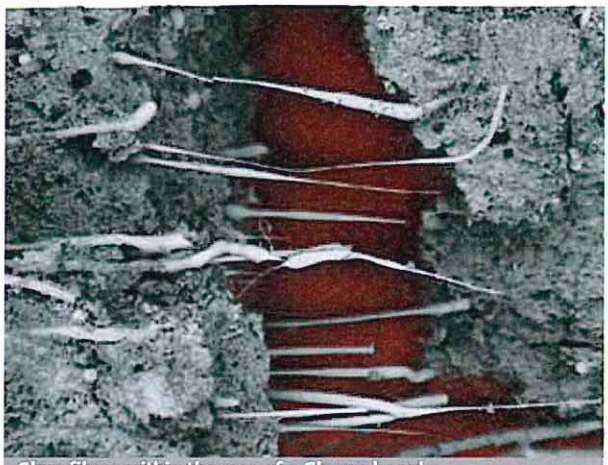
Glasroc F board products

Glasroc F physical properties

Why is Glasroc F so good in fire?

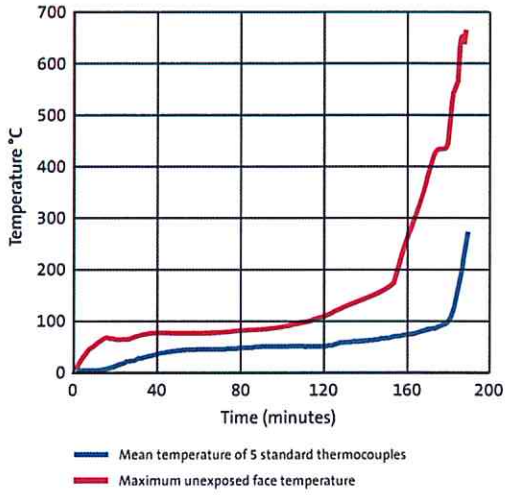


Glass fibres within the core of a Glasroc board

Glasroc F provides good fire protection in buildings due to the unique behaviour of its gypsum core when exposed to fire. Pure gypsum ($CaSO_4.2H_2O$) contains nearly 21% chemically combined water of crystallisation, and about 79% calcium sulphate ($CaSO_4$), which is inert below a temperature of 1200°C. When Glasroc F protected building elements are exposed to fire, the chemically combined water is gradually released in the form of water vapour. If a sufficiently high temperature is maintained, eventually all the water of crystallisation will be expelled. The process of dehydrating gypsum by heat is known as 'calcination'. This condition is caused in general use if the board or gypsum finish is continuously exposed to temperatures over 49°C. It commences at the surface exposed to the fire and proceeds gradually through the board thickness. The covering of calcined gypsum formed on the exposed faces adheres tenaciously to the uncalcined material and serves to retard the calcination process, which becomes progressively slower as the thickness of calcined material increases. While the process continues, the temperature directly behind the plane of calcination is only slightly higher than that of boiling water (100°C). Therefore, until all the water of crystallisation has been liberated, the temperature of materials adjacent to, or in contact with, the unexposed side cannot exceed 100°C. This temperature is well below that at which most materials used in buildings will ignite and far below the critical temperatures for structural components. Once the gypsum layer is completely calcined, the residue (calcium sulphate) continues to act as an insulating layer for as long as it remains intact.

Refer to **Figure 1** - Temperature profile on the unexposed face of a Glasroc F lined partition system. The graph shows that there is a large plateau in the temperature rise which is the period of time when the Glasroc F board is undergoing calcination. After this period the temperature gradually rises until the boards lose their integrity and fall away.

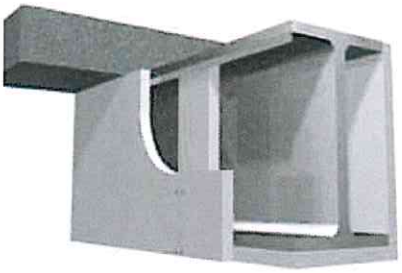
1 Temperature profile on the unexposed face of a Glasroc F lined partition system



The inclusion of the glass fibre tissue and rovings within the gypsum core of Glasroc F FIRECASE and Glasroc F MULTIBOARD improves the cohesive properties and fire integrity performance. This enables a much higher fire protection performance to be achieved compared to standard plasterboard.

In terms of reaction to fire, Glasroc F FIRECASE and Glasroc F MULTIBOARD are excellent performers as the endothermic hydration reaction requires energy to be taken from the fire, so in calorific terms gypsum is a negative contributor. Glasroc F FIRECASE and Glasroc F MULTIBOARD are non-combustible due to not having a paper lining on the face of the board.

FireCase - Frameless structural steel encasement system



FireCase frameless encasement system provides a high quality cladding to structural steel, and offers up to 120[1] minutes fire protection. The system provides protection to universal steel columns and beams, together with many joist and castellated beam sections. It can be used in any type of building where an encasement is required to structural steelwork. The Glasroc F FIRECASE lining provides a smooth, robust surface and there is no requirement to joint or apply a decorative treatment.

Key benefits

- High levels of fire protection to structural steelwork
- Non-combustible system
- Board manufactured to tight thickness tolerances to ensure the correct level of fire protection
- Maintains compartmentation
- Benefits acoustic performance
- No finishing required to achieve the fire performance
- Simple and quick to install
- Can be installed early in the build programme
- No costly steel preparation required
- Installation is not affected by temperature
- Option of staple fixing for faster installation
- Minimal impact to other trades on site
- Glasroc F FIRECASE provides a smooth, impact resistant surface
- Fully compatible with drylining and provides flexibility for future change of use
- Provides spatial efficiencies
- Is easy to maintain and repair
- Covered by British Gypsum's SpecSure® lifetime system warranty
- Glasroc F FIRECASE can be recycled using the British Gypsum Plasterboard Recycling Service
- Has third party certification

[1] Up to 180 minutes fire protection to columns can be achieved using Glasroc F FIRECASE boards in conjunction with the **Gyplyner ENCASE** system.

Smooth, impact-resistant surface

The Glasroc F FIRECASE board lining provides a smooth, robust surface and there is no requirement to joint or apply a decorative treatment. The **FireCase** frameless encasement system can be finished if required, to blend seamlessly with other British Gypsum systems.

Non-combustibility

The surfaces of the Glasroc F FIRECASE board are non-combustible and are designated Class 0 (for the purposes of Building Regulations).

Thickness of applied fire protection

Glasroc F FIRECASE is manufactured to stringent factory tolerances, giving the client peace of mind that the correct thickness of fire protection has been applied, ensuring life safety in the event of a fire.

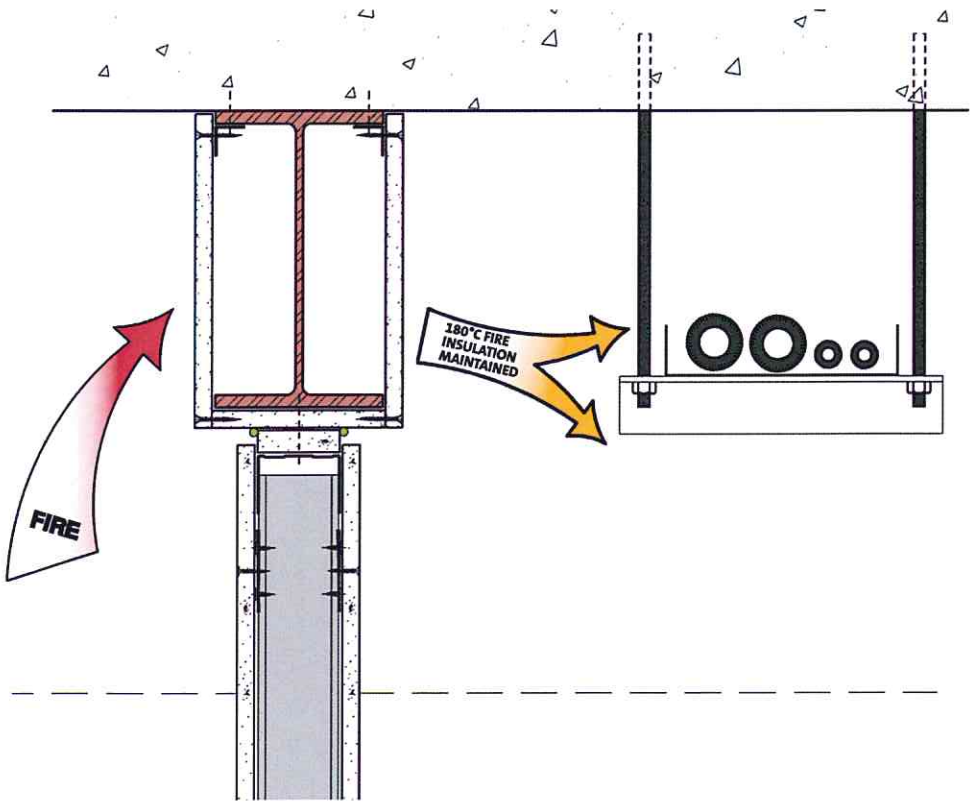
Benefits to compartmentation

Using the **FireCase** frameless encasement system will eliminate any potential problems with compartmentation. Unlike some alternative fire protection technologies, e.g. paint, using the **FireCase** frameless encasement system will ensure that there are no potential problems with insulation failure through the steelwork (refer to **Figure 1 - Benefits to compartmentation**).

Flexibility for future change of use

The **FireCase** frameless encasement system is fully compatible with other British Gypsum systems and supports flexibility during changes to building use. British Gypsum partition systems can be directly fixed to the Glasroc F FIRECASE board linings allowing changes to be made without compromising the structural fire protection. Refer to **Construction details 6** and **8** later in this section.

1 Benefits to compartmentation



Benefits to acoustics

The **FireCase** frameless encasement system will also give acoustic benefits in terms of preventing sound transmission through the building structure due to the steelwork not being exposed. The **FireCase** frameless encasement system can be used in conjunction with Gyproc plasterboards, and Isover APR 1200 mineral wool can be added to the cavity to further enhance the acoustic performance. Specific details are available from the British Gypsum Drywall Academy. Unlike some alternative fire protection technologies, e.g. paint, using the **FireCase** frameless encasement system will greatly improve the acoustic performance of a structure (refer to **Figure 2 - Benefits to acoustics**).

All year round installation

Glasroc F FIRECASE has an operational tolerance from below freezing to +49°C, whereas some alternative technologies are often +5°C to +30°C. Using Glasroc F FIRECASE ensures that there are no potential problems with the build program in UK winter conditions.

Building programme efficiencies

The **FireCase** frameless encasement system allows other trades to work in close proximity and simultaneously. Some alternative technologies require areas of the site to be closed off due to the containment of overspray and fumes.

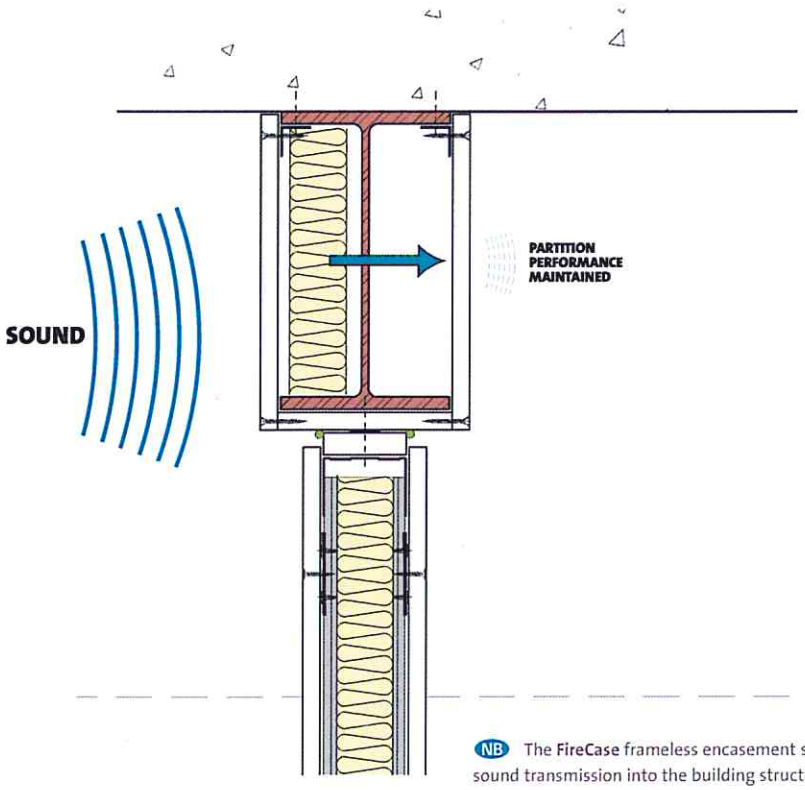
Spatial efficiencies

The **FireCase** frameless encasement system is fixed directly around the steel columns and beams, without any need for cavity spaces, which saves valuable floor space across a building compared to other technologies, e.g. intumescent paint over boarded with drylining.

Recycling waste

The British Gypsum Plasterboard Recycling Service offers the collection of Glasroc F FIRECASE direct from site for recycling in our factories. As regulations tighten and pressure on landfill intensifies, site waste is not only an environmental concern but can become a major cost to the project.

2 Benefits to acoustics



NB The **FireCase** frameless encasement system will help to minimise sound transmission into the building structure and can be detailed as to not downgrade the performance of adjoining partition systems.

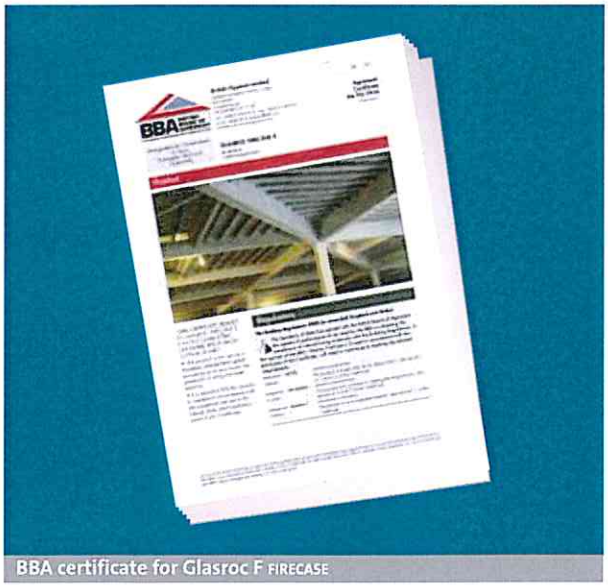
Ease of maintenance

Under the Regulatory Reform (fire safety) Order (RRO) the responsible person has duty of care for maintaining the buildings fire protection systems. The **FireCase** frameless encasement system is robust but should damage occur it is simple to repair or replace, making management and maintenance simple for building owners.

Third party accreditation

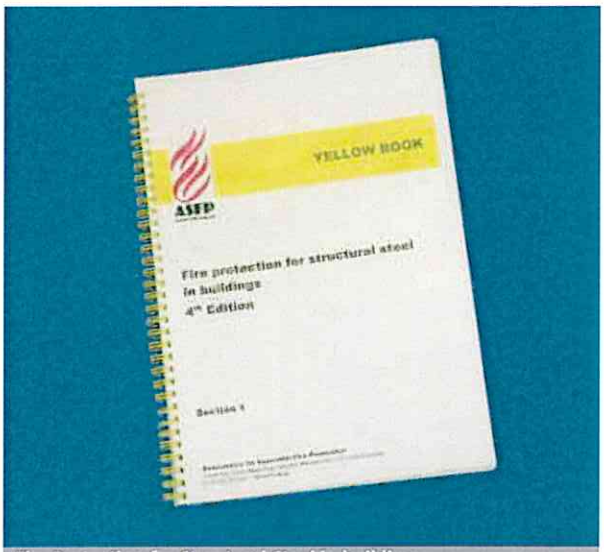
Third party accredited product conformity certification schemes not only provide a means of identifying materials and designs of system, products or structures which have demonstrated that they have the requisite performance in fire, but additionally provide confidence that the systems, materials, products or structures actually supplied are provided to the same specification or design as that tested and assessed.

The Glasroc F FIRECASE board has a BBA certificate giving third party accreditation against its fire performance and factory production control. This gives the client peace of mind that the fire protection system will perform in a fire situation.



BBA certificate for Glasroc F FIRECASE

FireCase also appears in the ASFP Yellow Book - Fire protection for structural steel in buildings. In order to be listed in this publication the supporting test data and fire assessments are reviewed by an independent panel.



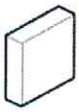
Fire Protection for Structural Steel in buildings

System components

Gypframe metal products

GA1 Steel Angle **Length** 2900mm

Glasroc F board products



Glasroc F FIRECASE

Thickness	15, 20, 25, 30mm
Width	1200mm
Length	2000, 2400mm

Fixing products

Glasroc Staples
50mm long. Use with cordless Glasroc Impulse Staple Gun for board-to-board fixing (except 30mm board).

or

Glasroc F FIRECASE Screws
40, 50, 58, 70mm. For board-to-board and board-to-Gypframe metal fixing.

Gyproc Drywall Metal Angle Bead
For reinforcing external angles where maximum protection is required.

or

Gyproc No-Coat Ultraflex 325
High performance drywall corner reinforcement.

Finishing products

Gyproc Joint Cement
For decorative seamless jointing.

Thistle Board Finish or Thistle Multi-Finish
To provide a plaster skim finish.

or

Thistle Durafinish 25kg
To provide improved resistance to accidental damage.

Isover APR 1200
For improved acoustic performance (optional).

Glasroc F fixings

Glasroc F FIRECASE boards can be fixed with Glasroc Staples or Glasroc F FIRECASE Screws. Refer to **Table 1** to establish the minimum length of fixing.

Table 1 - Glasroc F fixings

Board thickness (mm)	Minimum fixing length Board-to-board fixing	Board-to-metal fixing
15	40mm Glasroc F FIRECASE Screws or 50mm Glasroc Staples	40mm Glasroc F FIRECASE Screws
20	50mm Glasroc F FIRECASE Screws or 50mm Glasroc Staples	40mm Glasroc F FIRECASE Screws
25	58mm Glasroc F FIRECASE Screws or 50mm Glasroc Staples	40mm Glasroc F FIRECASE Screws
30	70mm Glasroc F FIRECASE Screws	40mm Glasroc F FIRECASE Screws
15 + 20	40mm & 50mm Glasroc F FIRECASE Screws or 50mm Glasroc Staples	40mm & 50mm Glasroc F FIRECASE Screws

Installation

Four-sided protection to steel columns

Cladding is commenced from the base of the column. Boards are positioned and staple-fixed board-to-board using a Glasroc Impulse Staple Gun (or similar) or alternatively using Glasroc F FIRECASE Screws of appropriate length. Board joints on adjacent sides are staggered by a minimum 600mm. For double layer linings, board joints are staggered between layers by a minimum 300mm.

Three-sided protection to steel columns incorporating steel angles

Gypframe GA1 Steel Angle is fixed to the wall both sides of the column. Additional steel angles are incorporated where the column flange is at right angles to the wall structure. Refer to **Construction details** later. Boards are positioned and screw-fixed to the steel angles. Board-to-board fixings are made by using Glasroc Staples or using Glasroc F FIRECASE Screws. For double layer linings, board joints are staggered between layers.

Three-sided protection to steel beams incorporating steel angles

The procedure is as for columns except that for single layer encasements, fascia board joints are backed with Glasroc F FIRECASE. Strips of Glasroc F FIRECASE are cut to a minimum 60mm width and staple or screw-fixed behind fascia board ends so as to half-lap the joints. Refer to **Construction details** later.

Three-sided protection to steel columns and beams incorporating Glasroc F FIRECASE soldiers to support single layer linings providing up to 90 minutes fire protection

Glasroc F FIRECASE soldiers are pre-cut to fit neatly into the steel section. The soldiers are located into both sides of the section at 1200mm maximum centres as boarding progresses. At fascia board joints, two soldiers are fitted side by side so that each one finishes flush with the board end. Cladding is fixed to each joint soldier and also any intermediate soldiers using three Glasroc Staples or Glasroc F FIRECASE Screws. Boarding is continued as previously, staggering board joints.

NB Boards are cut using a suitable mechanical saw. Board fixings throughout (including fixings to steel angles) are at 150mm centres. Steel angles are fixed at maximum 600mm centres.

Glasroc F FIRECASE providing up to 180 minutes fire protection to steel columns using GypLyner ENCASE system

Gypframe GL10 GypLyner Steel Framing Clips are friction-fitted at maximum 800mm centres onto the column flanges. Gypframe GL1 Lining Channel is located over the clips to form the steel framework. Where lengths of Gypframe GL1 Lining Channel abut, GL10 clips are located either side to provide support. Alternatively use Gypframe GL3 Channel Connector to join the ends of Gypframe GL1 Lining Channels together. Boards are cut to width and fixed to all framing members using Gyproc Drywall Screws. Board joints on adjacent sides are staggered by a minimum 600mm. Short lengths of Gypframe GL1 Lining Channel, Gypframe GFS1 Fixing Strap, or Gypframe GFT1 Fixing 'T' are cut to form horizontal noggings to back board end joints. The Glasroc F FIRECASE lining boards are fixed to the framework at 300mm centres.

Design

Planning - key factors
The **FireCase** frameless encasement system is suitable for protecting structural steel sections with a section factor A/V (Hp/A) up to 260m-1, calculated on the basis of box protection to three or four sides as required. It will protect universal column and beam sections described in *BS 4: Part 1: 2005*, and many joist and castellated beam sections.

Lining selection
To determine the thickness of cladding required, the designer should follow the procedure below:

1. Find out what period of fire resistance is needed.
2. Ascertain whether protection is required on three or four sides of the section.
3. Determine which critical temperature is to be used (usually 550°C).
4. Determine if the performance standard required is BS or EN.
5. Refer to **Tables 5 - 24** for the relevant steel size. Locate the steel section to be protected, listed by its size and mass per metre, and read off the section factor A/V.
6. Refer to **Tables A - L** for the relevant A/V (Hp/A) . Locate the A/V value on the vertical scale. Read across the chart to the column relating to the period of fire resistance required and read off the designated thickness of Glasroc F FIRECASE cladding required to form the encasement.

For castellated sections and cellular beams, please refer to the Association for Specialist Fire Protection (ASFP) publication 'Fire protection for structural steel in buildings - 4th edition', for guidance.

Partition fixing
Partitions and wall linings may be fixed directly to the Glasroc F FIRECASE cladding as long as:

1. The fire resistance requirement of the partition is 60 minutes or less.
2. There are no special requirements for pressure resistance, e.g. around lift shafts.
3. There are no special loading requirements, i.e. Heavy Duty or Severe Duty as defined in recognised partition performance specifications, e.g. *BS 5234*. Refer to **Construction detail - 6** later.

Where these criteria are not met, the partition framing must be suitably fixed to the structural steel section, through the Glasroc F FIRECASE cladding. Where the partition abuts the web of the structural steel, a suitable steel nogging must be provided. Refer to **Construction details - 7** later.

Additional support
Where steel section web dimensions exceed 600mm, additional support will be required for the cladding. Refer to **Construction detail - 11** later.

Tiling
Tiles can be applied using conventional tile adhesives without pre-treatment of the Glasroc F FIRECASE board.

Finishing
Glasroc F FIRECASE joints are treated using Gyproc Joint Tape bedded in Gyproc Joint Cement. External angles and corners can be reinforced using Gyproc No-Coat Ultraflex 325 bedded in Gyproc Joint Cement. If a plaster finish is required, joints should be reinforced and Thistle Board Finish, Thistle Multi-Finish or Thistle Durafinish applied.

NB Jointing and finishing of the Glasroc F FIRECASE board is not a requirement to meeting the specified fire protection period. Gaps up to 3mm can be left unfilled.

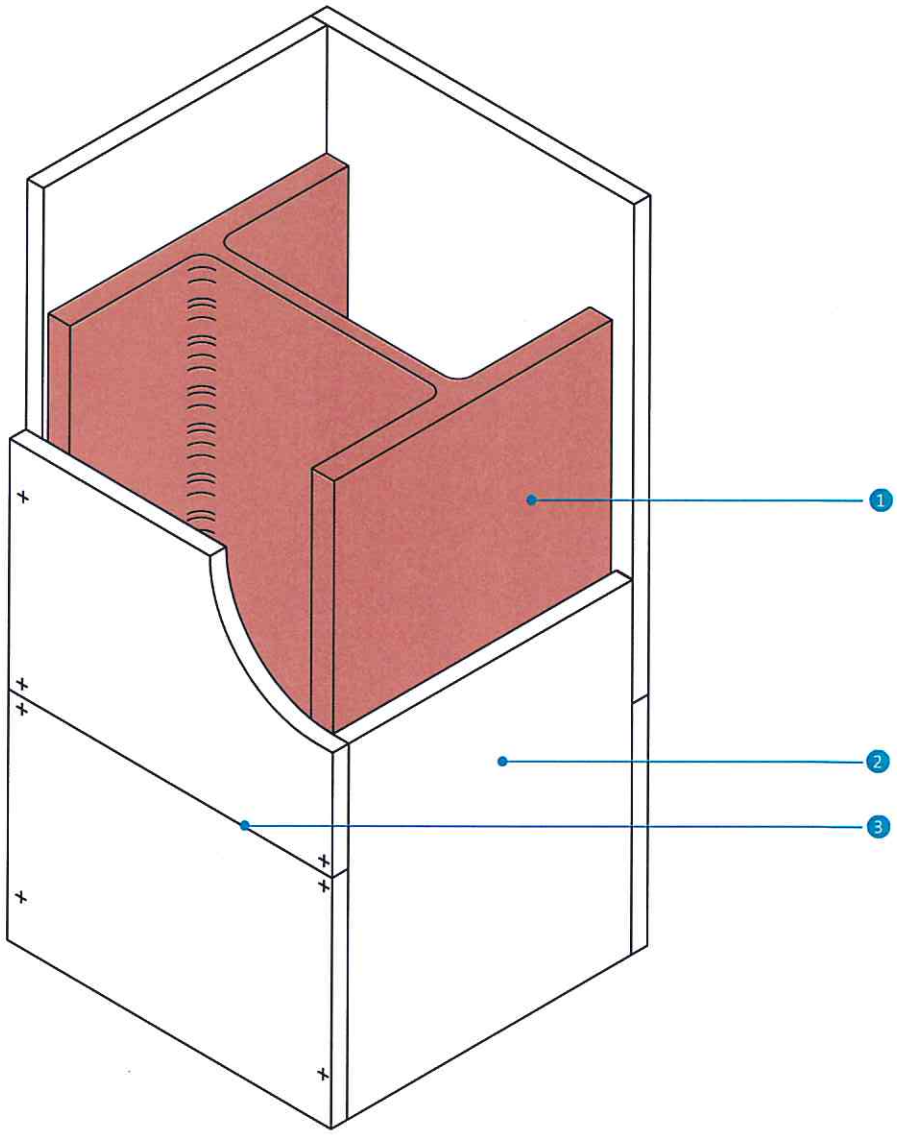
180 minute protection to columns
For periods of fire protection up to 180 minutes for columns Glasroc F FIRECASE can be incorporated into the **GypLyner ENCASE** system.

Guidance for alternative section types (box, angles, etc)
The **FireCase** steel encasement system can be used around structural hollow sections and angles in accordance with the recommendations in *ENV 13381-4: 2002* provided the maximum A/V and lining thickness does not exceed the values given in **Tables A - L** later.

Steel members used for wind bracing should be based on the actual section factor or a nominal value of 200^{-1}, whichever is the lower value in accordance with *BS 5950: Part 8: 2003*.

Construction details – 4-sided column encasement

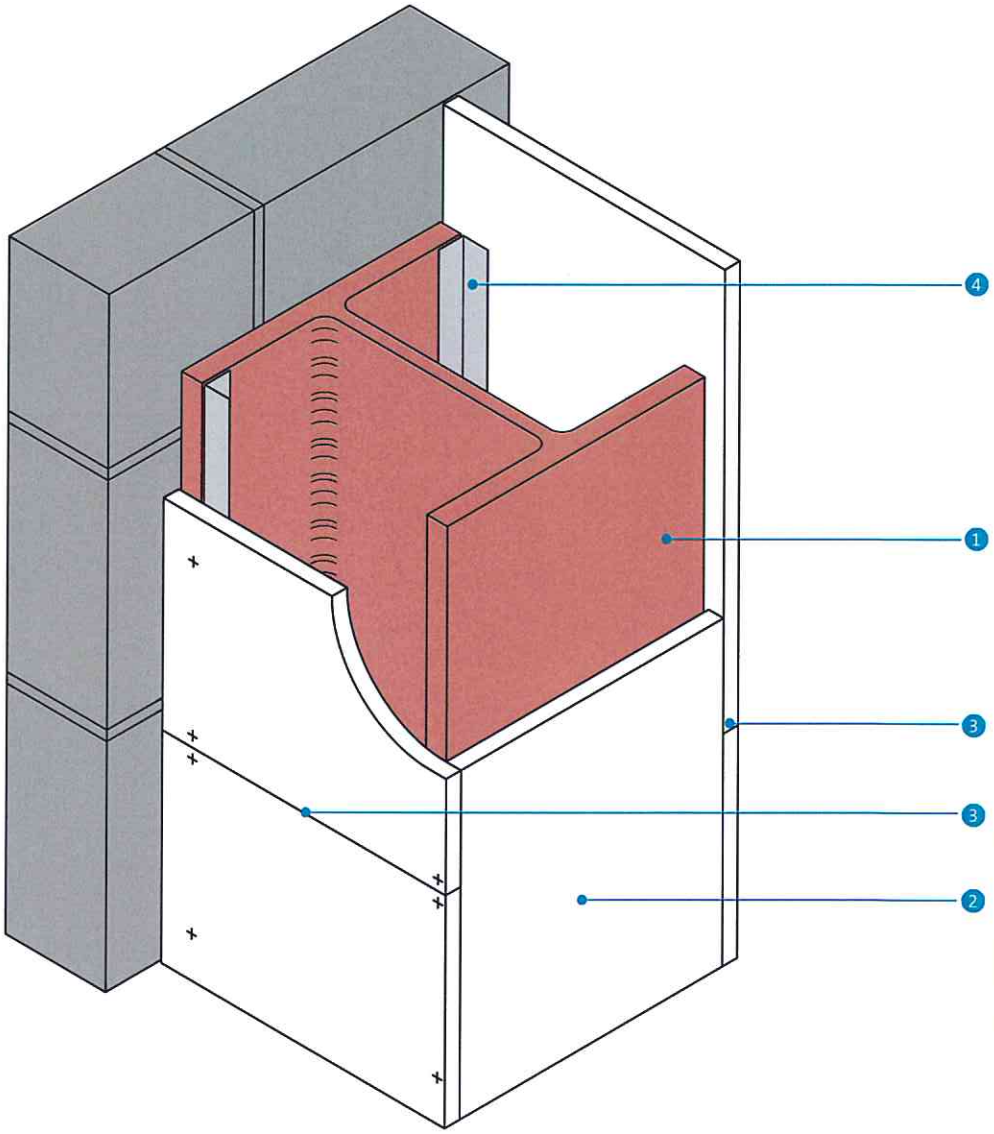
1 Four-sided column encasement for up to 120 minutes fire protection



1. Steel column
2. Glasroc F FIRECASE fixed together with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres
3. Board joints staggered by minimum 600mm between adjacent sides

Construction details – 3-sided column encasement

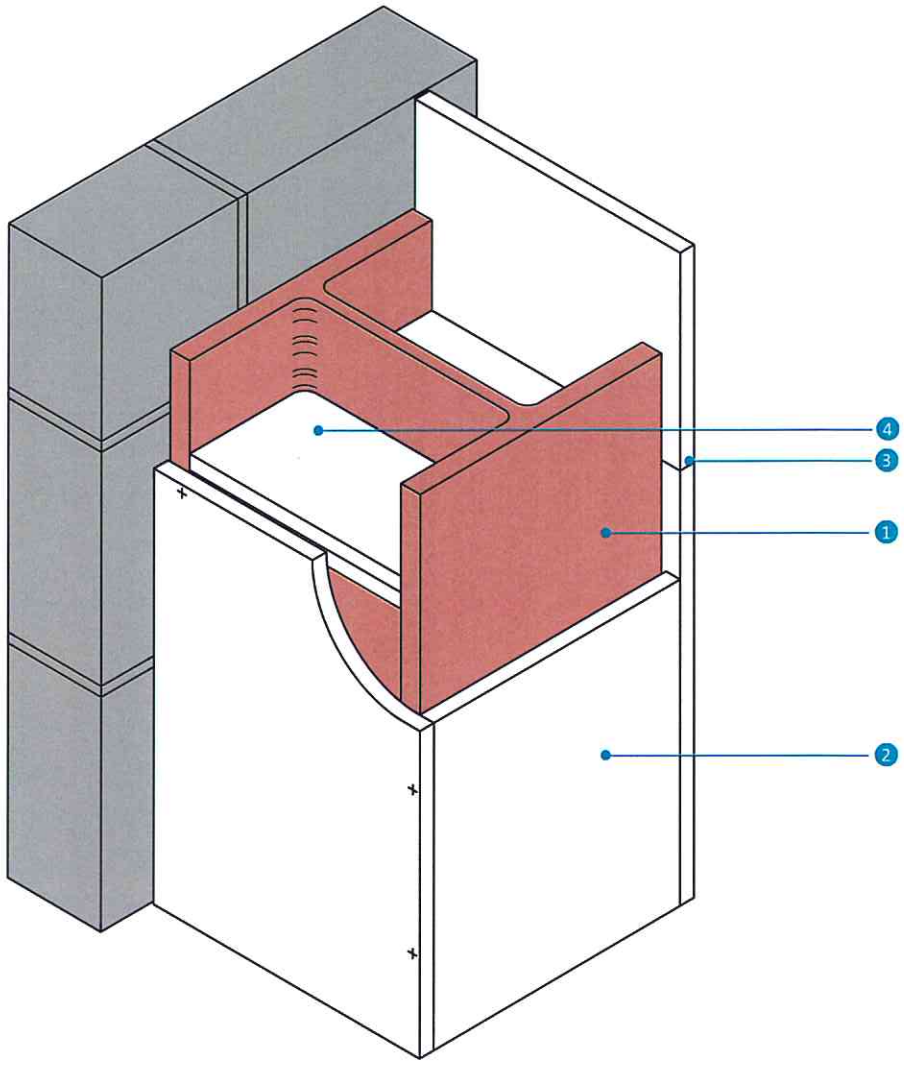
2 Three-sided column encasement incorporating steel angles for up to 120 minutes fire protection



1. Steel column
2. Glasroc F FIRECASE fixed together with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres
3. Board joints staggered by minimum 600mm between adjacent sides
4. Gypframe GA1 Steel Angle suitably fixed to column flange at 600mm centres

Construction details – 3-sided column encasement

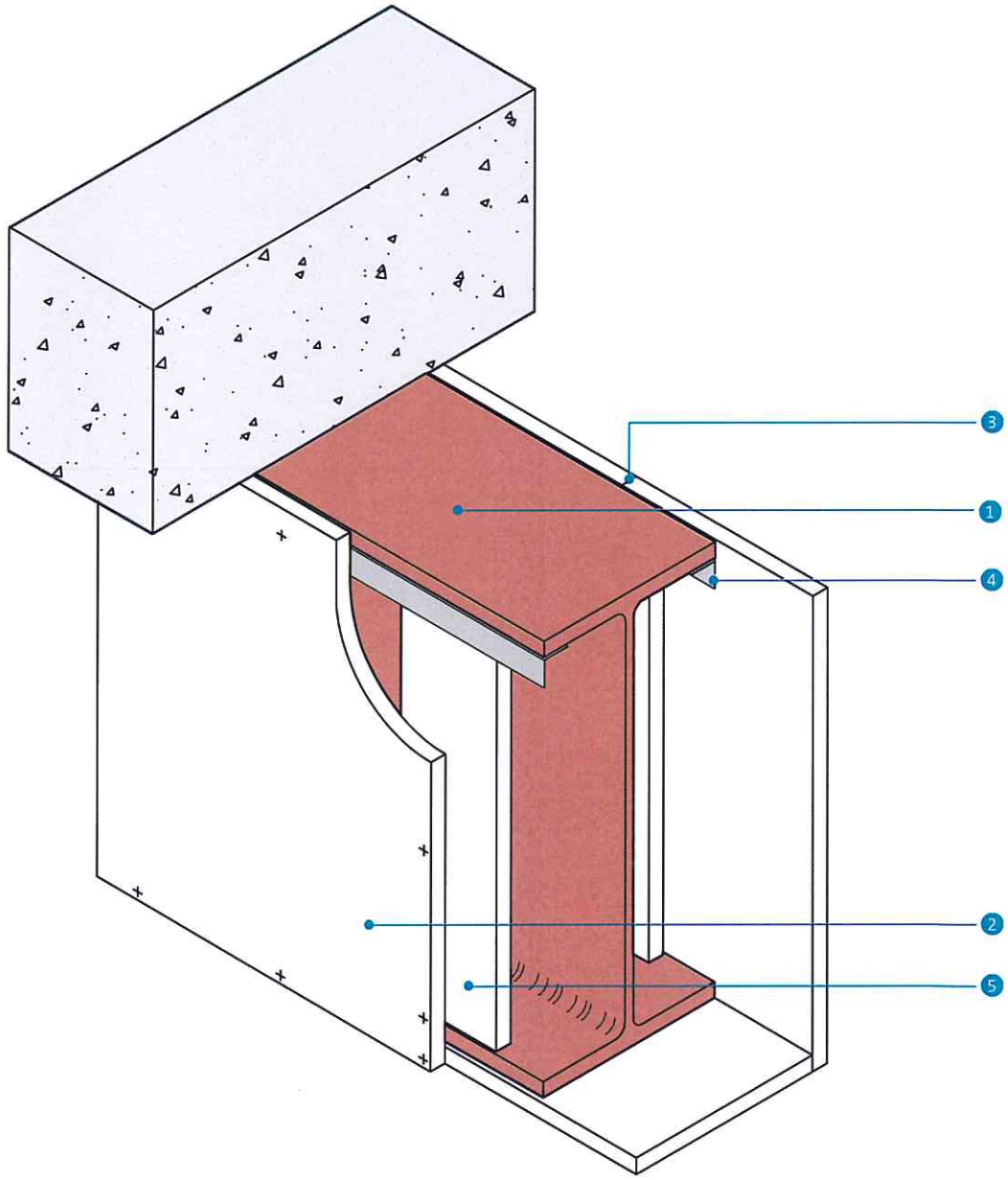
3 Three-sided column encasement incorporating Glasroc F FIRECASE soldiers for up to 90 minutes fire protection



1. Steel column
2. Glasroc F FIRECASE fixed together with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres
3. Board joints staggered by minimum 600mm between adjacent sides
4. Glasroc F FIRECASE soldiers at 1200mm centres (2 together at board joints)

Construction details – 3-sided beam encasement

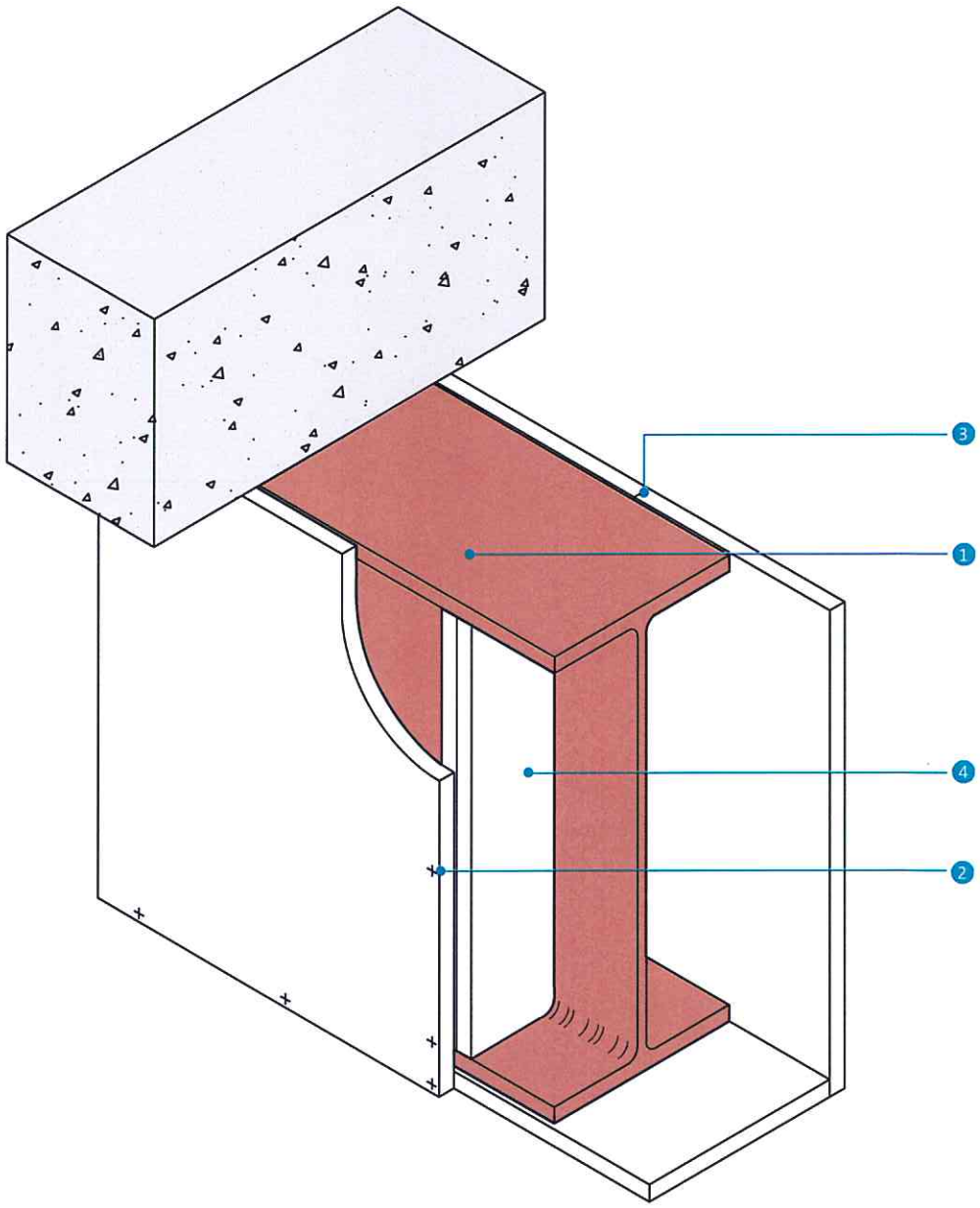
4 Three-sided beam encasement incorporating steel angles for up to 120 minutes fire protection



1. Steel beam
2. Glasroc F FIRECASE fixed together and to Gypframe GA1 Steel Angle with Glasroc F FIRECASE Screws at 150mm centres
3. Board joints staggered by minimum 600mm between adjacent sides
4. Gypframe GA1 Steel Angle suitably fixed to beam flange at 600mm centres
5. 60mm wide Glasroc F FIRECASE backing strip

Construction details – 3-sided beam encasement

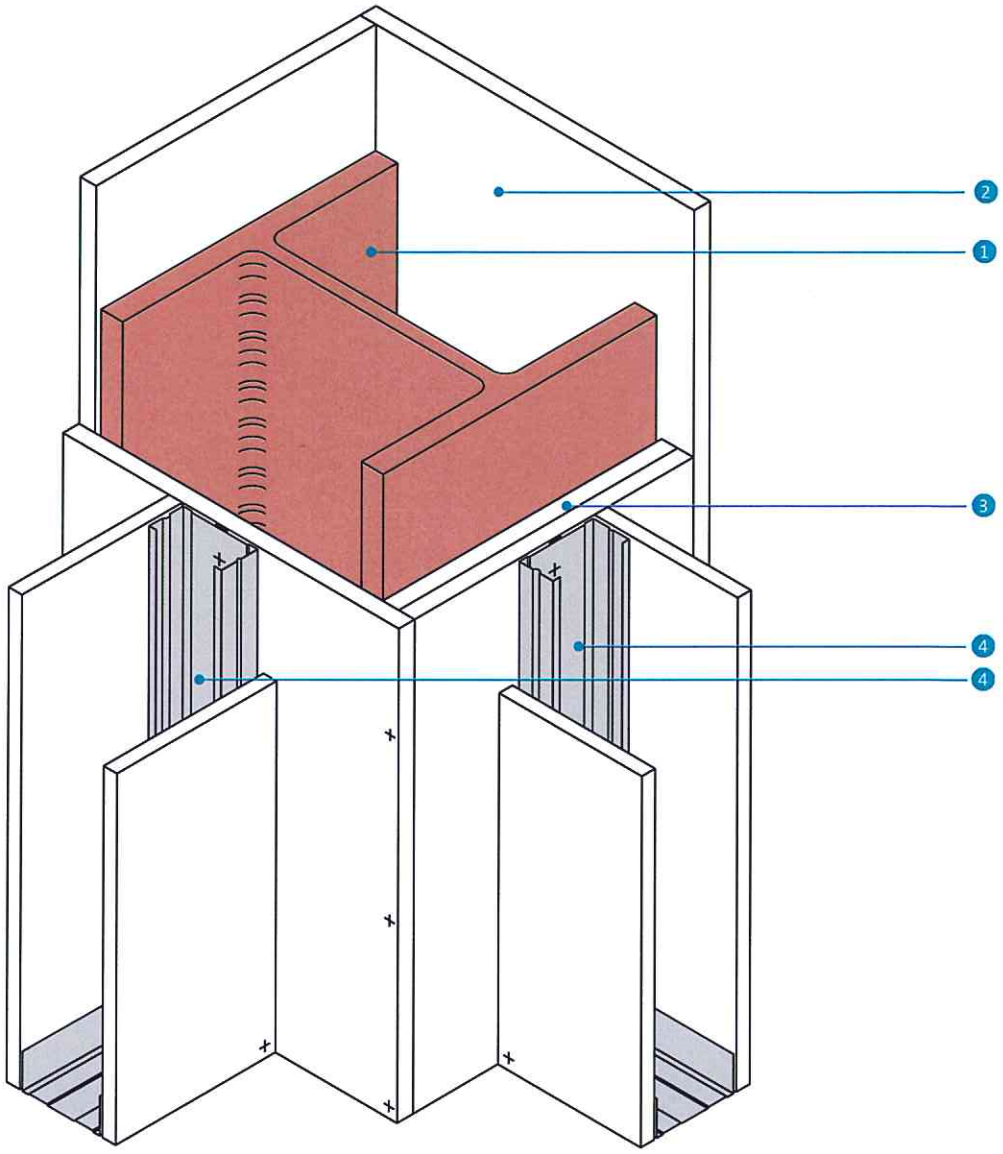
5 Three-sided beam encasement incorporating Glasroc F FIRECASE soldiers for up to 90 minutes fire protection



1. Steel beam
2. Glasroc F FIRECASE fixed together and to soldiers with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres
3. Board joints staggered by minimum 600mm between adjacent sides
4. Glasroc F FIRECASE soldiers at 1200mm centres (2 together at fascia board joints)

Construction details – column encasement and partition junction

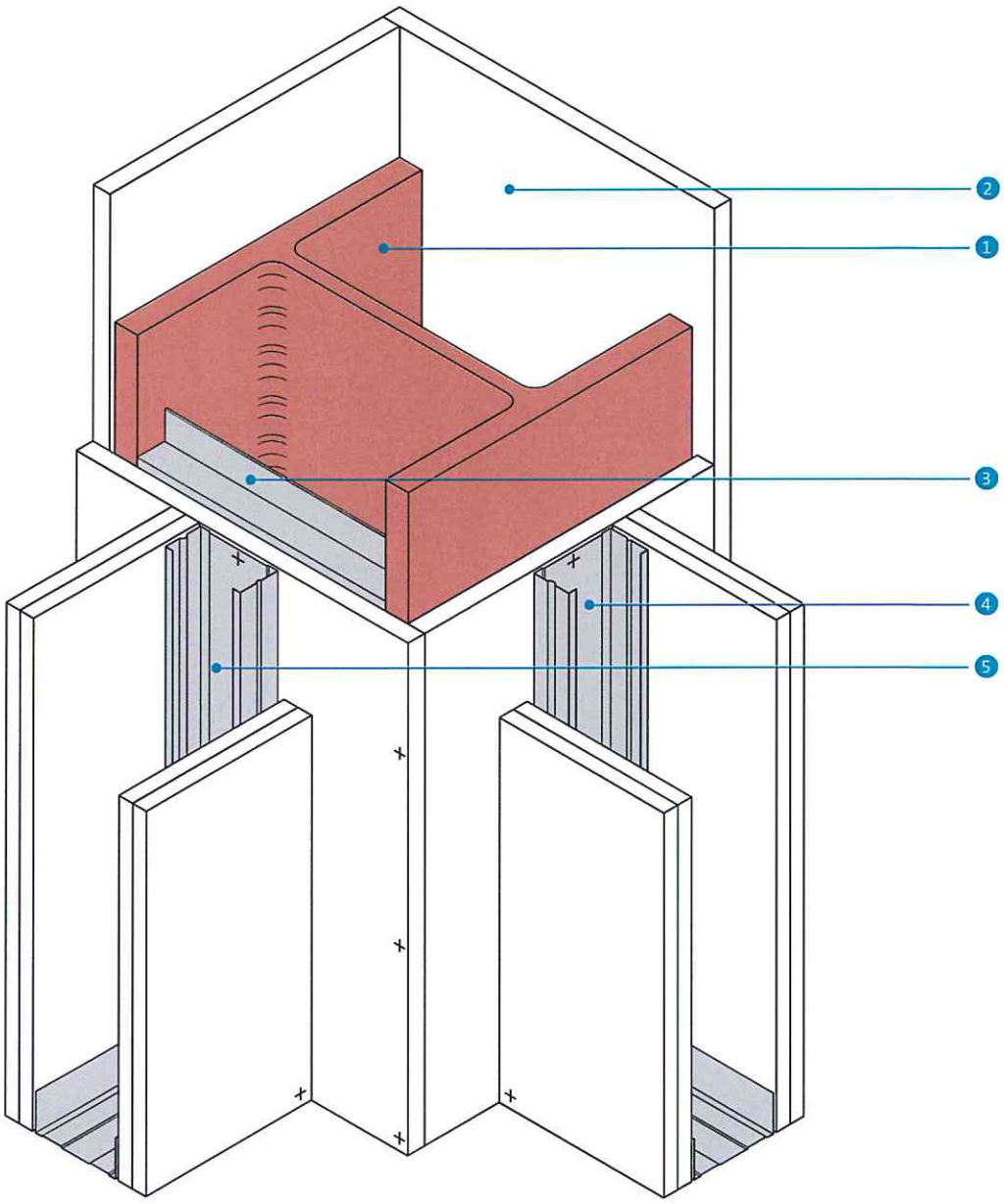
6 Column encasement and partition junction up to 60 minutes fire resistance (for partitions with *BS 5234* light and medium duty, and no pressure requirements)



1. Steel column
2. **FireCase** column encasement
3. Addtional layer of Glasroc F FIRECASE forming packer to receive partition fixing
4. Gypframe 'C' Stud bonded to Glasroc F FIRECASE with continuous bead of Gyproc Sealant (2 beads for studs wider than 75mm) and fixed with Gyproc Drywall Screws at 600mm centres (in 2 lines staggered by 300mm for studs wider than 75mm). Allow 24 hours before boarding.

Construction details – column encasement and partition junction

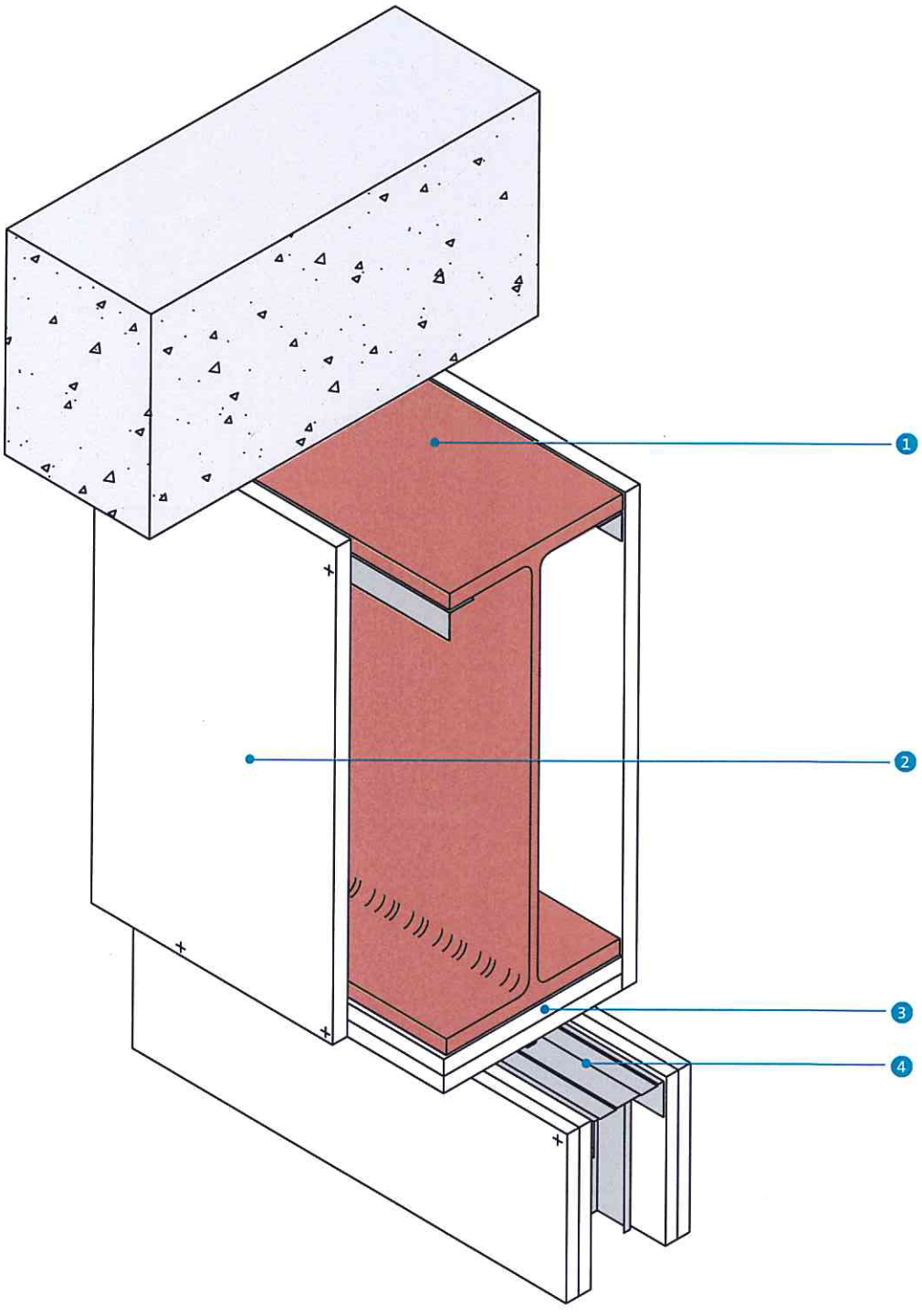
7 Column encasement and partition junction up to 120 minutes fire resistance (for partitions with *BS 5234* Heavy and Severe Duty)



1. Steel column
2. **FireCase** column encasement
3. Suitable size Z section (by others) fixed between column flanges at 600mm centres
4. Gypframe 'C' Stud suitably fixed through Glasroc F FIRECASE to column at 600mm centres (in 2 lines staggered by 300mm for studs wider than 75mm)
5. Gypframe 'C' Stud suitably fixed through Glasroc F FIRECASE to Z sections (in 2 lines for studs wider than 75mm)

Construction details – beam encasement and partition junction

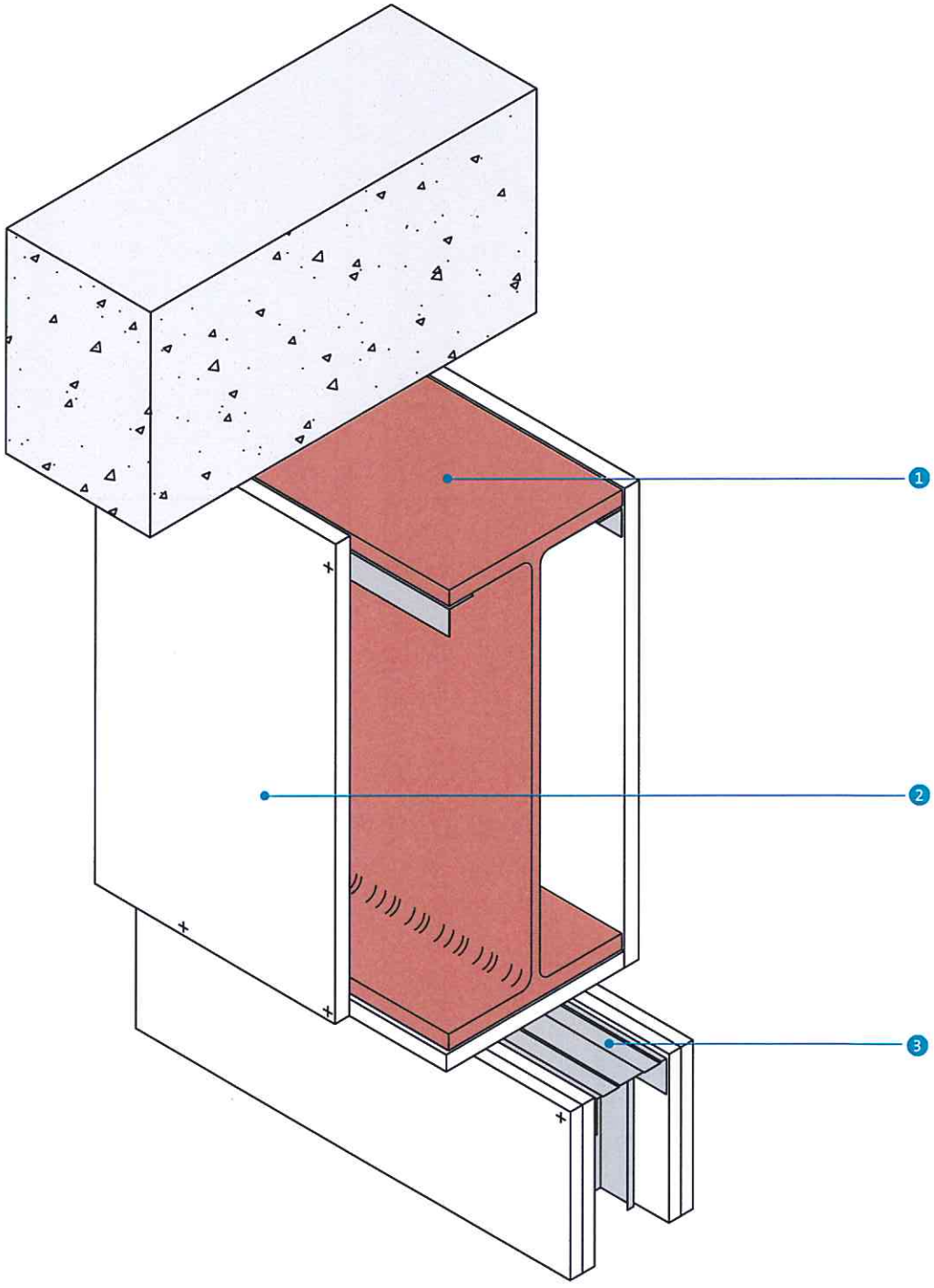
8 Beam encasement and partition junction up to 60 minutes fire resistance



1. Steel beam
2. **FireCase** beam encasement
3. Additional layer of Glasroc F FIRECASE forming packer to receive partition fixing
4. Gypframe Channel bonded to Glasroc F FIRECASE with continuous bead of Gyproc Sealant (2 beads for channels wider than 75mm) and fixed with Gyproc Drywall Screws at 600mm centres (in 2 lines staggered by 300mm for studs wider than 75mm). Allow 24 hours before boarding partition.

Construction details – beam encasement and partition junction

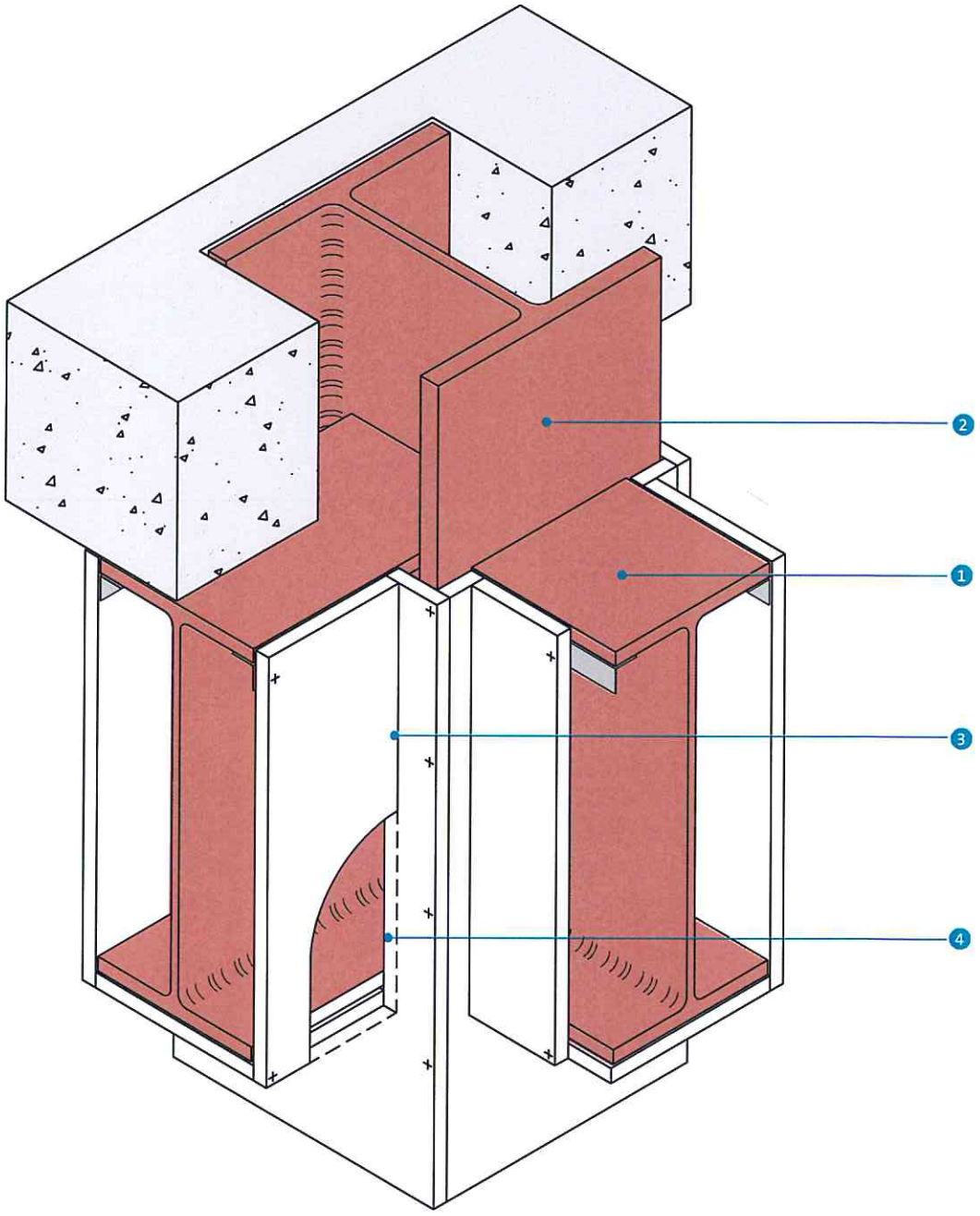
9 Beam encasement and partition junction up to 120 minutes fire resistance



1. Steel beam
2. **FireCase** beam encasement
3. Gypframe Channel suitably fixed through Glasroc F FIRECASE to beam at 600mm centres (in 2 lines staggered by 300mm for channels wider than 75mm)

Construction details – column and beam encasement junction

10 Column and beam encasement junction

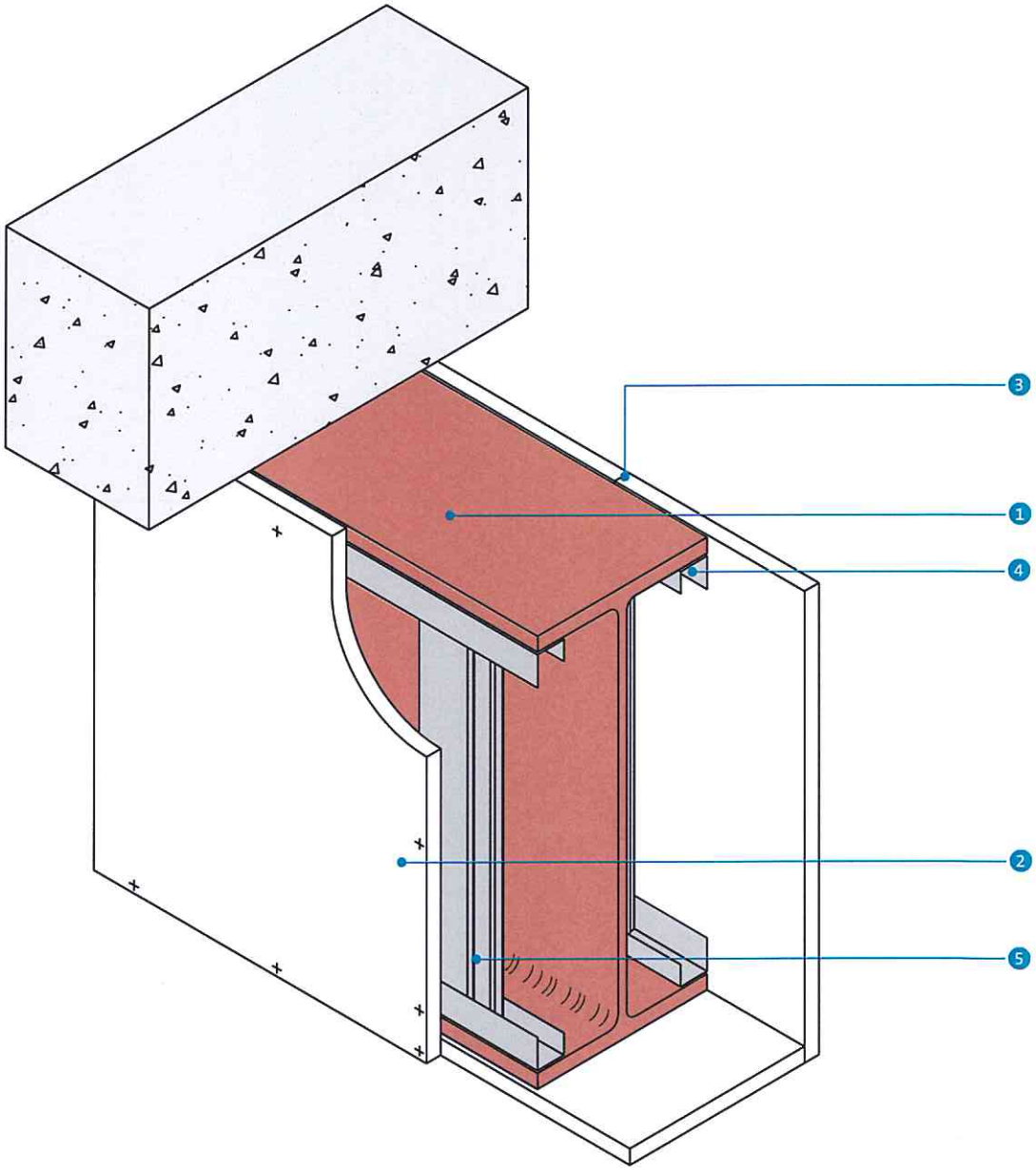


NB Where seating cleats create small gaps in column encasement below beam soffit, cloak with suitably sized strip of Glasroc F FIRECASE fixed to column encasement boards.

1. Steel beam
2. Steel column
3. Beam encasement boards butted tight to column encasement
4. Column encasement boards cut around penetrations

Construction details – three-sided beam encasement

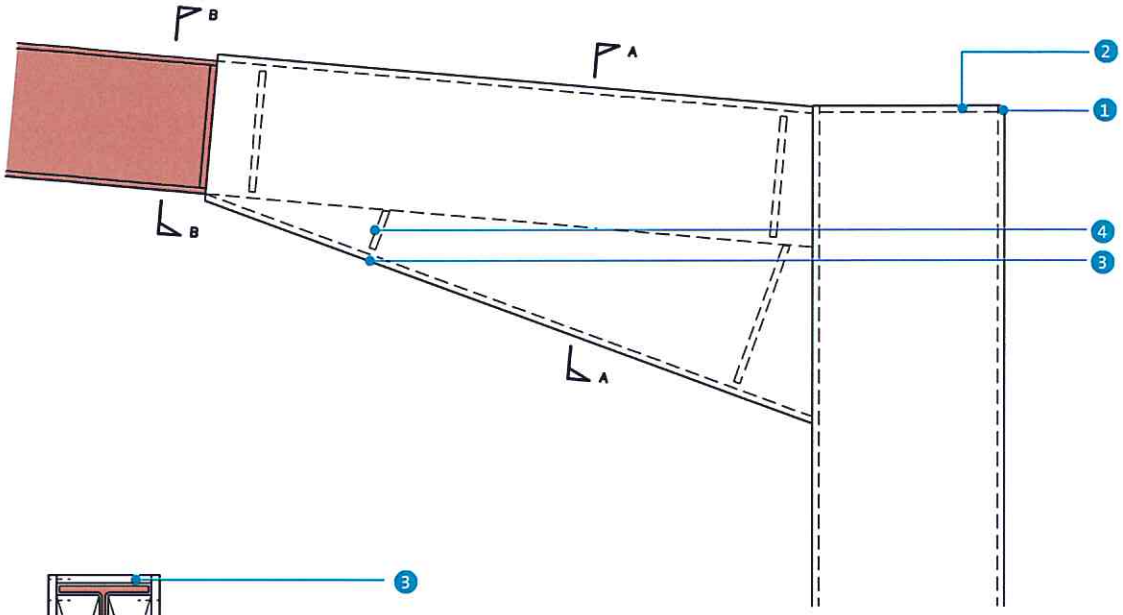
11 Three-sided encasement for beam depths 600mm - 1200mm

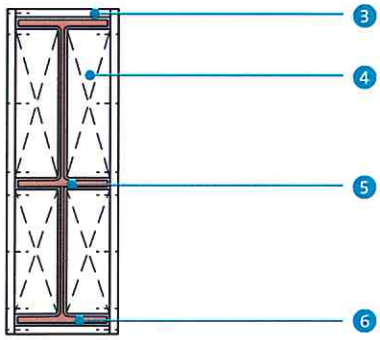


1. Steel beam
2. Glasroc F FIRECASE fixed together and to Gypframe MF5 Ceiling Section and Gypframe MF6 Perimeter Channel with Glasroc F FIRECASE Screws
3. Board joints staggered by minimum 600mm between adjacent sides
4. Gypframe MF6 Perimeter Channel suitably fixed to beam flange at 600mm centres
5. Gypframe MF5 Ceiling Section at 600mm centres and at board joints

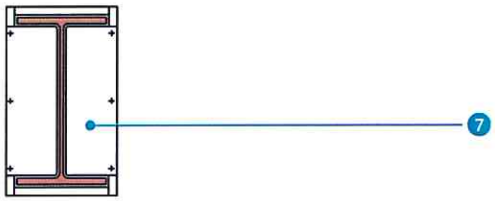
Construction details – portal frame column and haunch encasement

12 Portal frame column and haunch encasement





Section A–A

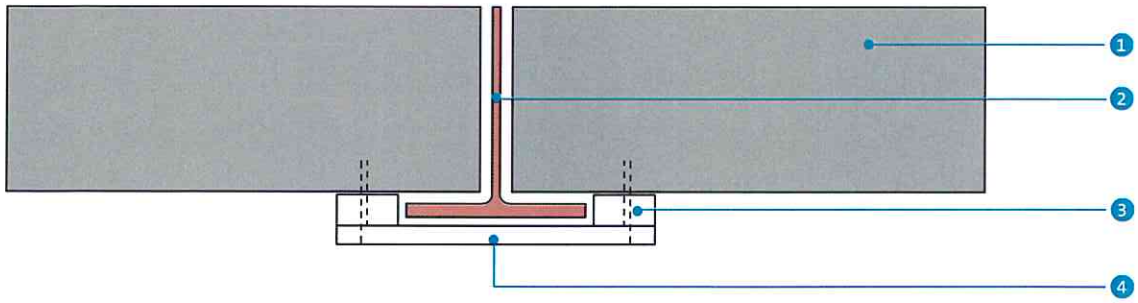


Section B–B

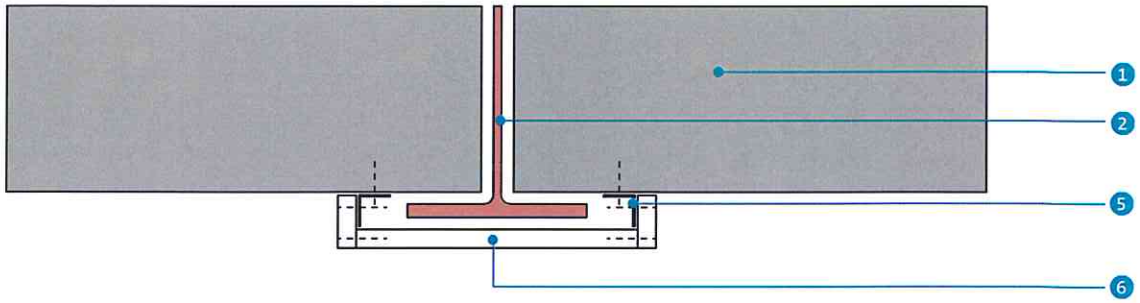
1. Column encasement boards to extend above top of steel column by thickness of Glasroc F FIRECASE
2. Glasroc F FIRECASE inserted into top of column encasement and fixed together with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres
3. Glasroc F FIRECASE fixed together with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres
4. Glasroc F FIRECASE soldiers at 1200mm centres
5. Portal rafter
6. Haunch
7. Glasroc F FIRECASE cut tight to portal rafter and fixed to end of encasement with Glasroc F FIRECASE Screws or Glasroc Staples at 150mm centres

Construction details – encasement of column within block wall

13 Column flange projection less than 30mm



14 Column flange projection less than 30mm using steel angles

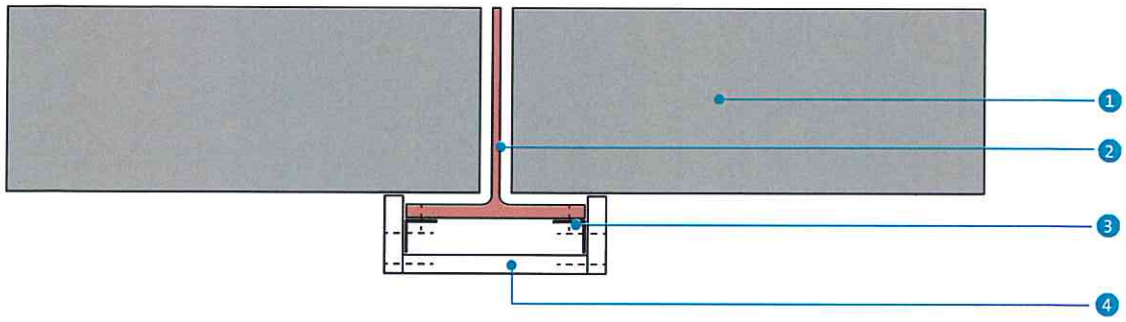


1. Blockwork
2. Steel column
3. Minimum 50mm wide strip of Glasroc F FIRECASE suitably fixed to blockwork at 1200mm centres
4. Glasroc F FIRECASE suitably fixed through packer to blockwork at 300mm centres
5. Gypframe GA1 Steel Angle suitably fixed to blockwork at 600mm centres
6. Glasroc F FIRECASE fixed together and to Gypframe GA1 Steel Angles with Glasroc F FIRECASE Screws at 150mm centres

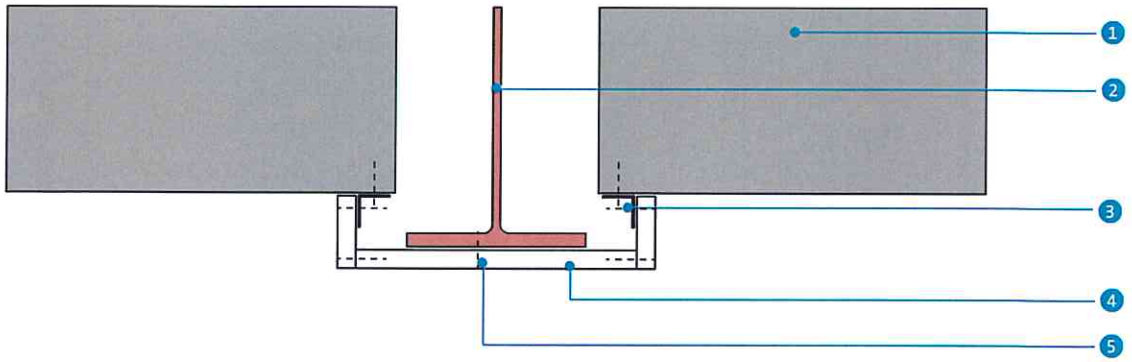
NB Maximum encasement width 600mm.

Construction details – encasement of column within block wall

15 Column flange projection (fixed to column)



16 Column flange projection (fixed to blockwork)

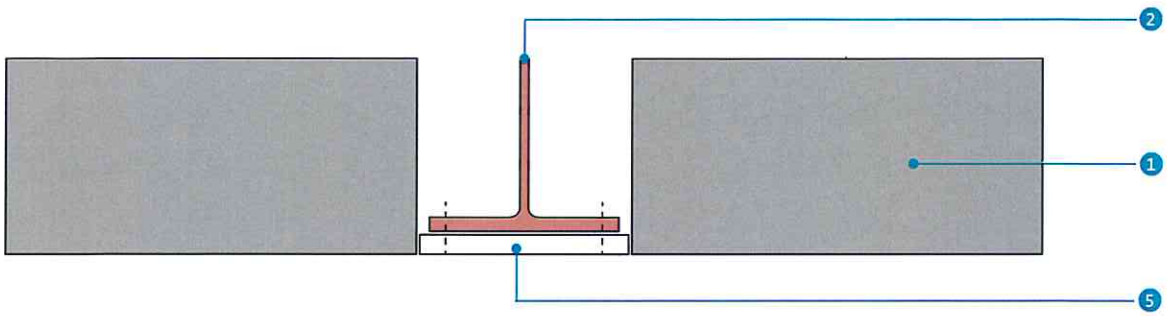


1. Blockwork
2. Steel column
3. Gypframe GA1 Steel Angle suitably fixed to column / blockwork at 600mm centres
4. Glasroc F FIRECASE suitably fixed together and to Gypframe GA1 Steel Angles with Glasroc F FIRECASE Screws at 150mm centres
5. Glasroc F FIRECASE fixed to column with mechanical steel pin fixings at 600mm centres

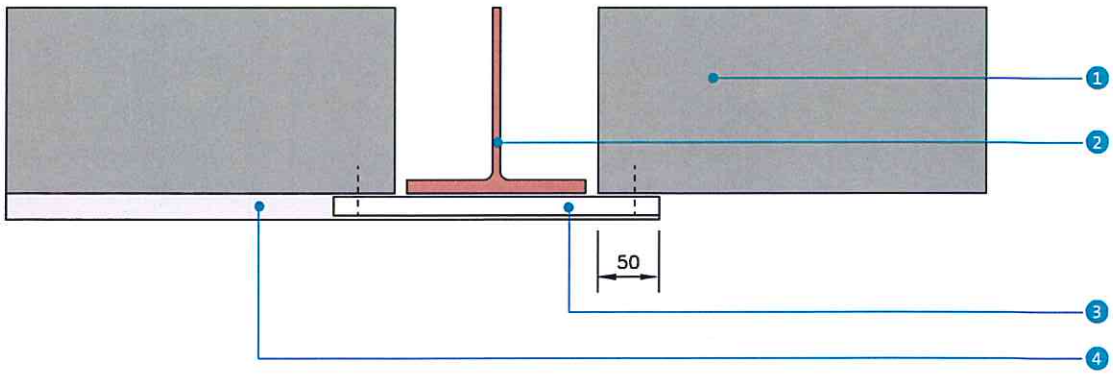
NB Maximum encasement width 600mm.

Construction details – encasement of column within block wall

17 Encasement flush with blockwork



18 Encasement overlapping blockwork



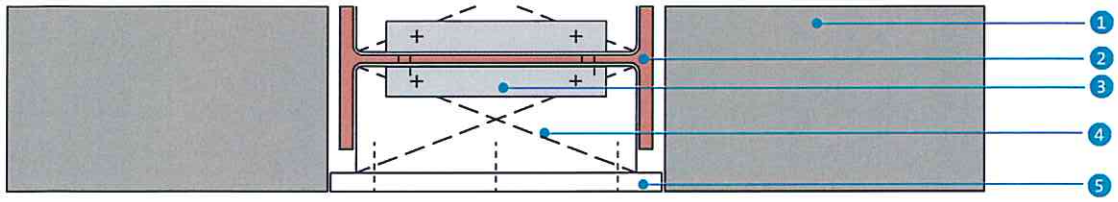
1. Blockwork
2. Steel column
3. Glasroc F FIRECASE suitably fixed to blockwork at 300mm centres
4. Optional plaster finish
5. Glasroc F FIRECASE fixed to column with mechanical steel pin fixings at 300mm centres, in 2 lines staggered by 150mm

NB Maximum encasement width 600mm.

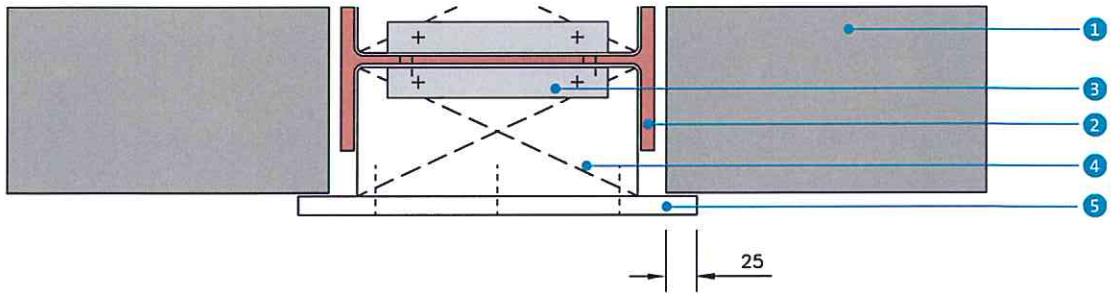
NB Steel pins will sit slightly proud of the board surface.

Construction details – encasement of column within block wall

19 Encasement flush with blockwork for columns up to 350mm wide



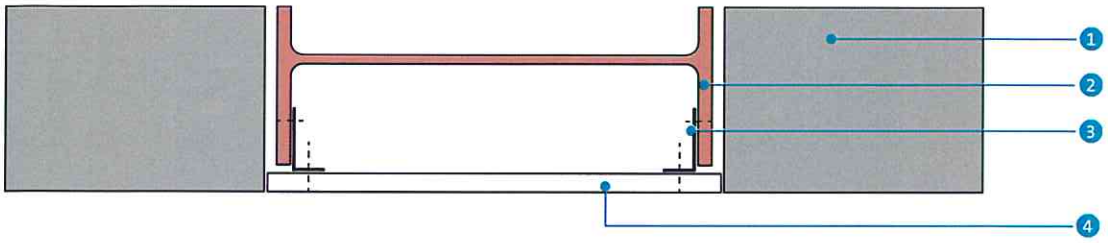
20 Encasement overlapping blockwork for columns up to 350mm wide



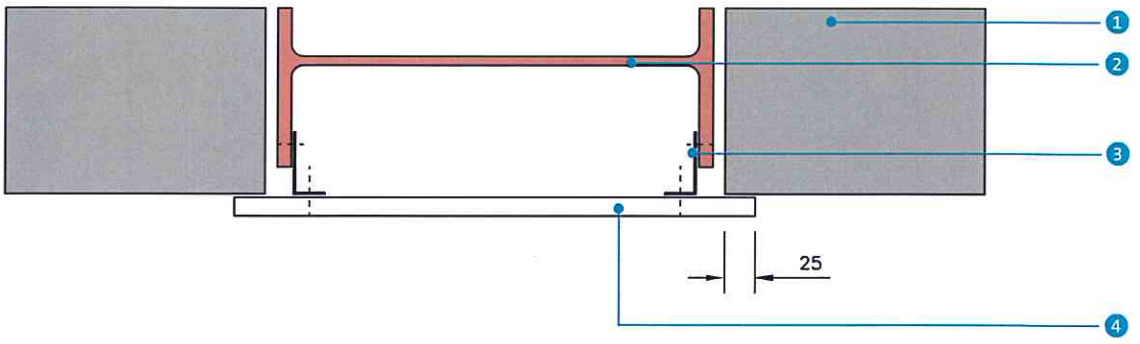
1. Blockwork
2. Steel column
3. Gypframe GA1 Steel Angle suitably fixed to column
4. Glasroc F FIRECASE soldiers at 1200mm centres (2 together at board joints) fixed to Gypframe GA1 Steel Angle with Glasroc F FIRECASE Screws
5. Glasroc F FIRECASE fixed to soldiers with Glasroc F FIRECASE Screws at 150mm centres

Construction details – encasement of column within block wall

21 Encasements flush with blockwork for columns 350mm to 600mm wide



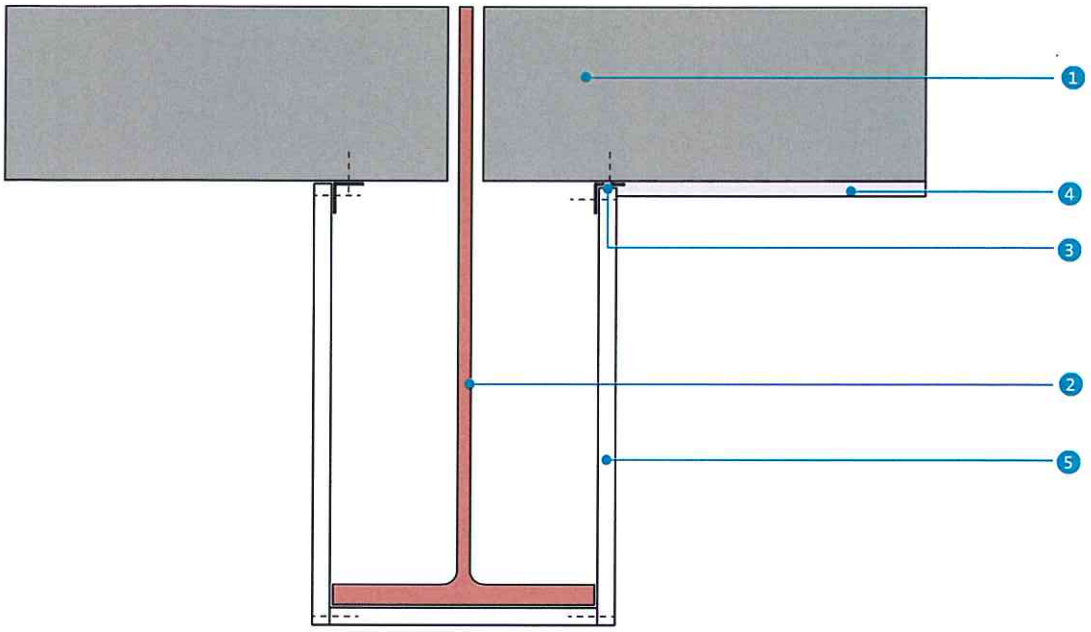
22 Encasement overlapping blockwork for columns 350mm to 600mm wide



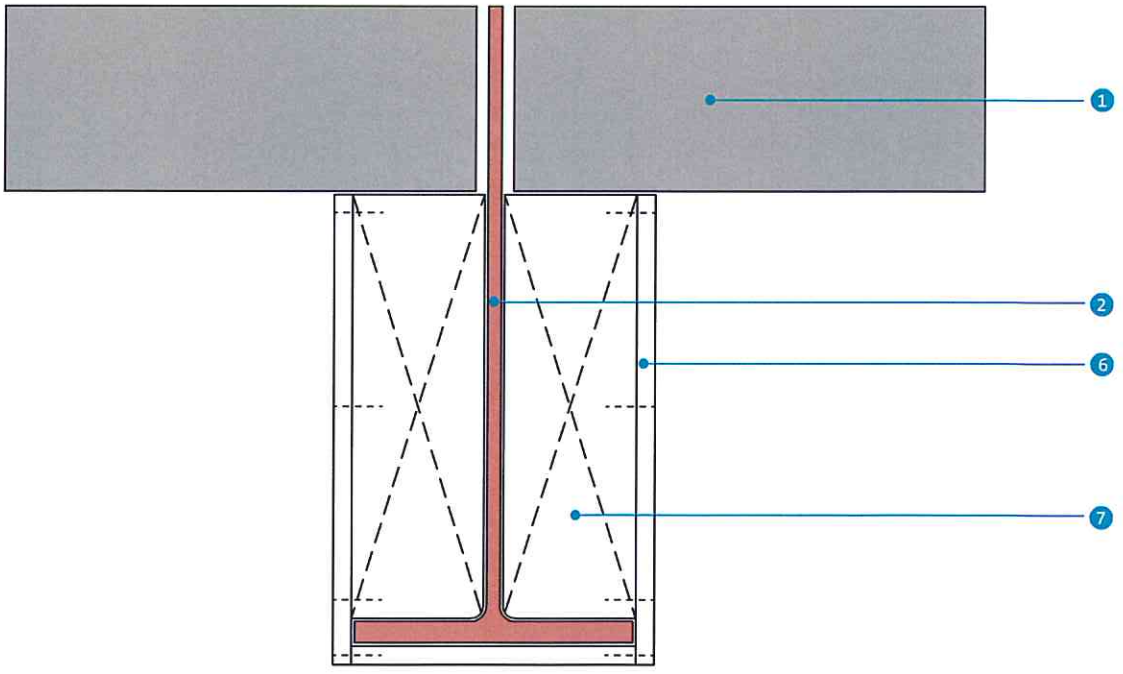
1. Blockwork
2. Steel column
3. Gypframe GA4 Steel Angle suitably fixed to column at 600mm centres
4. Glasroc F FIRECASE fixed to Gypframe GA4 Steel Angle with Glasroc F FIRECASE Screws at 150mm centres

Construction details – encasement of column within block wall

23 Column flange projection up to 600mm using steel angles



24 Column flange projection up to 600mm using Glasroc F FIRECASE soldiers



1. Blockwork
2. Steel column
3. Gypframe GA1 Steel Angle suitably fixed to blockwork at 600mm centres (angle may be fixed with leg pointing outward where minimum 25mm Glasroc F FIRECASE used or blockwork is to receive plaster finish)
4. Plaster finish
5. Glasroc F FIRECASE fixed together and to Gypframe GA1 Steel Angles with Glasroc F FIRECASE Screws at 150mm centres
6. Glasroc F FIRECASE fixed together and to soldiers with Glasroc F FIRECASE Screws at 150mm centres
7. Glasroc F FIRECASE soldiers at 1200mm centres (2 together at board joints)

FireWall - High performance fire-resistant wall system

FireWall is a non-loadbearing wall which provides up to 240 minutes fire resistance. It is used in retail and industrial storage areas to provide sub-division, and other specific conditions of use as determined by insurance companies.

Key benefits

- Satisfies insurance company requirements for enhanced fire performance
- Satisfies *BS 5234* strength and robustness requirements up to Severe Duty
- Minimal wall thickness with optimal fire resistance
- 240 minutes fire resistance

System components

Gypframe metal products

92 S 10 'C' Stud — **Length** 3600, 4200mm

92 I 90 'I' Stud — **Length** 3600, 5000, 6000mm

Extra Deep Flange Floor & Ceiling Channel 94 EDC 70 — **Length** 3600mm

Fixing Channels

	Length
99 FC 50	2400mm
150 FC 90	1197mm

GFS1 Fixing Strap — **Length** 2400mm

Gypframe GA2 Steel Angle
Used at deflection head. — **Length** 3200mm

Glasroc F board products

Glasroc F FIRECASE

Thickness	15mm
Width	1200mm

Glasroc F MULTIBOARD

Thickness	6mm
Width	1200mm

Fixing and finishing products

Gyproc Jack-Point Screws
For fixing boards to stud framing 0.8mm thick or greater and Gypframe 'I' Studs greater than 0.50mm thick.

Gyproc Wafer Head Jack-Point Screws
For metal-to-metal fixing 0.8mm thick or greater and Gypframe 'I' Studs greater than 0.55mm thick.

Glasroc F FIRECASE Screws
Fixing 6mm Glasroc F MULTIBOARD to Glasroc F FIRECASE.

Gyproc Sealant
For sealing airpaths to achieve optimum sound insulation.

Gyproc jointing materials
For seamless jointing.

Gyproc Control Joint
To accommodate structural movement.

Gyproc FireStrip
For fire-stopping deflection heads.

Thistle Board Finish or Thistle Multi-Finish
To provide a plaster skim finish.

or

Thistle Durafinish 25kg
To provide improved resistance to accidental damage.

Stone mineral wool insulation (100kg/m³)
40mm and 50mm thick batts (by others).

System installation

Run of lining

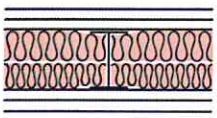
Gypframe Floor & Ceiling Channel is suitably fixed at the head and base. Gypframe 'C' Studs or Gypframe 'I' Studs are fitted vertically within the channel sections to form the framework. Gypframe 'C' Studs are fixed at abutments. Additional framing is installed as required to support heavy fixtures.

Boards are screw-fixed to all framing members to form the lining, except 6mm Glasroc F MULTIBOARD which is screw-fixed to Glasroc F FIRECASE linings. Horizontal board-end joints should be backed with Gypframe GFS1 Fixing Strap. Stone mineral wool is fitted into the stud cavity (ensuring joints are half staggered) and suitably secured prior to boarding the second side.

Performance

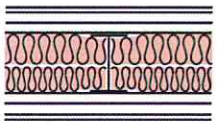
Table 1 – FireWall
Solutions to satisfy *BS 476: Part 22: 1987*

1



Two layers of board each side of Gypframe 92 I 90 'I' Studs spaced at 600mm centres and located in Gypframe Extra Deep Flange Floor & Ceiling Channel. 90mm thickness of stone mineral wool 100kg/m³ (40mm & 50mm batts) in the cavity.

2



Three layers of board each side of Gypframe 92 I 90 'I' Studs spaced at 600mm centres and located in Gypframe Extra Deep Flange Floor & Ceiling Channel. 90mm thickness of stone mineral wool 100kg/m³ (40mm & 50mm batts) in the cavity.

Detail	Partition thickness mm	Board type	Lining thickness mm	Maximum wall height[1] mm	Sound insulation R_w dB	Duty rating	Approx. weight kg/m²	System reference
180 minutes fire resistance BS								
1	155	Glasroc F FIRECASE	2 x 15[2]	6900	56	Severe	75	G106I019
240 minutes fire resistance BS								
2	170	Glasroc F FIRECASE + Glasroc F MULTIBOARD	2 x 15 + 6	6900	59	Severe	87	G106I018

[1] Maximum wall heights are based on L/240 at 200Pa.
[2] Actual test result gave 240 mins integrity : 222 mins insulation.

NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with joints taped and filled, or skimmed according to British Gypsum's recommendations. The quoted performances are achieved only if British Gypsum components are used throughout, and the Company's fixing recommendations are strictly observed. Any variation in the specifications should be checked with British Gypsum.

Design

Planning - key factors
The position of services should be pre-determined and their installation planned into the frame erection stage.

Wind loading
FireWall is non-loadbearing but can accept a degree of wind loading, for example when used in buildings with large or multiple external doors.
▶ Refer to British Gypsum Drywall Academy.

Cavity fire barriers
Minimum 12.5mm Gyproc plasterboard or 12.5mm Glasroc F MULTIBOARD, screw-fixed into the web of perimeter channels or vertical studs, will provide a satisfactory closure to flame or smoke, alternatively 15mm Glasroc F FIRECASE may be used.

Services
Penetrations
Penetrations of fire-resistant or sound-insulating constructions for services need careful consideration to ensure that the performance of the element is not downgraded and also that the services themselves do not act as the mechanism of fire spread or sound transmission.

Electrical
The installation of electrical services should be carried out in accordance with *BS 7671: 2008*. Service penetrations and socket outlets should always be avoided, where practical switch and socket boxes can be surface mounted without affecting the fire resistance of the wall.

Fixing floor and ceiling channels
Floor and ceiling channels must be securely fixed with a row of fixings at 600mm maximum centres. With 148mm and 94mm channels, two rows of staggered fixings are required, each row at 600mm centres and each fixing 25mm in from the flange.

If the concrete or screeded floor is new, consideration should be given to the installation of a damp proof membrane between the floor surface and the channel or sole plate.

Deflection heads
Partition head deflection designs may be necessary to accommodate deflections in the supporting floor. Deflection heads may also be required to the underside of roof structures subjected to positive and negative pressures. Refer to **Construction details - 1** and **2**.

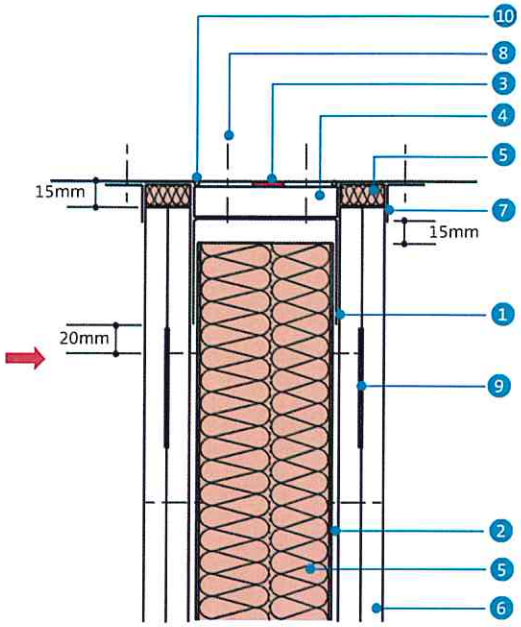
Openings
FireWall is used to divide space into fire compartments and, as such, openings are generally not required. If openings are to be specified they must be shown by fire test to maintain the fire performance of the wall.

Fixtures
Lightweight fixtures can be made directly to the partitions. Medium weight fixtures can be made to Gypframe 99 FC 50 Fixing Channel. Heavyweight fixtures (to *BS 5234*), can be fixed by using Gypframe 150 FC 90 Fixing Channel.

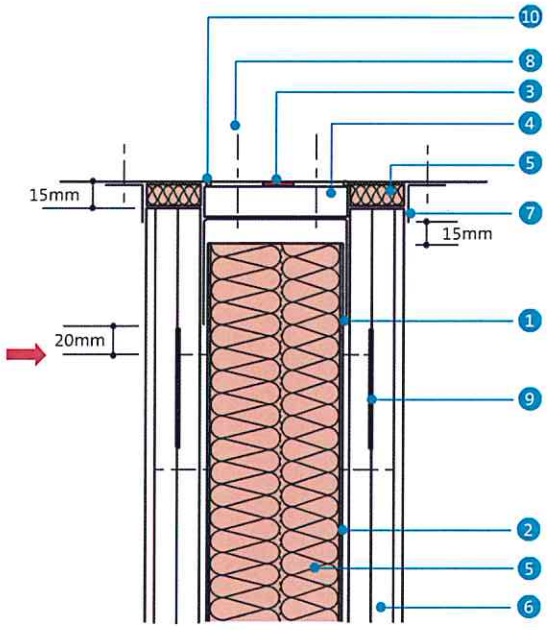
Board finishing
Glasroc F FIRECASE or Glasroc F MULTIBOARD joints are treated using Gyproc Joint Tape bedded in Gyproc Joint Cement. External angles / corners can be reinforced using Gyproc No-Coat Ultraflex 325 bedded in Gyproc Joint Cement. If a plaster finish is required, joints should be reinforced and Thistle Board Finish, Thistle Multi-Finish or Thistle Durafinish applied.

Construction details

1 15mm downward deflection - 180 minutes fire resistance



2 15mm downward deflection - 240 minutes fire resistance



1. Gypframe Extra Deep Flange Floor & Ceiling Channel
2. Gypframe 'I' Stud
3. Gyproc FireStrip (continuous line)
4. 20mm Glasroc F FIRECASE forming fire-stop (cut on site)
5. Stone mineral wool (100kg/m³)
6. Glasroc F board linings
7. Gypframe GA2 Steel Angle
8. Staggered rows of fixings through fire-stop
9. Gypframe GFS1 Fixing Strap
10. Gyproc Sealant

NB No fixings should be made through the boards into the flanges of the head channel. The arrow (➡) denotes the position of the uppermost board fixing which should be made into Gypframe GFS1 Fixing Strap. Continuous Gyproc FireStrip must be installed as shown in order to maintain fire performance.