

AIS Site Guide for Raised Access Flooring



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Site Guide for Raised Access Flooring

Introduction

Raised access flooring remains one of the key aspects of modern office construction and embraces a vast range of products, grades and finishes. A raised access floor system provides a versatile means of routing cables, heating and ventilation and other services, allowing ease of installation, maintenance and relocation through the use of modular and removable access panels. Raised access floor systems are rapidly installed and can provide a working platform for high level operations and a protecting surface for low level service installation works during the construction phase. A wide range of products are available to suit the ultimate needs of the end user, not only in terms of load performance, but also in type, grade and thickness of raised floor panel and method of panel fixing. Finishes may be pre-applied at point of manufacture to provide a self-finished raised access floor system.

It is essential for good quality work that a specialist raised access floor installation contractor is employed who is able to provide the necessary management, supervision and experienced operatives to ensure that the raised access floor system is installed correctly. The raised access floor system will be required to support a variety of different load and performance conditions and advice from manufacturers should always be sought to ensure that the correct raised access floor system is specified.

There is a wide and diverse range of raised access floor systems that may be installed by AIS members. It has not been the intention within this *Site Guide for Raised Access Flooring* to state specific procedures or techniques, but to provide a broad and general overview of key points that relate to a safe, efficient and timely installation. This guide may also serve to those intending to use a raised access floor system as part of their project to develop an understanding of the methods and terms used within the industry, and to gain awareness of the site requirements for those supplying and installing the raised access floor system.

Association of Interior Specialists

A single source serving the interior fit-out industry, the Association of Interior Specialists (AIS) represents companies involved in the manufacture, supply and installation of suspended ceilings, partitioning, operable walls, drylining, platform floors, office furniture and fittings and other aspects of contract interior fit-outs and refurbishment.

The AIS results from a merger between the Partitioning & Interiors Association and the Suspended Ceilings & Interiors Association in 1998, harnessing their combined wealth of knowledge, expertise and resources.

Objectives

The main objectives of the Association are to:

- Raise, maintain and ensure continuity of standards
- Be a source of quality membership

- Provide a single voice and industry leadership for the interiors sector
- Encourage and promote the use of members' products and services
- Provide benefits to and represent the interests of its members

In support of its objectives, the AIS encourages the application and use of interior systems; the development of suitable materials and systems; correct installation practices; care in the selection and use of materials and systems; the use of agreed standard contract documents and contractual procedures. It is also concerned with the promotion of closer working relationships with the specifier and related specialist trades. It is particularly concerned about the correct integration of ceiling and partitioning related services and other interior construction elements.

To achieve its overall objective of providing clients with the quality installations to which they aspire, the AIS requires the standards, materials, service and workmanship of its members to be of a very high order.

Membership and code of conduct

Membership of the Association is not automatic and applicants are subject to stringent vetting procedures. On being accepted into the Association, all members agree to abide by its code of conduct and conditions of membership.

The AIS code of conduct requires members:

- To conduct their business in a manner that will reflect credit on the Association and themselves.
- To adopt and commit to the principles and practices laid down by the Association.
- To act with the utmost integrity towards others, be they members or non-members, and at all times exercise high standards of business practice and workmanship.
- At all times not knowingly to mislead clients, architects or other employing bodies by fact or implication as to the performance of their products or systems.
- To ensure that they are, and remain, conversant with and adhere to the relevant current British Standards (and, where appropriate, international and European Standards) and other relevant technical Standards, Regulations and practices.
- In so far as they are able, to ensure that their products or systems are tested and/or comply with the recognised Standards specified by the client or statutory authority.

The Board and committee members bind themselves to treat in complete confidence private information concerning members of the Association, and information which is considered likely to bring AIS members into disrepute will be brought to the attention of the member(s) concerned before further action is taken.

Raised Access Flooring

Purpose of raised access flooring

The main purpose for the installation of a raised floor is to create a voided floor space in which services, such as electrical, optical, telecommunication, heating/ventilation and mechanical can be routed. A raised access floor system, as opposed to a raised floor, provides the means of accessing key or whole areas of the subfloor void in order to install, repair, alter or remove those services.

Categories of raised access flooring

There are two categories of raised access flooring systems; partial and full.

Partial access floor systems relate mainly to a continuously decked raised floor, formed with individual panels or boards that are supported on joists or pedestals to suit a determined height. The boards/panels are 'permanently' fixed to the means of support and access to the subfloor void can only be performed via a series of hinged/removable traps or hatches, or through a run of removable flooring.

Full access floor systems relate to the installation of a continuously decked raised floor, formed with individual panels, supported on pedestals to suit a determined height. The raised floor panels are manufactured to a regular size, are removable from their installed position and apart from cut panels, are wholly interchangeable within the installed system.

For the purposes of this AIS site guide, all references to raised access floor systems made henceforth shall be for full access floor systems.

Types of raised access flooring

The type of raised access flooring required is determined by the needs of the intended user, the environment in which the floor system is to be installed and the anticipated loads that will be imposed on the floor system, both during installation and following handover to the client/end user.

The key considerations when choosing a raised access floor system are:

- The structural grade of raised access flooring.
- The height of the raised access floor above the subfloor.
- The method of covering the raised floor surface.

The structural grade of the raised floor will mainly be determined by the anticipated weight loading that will be imposed on it through the day-to-day operations of the end user, although other factors should be considered, such as if the raised access floor is to be installed during heavy construction work for instance, or where the floor may be used as a route for transporting heavy materials or equipment.

Whilst actual requirements should be discussed with a manufacturer, the general guideline for choosing the structural grades of raised access flooring is as follows:

- Light grade: General office use without heavy equipment or storage items.
- Medium grade: General office use where heavy office-type equipment will be used – cabinets, photocopiers, heavy desking etc. Walkway and circulation areas.
- Heavy grade: Computer/PABX rooms, heavy storage areas, high public traffic areas.
- Extra heavy grade: As heavy grade, but to incorporate particular client loading requirements.

The height of the raised access floor system above the subfloor will be determined by a combination of three factors:

- a) The extent and type of services required within the subfloor void.
- b) The minimum distance allowed between the finished floor surface to the underside of the ceiling as directed by current regulations.

- c) The range of pedestals available from the manufacturer.

There is a variety of floor finishes that can be used to cover a raised access floor system, and whilst the list can be exhaustive, it can be broken down into two main aspects:

- Subsequent finishes i.e. carpet tiles, broadloom carpet, rubber, stone etc.
- Pre-bonded finishes i.e. the raised floor panels are pre-finished with a preferred covering at point of manufacture, thus providing a modular, removable and completed floor surface.

The latter can include pre-bonded carpets, rubber, high pressure laminates, vinyl coverings and specialist wood and stone finishes. For computer room areas, finishes that possess anti-static, dissipative or conductive properties may be required and the raised floor manufacturer can advise on the most suitable products, which may also involve special manufacture.

Materials and Components

The design requirements of raised access floor systems can involve a wide range of materials and components. It is important to ensure that the materials are properly transported, handled and stored. Transit damage or that which results in poor handling and storage may lead to unnecessary making-good and wastage. Additional protection may be required for pre-finished panels to avoid damage when in transit and when stored.

Deliveries

For reasons of protection, transportation and manoeuvrability, the majority of raised access floor materials are packaged and delivered on wooden pallets. The general location and type of project will in itself determine the size, length and height of the delivery vehicle, likewise whether the vehicle needs to have the mechanical means (i.e. tail lift/hi-ab) of offloading the materials. A point of delivery should be selected which is not only acceptable to the supplier and all other parties on site, but should be suitable for the onward transportation of materials, via pallet truck, from the point of offloading to the storage/works area. Given both the weight and the height of the palletised materials, an unloading point and subsequent transportation route should be chosen that is ideally flat and level and of sufficient width to accommodate both the product and means of handling. In some cases temporary ramps may need to be constructed to overcome stepped areas.

Delivery notes should be checked against the specified requirements and the raised access floor components checked for quantity, quality and suitability. In accordance with agreed procedures, shortages and damaged materials are to be reported immediately to the supplier.

It must be noted that, depending on type, grade and covering, a singular full pallet of raised access floor panels may weigh up to 450kg. Whilst this in itself creates difficulties in unloading and manoeuvring, particular attention must be made to intended transportation route, the means of vertical transportation of the materials once inside the building and subsequent storage area and whether the design of the building and lifting platforms are able to cater for the weight. Care and consultation may be required to ensure that the stored materials are not concentrated in a singular area, but dispersed over the floor plate and/or at load bearing points.

Handling

Care should be exercised when handling all raised access floor materials and particular attention should be given to the following.

The transportation route must be sufficiently clear of other personnel, operatives, materials and tools. In occupied buildings it may preferable to protect the wall and floor surfaces against possible damage that may occur.

When manoeuvring palletised loads, ensure that the transportation route is sufficiently flat and level and suitably resourced according to the type, shape and weight of the item being transported. You should avoid transporting palletised loads across completed raised access floor areas.

Ensure that lifting or hoisting mechanisms are of sufficient size and loading capacity to allow for the vertical movement of the materials.

Avoid the risk of personal injury. Correct PPE should be worn when handling raised access floor components. Raised floor components are predominately metal and there is always a risk of cuts and abrasions resulting from handling these materials and incorrect/absent PPE. Adhesives, sealants and fire barrier materials may contain irritants to the skin and eyes and suitable masks/eye protection should be worn.

Avoid the risk of personal injury. It is always preferable to use wheeled mechanical means to transport raised access floor materials. If this is impractical then the stacked materials should be broken down into manageable quantities and the correct manual handling techniques employed to transport materials around the site.

The handling of materials is an important part of site operations, proper attention to which will impact favourably on the quality of the finished work.

See also the Health and Safety section and the *AIS Health and Safety Handbook*.

Storage

The raised access floor materials should be stored in a clean, dry and suitable location. A storage area should be chosen that minimises subsequent handling to the point of work. Most of the constituent components of a raised access floor system are made from metal, and care should be taken to ensure that the materials are kept in a weather-tight location and away from undue humidity. Particleboard core materials are particularly susceptible to damage from humidity and moisture ingress. It may be advisable to provide additional protection to cover pre-finished panels. To avoid spillages, ensure that adhesives and sealants are suitably protected from accidental damage. Fire barrier materials are easily damaged and it may be preferential to keep these items off site until needed as part of the installation. As mentioned above, care should be taken prior to delivery to ensure that the storage area can bear the weight of the stored materials.

All materials and components should be stored in accordance with the recommendations of the manufacturer or supplier.

Installation

Sequence

Within the context of a multi-trade construction project, the installation sequence of a raised access floor system is dependant on a variety of factors. Quite often the raised access floor will serve as a

working platform for works at a higher level, such as suspended ceiling installations and the fitting of services within the ceiling void. The raised access floor system may be installed either before or after the installation of subfloor services and this can influence the preparation, installation and completion of the floor system. If fitted to the subfloor prior to the raised access floor installation, cables and services may need to be protected or 'bridges' constructed to allow transit routes for personnel and materials. If fitted after the floor installation, raised access floor panels may need to be lifted to allow access to the subfloor void. It is always preferable to install pre-finished raised floor systems after the completion of construction and decoration works to avoid unnecessary damage. Where the subfloor void is to be used as a plenum, then care is to be taken to ensure that dust and debris cannot enter the void through the operations of other trades.

Preparation

The correct preparation in all aspects of the raised floor installation, the supply of adequate and suitable materials, an agreed delivery sequence, an understanding of the method of delivery, transportation and storage facilities and the sequencing of other trades and of the raised floor installation will all help to minimise errors and promote safe and efficient working.

The following notes are offered as a general guideline:

- Agree a start date and a completion date for the work(s). Bear in mind that the raised access floor installation may comprise several operations: pre-marking the subfloor, applying a floor sealant, the installation of the floor and possible attendance works on subfloor service installations.
- Agree a delivery sequence, transportation route and storage area.
- Before commencing the installation of the raised floor system, site measurements should be taken and if appropriate, checked against layout drawings. Check that the setting out is correct and that datums are established around the building – *see level survey*.
- Ensure that the area(s) to receive the raised floor installation and/or associated works are in a suitable condition to allow the correct commencement of the works.

Pedestal test

There may be a requirement to test the bond between the pedestal adhesive and the subfloor surface. This test indicates the strength of the subfloor/adhesive bond by striking an adhered pedestal with a soft bodied weight. This should be performed at the earliest opportunity prior to the commencement of the installation works. Testing should be carried out in accordance with the Property Services Agency (PSA) Method of Building Performance Specification *Platform Floors (Raised Access Floors)*, *MOB PF2 PS/SPU* document T42.00 pedestal structure and fixings test. The specification does not indicate the quantity or percentage of adhered pedestals to be tested although it is generally accepted that a nominated quantity is agreed prior to conducting the test. *MOB PF2 PS/SPU* performance requirement P4.06 actually dictates that mechanical fixings should be used in addition to adhesive unless test T42.00 proves they are not required.

Level survey

To allow manufacture of the correct height of raised access floor pedestals, it is recommended practice to undertake a level survey of the subfloor surface(s). At this point you will need to discuss the actual raised floor height requirements of the client in relation to other factors such as subfloor

services, surrounding finishes and obstacles and whether there is a minimum finished floor-to-ceiling height.

You will also need to establish which of the following terms apply to your installation to ensure that the raised access floor pedestals are of the correct height:

- 1) Minimum void depth.
- 2) Average void depth or average finished floor height.
- 3) Finished floor height.

The glossary explains the difference between these terms.

Floor sealant

There may be a requirement to apply a dust sealant to the subfloor surface. This requirement will be determined by several factors such as: condition of the subfloor surface, subfloor services that may be affected by dust (i.e. fire detection) and whether the subfloor void will be used as a plenum. The application of a dust sealant may be performed prior to, during and after the installation of the raised access floor system. The sequencing of this item will depend on the programmed sequence of works, the type and finish of the raised floor system and the likelihood of dust contamination resulting from other construction works. You will also need to establish whether the subfloor is in a suitable condition to accept the dust sealant prior to use and whether the product chosen is compatible with the intended pedestal adhesive. Failure to consider this may affect the adhesive bond to the subfloor.

Consult with the dust sealant and pedestal adhesive supplier/manufacturer to establish best practice and compatibility of products.

Pre-marking

If subfloor services are to be installed prior to the raised access floor installation then there is the potential for clashes between these and the intended position of the raised floor pedestals. To avoid this, it may be necessary to pre-mark the subfloor. If required, this operation should take place after the application of any dust sealants and in conjunction with the agreed setting-out plan for the raised access floor system. The substance used for marking (i.e. spray/paint) should be of sufficient durability to withstand on-going site operations. The markings can take the form of individual pedestal positions, a wider grid based on a series of pedestals or a series of X-Y lines.

Setting out

Points for setting out should be made available by the main contractor. The layout of the raised access floor should be determined prior to commencement. The following points may need to be discussed and agreed:

- Is there a minimum cut panel size.
- How will perimeter cut panels be supported.
- The position and value of established datum.
- The position of existing/new services fixed to the subfloor.
- If a pre-finished raised access floor system is required, does the finish have a grain/pattern to 'run' in a certain way.

Accuracy in setting out and transfer of levels is essential for a good quality raised access floor installation. Should there be any queries regarding setting out these should be addressed and resolved at the earliest opportunity with the main contractor.

Installation

Installation methods will vary according to the type, scope and nature of the project, the raised access floor products being used, the manufacturer's installation guidelines and the operatives' own preferred techniques. The following notes serve as a general guide to the raised access floor installation:

- Ensure that the subfloor surface is in a suitable condition to receive the pedestal adhesive, taking note of the previous section titled 'Floor sealant'.
- Ensure that the area to receive raised access flooring is weather-tight and meets the manufacturer's criteria in terms of humidity level.
- Verify that the correct setting out details are being used and that datums are correctly established.
- Ensure that the correct PPE is being worn, relevant to the operation being performed.
- Check the material for quality, quantity and suitability prior to use.
- Work in areas that are free from other trades, particularly those working at high level.
- Place adequate signage around the works area to alert others to the on-going raised access floor installation. It is vital to restrict/prevent others from transgressing across the raised access floor installation until the pedestal adhesive has cured and the completed section of floor handed over to the client and/or has been adequately protected.
- Create a safety zone around the area used for the cutting of the raised access floor panels. Place adequate signage to warn others of the potential risk of injury which may result from straying into the designated area.
- Keep the storage area clean and tidy throughout the duration of the works.
- The presence of waste materials, off-cuts and packaging materials can create a risk to the safe operation of the project. Keep all rubbish to a minimum. Waste materials should be disposed of in accordance with product literature, COSHH statements and the raised access floor manufacturer's recommendations.

Cutting raised access floor panels

It is likely that raised floor panels will need to be cut to suit the profile of perimeter boundaries, slab mounted partitions, columns or other obstructions to the raised access floor system.

Cutting operations are hazardous and minimum age limits are placed on certain types of cutting tools including bandsaws. Eye protection and gloves are strongly recommended when using any cutting tools. Create a designated cutting area for all cutting operations to increase the level of safety for those working in the vicinity of the raised access floor installation.

Apertures within raised access floor panels

There may be a requirement to cut apertures within raised access floor panels. Typically apertures are required for the passing through of services, either through cables/pipes or through outlet systems such as floor boxes and grommets. Manufacturers may provide a factory cutting service. The following matters need to be established prior to cutting any apertures:

- The number of apertures required.
- The dimensions of the aperture.
- The position of the aperture within the raised access floor panel.
- The location of the raised access floor panel containing the aperture within the general raised floor installation.

Whilst there are no restrictions on the size of apertures, it is generally recognised that to maintain structural integrity, apertures should not be cut within 100mm of any edge of the raised access floor panel. Should this be impractical, then it is recommended that additional pedestals are placed along the cut edge of the aperture to provide additional means of support.

Care must be taken to ensure that the raised access floor panels containing apertures do not present a trip hazard to others. If possible, do not install these raised access floor panels until the risk to others has been reduced or eliminated. It may be necessary to cover the apertures with suitable boarding or, if conditions allow, install the relevant panels in a singular area suitably protected and guarded until required by subsequent trades/client.

Attendance works

There may be a requirement to remove installed raised access floor panels to enable works within the subfloor void to be carried out. It is recommended that only raised access floor operatives are engaged in performing this operation as improper lifting/replacing of the panels may result in unevenness to the floor system or damage to the installed components. The following notes serve as 'golden rules' for the lifting/replacing of raised access floor panels:

- Before commencing work warn others that raised access floor panels will be lifted and that there is a trip/fall risk. Place adequate signage around the works area. Restrict/prevent access to the works area if possible.
- Raised access floor panels should only be lifted with the use of a suitable panel lifter.
- Do not use keys, screwdrivers or sharp instruments to lever the panels up as this will cause permanent damage to the edge of the panel.
- Panels should be lifted and replaced using a vertical action, lifting the panel clear from its position before placing down.
- When removing 'pre-finished' raised access floor panels, it is advisable to store them 'face to face' and 'back to back' to avoid accidental damage to the finished surface.
- Do not use a hinged action when lifting the raised access floor panels.
- It is recommended that panels should be replaced to the same position and orientation as prior to lifting.
- Avoid removing long singular rows of panels at any one time and do not lift any more panels than necessary.
- When lifting rows of panels it is recommended that for every 10 panels lifted, a single panel is kept in place to ensure the integrity of the installation.
- Do not create pedestal 'islands' by lifting open areas of raised access floor panels as the pedestals may become dislodged or turned from level.
- Do not use the pedestals as pulleys for cables and wiring.

Fire/cavity barriers

Although rare, the outbreak of fire within a raised access floor void is a potential and serious danger. Reference to current building regulations and standards will determine the requirement, performance and frequency of fire and/or cavity barriers within a raised access floor void. Should fire and/or cavity barriers be required, then the following points should be noted:

- It is important that the barriers are fitted at the correct intervals. It is preferable that barriers are fitted in line with partition lines and/or reflect the positioning of barriers within the ceiling void.
- The materials and form of construction must comply with the tested design.
- The barrier(s) must be suitably sealed where penetrated by services.
- Periodically check the condition of the barrier if works have been carried out within the raised access floor void. Typically the barriers are formed with lightweight materials and are easily damaged/distorted.

Completion and Handover

Site clearance

The surface of the raised access floor should be left in a clean condition. Pay particular attention to the surface of pre-finished raised access floor systems to ensure that sharp objects, screws and debris are removed.

All debris should be removed from the work area and routes to this point, including lifts and staircases. Protection materials should be removed and all areas left clean and tidy.

Completion

Before handover, all works should be checked to ensure that they have been executed and completed to specification, including any agreed variations and additional items. Where appropriate, arrangements should be made to meet the client or his appointed representative to inspect the finished work and to agree handover.

Provision of maintenance manual

Before finally leaving site and where appropriate, the client or his representative should be given a comprehensive maintenance manual. This should include the following:

- The name and contact details of the manufacturer of the proprietary system and/or components.
- The name and contact details of the installer of the raised access floor system.
- Type of raised access floor system(s) installed, the grade, the general finished floor height(s) and the finishes applied to the panel surfaces.
- Details from the manufacturer(s) including the sources for spare components, test certificates and working drawings.
- 'As built' drawings when required.
- The position of fire barriers within the subfloor void.
- Details of special characteristics, such as 'screwed-down' raised access floor systems or where 'special' manufactured components have been used to cope with unusual details.

- Details that establish the correct cleaning techniques for pre-finished raised access floor systems.
- Guidance on the correct techniques for lifting and replacing the raised access floor panels.
- Relevant COSHH data.

Health and Safety

The Health & Safety at Work Act

The Health & Safety at Work Act 1974 imposes a general duty on employers to ensure so far as is reasonably practicable the health, safety and welfare at work of all their employees. The Act also provides, without prejudice to the generality of their duties, a list of specific duties of employers in respect of their employees. Contractors should play their full part in overall safety on site by adhering to the specific provisions and by making their site personnel aware of the need to conform to site safety rules at all times. Full co-operation should be sought from all other parties to the contract as far as site operations are concerned.

The Health & Safety at Work Act 1974 also requires that materials and products are safe and without risk to health when properly used. However, when materials and products that are potentially harmful are used, it is imperative to adhere to the manufacturers' instructions and recommended safety precautions. The Control of Substances Hazardous to Health Regulations (COSHH) 1999 relate to these duties under the Health & Safety at Work Act and employers must meet their obligations in respect of this legislation.

The Construction (Design and Management) Regulations 1994 (amended 2000)

The CDM Regulations place duties on all those who contribute to health and safety on a construction project, including clients, designers, planning supervisors, principal contractors and contractors. They also require development of the Health & Safety Plans and creation of the Health & Safety File.

The CDM Regulations apply to most construction projects, although there are certain exclusions. In consequence, the contractor will be involved in projects that fall within scope, e.g. some new building contracts, and projects that fall outside, e.g. some refurbishment contracts. The CDM Regulations apply except where:

- The construction work will last less than 30 days and involves less than 5 people (other than for demolition);
- The construction work is for a domestic client;
- It involves the maintenance or removal of pipe or boiler insulation, or other parts of heating or water systems;
- The construction work is carried out inside offices, shops or similar premises and does not cause any interruption of the normal activities carried out on the premises, and where the construction works are not physically separated from those other activities.

The aims of the CDM Regulations include the following:

- To ensure that all parties consider the hazards and risks associated with the work or location in advance.
- To encourage project planning i.e. the co-ordination of activities.
- To ensure that a written control document, the Health and Safety Plan, is developed.

- And, that future work and maintenance issues are considered.

If there is any doubt as to whether or not a fit-out contract falls within scope of these Regulations, the advice of the local Health & Safety Executive representative should be sought. For further information on The Construction (Design and Management) Regulations 1994 and Risk Assessment, see AIS Fact File Information Sheets AIS 016 *The Construction (Design & Management) Regulations 1994 (CDM)*; 004 *Health and Safety Policy*; and 005 *Risk Assessments*. See also *Managing Construction for Health and Safety*, The Construction (Design and Management) Regulations 1994 Approved Code of Practice HSG 224 (an update on the earlier L54 issue).

The importance of compliance with these regulations cannot be overstated as the authorities are looking for a responsible approach to be taken by all those involved in any form of construction related activity.

Site safety rules

All employees should adhere to the following:

- Upon arrival on site they should report to the Project Manager, Site Agent or client contact and familiarise themselves with specific site safety and health regulations. They should also identify the nearest fire alarm point, fire exit, fire extinguisher and first aid box to their place of work.

They should also:

- Work in accordance with any agreed Safe System of Work or Method Statement.
- Acquaint themselves with the fire procedures for the site or building and observe the relevant rules.
- Obey all site instructions regarding the wearing of personal safety equipment such as hard hats, safety glasses, ear protection, footwear, etc.
- Know to whom all accidents are to be reported and the procedures to be followed.
- Know to whom all defects in plant and equipment must be reported.
- Keep all gangways, exits and work areas clean and tidy and ensure that fire exits and staircases are kept free from any materials or debris, especially in occupied premises.
- Maintain good housekeeping throughout all areas of work by never leaving floors wet, and lifting and clearing waste regularly. Be aware that other site personnel may not be familiar with the working practices involved, for example, in the installation of partitions and/or suspended ceilings.
- Provide adequate protection and signs for the safety of others when their activities create a hazard.
- Never run, especially when on scaffolding.
- Obtain assistance when heavy items require to be lifted. Always bend knees and lift with a straight back.
- Follow correct hygiene and first aid procedures in the event of minor injuries. (Injection against tetanus for site operatives is recommended.)
- Ensure that machine and hand tools are used correctly and that worn tools and equipment are replaced.
- Acquaint themselves with the safety rules regarding the use of special machines and, where appropriate, use guards; avoid wearing loose clothing near moving machinery, and not wear

ties and rings when using power tools or similar equipment. (It is inadvisable to use special power tools if working alone on site.)

- Refrain from interfering with or adapting any equipment or service without proper advice or permission.
- Refrain from nailing objects to ladders and steps, do not remove guard or kick rails on towers or scaffolding.
- Obey site instructions concerning mobile plant and never ride on open hoists.
- Ensure electrical equipment is properly connected. Safe working practices require the use of 110-volt power supply. Where practicable, electrical plant when not in use should be isolated.
- Ensure all precautionary measures advised by the manufacturers are taken when lasers are to be used.
- Ensure that if hazardous materials are identified during the course of the work, the site Health & Safety Officer and the installer company is advised immediately.
- Wear safety glasses and gloves and other appropriate protection when handling glass, particularly annealed glass. Damaged glass should be broken into small pieces and placed into boxes or bins marked 'Danger - broken glass'; do not place into sacks or bags.

Further important reading: *AIS Health & Safety Handbook* and relevant AIS Fact File Information Sheets.

Appendix 1

Glossary of terms/components used in raised access flooring

The terms used in raised access flooring differ between individual manufacturers, installers, users and specifiers. The following list provides a compilation of terms commonly used across the industry to allow recognition of both the component parts and of the matters relating to the installation of a raised access floor system.

Panel (pan, tile)

An individual modular, removable floor panel, which may also include pre-applied floor coverings and/or apertures.

Pedestal (leg, stool, jack, prop)

A component that provides support to the panel. Pedestals may comprise of several parts: head, base, stem and locking device. The join between the head and stem of the pedestal may be through slotting the former into a tubular stem, or through locating the head onto a threaded stem. The pedestal will provide the means of vertically adjusting the height of the raised access floor to ensure correct levels.

Cap (gasket)

A separate fitting placed onto the pedestal head to provide the means of locating the raised access floor panel to the pedestal. The cap may also provide the means of electrical continuity between the raised access floor panel and the pedestal.

Stringer

A beam or bar fitted between adjacent pedestal heads, immediately beneath the surface of the raised access floor panel. These may be used to enhance the load capabilities of the raised access floor system, provide the means of minimising air leakage between abutting raised floor panels and/or where raised access floors are to be installed to provide greater floor void depths. Stability for floors over 500mm height.

Fixings (anchors)

The components that may be used (in addition to adhesive fixing) to mechanically fix the pedestal base to the subfloor surface.

Void depth

The dimension between the top surface of the subfloor and the underside of the raised access floor panel.

Minimum void/maximum void depth

The allowable space between the top surface of the subfloor and the underside of the raised access floor panel. This may be dependant on extent of subfloor services and method of routing within the subfloor void.

Finished floor height

The designated finished level of the flooring surface. Care should be taken to ensure whether 'finished floor height' relates to the finished level of the raised access floor system or that of subsequent floor finishes.

Subfloor

The surface supporting the raised access floor system.

Subfloor sealant (seal)

A substance applied to the subfloor surface to prevent the migration of dust within the raised access floor void. Although this is typically a water-based PVA sealant, epoxy sealants and floor paints may also be used. All sealant products should be checked for compatibility with the pedestal adhesives.

Pedestal adhesive

The primary means of fixing the pedestal base to the subfloor surface.

Shims/packers

Used to pack-up the underside of the pedestal base to ensure that the stem is perpendicular.

Bridging piece

A component designed to support the raised access floor panel in lieu of a pedestal, where the designated position of that pedestal has been displaced by an in-void obstruction.

'Neoprene'

A self-adhering compressible foam strip applied to the cut edges of the raised access floor panel to reduce to a minimum the gap between the panel edge and the vertical boundary. This is often used where the void beneath the raised floor is to be used a plenum. The specification may require a 'self extinguishing' foam strip for fire regulation purposes.

Foil tape

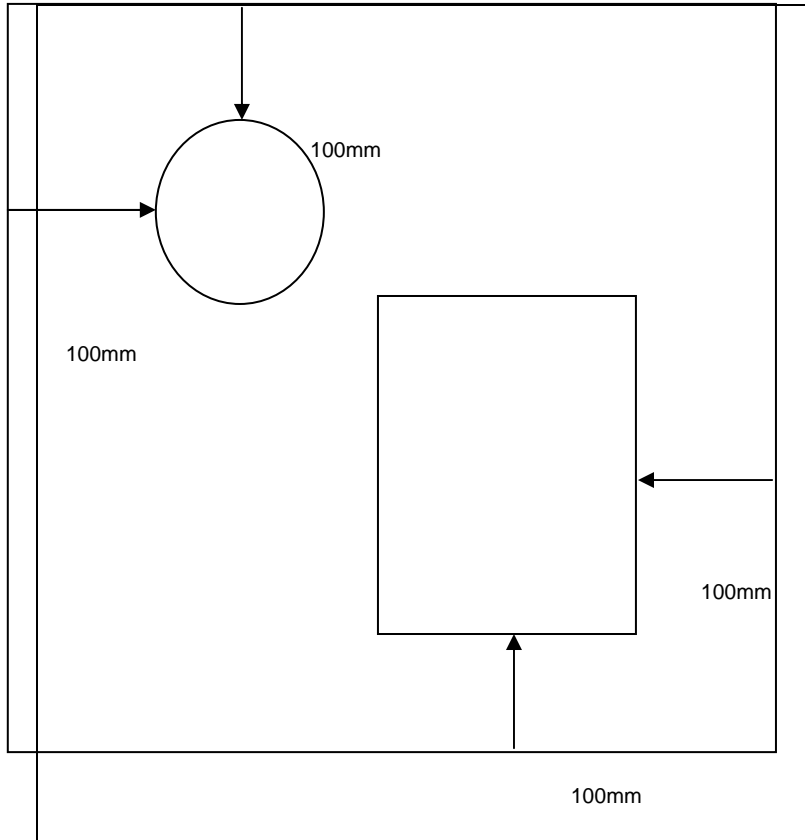
A self-adhering foil tape applied to the cut edges of raised access floor panels where the core material of the panels may be affected by moisture/humidity.

Lifting devices

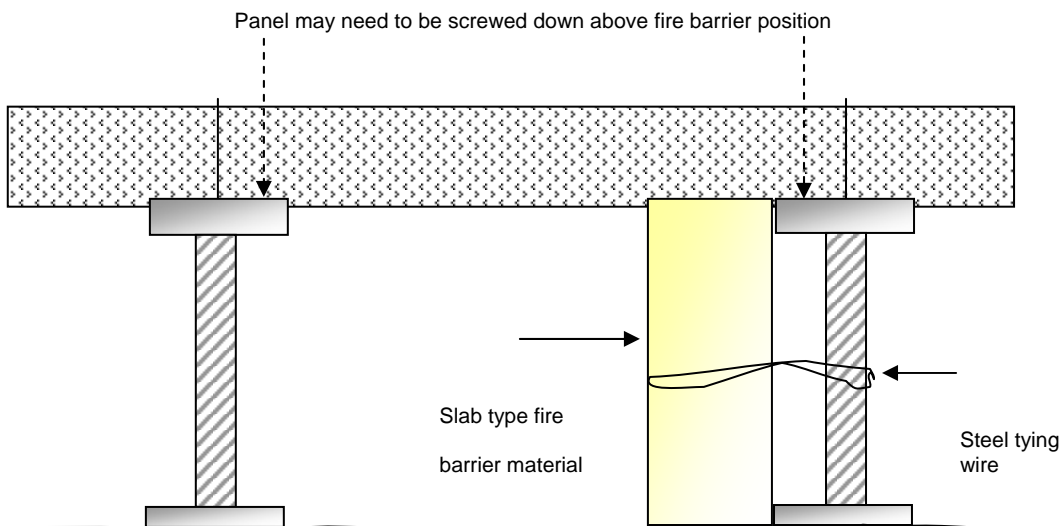
Suction lifter to be used for removing bare panels or vinyl, laminate, marble covered panels. A carpet lifter would be used for removing a factory-bonded carpet finish panel.

Appendix 2

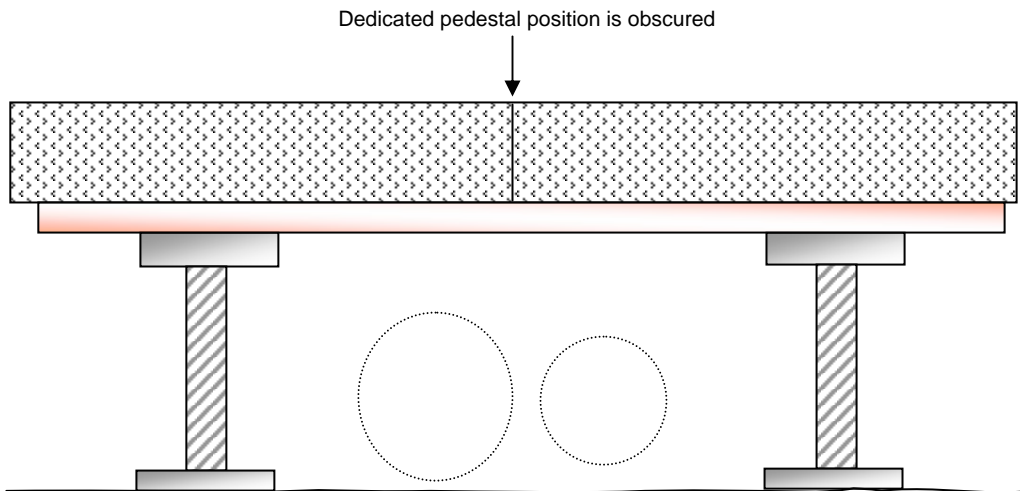
Drawings and diagrams



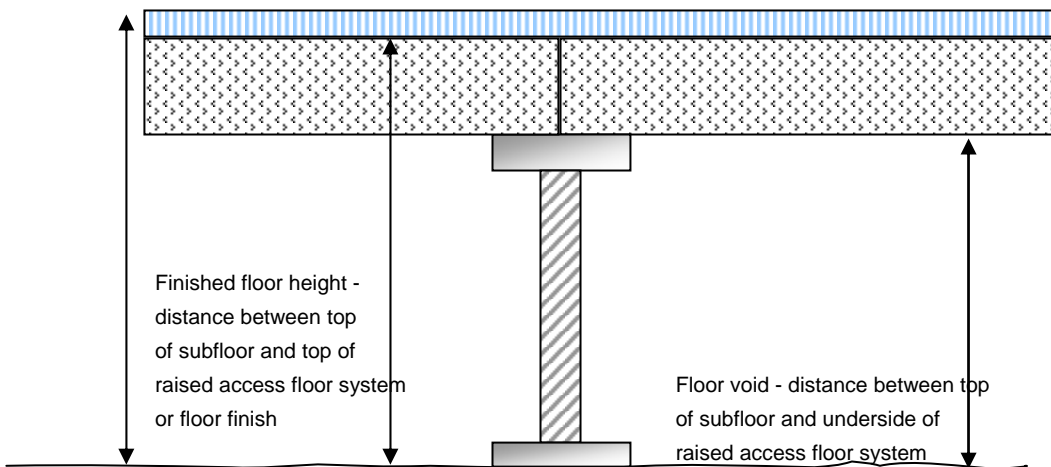
**Apertures within raised floor panels -
Minimum recommended distances**



Typical fire barrier detail



Typical bridging detail using mild steel plate



Appendix 3

List of references

- BS 476: *Fire tests on building materials and structures*
Part 4: 1970 (1984) *Non-combustibility test for materials*
Part 6: 1989 *Method of test for fire propagation for products*
Part 7: 1997 *Method for classification of the surface spread of flame of products*
Part 22: 1987 *Method for determination of the fire resistance of non-loadbearing elements of construction*
Part 23: 1987 *Methods for determination of the contribution of components to the fire resistance of a structure*
Part 31: *Methods for measuring smoke penetration through doorsets and shutter assemblies: Section 31.1: 1983 Method of measurement under ambient temperature conditions*
- BS EN 1364-1: 1999 *Fire resistance tests for non-loadbearing elements - walls*
BS EN 1364-2: 1999 *Fire resistance tests for non-loadbearing elements - ceilings*
BS EN 1365-1: 1999 *Fire resistance tests for loadbearing elements – walls*
BS EN 1365-2: 2000 *Fire resistance tests for loadbearing elements – floors and roofs*
BS EN 1365-3: 2000 *Fire resistance tests for loadbearing elements – beams*
BS EN 1365-4: 1999 *Fire resistance tests for loadbearing elements – columns*
BS EN 1366-1: 1999 *Fire resistance tests for service installations – ducts*
BS EN 1366-2: 1999 *Fire resistance tests for service installations – fire dampers*
BS EN 12825: 2001 *Raised access floors*
BS EN 13964: 2004 *Suspended ceilings. Requirements and test methods*
BS 5234: *Partitions (including matching linings)*
Part 1: 1992 *Code of practice for design and installation*
Part 2: 1992 *Specification for performance requirements for strength and robustness, including methods of test*
- BS 5492: 1990 *Code of practice for internal plastering*
BS 6180: 1999 *Code of practice for protective barriers in and about buildings*
BS 6206: 1981 (1994) *Specification for impact performance for flat safety glass and safety plastics for use in buildings*
- BS 6262: 1982 *Code of practice for glazing for buildings*
Part 4: 1994 *Code of practice for safety related to human impact*
- BS 8000: *Workmanship on building sites*
Part 5: 1990 *Code of practice for carpentry, joinery and general fixings*
Part 7: 1990 *Code of practice for glazing*
Part 8: 1994 *Code of practice for plasterboard partitions and drylinings*
Part 10: 1995 *Code of practice for plastering and rendering*
Part 11: - *Code of practice for wall and floor tiling*
Part 11.1: 1989 (1995) *Ceramic tiles, terrazzo tiles and mosaics*
Part 11.2: 1990 *Natural stone tiles*

Part 12: 1989 *Code of practice for decorative wallcoverings and painting*
 BS 8212: 1995 *Code of practice for drylining and partitioning using gypsum plasterboard*
 BS 8214: 1990 (1992) *Code of practice for fire door assemblies with non-metallic leaves*

BS 8290: *Suspended Ceilings*
 Part 1: 1991 *Code of practice for design*
 Part 2: 1991 *Specification for performance of components and assemblies*
 Part 3: 1991 *Code of practice for installation and maintenance*

BS EN ISO 9000 (formerly BS 5750) *Quality systems*
 The Building Regulations 2000 (England and Wales)
 Approved Document B - *Fire Safety, 2000 edition*
 Approved Document K - *Protection from falling, collision and impact, 1998 edition*
 Approved Document M - *Access to and use of Buildings, 2004 edition*
 Approved Document N - *Glazing – Safety in relation to impact, opening and cleaning, 1998 edition*
 Regulation 7 - *Materials and workmanship, 1999 edition*
 The Building Standards (Scotland) Regulations 1990
 The Building Regulations (Northern Ireland) 1994 as amended 1997
 The Health & Safety at Work Act 1974
 Management of Health & Safety at Work Regulations 1999
 Control of Substances Hazardous to Health Regulations (COSHH) 1999
 The Construction (Design and Management) Regulations (CDM) 1994
 Health & Safety Commission (HSC) Approved code of practice on Management of health and safety at work
 Glass and Glazing Federation (GGF) Codes of practice on Glass handling, storage, transport, and safety in the flat glass industry
 Property Services Agency (PSA) Method of Building Performance Specification - *MOB PF2 FS/SP: Platform Floors (Raised Access Floors)*

Association of Interior Specialists references

AIS Profile
AIS Fact File of Information Sheets
AIS Health & Safety Handbook
AIS Site Guide for Drylining
AIS Site Guide for Partitioning
AIS Site Guide for Raised Access Flooring
AIS Site Guide for Suspended Ceilings
AIS Site Guide for Wallcoverings
 AIS Website: www.ais-interiors.org.uk



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