Please read the written notices attached to the back of this standard

Category I Standard

S1134 Premises - Doorsets and Glazing

Issue No.: A4

Issue date: April 2016
Review date: December 2018

Contents

1 Purpose

1.1 The purpose of this standard is to define the performance requirements for doors, fire doors, doorsets, gates, windows, hatches, glass and glazing systems as used in public and non-public areas on London Underground (LU) premises.

2 Scope

2.1 This standard applies to all new and altered LU doors, doorsets, gates, windows, hatches, glass and glazing systems except for platform edge doors and flood protection doors.

2.2 For doors and glazing loading requirements refer to S1053 Civil Engineering - Building and Station Structures.

2.3 Doorsets and gates shall be designed and specified for the location in which they are to be installed. The requirements of this standard primarily apply to public facing assets and in particular, those in sub surface stations (as defined in the Fire Precautions (Sub-Surface Railway Stations) England Regulations 2009). For doors and gates within staff and maintenance areas in non-sub surface stations, the design and specification shall be demonstrably fit for purpose, in accordance with the appropriate standards.

Note:	This standard is supported by G0134A Guidance on Glazing and G0134B Guidance on Doorsets and Gates.

3 Requirements

3.1 General Requirements

3.1.1 All doors, doorsets, gates, windows, hatches, glass and glazing systems shall comply with the Building Regulations and shall consider Security in Design of Stations (SIDOS) Guide. Where any conflicts arise between the Building Regulations, SIDOS and this Standard, compliance with this Standard shall take precedence except where a breach in the law would arise.

3.1.2 The supplier shall clearly establish the performance criteria for each door, doorset, window and area of glazing in its application in accordance with current Standards, regulations and legislation.

3.1.3 The supplier shall clearly demonstrate that the installed doors, doorsets, windows glass and glazing fulfil the established performance criteria and provide evidence/certification where required.

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 Doorsets and Gates

3.2.1 The Supplier shall demonstrate that he has considered the risks associated with the design, installation and maintenance of the doorsets and gates. Refer to G0134B Guidance on Doorsets and Glazing.

3.2.2 Doorsets and gates shall be avoided wherever possible, for ease of circulation and to reduce obstructions.

3.2.3 Doorsets and gates shall ensure the necessary degree of escape, security and fire protection.

Note:	For all security issues for doorsets and gates, consult LU Network Security.

3.2.4 Station entrances shall be provided with doors or collapsible gates to allow closure of the station. The doors and gates shall allow rapid operation by one person and visibility of persons on the other side. Gates shall allow for limit of entry/egress to one person.

3.2.5 Entrance gates shall be stored out of passenger flow during normal traffic hours.

3.2.6 When in the open position, door leaves and gates, including collapsible gates, shall not reduce or interrupt the width of passageways below the required widths. Where possible, doors and gates shall open/retract into wall recesses to maximise openings and reduce obstructions.

3.2.7 Doors that are required to open such that the swing is into public areas shall be positioned to avoid major routeways. If this is not possible then the door must be subject to controls on its opening.

3.2.8 The bottom guide channel of collapsible, sliding or folding gates in public areas shall not form a trip hazard.

3.2.9 Collapsible, sliding and folding gates at entrances in public areas shall be lockable gate-to-gate and gate to top and bottom runner. Such locks shall be openable for egress only in case of emergency.

3.2.10 Internal collapsible, sliding and folding gates in public areas shall have a two-point locking system. Such locks shall be openable for egress only in case of emergency.

3.2.11 Collapsible gates which retract into recesses in public areas shall be covered by a hinged lockable plate or door.

3.2.12 Collapsible gates which do not retract into recesses in public areas shall be capable of being secured to prevent tampering by the public. Consideration shall be given to enclosing the gate within a housing.

3.2.13 Fire doorsets should be certified insitu with complete ironmongery fitted (refer to fire standards 1-081, 1-083 & 1-084).

3.2.14 Doorsets with automatic closing door leaves shall be provided with electro-magnetic or electro-mechanical controls to hold doors leaves open. These controls

shall be capable of automatic release on fire alarm activation or during a power failure.

3.2.15 Powered doorsets with automatic closing door leaves shall have sensor devices to prevent impact with pedestrians.

3.2.16 Doorsets with door leaves that have electronic closing devices for pedestrian use shall comply with BS 7036-1.

3.2.17 Delayed action door leaf closers shall always be fitted on pairs of doors where the closing sequence is critical to the functional requirements (eg. to achieve fire safety compartmentation on the door fixed with an astragal).

3.2.18 Access hatches which provide access to ductwork shall comply with BS 8313 section 9.

3.2.19 Security for door installations shall comply with BS 8220-2 sections 6 & 7.

3.2.20 No security device fitted to a fire door or doorset shall compromise a means-of-escape.

3.2.21 Security doorsets to the secure suite and other high security areas shall be designed to resist a Class FB4 ballistic attack as detailed in BS EN 1522 and BS EN 1523.

3.2.22 Security doorsets to the secure suite and other high security areas shall be intruder resistant in accordance with Loss Prevention Standard LPS 1175 security rating 4 or equivalent.

Note:	The wall containing security doorsets to the secure suite and other high security areas should also have the equivalent intruder resistance as the doorsets.

3.3 Windows and Glazing

3.3.1 The Supplier shall demonstrate that he has considered the risks associated with the design, installation and maintenance of the glazing system. Refer to G0134A Guidance on Glazing.

3.3.2 Security glazing to the secure suite and other high security areas shall be designed to resist a Class BR4 and a Class SG1 ballistic attack as detailed in BS EN 1063.

3.3.3 Security glazing to the secure suite and other high security areas shall be intruder resistant in accordance with Loss Prevention Standard LPS 1175 security rating 4 or equivalent.

3.3.4 Security for window installations shall comply with the recommendations of BS 8220-2 section 5.

3.3.5 Curtain walling installation shall comply with the Centre for Window and Cladding Technology, Standard for Systemised Building Envelopes.

3.3.6 All glazing which is more than 2.4m above pedestrian area finished floor levels (FFL) shall be considered as overhead glazing and shall be retained to prevent falling glass in the event of breakage.

Note:	Refer to CIRIA guidance on glazing at height.

3.3.7 Glazing in roofs and canopies shall comply with the requirements of Technical Note 66 Safety and Fragility of Glazed Roofing: guidance on specification, published by the Centre for Window and Cladding Technology. Technical Note 66 does not apply to plastic glazing materials. Plastic materials shall be classified as a Class B non-fragile assembly, in accordance with the requirements of Advisory Committee for Roof Safety ACR(M)001-2011 [fourth edition] Test for Non-Fragility of Profiled Sheeted and Large Element Roofing Assemblies.

3.3.8 Existing glazing can be replaced on a like for like basis or replaced with a modern equivalent. All risks that this action introduces shall be assessed as being as low as reasonably practical.

3.3.9 Openable windows close to rail tracks shall not encroach into the structure gauge.

3.3.10 Windows that are intended to be cleaned from inside the building shall be fully reversible and have a minimum cill height of 1.1m above finished floor level.

3.3.11 For glazing where there is a risk of collision, visually contrasting bands of 150mm high shall be applied within two zones: 850mm to 1000mm and 1400mm to 1600mm above finished floor level.

3.3.12 Full-height glass panels, in any location, and any panel vulnerable to impact shall comply with BS EN 12600 Class 1.

3.3.13 External surfaces to glazed canopies and rooflights shall have a min 3 degree fall.

3.3.14 Glass panels in risk areas at the foot of staircases, ramps and escalators shall comply with BS EN 12600 Class 1.

3.3.15 Glass panels used in UTS barriers and pedestrian guarding shall comply with BS 6180 and BS EN 12600 Class 1.

3.3.16 Glass panels shall be protected from impact along their lower edges to a height of 150mm measured from FFL.

3.3.17 The fire safety performance of glazing in walls and partitions shall be in accordance with G0137.

3.3.18 Structural glass shall comply with the requirements of S1053 Civil Engineering – Building and Station Structures.

3.4 Architectural Hardware

3.4.1 All architectural hardware shall be securely fixed.

3.4.2 All architectural hardware shall be consistent with the style of the existing hardware.

3.4.4 Surface areas of the door vulnerable to soiling and damage shall be protected by finger and kick plates.

3.4.5 No architectural hardware shall invalidate the fire-test certificate of any door.

3.4.6 Architectural hardware shall not present a hazard to persons or clothing.

Note:	Refer to G0134B Guidance on Doorsets and Gates for preferred ironmongery.

4 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 References

5.1 References

References in the text are made to latest and specific editions of standards.

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.

5.1.1 British Standards

Document no.	Title
BS 8313	Code of practice for accommodation of building services in ducts
BS 6180	Barriers in and about buildings. Code of practice
BS 6206	Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings
BS 6399-1	Loading for buildings Part 1:Code of practice for dead and imposed loads
BS 8220-2	Guide for security of buildings against crime. Offices and shops
BS 7036-1	Code of practice for Safety at powered doors for pedestrian use. Part 1. General
BS EN 1522	Windows, doors, shutters and blinds. Bullet resistance. Requirements and classification
BS EN 1523	Windows, doors, shutters and blinds. Bullet resistance. Test method
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 EN 1063	Glass in building. Security glazing. Testing and classification of resistance against bullet attack

Document no.	Title
BS EN 12600	Glass in building. Pendulum test. Impact test method and classification for flat glass
BS 8300	Design of buildings and their approaches to meet the needs of disabled people. Code of practice.

5.1.2 TfL company documents

Document no.	Title
S1622	Glossary of Terms and Abbreviations
1-081	Design and installation of fire protection systems and compartmentation measures
1-083	Passive fire protection systems
1-084	Maintenance of fire protection systems and compartmentation measures
S1053	Civil Engineering – Building and Station Structures
S1132	Premises – Barriers and Fencing (Non-Lineside)
G1034A	Guidance on Glazing
G1034B	Guidance on Doorsets and Gates
G0137	Walls and Partitions in Sub-Surface Stations

5.1.3 Other

Document no.	Title
Centre for Window and Cladding Technology CWCT	Standard for systemised building envelopes
CIRIA	Guidance on Glazing at height
Dept for Transport	Security in Design of Stations (SIDOS) Guide
Centre for Window and Cladding Technology CWCT	Technical Note TN66 Safety and Fragility of Glazed Roofing: guidance on specification
Advisory Committee for Roof Safety	ACR(M)001-2011 Test for Non-Fragility of Profiled Sheeted and Large Element Roofing Assemblies
LPS 1175	Requirements and testing procedures for the LPCB approval and listing of intruder resistant building components, strongpoints, security enclosures and free-standing barriers

5.2 Person accountable for the document

Person accountable for the document
[redacted] - Principal Premises Engineer

5.3 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	
R6	July 20007	Standard 2-01107-006 re formatted and re-numbered to 1-134, 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.	
A3	December 2013	Standard 1-134 A2 updated, re-formatted and re-numbered to S1134 A3 as per DRACCT No. 01956.	[redacted]
A4	April 2016	Replaced 'ticket office suite, to 'secure suite' on page 5 as part of the Fit For the Future launch, DRACCT No. 04182 refers Note: No other content has been changed	[redacted]

6 Current written notices attached to this document

Written Notice No	Issue date	Written Notice Title
LU-WN-01566 **Withdrawn**	10/12/2018	Clarification of security doorsets
LU-WN-01627	31/12/2019	Clarification of security doorsets
LU-WN-01717	24/07/2023	Clarification of requirements for overhead glazing

Written Notice	**LU Ref. No.:** LU-WN-01627
	Suppliers Ref. No.:

1	**Written Notice Completed By**	
	Person Accountable	[redacted]
	Directorate	TfL Engineering
	Date Issued	31/12/2019
2	**Details of the Standard Requiring Clarification or Correction**	
	Title:	Premises – Doorsets and Glazing
	Standard Reference No.	S1134
	Issue No.	A4
	Clause/Paragraph No.	3.2.21, 3.2.22, 3.2.23, 3.3.2, 3.3.3
3	**Details of Clarification or Correction**	
	Title of Written Notice	Clarification of security doorsets

As per change No. CR-11660 approved by DRACCT, S1375 Planning for Ticketing Issuing Facilites is to be withdrawn as a standalone standard. This is to remove duplication across standards and reflect the current organisational structure. The clauses contained within S1375 are being rehomed in their technical standards. Those relating to this standard are as follows:

Written Notice **LU-WN-01566 is withdrawn** and replaced with the content of this Written Notice.

Clauses 3.2.21 and 3.2.22 (including the associated note) are withdrawn and replaced with the following clauses:

3.2.21 Security rating to the secure suite doorset shall be in accordance with S1372 Station staff accommodation.

3.2.22 The secure door to the secure suite shall have a spyhole.

3.2.23 Security rating to doorsets for other high security areas shall be advised by Network Security and Policing.

Clause 3.3.2 and 3.3.3 are withdrawn and replaced with the following clauses:

3.3.2 Any security requirements for glazing to high security areas shall be advised by Network Security and Policing.

3.3.3 Not used

Written Notice	**LU Ref. No.:** LU-WN-01717
	Suppliers Ref. No.:

1	**Written Notice Completed By**	
	Person Accountable	[redacted]
	Directorate	TfL Engineering
	Date Issued	24/07/2023
2	**Details of the Standard Requiring Clarification or Correction**	
	Title:	Premises – Doorsets and Glazing
	Standard Reference No.	S1134
	Issue No.	A4
	Clause/Paragraph No.	3.3.1, 3.3.6, 3.3.7, 3.3.8
3	**Details of Clarification or Correction**	
	Title of Written Notice	Clarification of requirements for overhead glazing
	Following a number of failures of overhead glazing (specifically, single sheets of monolithic glazing) attention is drawn to the following clauses: 3.3.1, 3.3.6, 3.3.7, 3.3.8 The specification of new overhead glazing should ensure compliance with the requirements outlined above and contained within this standard. Guidance on risk management is contained in the supporting guidance document G0134A. This includes any glazing replaced on a like for like basis (as set out in clause 3.3.8). Where this is overhead glazing reference should be made to the standards above and (as noted in the standard) CIRIA guidance. Queries on specification should be directed to the Head of Technical Discipline (the responsible owner for this standard). Note: A glazing risk tool is under procurement, following its completion a revised version of this standard with appropriate reference and requirements will be published.	