

Category 1 Standard

S1131

Premises - Station Platforms



Please read the Written Notices
attached to this standard

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1 Purpose

- 1.1 The purpose of this standard is to define the performance requirements for station platforms.

2 Scope

- 2.1 This standard applies to new and altered London Underground station platforms; including setting out, paving, surfacing, edging, tactile strips, safety markings, Platform Accessibility Humps and requirements when platform edge doors (PED's) are installed.

Note: Throughout this standard, platform edge doors are defined as being full height, top hung doors. Refer to 1-065 Platform Edge Doors.

- 2.2 For platform structure and loading requirements, refer to the Standard S1053 Civil Engineering – Building and Station Structures.

Note: This standard is supported by G0131B Guidance on Station Platforms.

3 Requirements

3.1 General Requirements

- 3.1.1 Station platforms shall comply with the Building Regulations and S1156 Gauging and Clearances. Consideration shall be given to Security in Design of Stations (SIDOS) Guide. The dimensions of the Platform Train Interface shall comply with clause 3.2.3 of this Standard in order to achieve the requirements of the Rail Vehicle Accessibility Regulations (RVAR) where applicable. Where any conflicts arise between the Building Regulations, SIDOS, RVAR and this Standard, compliance with this Standard shall take precedence except where a breach in the law would arise.
- 3.1.2 Platform surfaces shall sustain the design loading, be at a consistent height above the adjacent running rail along their length, with an even cross fall away from the track to ensure they are drained of surface water and free from ponding. Where platforms have been raised to provide level access, cross falls may be varied in accordance with section 3.7 and G347 Platform Accessibility Humps.
- 3.1.3 The surface of the platform shall comply with Premises – Finishes S1135 and be safe for pedestrian use without slip or trip hazard.
- 3.1.4 The components covered by this Standard shall be replaceable as defined in BS ISO 15686-1 and BS ISO 15686-2. The design life for major replaceable components shall be a minimum of 40 years.

3.2 Setting out

- 3.2.1 Where Permanent Ground Markers (PGM) are located on platforms, they shall be retained in their existing positions.
- 3.2.2 Level (+/- 50mm) and adjacent (within 75mm) access between the platform nosing slabs and the floor of the train shall be provided on new platforms.
- 3.2.3 Where RVAR compliance is applicable, existing and altered platforms shall provide level (+/- 50mm) and adjacent (within 75mm) access along their full length where reasonably practicable. Where not reasonably practicable, localised level and adjacent access shall be provided. Refer to LU Customer Service Strategy's RVAR Strategy and S1156 Gauging and Clearances for further detail.

Note: As RVAR compliance is a requirement at all times following a project implementation, Asset Managers should implement an appropriate inspection regime to ensure continued compliance with those regulations.

- 3.2.4 Where minor infringements (10mm) of adjacency requirements between platform and Rolling Stock floor exist, rubber 'gap fillers' or 'maintenance strips' may be used to achieve compliance.
- 3.2.5 Where platform edge doors are fitted on existing platforms and RVAR compliance along the full length of the platform is not reasonably practicable, localised level and adjacent access shall be provided – refer to G347 Platform Accessibility Humps. On the rest of the platform, the horizontal stepping distance shall generally be not more than 100mm.

Note: Where platform edge doors are fitted, current best practice is that there is no step between the doors and the train. Any deviation from this shall be subject to a full risk assessment.

- 3.2.6 Platforms shall be straight or if unavoidable, curved as a radius not less than 1000m on new platforms.
- 3.2.7 Platforms shall be of constant width as defined in S1371 Station Planning, except where Platform Accessibility Humps are installed and a minor, localised width reduction may be necessary.
- 3.2.8 For the location of structures, furniture, equipment and signs on platforms refer to S1156 Gauging and Clearances and Station Planning S1371. For the location of platform barriers, also refer to S1132 Premises – Barriers and Fencing (Non-Lineside).
- 3.2.9 Upright posts and pillars shall be marked with visually contrasting bands of 150mm high within two zones: 850mm to 1000mm and 1400mm to 1600mm above finished floor level. Exceptions to this are permissible where the station tile module results in minor deviations from the required band positions or on heritage elements where decorative features or tile banding may be an adequate highlight.

- 3.2.10 Platform end barriers shall be provided on platforms in accordance with S1132 Premises - Barriers and Fencing (Non-Lineside).
- 3.2.11 Platform end ramps with a gradient not steeper than 1 in 8 and not less than 1200mm wide shall be provided beyond the platform end barrier to give access to the track. In tube locations where space has already been constrained by the tunnelling, the ramp requirement may be replaced with steps. See Figure 9. In existing locations where it is not possible to install either a ramp or steps, ladder access may be provided. The ladder assembly shall not cause any hazard, obstruction or clearance infringement.
- 3.2.12 If platform edge doors are not fitted, a safety pit and an under platform recess shall be provided, accessible from each end, in all sub surface, single track, non ballasted platform tunnels. The length of a safety pit shall not be less than the length of the platform. See Figures 8 & 9.
- 3.2.13 If platform edge doors are not fitted, an under platform recess shall be formed along the length of the platform, clear of cables and other obstructions, measuring at least 300mm from the front edge of the nosing slabs, to provide a refuge in an emergency. See Figure 8.

3.3 Paving, surfacing and edging

- 3.3.1 All platform surfacing shall be laid to a cross-fall not steeper than 1 in 40 or shallower than 1 in 70 away from the back edges of the nosing slabs. Exceptions are where steeper cross-falls may be required to accommodate Platform Accessibility Humps or where platforms are raised to provide level access as part of platform edge door installations – refer to section 3.7.
- 3.3.2 On an island platform the surface shall fall from the back edges of both nosing slabs towards the middle.
- 3.3.3 Platform drainage channels shall not be placed within 2.0m of the platform edge. Refer to S1052 Civil Engineering – Gravity Drainage Systems.
- 3.3.4 Platform drainage channels shall not create a slip or trip hazard or present a heel trap.
- 3.3.5 Dished drainage channels shall only be used in areas where the channel does not cross primary customer flow routes and shall not be used on narrow platforms.
- 3.3.6 Except where platform edge doors are fitted, standard nosing slabs PC10, PC20, PC30 and PC40 shall be used to finish platform edges. See Figures 2, 3, 4 and 5.
- 3.3.7 The type PC10 ‘flat’ nosing slabs or the PC40 combined nosing/tactile shall be used in all new works except at stations where both Tube and sub-surface trains stop at a compromise platform when the Type PC20 ‘downstand’ nosing slab shall be used.
- 3.3.8 The setting out for the ‘flat-topped domes’ on the tactile part of the PC40 shall be in accordance with the Department for Transport Guidance on the use of tactile paving surfaces.

- 3.3.9 The maximum overhang shall be 75mm for type PC10, 125mm for type PC20, 100mm for type PC30 and 150mm for type PC40.
- 3.3.10 Nosing slabs shall be set level and flush with adjacent slabs and platform surface.
- 3.3.11 A joint along the rear edge of the nosing slabs shall be provided to allow for future adjustment of the slabs in relation to the kinematic envelope. Where a PC40 is being used, the joint should be to the rear edge of the tactile. Refer to G0131B Guidance on Station Platforms.
- 3.3.12 A joint between the platform edge door system and edge of the floor finishes shall be provided to allow for all future adjustment in relation to the kinematic envelope or floor maintenance and replacement.
- 3.3.13 Platforms in surface and below ground environments are subject to very different environmental conditions. When selecting platform finishes, consideration shall be given to the level of weather exposure and preference given to the materials identified in Table 1 of G0131B Guidance on Station Platforms.

3.4 Tactile paving

- 3.4.1 Where platform edge doors are not fitted, a Platform Tactile Strip (or Platform Edge (Off Street) Warning Surface) 400mm wide shall be laid immediately behind the nosing slabs along the entire length of the platform accessible to the public. Alternatively, a PC40 combined nosing/tactile may be used.
- 3.4.2 The Platform Tactile Strip (see Figure 6) shall be in accordance with the Department for Transport Guidance on the use of tactile paving surfaces.
- 3.4.3 The Platform Tactile Strip shall be laid flush with the nosing slabs and flush and in plane with the finished platform. Exceptions are the tactile part of the PC40 which shall be laid level and where a 'Stick-On' Platform Tactile Strip is used. For 'Stick-Ons', refer to G0131A Guidance on the installation of Platform Tactile Strips.
- 3.4.4 The Platform Tactile Strip shall be replaced if the height of the 'flat-topped domes' falls below 4.5mm.
- 3.4.5 The Platform Tactile Strip in surface and below ground environments is subject to very different environmental conditions. When selecting the Platform Tactile Strip, consideration shall be given to both the level of weather exposure and the adjacent platform finish. Refer to the recommended products in Table 1 of G0131A Guidance on the installation of Platform Tactile Strips when making product selection.

3.5 Platform markings

- 3.5.1 Platform markings shall not present a slip or trip hazard.

- 3.5.2 Where platform edge doors are not fitted, a solid, continuous white line 100mm wide applied along the whole length of the platform, shall mark the outer edge of the platform and the platform end ramps.
- 3.5.3 Where a standard nosing slab is present, the inner edge of the white line shall be laid to turn into the second groove of the nosing slabs given in Figure 1.
- 3.5.4 Where platform edge doors are not fitted, a solid, yellow 'warning line' 100mm wide parallel to the platform edge shall be applied along the entire length of the platform at distances given in Table 2 and Figure 7.
- 3.5.5 Yellow platform markings shall be NCS S 0580-Y10R in accordance with the National Colour Scheme.
- 3.5.6 The yellow line shall be continuous except where it intersects other marks referenced in this standard.
- 3.5.7 For both white and yellow lines, minor misalignments in the continuity of the lines along the length of the platform are permissible when Platform Accessibility Humps are installed or when adjustments are made to nosings to achieve track clearance.
- 3.5.8 The yellow line may be interrupted for purposes such as the COMS CCTV test target.
- 3.5.9 The COMS CCTV test target shall not overlap the platform tactile strip.
- 3.5.10 'MIND THE GAP' warning markings shall be in New Johnston bold capital lettering 146 mm high spaced as given in Figure 7.
- 3.5.11 'MIND THE GAP' warning markings shall contrast visually with the nosing and be positioned with their longitudinal centre line 200mm from the platform edge as given in Figure 7.
- 3.5.12 Where the distance between the platform edge and the floor or footboard of the train exceeds 150 mm horizontally, 'MIND THE GAP' marking lettering shall be applied at each passenger door position, facing alternately towards and away from the platform edge as given in Figure 7.
- 3.5.13 Where a platform is served by more than one type of rolling stock and where the locations of the door openings on trains are different, the supplier shall aim for a best fit solution to the positioning of the 'MIND THE GAP' warning markings.
- 3.5.14 For Platform Train Interface gaps, mitigations shall be considered in accordance with Table 1.

	Gap 0mm – 75mm	Gap 75mm – 150mm	Gap > 150mm	Gap > 250mm
Platforms without platform edge doors (PED's)	Platform tactile strip Platform markings	As 0-75mm plus: Compliant above platform lighting. Consider passive gap fillers	As 75-150mm plus: 'Mind the Gap' warning markings Audio warnings ¹ White highlighting to vertical face of nosing Under platform lighting ²	As > 150mm plus: Hatching under platform ³ Consider gap fillers Passenger flow barriers Any platform falls towards track to be rectified Improve weather protection if appropriate Relocate platform plungers adjacent to gap locations
Platform with platform edge doors (PED's)	No requirements	Consider passive gap fillers	Gap fillers	Gap fillers

Notes:

1 – Audio warnings to be localised to the section of platform where the gap exceeds 150mm. Environmental considerations may prevent audio warnings on open platforms.

2 – Under platform lighting to be localised to the section of platform where the gap exceeds 150mm.

3 - To be applied to ledge under platform or to unballasted track bed.

Table 1 – PTI horizontal gap mitigations, for the range of conditions indicated

3.6 Under Platform Marking

3.6.1 Where the distance between the platform edge and the floor or footboard of the train exceeds 250mm horizontally or 300mm diagonally, hatched marking shall be applied on the track ledge where one is formed or at track bed level as given in Figure 7.

- 3.6.2 Where located on the track ledge the hatched marking shall be the full width of the ledge.
- 3.6.3 Where located on the track bed the hatched marking shall be the maximum width available between the edge of the fastenings, base plates or chairs to the running rail adjacent to the platform and to the wall of the platform.
- 3.6.4 The hatched marking shall be formed with alternating black NCS S 9000-N and yellow NCS S 0580-Y10R lines 100mm wide.
- 3.6.5 The lines of the hatched marking shall be set at 45 degrees to the tangent line of the platform edge as given in Figure 7.
- 3.6.6 The hatched marking shall be between the beginning of the first and the end of the last 'MIND THE GAP' markings on the platform.
- 3.6.7 Under-platform hatched marking shall not be provided where the track is laid on ballast.

3.7 Platform Accessibility Humps and Raised Platforms

- 3.7.1 Several solutions exist which meet the requirements for level and adjacent access between platform and train and these are set out in the form of a prioritised hierarchy for dealing with the step and gap between train and platform in LU's RVAR Strategy and G347 Platform Accessibility Humps. These solutions are:
 - a) New rolling stock to match standard platform height for line;
 - b) Changes to track height to match sill height of rolling stock;
 - c) Changes to platform height to match sill height of rolling stock across whole of platform;
 - d) Changes to platform height to match sill height of rolling stock across part of the platform (Platform Accessibility Humps). Option d) should only be used if other options are not possible.
- 3.7.2 Where no permanent physical solution is available, provision of manual boarding ramps (MBRs) to provide access to / from trains for wheelchair users should be explored. See LU's RVAR Strategy for more information.
- 3.7.3 Where localised level access boarding points are provided, signage to indicate the designated train door locations shall be provided.
- 3.7.4 G347 Platform Accessibility Humps identifies the designated 'wheelchair accessible' car for each line. This dictates where a hump should be located on each platform.
- 3.7.5 The concept of Platform Accessibility Humps is to provide a level platform for boarding on and alighting adjacent from trains at designated train door positions.

To do this, the hump must be at least as long as the distance between the designated doors plus an allowance for the stopping position tolerance of the train.

- 3.7.6 Ramps to Platform Accessibility Humps on platforms should have a maximum gradient of 1:20. Ideally, the step out of a train door should not be onto a ramp, but this is preferred to having a steeper than 1:20 ramp.
- 3.7.7 Ramps within cross passages and adits to Platform Accessibility Humps or raised platforms shall have a maximum gradient in accordance with BS 8300.
- 3.7.8 Ramps to Platform Accessibility Humps or raised platforms shall contrast visually with the interfacing floor surfaces in accordance with BS 8300.
- 3.7.9 Cross falls to Platform Accessibility Humps or raised platforms shall be within the range 1:70 to 1:40 except in the following circumstances. Where low headroom can be improved by having a steeper localised crossfall the maximum permissible gradient is 1:20. Where platform edge doors are installed below ground and platforms are raised to provide level access, falls may be shallower than 1:70 or level, if headroom permits.

3.8 Evidence of Compliance

Compliance with the requirements of this standard shall be demonstrated to LU by each party contracted to LU. Additionally LU may audit compliance as part of its surveillance regime.

4 Responsibilities

4.1 Responsibilities

- 4.1.1 The LU Principal Premises Engineer shall be responsible for creating and maintaining this Standard and auditing Suppliers thereby ensuring compliance, whilst identifying opportunities for improvement.

5 Supporting Information

5.1 Safety considerations

- 5.1.1 Special precautions are required when working within 2.0m of the platform edge.

5.2 Other information

- 5.2.1 Platform Edge Lining.

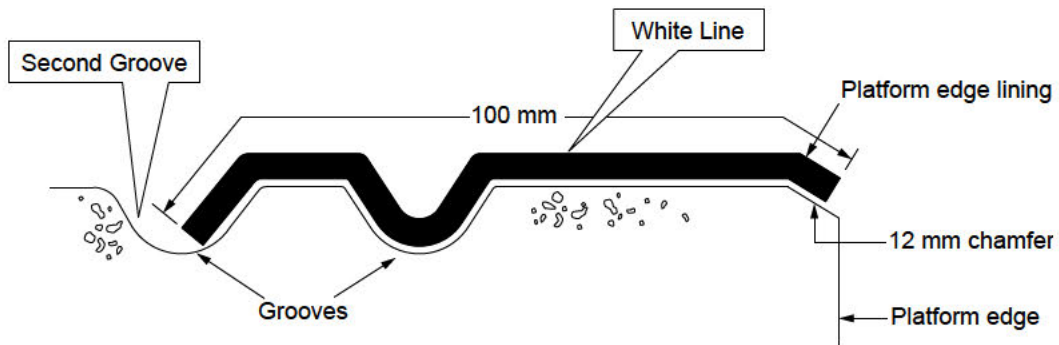
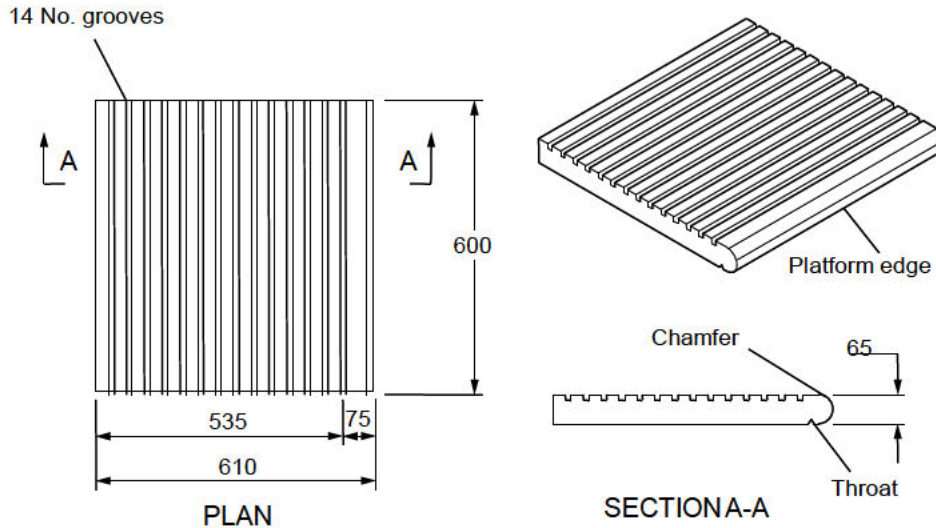


Figure 1 – Section through platform edge

5.2.2 Platform Edge Nosing Slabs



(all dimensions in mm)

Figure 2 – Type PC10 platform nosing

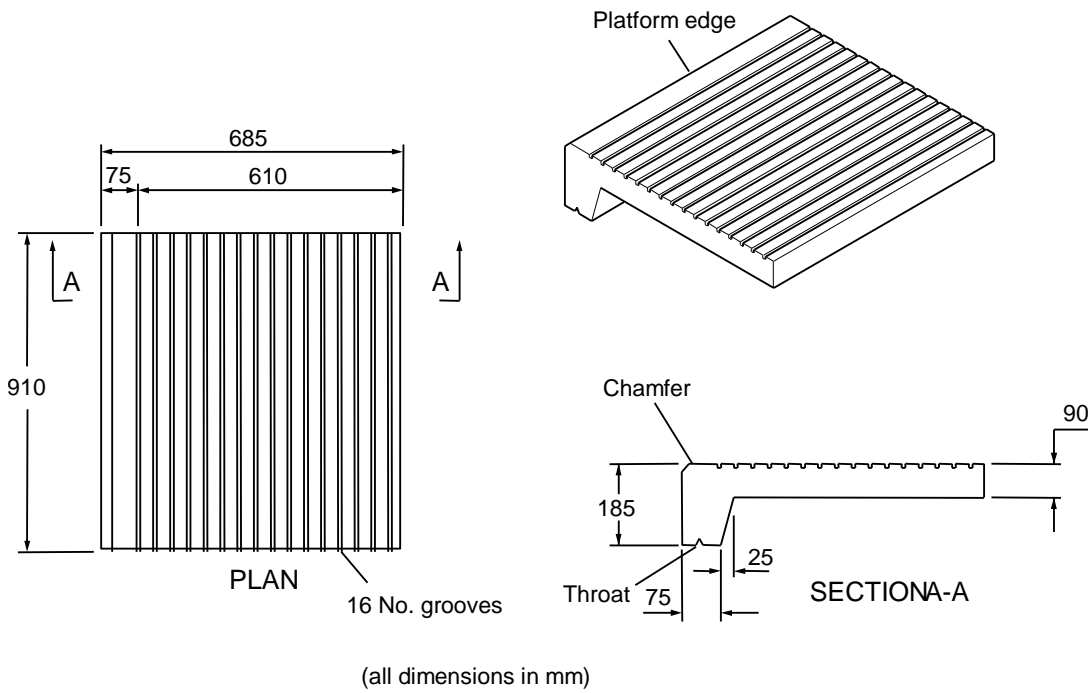


Figure 3 – Type PC20 platform nosing

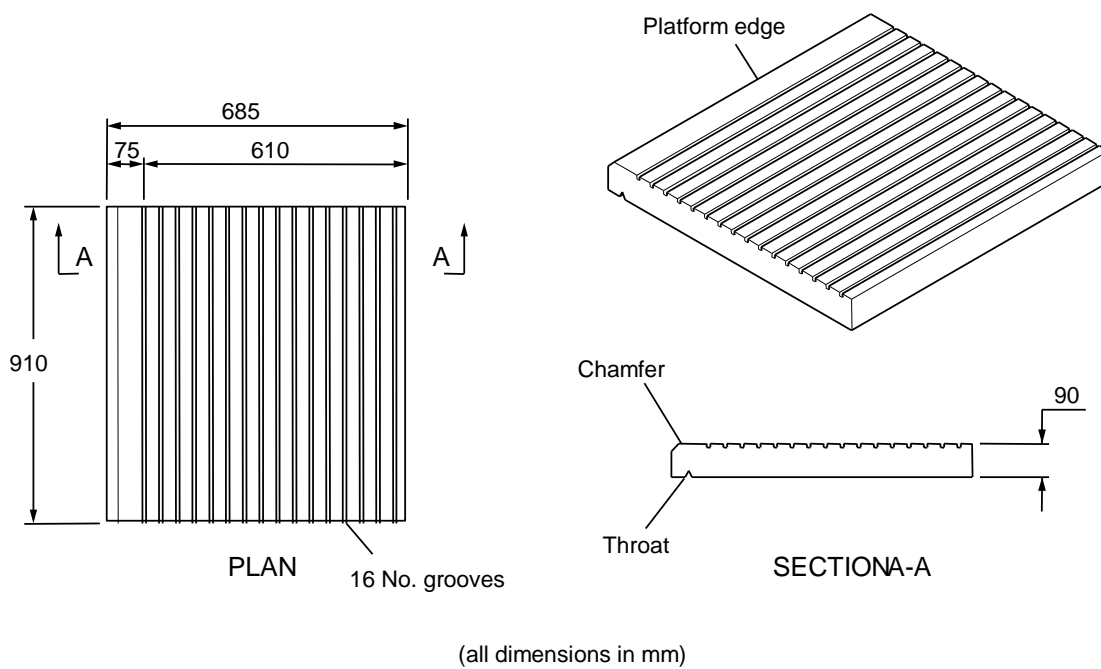
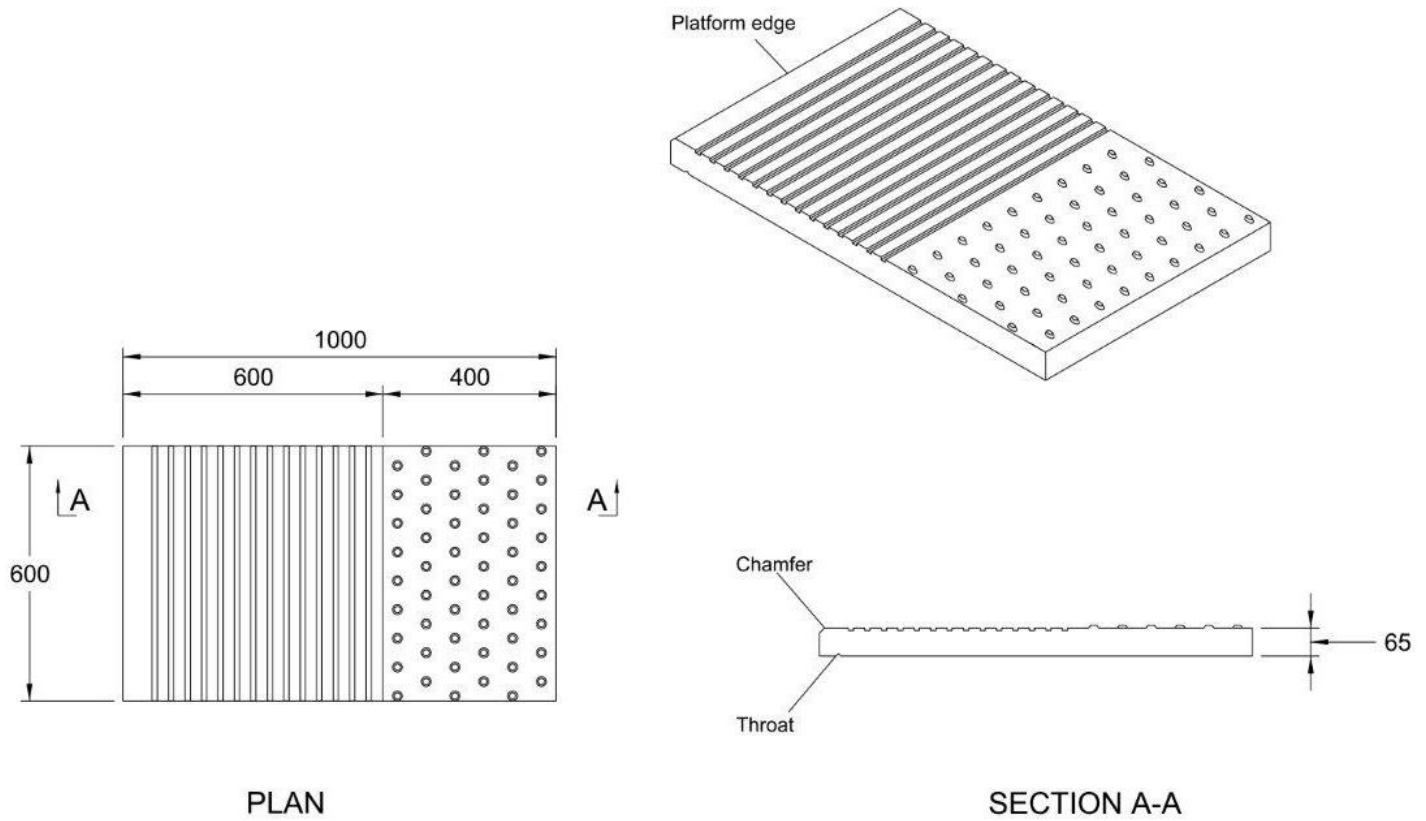


Figure 4 – Type PC30 platform nosing (replacement only)



(all dimensions in mm)

Figure 5 – Type PC40 platform nosing. The setting out for the ‘flat-topped domes’ shall be in accordance with the Department for Transport Guidance on the use of tactile paving surfaces.

5.2.3 Platform Edge (Off Street) Warning Surface.

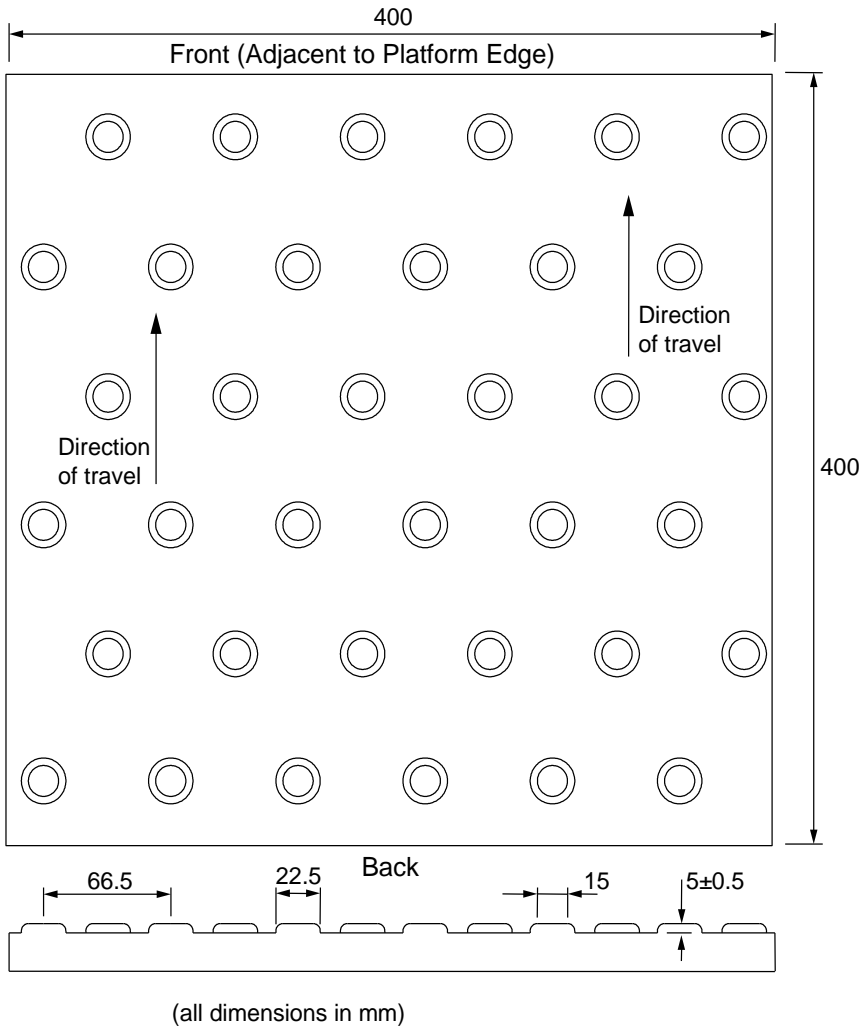


Figure 6 – Plan and Section through tactile paving slab

5.2.4 Typical 'Mind The Gap' Warning.

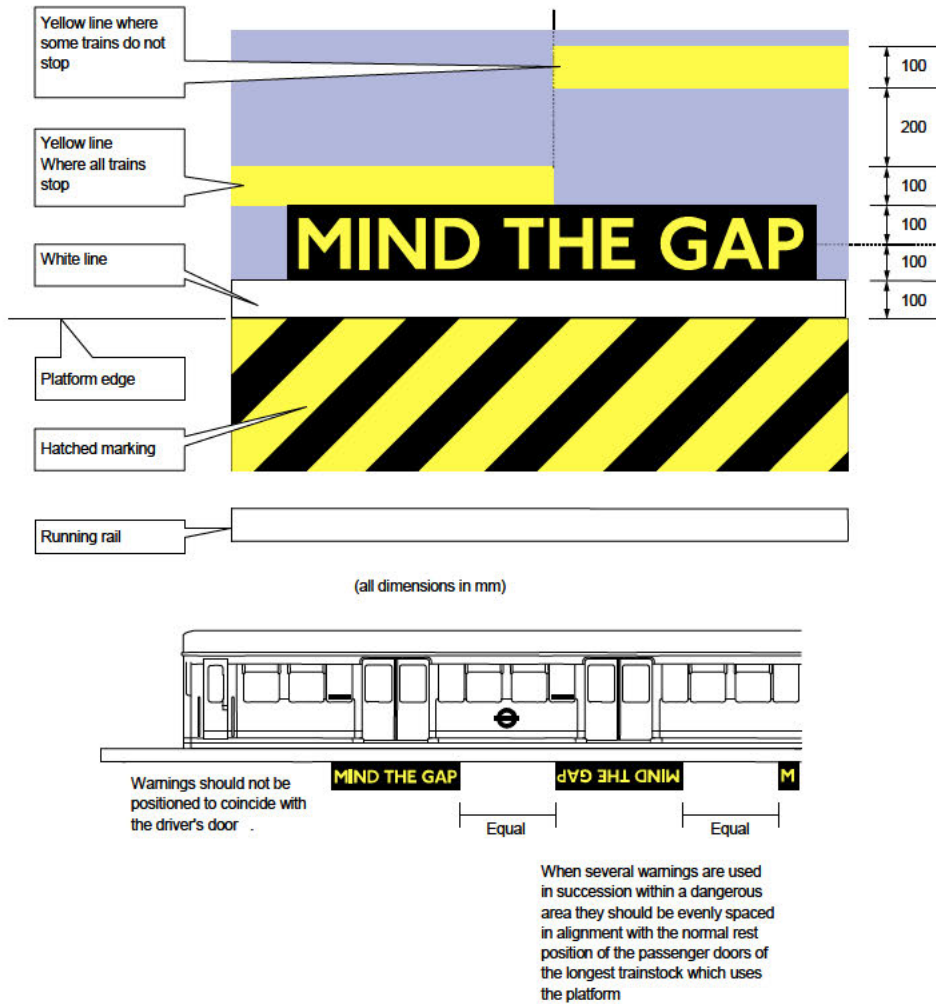


Figure 7 – Plan of yellow lines and layout of “mind the gap” warnings

5.2.5 Safety pit/under platform recess in sub-surface – single track – non ballasted tunnels

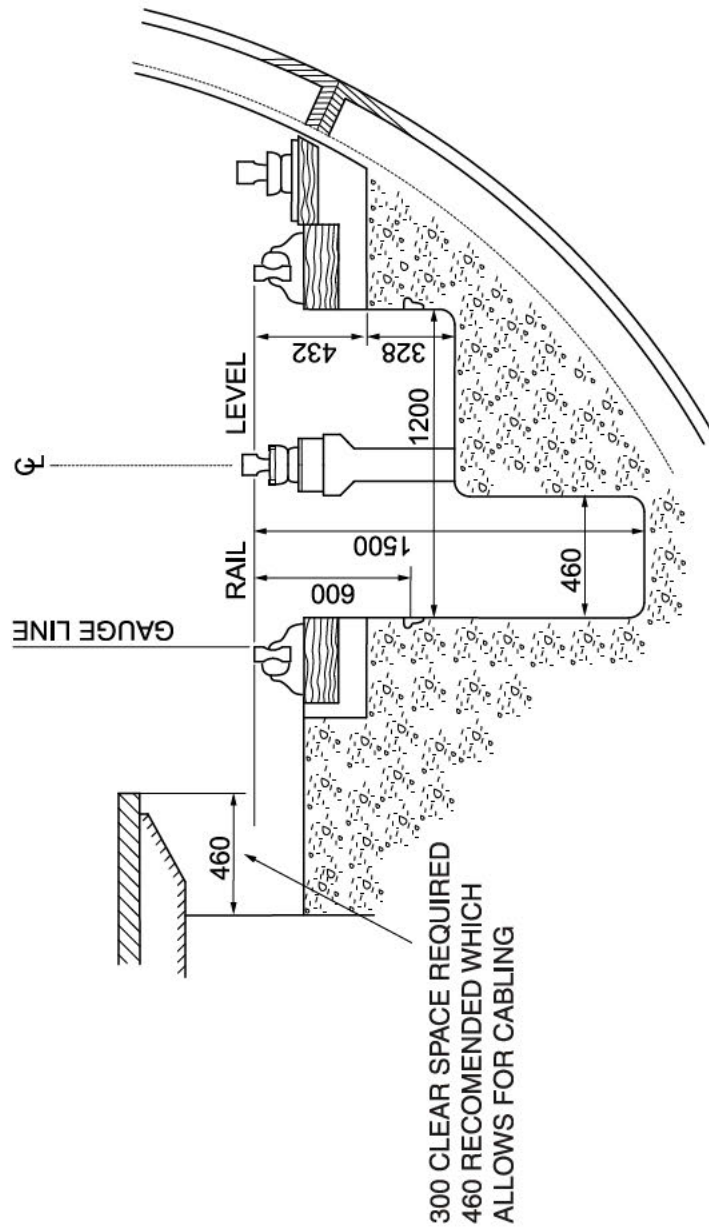
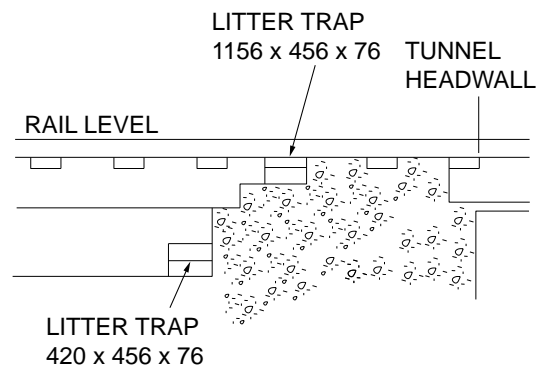
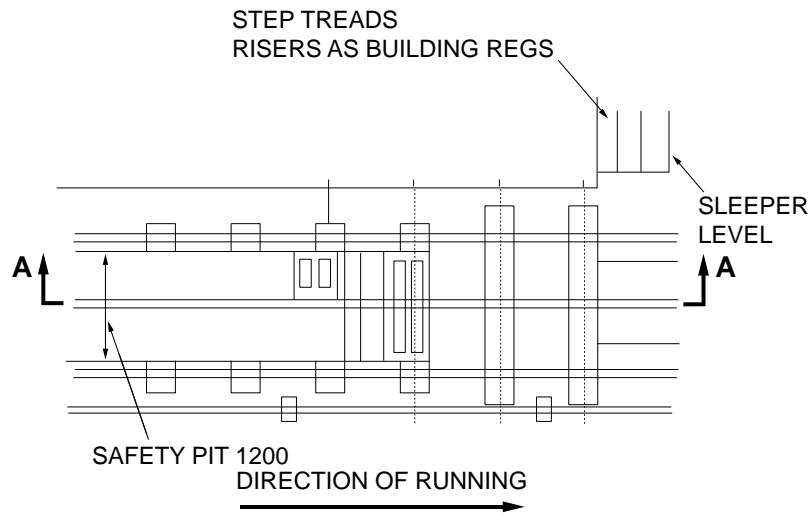


Figure 8 – Safety Pit & Under Platform Recess

5.2.6 Steps & Litter Traps



SECTION A - A

Figure 9 – Platform End Steps

6 References

6.1 References

References in the text are made to latest editions unless specific editions are cited.

Note: References to particular EC Directives and Regulations, Acts of Parliament, Statutory Instruments or Common Law are made only if the subject demands them. Users of engineering standards are bound by all the relevant requirements of the law, regardless of whether or not there is any reference to them in the standards.

6.1.1 Statutory documents

Document no.	Title
	The Rail Vehicle Accessibility Regulations (RVAR) 2010
	The Equality Act 2010

6.1.2 British Standards

Document no.	Title
BS ISO 15686-1	Buildings and constructed assets. Service life planning. General principles and framework
BS ISO 15686-2	Buildings and constructed assets – Service life planning: Service life prediction procedures
BS 8300	Design of buildings and their approaches to meet the needs of disabled people. Code of practice

6.1.3 TfL company documents

Document no.	Title
S1622	Glossary of Terms and Abbreviations
S1371	Station Planning
S1135	Premises – Finishes
S1132	Premises – Barriers and Fencing (Non-Lineside)
S1052	Civil Engineering – Gravity Drainage Systems
S1053	Civil Engineering – Building and Station Structures
S1156	Gauging and Clearances
1-065	Platform Edge Doors.
G0131A	Guidance on the installation of Platform Tactile Strips
G0131B	Guidance on Station Platforms
G0135	Guidance on Premises Finishes
G347	Platform Accessibility Humps
G1413	Planning New Lines and Extensions to Existing Lines
LU Customer Service	RVAR Strategy (in development at time of publication of this

Document no.	Title
Strategy	Standard)

6.1.4 Other

Document no.	Title
Dept for Transport	Security in Design of Stations (SIDOS) Guide.
Dept for Transport	Guidance on the use of tactile paving surfaces.

6.2 Person accountable for the document

Person accountable for the document
John Caves - Principal Premises Engineer

6.3 Document history

Issue no	Date	Changes	Author
R6	July 2007	Standard 2-01107-002 re formatted and re-numbered to 1-131, no technical changes have been made to the content other than changing references to other Standards where their numbers have changed.	
A1	October 2007	Authorised for use. Previous authorisation is valid	
R7	February 2008	Changes after Director led review	
A2	March 2008	Authorised for use	
R8	May 2008	Clauses 3.1.2 amended to clarify platform humps	
R9	October 2008	Clause 3.8 added.	
A3	November 2008	Authorised for use	
R10	June 2009	Revised clause 3.2.3 following PSC comments	
A4	June 2009	Authorised for use	
A5	December 2013	Standard 1-131 A4 updated, re-formatted and re-numbered to S1131 A5 as per DRACCT No. 01956.	Cindy Marshall

7 Current Written Notices attached to this standard

Written Notice No	Issue Date	Written Notice Title
LU-WN-01346 V2	15/12/2016	Safety Pits

Written Notice	LU Ref. No.: LU-WN-01346 V2
	Suppliers Ref. No.:

1	Written Notice Completed By	
	Person Accountable	John Caves
	Directorate	CPD
	Date Issued	15/12/2016
2	Details of the standard Requiring Clarification	
	Title:	Premises – Station Platforms
	Standard Reference No.	S1131
	Issue No.	A5
	Clause/Paragraph No.:	3.2.12, 3.2.13, Figure 8, Figure 9
3	Details of Definitive LU Interpretation of Requirements	
	Title of Written Notice	Safety Pits
	<p>Figures 8 and 9 in this standard show the arrangement of the safety pit. These drawings are obsolete and are withdrawn, to be replaced by Figures A and B which form part of this Written Notice.</p> <p>Clauses 3.2.12 and 3.2.13 shall be withdrawn and replaced with the following clauses:</p> <p>3.2.12 If platform edge doors are not fitted, a safety pit shall be provided, accessible from each end, in all sub surface, single track, non ballasted platform tunnels. The length of a safety pit shall not be less than the length of the platform. See Figure A within this Written Notice.</p> <p>3.2.13 Litter traps shall be provided at both ends of a safety pit.</p> <p>3.2.14 Where a track renewal is being undertaken through a tube platform with a Tripcock Tester, the safety pit width may be locally modified to accommodate the checkrail baseplates. See Figure B within this Written Notice.</p> <p>3.2.15 If platform edge doors are not fitted, an under platform recess shall be formed along the length of the platform, clear of cables and other obstructions to provide a refuge in an emergency. See S1156 Gauging and Clearances.</p>	



Figure A

F



Figure B

