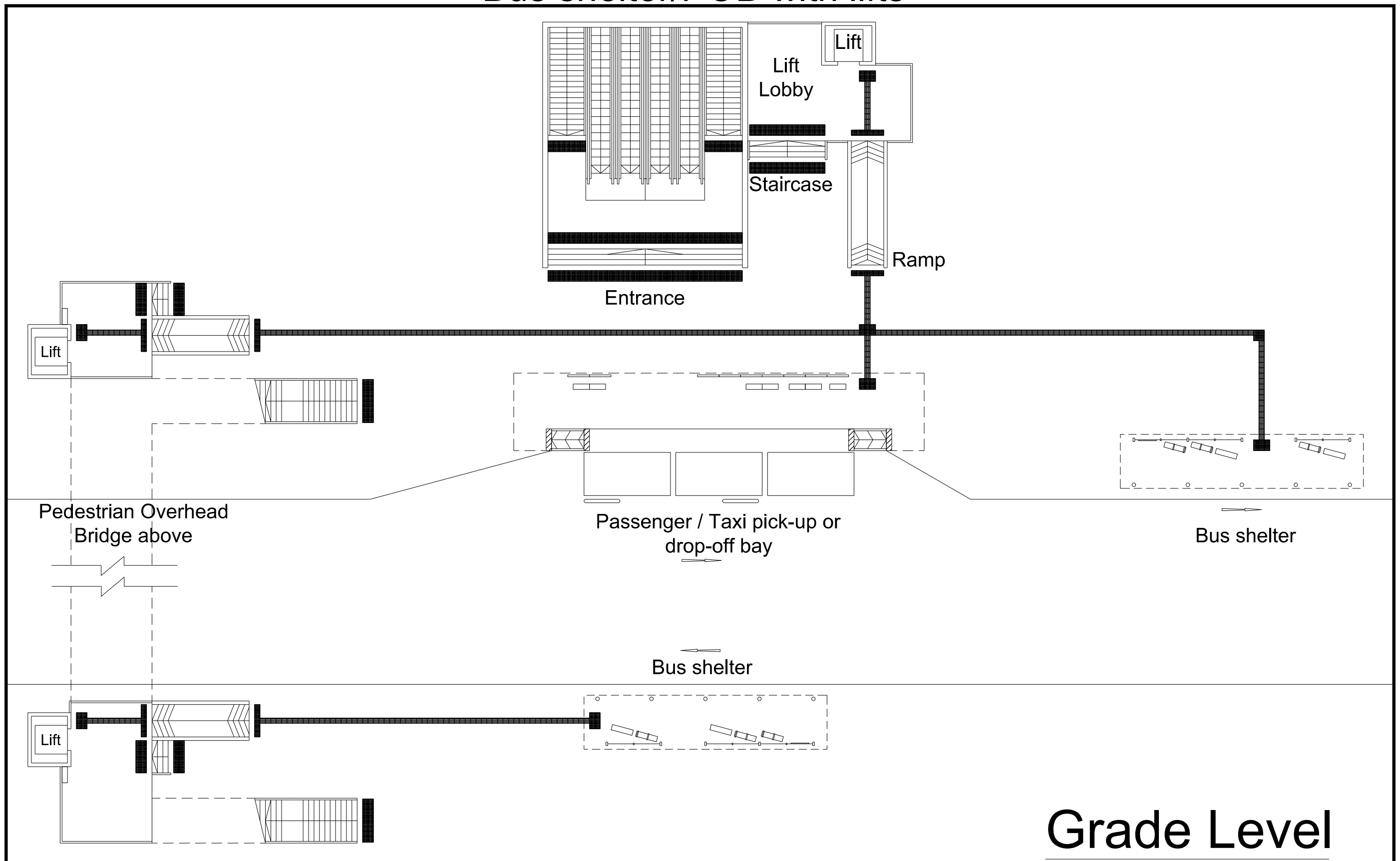
# At Typical Underground Station



Concourse Level

# Station Entrance

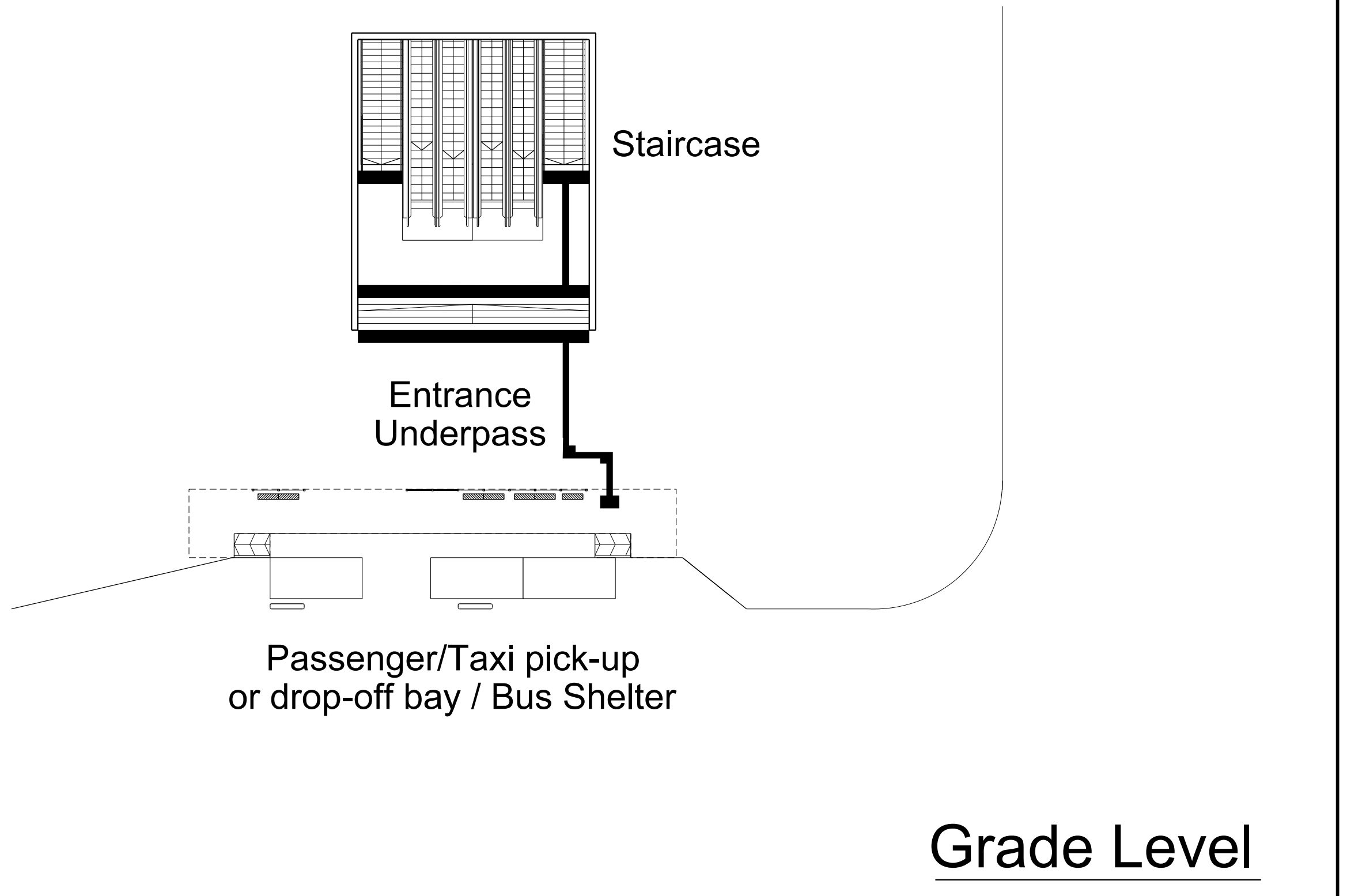
Scenario 1: with Lift and Passenger/Taxi pick-up or Drop-off bay/  
Bus shelter/POB with lifts



Grade Level

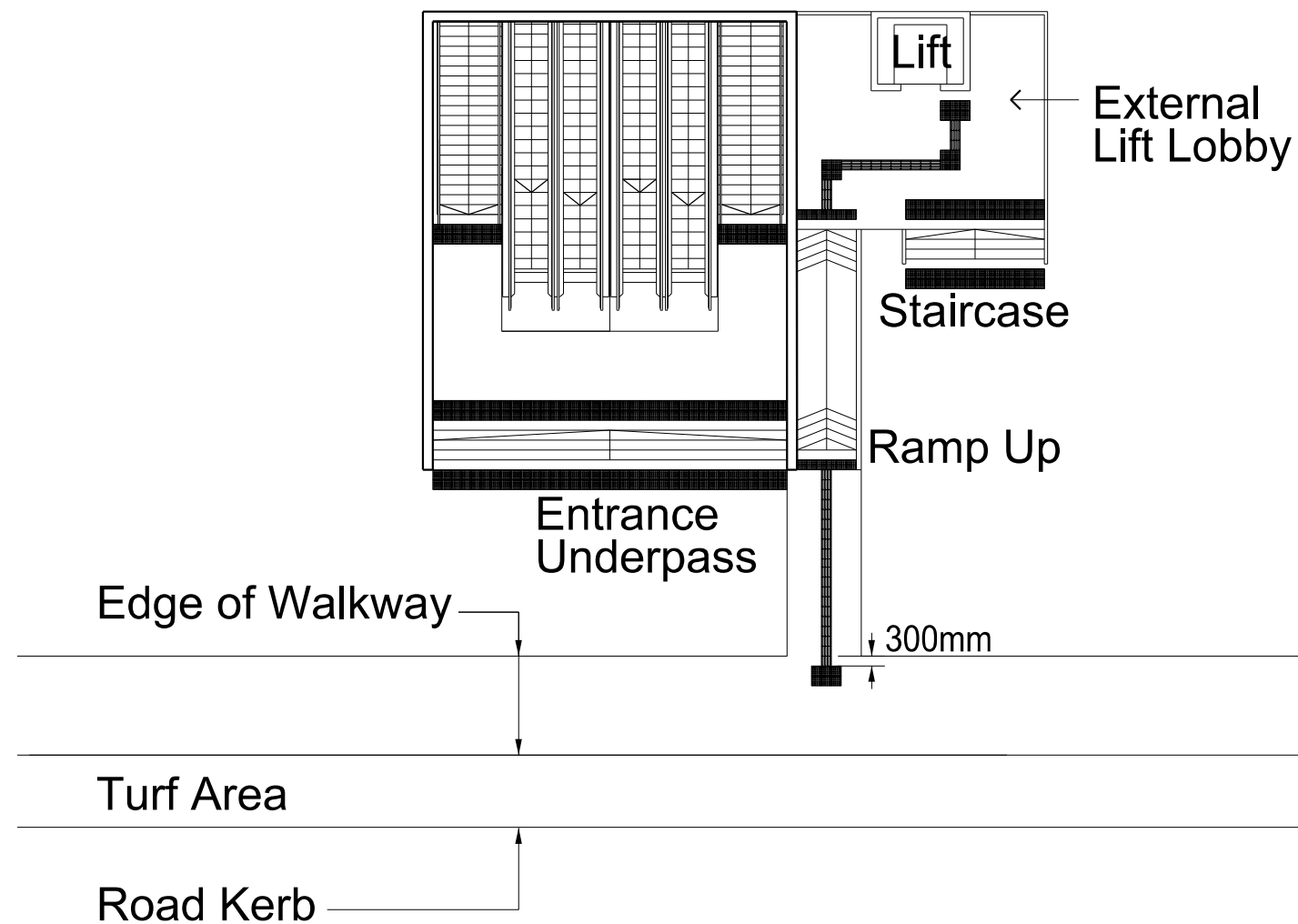
# Station Entrance

Scenario 2 : without Lift but with Passenger/Taxi pick-up or drop-off bay / Bus Shelter



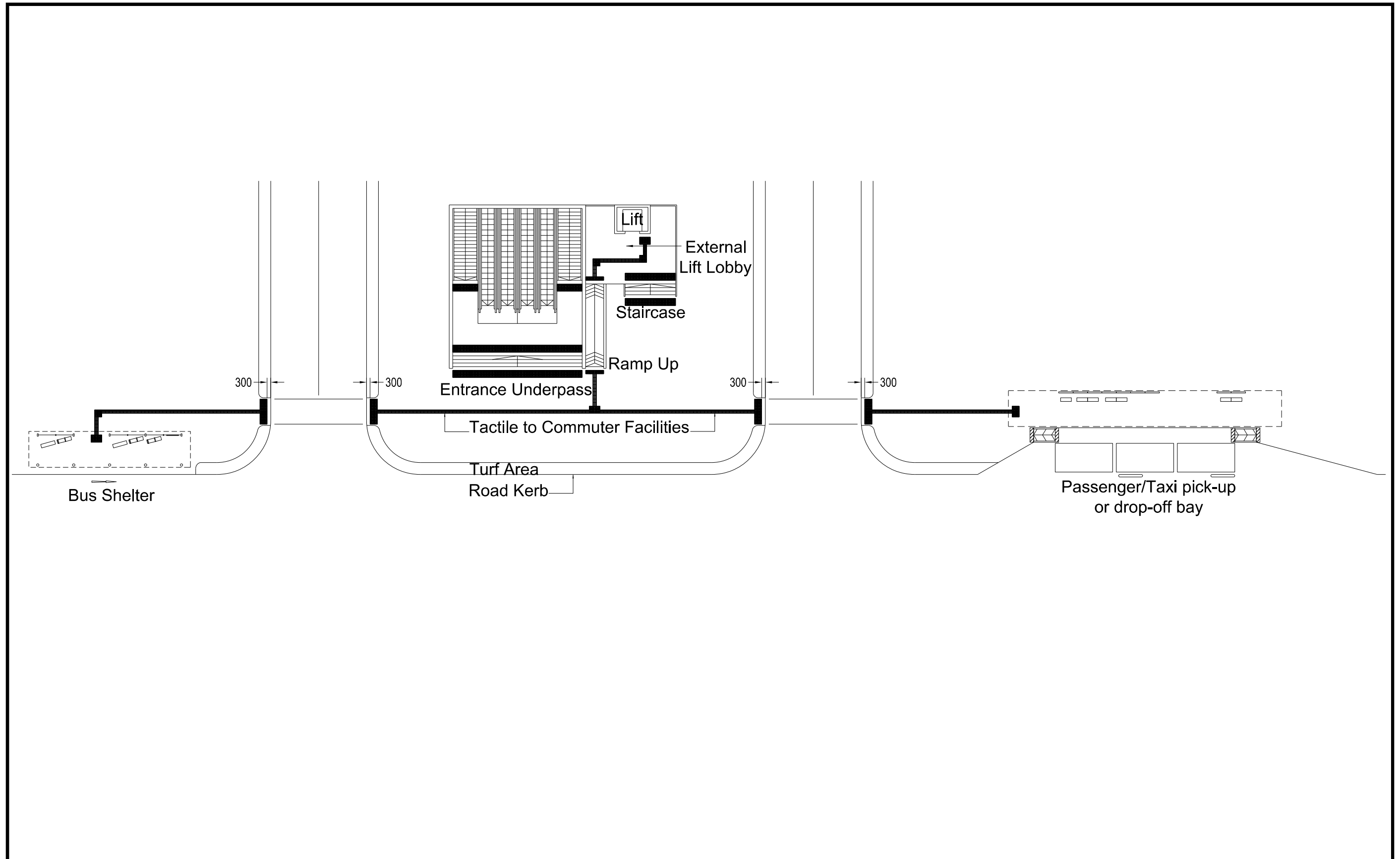
# Station Entrance

Scenario 3 : with Lift but without Passenger/Taxi pick-up or drop-off / Bus Shelter



# Station Entrance

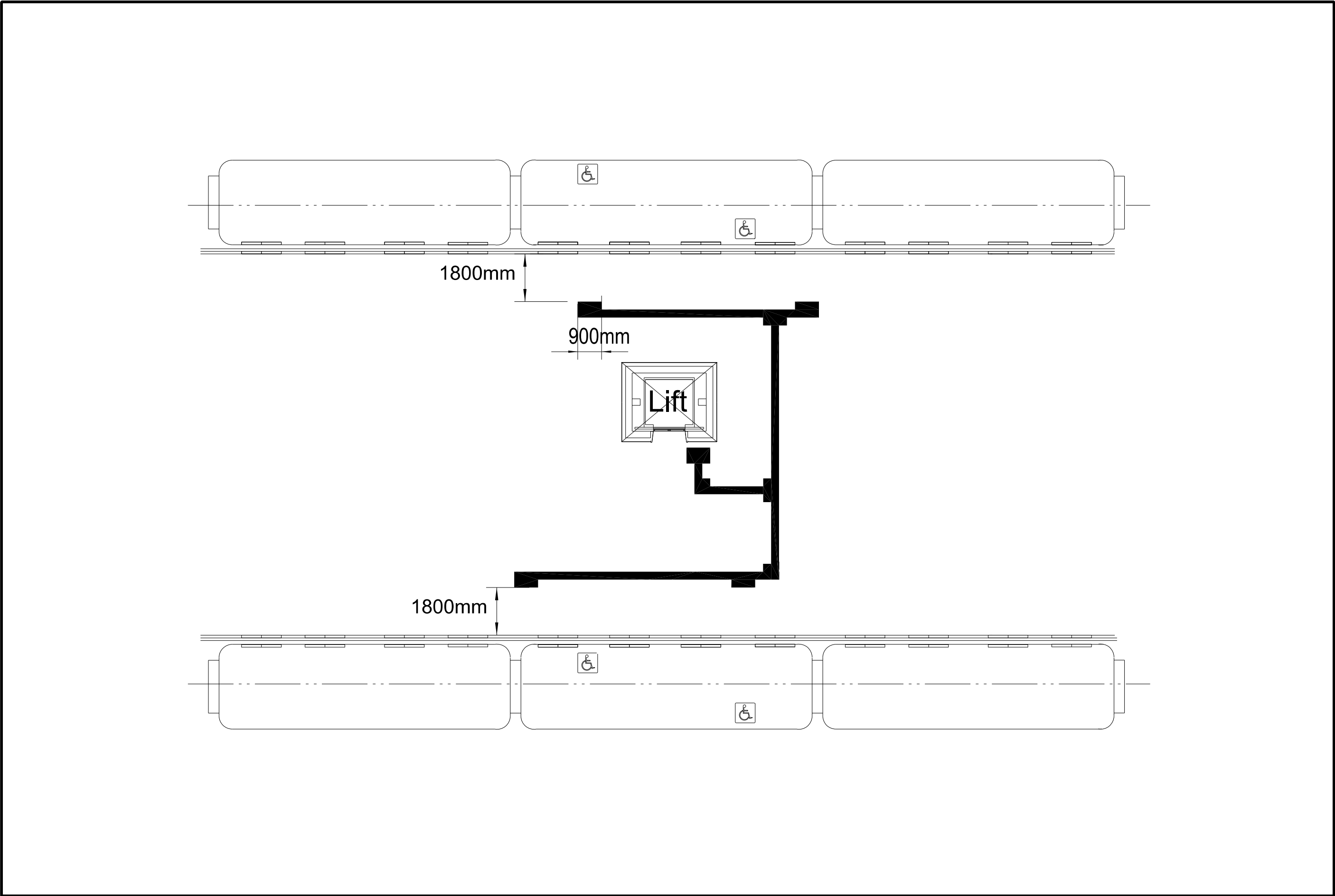
Scenario 4: with Lift and Passenger/Taxi pick-up or Drop-off bay/  
Bus shelter crossing roads



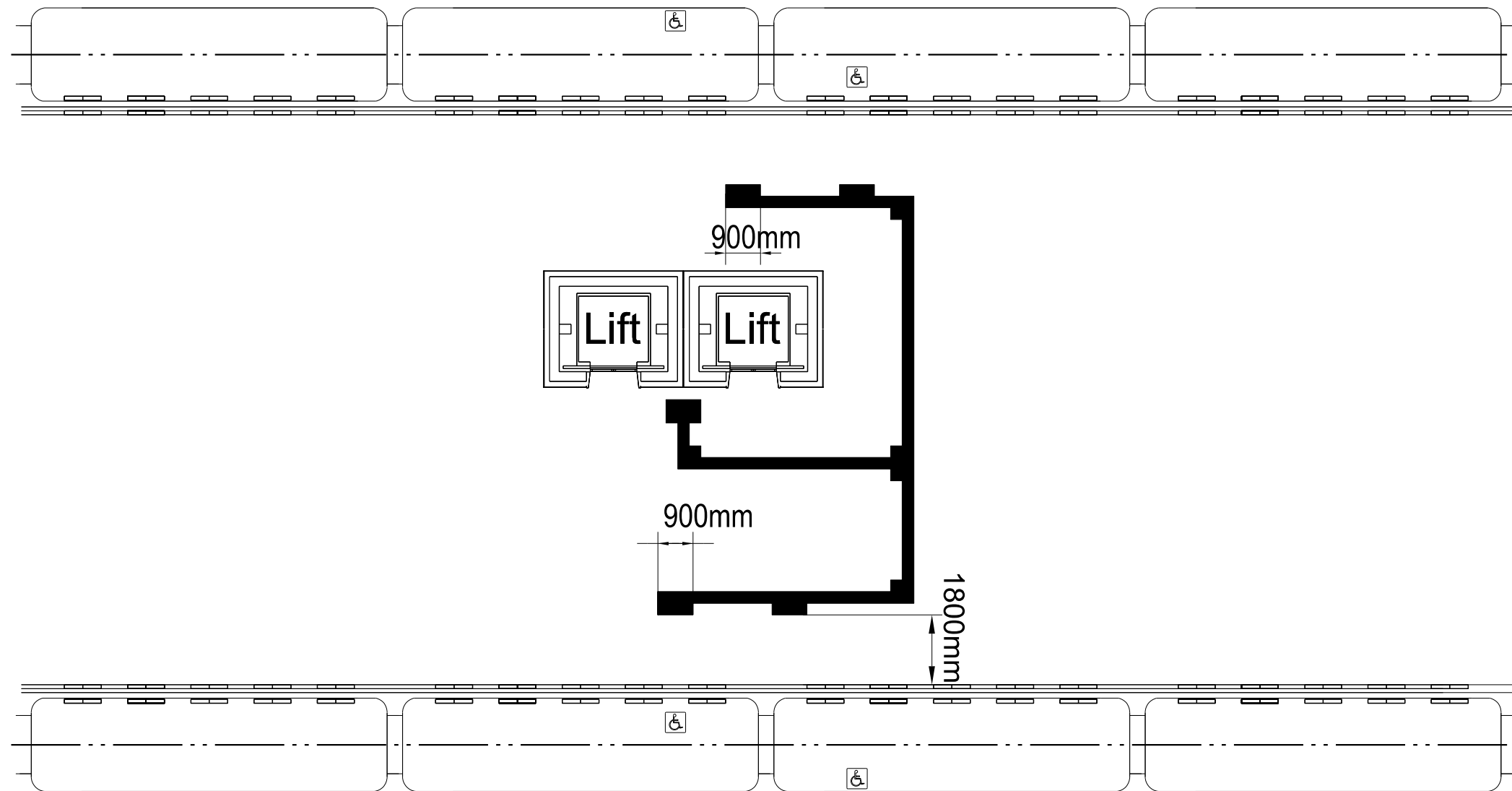


# TACTILE & BRAILLE DETAILS

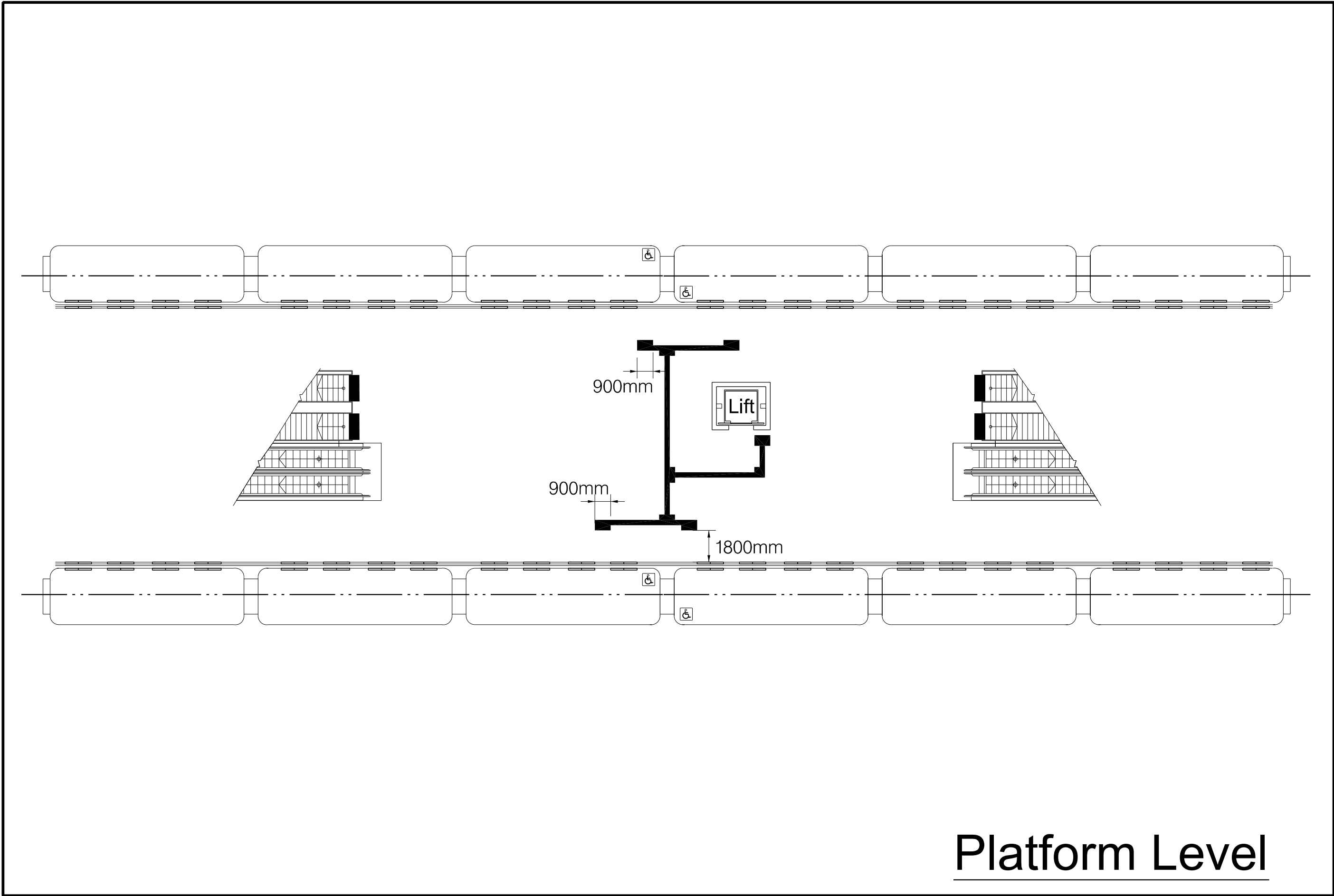
# At Platform Level - 3 Cars Train with 1 Lift (CCL & DTL stations)



# At Platform Level - 4 Cars Train with 2 lifts (TEL stations)

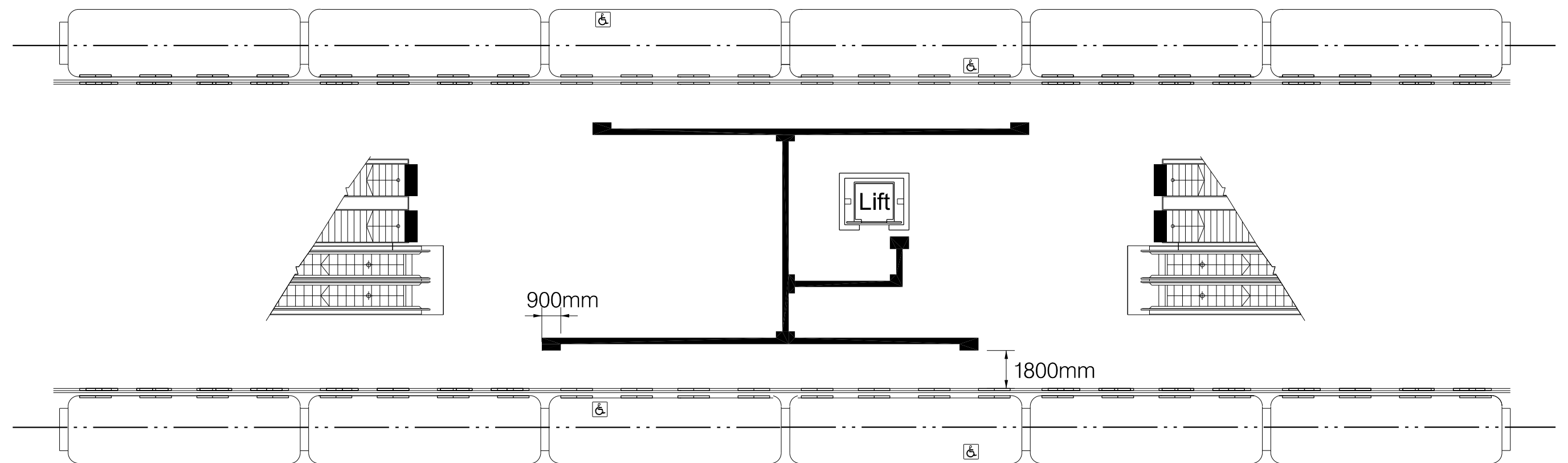


# At Platform Level - 6 Cars Train with 1 lift (NSEW Trains)



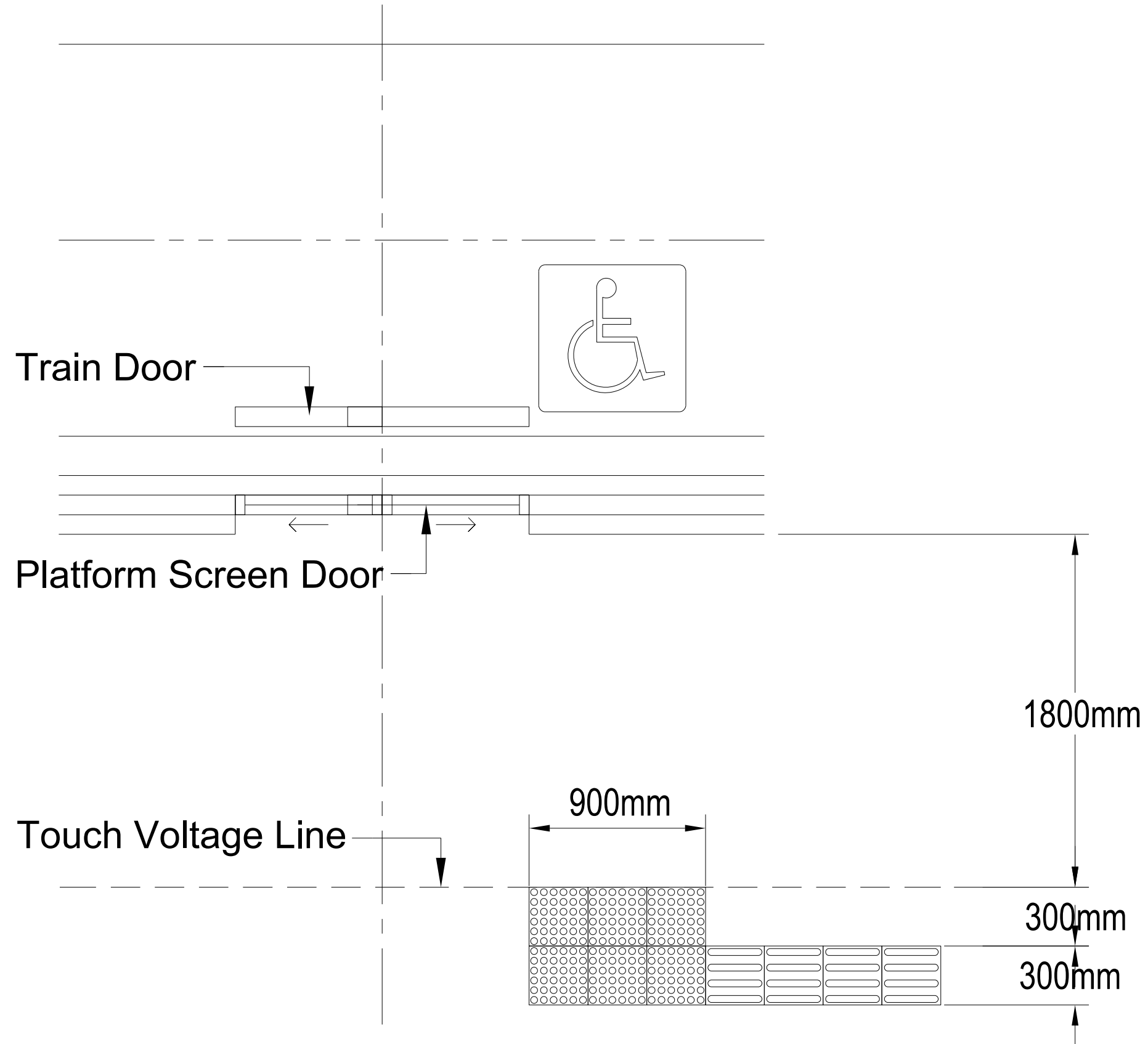
Platform Level

# At Platform Level – 6 Cars Train with 1 lift (NEL stations)

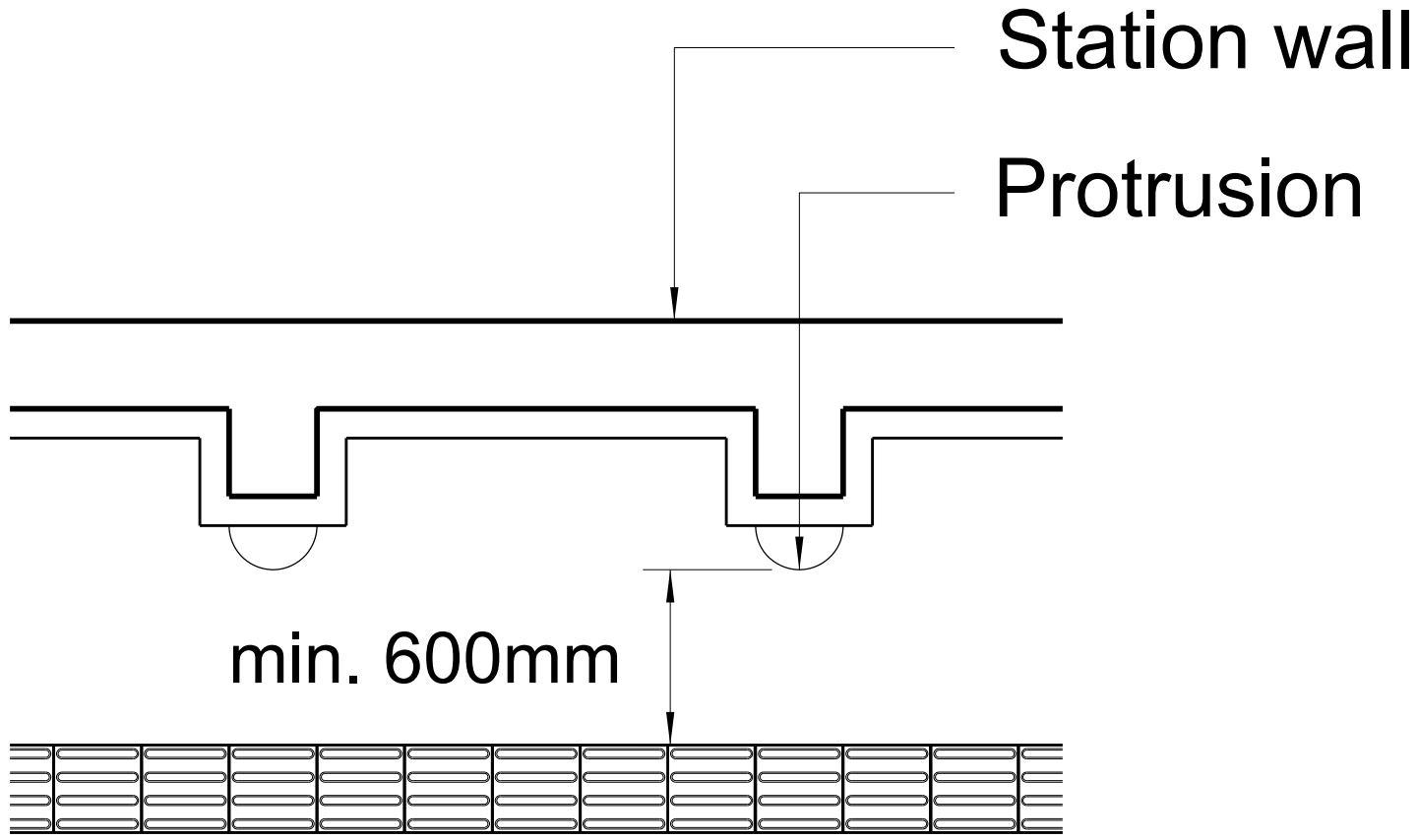


Platform Level

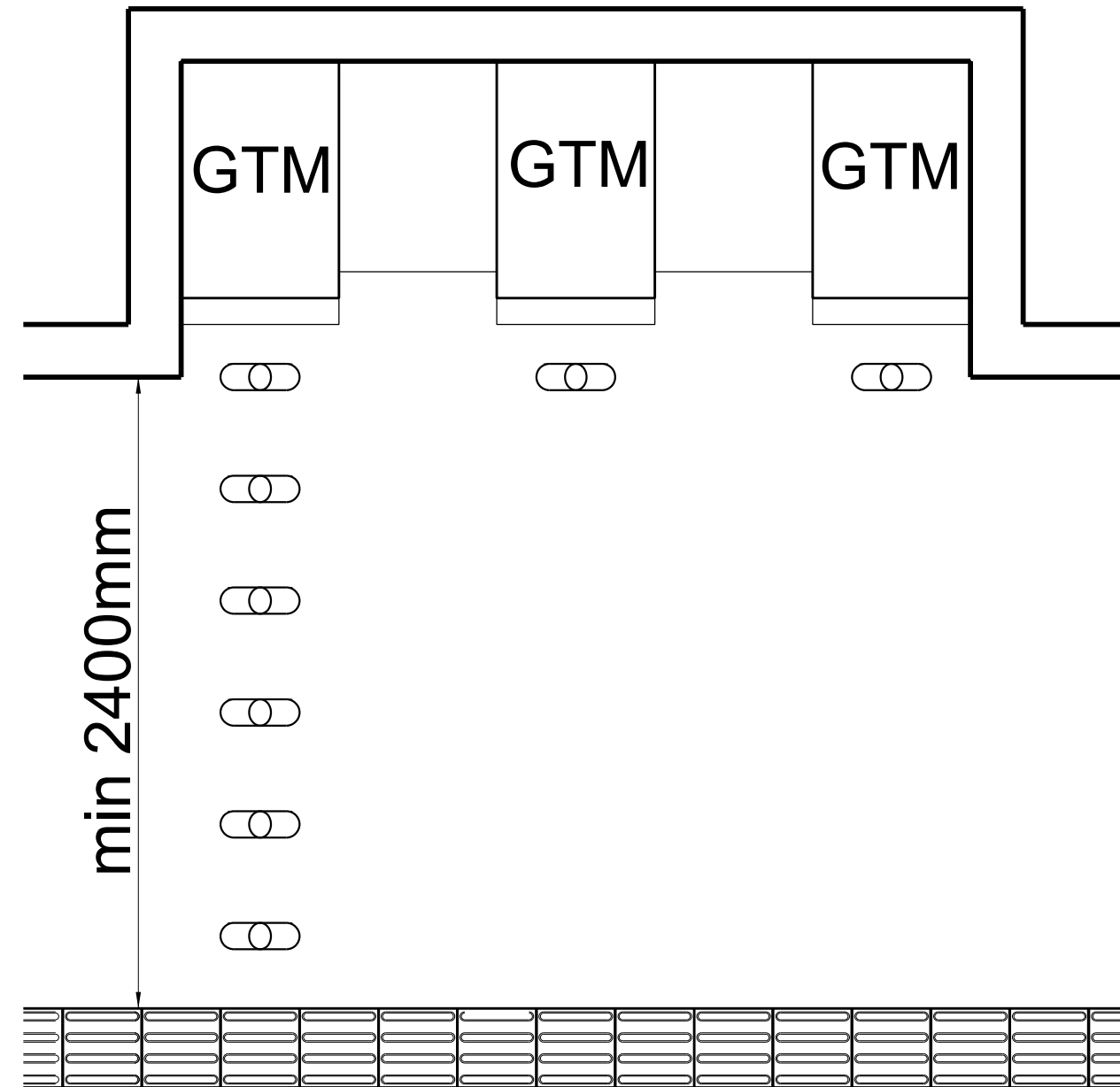
# At Platform with PSD



# Near Protrusion

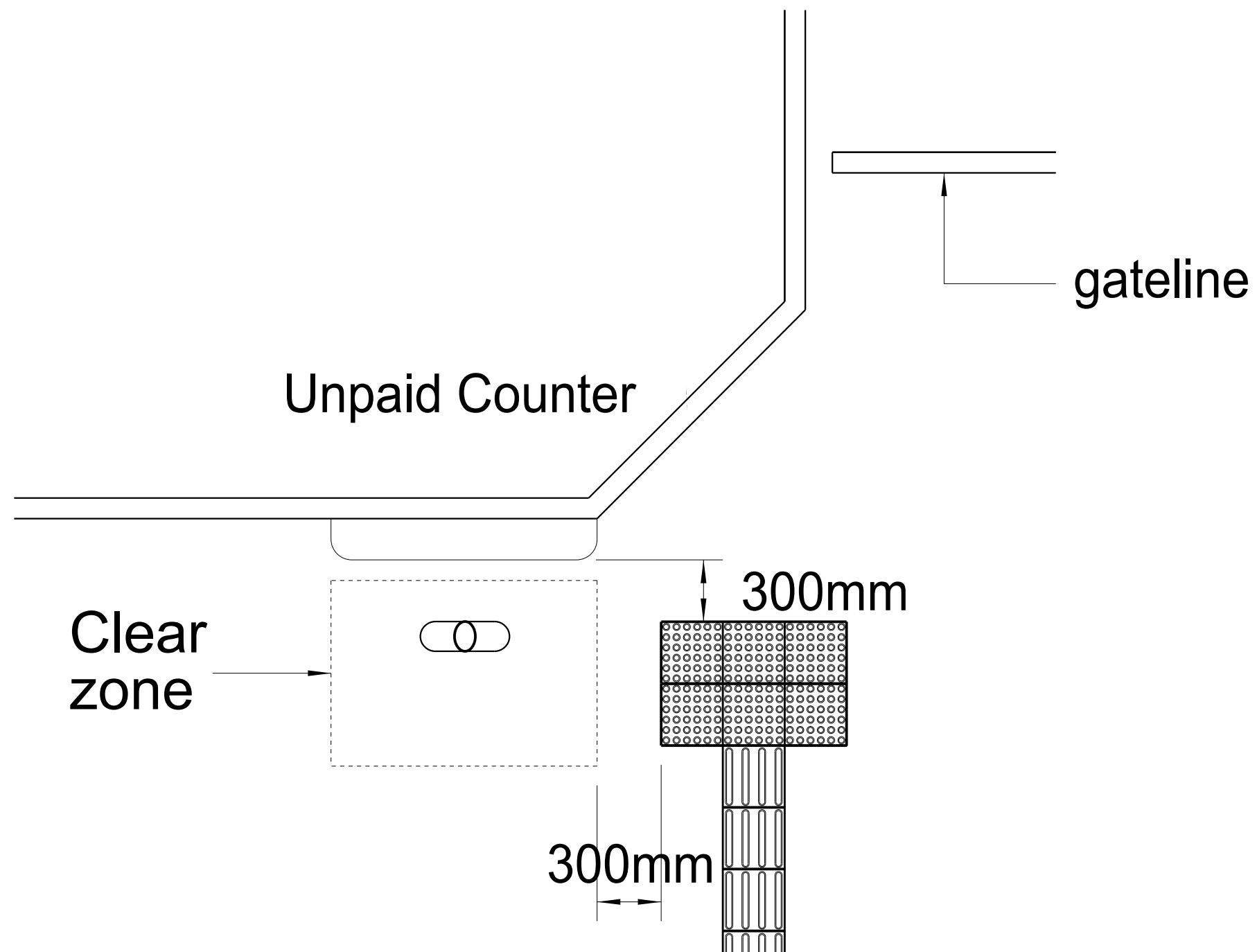


# Across Queue

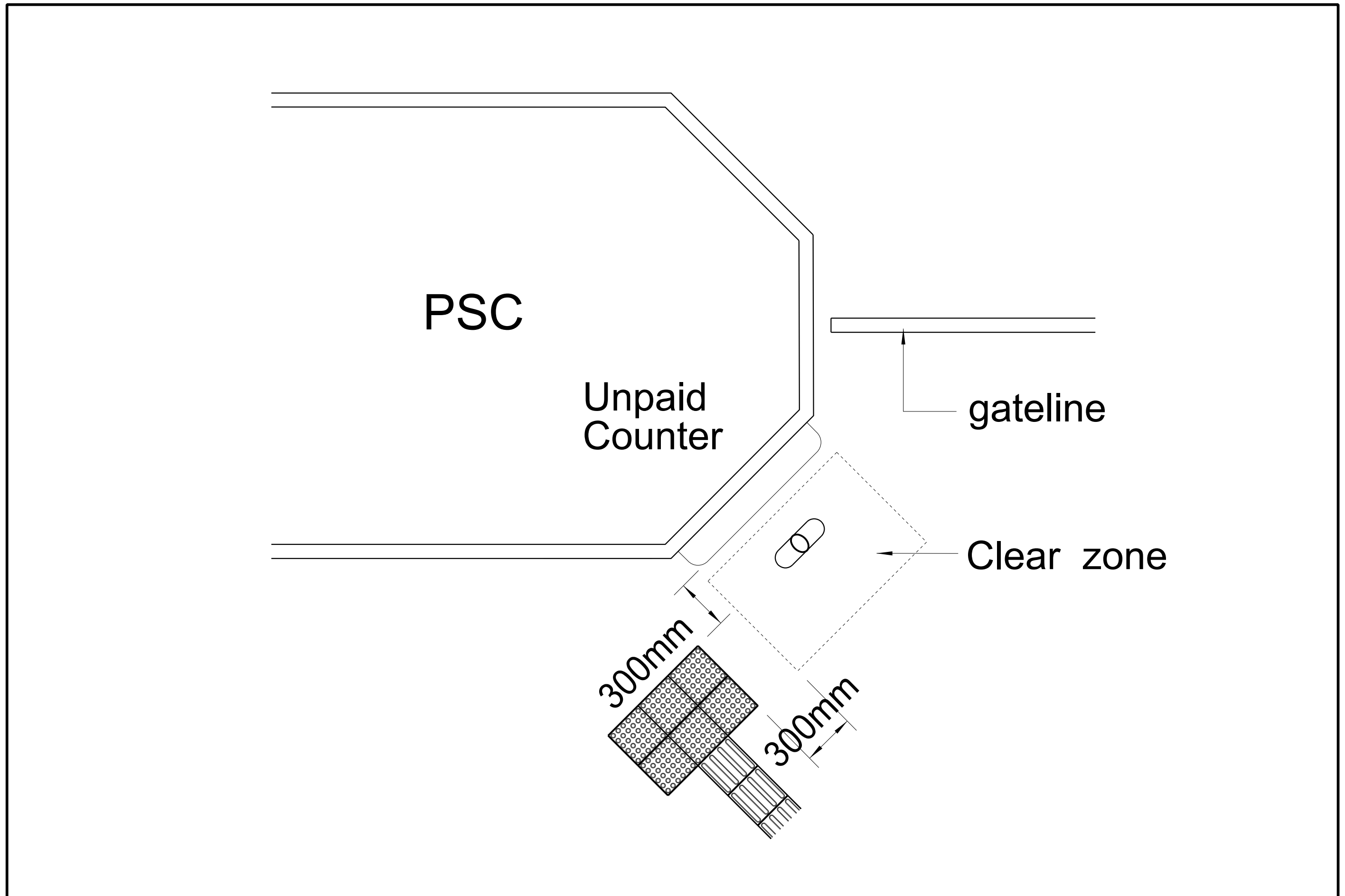




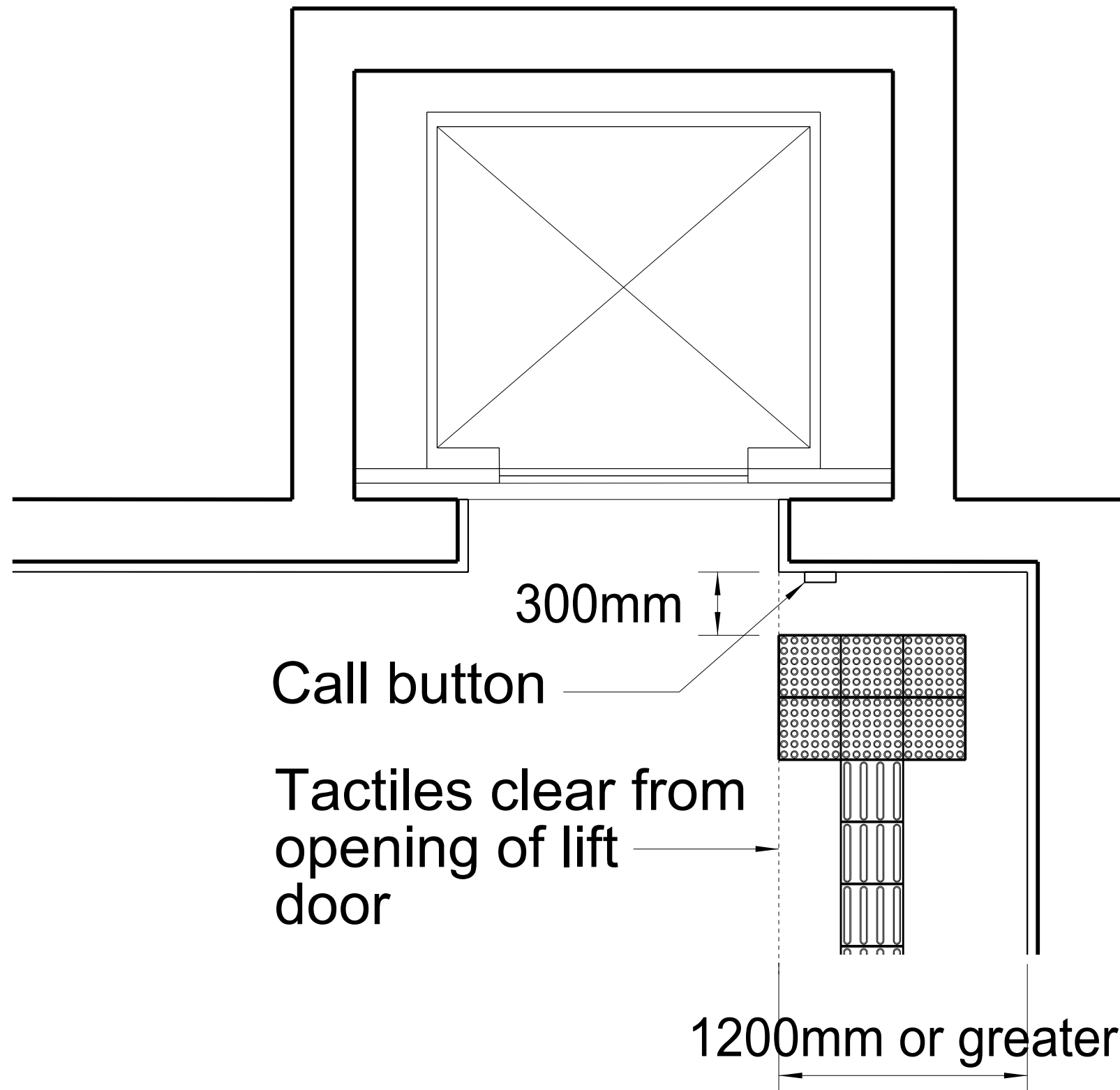
# At PSC



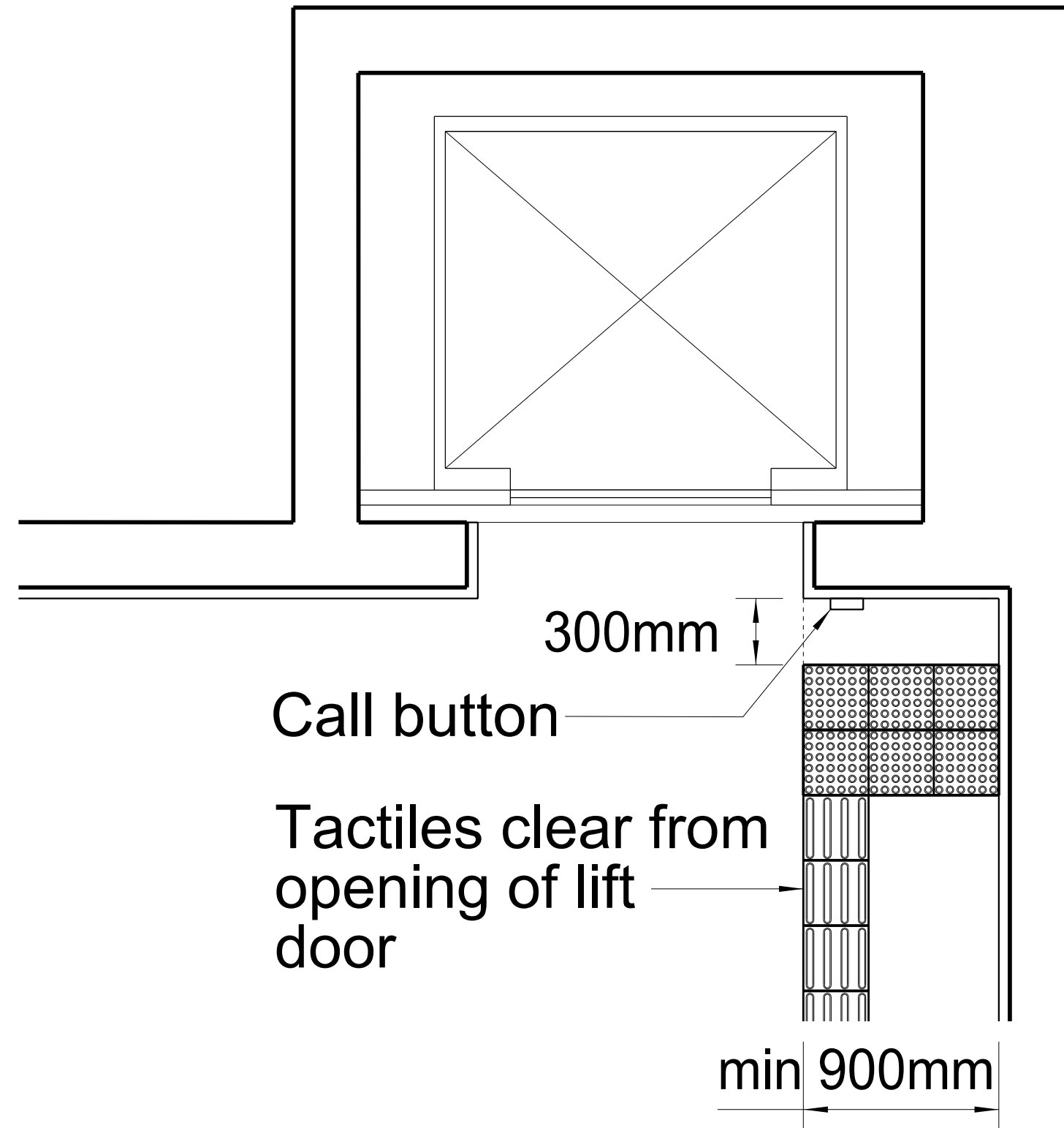
# At PSC



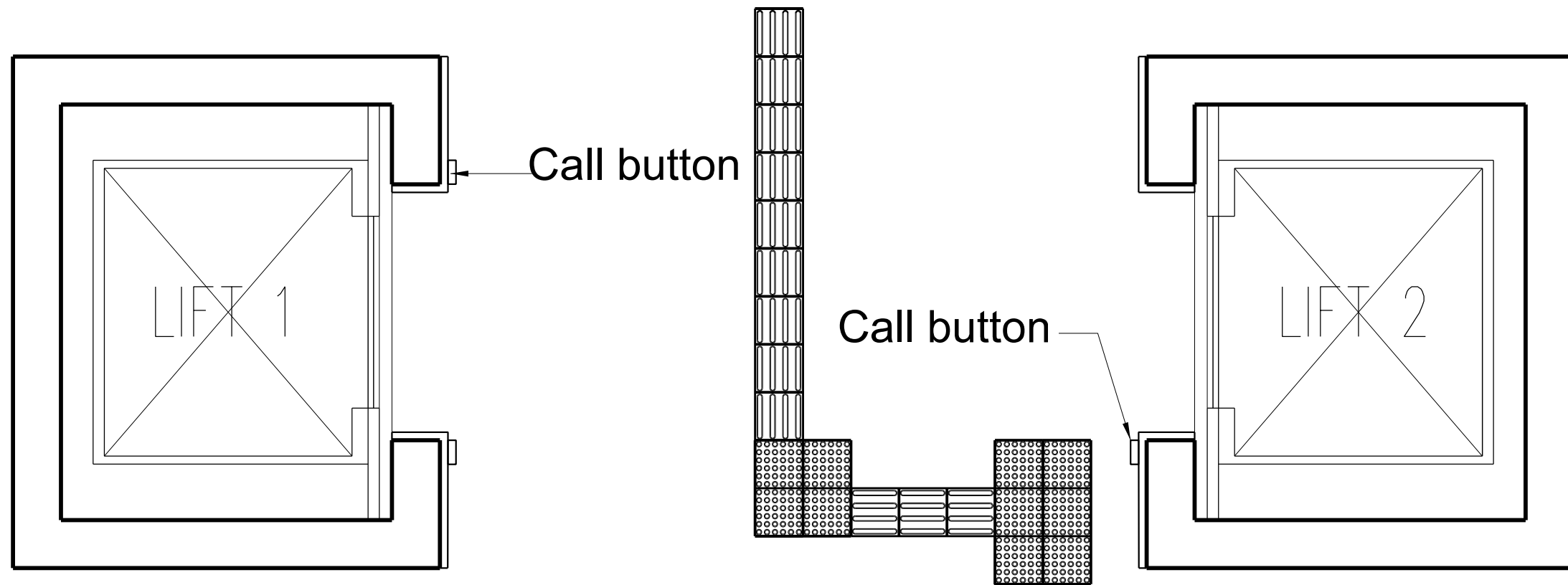
# Lift with clear space at lift call button 1200mm or greater



# Lift with clear space at lift call button between 900 and <1200mm

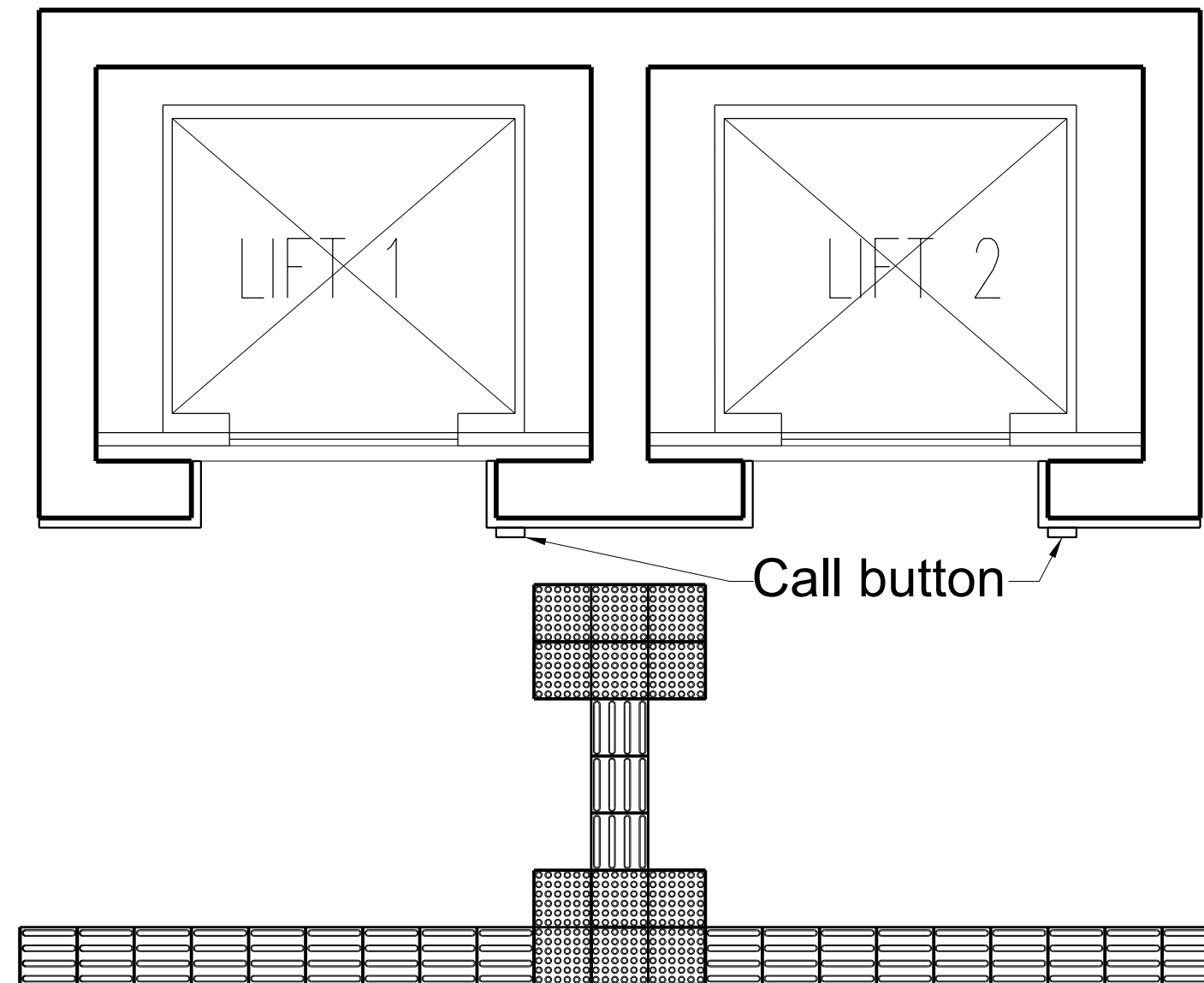


# Lifts On Opposite Sides



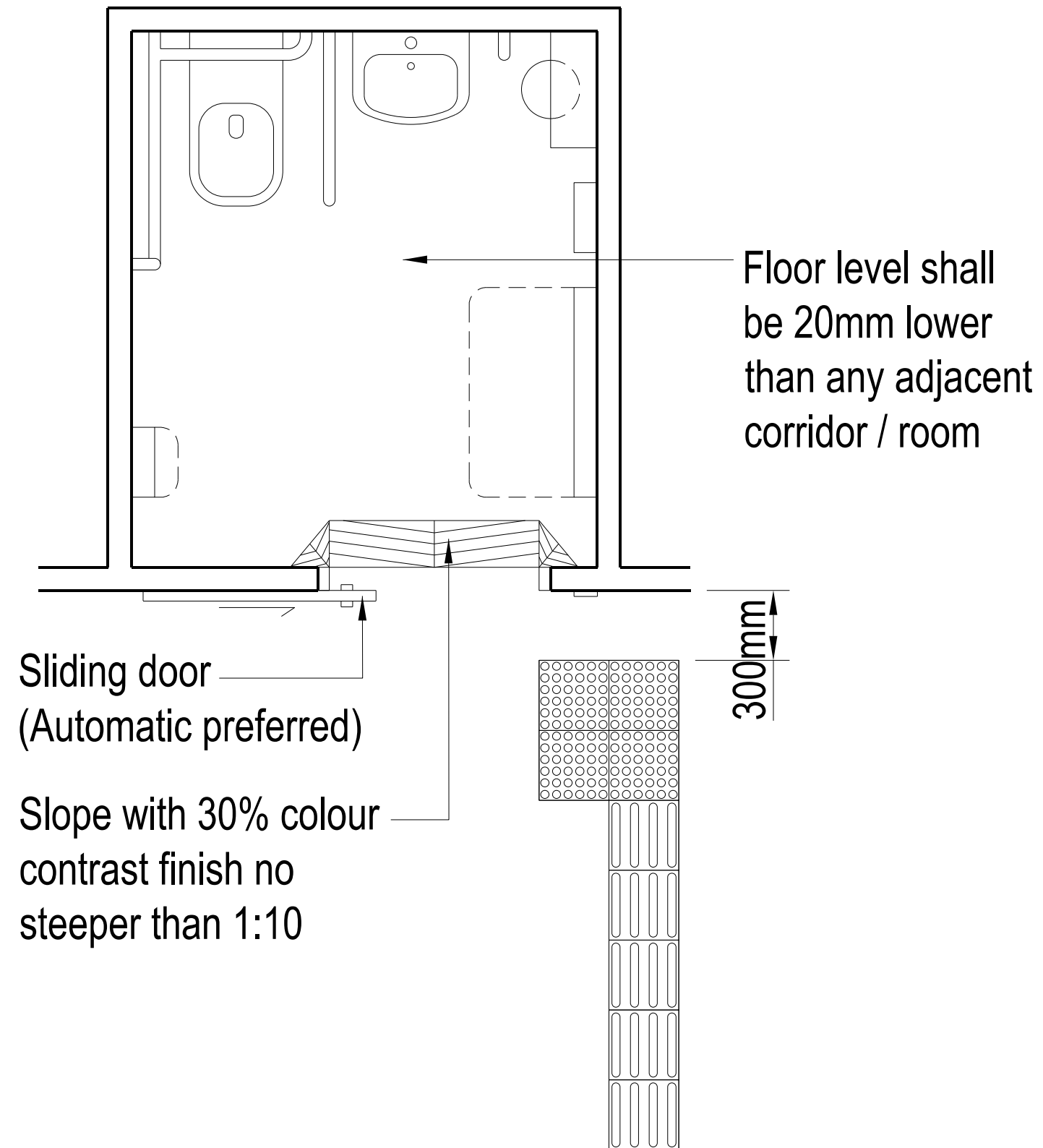
Note:Lifts using simplex system

# Adjacent Lifts / Through Lifts

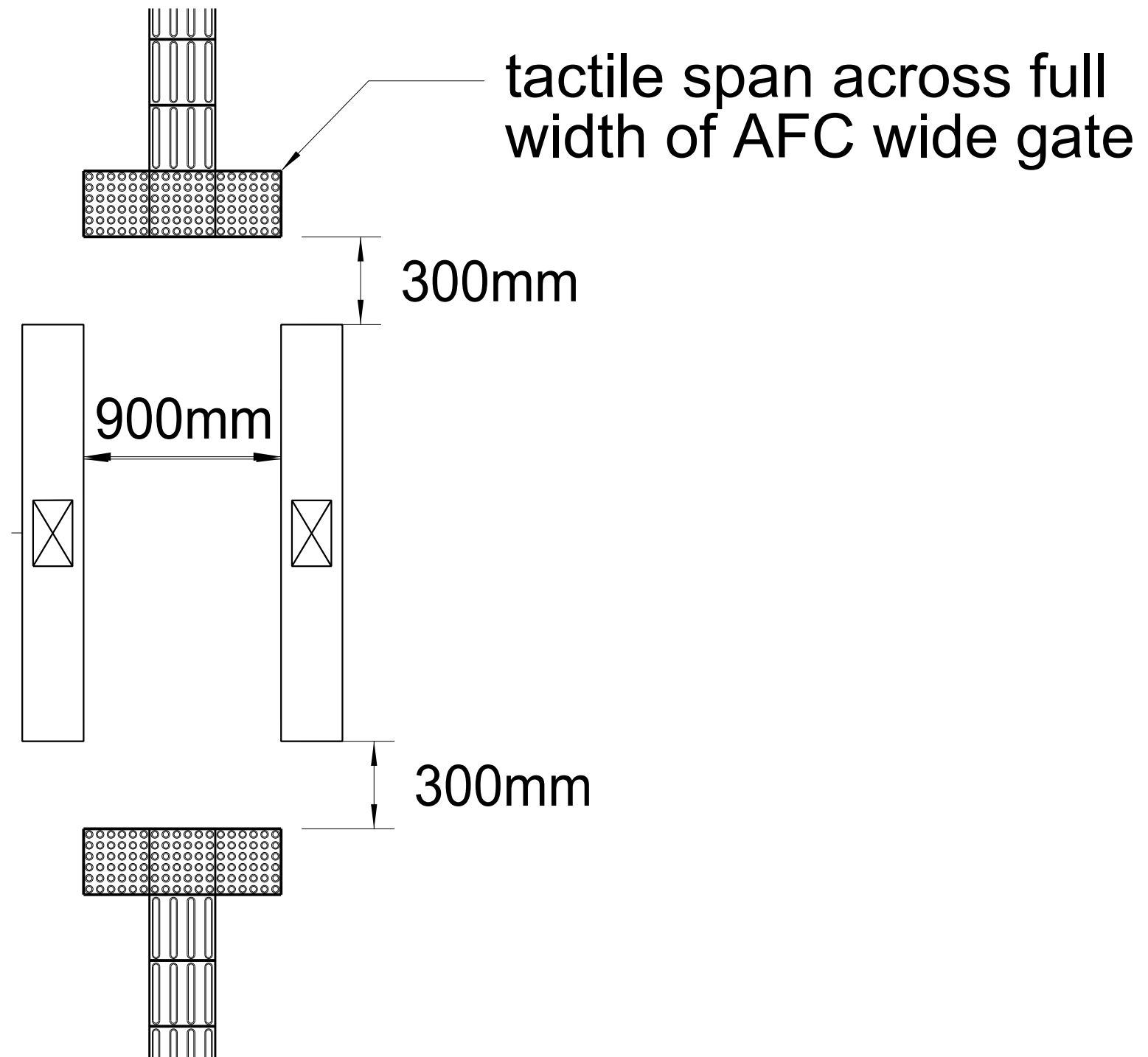


Note: Lifts using duplex system

# At Accessible Toilet

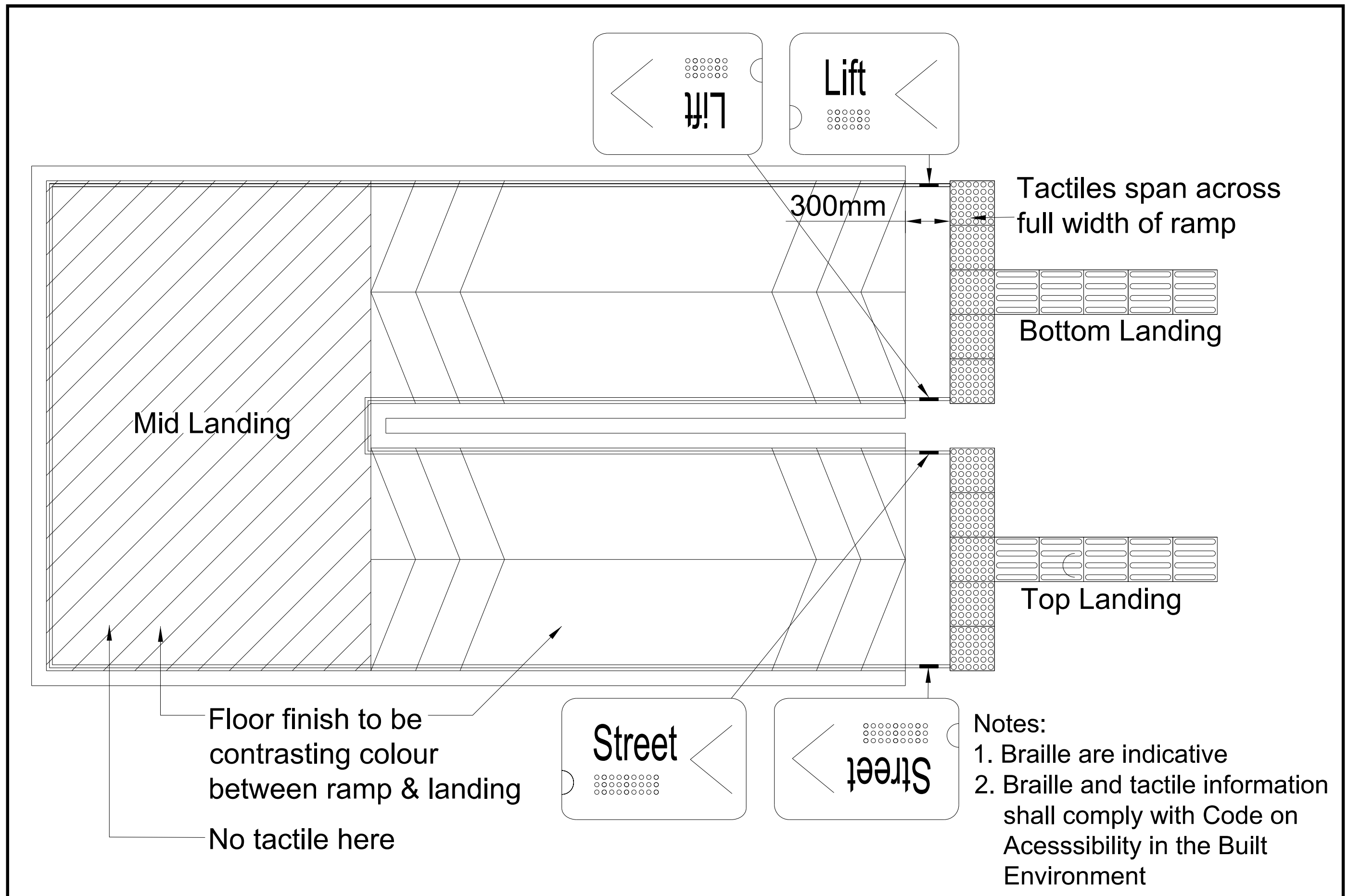


# At AFC Wide Gate

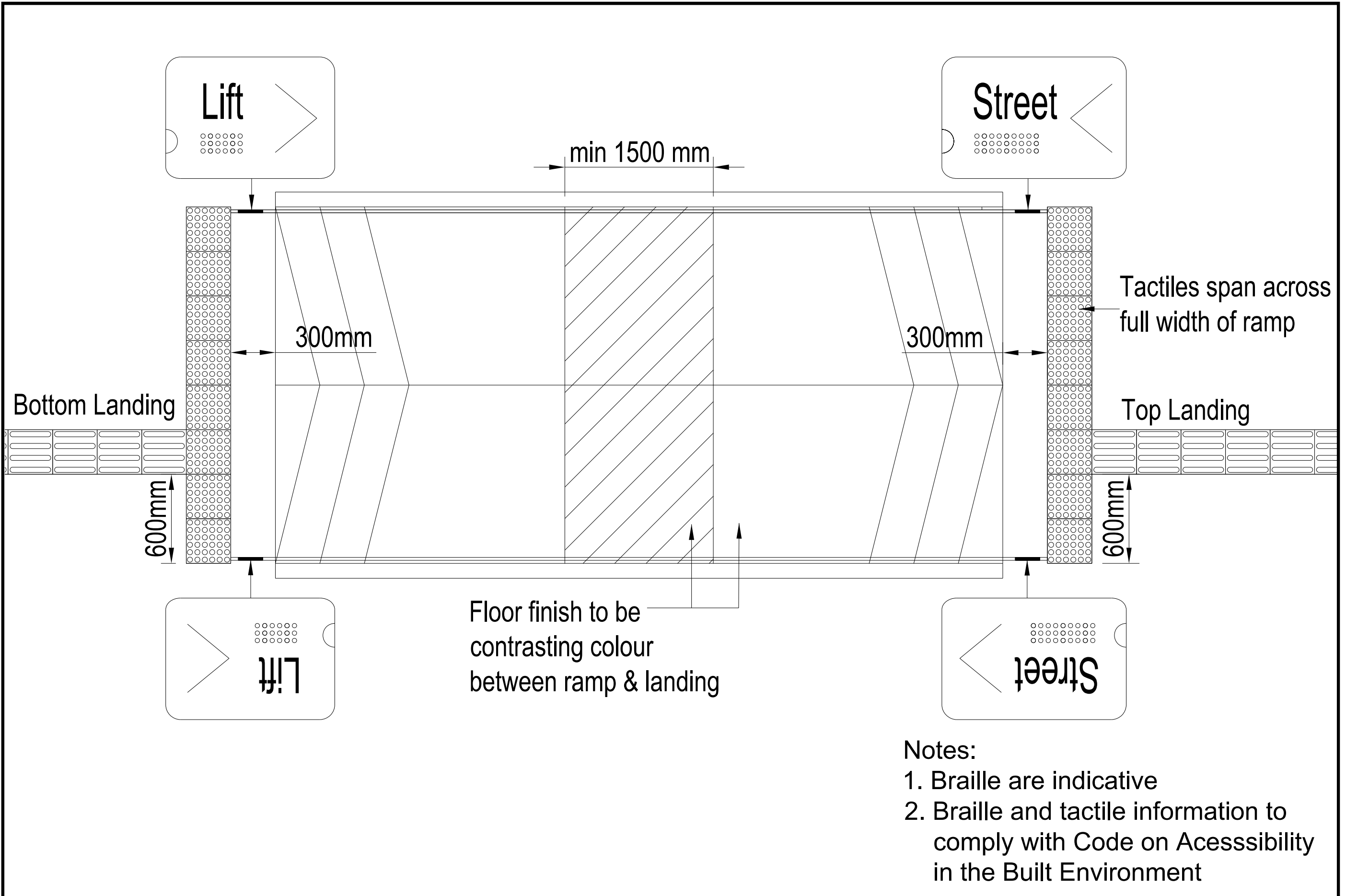




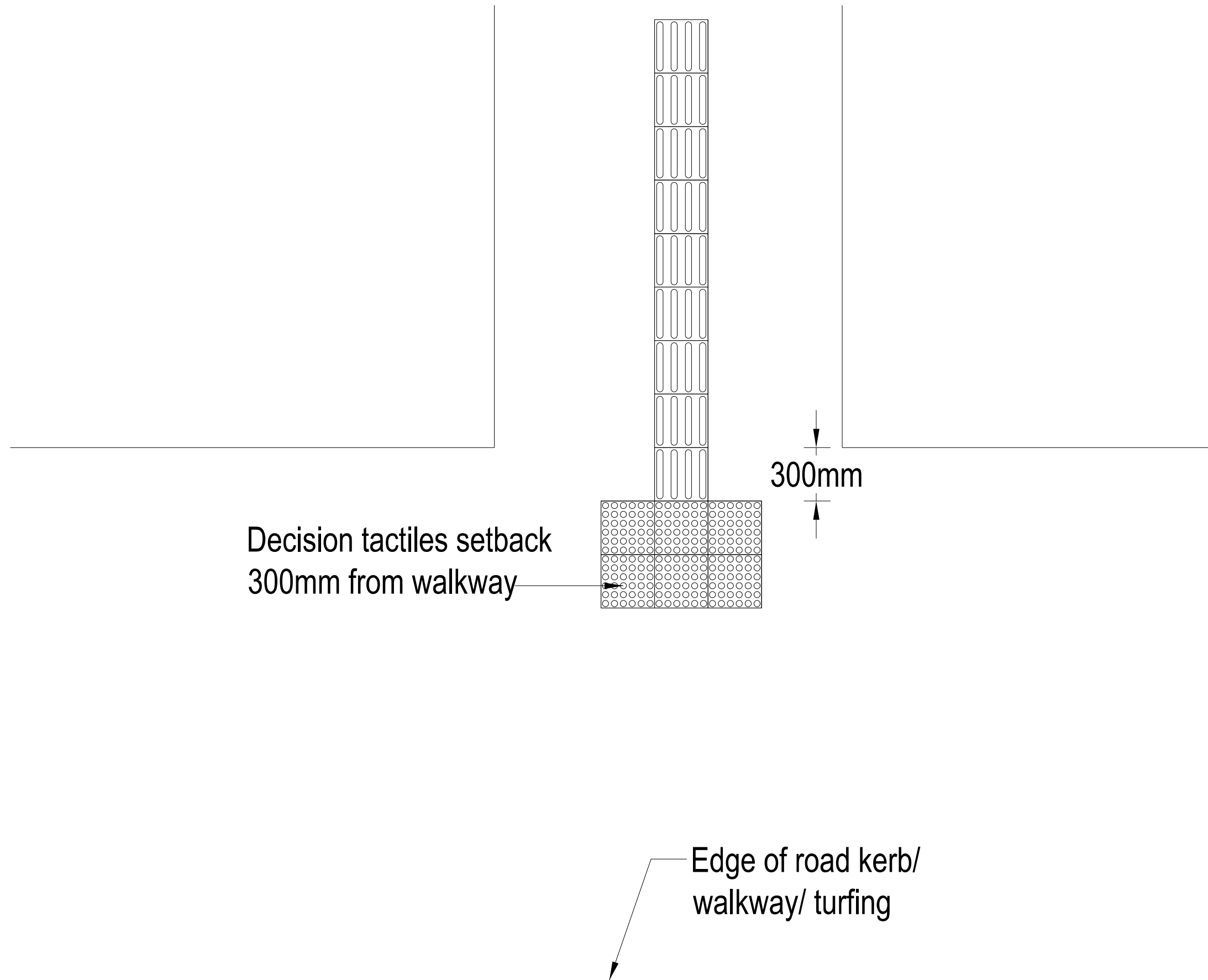
# At Ramp between 1.2m to 1.5m wide



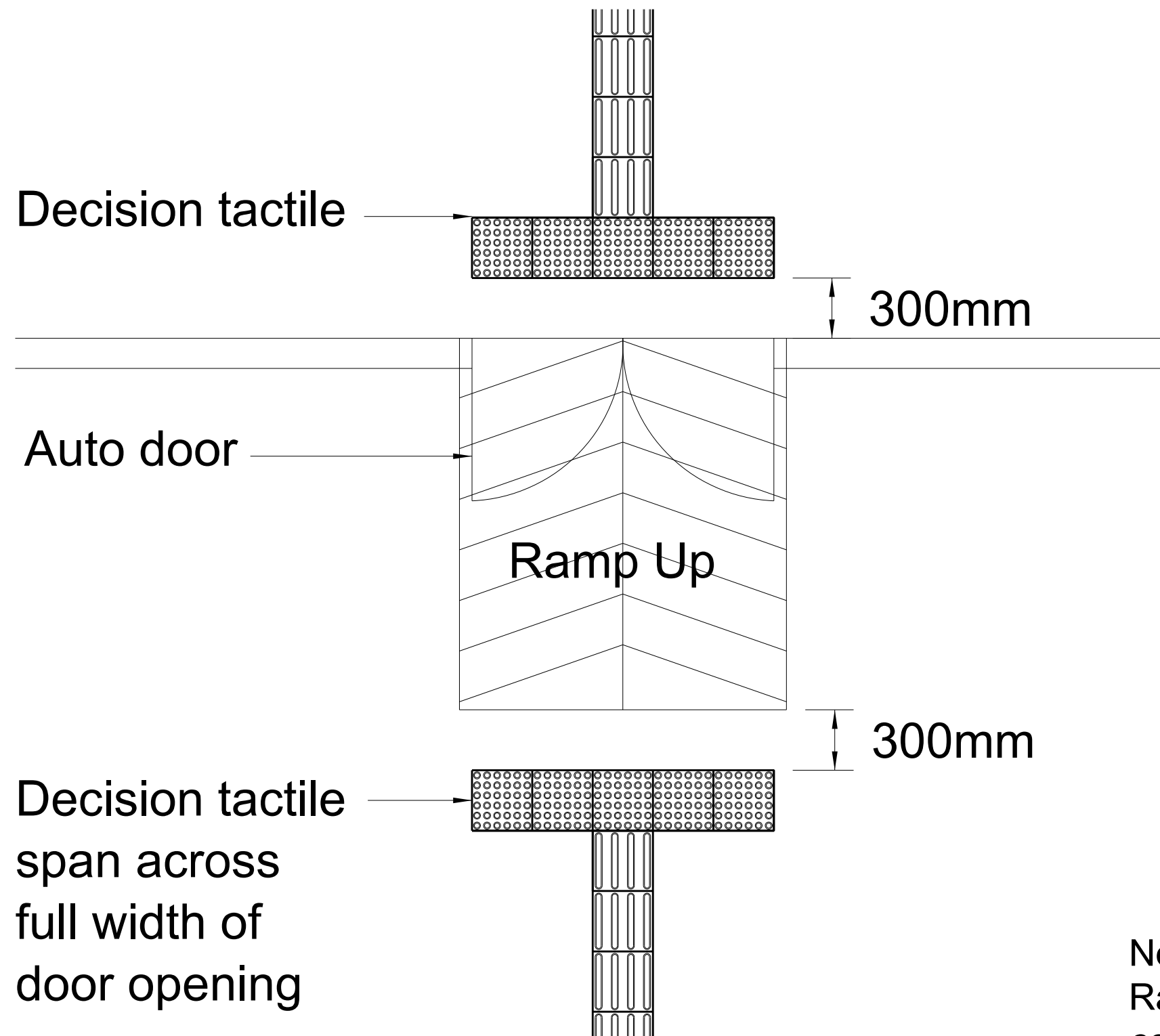
# At Ramp > 1.5m wide



# At Edge of Road kerb/ Walkway/ Turfing

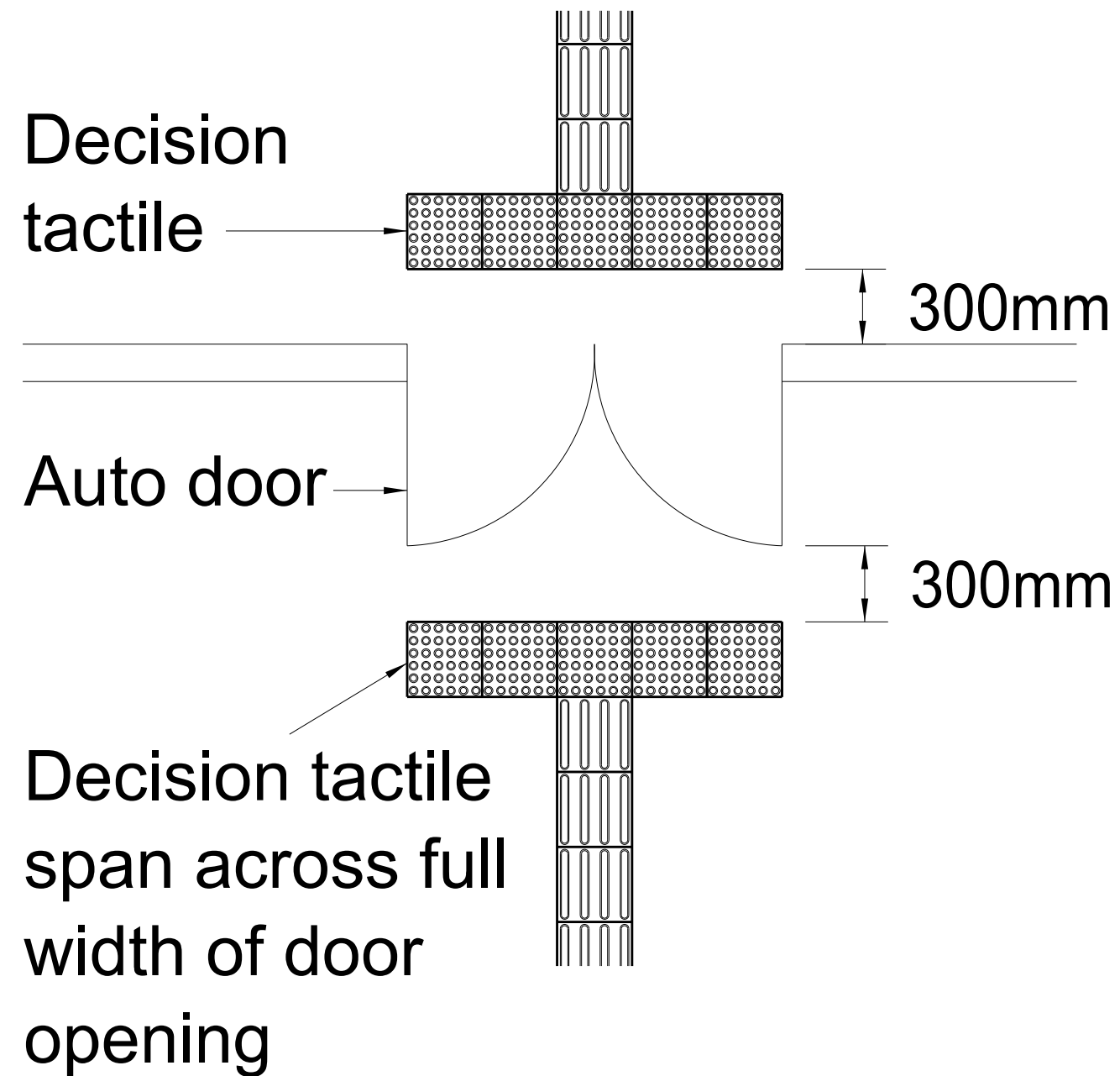


# At Auto Door with Ramp

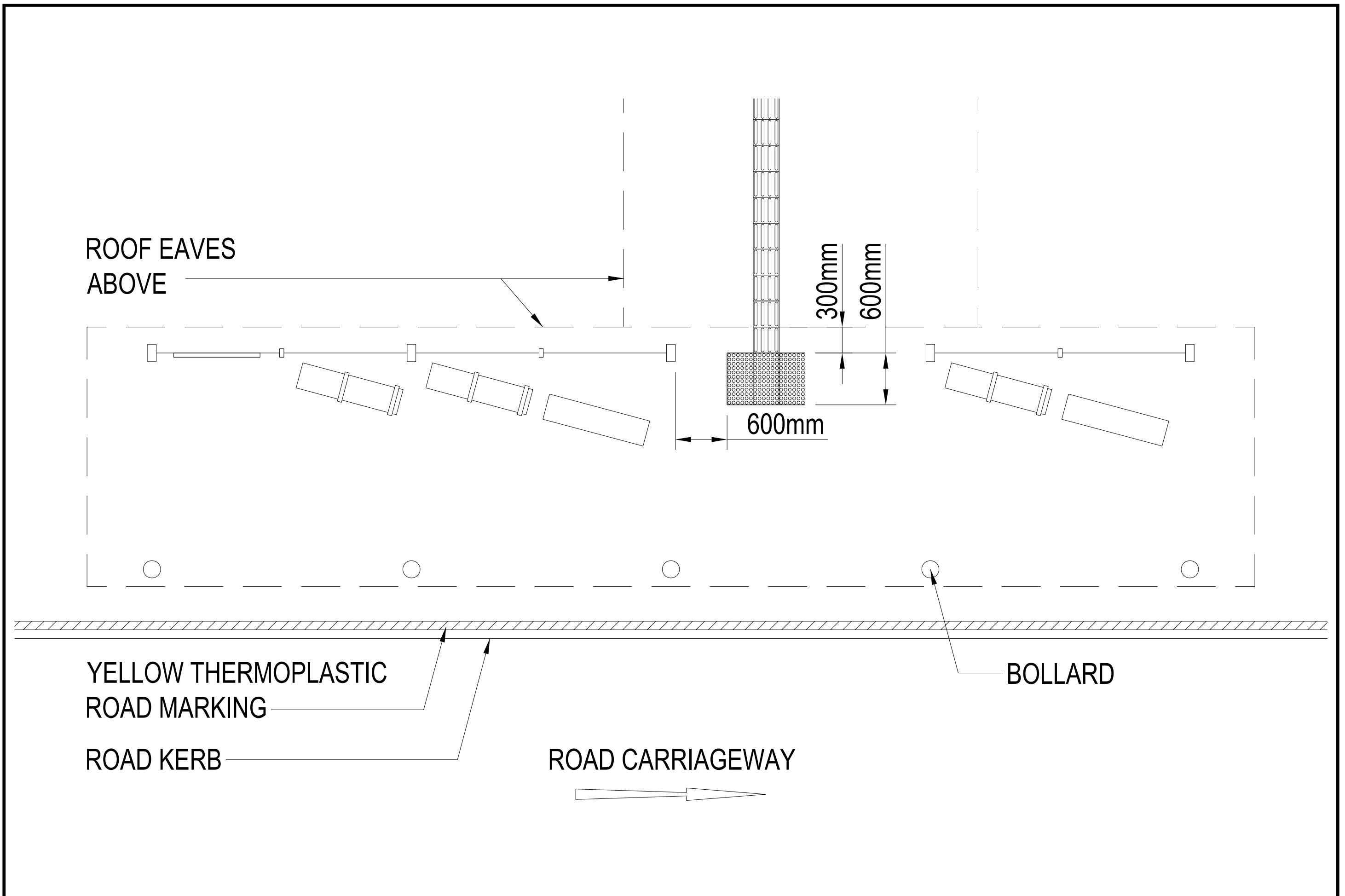


Note:  
Ramps shall be designed in compliance with the Building Control Regulations and Code on Accessibility in the Built Environment

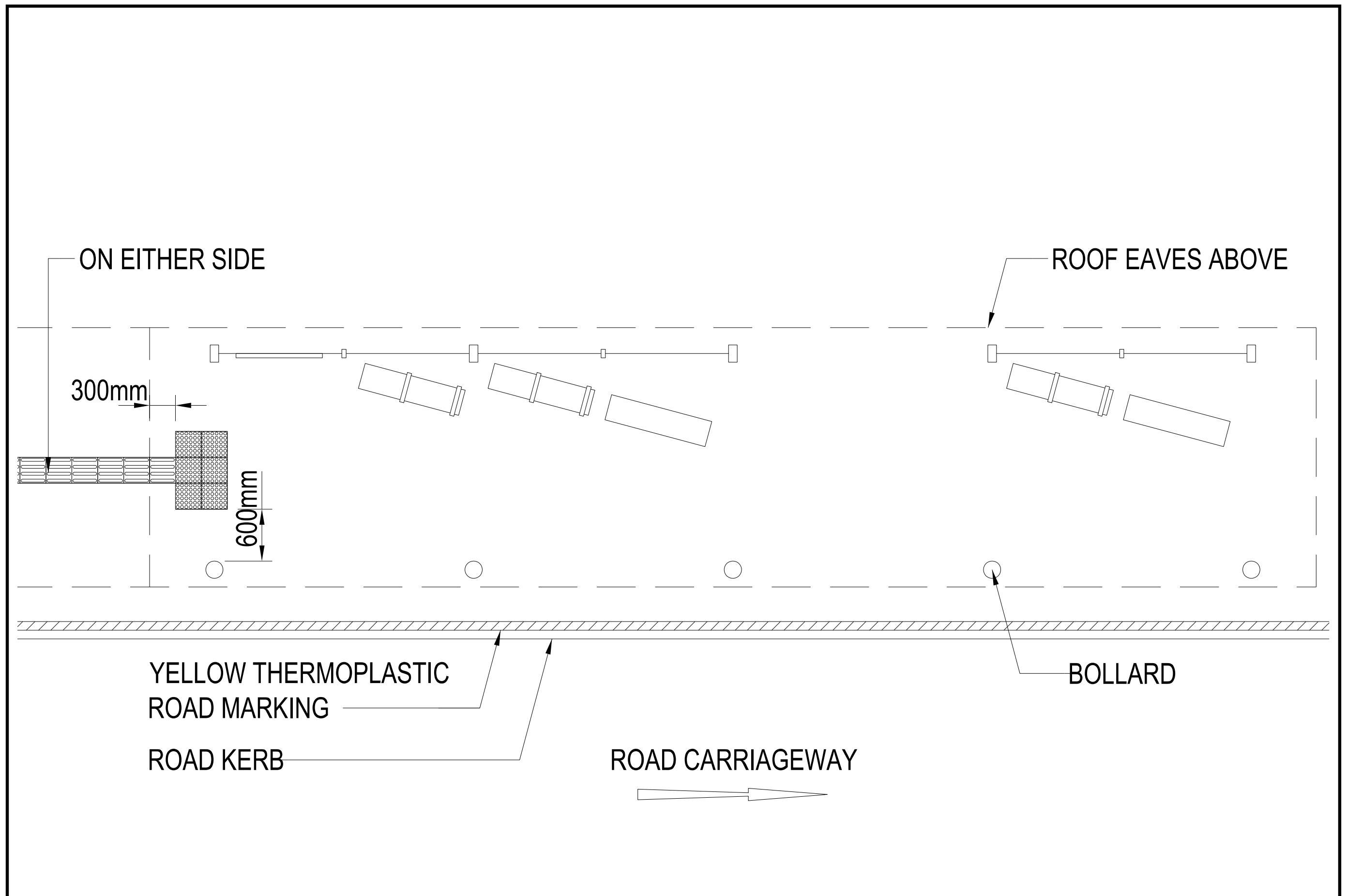
# At Auto Door without Ramp



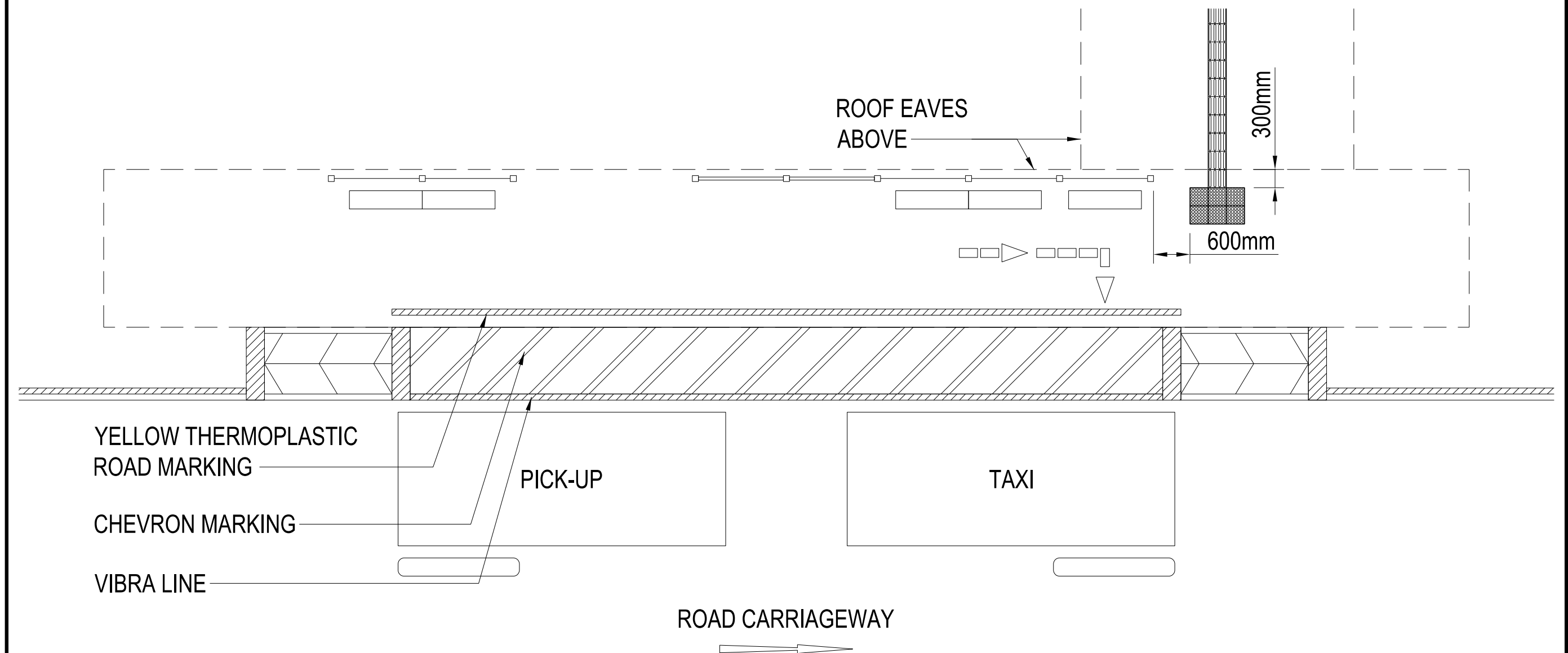
# At Bus Shelter



# At Bus Shelter

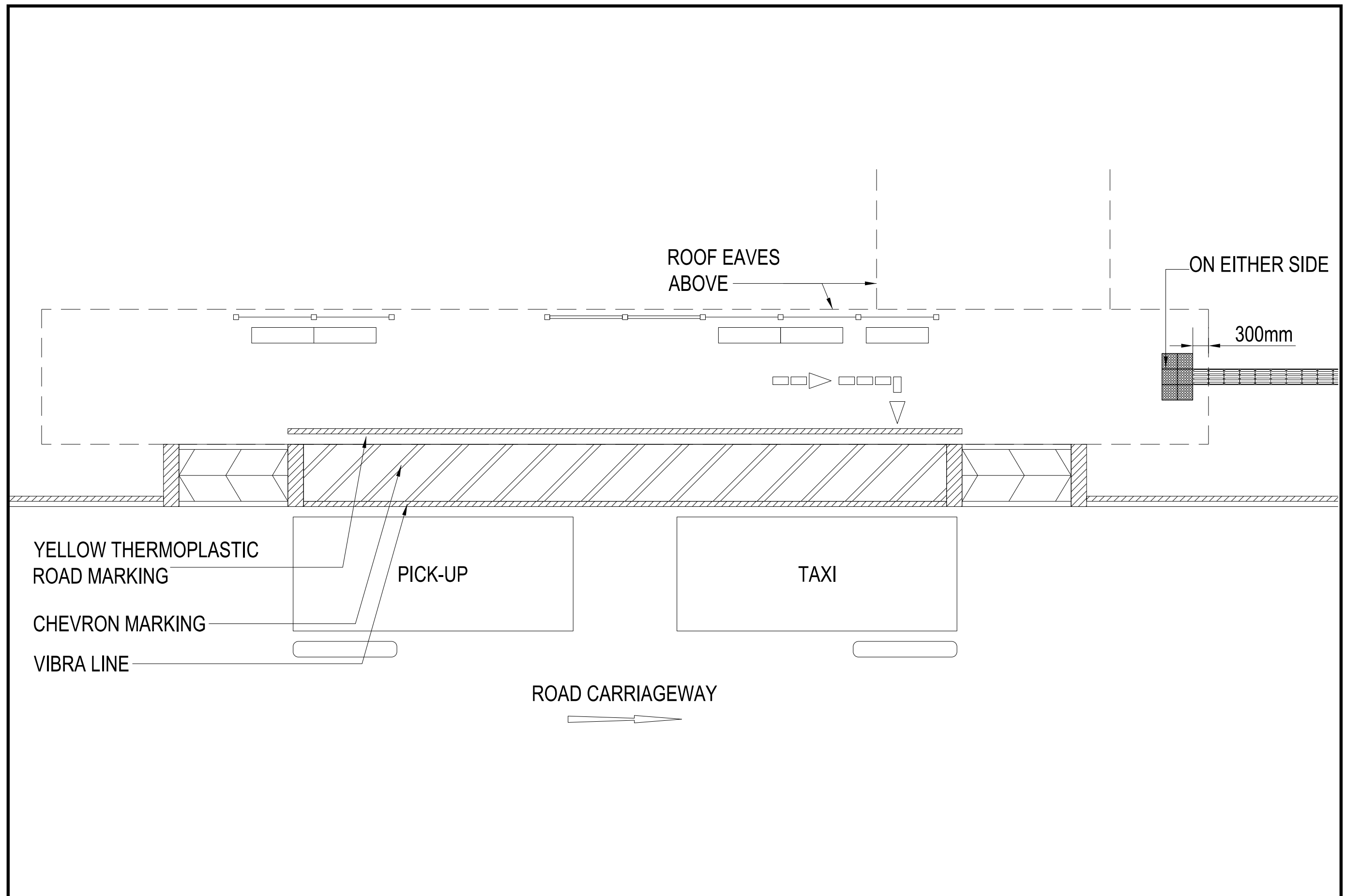


# At Passenger/Taxi pick-up bay

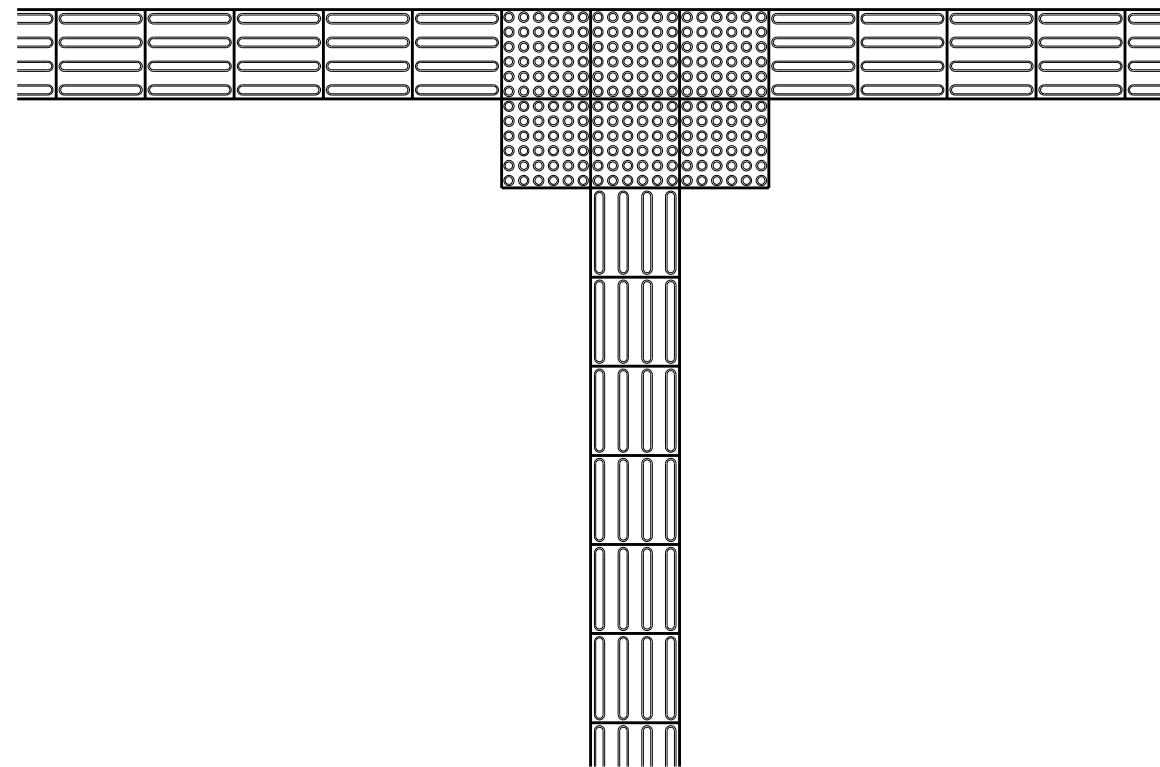




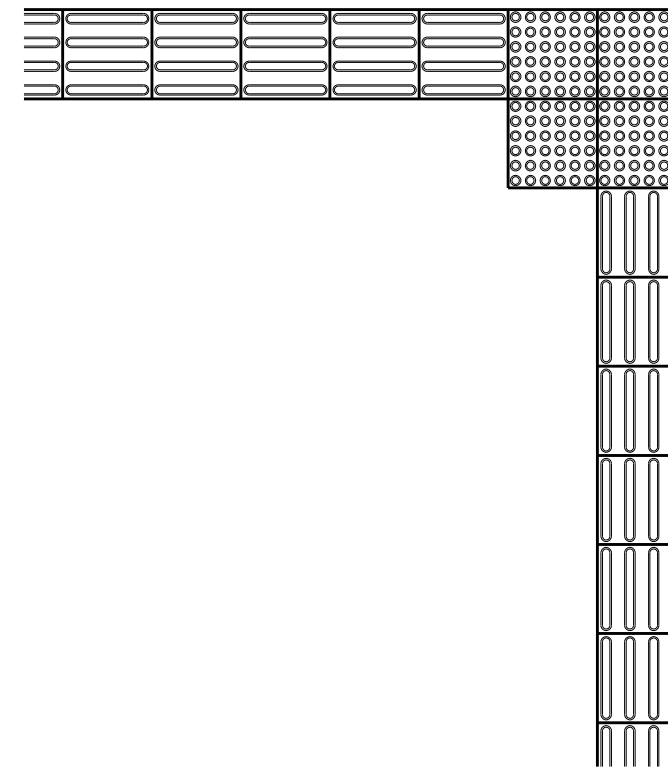
# At Passenger/ Taxi pick-up bay



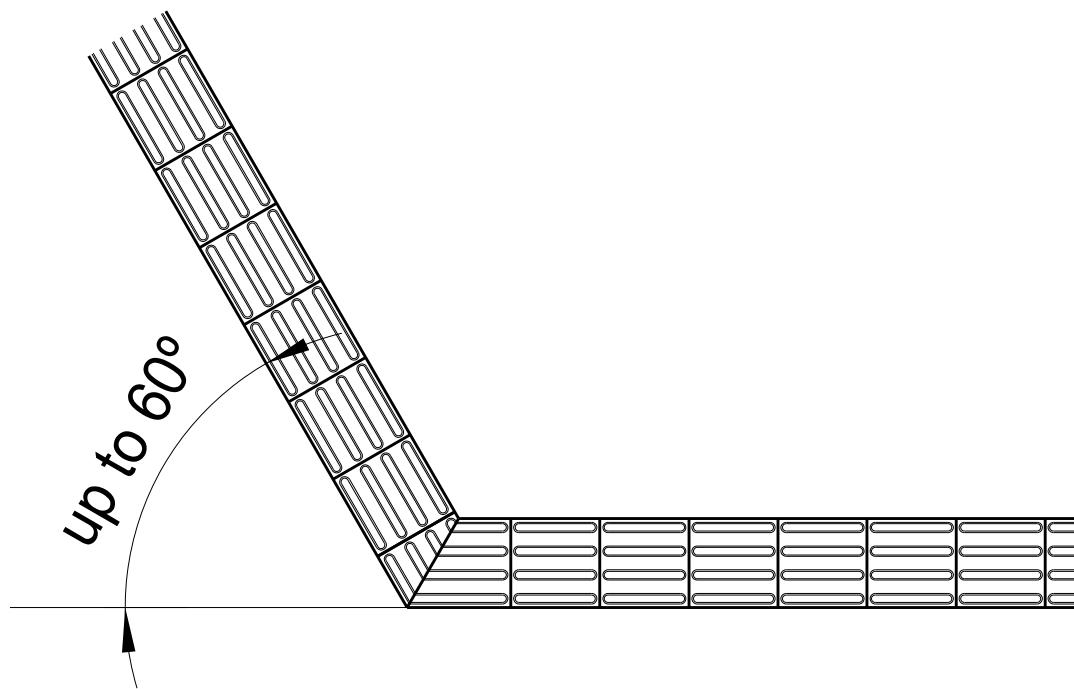
## At Junctions - 3 Ways



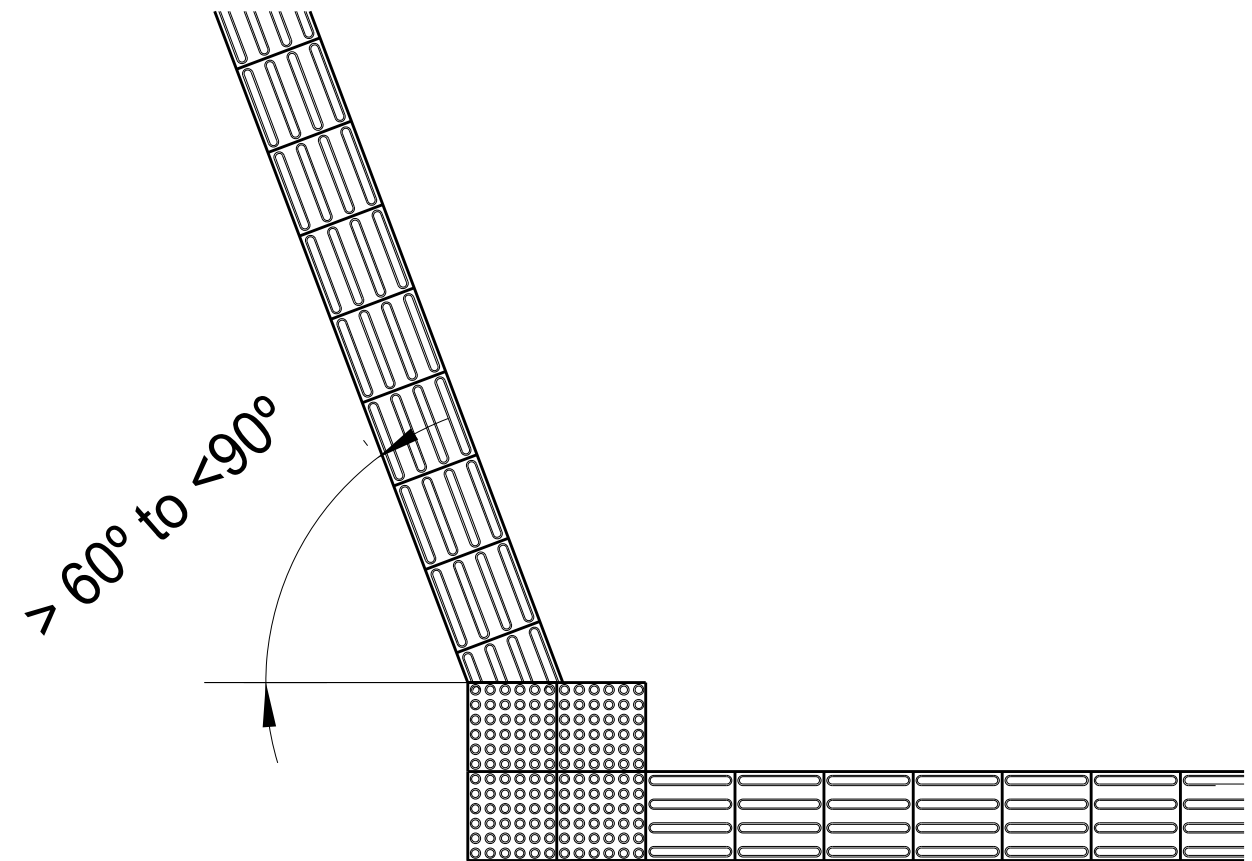
## At Junctions - 90°



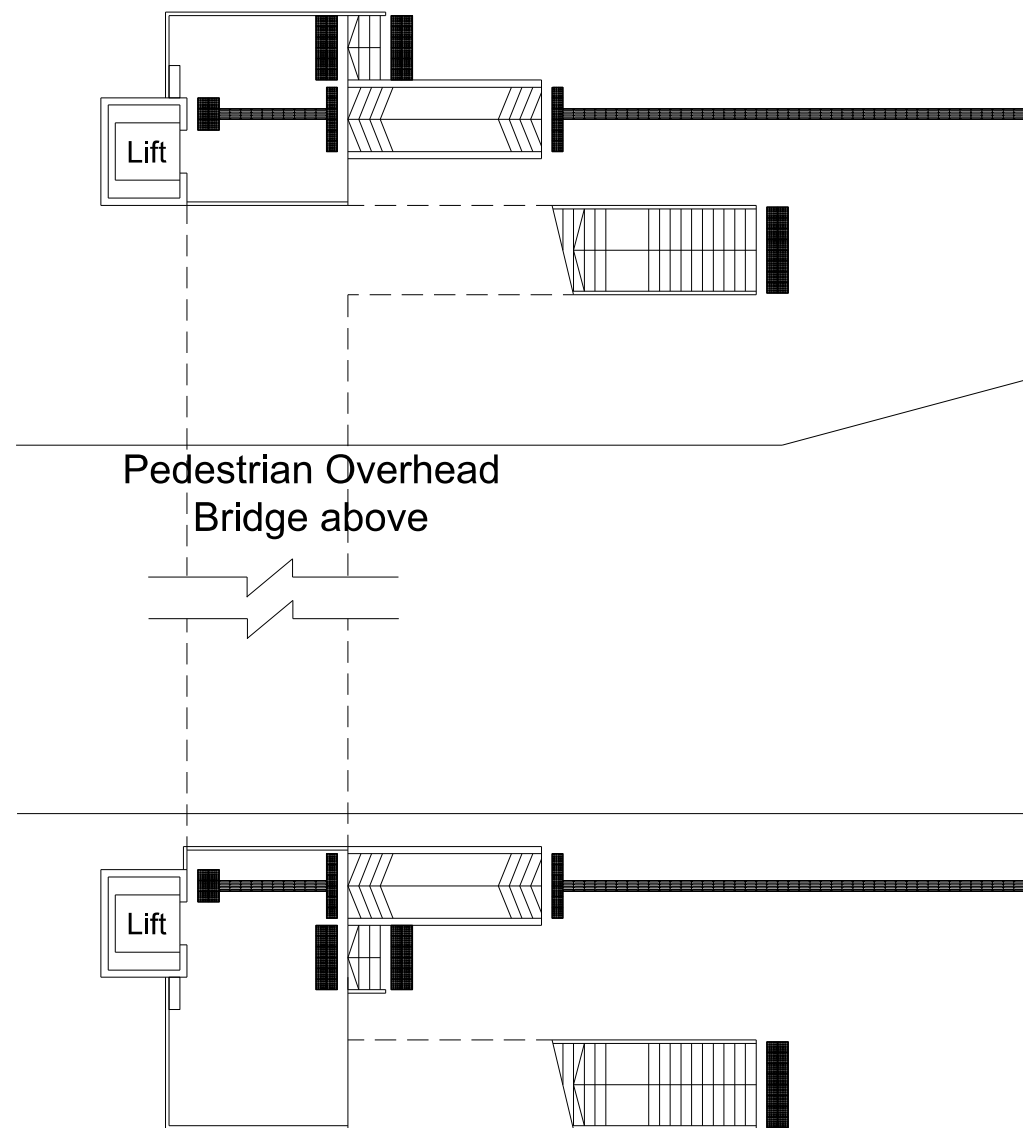
## Junctions up to $60^\circ$



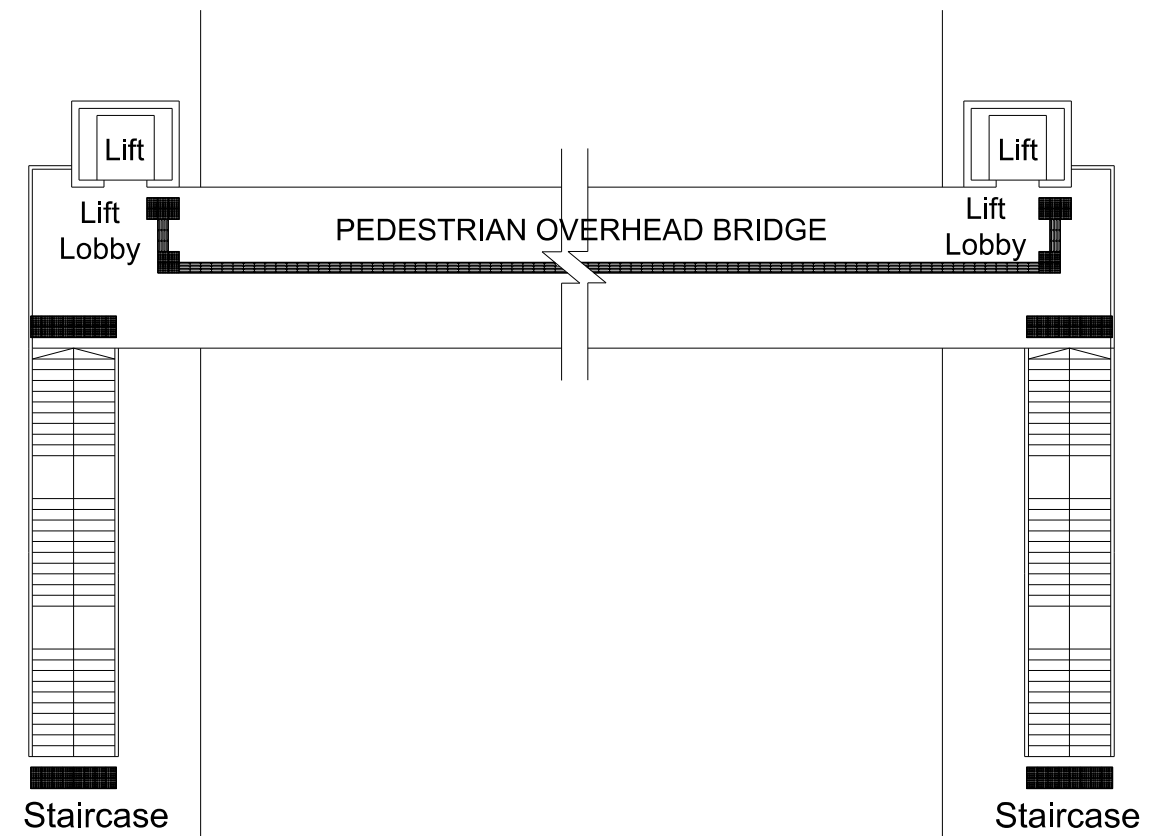
## Junctions $>60^\circ$ and $<90^\circ$



# POB with Lifts Integrated with Transit Stations



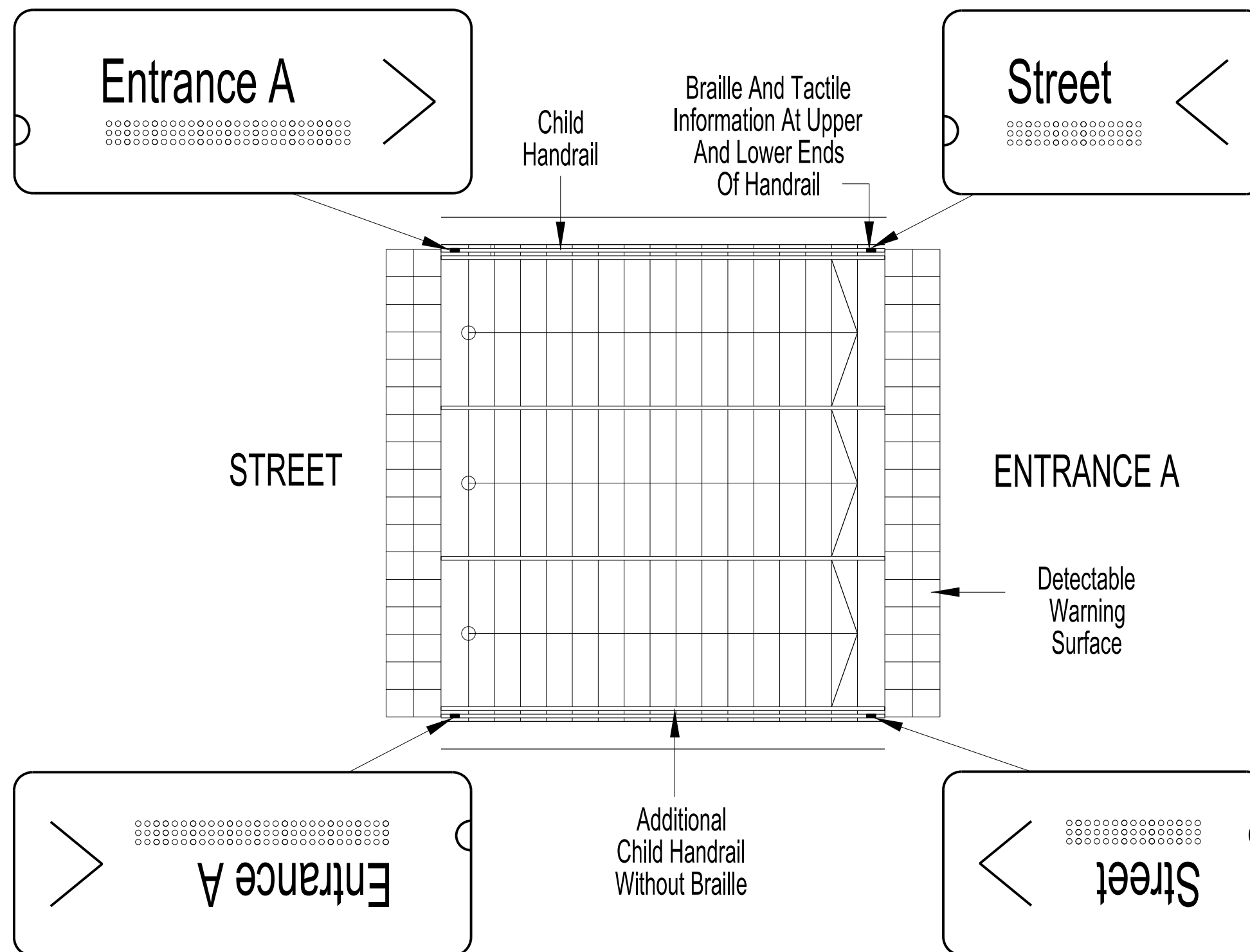
Lower Plan



Upper Plan

# STAIRCASE WITH TACTILE AND BRAILLE

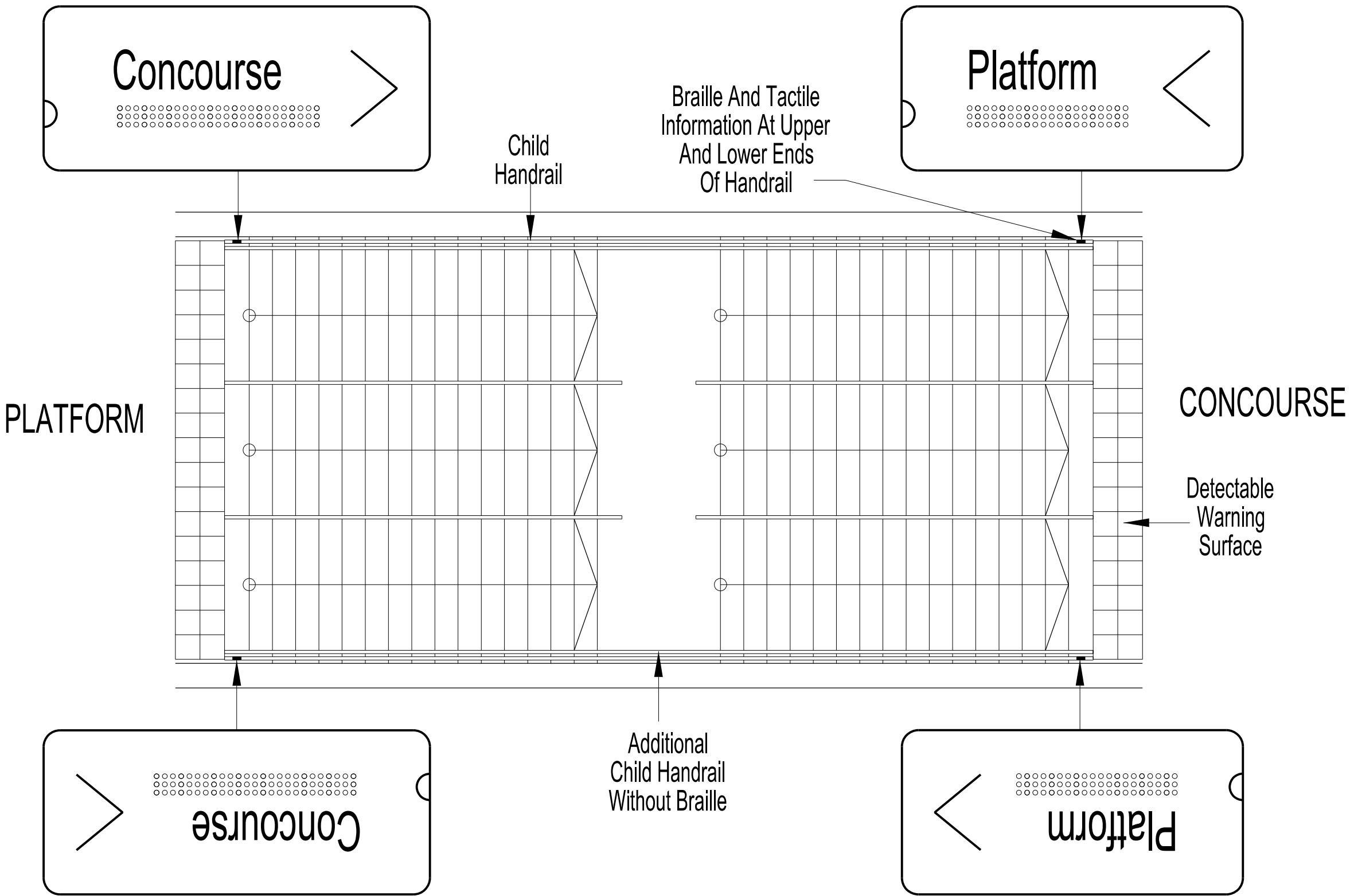
# Public Staircase without Mid-Landing(s)



## Notes:

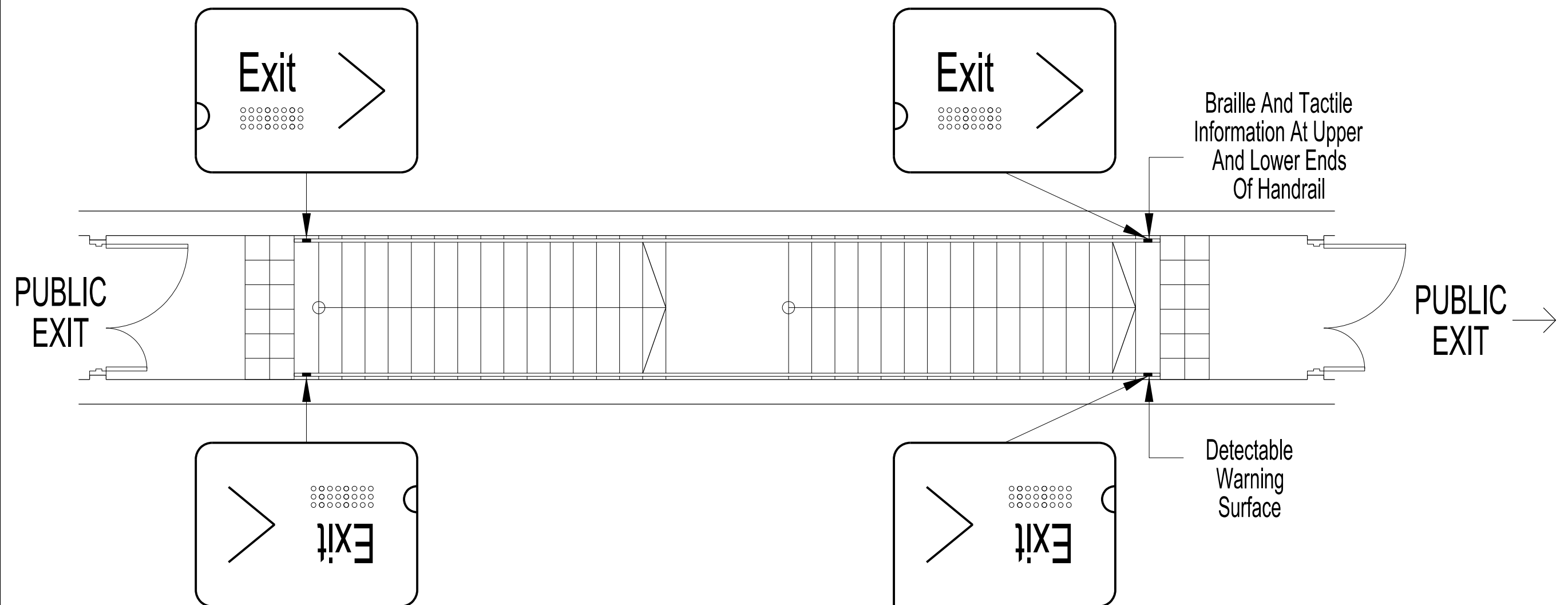
1. Braille are indicative
2. Braille and tactile information shall comply with Code on Accessibility in the Built Environment

# Public Staircase with Mid-Landing(s)



- Notes:
- 1. Braille are indicative
  - 2. Braille and tactile information shall comply with Code on Accessibility in the Built Environment

# Exit Staircase with Mid-Landing(s)

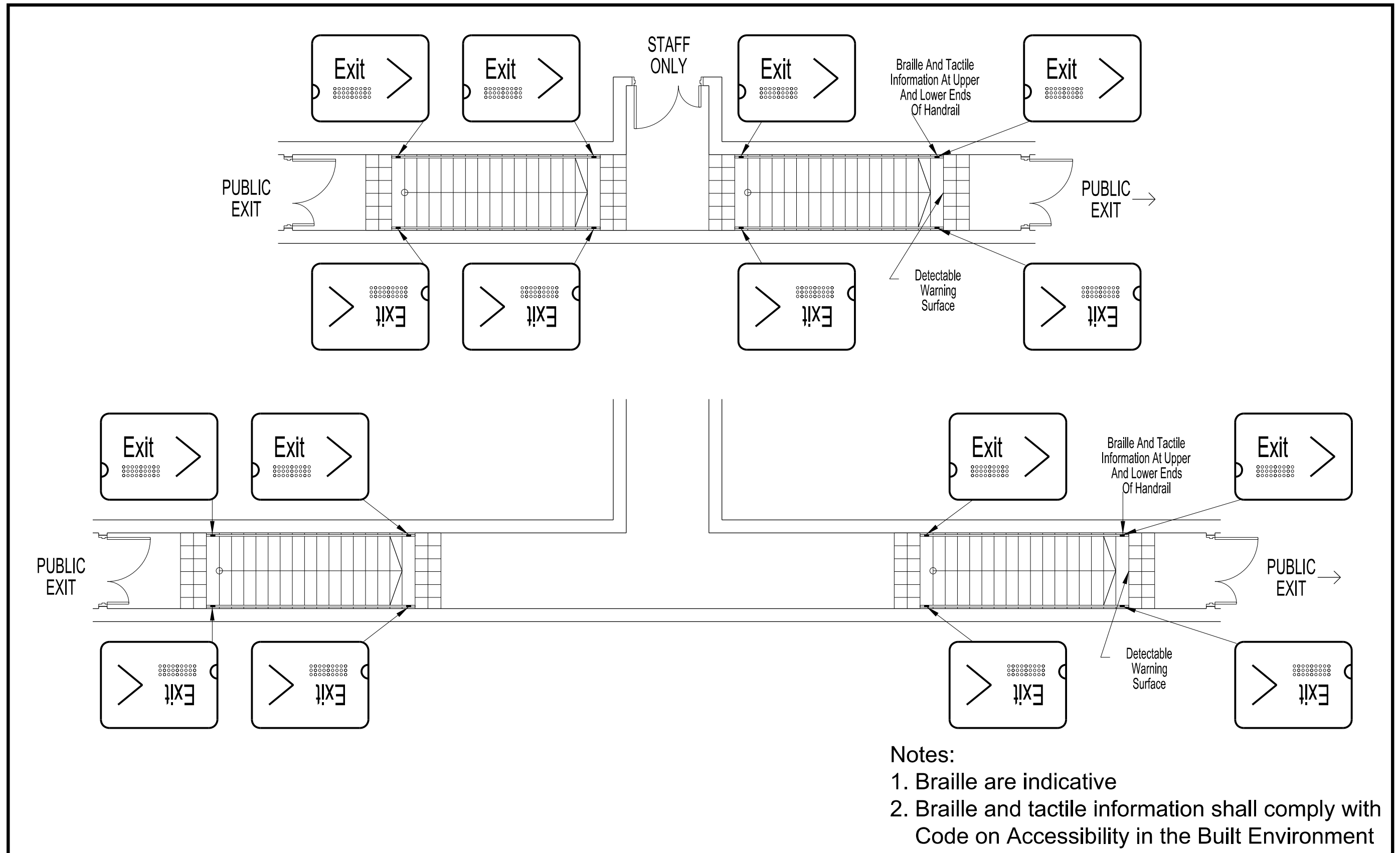


## Notes:

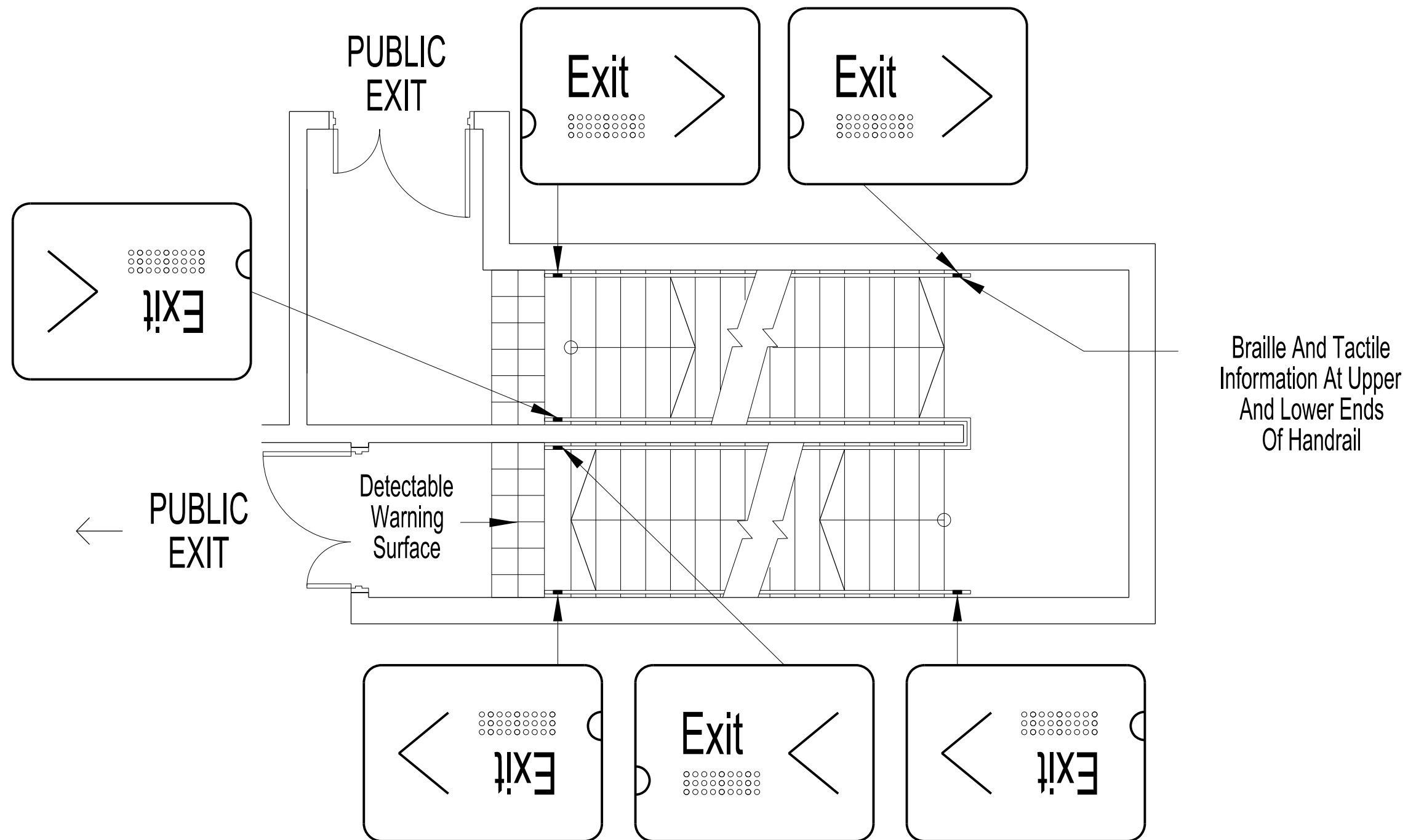
1. Braille are indicative
2. Braille and tactile information shall comply with Code on Accessibility in the Built Environment



# Exit Staircase with Staff Access Door at Mid-Landing(s) with Long Connecting Corridor



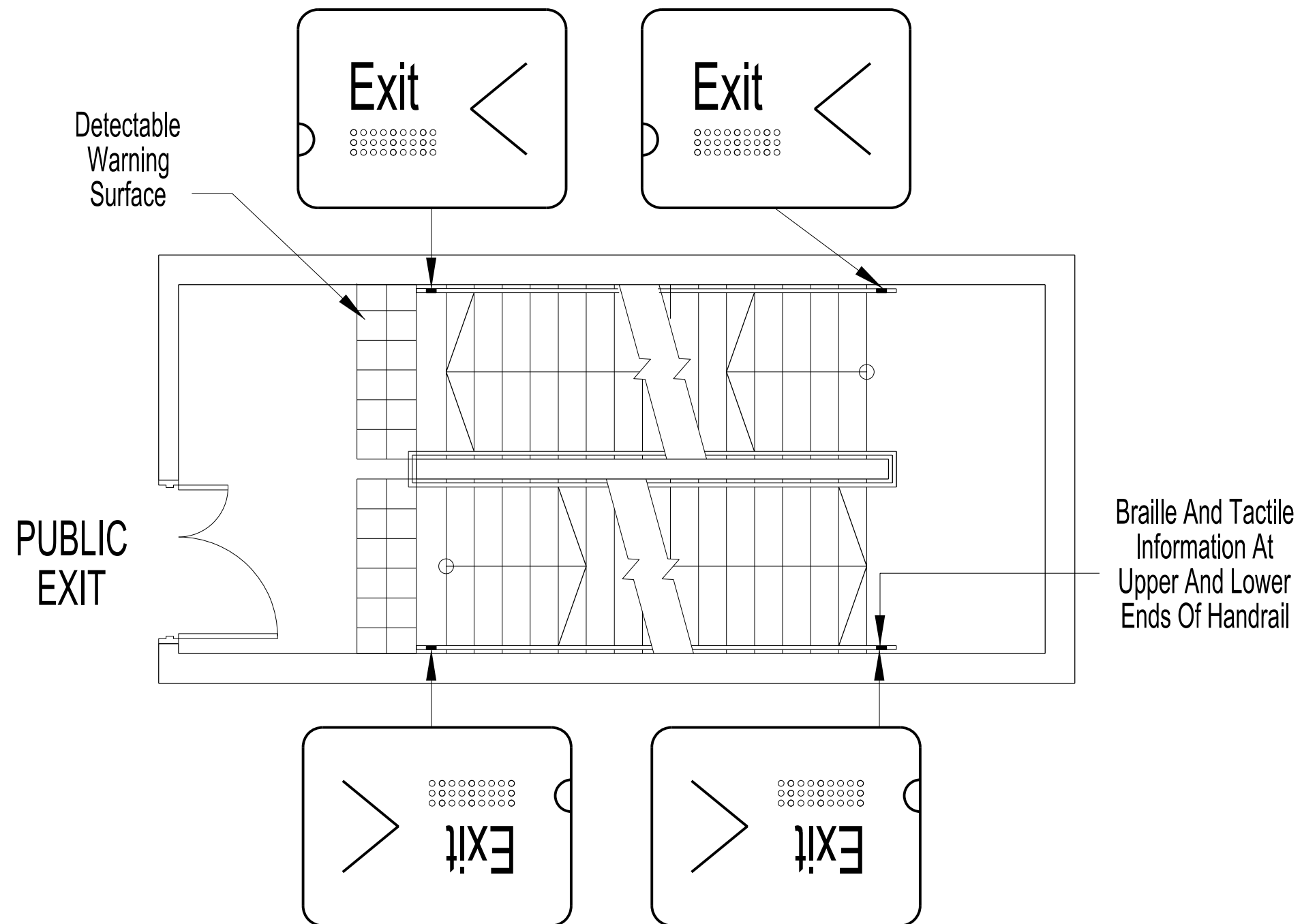
# Exit Staircase with No Intermediate Access



## Notes:

1. Braille are indicative
2. Braille and tactile information shall comply with Code on Accessibility in the Built Environment

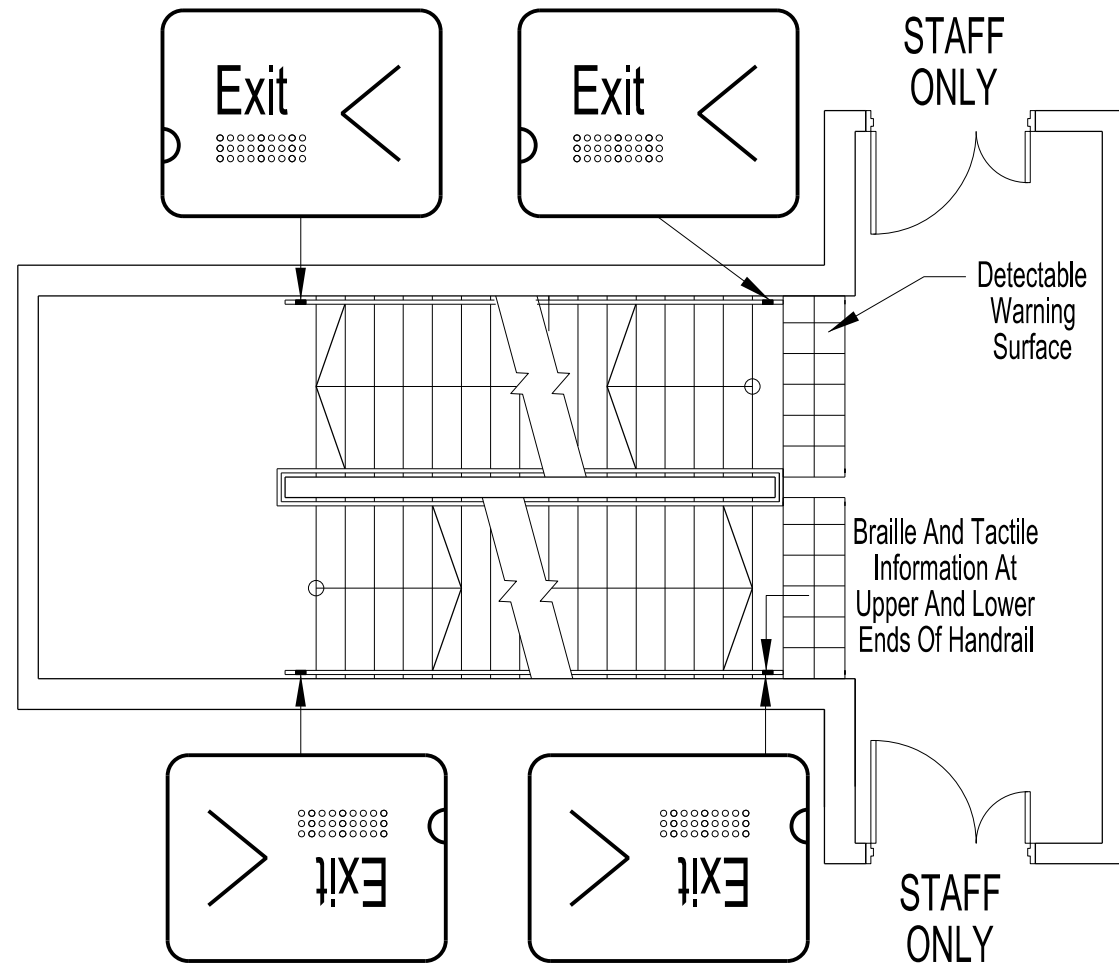
# Exit Staircase at Mid-Landing(s)



## Notes:

1. Braille are indicative
2. Braille and tactile information shall comply with Code on Accessibility in the Built Environment

# Exit Staircase with Staff Access Doors at Mid-Landing(s)



## Notes:

1. Braille are indicative
2. Braille and tactile information shall comply with Code on Accessibility in the Built Environment

# Braille Label On Staircase Handrails, Lift Buttons & Lift Announcements

Typical Level Name	Sub-divisions	Characteristics	Label on Stair handrail leading to level	Label on Lift button at level	Label on lift display	Voice announcements
Level 1/ Street Level/ Entrance Level	Road side	<ul style="list-style-type: none"> <li>Commuter Infrastructure</li> <li>Bicycle paths</li> <li>Foot paths</li> <li>Planting</li> </ul>	Street	-	-	-
	Flood Protection Level - Entrances	<ul style="list-style-type: none"> <li>Top of escalators into station</li> <li>Lift lobby into station</li> </ul>	Entrance # <A, B, C etc>	Street	Street	Street Level
	Exit staircases	<ul style="list-style-type: none"> <li>Door way from staircase</li> <li>Fire Fighting Lobby</li> <li>Fire Command Centre</li> </ul>	Exit	Street	Street	Street Level
Concourse Level		<ul style="list-style-type: none"> <li>Ticket Machines</li> <li>Fare Gateline</li> <li>PSC</li> </ul>	Concourse	Ticket Concourse	Ticket Concourse	Ticket Concourse Level
Platform Level	Island Platform	<ul style="list-style-type: none"> <li>Boarding and alighting to trains</li> <li>One line onl</li> </ul>	Platform	Platform	Platform	Platform level
	Side Platform	<ul style="list-style-type: none"> <li>Boarding and alighting to trains</li> <li>One side only</li> </ul>	Platform # <A, B, ...>	Platform # <A, B, ...>	Platform # <A, B, ...>	Platform # <A, B, ...>
	Stacked island platform	<ul style="list-style-type: none"> <li>Boarding and alighting to trains</li> <li>stacked Interchange</li> </ul>	### Platform <Upper, Lower>	### Platform <Upper, Lower>	### Platform <Upper, Lower>	### Platform Level <Upper, Lower>
	Interchange linked platforms	<ul style="list-style-type: none"> <li>Boarding and alighting to trains</li> <li>adjoining Interchange</li> </ul>	### Platform <EWL, TEL ...>	### Platform <EWL, TEL ...>	### Platform <EWL, TEL ...>	### Platform Level <East West Line, Thomson-East Coast line ...>

Notes:

1. Above list is not exhaustive and should be expanded to include areas not covered here.
2. Tactile labels should align with lift announcements and floor level naming in lifts.

# Braille Label On Staircase Handrails, Lift Buttons & Lift Announcements

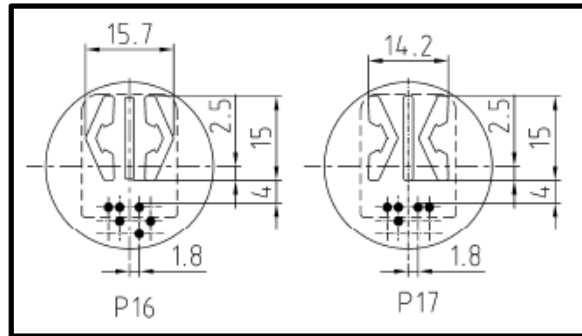
Typical Level Name	Sub-divisions	Characteristics	Label on Stair handrail leading to level	Label on Lift button at level	Label on lift display	Voice announcements
Overhead Bridge		<ul style="list-style-type: none"> <li>• POB linked to station entrance</li> </ul>	Overhead Bridge	Overhead Bridge	Overhead Bridge	Overhead Bridge Level
Mezzanine Level/ Intermediate Level / Plantroom Level	Level with no public activities <u>Lift for public</u> which has door for staff to access level	<ul style="list-style-type: none"> <li>• Escalators bypass</li> <li>• Transfer landings only</li> <li>• Plantrooms</li> <li>• Vent shafts</li> </ul>	-	Staff	Staff only	Staff Level
	Level with no public activities <u>Lift for firemen and staff only</u> (no public)	<ul style="list-style-type: none"> <li>• Escalators bypass</li> <li>• Transfer landings only</li> <li>• Firemen's Lift not used by public</li> <li>• Plantrooms</li> <li>• Vent shafts</li> <li>•</li> </ul>	-	Plantroom	Plantroom	Plantroom Level
Mezzanine Level/ Intermediate Level /Upper Concourse Level/ Subway level / Linkway level / xxx Level	Level with public corridors to reach entrances	<ul style="list-style-type: none"> <li>• Transitory space</li> <li>• Links between lifts</li> <li>• Underpasses under roads</li> <li>• Plantrooms</li> <li>• Vent shafts</li> </ul>	Underpass	Underpass	Underpass	Underpass
	Level with public corridors to connect to adjoining line	<ul style="list-style-type: none"> <li>• Interchange Links</li> <li>• Wide corridors</li> <li>• Plantrooms</li> <li>• Vent shafts</li> </ul>	Link to ### <NSL, CCL, DTL ...>	Link to ### <NSL, CCL, DTL ...>	Link to ### <NSL, CCL, DTL ...>	Link to ### <North South Line, Circle Line, Downtown Line ...>
	Level with public corridor to connect to adjoining public facility <u>only</u>	Eg) <ul style="list-style-type: none"> <li>• Hospital,</li> <li>• Bus Interchange</li> <li>• Bicycle Park</li> </ul>	Link to ### <Hospital, Bus Interchange, Bicycle Park>	Link to ### <Hospital, Bus Interchange, Bicycle Park>	Link to ### <Hospital, Bus Interchange, Bicycle Park>	Link to ### <Hospital, Bus Interchange, Bicycle Park>
	Level with direct link into adjoining public facility <u>only</u>	Eg) <ul style="list-style-type: none"> <li>• Hospital,</li> <li>• Bus Interchange</li> <li>• Bicycle Park</li> </ul>	### <Hospital, Bus Interchange, Bicycle Park>	### <Hospital, Bus Interchange, Bicycle Park>	### <Hospital, Bus Interchange, Bicycle Park>	### <Hospital, Bus Interchange, Bicycle Park>

Notes:

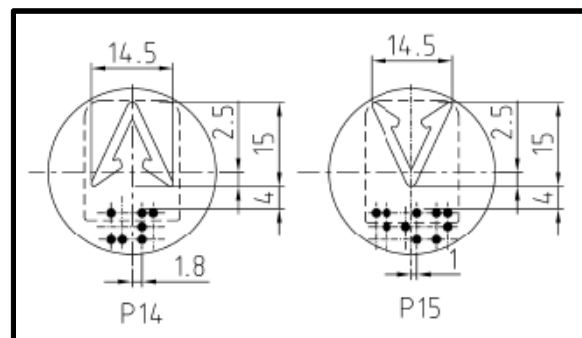
1. Above list is not exhaustive and should be expanded to include areas not covered here.
2. Tactile labels should align with lift announcements and floor level naming in lifts.

# Braille on Round Lift Buttons

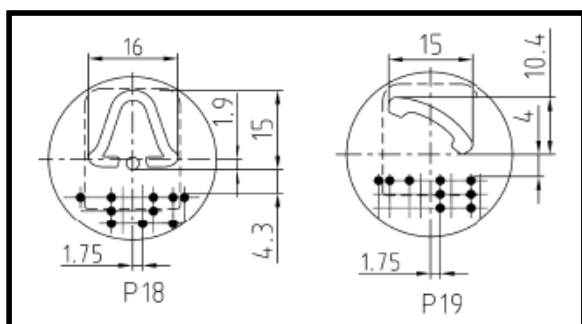
Item 1: Door Open & Door Close Button



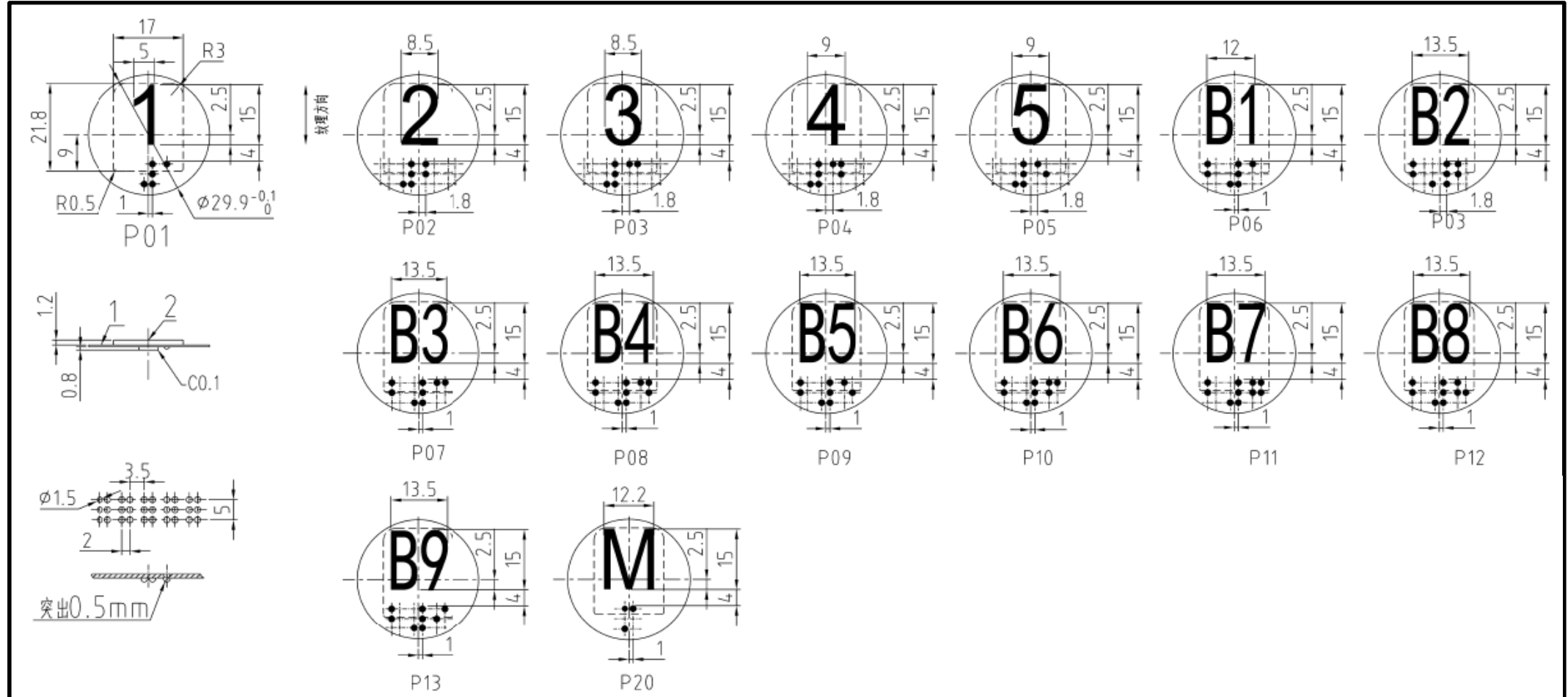
Item 2: Call Button at Lower & Upper Level



Item 3: Alarm & Interphone Button



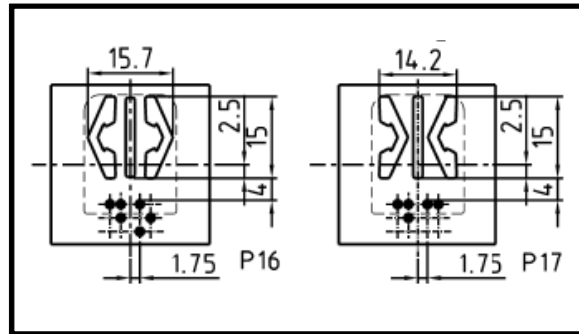
Item 4: Floor Number Button



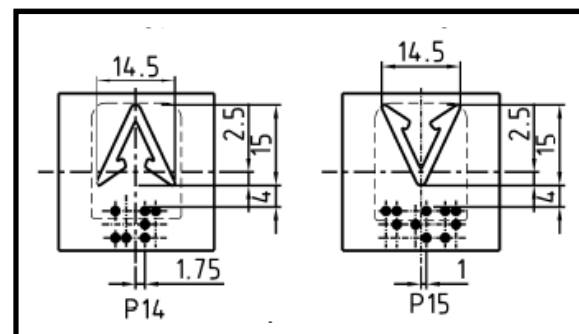
Notes:  
Braille on lift buttons shall be standardised for all lifts.

# Braille on Square Lift Buttons

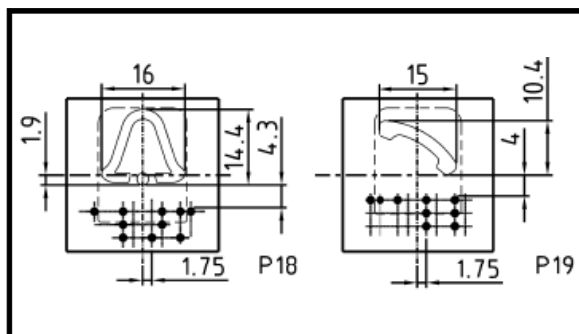
Item 1: Door Open & Door Close Button



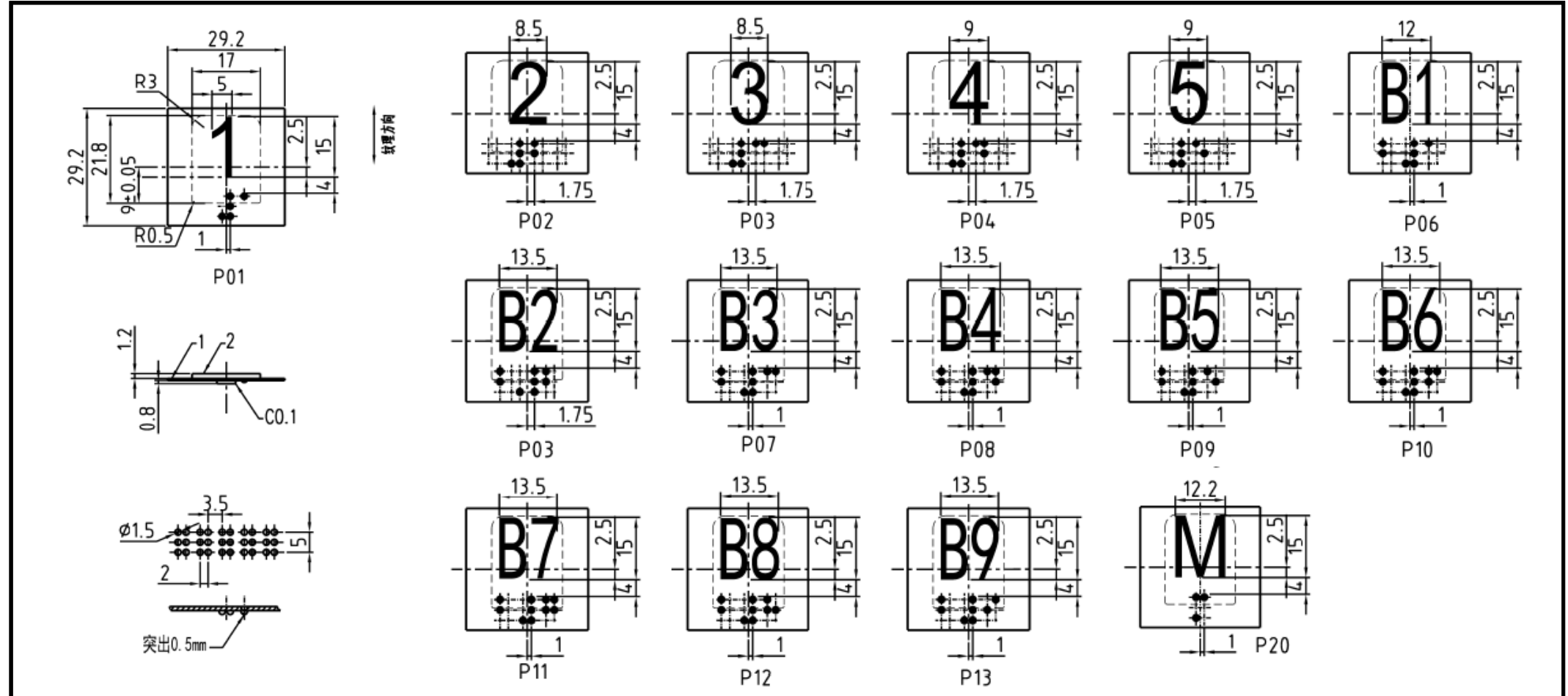
Item 2: Call Button at Lower & Upper Level



Item 3: Alarm & Interphone Button



Item 4: Floor Number Button



Notes:  
Braille on lift buttons shall be standardised for all lifts.



## ANNEX E – GLAZING DESIGN CRITERIA

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## **1 INTRODUCTION**

### **1.1 General**

- 1.1.1 This section describes the minimum acceptable requirements for the provision of glazing including walls, glazed doors, integrated glazed components and other glazed elements.
- 1.1.2 The designer shall assume the responsibility to fully develop, analyze and document the proposed design by appropriately qualified and experienced licensed professional engineers. The design shall be adequate to satisfy structural requirements, aesthetics, air and water leakages, etc. The designer shall verify that the design complies with the applicable regulations. Fabrication shall not proceed until the written approval of the Engineer is obtained.
- 1.1.3 “Accepted,” “Reviewed”, “Directed”, “Rejected”, “Endorsed” and similar expressions mean accepted, reviewed, directed, rejected, endorsed in writing by the Engineer
- 1.1.4 Tempered or toughened glass is a type of safety glass processed by controlled thermal or chemical treatments to increase its strength. The terms ‘tempered’ and ‘toughened’ mean the same and are interchangeable.
- 1.1.5 The selection of glass at each specific location for the works shall be in accordance to AS1288 and in compliance to the relevant sections of the INPQS as follows:
- a. A02-050 Glass Partitions
  - b. A03-010 Semi Unitised Cassette System
  - c. A03-020 Stick Curtain Wall System
  - d. A03-040 Glass Fin System
  - e. A04-060 Windows
  - f. A05-040 Glass Roof System
- 1.1.6 The project specific M&W specifications shall be developed using the relevant INPQS sections as a base. The project specific M&W specifications shall be expanded by including all specific requirements required by the glazing at each location in order to meet the requirements as outlined within this document and all cross-referenced documents.

### **1.2 Cross References**

- 1.2.1 All requirements shall be in accordance to the LTA Architectural M&W General Requirements.
- 1.2.2 For precedence, in the event of any discrepancies, conflicts or contradiction between the Particular Specification, reference standards, or within this Specification, the most stringent/ onerous requirement shall be adopted.

- 1.2.3 Codes, Regulations, Standards and Technical Documents requirements as follow:

### **1.3 Regulations**

- 1.3.1 The Whole of the Works and material are to be in accordance and comply with all prevailing standards and code requirements; as well as regulations as set out by the authorities having jurisdiction over the works, and the relevant bylaws unless otherwise stated.

### **1.4 Standards and Codes of Practices**

- 1.4.1 In case of conflicting requirements between the codes, refer to the Engineer for resolution. Assume priority of precedence of the different standards and codes in descending order as follows:

- a. Singapore Codes SS and SS CP
- b. SS ISO or ISO
- c. BS or BS EN
- d. Other standards such as ASTM (US), AS (Australia), etc, as agreed with the Engineer.

### **1.5 Technical Reference**

- 1.5.1 Where specified, the works shall be carried out in accordance with the principles and methods as set out in the technical reference document.
- 1.5.2 Alternative methods and principles may be proposed subject to Engineer's acceptance, if it can be demonstrated that the proposal is beneficial and without compromise to the specified quality or performance of the works
- 1.5.3 Loading Requirements on glass refer to the LTA Civil Design Criteria.
- 1.5.4 Stations identified as having Civil Defence (CD) requirements, refer to the CD Design Criteria for requirements and information relating to the upgrading of materials, material thicknesses, composition and fixing methods for CD stations.

## **2 PERFORMANCE**

### **2.1 General**

- 2.1.1 The glazing works shall:
- a. remain intact under the ambient in-service and climatic conditions;
  - b. withstand the anticipated loads without damage or impairment of performance;
  - c. provide adequate means of dealing with thermal and differential movement. No glass shall suffer from thermal fracture;

- d. be designed to minimise fragmentation and panel separation.
- e. allow for effective maintenance and replacement to be carried out without damaging adjacent components.
- f. be installed to minimize visual impact of roller wave distortion or 'pillowing' effect. Direction of ripples shall be consistent.

## **2.2 External Glazing**

- 2.2.1 All thickness of glass for external application shall meet with the required design wind pressure or suction and shall be watertight.
- 2.2.2 All external glazing enclosing or providing covered shelter shall limit solar heat gain and prevent UV penetration.
- 2.2.3 All glazing exposed to weather shall be self-cleaning and solar control glass where exposed to weather.

## **2.3 Impact**

- 2.3.1 Glazing shall be used such that the public are protected from danger. All glass must be Grade A in compliance with the requirements of Singapore Standard SS 341: Safety Glazing Materials for Use in Buildings (human impact considerations).
- 2.3.2 Selection and design of glass shall be in accordance to SS 653.
- 2.3.3 Feasible mitigation measures (e.g. impact barriers) acceptable to the Engineer shall be provided where glazing systems are susceptible to impact.

## **2.4 General Loading**

- 2.4.1 The design of the structure shall be in accordance with AS 1288, established good engineering practice and principles. The design and loading requirements shall be as follows:
  - a. The loads specified and effects for the most severe combination of forces on every component /member.
  - b. The method and sequence of construction shall be specified and taken into account in the design.
  - c. Possible imperfections in fabrication and erection shall be considered in the design. The structurally acceptable margins of tolerance shall be clearly specified for critical members and installation/ operations.
  - d. Unless otherwise demonstrated by the Designer and accepted by the Engineer that there is no impact on public safety in case of glass failure, all glass shall be designed for one ply failure. The remaining unbroken/ un-shattered glass ply shall be designed to carry self-weight of the whole panel and wind load.
  - e. Structural fixings shall be designed to resist all anticipated loads such as dead loads, live loads, wind loads, etc. including all structural

movements individually and in combinations. All fixings shall accommodate the worst combination and the overall articulation of the glazing.

- f. All glazing elements shall be designed such that effective maintenance and replacement of these elements can be carried out without damaging adjacent components.
- g. The breakage or removal of any panel of glass or any component shall not lead to a collapse or failure of adjacent elements or the system as a whole.
- h. Horizontal elements of suspended glass such as skylights, etc. shall be designed to withstand all the anticipated loads including:
  - i. the imposed roof loads as specified in the Civil Design Criteria without material failure or permanent deformation of structural members.
  - ii. falling objects.
- i. The loads appropriate to the design of glass parapets and balustrades shall be in accordance with the Civil Design Criteria.
- j. The design shall incorporate the clearances, dimensions, configurations and withstand the loads created by the selected window washing system. Loads induced by the system shall be considered to act simultaneously with the design wind pressures.
- k. The glazing system shall be capable of withstanding dynamic effect, including vibrations if appropriate. When the glazing is adjacent to a carriageway, it shall be designed to withstand a vibration of 10mm/sec without breakage of the glass or separation of the glass from the supports.

## **2.5 Temperature Loads**

- 2.5.1 Glazing shall be designed to provide for expansion and contraction over the following temperature ranges without buckling, sealed joint failure, glass breakage, stone breakage, undue stress on members or anchors, and other detrimental effects.
- 2.5.2 External environment allowance temperature range ambient from 15°C to 37°C.
- 2.5.3 Internal environment allowance temperature range ambient from 20°C to 35°C (for non-air-conditioned space) and 15°C to 27°C (for air-conditioned space)
- 2.5.4 Surface temperature allowance shall be +33°C i.e. 70°C.

## **2.6 Maximum Deflection for Skylights and Glass Roofs**

- 2.6.1 Horizontal and sloped elements of suspended glass (e.g. skylights etc): Maximum full load deflections, normal to the projected area of the suspended glass, for any support member shall not exceed 1/240 of its clear span or 19mm, whichever is less. Maximum full load deflections, parallel to projected area of suspended glass, shall not exceed 75% of the

design clearance dimension between that member and the panel, glass or other part immediately adjacent.

2.6.2 For glass to be considered as four-edge fully supported, the deflection of edge of the glass shall be limited to glass span/175. This requirement shall also be applied to the one ply failure condition. Only self-weight and wind load (if applicable) need to be considered under such a condition.

2.6.3 Permanent deformation: Weld or fastener failure, component dislodgement or breakage shall not occur under loading equal to 1.5 times the design load pressures. Permanent deformation is defined as deflection without recovery exceeding length/1000.

## **2.7 Design Calculations**

2.7.1 The Designer shall submit calculations for all the elements. The following calculations shall be submitted:

- a. Structural calculations for frames, connections and glass panels including calculations for one ply failure condition to show that the total maximum stresses and deflections do not exceed specified performance requirements under full design loading. Building movements including loading deflections, shrinkage, creep, temperature variation and vibration, etc. are to be taken into account.
- b. Thermal stress calculations for each type, size and thickness of exterior glass.
- c. Calculations on expected expansion and contraction shall be compared against the allowable values in the design.
- d. Structural calculations for the anchorage of the glazing washing systems.
- e. Calculations for all the anchors, inserts and fasteners, demonstrating that they will sustain all imposed design loads.

## **3 MATERIALS & COMPONENTS**

### **3.1 General**

3.1.1 All glass shall be evaluated and tested to demonstrate conformity to the specified characteristics and properties and shall be fabricated with the required factory production controls as outlines under the following standards and parts thereof:

- a. Glass generally : SS341 & BS EN 572
- b. Laminated Glass: BS EN 14449 & ISO 12543
- c. Heat Strengthened Glass : BS EN 1863
- d. Toughened Glass : BS EN 12150 & BS EN 14179

### **3.2 Glass Quality**

- 3.2.1 All glass and glazing materials shall be free from defects which detract from appearance or interfere with performance under normal conditions of use and shall comply to:
- a. Glass generally : BS EN 572 parts 1, 2 and 8
  - b. Laminated Glass: ISO 12543 parts 1,2,3,4,5 and 6
  - c. Heat Strengthened Glass : BS EN 1863 part 1
  - d. Toughened Glass : BS EN 12150 part 1 & BS EN 14179 part 1
- 3.2.2 All glazing shall be Grade A safety glass in accordance to SS 341 unless otherwise stated.
- 3.2.3 Quality Control measures shall be in place to ensure all glass supplied and installed meet specified standards including; tolerances limits, maximum blemishes, required characteristics, maximum distortions,
- 3.2.4 Any piece of glass that fails to meet the specified standards shall be considered a defect and thus render all glass from the same batch unacceptable and shall be rejected.
- 3.2.5 Any inherent defects or deterioration in quality from the specified standards found during the warranty period shall also be considered a defect requiring the replacement of the glass panel.

### **3.3 Laminated Glass**

- 3.3.1 Polyvinylbutyral (PVB) interlayer of laminated glass shall be of appropriate thickness as recommended by manufacturer.
- 3.3.2 All laminated glass shall have clean-cut edges, or polished edges and protected to prevent de-lamination, contamination or other defects, caused by moisture, sealant contact or other external/internal source. Materials used shall not cause deterioration or discolouration of the interlayer.
- 3.3.3 All surface treatments to be on the inner face of the laminated glass.

### **3.4 Toughened Glass**

- 3.4.1 All roller wave on toughened heat treated glass to be horizontal and shall not exceed requirements for toughened glass as per BS EN 12150.
- 3.4.2 All toughened glass shall be heat soak tested to BS EN 14179 and subject to other quality control measures, to minimise the occurrence of nickel sulphide inclusions. This Specification defines nickel sulphide inclusions as a glass/material defect. Installed toughened glass which breaks due to nickel sulphide inclusions shall be considered a material defect and shall be replaced under the warranty provisions.

### **3.5 Framed Glass**

- 3.5.1 Framed glass shall be smooth, of uniform dimensions, and free from components likely to bleed, stain or detrimentally affect performance of the glazing.
- 3.5.2 All jointing materials shall be compatible with each other and with the contact surfaces and non-staining to finished surfaces. Do not use bituminous materials on absorbent surfaces.
- 3.5.3 Fastenings, including bolts, anchors, lugs and the like, shall be of a type appropriate to the work, capable of transmitting the loads and stresses imposed, and sufficient to ensure the rigidity of the assembly. All fixings and brackets shall be non-corrosive. Mild steel or cadmium plated steel fixings will not be acceptable

### **3.6 Insulating Glass Units (IGUS)**

- 3.6.1 Submit a report from an independent testing authority to AS/NZS 4666 accredited by the Insulating Glass Certification Council (USA), showing that the unit type has attained Class A as defined in ASTM E774 when tested to ASTM E773.

### **3.7 Exposed Edges**

- 3.7.1 Process exposed glass edges to a finish not inferior to smooth ground arrissed as stated in BS EN 12150 and ISO 12543

### **3.8 Mirrors**

- 3.8.1 All mirror shall be silver layer deposited on the glass or glazing plastic. Protective coatings shall be electrolytic copper coating at least 5 µm thick, and 2 coats of mirror backing and edge sealing paint having a total dry film thickness of at least 50 µm.
- 3.8.2 All mirrors shall be framed on all sides in aluminium, with mitred joints/ corners. Attach the frame to the substrate with concealed screw fixings.
- 3.8.3 Glass edges to be bedded in a continuous resilient gasket.
- 3.8.4 Seal the frame to the substrate with paintable sealant which will not react with the mirror coating. Do not allow the sealant to contact the mirror back.

### **3.9 Glazing Components**

- 3.9.1 Weather strips in accordance to BS EN 12365.
- 3.9.2 Materials for weather strips shall be polypropylene or equivalent pile and backing, low friction silicone treated and ultra violet stabilised.



- 3.9.3 Finned type for weather strips shall be a pile weather seal with a central polypropylene fin bonded into the centre of the backing rod and raised above the pile level.
- 3.9.4 Depth of elastomeric sealant for movement joints shall be one half the joint width, or 6 mm, whichever is greater.
- 3.9.5 Foamed materials (in compressible fillers and backing rods) shall be closed-cell or impregnated types which do not absorb water.
- 3.9.6 To prevent bond breaking in movement joints, provide backing rods, and other back-up materials for sealants, which do not adhere to the sealant.

## **4 WORKMANSHIP**

### **4.1 General**

- 4.1.1 Workmanship shall be according to application as defined in the relevant sections of the INPQS as follows:
  - a. A02-050 Glass Partitions
  - b. A03-010 Semi Unitised Cassette System
  - c. A03-020 Stick Curtain Wall System
  - d. A03-040 Glass Fin System
  - e. A04-060 Windows
  - f. A05-040 Glass Roof System

### **4.2 Protection, Handling & Transportation**

- 4.2.1 Protect all glazing-on site from damage until handover.
- 4.2.2 Damaged glazing will not be accepted.
- 4.2.3 Protect all glass from all risks of chemical, physical and mechanical damage at all times.
- 4.2.4 Replace damaged glass and leave the work clean, polished, free from defects, and in good condition.
- 4.2.5 Store all glass as recommended by the manufacturer in a covered, dry, protected and ventilated area.
- 4.2.6 Temporary measures: submit details of all proposed temporary protection measures to the Engineer for acceptance.
- 4.2.7 Remove temporary protection measures.
- 4.2.8 Transport all glass as recommended by the manufacture.

### **4.3 Inspection**

- 4.3.1 Carry out inspections of mock-ups and prototypes as required under Section 5 of Glazing Design Criteria.
- 4.3.2 All on site materials and workmanship shall be subject to inspection by the Engineer at all times.
- 4.3.3 Ensure edges of all tempered and heat strengthened glass are unchipped at the time of installation and remain so until handover.
- 4.3.4 Install the glass as follow:
- a. each piece is held firmly in place by permanent means which enable it to withstand the normal loadings and ambient conditions at its location without distortion or damage to glass and glazing materials;
  - b. building movements are not transferred to the glass; and
  - c. external glazing is watertight and airtight.
- 4.3.5 Temporary marking shall be as follow:
- a. use a method which does not harm the glass
  - b. remove marking on completion.
- 4.3.6 Tempered and heat strengthened glass shall be as follow:
- a. Do not cut, work, or permanently mark after toughening.
  - b. Use installation methods which prevent the glass making direct contact with metals or other non-resilient materials.
- 4.3.7 Written notice of inspection for the following witness points shall be as follow:
- a. The fabrication of glazed panels or assemblies prior to delivery to the site.
  - b. Fabricated glazed panels prior to installation on site.
  - c. Those parts of the glazing installation which will be covered up or concealed.
- 4.3.8 Written notice of inspection for the following hold points shall be as follow:
- a. Completion of sample approvals
  - b. Completion of confirmation of mock-ups and prototypes.
  - c. On completion of trial sections of work.
  - d. Laminated glass test: on completion of 72 hours holding test.
- 4.3.9 Sealant application required to check prior to the installation of glazing sealant that all contact porous surfaces have been sealed.

## **5 VERIFICATIONS AND SUBMISSIONS**

### **5.1 General**

- 5.1.1 Submit a complete list of shop drawings and a complete list of samples of components and mock-up, manufacturers and fabricators for each specification section for acceptance and tracking, prior to submitting shop drawings and/or samples.

### **5.2 Submissions**

#### **5.2.1 General**

- 5.2.1.1 Make all submissions in accordance with the requirements of Architectural M&W General Requirements.

#### **5.2.2 Subcontractors**

- 5.2.2.1 Submit name and contact details of proposed specialist glazing subcontractor(s).

- 5.2.2.2 Submit name and contact details of proposed specialist glass supplier.

#### **5.2.3 Method Statement**

- 5.2.3.1 Submit a method statement for all glazing works.

#### **5.2.4 Design**

- 5.2.4.1 Submit the sub-contractor's confirmation that the following are acceptable with regard to the bow, warp, and kink characteristics of the required glass types.

- a. the glazing clearances provided in the frames.
- b. the frame tolerances.
- c. the joint configurations.
- d. bracket dimensions and sizes.

#### **5.2.5 Shop drawings**

- 5.2.5.1 Verify all dimensions on site prior to the preparation of shop drawings.

- 5.2.5.2 Submit shop drawings showing, but not limited to, the following information:

- a. Elevations plans and sections of all glazed areas showing the supporting structure and layout of all glazing identifying panel numbers and differing glass types.
- b. Rebate depth.
- c. Edge restraint.
- d. Clearances and tolerances.

- e. Glazing gaskets and sealant beads.
- f. All brackets, supports, fixings and accessories, including all primary and secondary support and framing members.
- g. Frame and support details.
- h. Details of all required joints, penetrations and interfaces.
- i. Allowances for movement.
- j. Method of assembly.
- k. Provisions for maintenance access.

5.2.5.3 No. of copies to be submitted as per Particular Specification.

5.2.6 Calculations

5.2.6.1 Comply with all relevant Singapore legislation and regulations.

5.2.6.2 The Contractor shall submit calculations for all the elements:

- a. Structural calculations for frames, connections and glass panels including calculations for one ply failure condition to show that the total maximum stresses and deflections do not exceed specified performance requirements under full design loading. Building movements including loading deflections, shrinkage, creep, temperature variation and vibration, etc. are to be taken into account.
- b. Thermal stress calculations for each type, size and thickness of exterior glass.
- c. Calculations on expected expansion and contraction shall be compared against the allowable values in the design.
- d. Structural calculations for the anchorage of the glazing washing systems.
- e. Calculations for all the anchors, inserts and fasteners, demonstrating that they will sustain
- f. all imposed design loads.
- g. Design and construction of structural sealant glazing shall comply with BCA's requirements.

5.2.6.3 Submit calculations and drawings endorsed by a Singapore licensed Professional Engineer concurrently with the shop drawings and showing, but not limited to, the following:

- a. Compliance with all relevant Singapore legislation and regulations.

5.2.6.4 Submit calculations and drawings endorsed by a Singapore licensed Professional Engineer to show that the structural glazing system has been designed to:

- a. provide a structural sealant bite adequate to restrain the glass at the ultimate limit states design wind pressure as required by the Engineer.
- b. provide for thermal movement between abutting glass edges by an adequate "working joint" design with the necessary clearances and dimensions to the sealant manufacturer's recommendations; and

- c. limit the working stress of sealants and the working stress of pressure sensitive tapes as required by the Engineer.

#### 5.2.7 Glazing schedule

- 5.2.7.1 Designers shall prepare a full glazing schedule identifying all types of glass used in a station, including its associated support system, material properties and location. Glazing schedules must be included in each formal design submission and accepted by the Authority.

#### 5.2.8 Manufacturers' information

- 5.2.8.1 Submit the manufacturer's technical literature for all proprietary materials used together with certification of compliance and test reports to the required standards, in accordance with Architectural M&W General Requirements.
- 5.2.8.2 Submit copies of relevant manufacturers' instructions including standard drawings and details.
- 5.2.8.3 Submit material safety data sheets (MSDS).
- 5.2.8.4 Fire resistant glass: Submit a report certifying that the glazing assembly meets the fire resistance requirements of where fire resistant glass is required.

#### 5.2.9 Glass manufacturer's data

- 5.2.9.1 Heat soaked tempered glass: Submit certificates from the glass manufacturer confirming by reference to statistical analysis of past test data that the anticipated rate of failure in tempered glass due to nickel sulphide inclusions after heat soaking, will be no greater than 1 per 400 tonne of glass.
- 5.2.9.2 Opacified glass: Submit a statement by the manufacturer certifying that the proposed method of opacifying the glass will not be detrimental to the glass or detract in any way from the glass product warranty.
- 5.2.9.3 Glazier's data: Submit the glazing subcontractor's statement certifying that the assembled frame provides for the required glazing clearances and tolerances and maximum and minimum joint configurations, having regard to the bow, warp and kink characteristics of the required glass types, and is ready for glazing.

#### 5.2.10 As Built drawings

- 5.2.10.1 Provide as built drawings.

## 5.2.11 Operation and Maintenance Manual

5.2.11.1 On completion submit an Operation and Maintenance Manual.

5.2.11.2 A comprehensive maintenance strategy for the glazing system shall be submitted for approval. The strategy shall include periodical inspection requirement of the glazing system and methodology for replacement of broken glass and routine cleaning. The methodology shall be demonstrated during design stage and verified on site with a full mock up at construction stage.

5.2.11.3 Site specific access and lifting equipment details shall be submitted for approval to demonstrate that panel replacement can be achieved, including all time required for mobilisation and demobilisation of such equipment, within 4 hours for all glass panels

## 5.3 Samples

### 5.3.1 General

5.3.1.1 Submit samples of each of the following in accordance with Architectural M&W General Requirements.

5.3.1.2 Submit samples, each at least 300 x 300mm, showing specified visual properties and the range of variation, if any, for each type of glass, including, but not limited to:

- a. Tinted or coloured glass.
- b. Surface modified or surface coated glass.
- c. Patterned or obscured glass.
- d. Ceramic coated glass.
- e. Wired glass.
- f. Mirror glass.
- g. Laminated glass.
- h. Tempered glass.
- i. Fire resistant glass.

5.3.1.3 Submit samples at least 600mm long of the following

- a. All joint types proposed for use in glass and framing.
- b. Each glazing extrusion and assembly which will be exposed to view.
- c. Each extrusion, accessory and fixing used in the structural glazing.
- d. A structurally glazed corner fully glazed and complete with all sealants.

5.3.1.4 Submit samples of all accessories and ironmongery items.

5.3.1.5 All samples to held by the Authority and available for viewing during the tender and construction period.

## **5.4 Mock-Ups**

### **5.4.1 General**

#### **5.4.1.1 Provide mock-ups and prototypes during the different stages**

#### **5.4.1.2 Glass enclosure at entrance to carry out the following:**

- a. Pre-production mock-up required to incorporate
  - i. an assembly of glazing including support details, sealant or joint, capping and edge details
  - ii. extrusion and mullions
  - iii. any other as directed by the Engineer
- b. Confirmation prototype required to incorporate
  - i. all details specified in the pre-production mock up
  - ii. interfaces with SWC components if any

#### **5.4.1.3 Glass balustrade to carry out the following:**

- a. Pre-production mock-up required to incorporate
  - i. all termination, critical joints and interfacing material
  - ii. any other details as directed by the Engineer
- b. Confirmation prototype required to incorporate
  - i. all details specified in the pre-production mock-up
  - ii. typical finish, texture and colour of the metal framing and fixings
- c. On-site Quality Control Prototype required to incorporate
  - i. One bay of wall and balustrade modules showing at least one termination, one intermediate and one interfacing module with adjacent finishes

## **5.5 Tests**

### **5.5.1 General**

#### **5.5.1.1 Carry out the following tests for all glazing:**

- a. Weather tightness in accordance to AS2208 in locations agreed with the Engineer. Repair all identified leaks and retest.
- b. Wind resistance in accordance to AS1288
- c. Resistance to Wind Load in accordance to AS1288
- d. Skylight and canopy glazing in accordance to AS1288

#### **5.5.2 Holding Test For Laminated Glass**

##### **5.5.2.1 Test laminated glazing to demonstrate that should one ply of any laminated glass break, the remaining unbroken plies held within the actual fixings, shall have sufficient strength to carry the weight of the broken ply, together**

with all anticipated loads with the broken glass being required to remain in position for a minimum of 72 hours.

- a. Timing of the test: On completion of the glazing, or as directed by the Engineer.
- b. Location of test: On site.
- c. Item to be tested: To be agreed with the Engineer.
- d. Ply to be broken: To be agreed with the Engineer.
- e. Loading: external glazing: Dead load.
- f. Live load: as climatic conditions at the time of the test.
- g. Loading: internal glazing: Dead load.

5.5.2.2 The glass will be considered to have failed this test if broken glass does not remain fixed in position for a minimum of 72 hours.

5.5.2.3 The breakage of further plies of glass during the test shall not constitute a failure provided it/they remain in position for the period of the test.

#### 5.5.3 Glass/ Glazing

5.5.3.1 Shop glazed units: Submit details of a test deglazing procedure, or a panel bond strength test procedure.

#### 5.5.3.2 Rate of tests

- a. one unit in the first 10;
- b. one unit in the next 40;
- c. one unit in the next 75; and
- d. one unit in each 100 thereafter.

#### 5.5.4 Sealant

5.5.4.1 Type test to ASTM C1087, to demonstrate compatibility with the other materials and accessories of the structural glazing system which it may contact.



## **ANNEX F – DESIGN CRITERIA FOR ADVERTISING AND RETAIL PROVISIONS IN MASS RAPID TRANSIT (MRT) STATIONS**

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## **1 General**

- 1.1 This document gives an overview of the general requirements for advertising and retail design provisions to be incorporated in the design of the station. All drawings and illustrations provided in this document are indicative only. This document shall be read in conjunction with Chapter 4 – Security Requirements.
- 1.2 The Designer shall further coordinate their design and construction activities with the appointed advertising and retail operators to ensure that the requirements for equipment installation, maintenance and operation are incorporated in the design and construction phases of the project, e.g. the provision of necessary openings on wall claddings/ floor tiles for the installation of advertising panels.
- 1.3 The Designer shall ensure that the design and provision comply with all prevailing regulatory requirements and guidelines, including and not limited to Code of Practice for Advertisements in Rapid Transit Systems (RTS) Stations, Trains and Tunnels (CP3), Code of Practice for Security Standards in MRT Systems (CP6) and Code of Practice for Fire Precautions in Rapid Transit System (CPFPRTS).


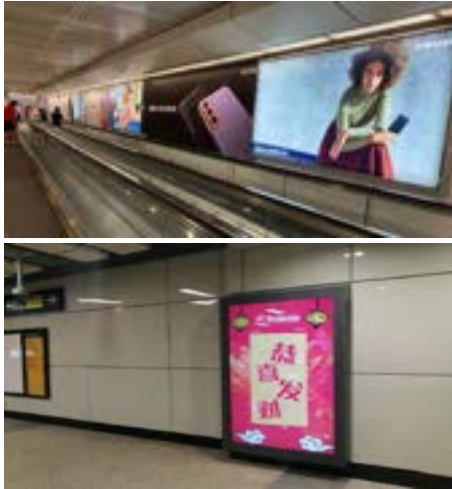






## **2 Advertising**

### **2.1 General**

- 2.1.1 The Designer shall allocate suitable wall, floor and ceiling spaces for the installation of advertising assets based on the guidelines outlined in this document and/or other specific guidelines/locations advised by the Authority. Spaces to be reserved shall be coordinated with other relevant Designer/contractors to avoid clashes with station signs, fire extinguisher/hose reel cabinets, access panels, exit lights, Station Travel Information System displays (STIS), Video Surveillance System (VSS) including monitors and cameras, their field of view and visibility from commuters, radio antennae, artwork etc.



### **2.2 Potential Locations**

- 2.2.1 The various permanent advertising assets can be installed in the ticketed and non-ticketed areas of station premises. The following are some potential advertising locations:





<b>a. Concourse</b>	
Near Fare Gates 	Along walls, columns at thoroughfare, subway, linkway 
<b>b. Platform</b>	
Overhead 	Along walls/columns of platform 
<b>c. Escalators Vicinity</b>	
Lift Shafts / Columns facing Escalators 	Escalator Bulkheads 
Near Escalators 	Along Escalators 

## 2.3 Advertising Assets


2.3.1 The tables below show examples of the types of advertising assets that can be installed.

<b>a. Floor Mounted Assets</b>		
<p>Floor mounted assets can be located near faregates and beside escalators.</p> <ul style="list-style-type: none"> <li>Floor mounted assets shall have at least 300mm lateral clearance from the side of any escalator or staircase for working space and maintenance purposes. The asset shall not pose obstruction/hindrance/inconvenience to the pedestrian flow.</li> <li>Locations shall not obstruct station operations, e.g., line of sight of surveillance from Passenger Service Centre (PSC), VSS field of vision, station signs or pedestrian flow.</li> <li>Locations shall not obstruct floor tactile and cause inconvenience to the Persons with Disabilities (PWDs).</li> <li>Floor mounted assets can be free standing or located in front of columns.</li> <li>Floor mounted assets can be installed as a single piece or in pairs.</li> </ul>		
 <i>Single floor mounted panel</i>	<b>Type</b>	Digital Display
	<b>Approximate Size</b>	Single floor mounted asset size not exceeding: 1200 (W) x 2000 (H) x 150 (D) mm, typically enclosed with a metal housing <sup>1</sup> .
 <i>Pair floor mounted panels</i>	<b>Power socket</b>	2 no. 13A Switch Socket Outlet (SSO) per digital panel

<sup>1</sup> Dimensions of advertising panel housing unit may vary to align with station ceiling height and column widths

<b>b. Wall Mounted Assets</b>		
Wall mounted assets can be located along the walls/columns at thoroughfare, subway, linkway and escalator overheads.		
 <i>Lightbox</i>  <i>Overhead panel</i>	<b>Type</b> <b>Approximate Size</b>	<b>Static/Digital Display</b> Wall mounted asset size varies depending on the space/locations and taking into consideration the station's ceiling height, alignment with column/cladding width/ height.  Approximate sizes <sup>1</sup> :  Wall mounted assets - not exceeding: 5000 (W) mm x 2000 (H)  Escalator crowns - not exceeding: 500 (W) x 750 (H) mm
	<b>Power socket</b>	2 no. 13A SSO per asset
 <i>Digital panel</i>  <i>Escalator crowns</i>		


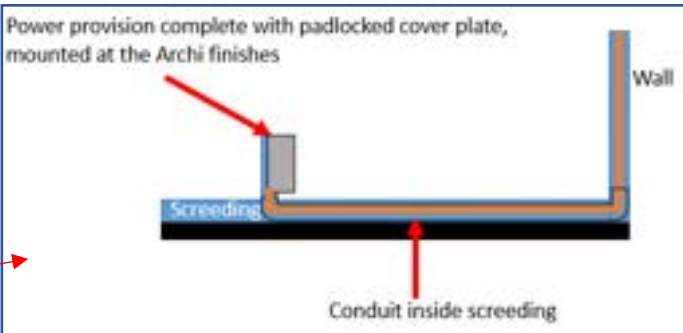


<b>c. Ceiling Mounted Assets</b>		
Ceiling mounted assets can be located at platform levels <ul style="list-style-type: none"> <li>Locations shall not obstruct line of sight of VSS coverage</li> <li>Locations shall not obstruct any STIS, wayfinding and/or exit signs</li> </ul>		
 <p><i>Ceiling mounted digital panel</i></p>	<b>Type</b>	Digital Display
	<b>Approximate Size</b>	LCD/LED asset size not exceeding: 750 (W) x 1250 (H) x 100 (D) mm, typically enclosed with a metal housing <sup>2</sup> .
	<b>Power socket</b>	2 no. 13A SSO per asset

## 2.4 Installation Detail for Power Supply

2.4.1 The Designer shall coordinate the installation details of power supply for advertising assets with the relevant Designers/contractors and advertising operator. All services (including all pipes, cables, trunking and conduits) shall be concealed or routed above false ceiling. Dedicated advertising distribution boards (DB) with electrical sub-meter shall be provided. The dedicated advertising DB shall be provided with 20% spare capacity.

2.4.2 The tables below show the general guidelines on the placement of power socket for the advertising assets. Power sockets are to be provided at appropriate locations in accordance to the space reserved for placement of such advertising assets.

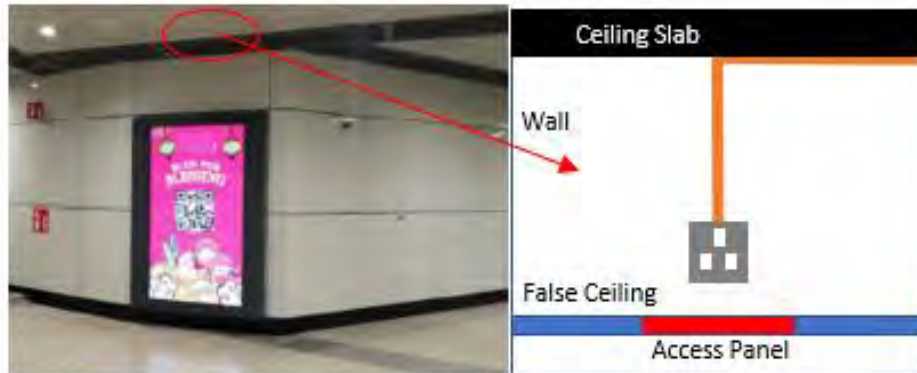
<b>a. Floor Mounted Assets</b>
<p>The Designer shall coordinate with the relevant Designer/contractor and the advertising operator for provision of underfloor trunking to the exact location of the advertising panels, where required.</p> <p>Power sockets can be installed at the reserved panel locations, recessed in the architectural finishes with an appropriate access panel/cover plate provided. The Designer/contractor shall ensure that the design of the access panel/cover plate does not pose as a tripping hazard to the commuters.</p>
 

<sup>2</sup> Dimensions of advertising panel housing unit may vary.

### b. Wall Mounted Assets

Power sockets can be installed on the wall just above the false ceiling level with an appropriate access panel provided.

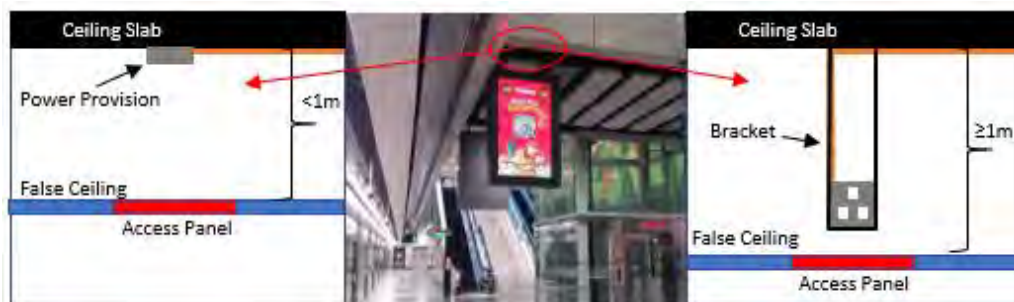
For walls that have little/no spaces for services (e.g. tiles instead of claddings), the Designer/contractor shall coordinate with the advertising operator for provision of wall embedded trunking to the exact location of the advertising panels.



### c. Ceiling Mounted Assets

Power sockets can be installed on the ceiling above the false ceiling level with an appropriate access panel (either ceiling or door) provided.

If the space between the false ceiling and the ceiling slab is  $\geq 1\text{m}$ , the power sockets can be suspended by a bracket above the false ceiling level.



### d. Large Advertising Assets

In addition to the above-mentioned advertising assets, large advertising assets may be proposed on a case-by-case basis (subject to approval from the Authority) by the advertising operator at certain locations (e.g. lift shaft, high wall/columns) in some stations. The power provision for such large advertising assets will vary according to the size and type of the asset, and the Designer/contractor shall coordinate with the advertising operator for the appropriate power provision.



### 3. Retail

#### 3.1 General

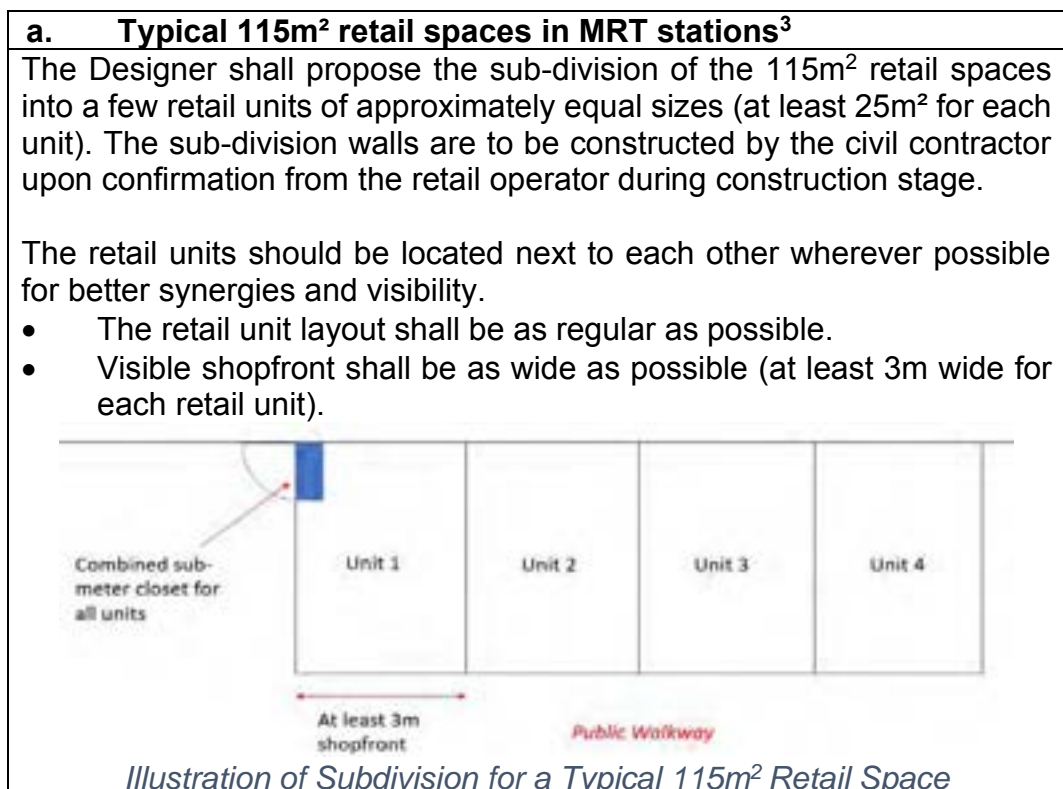
3.1.1 The Designer shall design retail spaces with a total area of 115m<sup>2</sup> in the non-ticketed areas of each station. The retail spaces shall be well-located and be highly visible along the main commuter traffic flow to maximise the commercial potential.

3.1.2 In the event of the presence of large incidental spaces within the station, the Designer shall propose strategies for the integration of additional retail spaces in suitable locations within the station, over and above the standard 115m<sup>2</sup>, where deemed suitable and/or as requested by the Authority. Such additional retail spaces are subject to the Authority, Singapore Land Authority (SLA), Urban Redevelopment Authority (URA), Singapore Civil Defence Force (SCDF) and other relevant agencies' approval.

3.1.3 The Designer shall design machine spaces in the non-ticketed areas of each station so that they do not obstruct commuter traffic flow.

#### 3.2 Retail Space Locations and Layout

3.2.1 Retail spaces should ideally be located along the main traffic flow e.g. along the non-ticketed linkway connecting interchange stations. The retail spaces will be categorised into two types:

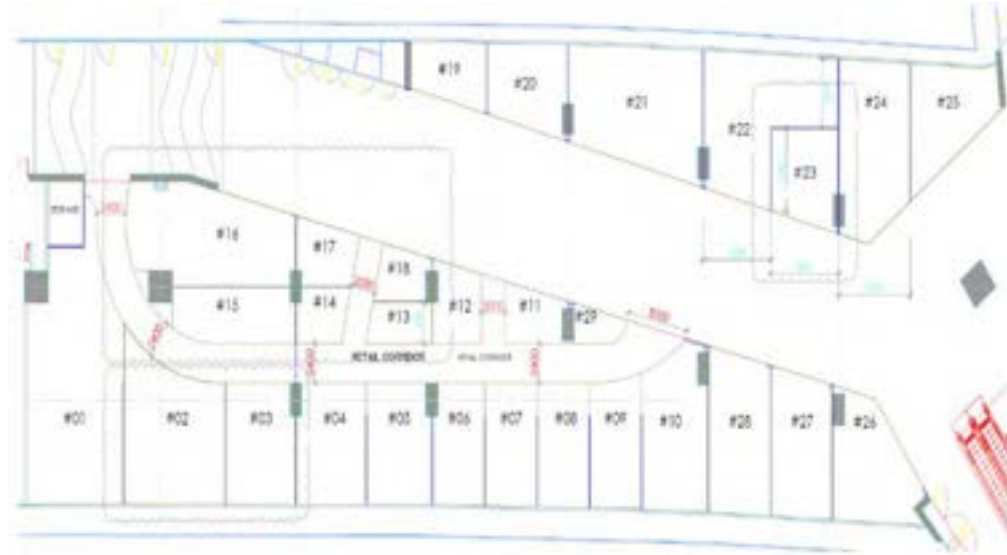


<sup>3</sup> As per CPFPTS, shops with a maximum aggregated area of 115m<sup>2</sup> (where no individual shop unit shall exceed 100m<sup>2</sup>) are allowed in the public area of MRT stations.



**b. Large retail spaces (>>115m<sup>2</sup>) arising from incidental spaces in MRT stations**

The Designer shall propose the sub-division of such large retail spaces into retail units of 25 - 50m<sup>2</sup> each. The relevant Designer/contractors are to provide the retail provisions listed in section 3.3. based on such indicative retail units. The sub-division walls will be constructed by the retail operator.



*Illustration of Subdivision of 1500m<sup>2</sup> Retail Space*

### 3.3 Retail Space Provisions

3.3.1 The tables below show the provisions required for the retail spaces. This is to be read in conjunction with Section 6.9 under Annex B - MRT Station Room Datasheets.

<b>a. Typical 115m<sup>2</sup> retail spaces in MRT stations</b>	
<u>Signage and Shopfront</u>	<ul style="list-style-type: none"> <li>The Designer shall coordinate with the retail operator on their shopfront preference i.e. <ul style="list-style-type: none"> <li>i. Fire shutter and a by-pass door using standard locking hardware set SA (secondary access); or</li> <li>ii. Fire rated glass doors and panels.</li> </ul> </li> <li>The Designer shall provide sufficient space, above the shopfront, for mounting of signage/ sign box by the retail operator.</li> <li>The Designer/contractor shall coordinate with the retail operator on the provision of necessary openings for the retail unit signage's power supply.</li> </ul>

<p><u>Sub-Meters and Sub-Meter Closet</u></p>	<ul style="list-style-type: none"> <li>• 1 set of sub-meters for electricity and chilled water services shall be provided for each retail unit.</li> <li>• Isolation valves for water and chilled water services shall be provided in the sub-meter closet.</li> <li>• Sub-meter closet(s) shall be provided to house the sub-meters for the services.</li> <li>• Sub-meter closet(s) shall be located adjacent to the retail units.</li> <li>• Sub-meter closet shall be accessible from non-ticketed public areas and compartmentalised according to relevant codes.</li> <li>• Sub-meters for the different retail units are recommended to be co-located in a single sub-meter closet wherever possible, to save space.</li> <li>• Floor trap/drain shall be provided in the sub-meter closet where water or chilled water meter is provided.</li> <li>• Lighting with IP55 rating shall be provided in the sub-meter closet at 150 lux where electricity meter is provided.</li> <li>• 1 no. 13A weather-proof SSO shall be provided in the sub-meter closet where electricity meter is provided.</li> </ul>
<p><u>Drainage &amp; Water Services</u></p>	<ul style="list-style-type: none"> <li>• Water supply pipe with isolation valve shall be provided and terminated inside the retail unit.</li> <li>• Adequate space for mounting of Public Utilities Board (PUB) water sub-meter<sup>4</sup> shall be made in the sub-meter closet.</li> <li>• 1 no. of floor trap shall be provided for each retail unit.</li> <li>• The floor trap shall be located away from the shopfront, preferably at the back/corner of the retail unit.</li> </ul>
<p><u>Air Conditioning &amp; Mechanical Ventilation (ACMV)</u></p>	<ul style="list-style-type: none"> <li>• Chilled water pipes, insulated condensate drainpipes and fresh air ducts (complete with volume control damper) shall be provided in the retail spaces and capped off for each retail unit, for future connection by the retail operator.</li> <li>• Insulated condensate drainpipe connection to floor trap/drain shall be provided for each retail unit.</li> </ul>

<sup>4</sup> The retail operator will apply for PUB water sub-meter.

<u>Power Provision</u>	<ul style="list-style-type: none"> <li>1 no. 60A 4P isolator shall be provided for each retail unit.</li> </ul>
<u>Lighting Provision</u>	<ul style="list-style-type: none"> <li>Emergency Lighting in compliance with SS 563 shall be provided for station Temporary Occupation Permit (TOP).</li> </ul>
<u>Communication System</u>	<ul style="list-style-type: none"> <li>Public Address (PA) system shall be provided as prescribed in CPFPRTS.</li> <li>Cable slack shall be provided to lower the loudspeakers to the false-ceiling level inside retail unit.</li> <li>Radio coverage shall be provided as prescribed in CPFPRTS.</li> <li>Emergency Fire Phone (EFP) shall be provided as prescribed in CPFPRTS.</li> </ul>
<u>Fire Protection System</u>	<ul style="list-style-type: none"> <li>Sprinkler system shall be provided with cap-off point for each retail unit, for future second layer sprinkler.</li> </ul>
<u>Others</u>	<ul style="list-style-type: none"> <li>Fibre box by service provider shall be located inside the retail units.</li> </ul>

<b>b. Large retail spaces (&gt;&gt;115m<sup>2</sup>) arising from incidental spaces in MRT stations</b>	
<u>Shopfront</u>	<ul style="list-style-type: none"> <li>Security shutters shall be provided to separate the retail spaces from the station public areas.</li> <li>Power supply for the security shutters shall be provided.</li> </ul>
<u>Sub-Meters and Sub-Meter Closet</u>	<ul style="list-style-type: none"> <li>1 set of sub-meters for electricity, chilled water services shall be provided for each retail unit.</li> <li>Isolation valves for water and chilled water services shall be provided in the sub-meter closet.</li> <li>Sub-meter closet(s) shall be provided to house the sub-meters for the services.</li> <li>Sub-meter closet(s) shall be located next to the retail spaces.</li> <li>Sub-meter closet shall be accessible from non-ticketed public areas and compartmentalised according to relevant codes.</li> <li>Sub-meters for different retail units can be co-located in a single sub-meter closet wherever possible, to save space.</li> <li>Floor trap/drain shall be provided in the sub-meter closet.</li> </ul>

	<ul style="list-style-type: none"> <li>Lighting with IP55 rating shall be provided in the sub-meter closet at 150 lux where electricity meter is provided.</li> <li>1 no. 13A weather-proof SSO shall be provided in the sub-meter closet where electricity meter is provided.</li> </ul>
<u>Drainage &amp; Water Services</u>	<ul style="list-style-type: none"> <li>Water supply pipe with isolation valve shall be provided and terminated inside the retail spaces.</li> <li>Adequate space for mounting of PUB water sub-meter<sup>5</sup> shall be made in the sub-meter closet.</li> <li>1 no. of floor trap shall be provided for each retail unit.</li> <li>The floor traps shall be located away from the shopfront, preferably at the back/corner of the retail unit.</li> <li>All floor traps shall be linked to the grease interceptor for retail spaces.</li> </ul>
<u>Air Conditioning &amp; Mechanical Ventilation (ACMV)</u>	<ul style="list-style-type: none"> <li>Engineered smoke control system shall be provided (including smoke-exhaust fans, replacement air intake and motorised dampers).</li> <li>Chilled water pipes, insulated condensate drainpipes and fresh air ducts (complete with volume control damper) shall be provided in the retail spaces and capped off for future connection by the retail operator.</li> <li>Insulated condensate drainpipe connection to floor trap/drain shall be provided for each retail unit.</li> </ul>
<u>Power Provision</u>	<ul style="list-style-type: none"> <li>Retail units between 25m<sup>2</sup> and 100m<sup>2</sup>: 1 no. 60A 4P isolator</li> <li>Retail units larger than 100m<sup>2</sup>: 1 no. 4P isolator. Isolator to be rated for a connected load of 100W/ m<sup>2</sup>. Minimum isolator rating 60A 4P</li> </ul>
<u>Lighting Provision</u>	<ul style="list-style-type: none"> <li>Emergency Lighting to comply with SS 563 shall be provided for station Temporary Occupation Permit (TOP).</li> </ul>

<sup>5</sup> The retail operator will apply for PUB water sub-meter.

<u>Communication System</u>	<ul style="list-style-type: none"> <li>Public Address (PA) system loudspeakers shall be provided as prescribed in CPFPTS.</li> <li>Cable slack shall be provided to bring down the loudspeakers to the false-ceiling level inside retail unit.</li> <li>Radio coverage shall be provided as prescribed in CPFPTS.</li> <li>Emergency Fire Phone (EFP) shall be provided as prescribed in CPFPTS.</li> </ul>
<u>Fire Protection System</u>	<ul style="list-style-type: none"> <li>Sprinkler system shall be provided with cap-off point for future second layer sprinkler.</li> <li>Smoke detectors shall be provided for activation of engineered smoke control system or if required (e.g. For fire shutter).</li> <li>Fire alarm system Interface Terminal Box (ITB) outside retail unit to shut down ACMV in event of fire alarm activation.</li> <li>Connection of retail unit fire shutter (if provided) to fire alarm system ITB.</li> </ul>
<u>Kitchen Exhaust System</u>	<ul style="list-style-type: none"> <li>Kitchen exhaust and make-up air ducts shall be provided to facilitate Food and Beverage (F&amp;B) business. The retail units/area to be used for F&amp;B business will be advised by the Authority.</li> <li>The termination of kitchen exhaust and make-up air ducts (capped off for future connection) shall allow for easy connection to fans installed by the retail operator.</li> <li>Sufficient headroom shall be provided for the retail operator to install the fans and kitchen exhaust hoods.</li> </ul>
<u>Grease Trap System</u>	<ul style="list-style-type: none"> <li>Grease trap system (including kitchen floor trap, kitchen waste sumps, grease separator, grease sump pit and sump pump(s) with associated power supply, local control panel &amp; monitoring points) shall be provided.</li> </ul>
<u>Others</u>	<ul style="list-style-type: none"> <li>Fibre box by service provider shall be located inside the retail units.</li> <li>Dedicated fire escape, fire safety and fire-fighting provisions including engineered smoke control system shall be provided according to the relevant statutory requirements.</li> <li>Separate service lift, bin centre, public toilet and service corridors can be provided.</li> <li>Dedicated loading/unloading bay shall be provided adjacent to the entrance.</li> </ul>

### 3.4 Machine Space Provisions

3.4.1 The tables below show the provisions required for the licensed space for the purposes of the installation and operation of Automated Teller Machines (ATM), AXS Stations and/or Self-Automated Machines (SAM).

Machine Spaces (ATM/AXS/SAM)	
<u>Power and Communications System</u>	<ul style="list-style-type: none"><li>• 1 no. 20A DP isolators shall be provided for each machine and mounted at 300mm height above Floor Finished Level (FFL).</li><li>• 1 no. fibre connection shall be provided for each machine and located next to the isolators.</li><li>• Provisions shall be protected by stainless steel box, compartmentalized and locked.</li></ul>

## Annex M: Legal Register for Safety, Health & Environmental Management

Title of Legislation	Year
<b>Workplace Safety &amp; Health Act and Subsidiary Legislation</b>	
1. 2009 Revised Edition - Workplace Safety and Health Act <ul style="list-style-type: none"> <li>✓ G. N. No. S 72/2007 - Workplace Safety and Health (Workplaces Subject to Act) Order 2007</li> <li>✓ G. N. No. S 634/2007- Workplace Safety and Health Act (Amendment of First Schedule) Order 2007</li> <li>✓ Act 9 of 2008 - Workplace Safety and Health (Amendment) Act 2008</li> <li>✓ Act 18 of 2011 - Workplace Safety and Health (Amendment) Act 2011</li> <li>✓ Act 44 of 2017 - Workplace Safety and Health (Amendment) Act 2017</li> </ul>	2009
2. 2007 Revised Edition - Workplace Safety & Health (General Provision) Regulations <ul style="list-style-type: none"> <li>✓ G. N. No. S 463/2009 - WSH (General Provisions) (Amendment) Regulations 2009</li> <li>✓ G. N. No. S 609/2009 - WSH (General Provisions) (Amendment No. 2) Regulations 2009</li> <li>✓ G. N. No. S 517/2011 - WSH (General Provisions) (Amendment) Regulations 2011</li> <li>✓ G. N. No. S 277/2014 - WSH (General Provisions) (Amendment) Regulations 2014</li> </ul>	2007
3. Workplace Safety & Health (Construction) Regulations <ul style="list-style-type: none"> <li>✓ G. N. No. S 608/2009 - WSH (Construction) (Amendment) Regulations 2009</li> <li>✓ G. N. No. S 224/2013 - WSH (Construction) (Amendment) Regulations 2013</li> <li>✓ G. N. No. S 278/2014 - WSH (Construction) (Amendment) Regulations 2014</li> </ul>	2007
4. 2007 Revised Edition - Workplace Safety & Health (Risk Management) Regulations	2007
5. Workplace Safety & Health (Operation of Crane) Regulations <ul style="list-style-type: none"> <li>✓ G. N. No. S 4/2016 - WSH (Operation of Crane) (Amendment) Regulations 2016</li> </ul>	2011
6. 2020 Revised Edition - Workplace Safety & Health (Incident Reporting) Regulations <ul style="list-style-type: none"> <li>✓ G. N. No. S 460/2011 - WSH (Incident Reporting) (Amendment) Regulations 2011</li> <li>✓ G. N. No. S 7/2014 - WSH (Incident Reporting) (Amendment) Regulations 2014</li> <li>✓ G. N. No. S 7/2020 - WSH (Incident Reporting) (Amendment) Regulations 2020</li> </ul>	2007
7. 2007 Revised Edition - Workplace Safety & Health (First-Aid) Regulations <ul style="list-style-type: none"> <li>✓ G. N. No. S 514/2011 - WSH (First-Aid) (Amendment) Regulations 2011</li> </ul>	2007
8. Workplace Safety & Health (Noise) Regulations	2011
9. Workplace Safety & Health (Work At Heights) Regulations <ul style="list-style-type: none"> <li>✓ WSH (Work At Heights) (Amendment) Regulations 2014</li> </ul>	2013
10. Workplace Safety & Health (Scaffold) Regulations	2011
11. Workplace Safety & Health (Registration of Factories) Regulations <ul style="list-style-type: none"> <li>✓ G.N. No. S 57/2010 WSH (Registration of Factories) (Amendment) Regulations 2010</li> <li>✓ G.N. No. S 203/2017 WSH (Registration of Factories) (Amendment) Regulations 2017</li> </ul>	2008

✓ G.N. No. S 206/2019 WSH (Registration of Factories) (Amendment) Regulations 2019	
12. Workplace Safety & Health (Confined Space) Regulations	2009
13. Workplace Safety & Health (Asbestos) Regulations	2014
14. Workplace Safety & Health (Explosive Powered Tools) Regulations	2009
15. Workplace Safety & Health (Medical Examination) Regulations ✓ G. N. No. S 320/2013 - WSH (Medical Examination) (Amendment) Regulations 2013	2011
16. Workplace Safety & Health (Safety & Health Management System & Auditing) Regulations	2009
17. Workplace Safety & Health (Workplace Safety & Health Committee) Regulations	2008
18. 2007 Revised Edition — WSH (Workplace Safety & Health Officer) Regulations	2007
19. Workplace Safety & Health (Workplace Subject To Act) Order	2007
20. 2002 Revised Edition - Factories (Safety Training Course) Order ✓ G. N. No. S 673/2002 - Factories (Safety Training Course) (Amendment) Order 2002	2002
21. Workplace Safety & Health (Design for Safety) Regulations	2015
22. 2007 Revised Edition - Workplace Safety & Health (Composition of Offences) Regulations	2007
23. 2007 Revised Edition - Workplace Safety & Health (Offences and Penalties) (Subsidiary Legislation Under Section 66(14) Regulations	2007
24. Workplace Safety & Health (Learning Report) Regulation 2019	2019
25. 2009 Revised Edition — Work Injury Compensation Act ✓ Act 21 of 2011 - Work Injury Compensation (Amendment) Act 2011 ✓ G. N. No. S 200/2012 - Work Injury Compensation Act (Amendment of Second and Third Schedules) Order 2012 ✓ G. N. No. S 586/2015 - Work Injury Compensation Act (Amendment of Third Schedule) Order 2015	2009
Work Injury Compensation Regulation 2020	
Covid 19-Act and Regulation	
COVID-19 (Temporary Measures) Act 2020 ✓ COVID-19 (Temporary Measures) (Amendment No. 2) Act 2021 ✓ COVID-19 (Temporary Measures) (Amendment) Act 2021 ✓ COVID-19 (Temporary Measures) (Amendment) Act 2020 ✓ COVID-19 (Temporary Measures) (Amendment No. 2) Act 2020 ✓ COVID-19 (Temporary Measures) (Amendment No. 3) Act 2020  COVID-19 (Temporary Measures) (Control Order) Regulations 2020 ✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 8) Regulations 2021	2020



<ul style="list-style-type: none"> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 7) Regulations 2021</li> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 6) Regulations 2021</li> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 5) Regulations 2021</li> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 4) Regulations 2021</li> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 3) Regulations 2021</li> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 2) Regulations 2021</li> <li>✓ COVID-19 (Temporary Measures) (Control Order) (Amendment No. 1) Regulations 2021</li> </ul> <p>COVID-19 (Temporary Measures) (Foreign Employee Dormitories — Control Order) Regulations 2020</p>	
<b>Fire Safety Act and Subsidiary Legislation</b>	
<p>2000 Revised Edition - Fire Safety Act</p> <ul style="list-style-type: none"> <li>✓ Act 5 of 2000 - Fire Safety (Amendment) Act 2000</li> <li>✓ G. N. No. S 449/2000 - Fire Safety Act (Amendment of First Schedule) Notification 2000</li> <li>✓ Act 7 of 2004 - Fire Safety (Amendment) Act 2004</li> <li>✓ Act 14 of 2013 - Fire Safety (Amendment) Act 2013</li> <li>✓ Act 31 of 2016 - Fire Safety (Amendment) Act 2016</li> </ul>	2000
<p>Revised Edition 2008 Fire Safety (Petroleum and Flammable Materials) Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 625/2006 - Fire Safety (Petroleum and Flammable Materials) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 546/2013 - Fire Safety (Petroleum and Flammable Materials) (Amendment) Regulations 2013</li> <li>✓ G. N. No. S 552/2013 - Fire Safety (Petroleum and Flammable Materials) (Amendment No. 2) Regulations 2013</li> <li>✓ G. N. No. S 547/2013 - Fire Safety (Petroleum and Flammable Materials - Exemption) (Amendment) Order 2013</li> <li>✓ G. N. No. S 188/2014 - Fire Safety (Petroleum and Flammable Materials) (Amendment No. 2) Regulations 2014</li> <li>✓ G. N. No. S 189/2014 - Fire Safety (Petroleum and Flammable Materials - Exemption) (Amendment) Order 2014</li> <li>✓ G. N. No. S 329/2015 - Fire Safety (Petroleum and Flammable Materials) (Amendment No. 2) Regulations 2015</li> <li>✓ G. N. No. S 186/2018 - Fire Safety (Petroleum and Flammable Materials) (Amendment No. 2) Regulations 2018</li> </ul>	2008
2008 Revised Fire Safety (Composition of Offence) Regulations	2008
<b>Electricity Act and Subsidiary Legislation</b>	<b>Year</b>
<p>2002 Revised Edition - Electricity Act</p> <ul style="list-style-type: none"> <li>✓ Act 18 of 2006 - Electricity (Amendment) Act 2006</li> <li>✓ Act 42 of 2018 - Electricity (Amendment) Act 2018</li> </ul>	2002
<p>2004 Revised Edition Electricity (Electrical Installation) Regulation</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 334/2007 - Electricity (Electrical Installations) (Amendment) Regulations 2007</li> </ul>	2004

✓ G. N. No. S 185/2018 - Electricity (Electrical Installations) (Amendment) Regulations 2018	
2004 Revised Edition Electricity (Electrical Workers) Regulation	2004
<ul style="list-style-type: none"> <li>✓ G. N. No. S 332/2007 - Electricity (Electrical Workers) (Amendment) Regulation 2007</li> <li>✓ G. N. No. S 22/2015 - Electricity (Electrical Workers) (Amendment) Regulation 2015</li> <li>✓ G. N. No. S 862/2018 - Electricity (Electrical Workers) (Amendment) Regulation 2018</li> </ul>	
2004 Revised Edition Electricity (Cable Detection Workers) Regulation <ul style="list-style-type: none"> <li>✓ G. N. No. S 333/2007 - Electricity (Cable Detection Workers) (Amendment) Regulation 2007</li> <li>✓ G. N. No. S 863/2018 - Electricity (Cable Detection Workers) (Amendment) Regulation 2018</li> </ul>	2004
2004 Revised Edition - Electricity (Composition of Offences) Regulation	2004
<b>Mass Rapid Transit Legislation</b>	
2004 Revised Edition - Rapid Transit System Act <ul style="list-style-type: none"> <li>✓ Act 21 of 2010 - Rapid Transit System (Amendment) Act 2010</li> <li>✓ Act 9 of 2014 - Rapid Transit System (Amendment) Act 2014</li> </ul>	2004
1997 Revised Edition Rapid Transit (Railway Protection Restricted Activities) Regulations <ul style="list-style-type: none"> <li>✓ G. N. No. S 280/2000 - Mass Rapid Transit (Railway Protection Restricted Activities) (Amendment) Regulations 2000</li> <li>✓ G. N. No. S 163/2003 - Mass Rapid Transit (Railway Protection Restricted Activities) (Amendment) Regulations 2003</li> </ul>	1997
2002 Revised Edition - Rapid Transit Systems (Development and Building Works in Railway Corridor and Railway Protection Zone) Regulations	2002
Code of practice for Railway Protection	2004
Guide to Carrying out Restricted Activities within Railway Protection and Safety Zones	2009
<b>Building Control Act and Regulation</b>	<b>Year</b>
1999 Revised Edition - Building Control Act <ul style="list-style-type: none"> <li>✓ Act 4 of 1999 – Building &amp; Construction Authority Act 1999</li> <li>✓ Act 36 of 1999 - Building Control (Amendment) Act 1999</li> <li>✓ Act 26 of 2000 - Building Control (Amendment) Act 2000</li> <li>✓ Act 18 of 2003 - Building Control (Amendment) Act 2003</li> <li>✓ Act 34 of 2004 - Building Control (Amendment) Act 2004</li> <li>✓ Act 47 of 2007 - Building Control (Amendment) Act 2007</li> <li>✓ Act 22 of 2012 - Building Control (Amendment) Act 2012</li> </ul>	1999
Building Control (Temporary Buildings) Regulation	2018
2000 Revised Edition - Building Control (Inspection of Buildings) Regulation <ul style="list-style-type: none"> <li>✓ G.N. No. S 508/2017—Building Control (Inspection of Buildings) (Amendment) Regulations 2017</li> </ul>	2000
1996 Revised Edition - Street Works Act <ul style="list-style-type: none"> <li>✓ Act 11 of 2003—Street Works (Amendment) Act 2003</li> </ul>	1996

2000 Revised Edition - Telecommunication Act	
✓ Act 10 of 2005 - Telecommunications (Amendment) Act 2005	2000
✓ Act 19 of 2005 - Telecommunications (Amendment) Act 2011	
✓ Act 30 of 2016 - Telecommunications (Amendment) Act 2016	

<i>Approved Codes of Practice</i>	<i>Year</i>
Workplace Safety & Health (Approved Code of Practice) Notification 2020	2020
1. Code of Practice for Working Safely at Heights (Second Revision: 2013)	2013
2. Code of Practice on WSH Risk Management (Second Revision: 2015)	2015
3. Code of Practice on Safe Lifting Operations in the Workplaces (First Revision: 2014)	2014
4. SS 98: Specification for Industrial safety helmets	2013
5. SS 280: Specification for Metal scaffoldings Part 1: Frame scaffoldings	2006
6. SS 280: Specification for Metal scaffoldings Part 2: Modular scaffoldings	2009
7. SS 311: Specification for Steel tubes and fittings used in tubular scaffolding	2005
8. SS 473: Specification for Personal eye-protectors Part 1: General requirements	2011
9. SS 473: Specification for Personal eye-protectors Part 2: Selection, use and maintenance	2011
10. SS 497: Code of Practice for Design, safe use and maintenance of gantry cranes, overhead travelling cranes and monorail hoists	2011
11. SS 506: Occupational safety and health (OSH) management system Part 1: Requirements	2009
12. SS 506: Occupational safety and health (OSH) management system Part 2: Guidelines for the implementation of SS 506: Part 1: 2009	2009
13. SS 508: Specification for Graphical symbols — Safety colours and safety signs Part 1: Design principles for safety signs in workplaces and public areas	2013
14. SS 508: Specification for Graphical symbols — Safety colours and safety signs Part 2: Design principles for product safety labels	2008 (2013)
15. SS 508: Specification for Graphical symbols — Safety colours and safety signs Part 3: Design principles for graphical symbols for use in safety signs	2013
16. SS 508: Specification for Graphical symbols — Safety colours and safety signs Part 4: Colorimetric and Photometric properties of safety sign material	2013
17. SS 508: Specification for Graphical symbols — Safety colours and safety signs Part 5: Registered Safety Signs	2013

18. SS 510: Code of Practice for Safety in welding and cutting (and other operations involving the use of heat) (Formerly CP 50)	2017
19. SS 511: Code of Practice for Diving at work	2018
20. SS 513: Specification for Personal protective equipment — Footwear Part 1: Safety footwear	2013
21. SS 513: Specification for Personal protective equipment — Footwear Part 2: Test methods for footwear	2013
22. SS 514: Code of Practice for Office ergonomics	2016
23. SS 528: Specification for Personal fall-arrest systems Part 1: Full-body harnesses	2006 (2014)
24. SS 528: Specification for Personal fall-arrest systems Part 2: Lanyards and energy absorbers	2006 (2014)
25. SS 528: Specification for Personal fall-arrest systems Part 3: Self-retracting lifelines	2006 (2014)
26. SS 528: Specification for Personal fall-arrest systems Part 4: Vertical rails and vertical lifelines incorporating a sliding-type fall arrester	2006 (2014)
27. SS 528: Specification for Personal fall-arrest systems Part 5: Connectors with self-closing and self-locking gates	2006 (2014)
28. SS 528: Specification for Personal fall-arrest systems Part 6: System performance tests	2006 (2014)
29. SS 531: Code of Practice for Lighting of work places Part 1: Indoor	2006 (2019)
30. SS 531: Code of Practice for Lighting of work places Part 2: Outdoor	2006 (2019)
31. SS 531: Code of Practice for Lighting of work places Part 3: Lighting requirements for safety and security of outdoor work places	2019
32. SS532: Code of Practice for The storage of flammable liquids	2016
33. SS 536: Code of Practice for The safe use of mobile cranes (Formerly CP 37)	2008
34. SS 537: Code of Practice for Safe use of machinery Part 1: General requirements	2008
35. SS 537: Code of Practice for Safe use of machinery Part 2: Woodworking machinery	2009
36. SS 541: Restraint belts Amendment 1 (2012)	2008
37. SS 548: Code of Practice for Selection, use, and maintenance of respiratory protective devices (Formerly CP 74)	2009
38. SS 549: Code of Practice for Selection, use, care and maintenance of hearing protectors (Formerly CP 76)	2009
39. SS 550: Code of practice for installation, operation and maintenance of electric passenger and goods lifts	2020
40. SS 553: Code of Practice for Air-conditioning and mechanical ventilation in buildings (Formerly CP 13) Incorporating Amendment 1 – Aug 2017	2016

41. SS 554: Code of Practice for Indoor air quality for air-conditioned buildings	2016
42. SS 557: Code of Practice for Demolition (Formerly CP 11)	2010
43. SS 559: Code of Practice for Safe use of tower cranes (Formerly CP 62)	2010
44. SS 562: Code of Practice for Safety in trenches, pits and other excavated areas	2010
45. SS 567: 2011 Code of Practice for Factory layout — Safety, health and welfare considerations (Formerly CP 27)	2011
46. SS 568: 2011 Code of Practice for Confined spaces (Formerly CP 84)	2011
47. SS 569: Code of Practice for Manual handling (Formerly CP 92)	2011
48. SS 570: Specification for Personal protective equipment for protection against falls from a height — Single point anchor devices and flexible horizontal lifeline systems	2011
49 SS 571: Code of Practice for Energy lockout and tagout (Formerly CP 91)	2011
50. SS 573: Code of Practice for The safe use of powered counterbalanced forklifts (Formerly CP 101) Incorporating Corrigendum No 1 – July 2012	2012
51. SS580: Code of Practice for Formwork (Formerly CP 23) Incorporating Corrigendum No 1 – May 2016	2012
52. SS 586: Specification for Hazard communication for hazardous chemicals and dangerous goods Part 1: Transport and storage of dangerous goods	2014
53. SS 586: Specification for Hazard communication for hazardous chemicals and dangerous goods Part 2: Globally harmonised system of classification and labelling of chemicals Singapore's adaptations	2014
54. SS 586: Specification for Hazard communication for hazardous chemicals and dangerous goods Part 3: Preparation of safety data sheets (SDS) Incorporating Amendment No.1 (2014)	2008 (2014)
55. SS 638: Code of Practice for Electrical installations (Formerly CP 5)	2018
56. SS588: Personal equipment for protection against fall – Rope Access Systems. Part 1 – Fundamental principle for a system of work	2013
57. SS588: Personal equipment for protection against fall – Rope Access Systems. Part 2 – Code of Practice	2013
58. SS598: Code of Practice for Suspended scaffolds	2014
59. SS595 Steel Wire Ropes for Hoisting – Part 3: Code of Practice for the care, inspection and maintenance of steel wire ropes for hoisting.	2014
60. SS659 : 2020 Code of Practice for Scaffolds (Formerly CP14)	2020
61. SS 617:2016 on Code of practice for the lifting of persons in work platforms suspended from cranes (formerly CP 63)	2016

62. CP 79: Code of Practice for Safety management system for construction worksites Incorporating Amendment No.1 (2010)	1999
63. SS650: Code of Practice for Temporary electrical installations Part 1: Construction and building sites (Formerly CP 88)	2019
64. SS 657: Code of practice for workplace noise control ((Formerly CP 99)	2020
65. SS343: Specification for lifting gear – Part 1: Wire rope sling	2014
66. SS343: Specification for lifting gear – Part 2: Hooks	2014
67. SS343: Specification for lifting gear – Part 3: Shackles	2014
68. SS607: Specification for design of active fall-protection systems	2015
69. SS 616: Code of practice for safe use of mobile elevating work platforms	2016
70. SS 176: Portable aluminium ladder	1996
71. SS ISO 45001:2018 Occupational health & safety management systems – Requirements with guidance for use.	2018
72. SS ISO 10218:2016 Robots and robotic devices – Safety requirements for industrial robots Part 1: Robots.	2016
73. SS ISO 10218:2016 Robots and robotic devices – Safety requirements for industrial robots Part 2: Robots systems and integration	2016
76. SS 639: Code of practice for the filling, inspection, testing and maintenance of gas cylinders for the storage and transport of compressed gases - Part 3: Acetylene cylinders - periodic inspection and maintenance	2018
77. SS EN 13374: Temporary edge protection systems - Product specifications - Test methods	2018

<i>Other Codes of Practices and requirements</i>	<i>Year</i>
Code of Practice for Traffic Control at Work Zone Revision	2018
78. SS576 Code of Practice for earthworks in the vicinity of electricity cables	2019
79 <a href="#">SS 663 : 2020</a> - Code of practice for safe loading on vehicles	2020
80. SS 578 Code of Practice for use and maintenance of portable fire extinguisher	2020
81. Requirements for Safe management Measures at the Workplace	2021
82. BCA COVID-Safe Restart Criteria	2021

<i>Title of Legislation</i>	<i>Year</i>
<b>Environmental Protection and Management Act and Subsidiary Legislation</b>	
Environmental Protection and Management Act	2002
✓ G. N. No. S 492/2004—Environmental Pollution Control Act (Amendment Of Second Schedule) Order 2004	

<ul style="list-style-type: none"> <li>✓ G. N. No. S 78/2005—Environmental Pollution Control Act (Amendment Of Second Schedule) Order 2005</li> <li>✓ G. N. No. S 571/2005—Environmental Pollution Control Act (Amendment Of Second Schedule) (No. 2) Order 2005</li> <li>✓ G. N. No. S 296/2007—Environmental Pollution Control Act (Amendment Of Second Schedule) Order 2007</li> <li>✓ Act 26 of 2007—Environmental Pollution Control (Amendment) Act 2007</li> <li>✓ Act 26 of 2007—Environmental Pollution Control (Amendment) Act 2007</li> <li>✓ G. N. No. S 43/2008—Environmental Protection And Management Act (Amendment Of Second Schedule) Order 2008</li> <li>✓ G. N. No. S 62/2009—Environmental Protection And Management Act (Amendment Of Second Schedule) Order 2009</li> <li>✓ Act 12 of 2011—Environmental Protection And Management (Amendment) Act 2011</li> <li>✓ G. N. No. S 441/2011—Environmental Protection and Management Act (Amendment of Second Schedule) (No. 2) Order 2011</li> <li>✓ G. N. No. S 373/2011—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2011</li> <li>✓ G. N. No. S 373/2013—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2013</li> <li>✓ G. N. No. S 374/2013—Environmental Protection and Management Act (Amendment of Second Schedule) (No. 2) Order 2013</li> <li>✓ G.N. No. S 688/2014—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2014</li> <li>✓ Act 4 of 2016—National Environment Agency (Miscellaneous Amendments) Act 2016</li> <li>✓ G.N. No. S 378/2016—Environmental Protection and Management Act (Amendment of Second Schedule) (No. 2) Order 2016</li> <li>✓ G.N. No. S 263/2016—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2016</li> <li>✓ G.N. No. S 27/2017—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2017</li> <li>✓ G.N. No. S 783/2017—Environmental Protection and Management Act (Amendment of Second Schedule) (No.3) Order 2017</li> <li>✓ G.N. No. S 359/2018—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2018</li> <li>✓ G.N. No. S784/2017—Environmental Protection and Management Act (Amendment of Second Schedule) (No.4) Order 2017</li> <li>✓ G.N. No. S 491/2019—Environmental Protection and Management Act (Amendment of Second Schedule) Order 2019</li> <li>✓ Act 40 of 2019—Supreme Court of Judicature (Amendment) Act 2019</li> </ul>	
<p>Environmental Protection and Management (Trade Effluent) Regulations</p> <ul style="list-style-type: none"> <li>✓ G.N. No. S 485/2011—Environmental Protection and Management (Trade Effluent) (Amendment) Regulations 2011</li> </ul>	2008
<p>Environmental Protection and Management (Vehicular Emissions) Regulations</p> <ul style="list-style-type: none"> <li>✓ G.N. No. S 877/2018—Environmental Protection and Management (Vehicular Emissions) (Amendment No. 3) Regulations 2018</li> <li>✓ G.N. No. S 57/2019—Environmental Protection and Management (Vehicular Emissions) (Amendment) Regulations 2019</li> <li>✓ G.N. No. S 322/2019—Environmental Protection and Management (Vehicular Emissions) (Amendment No. 2) Regulations 2019</li> </ul>	2008
<p>Environmental Protection and Management (Air Impurities) Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 369/2015—Environmental Protection and Management (Air Impurities) (Amendment) Regulations 2015</li> </ul>	2008



Environmental Protection and Management (Control of Noise At Construction Sites) Regulations	2008
<ul style="list-style-type: none"> <li>✓ G. N. No. S 484/2011—Environmental Protection and Management (Control of Noise at Construction Sites) (Amendment) Regulations 2011</li> </ul>	
Environmental Protection and Management (Hazardous Substances) Regulations	2008
<ul style="list-style-type: none"> <li>✓ G. N. No. S 59/2009—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2009</li> <li>✓ G. N. No. S 553/2010—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2010</li> <li>✓ G.N. No. S 440/2011—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2011</li> <li>✓ G.N. No. S 675/2014—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2014</li> <li>✓ G.N. No. S 790/2014—Environmental Protection and Management (Hazardous Substances) (Amendment No. 2) Regulations 2014</li> <li>✓ G.N. No. S 782/2017—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2017</li> <li>✓ G.N. No. S 360/2018—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2018</li> <li>✓ G.N. No. S 492/2019—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2019</li> <li>✓ G.N. No. S 537/2019—Environmental Protection and Management (Hazardous Substances) (Amendment) Regulations 2020</li> </ul>	
Environmental Protection and Management (Off-Road Diesel Engine Emissions) Regulations	2012
Environmental Protection and Management (Prohibition on the Use of Open Fires) Order	2008
<b>Control of Vectors and Pesticides Act and Subsidiary Legislation</b>	
Control of Vectors and Pesticides Act	2002
<ul style="list-style-type: none"> <li>✓ Act 24 of 1988- Control of Vectors and Pesticides Act 1988</li> <li>✓ 1999 Revised Edition- Control of Vectors and Pesticides - Act</li> <li>✓ Act 4 of 2002- National Environmental Agency Act 2002</li> <li>✓ 2002 Revised Edition Control of Vectors and Pesticides Act</li> <li>✓ Act 4 of 2016- National Environment Agency (Miscellaneous Amendments) Act 2016</li> <li>✓ Act 40 of 2019- Supreme Court of Judicature (Amendment) Act 2019</li> </ul>	
<b>Infectious Diseases Act and Subsidiary Legislation</b>	
Infectious Diseases Act	2003
<ul style="list-style-type: none"> <li>✓ G.N. No. S 794/2005— Infectious Diseases (Amendment of first schedule) notification 2005</li> <li>✓ Act 10 of 2008- Infectious Diseases (Amendment) Act 2008</li> <li>✓ G.N. No. S 614/2008— Infectious Diseases Act (Amendment of first schedule) notification 2008</li> <li>✓ G.N. No. S 720/2014— Infectious Diseases Act (Amendment of sixth schedule) notification 2014</li> <li>✓ G.N. No. S 37/2016— Infectious Diseases Act (Amendment of first schedule) notification 2016</li> <li>✓ G.N. No. S 61/2019— Infectious Diseases Act (Amendment of first schedule) notification 2019</li> <li>✓ Act 5 of 2019— Infectious Diseases (Amendment) Act 2019</li> <li>✓ Act 11 of 2019— Singapore Food Agency Act 2019</li> </ul>	



<ul style="list-style-type: none"> <li>✓ G.N. No. S 68/2020— Infectious Diseases Act (Amendment of first and second schedules) Notification 2020</li> <li>✓ G.N. No. S 140/2020— Infectious Diseases Act (Amendment of first and second schedules) (No.2) Notification 2020</li> </ul>	
<b>Sewerage and Drainage Act and Subsidiary Legislation</b>	
Sewerage and Drainage Act	2001
<ul style="list-style-type: none"> <li>✓ Act 9 of 2002—Sewerage and Drainage (Amendment) Act 2002</li> <li>✓ Act 10 of 2012—Sewerage and Drainage (Amendment) Act 2012</li> <li>✓ Act 10 of 2012—Sewerage and Drainage (Amendment) Act 2012</li> <li>✓ Act 5 of 2012—Subordinate Courts (Amendment) Act 2014</li> <li>✓ Act 12 of 2015—Land Acquisition (Amendment) Act 2015</li> <li>✓ Act 11 of 2018— Public Utilities (Amendment) Act 2018</li> <li>✓ Act 40 of 2019- Supreme Court of Judicature (Amendment) Act 2019</li> </ul>	
Sewerage and Drainage (Surface Water Drainage) Regulations	2007
Sewerage and Drainage (Trade Effluent) Regulations	2007
<ul style="list-style-type: none"> <li>✓ G. N. No. S 30/2008—Sewerage and Drainage (Trade Effluent) (Amendment) Regulations 2008</li> <li>✓ G.N. No. S 46/2013—Sewerage and Drainage (Trade Effluent) (Amendment) Regulations 2013</li> <li>✓ G.N. No. S 710/2014—Sewerage and Drainage (Trade Effluent) (Amendment) Regulations 2014</li> <li>✓ G.N. No. S 73/2015—Sewerage and Drainage (Trade Effluent) (Amendment) Regulations 2015</li> <li>✓ G.N. No. S 590/2015—Sewerage and Drainage (Trade Effluent) (Amendment No. 2) Regulations 2015</li> <li>✓ G.N. No. S 483/2016—Sewerage and Drainage (Trade Effluent) (Amendment) Regulations 2016</li> </ul>	
Sewerage and Drainage (Exemption — Approval for Discharge of Trade Effluent) Notification	2013
<b>Environmental Public Health Act and Subsidiary Legislation</b>	
Environmental Public Health Act	2002
<ul style="list-style-type: none"> <li>✓ Act 26 of 2007—Environmental Pollution Control (Amendment) Act 2007</li> <li>✓ Act 26 of 2008—Environmental Public Health (Amendment) Act</li> <li>✓ G.N. No. S 442/2013—Environmental Public Health Act (Amendment of Fourth Schedule) Notification 2013</li> <li>✓ Act 15 of 2014—Environmental Public Health (Amendment) Act 2014</li> <li>✓ Act 4 of 2016—National Environment Agency (Miscellaneous Amendments) Act 2016</li> <li>✓ Act 16 of 2016—Statutes (Miscellaneous Amendments) Act 2016</li> <li>✓ Act 48 of 2017—Sale of Food (Amendment) Act 2017</li> <li>✓ Act 11 of 2019—Singapore Food Agency Act 2019</li> <li>✓ G.N. No. S 747/2020—Environmental Public Health Act (Amendment of Fourth Schedule) Notification 2020</li> <li>✓ Act 40 of 2019- Supreme Court of Judicature (Amendment) Act 2019</li> </ul>	
Environmental Public Health (Cooling Towers and Water Fountains) Regulations	2002
Environmental Public Health (Registration of Environmental Control Officers) Regulations	2001
Environmental Public Health (Employment of Environmental Control Officers) Order	2001
Environmental Public Health (Qualifications of Environmental Control Officers) Notification	2001

<p>Environmental Public Health (Food Hygiene) Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 222/2000 - Environmental Public Health (Food Hygiene) (Amendment) Regulations 2000</li> <li>✓ G. N. No. S 622/2004 - Environmental Public Health (Food Hygiene) (Amendment) Regulations 2004</li> <li>✓ G. N. No. S 872/2005 - Environmental Public Health (Food Hygiene) (Amendment) Regulations 2005</li> <li>✓ G. N. No. S 522/2010 - Environmental Public Health (Food Hygiene) (Amendment) Regulations 2010</li> <li>✓ G.N. No. S 674/2011 - Environmental Public Health (Food Hygiene) (Amendment) Regulations 2011</li> </ul>	2000
<p>Environmental Public Health (Public Cleansing) Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 221/2000 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2000</li> <li>✓ G. N. No. S 49/2001 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2001</li> <li>✓ G. N. No. S 176/2001 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2001</li> <li>✓ G. N. No. S 244/2001 - Environmental Public Health (Public Cleansing) (Amendment No. 3) Regulations 2001</li> <li>✓ G. N. No. S 287/2001 - Environmental Public Health (Public Cleansing) (Amendment No. 4) Regulations 2001</li> <li>✓ G. N. No. S 316/2001 - Environmental Public Health (Public Cleansing) (Amendment No. 5) Regulations 2001</li> <li>✓ G. N. No. S 359/2001 - Environmental Public Health (Public Cleansing) (Amendment No. 6) Regulations 2001</li> <li>✓ G. N. No. S 360/2001 - Environmental Public Health (Public Cleansing) (Amendment No. 7) Regulations 2001</li> <li>✓ G. N. No. S 199/2002 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2002</li> <li>✓ G. N. No. S 377/2004 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2004</li> <li>✓ G. N. No. S 639/2004 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2004</li> <li>✓ G. N. No. S 589/2005 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2005</li> <li>✓ G. N. No. S 168/2006 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 168/20- 06 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 168/2006 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 168/2006 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 168/2006 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 500/2006 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2006</li> <li>✓ G. N. No. S 168/2006 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 712/2006 - Environmental Public Health (Public Cleansing) (Amendment No. 3) Regulations 2006</li> <li>✓ G. N. No. S 402/2010 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2010</li> <li>✓ G. N. No. S 17/2009 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2009</li> </ul>	2000

<ul style="list-style-type: none"> <li>✓ G. N. No. S 405/2009 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2009</li> <li>✓ G. N. No. S 402/2010 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2010</li> <li>✓ G. N. No. S 554/2010 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2010</li> <li>✓ G.N. No. S 596/2011 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2011</li> <li>✓ G.N. No. S 300/2012 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2012</li> <li>✓ G.N. No. S 165/2013 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2013</li> <li>✓ G.N. No. S 165/2013 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2013</li> <li>✓ G.N. No. S 626/2013 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2013</li> <li>✓ G.N. No. S 626/2013 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2013</li> <li>✓ G.N. No. S 626/2013 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2013</li> <li>✓ G.N. No. S 367/2014 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2014</li> <li>✓ G.N. No. S 367/2014 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2014</li> <li>✓ G.N. No. S 794/2014 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2014</li> <li>✓ G.N. No. S 799/2014 - Environmental Public Health (Public Cleansing) (Amendment No. 3) Regulations 2014</li> <li>✓ G.N. No. S 162/2015 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2015</li> <li>✓ G.N. No. S 379/2016 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2016</li> <li>✓ G.N. No. S 620/2016 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2016</li> <li>✓ G.N. No. S 111/2017 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2017</li> <li>✓ G.N. No. S 220/2018 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2018</li> <li>✓ G.N. No. S 394/2018 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2018</li> <li>✓ G.N. No. S 394/2018 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2018</li> <li>✓ G.N. No. S 220/2018 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2018</li> <li>✓ G.N. No. S 394/2018 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2018</li> <li>✓ G.N. No. S 172/2019 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2019</li> <li>✓ G.N. No. S 173/2020 - Environmental Public Health (Public Cleansing) (Amendment) Regulations 2020</li> <li>✓ G.N. No. S 975/2020 - Environmental Public Health (Public Cleansing) (Amendment No. 2) Regulations 2020</li> </ul>	
<p>Environmental Public Health (General Waste Collection) Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 480/2002-Environmental Public Health (General Waste Collection) (Amendment) Regulations 2002</li> <li>✓ G. N. No. S 562/2008-Environmental Public Health (General Waste Collection) (Amendment) Regulations 2008</li> <li>✓ G. N. No. S 557/2010-Environmental Public Health (General Waste Collection)</li> </ul>	<p>2000</p>

<ul style="list-style-type: none"> <li>(Amendment) Regulations 2010</li> <li>✓ G.N. No. S 792/2014-Environmental Public Health (General Waste Collection) (Amendment) Regulations 2014</li> <li>✓ G.N. No. S 585/2016-Environmental Public Health (General Waste Collection) (Amendment) Regulations 2016</li> <li>✓ G.N. No. S 707/2017-Environmental Public Health (General Waste Collection) (Amendment) Regulations 2017</li> <li>✓ G.N. No. S 387/2019 -Environmental Public Health (General Waste Collection) (Amendment) Regulations 2019</li> </ul>	
<p>Environmental Public Health (Toxic Industrial Waste) Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 130/2000-Environmental Public Health (Toxic Industrial Waste) (Amendment) Regulations 2000</li> <li>✓ G. N. No. S 716/2006-Environmental Public Health (Toxic Industrial Waste) (Amendment) Regulations 2006</li> <li>✓ G. N. No. S 60/2009-Environmental Public Health (Toxic Industrial Waste) (Amendment) Regulations 2009</li> <li>✓ G. N. No. S 76/2010-Environmental Public Health (Toxic Industrial Waste) (Amendment) Regulations 2010</li> <li>✓ G. N. No. S 556/2010-Environmental Public Health (Toxic Industrial Waste) (Amendment No. 2) Regulations 2010</li> <li>✓ G.N. No. S 796/2014-Environmental Public Health (Toxic Industrial Waste) (Amendment) Regulations 2014</li> </ul>	2000
Environmental Public Health (Burning of Joss Sticks and Candles) Regulations	2000
Environmental Public Health (Water Suitable for Drinking) Regulations 2019	2019
<b>Prevention of Pollution of the Sea Act and Subsidiary Legislation</b>	
<p>Prevention of Pollution of the Sea Act</p> <ul style="list-style-type: none"> <li>✓ Act 26 of 2017—Prevention of Pollution of the Sea (Amendment) Act 2017</li> </ul>	1999
Prevention of Pollution of the Sea (Reporting of Pollution Incidents) Regulations	2001
Prevention of Pollution of the Sea (Garbage) Regulations 2012	2012
<b>Parks and Trees Act and Subsidiary Legislation</b>	
<p>Parks and Trees Act</p> <ul style="list-style-type: none"> <li>✓ Act 15 of 2010—Criminal Procedure Code 2010</li> <li>✓ Act 9 of 2017—Parks and Trees (Amendment) Act 2017</li> <li>✓ Act 10 of 2019—National Parks Board (Amendment) Act 2019</li> <li>✓ Act 40 of 2019- Supreme Court of Judicature (Amendment) Act 2019</li> </ul>	2006
<p>Parks and Trees Regulations</p> <ul style="list-style-type: none"> <li>✓ G. N. No. S 425/2008—Parks and Trees (Amendment) Regulations 2008</li> <li>✓ G. N. No. S 484/2009—Parks and Trees (Amendment) Regulations 2009</li> <li>✓ G.N. No. S 379/2011—Parks and Trees (Amendment) Regulations 2011</li> <li>✓ G.N. No. S 224/2012—Parks and Trees (Amendment) Regulations 2012</li> <li>✓ G.N. No. S 74/2013—Parks and Trees (Amendment) Regulations 2013</li> <li>✓ G.N. No. S 160/2015—Parks and Trees (Amendment) Regulations 2015</li> <li>✓ G.N. No. S 530/2015—Parks and Trees (Amendment No. 2) Regulations 2015</li> <li>✓ G.N. No. S 555/2015—Parks and Trees (Amendment No. 3) Regulations 2015</li> <li>✓ G.N. No. S 170/2016—Parks and Trees (Amendment) Regulations 2016</li> </ul>	2006

<ul style="list-style-type: none"> <li>✓ G.N. No. S 205/2016—Parks and Trees (Amendment No. 2) Regulations 2016</li> <li>✓ G.N. No. S 561/2016—Parks and Trees (Amendment No. 3) Regulations 2016</li> <li>✓ G.N. No. S 660/2017—Parks and Trees (Amendment) Regulations 2017</li> <li>✓ G.N. No. S 122/2018—Parks and Trees (Amendment) Regulations 2018</li> <li>✓ G.N. No. S 847/2019—Parks and Trees (Amendment) Regulations 2019</li> <li>✓ G.N. No. S 502/2020—Parks and Trees (Amendment) Regulations 2020</li> </ul>	
Parks and Trees (Preservation of Trees) Order	1998
<ul style="list-style-type: none"> <li>✓ G.N. No. S 661/2017—Parks and Trees (Preservation of Trees) (Amendment) Order 2017</li> </ul>	
Parks and Trees (Heritage Road Green Buffers) Order	2006
<b>Wildlife Protection Act and Subsidiary Legislation</b>	
Wild Animals and Birds Act	2000
<ul style="list-style-type: none"> <li>✓ Act 10 of 2019 – National Parks Board (Amendment) Act 2019</li> <li>✓ Act 18 of 2020 – Wild Animals and Birds (Amendment) Act 2020</li> </ul>	
<b>Public Utilities Act and Subsidiary Legislation</b>	
Public Utilities Act	2002
<ul style="list-style-type: none"> <li>✓ Act 39 of 2004—Public Utilities (Amendment) Act 2004</li> <li>✓ Act 9 of 2012—Public Utilities (Amendment) Act 2012</li> <li>✓ Act 9 of 2012—Public Utilities (Amendment) Act 2012</li> <li>✓ Act 12 of 2015—Land Acquisition (Amendment) Act 2015</li> <li>✓ Act 5 of 2018—Public Utilities (Governance) Act 2018</li> <li>✓ Act 11 of 2018—Public Utilities (Amendment) Act 2018</li> <li>✓ Act 40 of 2019- Supreme Court of Judicature (Amendment) Act 2019</li> <li>✓ Act 13 of 2020—Public Utilities (Amendment) Act 2020</li> </ul>	
Public Utilities (Water Supply) Regulations	2004
<ul style="list-style-type: none"> <li>✓ G. N. No. S 97/2005—Public Utilities (Water Supply) (Amendment) Regulations 2005</li> <li>✓ G. N. No. S 703/2008—Public Utilities (Water Supply) (Amendment) Regulations 2008</li> <li>✓ G. N. No. S 832/2010—Public Utilities (Water Supply) (Amendment) Regulations 2010</li> <li>✓ G. N. No. S 161/2011—Public Utilities (Water Supply) (Amendment) Regulations 2011</li> <li>✓ G.N. No. S 616/2013—Public Utilities (Water Supply) (Amendment) Regulations 2013</li> <li>✓ G.N. No. S 721/2014—Public Utilities (Water Supply) (Amendment) Regulations 2014</li> <li>✓ G.N. No. S 826/2014—Public Utilities (Water Supply) (Amendment No. 2) Regulations 2014</li> <li>✓ G.N. No. S 55/2015—Public Utilities (Water Supply) (Amendment) Regulations 2015</li> <li>✓ G.N. No. S 133/2017—Public Utilities (Water Supply) (Amendment) Regulations 2017</li> <li>✓ G.N. No. S 133/2017—Public Utilities (Water Supply) (Amendment) Regulations 2017</li> <li>✓ G.N. No. S 336/2017—Public Utilities (Water Supply) (Amendment No. 2) Regulations 2017</li> <li>✓ G.N. No. S 164/2018—Public Utilities (Water Supply) (Amendment) Regulations 2018</li> <li>✓ G.N. No. S 535/2018—Public Utilities (Water Supply) (Amendment No.2) Regulations 2018</li> <li>✓ G.N. No. S 112/2019—Public Utilities (Water Supply) (Amendment) Regulations 2019</li> <li>✓ G.N. No. S 153/2019—Public Utilities (Water Supply) (Amendment No.2) Regulations 2019</li> <li>✓ G.N. No. S 192/2019—Public Utilities (Water Supply) (Amendment No.3) Regulations 2019</li> <li>✓ G.N. No. S 341/2020—Public Utilities (Water Supply) (Amendment) Regulations 2020</li> </ul>	
Public Utilities (Reservoirs, Catchment Areas and Waterway) Regulations 2006	2006

<i>Approved Codes of Practice</i>	<i>Year</i>
Code of Practice on Environmental Health	2020
Code of Practice for Environmental Control Officers	2020
Code of Practice for Vector Control Operators, Technician and Worker	2020
Code of Practice for Licensed General Waste Collectors	2020
Code of Practice for the Control of Legionella Bacteria in Cooling Towers	2001
Code of Practice on Drinking Water Sampling and Safety Plans	2019
Code of Practice on Surface Water Drainage	2021
Code of Practice on Sewerage and Sanitary Works	2021
SS 636: 2018 Code of Practice for Water Services	2020
SS 547: 2009 Code of Practice for Temporary housing quarters in Construction sites	2009
SS 554: 2016 Code of practice for indoor air quality for air-conditioned buildings	2016
SS 602: 2014 Code of practice for noise control on construction and demolition sites	2014
SS 593:2013 Code of Practice for Pollution Control	2014
SS 603: 2014 Code of practice for hazardous waste management	2014
SS ISO 46001: 2019 Water efficiency management systems – Requirements with guidance for use	2019