NHS National Services Scotland

# Scottish Health Technical Memorandum 59

## SHTM Building Component Series

## Ironmongery

Health Facilities Scotland
Property and Capital Planning

December 2006

# Contents

# 1. Introduction

## Background

1.1 This is one of a series of Scottish Health Technical Memoranda which provides specifications and design guidance on building components for health buildings.

A Reference Section is provided at the end of this document, including Acts, Regulations and British Standards.

1.2 The numbers and titles of the SHTMs in the series are:

- 54 User manual;
- 55 Windows;
- 56 Partitions;
- 57 Internal glazing;
- 58 Internal doorsets;
- 59 Ironmongery;
- 60 Ceilings;
- 62 Demountable storage system;
- 63 Fitted storage system;
- 64 Sanitary assemblies;
- 66 Cubicle curtain track;
- 67 Laboratory fitting out systems;
- 69 Protection.

## Scope and status

1.3 This SHTM offers guidance on the correct selection, fitting and use of items of ironmongery for doorsets to meet the user requirement and service conditions in health buildings.

1.4 The information in this SHTM will be of value to all those involved in health buildings from briefing and design through to commissioning and maintenance.

1.5 Whether for use in remedial and upgrade works or in new build projects, whether with door assemblies or with doorsets, responsibility for the selection and specification of ironmongery remains with the architect/designer but with input from the client and users.

1.6 The content of this SHTM does not diminish either the manufacturer's responsibility for fitness for purpose of products or the design team's responsibility for selection and application of products to meet project requirements. Design teams are also reminded of their obligations under the Construction (Design and Management) [CDM] Regulations 1994 (as amended 2000) to ensure safe construction.

## Relationship to other data

1.7 The main sources of data used in the preparation of this SHTM are listed in the References Section.

1.8 This SHTM was prepared for publication in December 2006. After this date, readers should ensure that they use the latest or new edition of all building legislation, British Standards etc, which may post-date the publication of this document.

1.9 First preference should be given to products and services from sources which have been registered under current BSI Quality Assurance procedures or other certification schemes. Suppliers offering products other than to British Standards should provide evidence to show that their products are at least equal to such Standards.

1.10 This guidance should be used in conjunction with sections of the National Building Specification (NBS) relevant to ceilings. NBS is a library of standard specification clauses covering most kinds of building work and comprising a wide range of clauses with accompanying guidance notes. All clauses are optional, and their combination into a job specification is left to the specifier. NBS has great flexibility, and it can be adapted to suit the technical needs and preferences of different projects, organisations and specifiers. Specifications go out of date as a result of technical innovation or major review of a key BSI document. As NBS sections become affected by such major changes, they are re-issued to members of the subscription service. Users are advised to ensure that they refer to the current edition. Refer to the NBS website at www.thenbs.com

1.11 Any enquiries regarding the technical content of this SHTM should be e-mailed to enquiries@hfs.scot.nhs.uk

## Terminology

1.12 Throughout this document the following definitions apply:

- Ironmongery – components intended for the functional operation of doorsets (also sometimes referred to as 'architectural ironmongery' and as 'builders hardware');
- Doorset – a manufactured component comprising frame, leaf (or leaves) and ironmongery pre- assembled and delivered as one unit;

- Door assembly – a frame, leaf (or leaves) and ironmongery intended for use as an assembly after fitting together on site;
- Configuration (of a doorset or door assembly) – the number of leaves, their swing pattern, hand, and how they open;
- Grade – the functional duty of a doorset or door assembly;
- Hand (of a doorset or assembly) – the position of the hinges (or pivots) on a single leaf when seen from the pull side (see Figure 1);


**Figure 1**

- The hand of doorsets with unequal leaves is determined by reference to the larger leaf. Doorsets with double equal leaves are symmetrical in plan and are not handed;
- Detente – an electrically powered magnetic hold- open device used in association with fire doors. Activation of the fire alarm releases the magnetic hold and allows the fire door to close;
- Self-closing device (door closer) – any door-closing mechanism in which the energy for closing is generated by the user upon opening the door, and which returns the door to the closed position under control.

# 2. General guidance

## Introduction

2.1 Ironmongery represents a very small proportion of the capital cost of any building, but it can have a disproportionate effect on the user's perception of the building and the satisfaction they feel in its use. To be satisfactory, ironmongery must be:

- appropriate to its function;
- of the right grade and good quality;
- well designed and unobtrusive;
- correctly fitted;
- properly maintained.

2.2 Health buildings are used by a wide cross-section of people – both general public and staff – ranging from the young and able-bodied to the elderly and infirm. However, by virtue of their function, it is likely that healthcare facilities have a higher proportion of physically weakened and disabled users coming through their doors than any other type of building.

2.3 Users' needs can be met from the range of standard ironmongery components readily available throughout the UK. An improved range of components is available to respond to the needs of disabled people and to comply with the requirements of the Disability Discrimination Act 1995.

2.4 Ironmongery selection is primarily influenced by the doorset of which it forms. Refer to SHTM 58: 'Internal doorsets' for more detailed information on the grade, configuration and type of doorsets appropriate to health buildings.

2.5 Extensive research and testing has established that rebated edges to the meeting stiles of double-leaf doors serve no useful purpose but cause confusion and reduce performance. SHTM 58 makes no provision for them; consequently this SHTM makes no reference to components for rebated stiles.

2.6 In existing installations, if it is not possible to replace rebated doors, specially adapted ironmongery components will be required and manufacturers' advice should be obtained.

## Selection

2.7 The designer is advised to use the guidance contained in this SHTM to select generic items of ironmongery based upon user requirements. It is desirable to identify ironmongery requirements as sets for specific door types. That selection can then be matched to commercially available products using the services of

ironmongery suppliers and specialists who can prepare schedules and supply sample ironmongery sets for approval.

## Classification of components

2.8 Ironmongery components can be classified into groups according to their primary functions as follows:

a. Hanging: components which support the door leaf and allow it to move (to operate);

b. Operating: components which control the operation of the door leaf, both in the sense of moving it and of preventing its movement;

c. Securing: components which secure a door leaf in the closed position;

d. Furniture: components which are attached to the surface of the doorset and contribute to its functional performance.

## Assessment of functional requirements

2.9 Costs in use – the combination of initial capital cost and subsequent maintenance costs – can be significantly reduced by the careful choice of ironmongery based upon:

- using only the minimum of ironmongery in each particular situation;
- being consistent so that users are not faced with different ironmongery in situations which are otherwise similar;
- choosing robust components from standard product ranges;
- ensuring the components are correctly fitted and maintained.

2.10 Selection of appropriate ironmongery must begin with consideration of the functional requirements of each individual doorset. Although SHTM 58 deals only with internal doorsets, ironmongery is also required for use on external doors where the service conditions may be more extreme.

2.11 The following factors are all relevant to selection:

- location of doorset;
- frequency of door operation;
- severity of use;
- configuration;
- weight and width of door leaf;
- special requirements.

### Location of doorset

2.12 Consider doorset location and assess the degree of exposure to sudden changes of pressure or to differential pressure on opposite faces:

- entrance doors and lobby doors are frequently affected by wind pressures: doors to theatres, sterile laboratories and pressurised escape routes will be subject to a constant differential pressure. Such pressures will affect the selection of hinges and of closing devices, and may indicate a preference for sliding and/or automated operation.

### Frequency of door operation

2.13 Consider the frequency of use of the door and assess its effect upon wear and tear of moving parts, such as hinges and closers, as well as the convenience to users:

- doors in health buildings, especially those in busy clinical areas, may be operated as much as 600 times a day (that is, 200,000 times per annum);
- the doorways on busy routes may be used very frequently, but the door leaves may well be held open on detentes linked to the fire-alarm system and only be operated as part of the fire-alarm testing programme. Doors which are operated very infrequently may well need fewer ironmongery components or ones of a lighter grade. Doors which are normally kept locked (such as those to ducts and stores) may well be very substantial because of the need to provide fire protection but be very rarely operated; such doors therefore require very few components to allow them to function adequately;
- doors which are normally kept closed but are frequently used may be operated manually or automatically; their ironmongery provision should ensure ease of operation and be robust to withstand frequent use.

### Severity of use

2.14 Consider the severity of operation by assessing the attitudes of people using the door:

- porters encumbered by heavy loads or pushing trolleys, beds or bulky equipment are likely to operate doors more roughly than patients or staff with their hands free. On routes where emergency movement is likely – as at the approaches to an accident and emergency department – automated operation is probably a better solution than applying surface protection to the doors.

### Configuration

2.15 Consider the configuration of each doorset and how it limits the choice of components:

- whilst hinges are the most economical means of hanging doors, double-swing doors must be set on floor springs;
- automatic operation of doors may be easier to achieve with sliding doors hung from overhead track or – if the doors are very heavy – set on rollers on a floor track.

### Weight and width of door leaf

2.16 Consider the weight and width of each door leaf and assess their effect upon the ironmongery components in terms of wear and tear:

- door leaves will weigh approximately 20kg for a 500mm wide leaf to 65–70 kg for a 900mm wide, 60-minute fire-resisting leaf; different weights and sizes of leaf necessitate different sizes and numbers of hinges and different grades of closer.

### Special requirements

2.17 Consider any special requirements which apply – such as panic escape, emergency operation, X-ray shielding, radio-frequency shielding, laser protection, high-security situations, fire resistance and smoke containment. Also consider safety issues, for example protection against children trapping fingers in closing doors etc:

- BS EN 1125:1997 and BS EN 179:1998 classify panic and emergency exit devices, respectively;
- fire-resisting and smoke-containing doorsets must be tested, evaluated and certified with essential ironmongery fitted: test results could well be invalidated by the fitting of components different from those tested. Further information is contained in paragraphs 2.18–2.42.

## Ironmongery for fire-resisting doorsets

2.18 SHTM 58: 'Internal doorsets' gives information on fire-resisting doorsets.

2.19 Warrington Fire Research Centre and the British Standards Institution have jointly established the CERTIFIRE scheme for the independent evaluation and certification of fire protection products
www.wfrc.co.uk/certification/certifire/certifire_overview.htm

Certification is based on valid test evidence and compliance with performance and quality assessment schedules.

2.20 Doorsets which are designed for fire resistance and/or smoke containment will, hopefully, never be required to perform those functions. Nevertheless, they must remain at all times capable of such performance whilst still functioning normally in all other respects.

2.21 The greatest single contribution to fire/smoke containment is made by the door being shut, but there are many situations in health buildings where it is more

convenient for doors to remain open in normal circumstances. This apparent conflict of interests may be resolved by risk assessment, taking into account all the circumstances including user requirements.

2.22 Three functional categories of fire/smoke door can be identified:

- normally held in the open position;
- normally held in the closed position;
- normally shut and locked.

### Door normally held open

2.23 This is not normally acceptable, but may be permissible in some circumstances, using technology that ensures the door will close automatically in the event of fire.

2.24 Suitable devices are described in BS EN 1155: 1997. The provision must 'fail safe' in the event of a power failure.

**Note:** 'Fail safe' in this context means the door should close fully in the event of power loss.

2.25 A floor spring may be technically suitable, but its cost is unlikely to be justifiable on a door which is normally open and seldom operated.

### Door normally held closed

2.26 In fire-rated doorways which are less frequently used, it is preferable for the door to be normally held shut, and this can be achieved by use of an overhead closer or a floor spring.

2.27 The use of a latch in conjunction with a controlled door-closing device (floor spring or overhead closer) is not recommended.

**Note:** Where a door is fitted with a self-closing device, the closing force of the device should be sufficient to overcome any resistance caused by the latch so that the door closes fully against the rebate.

### Door normally locked shut

2.28 Doors to ducts and stores are often fire-rated. They should be secured shut by means of a dead lock; they do not require any closing device.

**Note:** If a fire resisting is locked shut as an alternative to fitting a self-closing device, it should be provided with a notice bearing the words "Keep locked shut"

2.29 Tests of fire-resisting doorsets have demonstrated several basic principles governing the selection of suitable components. These are discussed in paragraphs 2.30–2.42.

### Hanging

2.30 Hinges must be capable of supporting the door at temperatures of 800ºC and higher. Steel or brass hinges may be used as an FD30 or FD30(s) door. Only steel hinges may be used on an FD60 or FD60(s) door. In either case, screws should not be less than 38mm.

### Operating

2.31 Closers mortised into the doorset are difficult to fireproof and are not therefore covered in this SHTM.

2.32 The arms of overhead closers must not include any material with a melting point less than 800ºC.

2.33 In the case of floor springs, the operating unit is protected by its position within the floor/screed; the door should be supported either on a shoe without a heel or on a bottom strap of the same length as the floor cover plate.

2.34 A polished cover plate may reflect radiation which can burn through the bottom of an unprotected door leaf.

### Securing

2.35 Most locks, latches, catches and bolts are set into mortises cut into the door leaf; this involves the removal of the solid fire-resisting core material and its replacement by a metal case partly filled with heavy metal parts. As a result, not only is the fire resistance of the doorset reduced, but the metal components form a heat sink which accelerates heat transfer and can result in failure. Other metal parts, including lock cylinders, spindles and bolt-through fixings, may also weaken overall resistance and must be carefully considered.

2.36 All mortises should be formed as tight as possible to suit the mortised component; intumescent material is required to protect components mortised into 60-minute doorsets.

### Furniture

2.37 Components attached to the faces of a doorset – including bolts, lever handles, pull handles and plates – have no effect on fire door performance and may be of low-melt material.

**Note:** Only steel spindles should be fitted where lever operated latches are used.

## Seals

2.38 A closed and close-fitting door is essential to fire and smoke containment. Gaps between leaf and frame should always be as small as practicable (see SHTM 58: 'Internal doorsets').

2.39 Most fire-resisting doorsets – including those outlined in SHTM 58 – rely for their successful performance on the use of intumescent edge seals which, on being activated by high temperature, expand and fills the gap between door and frame. The ironmongery on such doors has therefore to ensure the door is shut and held in the frame when the seals activate.

2.40 Standardised test procedures to evaluate fire and smoke-rate doorsets do not normally require the gap between floor and door to be sealed, but the specifier may wish to consider sealing it to achieve improved smoke sealing and/or good acoustic and thermal containment.

2.41 If seals are to function correctly, it is essential they be accurately aligned and not interrupted by hinges, forends and keeps; it is also imperative the doorsets be carefully maintained.

2.42 Recent developments in seal designs allow fire- sealing and smoke-sealing functions to be combined in one insert.

2.43 Useful guidance on the standard, site fitting, associated hardware and intumescent seals may be found in BS 8214 – Code of Practice for fire door assemblies with non-metallic leaves.

# 3. Component selection and maintenance

3.1 This section contains advice on the selection of components in each of the functional groups defined in paragraph 2.8 (namely hanging, operating, securing, and furniture) and offers guidance on maintenance.

## Hanging

### Introduction

3.2 This group includes components which support the weight of a door and allow it to be operated, namely hinges and sliding gear; the size and grade of these components must be matched to the size and weight of door leaf to be supported.

### Standards

3.3 BS EN 1935:2002 specifies requirements, static strength and endurance testing of single-axis metal hinges for doors up to 2400 mm high x 1200 mm wide weighing up to 160 kg. The standard hinges are classified according to the maximum mass of the door they support (including its ironmongery) and the maximum number of operations per annum (see paragraph 2.13).

3.4 BS EN 1527:1998 covers most of the main types of sliding and sliding/folding application, giving details of product performance criteria, test apparatus, testing methods, door mass, durability, fire and corrosion resistance.

### Selection

3.5 Doors may be hung on hinges or on sliding gear, the door being fitted to its frame at the joinery manufacturer (see SHTM 58: 'Internal doorsets').

## Operating

### Introduction

3.6 The opening and closing of a door can be affected either manually or mechanically. Manual operation is obviously much cheaper in terms of both initial cost and maintenance. The provision of mechanical operating devices should be clearly based on user needs as referred to in Section 2.

### Standards

3.7 BS EN 1154:1997 covers both floor springs and overhead closers.

3.8 BS 7036:1996 deals with automatic, power- operated pedestrian door systems and covers general requirements for swinging doors, sliding doors, low- energy doors and revolving doors.

3.9 Hold-open devices are covered by BS EN 1155:1997 which deals with specifications and test methods for electrically powered hold-open devices for swing doors.

### Selection

3.10 The choice of operating devices will be influenced by the functional requirements detailed in Section 2. Specifiers are advised to consult individual manufacturers' data when making their final selection.

## Securing

### Introduction

3.11 This covers ironmongery components used for securing doors in the closed position.

### Standards

3.12 BS EN 12209:2003 covers locks, latches and locking plates.

3.13 BS EN 1303:1998 deals with cylinders and provides for different grades of security covering resistance to drilling out, to attack with a chisel etc. Section 2 Annex 2B of the Building (Scotland) Regulations 2004 together with the relevant provisions of Firecode, describes the requirements for emergency escape from health buildings;

3.14 BS EN 1125:1997 deals with the requirements and test methods for panic exit devices operated by a horizontal bar.

3.15 BS EN 179:1998 describes emergency exit devices operated by a lever handle or push pad.

### Selection

3.16 Securing devices should not normally be fitted to doors operated by a controlled door-closing device (floor spring or overhead closer).

3.17 Doors should only be fitted with locks (as distinct from latches or catches) after careful consideration of user requirements.

3.18 Two forms of lock can be identified: dead locks and sprung locks. A dead lock requires the action of a key or thumb turn to move the bolt into and out of the keep; included in this group are budget locks and mortised cylinder locks. A spring lock closes automatically by virtue of its shaped bolt; it must be operated

by a key or knob or lever to withdraw the bolt. From this distinction it can be seen that a dead lock requires a positive decision by the user to lock the door and unintentional locking is avoided.

3.19 The means of locking and latching a door are often combined into one 'unified' case for mortising into a door. This practice is not recommended in health buildings. Unified lock/latch cases require large mortises, which adversely affects the doorset performance in fire tests. Functional requirements for door locking are better served by fitting the smallest possible lock case at approximately eye level (see Appendix), a position which makes it easier to insert the key.

3.20 If additional security is required, the specifier should consider fitting a second mortised dead lock at low level to give two-point fastening of the door leaf. Dead locks are also available with a 'double throw' mechanism which gives greater security by virtue of a greater projection of the bolt into the keep. Where locking of double-leaf, double-swing doors is required, it is advisable to specify a double-throw dead lock.

### Final exit doors

3.21 The requirement to allow people to escape to a place of safety in the open air in the event of a fire may conflict with the need to secure external doors against unauthorised access; in such cases the need to ensure safe evacuation must take priority.

### Lock suiting and mastering

3.22 Any number of cylinders can be specified as 'to pass one key', which is a cheap and effective way of allowing users access through a number of doors without the burden of multiple keys. Alternatively a suite of cylinders, each operated by a unique key, may be mastered by one key which will operate all of the cylinders in the suite.

3.23 The mastering facility can be extended to allow several suites, each with its master key, the complete range of suites being covered by a grand master key. Mastered suites are manufactured to order, and sufficient time must always be allowed for their manufacture (see Figure 2).

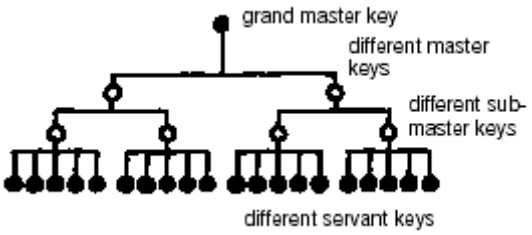



**Figure 2**

3.24 Contrary to common belief, the mastering of locks does not make for maximum security; it does require management procedures to ensure control of keys at all levels.

### Electro-mechanical keeps

3.25 These may be used in conjunction with locks to facilitate remote operation by means of a swipe card, keypad or push-button control. Remote control over the door can be combined with a telephone/speaker link and/or a television camera.

## Door furniture

### Introduction

3.26 This deals with the selection of components which are attached to the surfaces of the doorset and do not directly affect its hanging, operating or securing.

### Standards

3.27 BS EN 1906:2002 covers requirements and test methods for lever handles and knob furniture.

### Selection

3.28 On doors fitted with a latch, lever handles are to be preferred because they are more easily operated by encumbered and/or incapacitated users. Levers should be spring-loaded and of sufficient length and diameter to afford a full handed grip with the end of the lever turned towards the door face to minimise the risk of catching clothing.

3.29 Pull handles for use on non-latched doors should be of adequate size and diameter to match the size and weight of the door leaf and its degree of use. Cranked handles offer advantages in certain situations, for example where the leading edge of the door is close to a return wall.

3.30 An important consideration in selecting items of door furniture is to ensure matching appearance. It will not always be practicable or possible to choose items from one manufacturer's coordinated range; items manufactured from different metals by different manufacturing processes cannot always support identical surfaces and finishes. The specifier is advised to select by reference to samples, bearing in mind that the use of special materials, finishes or colours can lead to difficulties in obtaining matching items for replacement, repair and extension.

## Maintenance manual

3.31 An operation and maintenance manual should be compiled and should be handed to the maintenance staff immediately following the practical completion of the contract with the following information concerning ironmongery:

- **a copy of the ironmongery schedule (see Table 1);**

| *1/12/2004* | *XX Royal Infirmary* | *Hardware Set 8 page 1* |
|---|---|---|
| ***Quantity*** | ***Description*** | |
| 1.5 pr | Butts 100 x 75 mm | |
| 1 each | Door closer adjustable power | |
| 1 each | Sashlock c/w backbox | |
| 1 each | Profile double cylinder | |
| 1 pair | Lever assembly | |
| 2 each | Covered profile cylinder rose | |
| 2 each | Fire door keep shut | |
| 1 each | Floor door stop | |
| 1 each | Kicking plate | |

**Table 1: Example of an ironmongery schedule**

- names and addresses of manufacturers, with copies of relevant trade literature;
- manufacturer's reference number for each component;
- name and address of merchant who supplied the components;
- manufacturer's instructions for care and maintenance.

## Hygiene and cleaning

3.32 Control and Prevention of Healthcare Associated Infection (HAI) is a priority issue for NHSScotland – both in respect of the safety and well being of patients and staff and also the resources consumed by potentially unavoidable infections.

Healthcare Associated Infection (HAI) is a complex issue involving the many different elements of patient care and provision. Due to its multi-factorial nature there is a need to develop a holistic approach to combating the spread of infection within the built environment.

It is imperative that those involved in the design and planning, construction and refurbishment and on-going maintenance of the healthcare facility have a sound knowledge of prevention and control of infection in the built environment.

Scottish Health Facilities Note (SHFN) 30 and HAI-SCRIBE aim to provide information on the prevention and control of infection, and on the prevention of cross-infection and cross contamination in healthcare facilities, to those responsible for the planning, design and maintenance of such facilities.

Cleaning is an essential part of the multi-disciplinary approach in improving patient, staff and public safety. Safe clinical care is supported through ensuring high standards of hygiene and related measures to tackle HAI in the healthcare environment.

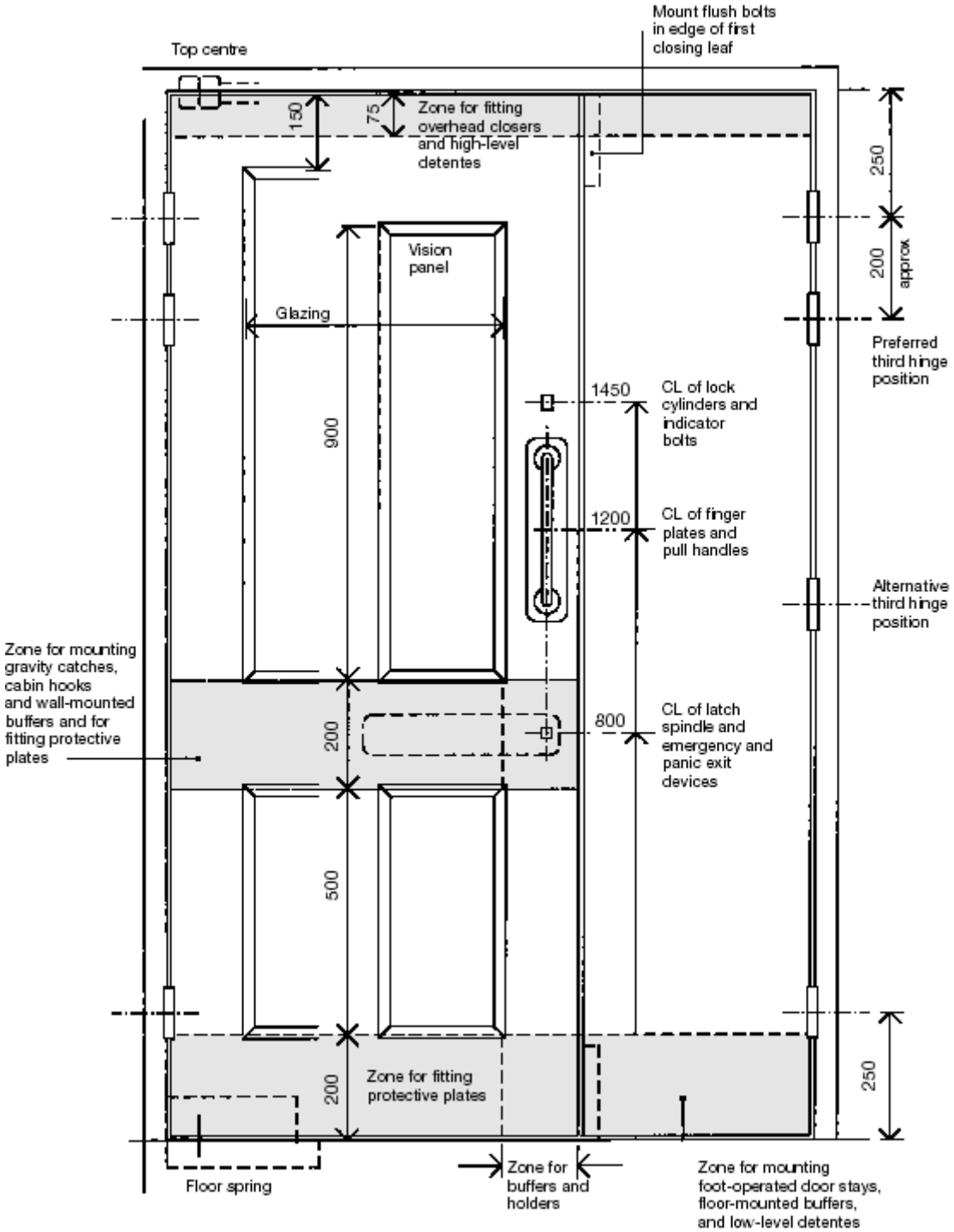
Cleaning regimes including frequency of cleaning should be addressed in line with current national guidance together with any additional Local Management requirements.

Relevant provisions of current guidance, standards and Codes of Practice for cleaning of healthcare premises and including the latest technical requirements are embodied in the following documents:

- Scottish Health Facilities Note (SHFN) 30: Infection Control in the built environment: Design and Planning;
- HAI-Scribe (Healthcare Associated Infection System for Controlling Risk in the Built Environment);
- The NHSScotland National Cleaning Services Specification;
- NHS Quality Improvement, Scotland – Healthcare Associated Infection (HAI) Cleaning Services Standards;
- The NHSScotland Code of Practice for the Local Management of Hygiene and Healthcare Associated Infection;
- Clinical Standards Board for Scotland Healthcare Associated Infection (HAI) Infection Control Standards.

3.33 The above guidance should be followed with regard to the cleaning and maintenance of ironmongery.

# Appendix: Recommended fixing positions for ironmongery components



# References

## Acts and regulations

**(The) Building (Scotland) Regulations 2004:** ISBN 0 954 6292 3 x Ref: Scottish Building Standards Agency.

**Construction (Design and Management) [CDM] Regulations 1994, SI 1994 No. 3140:** HMSO, 2000. www.hmso.gov.uk/si/si1994/Uksi_19943140_en_1.htm

**Construction (Design and Management) (Amendment) Regulations 2000, SI 2000 No. 2380**: HMSO, 2000. www.legislation.hmso.gov.uk/si/si2000/20002380.htm

**Disability Discrimination Act 1995:** HMSO, 1995. http://www.legislation.hmso.gov.uk/acts/acts1995/ Ukpga_19950050_en_1htm

**Activity DataBase** http://adb.dh.gov.uk/

## NHSScotland Publications

**Firecode:** Guide of documentation: Health Facilities Scotland, 2006

**SHTM 58: 'Internal doorsets'**: Health Facilities Scotland, 2006

**SHFN 30: 'Infection Control in the built environment: Design and Planning'** Health Facilities Scotland, 2007

**HAI-Scribe (Healthcare Associated Infection System for Controlling Risk in the Built Environment):** Health Facilities Scotland, February 2007

**The NHSScotland National Cleaning Services Specification:** SEHD / CMO (2004) 8

**NHS Quality Improvement, Scotland – Healthcare Associated Infection (HAI) Cleaning Services Standards:** CSBS / NHSQIS 2002 ISBN 1 903766 12 5

**The NHSScotland Code of Practice for the Local Management of Hygiene and Healthcare Associated Infection: Healthcare Associated Task Force** CMO (2004) 09

**Clinical Standards Board for Scotland Healthcare Associated Infection (HAI) Infection Control Standards:** December 2001 CSBS 2001 ISBN 1-903766-12-5

## British Standards

**BS 7036-1:1996** Code of practice for safety at powered doors for pedestrian use. General. British Standards Institution, 1996.

**BS 7036-2:1996** Code of practice for safety at powered doors for pedestrian use. Straight and curved sliding doors and prismatic and folding doors. British Standards Institution, 1996.

**BS 7036-3:1996** Code of practice for safety at powered doors for pedestrian use. Swing doors and balanced doors. British Standards Institution, 1996.

**BS 7036-4:1996** Code of practice for safety at powered doors for pedestrian use. Low energy swing doors. British Standards Institution, 1996.

**BS 7036-5:1996** Code of practice for safety at powered doors for pedestrian use. Revolving doors. British Standards Institution, 1996.

**BS 8214:1990** Code of practice for fire door assemblies with non-metallic leaves. British Standards Institution, 1990.

**BS EN 179:1998** Building hardware. Emergency exit devices operated by a lever handle or push pad. Requirements and test methods. British Standards Institution, 2003.

**BS EN 1125:1997** Building hardware. Panic exit devices operated by a horizontal bar. Requirements and test methods. British Standards Institution, 1997.

**BS EN 1154:1997** Building hardware. Controlled door- closing devices. Requirements and test methods. British Standards Institution, 1997.

**BS EN 1155:1997** Building hardware. Electrically powered hold-open devices for swing doors. Requirements and test methods. British Standards Institution, 1997.

**BS EN 1303:1998** Building hardware. Cylinders for locks. Requirements and test methods. British Standards Institution, 1998.

**BS EN 1527:1998** Building hardware. Hardware for sliding doors and folding doors. Requirements and test methods. British Standards Institution, 1998.

**BS EN 1527:1998** Building hardware. Hardware for sliding doors and folding doors. Requirements and test methods. British Standards Institution, 1998.

**BS EN 1906:2002** Building hardware. Lever handles and knob furniture. Requirements and test methods. British Standards Institution, 2002.

**BS EN 1935:2002** Building hardware. Single-axis hinges. Requirements and test methods. British Standards Institution, 2002.

**BS EN 12209:2003** Building hardware. Locks and latches. Mechanically

operated locks, latches and locking plates. Requirements and test methods. British Standards Institution, 2003.

## Trade associations

The Association of Building Hardware Manufacturers, 42 Heath Street, Tamworth, Staffs B79 7JH. www.abhm.org.uk

Automatic Door Suppliers Association, 411 Limpsfield Road, The Green, Warlingham, Surrey CR6 9HA. www.adsa.org.uk

The Guild of Architectural Ironmongers, 8 Stepney Green, London E1 3JU. www.gai.org.uk

The Institute of Architectural Ironmongers,15 Soho Square, London W1V 5FB. www.institute.free-online.co.uk