Introduction

This Technical Booklet has been prepared by the Department of Finance and Personnel and provides for certain methods and standards of building which, if followed, will satisfy the requirements of the Building Regulations (Northern Ireland) 2000 ("the Building Regulations").

There is no obligation to follow the methods or comply with the standards set out in this Technical Booklet.

If you prefer you may adopt another way of meeting the requirements of the Building Regulations but you will have to demonstrate that you have satisfied those requirements by other means.

Other regulations

This Technical Booklet relates only to the requirements of V2, V3, V4 and V5. The work will also have to comply with all other relevant Building Regulations.

British Standards and European Technical Specifications

In this introduction and throughout this Technical Booklet any reference to a British Standard shall be construed as a reference to –

(a) a British Standard or British Standard Code of Practice;

(b) a harmonised standard or other relevant standard of a national standards body of any Member State of the European Economic Area;

(c) an international standard recognised for use in any Member State of the European Economic Area;

(d) any appropriate, traditional procedure of manufacture of a Member State of the European Economic Area which has a technical description sufficiently detailed to permit an assessment of the goods or materials for the use specified; or

(e) a European Technical Approval issued in accordance with the Construction Products Directive,

provided that the proposed standard, code of practice, specification, technical description or European Technical Approval provides, in use, equivalent levels of safety, suitability and fitness for purpose as that provided by the British Standard.

Products conforming with a European Council Directive

Any product designed and manufactured to comply with the requirements of a European Council Directive does not have to comply with any other standard or part of a standard, whether British, International or other, which relates to the same characteristic or specific purpose as the EC Directive.

CE marked construction products

Any construction product (within the meaning of the Construction Products Directive) which bears a CE marking shall be treated as if it satisfied the requirements of any appropriate British Board of Agrément Certificate, British Standard or British Standard Code of Practice relating to such a product, where the CE marking relates to the same characteristic or specific purpose as the Certificate, Standard or Code of Practice.

Testing of materials and construction

Where for the purposes of this Technical Booklet testing is carried out it shall be carried out by an appropriate organisation offering suitable and satisfactory evidence of technical and professional competence and independence. This condition shall be satisfied where the testing organisation is accredited in a Member State of the European Economic Area in accordance with the relevant parts of the EN 45000 series of standards for the tests carried out.

Materials and workmanship

Any work to which a requirement of the Building Regulations applies must, in accordance with Part B of the Building Regulations, be carried out with suitable materials and in a workmanlike manner. The requirements of Part B can be complied with by following an appropriate British Standard or it may be demonstrated that the requirements have been complied with by other suitable means, such as an acceptable British Board of Agrément Certificate, Quality Assurance Scheme, Independent Certification Scheme or Accredited Laboratory Test Certificate.

Diagrams

The diagrams in this Technical Booklet supplement the text. They do not show all the details of construction and are not intended to illustrate compliance with any other requirement of the Building Regulations. They are not necessarily to scale and should not be used as working details.

References

Any reference in this Technical Booklet to a publication shall, unless otherwise stated, be construed as a reference to the edition quoted, together with any amendments, supplements or addenda thereto current at 22 November 2000.

Contents

Foreword

0.1 Glazing which forms part of guarding required by Part H may need to meet requirements in that Part which are additional to the provisions in this Technical Booklet.

Section 2 – Glazing

0.2 This Section contains provisions to limit the risk of people sustaining cutting and piercing injuries from impact with glazing.

The most likely locations for impacts leading to such injuries are in doors and door side panels and at low level in internal and external walls and partitions.

In doors and door side panels, the risk is at its greatest between floor and shoulder level, near door handles and at push plates (especially when normal building movement causes doors to stick). Hands, wrists and arms are particularly vulnerable. An initial impact between waist and shoulder level may be followed by a fall through the glazing, resulting in additional injury to the face and body.

In walls and partitions away from doors, the risks are predominantly at low level, and at that level children are particularly vulnerable.

Section 3 – Transparent glazing

0.3 The existence of large uninterrupted areas of transparent glazing represents a significant risk of injury through collision.

The risk is increased where two parts of the building, or the building and its immediate surroundings, are essentially at the same level but separated by transparent glazing and people might reasonably have the impression that they are able to walk from one part to the other without interruption.

Provisions are given to make glazing apparent, either by the incorporation of substantial framing, door handles, etc, or by permanent manifestation (i.e. marking of the glass itself).

Section 4 – Safe opening and closing of windows, skylights and ventilators

0.4 Where the control cannot be positioned within safe reach of the floor, a safe means of remote operation, such as a mechanical or electrical system shall be provided.

Where there is a danger of a person falling through the opening whilst opening, closing or adjusting a window, skylight or ventilator, a suitable opening limiter shall be provided.

Section 5 – Safe means of access for cleaning glazing

0.5 This Section contains provisions for the safe means of access for cleaning transparent or translucent glazing.

Section 1 – General

1.1 This Section contains information on critical locations in terms of safety.

Definition

1.2 In this Technical Booklet the following definition applies –

Critical locations – between finished floor level and –

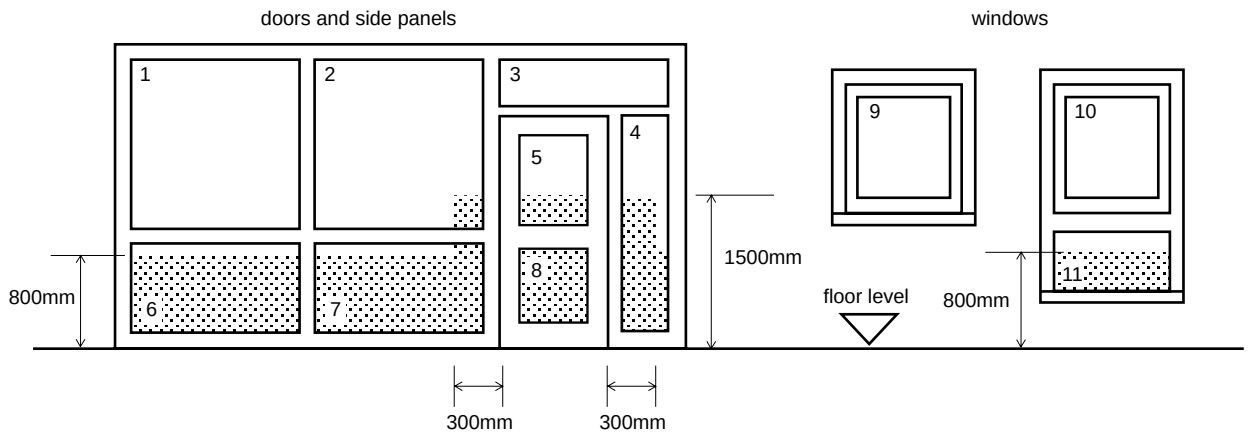
(a) 800 mm above that level in walls and partitions; and

(b) 1500 mm above that level in a door or in a side panel within 300 mm of either edge of a door.

For glazing in critical locations, see Diagram 1.1.

Diagram **1.1** **Critical locations in internal and external walls**

see para 1.2



shaded areas show critical locations
(ie. glazing in areas 2, 4, 5, 6, 7, 8, 11)

Section 2 – Glazing

2.1 This Section contains provisions to limit the risk of people sustaining cutting and piercing injuries from impact with glazing.

Reducing the risks

2.2 Glazing in critical locations shall –

(a) break safely, if it breaks, (see paragraph 2.3);

(b) be robust or in small panes (see paragraphs 2.4, 2.5, and Diagrams 2.1 and 2.2); or

(c) be permanently protected or shielded (see paragraph 2.6 and Diagram 2.3).

Safe breakage

2.3 Safe breakage is defined in BS 6206: 1981: Clause 5.3, and is based on an impact test which requires the result of the impact to be limited to creating –

(a) a small clear opening only, with a limit to the size of the detached particles;

(b) disintegration, with small detached particles; or

(c) breakage resulting in separate pieces that are not sharp or pointed.

Glazing suitable for installation in a critical location shall satisfy the test requirements of Class C of BS 6206. Where it is installed in a door or a door side panel and has a pane width of more than 900 mm, it shall satisfy the test requirements of Class B of BS 6206.

Robustness

2.4 To be considered robust, panes of annealed glass shall be supported on all sides and shall not exceed the sizes in Diagram 2.1 for the given thickness of glass.

Glazing in small panes

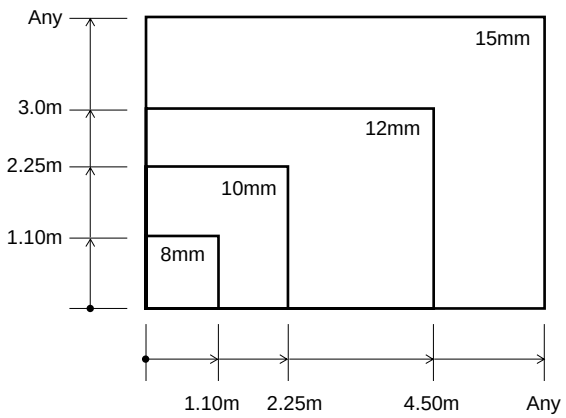
2.5 A small pane may be an isolated pane or one of a number of panes contained within glazing bars (see Diagram 2.2), traditional leaded lights or copper-lights and shall have –

(a) a width of not more than 250 mm; and

(b) an area of not more than 0.5 m^2,

Diagram **2.1** Annealed glass thickness/pane size limits

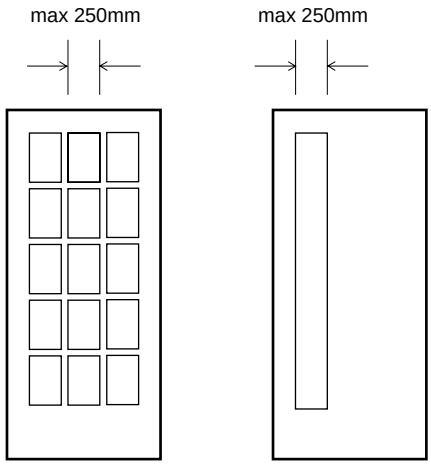
see para 2.4



the dimensions shown may be height or length.
for 12mm glass, one dimension will be subject to 3.0m manufacturing limit

Diagram **2.2** Dimensions and areas of small panes

see para 2.5



maximum area of single pane shall not exceed 0.5m^2.
small panes of annealed glass shall be not less than 6mm in thickness

measured between glazing beads or similar fixings.

Small panes of annealed glass shall be not less than 6 mm in thickness, except in traditional leaded or copper-lights in which 4 mm glass is acceptable.

Permanent screen protection

2.6 When glazing in a critical location is installed behind permanent screen protection the screen shall –

(a) prevent a sphere of 75 mm diameter from coming into contact with the glazing;

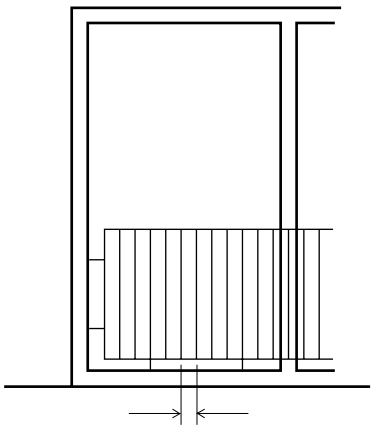
(b) be capable of withstanding a horizontal force of 0.36 kN at a height of 800 mm above the floor level applied at any point along its length; and

(c) when glazing forms part of guarding required by Part H, be constructed so that a child cannot readily climb up it.

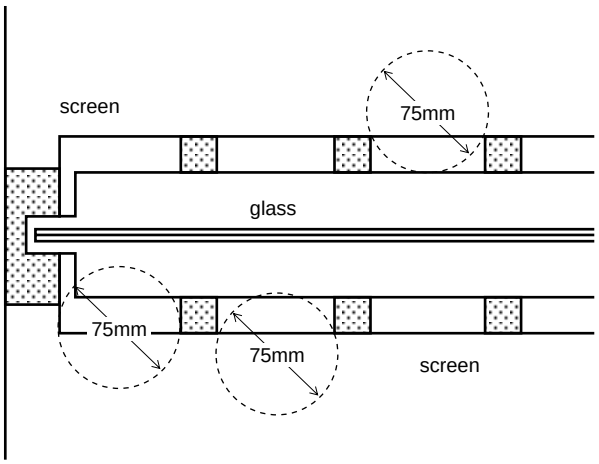
See Diagram 2.3.

Diagram **2.3** **Permanent screen protection**

see para 2.6



a climbable screen with horizontal rails is not suitable where guarding is required under Part H



Detail of screen

Section 3 – Transparent glazing

3.1 Transparent glazing shall be made apparent by either –

(a) permanent manifestation of the glazing (see paragraph 3.2); or

(b) alternative indications of the glazing (see paragraph 3.3).

Permanent manifestation of glazing

3.2 Permanent manifestation of large uninterrupted areas of transparent glazing shall be provided in the form of broken or solid lines, patterns or company logos, within the height range shown in Diagram 3.1 and at appropriate intervals.

Alternative indications of glazing

3.3 Installations of transparent glazing which do not warrant permanent manifestation include –

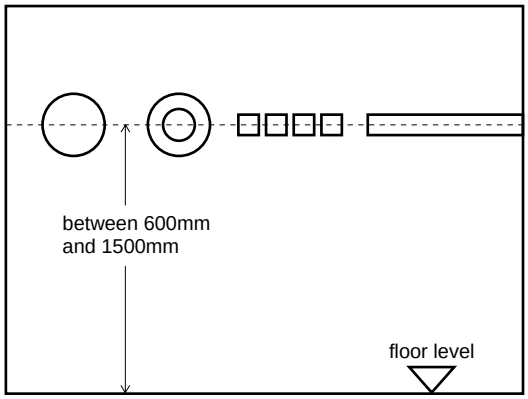
(a) glazing less than 400 mm in width between framing;

(b) glazing with a rail at a height of between 600 mm and 1500 mm above floor level;

(c) a single pane glazed door with substantial framing; or

Diagram **3.1** **Height of manifestation of large areas of transparent glazing**

see para 3.2



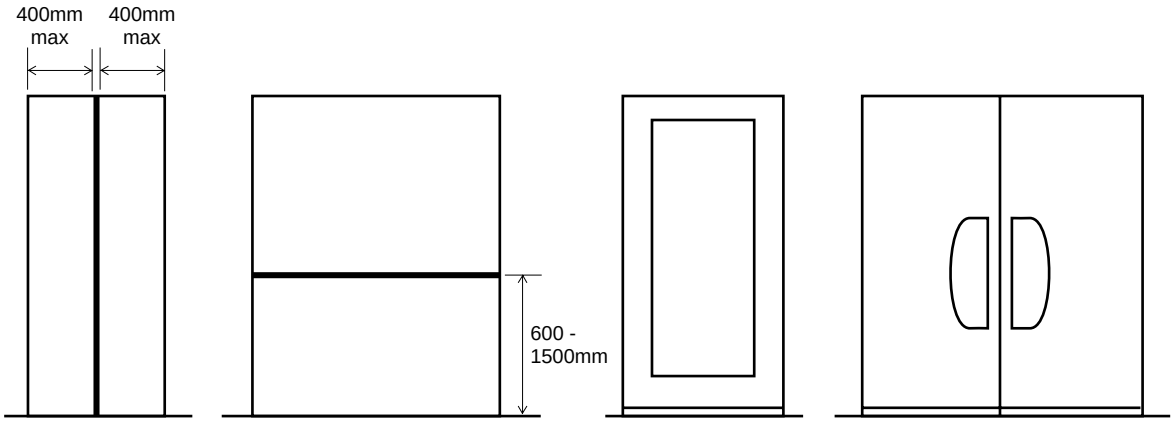
manifestation can take various forms
e.g. broken or solid lines, patterns
or company logos

(d) a single pane glazed door which is provided with large push or pull plates or handles.

See Diagram 3.2.

Diagram **3.2** **Examples of transparent glazing not warranting manifestation**

see para 3.3



(a) glazing less than 400mm in width between framing

(b) glazing with a rail between 600 and 1500mm above floor level

(c) a single pane glazed door with substantial framing

(d) glazed doors with no frame, or narrow frames, but with a large handle or push plate on each single pane

Section 4 – Safe opening and closing of windows, skylights and ventilators

4.1 This Section contains provisions for the location of a control for the safe opening, closing and adjusting of a window, skylight or ventilator.

Location of controls

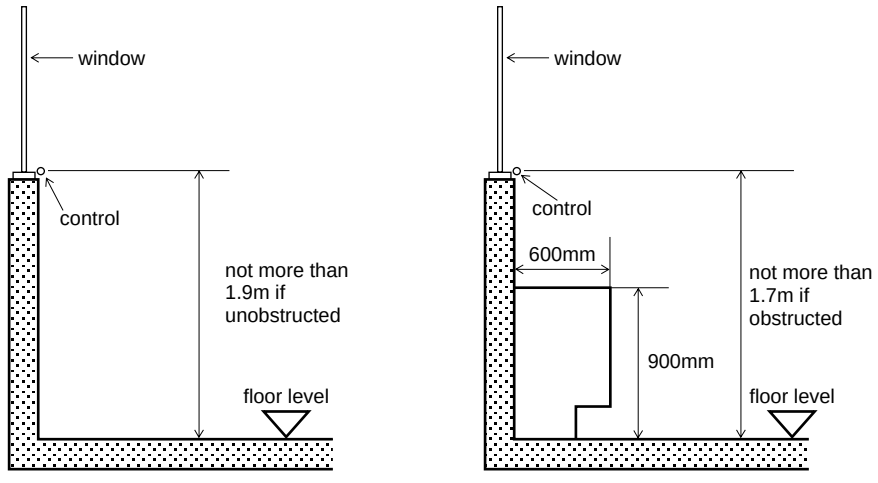
4.2 A control for a window, skylight or ventilator shall be within safe reach of a person standing on a floor (or other permanent stable surface). When considering safe reach, a small recess such as a window reveal may be ignored.

4.3 Where reach is unobstructed the control shall be not more than 1.9 m above floor level (see Diagram 4.1(a)).

4.4 Where reach would be obstructed the control shall be lower, for example, if the obstruction is a kitchen unit 900 mm high and 600 mm deep, the control shall be not more than 1.7 m above floor level (see Diagram 4.1(b)).

Diagram **4.1** **Height of controls**

see paras 4.3 and 4.4



(a) Unobstructed reach

(b) Example of obstructed reach

Section 5 – Safe means of access for cleaning glazing

5.1 This Section contains provisions for the safe means of access for cleaning transparent or translucent glazing.

Access for cleaning glazing

5.2 Where a building has glazing which is designed to be cleaned a safe means of access shall be provided –

(a) from inside the building;

(b) from outside the building; or

(c) by specialist access equipment.

Cleaning glazing from inside

5.3 Where the internal face of glazing is designed to be cleaned from the inside of a building the glazing shall be either –

(a) accessed safely from a floor; or

(b) accessible from specialist access equipment (see paragraphs 5.7 and 5.8).

5.4 Where the external face of glazing is designed to be cleaned from the inside of a building the glazing shall be either –

(a) within safe reach of a person standing on a floor (see Diagram 5.1); or

(b) accessible from specialist access equipment.

Where there is a risk of falling when cleaning reversible glazing the glazing shall be fitted with a mechanism which holds it in the reversed position.

Cleaning glazing from outside

5.5 Where the external face of glazing is designed to be cleaned from the outside of a building, the glazing shall be –

(a) accessed from a safe place having a firm level surface; and

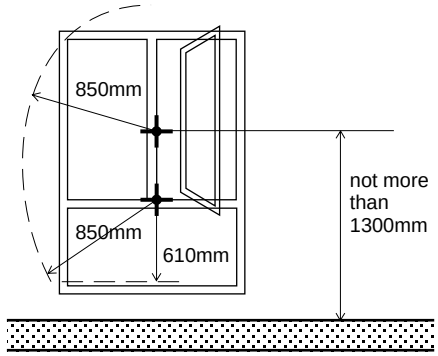
(b) reached from an area adequate in size for the method of cleaning.

Where the height to the window sill is more than 6.0 m and not more than 9.0 m, suitable tying or fixing points for the access equipment shall be provided on the building. The standing surface shall be a path or similar hard surface (see Diagram 5.2(a)).

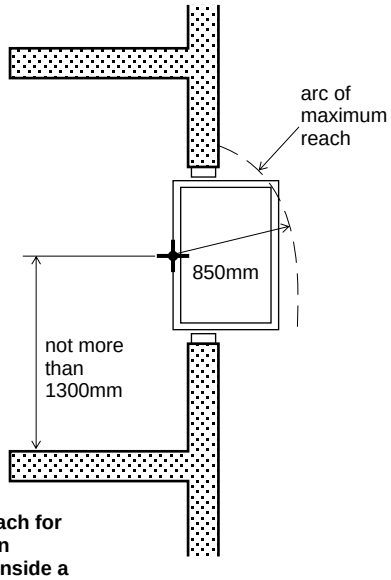
Where the height to the window sill is less than 6.0 m and access is by a ladder, the standing surface may be normal soil.

Diagram **5.1** **Cleaning the external face of glazing from inside**

see para 5.4



(a) maximum reach for cleaning glazing from an adjacent opening



(b) maximum reach for cleaning an open casement from inside a building

5.6 Where glazing is designed to be cleaned from a walkway the top of the glazing shall be not more than 2150 mm above the level of the walkway. The walkway shall be not less than 400 mm wide, and either –

(a) the walkway shall have guarding not less than 1100 mm high (see Diagram 5.2(b)); or

(b) anchorages for sliding safety harnesses shall be provided (see Diagram 5.2(c)).

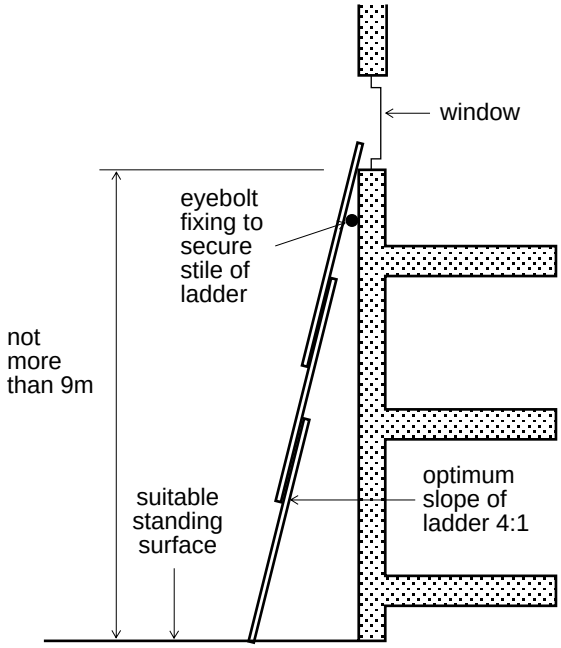
Specialist access equipment

5.7 Where glazing is designed to be cleaned using specialist access equipment such as a boatswain's chair, scaffold tower, suspended cradle, travelling ladder etc., suitable facilities and fixing points shall be provided on the building.

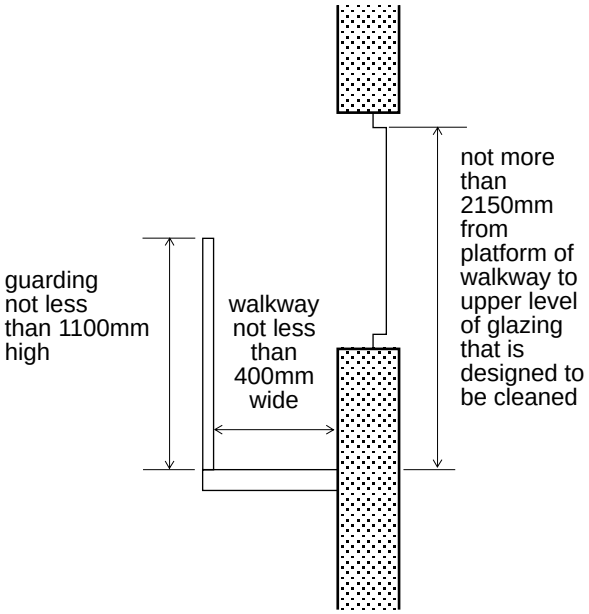
5.8 Where a scaffold tower is to be used as the access for cleaning glazing in ceilings and roofs, suitable space for the tower shall be provided.

Diagram **5.2** **Cleaning glazing from outside**

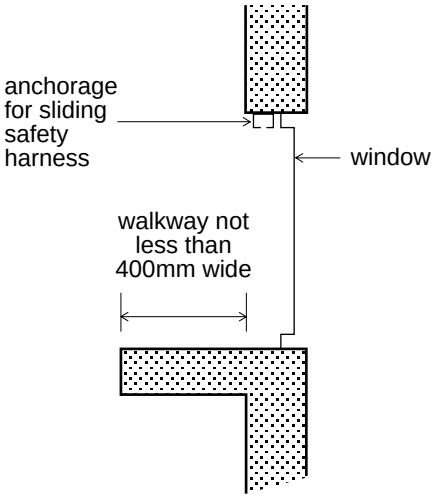
see paras 5.5 and 5.6



(a) height to window sill more than 6m and not more than 9m above standing surface



(b) walkway with guarding



(c) walkway with anchorage for sliding safety harness

Appendix – Publications referred to

BS 6206: 1981 Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings.

AMD 4580, June 1984
AMD 5189, August 1986
AMD 7589, May 1993
AMD 8693, July 1995