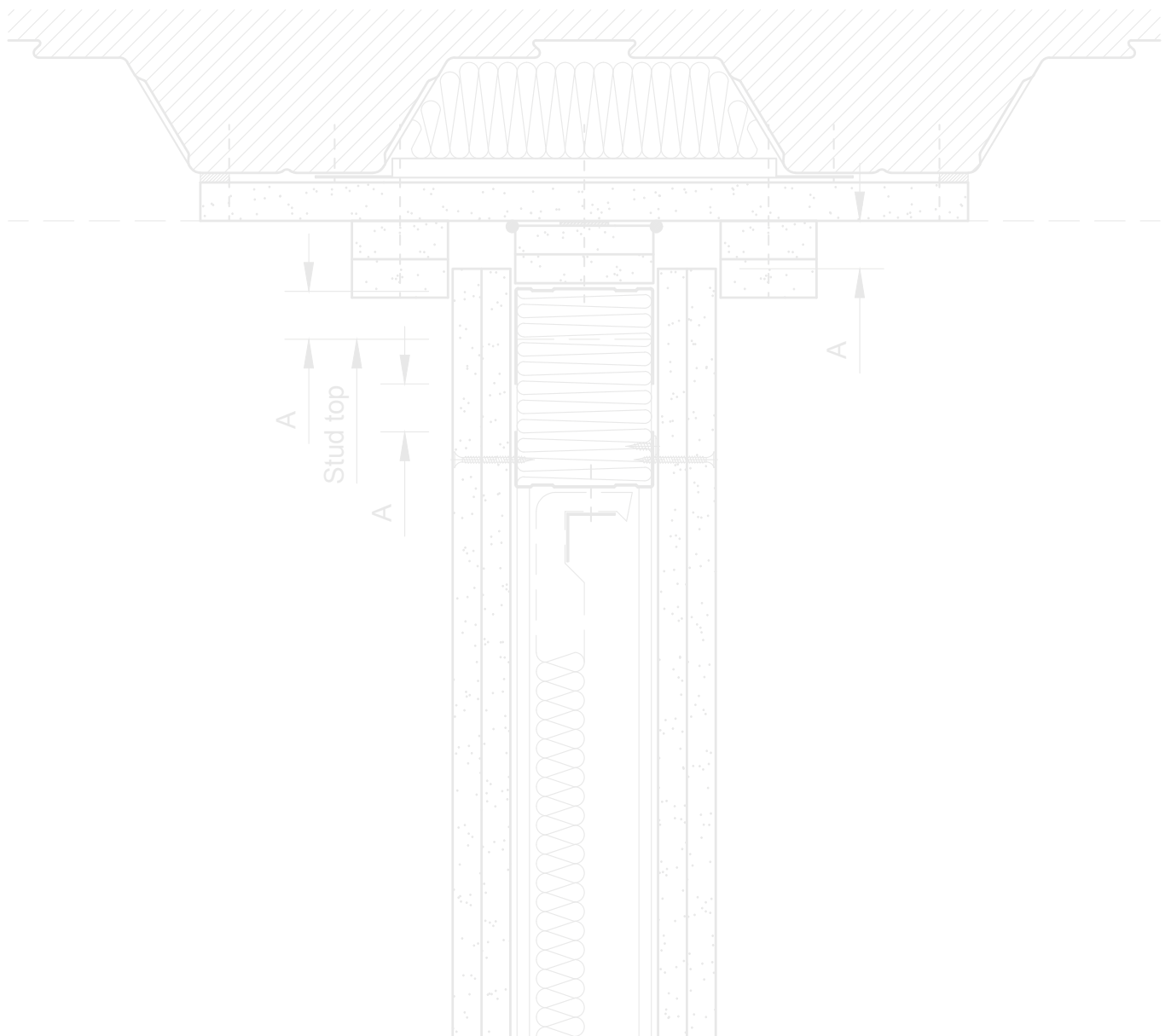


## Best practice guidance

### Fire-rated junctions



26 May 2026

BPG004

#### Technical Support Team

East Leake Loughborough Leicestershire LE12 6HX

Tel: 0115 945 6123 british-gypsum.com

In the evolving landscape of building safety, the demand for rigorously tested and validated construction solutions has never been greater. The introduction of the Building Safety Act has intensified the spotlight on fire protection, placing a premium on transparency, traceability, and performance assurance. Yet, despite this regulatory momentum, a critical gap remains: there is currently no standardised test method for evaluating many of the most common drylining junctions – interfaces that are fundamental to the integrity and safety of modern buildings.

Approved Document B (England & Wales) and the Technical Handbook (Scotland), which provide statutory guidance for fire safety, reinforce the need for continuity of fire resistance across compartment lines. They require that junctions between fire-resisting elements—such as partitions, walls, floors and ceilings must be detailed and constructed in a way that maintains the intended fire performance of the overall system. However, ADB does not prescribe specific test methods for these junctions, leaving designers and contractors to rely on assumptions or extrapolated data from 'flat' system tests.

This guide has been developed in direct response to that gap. It reflects British Gypsum's proactive commitment to advancing fire safety through innovation, technical leadership, and a deep understanding of real-world construction challenges. Drawing on decades of in-house expertise, we have undertaken a comprehensive program of bespoke fire testing to demonstrate the performance of key junction types – internal corners, T-junctions, partition-to-column interfaces, offset beams, ceiling junctions, etc. These tests go beyond conventional flat wall assessments, adapting and extending existing methods such as BS EN 1364-1: 2015 and BS EN 13381-4: 2013 to reflect the complex geometries and interactions found on construction sites.

Our journey to this point has been shaped by close collaboration with architects, contractors, and regulatory bodies, as well as by the practical realities observed across thousands of projects. Historically, the industry has relied on assumptions and generic detailing to address junction performance. But as expectations rise and scrutiny deepens, that approach can be improved upon. Our work formalises the performance of these critical interfaces, providing designers and specifiers with the confidence to make informed decisions.

Looking ahead, we anticipate the development of new test methodologies and the eventual standardisation of junction testing within national and European frameworks. British Gypsum is actively contributing to this evolution, not only through our testing program but also through our engagement with industry bodies and standardisation committees. We see this guide as both a technical resource and a statement of intent: to lead the way in fire protection, to share our knowledge openly, and to support the industry in delivering safer, more resilient buildings.

As trusted partners and knowledge experts, we are proud to offer this guide as a benchmark for best practice – grounded in evidence, shaped by experience, and driven by a shared commitment to safety.



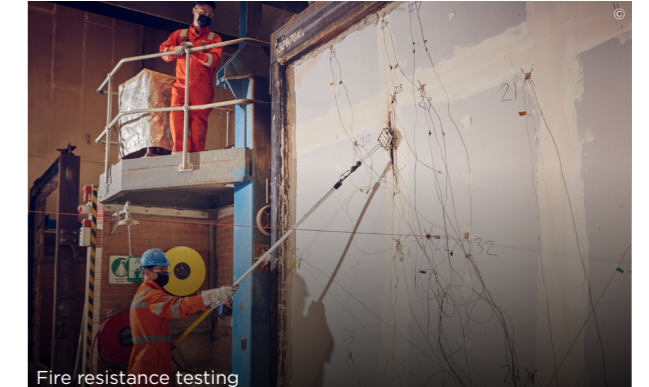
### Abutments to structural elements and other systems

Performance is based on maintaining compartmentation through the British Gypsum systems up to the line of the abutting structural element. This is on the basis the structural element has at least the equivalent fire resistance performance to that of the British Gypsum system. The proposed junctions should be approved by the project design and management authority before use to ensure that they meet with their specific project requirements.

### How to use this guide

The configurations and performances presented are based on selected fire resistance tests conducted and following methodologies of current test standards.

It is important to note that these test results are intended to illustrate principles of good practice in common construction scenarios. They do not constitute direct substantiation for every possible site-specific application. The tests were conducted in an ad-hoc manner to explore performance boundaries and inform design development, rather than to provide universal substantiation.



### What is an ad-hoc fire test?

The definition of this is a test which was conducted to a procedure which was not the subject of a standard test but utilised the principles of one or more published BS EN test standards e.g. for non-loadbearing partitions BS EN 1364-1: 2015. Ad-hoc fire test reports can be used in Passive Fire Protection Forum (PFPF) Guide assessments as supporting evidence, but they cannot be classified in accordance with BS EN 13501-2: 2023.

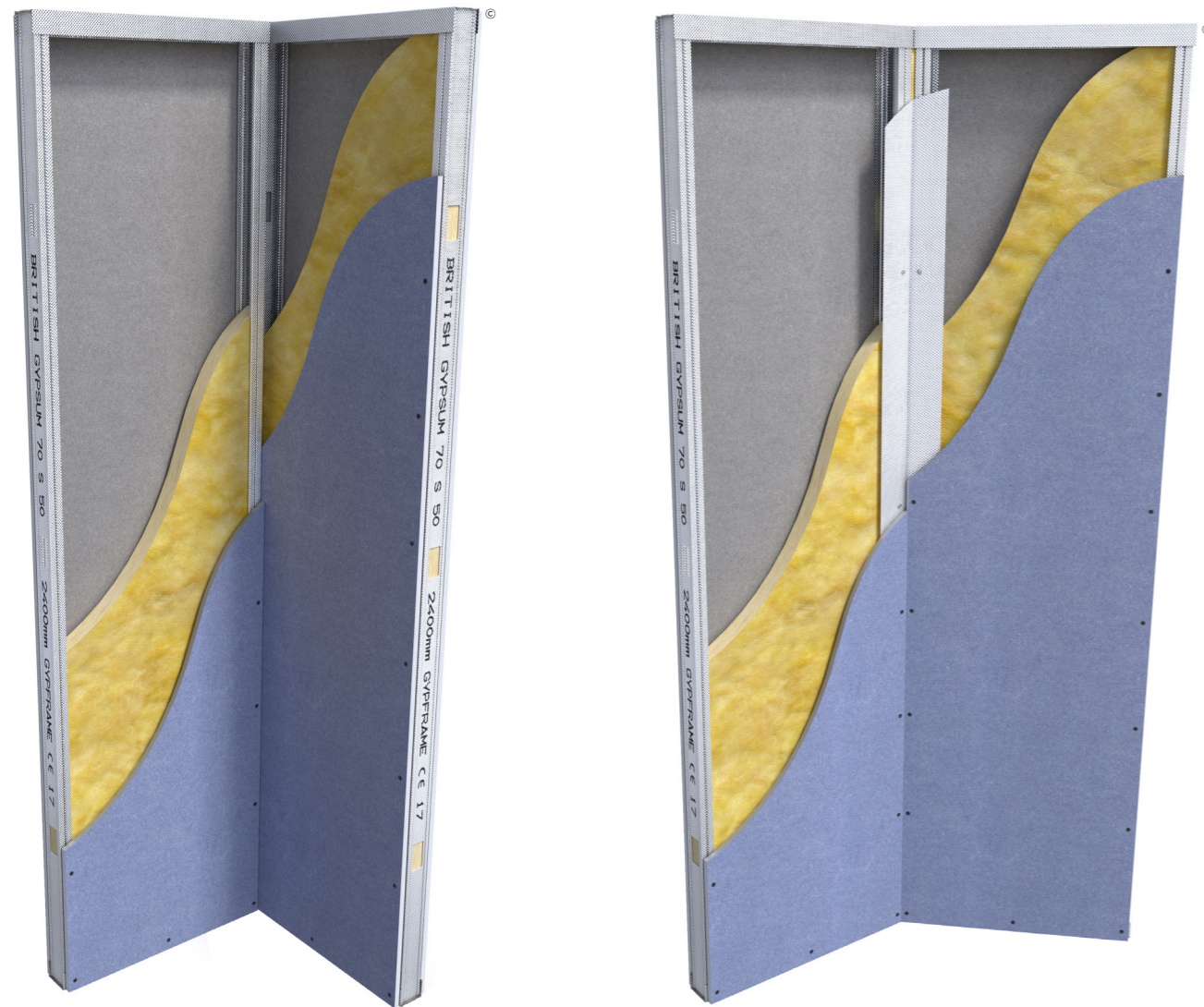
Users of this guide should treat the details as indicative rather than prescriptive. Where project-specific substantiation is required – particularly for regulatory approval or performance-based design – further testing, assessment, or engineering judgement may be necessary. Always consult with fire safety professionals and relevant authorities to ensure compliance with regulations and project requirements.

Each detail is accompanied by commentary on fire performance, installation considerations, and compatibility with adjacent systems.

# Section 1

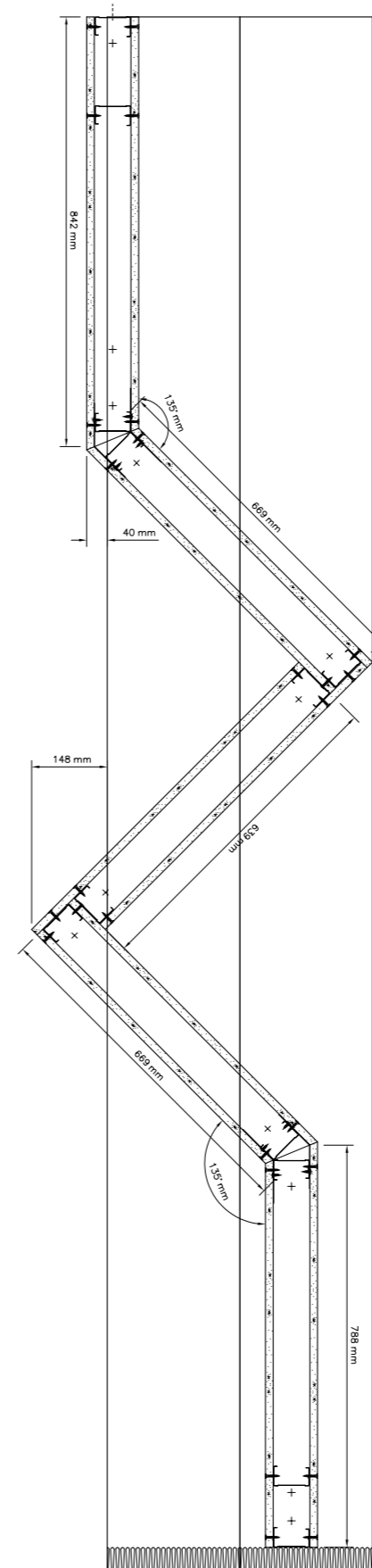
## Partition corners

Corners are one of the most common Drylining details within nearly every building, these were the first priority for our testing program. By formalising our approach to these common junctions, we aim to support robust design decisions, reduce ambiguity during installation, and enhance the safety and performance of partition systems in real-world applications.



Typical GypWall Single Frame partition systems with corner details

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.



### Test design

This example outlines the specifications and testing methodologies for a commonly used 60-minute fire resistance partition system, specifically designed for schools and hospitals. The system utilises British Gypsum standard detailing for 90° corners and splayed angles.

The partition system tested, GypWall Single Frame Enhanced, features a single layer of Gyproc DuraLine 15 mm on Gypframe 70 S 50 'C' studs. This system has been previously substantiated for 60 minutes fire resistance according to BS EN 1364-1: 2015 in a flat configuration in accordance with the requirements of Approved Document B.

To test the corner design, we drew inspiration from the curtain wall test standard, a different building application, and applied its principles to the BS EN 1364-1: 2015 test methodology. This innovative approach allowed us to validate the corner's fire resistance effectively. The test design incorporated both 90° internal and external corners and splayed angles fire tested from both directions in one test.

# Section 1

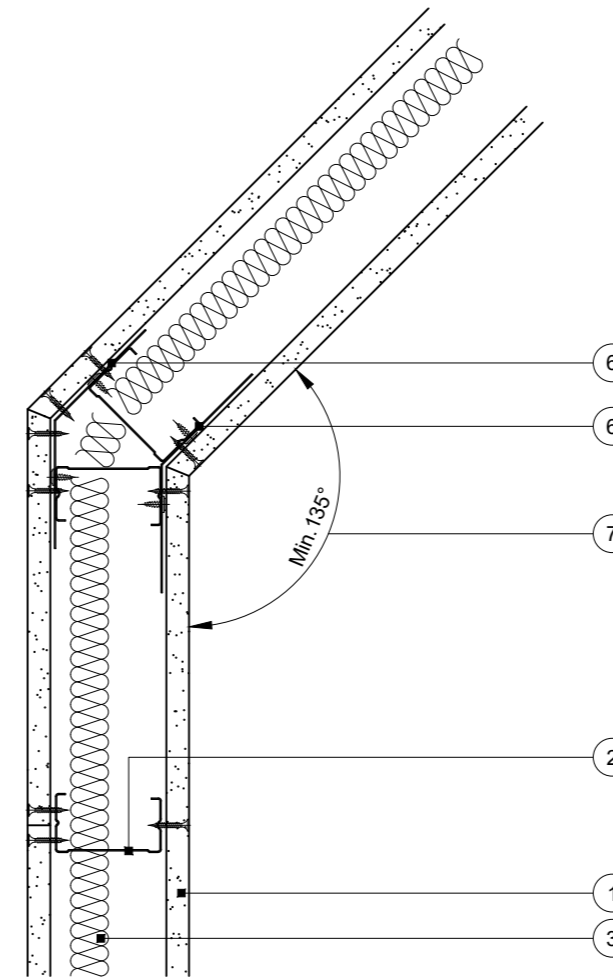
## Partition corners



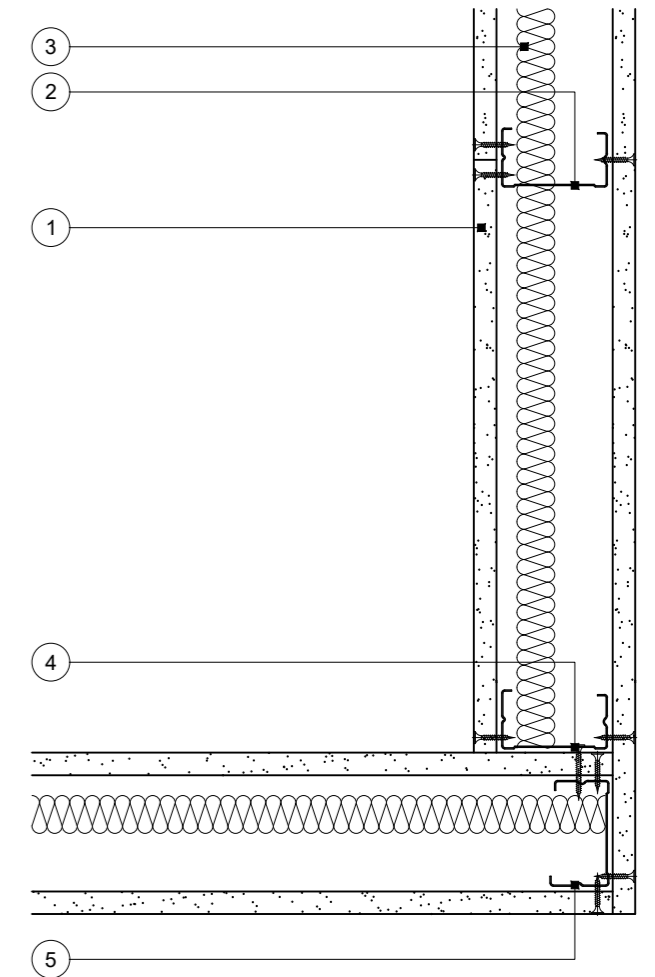
### Test BTC 23184F and outcome

The specimen achieved over 60 minutes fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015 which is equivalent for this specification when tested as a flat vertical system. The corners exhibited exceptional resilience, maintaining stability for more than 90 minutes under fire conditions.

## Standard details for internal partition corners



**Splayed angle**



**Corner**

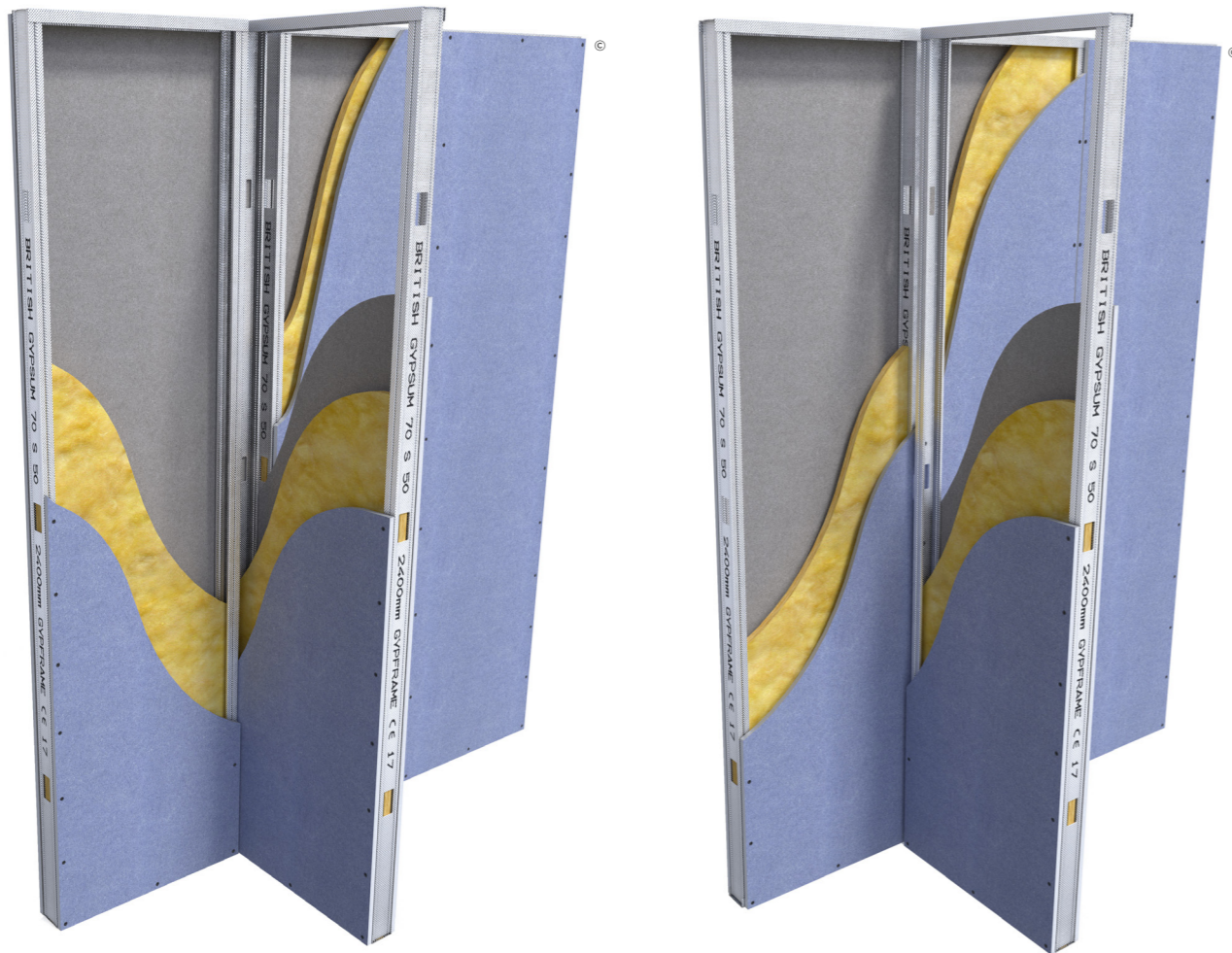
- 1 One layer Gyproc plasterboard or Rigidur gypsum fibre board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Gypframe 'C' studs at specified centres
- 3 Isover insulation where required
- 4 Gypframe 'C' stud fixed through board to stud(s) with suitable British Gypsum screws at 600 mm centres (in two lines staggered by 300 mm for 92 mm and 146 mm studs)
- 5 Gypframe 'C' stud at junction (two for 92 mm and 146 mm studs in adjacent partition)
- 6 Gypframe GA6 Splayed Angle fixed to channels and studs with suitable British Gypsum wafer head screws at 600 mm centres (no fixings to head channel for deflection head condition)
- 7 Minimum angle ensures Gypframe GA6 Splayed Angle is fixed to studs at external angle

## Section 2

### Partition T-junctions

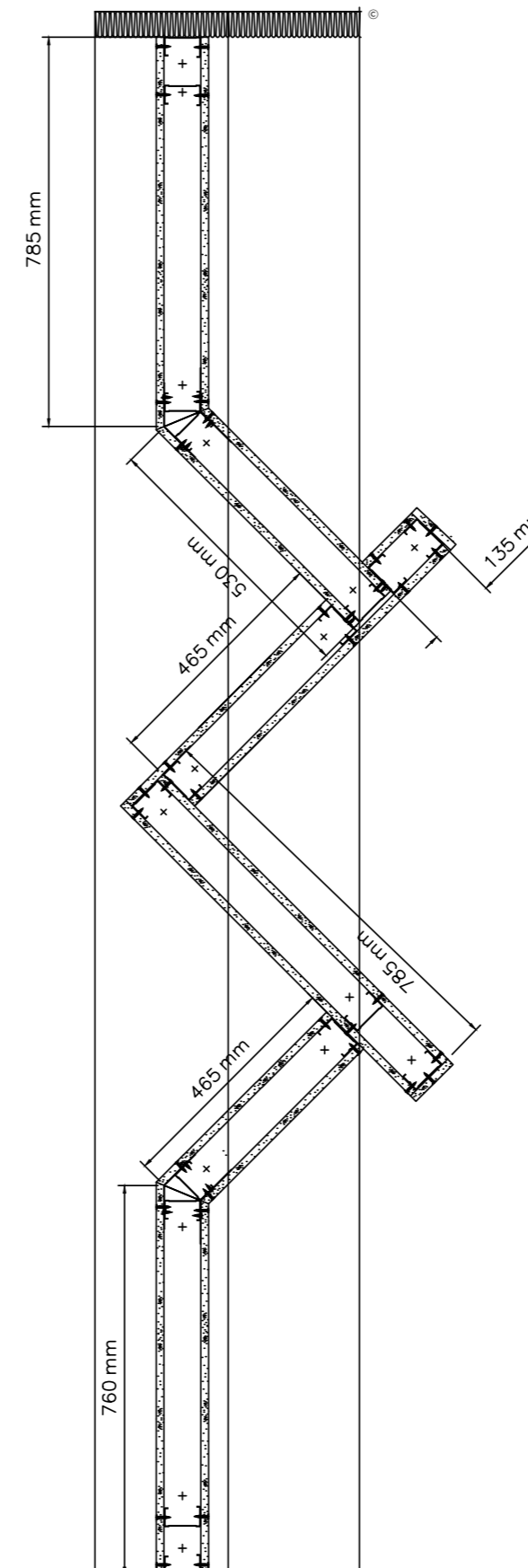
T-junctions are a frequent and often overlooked feature in drylining construction, where one partition intersects another at a perpendicular angle. These junctions are critical to the overall performance of a wall system, influencing not only structural continuity but also fire resistance and acoustic separation.

Despite their ubiquity on-site, T-junctions have historically lacked dedicated fire testing. Industry standards such as BS EN 1364-1: 2015 focus on individual system performance in isolation, leaving a gap in how intersecting elements are validated. This has led to a reliance on generic detailing and assumptions about performance continuity.



Typical GypWall Single Frame partition systems with T-junction details

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.



#### Test design

This example outlines the specifications and testing methodologies for a commonly used 60 minute fire resistance partition system, specifically designed for commercial buildings. The system utilises British Gypsum standard detailing for simple abutment T-junctions and interlocking acoustic details.

The partition system, GypWall Single Frame, features a single layer of Gyproc FireLine 15 mm on Gypframe 70 S 50 'C' studs. This system has been previously substantiated for 60 minutes fire resistance according to BS EN 1364-1: 2015 in a flat configuration in accordance with the requirements of Approved Document B.

A bespoke layout had to be designed to allow for incorporation of both T-junction types (simple connection and enhanced acoustics detailing) within one test specimen.

## Section 2

### Partition T-junctions

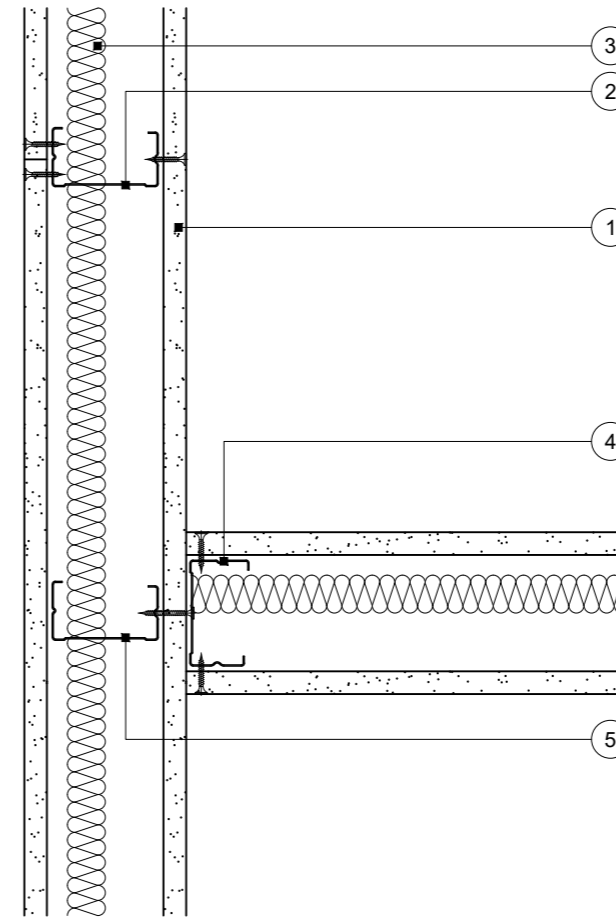
### Standard detail for partition T-junctions



View of fire test specimen at 60 minutes (no failure yet)

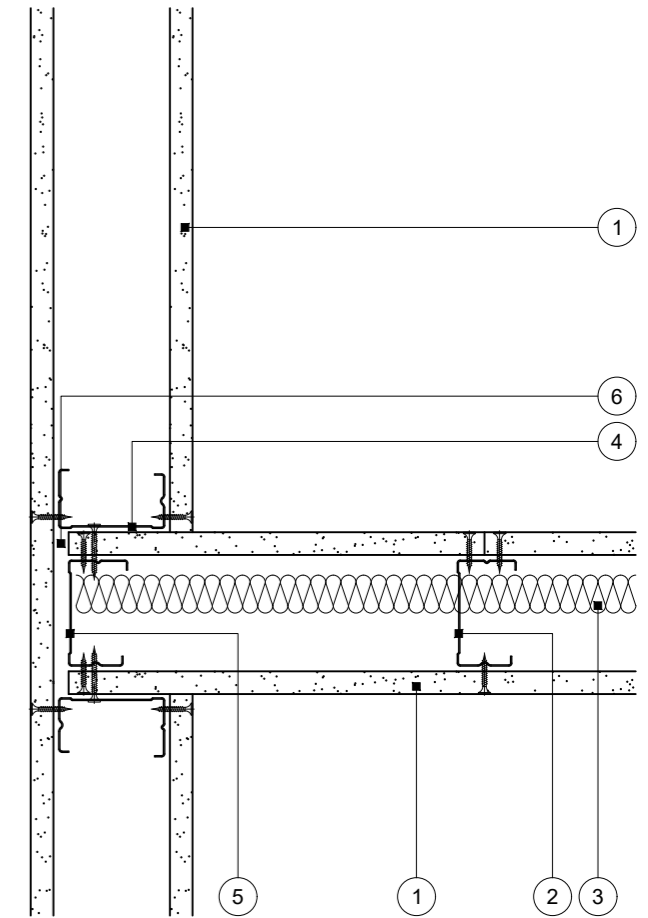
#### Test BTC 23242F and outcome

The specimen achieved over 60 minutes fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015 which is equivalent to the flat version of this partition system.



#### T-junction

Standard connection between partitions



#### T-junction other partition

Detailing where high and low acoustic performance specifications meet

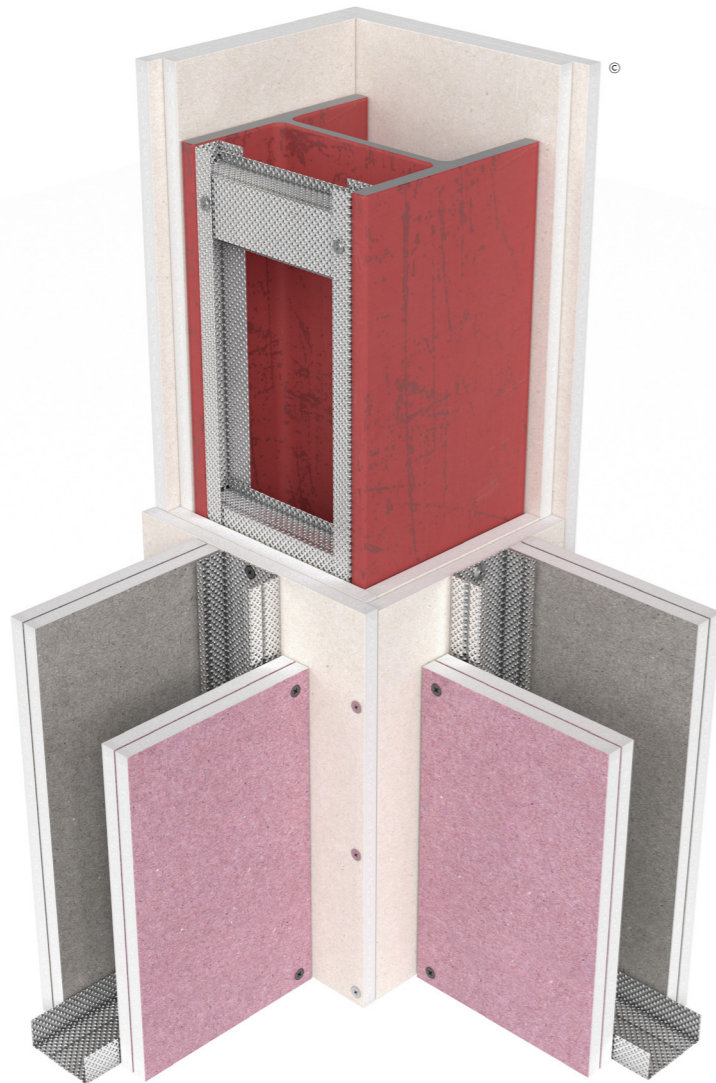
- 1 One layer Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Gypframe 'C' studs at specified centres
- 3 Isover insulation where required
- 4 Gypframe 'C' stud fixed through board to stud(s) with suitable British Gypsum screws at 600 mm centres (in two lines staggered by 300 mm for 92 mm and 146 mm studs)
- 5 Additional Gypframe 'C' stud at junction (two for 92 mm and 146 mm studs in adjacent partition)
- 6 Nominal 10 mm gap between boards

## Section 3

### Partition to column encasement system

The interface between internal partitions and structural columns – particularly those encased in fire protection systems – is a critical detail in building design. These junctions must be carefully considered to maintain the fire protection of the structural steel column, fire resistance of the compartment line, ensure aesthetics and acoustic performance, and accommodate structural movement and tolerances.

This section focuses on the detailing of junctions where drylined partitions meet FireCase-encased columns. It provides practical guidance for architects, engineers, and contractors to achieve compliant, durable, and coordinated solutions.



Steel column protected with FireCase with abutting GypWall Single Frame partition systems

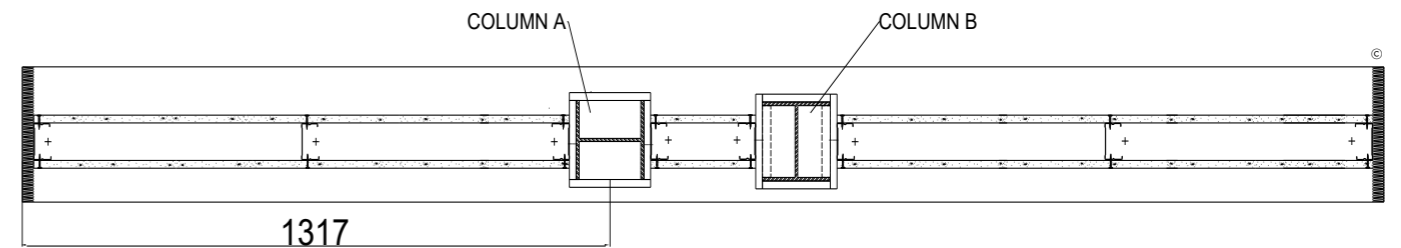
Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

### Test design

This example outlines the specifications and testing methodologies for a commonly used 60 minute fire resistance partition system with a FireCase encasement system specified for 60 minutes fire protection.

The partition system, GypWall Single Frame, features a single layer of Gyproc FireLine 15 mm on Gypframe 70 S 50 'C' studs. This partition system has been previously substantiated for 60 minutes fire resistance according to BS EN 1364-1: 2015 in a flat configuration. The FireCase system is substantiated to BS EN 13381-4: 2013, in this case with single layer 15 mm Glasroc F FireCase specified to provide 60 minutes fire protection for the steel column size tested.

Two columns were included in the specimen to allow fixing of the partition either directly through the FireCase into the steel, or into Gypframe MF5 / MF6 ladder framework located between the column flanges. The columns had thermocouples applied in accordance with BS EN 13381-4: 2013.



# Section 3

## Partition to column encasement system

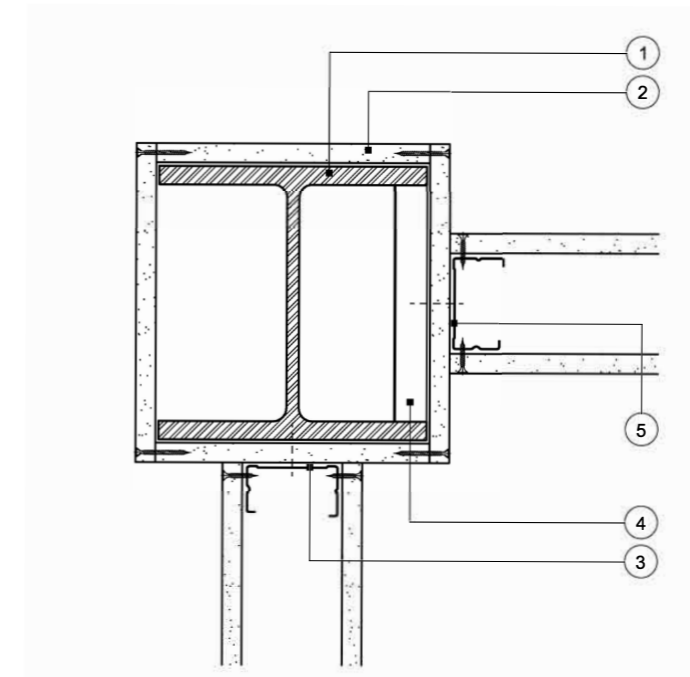
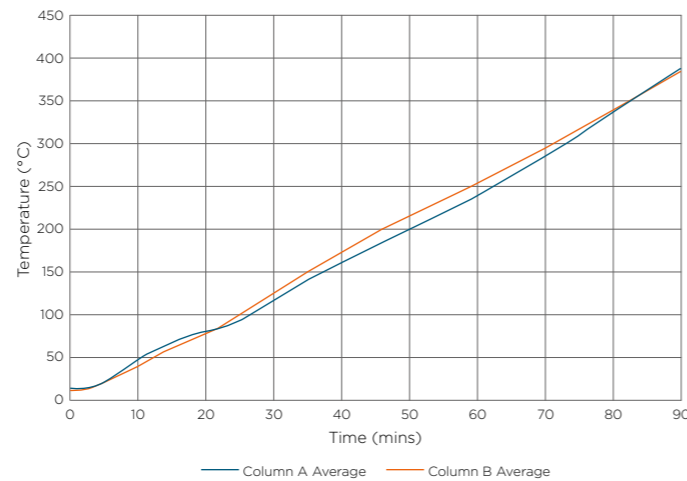
## Standard detail for partition to column encasement system



### Test BTC 23434F and outcome

The specimen achieved over 60 minutes fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015. This partition system has been previously substantiated for 60 minutes fire resistance according to BS EN 1364-1: 2015 in a flat configuration. The column temperatures were maintained below the critical temperatures of both 500 °C and 550 °C at 60 minutes.

Time temperature graph for columns



### FireCase

- 1 Indicative steel column / beam
- 2 One layer Glasroc F FireCase fixed together with Glasroc F FireCase Screws at 150 mm centres. Board joints staggered by minimum 600 mm between adjacent sides
- 3 Gypframe stud suitably fixed through board to column at 600 mm centres (in two lines staggered by 300 mm for 92 mm and 146 mm studs)
- 4 Gypframe MF5 / MF6 ladder framework fixed between the column flanges at 600 mm centres (300 mm centres for 92 mm and 146 mm studs in adjacent partition)
- 5 Gypframe stud suitably fixed through board to Gypframe MF5 sections at 600 mm centres (in two lines staggered by 300 mm for 92 mm and 146 mm studs)

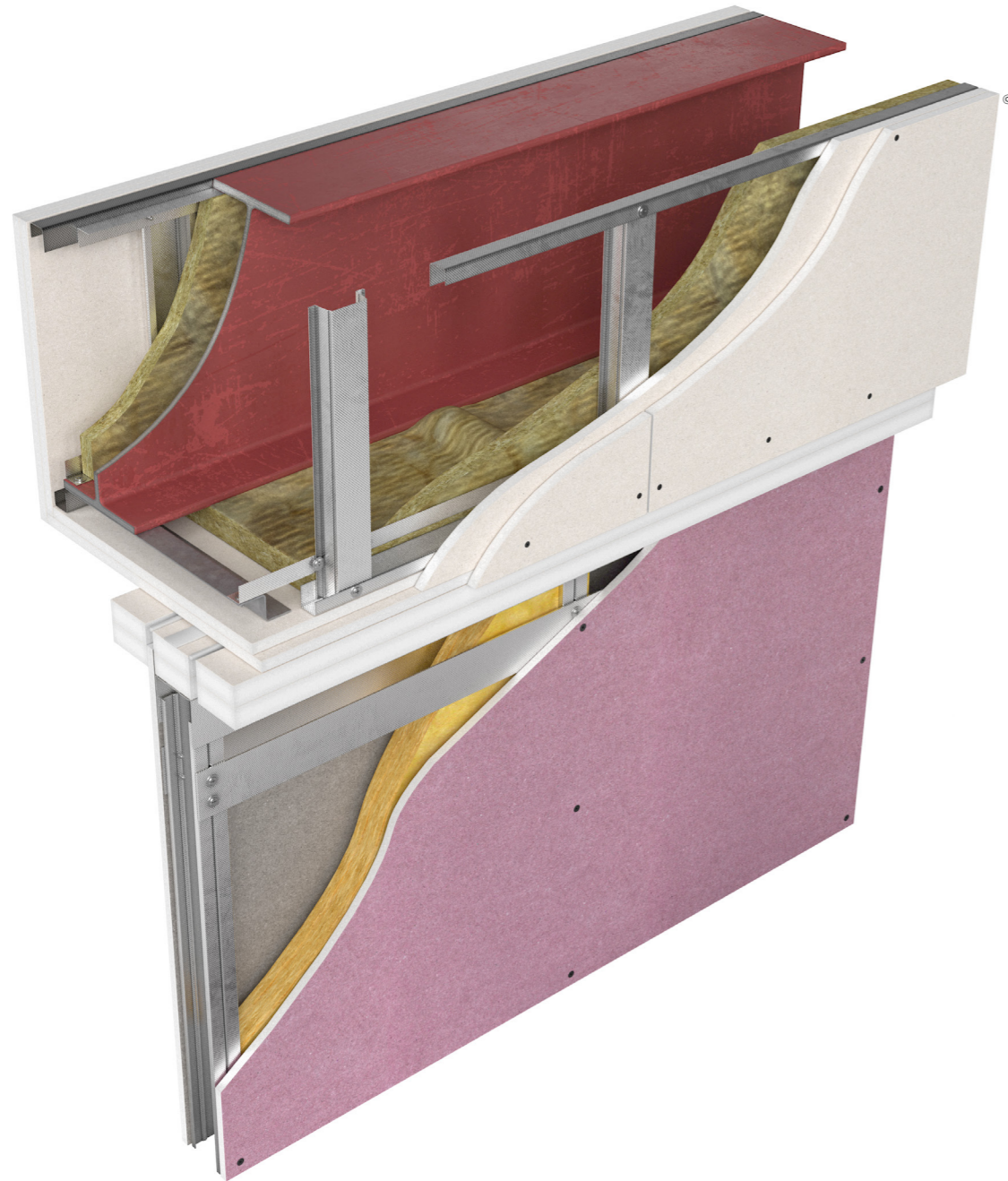
### Important information

As there is no recognised method for fire resistance testing of junctions, any performance characteristics, stated or inferred, in this detail are estimated based on each system tested in isolation and other relevant test data. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

# Section 4

## Beam offset from partitions

A recurring on-site challenge arises when structural steel beams do not align with compartment walls, necessitating adaptable fire-rated encasement solutions. These details outline the approach taken to address such scenarios.



Offset encased beam with GypWall Single Frame partition for up to 60 minutes fire resistance

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

### Test design

Tested as a partition with a universal steel beam suspended at the head of the concrete lined fire resistance frame, with the encasement system extended using 'Z' bars fixed to the underside of the beam soffit. A GypWall Single Frame partition system with a deflection head was installed below the encasement with the head fixed through into the 'Z' bars. The 'Z' bars are to a suitable specification by others to support the span required. The tests incorporated 38 mm x 38 mm x 38 mm, 2 mm gauge sections.

Separate tests were carried out in both directions due to the specimens being asymmetric and 60 minute and 120 minute solutions were tested. The partitions were tested to BS EN 1364-1: 2015 with the beam thermocouples in accordance with BS EN 13381-4: 2013.

Previously the partition and bulkhead elements had been tested and substantiated for 60 minutes fire resistance according to BS EN 1364-1: 2015 and BS EN 1364-2: 2018 standards in flat configurations in accordance with the requirements of Approved Document B.

### Design considerations

The 'Z' bars are critical for extending the encasement system and supporting the head of the partition. The partition system includes a deflection head, which allows for vertical movement.

#### 60 minute solution

Bulkhead consisting of two layers of Glasroc F FireCase 15 mm board mounted on Gypframe MF5 vertical framework, with a GypWall Single Frame partition below consisting of single layer Gyproc FireLine 15 mm on Gypframe 48 S 50 'C' studs. Bulkhead incorporated 25 mm 100 kg/m<sup>3</sup> stone mineral wool lining the back of the encasement boards and framing.

#### 120 minute solution

Bulkhead consisting of three layers of Glasroc F FireCase 15 mm board mounted on Gypframe MF5 vertical framework, with a GypWall Single Frame partition below consisting of double layer Gyproc FireLine 12.5 mm on Gypframe 48 S 50 'C' studs.

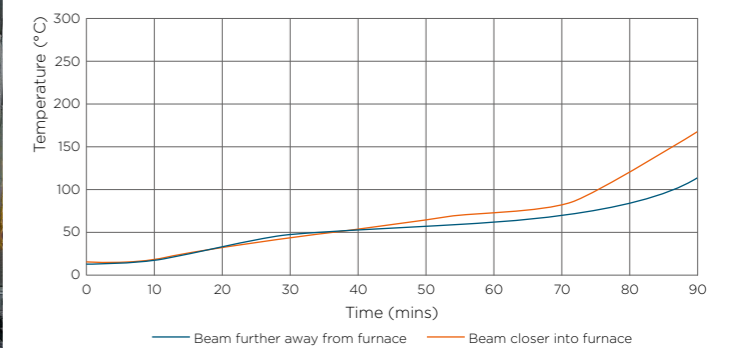


### Tests BTC 23502F, BTC 23539F, BTC 22519F, BTC 22559F and outcome

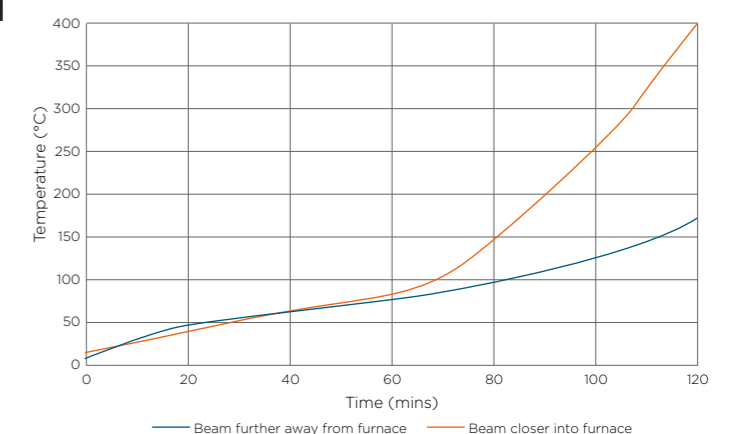
The specimens achieved over 60 minutes and 120 minutes respectively for fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015 which is expected for these specifications for both the bulkhead and partition elements.

The beam temperatures were maintained below the critical temperature of 550 °C at 60 and 120 minutes.

Time temperature graphs for beams - 60 minute solutions

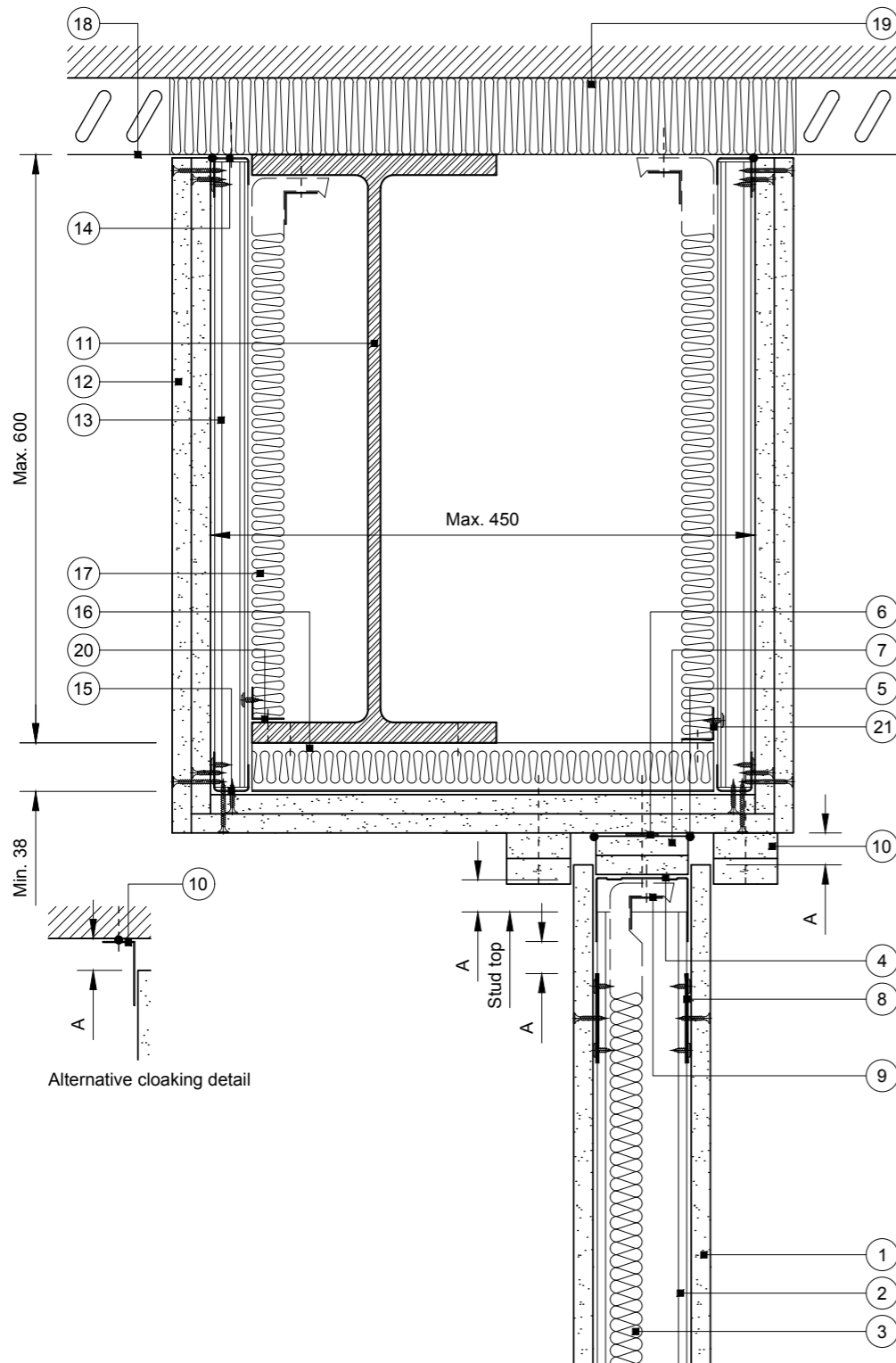


Time temperature graphs for beams - 120 minute solutions



# Section 4

## Standard details for beam offset from partitions 1



### Deflection head to underside of beam offset with 'Z' bars

Downward (vertical) Movement

All dimensions in mm

- 1 One layer Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Gypframe stud type and centres as specified
- 3 Isover insulation where required
- 4 Gypframe Deep Channel or Extra Deep Channel (see table) suitably fixed through board to 'Z' bars at 450 mm centres (in two lines staggered by 300 mm for 94 mm and 148 mm channels)
- 5 Gyproc Sealant for optimum sound insulation
- 6 Gyproc FireStrip
- 7 One or two channel width strip(s) of board (see table). Two strips pre-fixed to channel with suitable British Gypsum screws at 600 mm centres
- 8 Gypframe GFS1 Fixing Strap fixed to each stud with two suitable British Gypsum wafer head screws to receive uppermost board fixings (no fixings into head channel)
- 9 Gypframe steel angle or timber batten suitably fixed to channel to retain insulation where required
- 10 Two 50 mm width strips of Glasroc F FireCase fixed through board to 'Z' bars or MF6 with suitable fire resistant fixings at max. 600 mm centres, or Gypframe Steel Angle bedded on bead of Gyproc Sealant and fixed through board to 'Z' bars or MF6 with suitable fire resistant fixings at max. 600 mm centres (see table)
- 11 Indicative universal steel beam minimum 305 mm x 102 mm x 25 kg/m
- 12 Two layers 15 mm Glasroc F FireCase fixed with 25 mm and 40 mm British Gypsum Drywall Screws at 230 mm centres in field of board and 150 mm centres at board ends
- 13 Gypframe MF5 Ceiling Sections at 450 mm centres fixed into MF6 Perimeter Channels and to steel angles with suitable British Gypsum wafer head screws
- 14 Gypframe MF6 Perimeter Channel suitably fixed to soffit at 600 mm centres
- 15 Gypframe MF6 Perimeter Channel fixed to each MF5 with suitable British Gypsum wafer head screws
- 16 'Z' bars sized and supplied by others, minimum size 38 mm x 38 mm x 38 mm, 2 mm gauge at 450 mm centres (300 mm centres for 94 mm and 148 mm channels). 'Z' bars suitably fixed to underside of beam with two rows of fixings (see important information)
- 17 25 mm stone mineral wool 100 kg/m<sup>3</sup> minimum density supplied by others
- 18 Profile sheet decking
- 19 Suitable fire stopping material by others (see important information)
- 20 Gypframe FEA1 Steel Angle suitably fixed to beam at 600 mm centres
- 21 Gypframe FEA1 Steel Angle suitably fixed to each 'Z' bar

### DEFLECTION (VERTICAL) HEAD DESIGN

DEFLECTION DIM. A	DROPPED SOFFIT NOTE 7	CHANNEL NOTE 4	CLOAKING ELEMENT NOTE 10
1-15 mm	One 19 mm <sup>A</sup> or 20 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup> or GA4
16-20 mm	Two 15 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup> or GA4
21-25 mm	Two 15 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup> or GA4
26-30 mm	Two 20 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup> or GA7
31-35 mm	Two 20 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup> or GA7
36-40 mm	Two 25 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup> or GA7
41-45 mm	Two 25 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup> or GA7
46-50 mm	Two 30 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup> or GA7

<sup>A</sup> Gyproc CoreBoard  
<sup>B</sup> Glasroc F FireCase

### Important information

#### Fire resistance BS EN 1364-1

- 60 minutes through partition subject to specification
- 60 minutes evidence based opinion room to room through beam encasement subject to partition specification

#### Fire protection within beam encasement cavity

- 60 minutes evidence based opinion up to A/V (Hp/A) 235 m<sup>-1</sup> based on 3 sided box, critical temperature 550 °C, beam depth up to 600 mm, based on thermocouple data to ad-hoc BS EN 1364-1

As there is no recognised method for fire resistance testing of junctions, any performance characteristics, stated or inferred, in this detail are estimated based on each system tested in isolation and other relevant test data. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

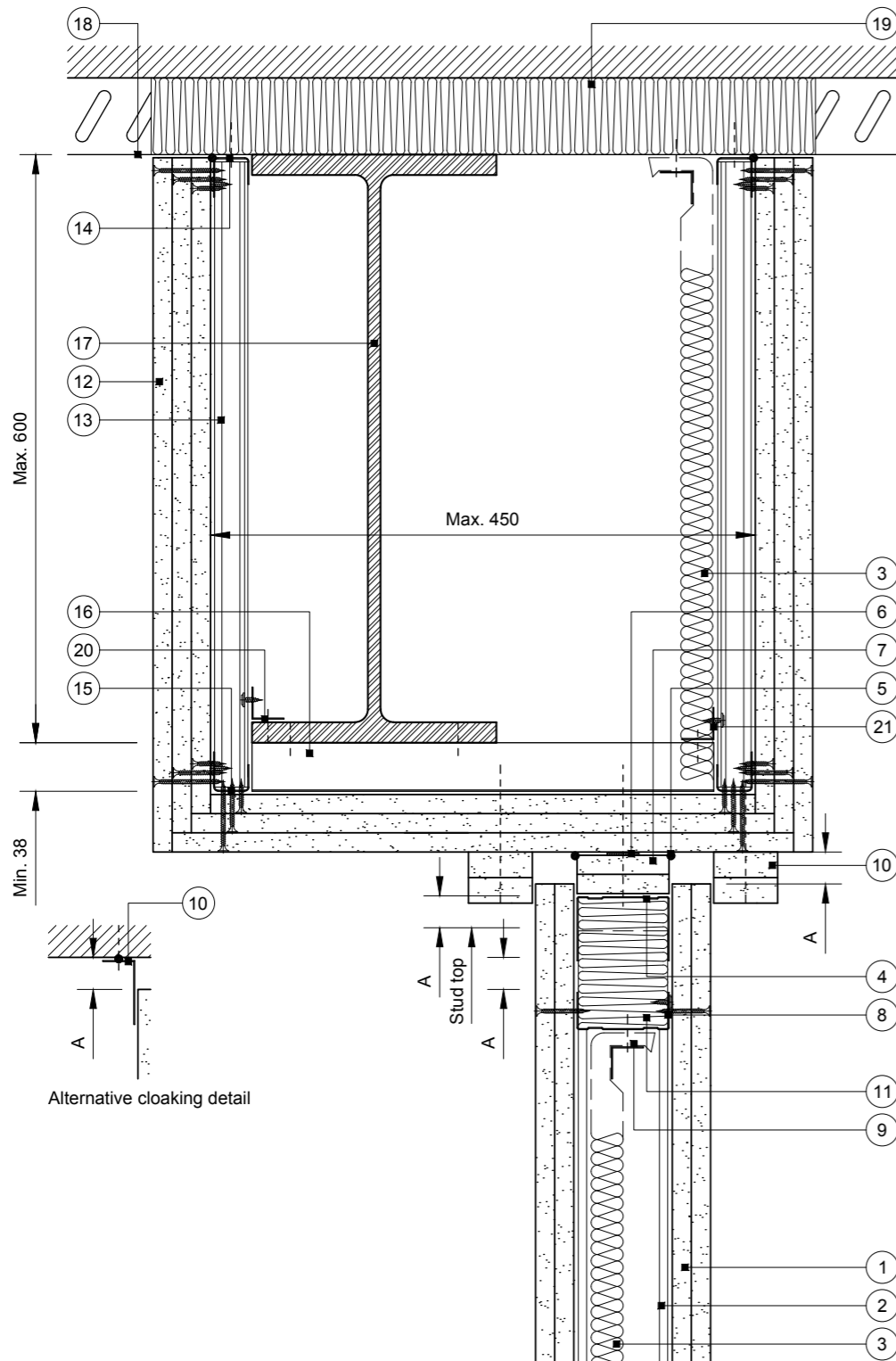
An ad-hoc fire resistance test has been carried out on this construction using 'Z' bars to a length of 325 mm, as noted on this drawing. For greater length up to maximum 450 mm ensure the 'Z' bars are suitably sized by the manufacturer.

Performance is based on maintaining compartmentation through the British Gypsum partition up to the line of the abutting structural element. This is on the basis the structural element has at least the equivalent fire resistance performance to that of the partition. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

Performance characteristics of the British Gypsum system must be maintained. It is important that a suitable fire stopping product with appropriate fire resistance substantiation is sought from a third party manufacturer.

# Section 4

## Standard details for beam offset from partitions 2



- 1 Two layers Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Gypframe stud type and centres as specified
- 3 Isover insulation where required
- 4 Gypframe Deep Channel or Extra Deep Channel (see table) suitably fixed through board to 'Z' bars at 450 mm centres (in two lines staggered by 300 mm for 94 mm and 148 mm channels)
- 5 Gyproc Sealant for optimum sound insulation
- 6 Gyproc FireStrip
- 7 One or two channel width strip(s) of board (see table). Two strips pre-fixed to channel with suitable British Gypsum screws at 600 mm centres
- 8 Gypframe Channel noggings with ends notched around studs and fixed with suitable British Gypsum wafer head screws, to receive uppermost board fixings (no fixings into head channel). Alternatively Gypframe stud noggings tightly fitted between studs
- 9 Gypframe steel angle or timber batten suitably fixed to channel to retain insulation where required
- 10 Two 50 mm width strips of Glasroc F FireCase fixed through board to 'Z' bars or MF6 with suitable fire resistant fixings at max. 600 mm centres, or Gypframe Steel Angle bedded on bead of Gyproc Sealant and fixed through board to 'Z' bars or MF6 with suitable fire resistant fixings at max. 600 mm centres (see table)
- 11 Stone mineral wool 33 kg/m<sup>3</sup> minimum density by others
- 12 Three layers 15 mm Glasroc F FireCase fixed with 25 mm, 40 mm and 60 mm British Gypsum Drywall Screws at 230 mm centres in field of board and 150 mm centres at board ends
- 13 Gypframe MF5 Ceiling Sections at 450 mm centres fixed into MF6 Perimeter Channels and to steel angles with suitable British Gypsum wafer head screws
- 14 Gypframe MF6 Perimeter Channel suitably fixed to soffit at 600 mm centres
- 15 Gypframe MF6 Perimeter Channel fixed to each MF5 with suitable British Gypsum wafer head screws
- 16 'Z' bars sized and supplied by others, minimum size 38 mm x 38 mm x 38 mm, 2 mm gauge at 450 mm centres (300 mm centres for 94 mm and 148 mm channels). 'Z' bars suitably fixed to underside of beam with two rows of fixings (see important information)
- 17 Indicative universal steel beam minimum 305 mm x 102 mm x 25 kg/m
- 18 Profile sheet decking
- 19 Suitable fire stopping material by others (see important information)
- 20 Gypframe FEA1 Steel Angle suitably fixed to beam at 600 mm centres
- 21 Gypframe FEA1 Steel Angle suitably fixed to each 'Z' bar

### DEFLECTION (VERTICAL) HEAD DESIGN

DEFLECTION DIM. A	DROPPED SOFFIT NOTE 7	CHANNEL NOTE 4	CLOAKING ELEMENT NOTE 10
1-15 mm	One 19 mm <sup>A</sup> or 20 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup> or GA4
16-20mm	Two 15 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup>
21-25 mm	Two 15 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup>
26-30 mm	Two 20 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup>
31-35 mm	Two 20 mm <sup>B</sup>	EDC	Two 25mm <sup>B</sup>
36-40 mm	Two 25 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup>
41-45 mm	Two 25 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup>
46-50 mm	Two 30 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup>

<sup>A</sup> Gyproc CoreBoard  
<sup>B</sup> Glasroc F FireCase

### Important information

#### Fire resistance BS EN 1364-1

- 120 minutes through partition subject to specification
- 120 minutes evidence based opinion room to room through beam encasement subject to partition specification

#### Fire protection within beam encasement cavity

- 120 minutes evidence based opinion up to A/V (Hp/A) 235 m<sup>-1</sup> based on 3 sided box, critical temperature 550 °C, beam depth up to 600 mm, based on thermocouple data to ad-hoc BS EN 1364-1

As there is no recognised method for fire resistance testing of junctions, any performance characteristics, stated or inferred, in this detail are estimated based on each system tested in isolation and other relevant test data. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

An ad-hoc fire resistance test has been carried out on this construction using 'Z' bars to a length of 325 mm, as noted on this drawing. For greater length up to maximum 450 mm ensure the 'Z' bars are suitably sized by the manufacturer.

Performance is based on maintaining compartmentation through the British Gypsum partition up to the line of the abutting structural element. This is on the basis the structural element has at least the equivalent fire resistance performance to that of the partition. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

Performance characteristics of the British Gypsum system must be maintained. It is important that a suitable fire stopping product with appropriate fire resistance substantiation is sought from a third party manufacturer.

### Deflection head to underside of beam offset with 'Z' bars

Downward (vertical) Movement

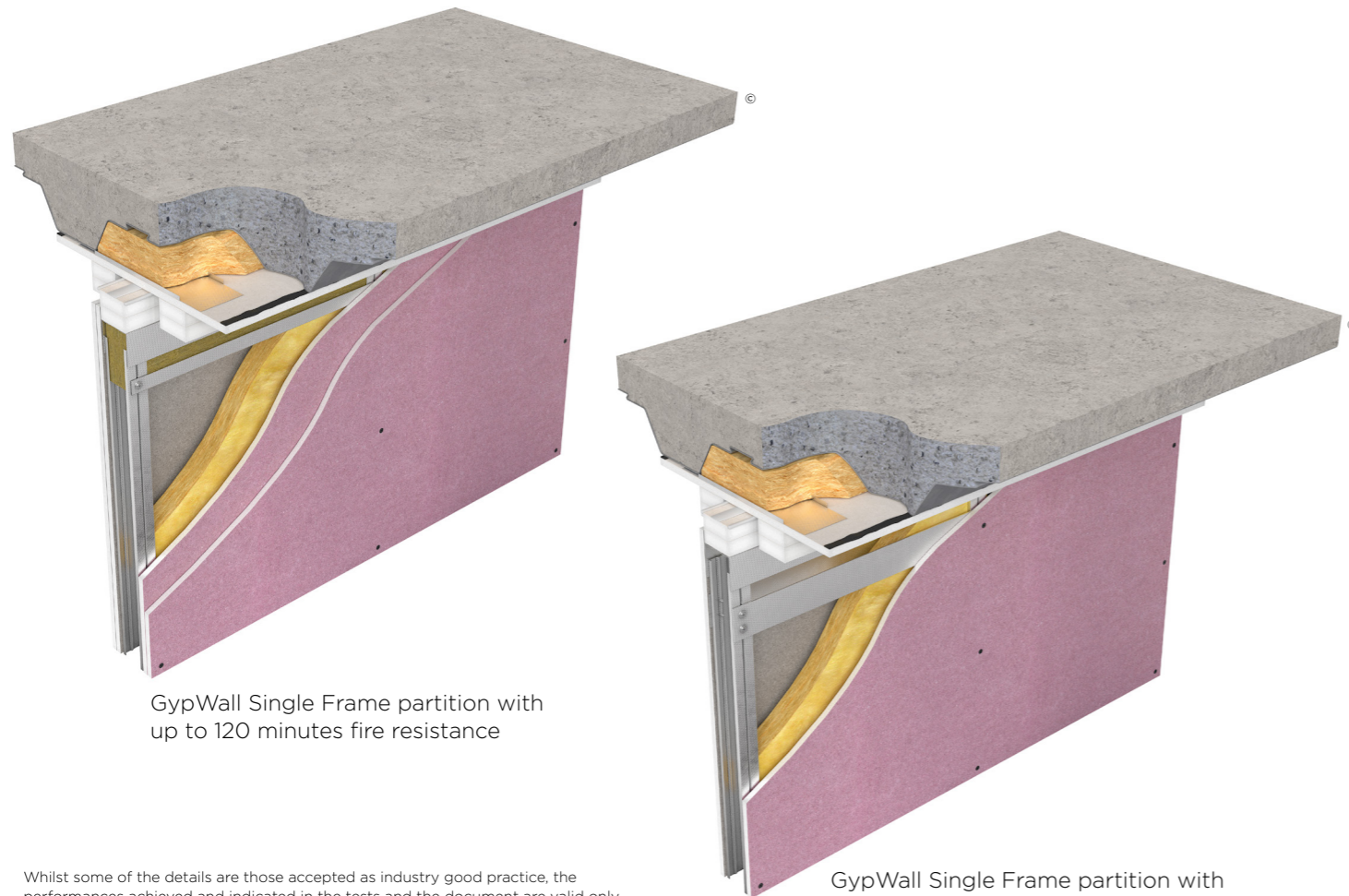
All dimensions in mm

# Section 5

## Partitions under profiled decks

The interface between drylining partitions and structural floor decks – particularly trapezoidal steel decks– presents a unique set of fire safety challenges. These junctions are common in multi-storey commercial and residential buildings, where partitions must be installed beneath profiled metal decking that supports concrete floor slabs. Despite their prevalence, these junctions have historically lacked dedicated fire testing, leaving designers to rely on extrapolated data.

British Gypsum has responded to this need by developing and testing partition-to-deck junctions using an adaptation of BS EN 1364-1: 2015 methodologies. These tests are designed to reflect real-world construction scenarios, including the presence of deflection heads. While the results do not provide direct substantiation for every possible configuration, they demonstrate key principles of performance and buildability.



GypWall Single Frame partition with up to 120 minutes fire resistance

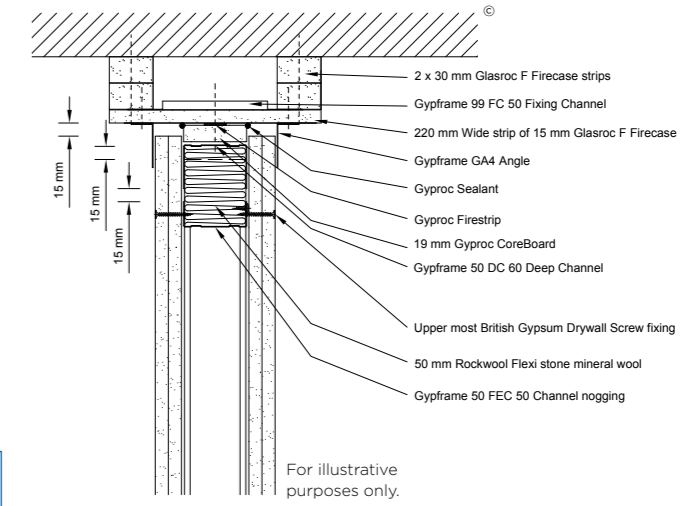
GypWall Single Frame partition with up to 60 minutes fire resistance

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

### Test design

Tested as a partition supported by a Glasroc F FireCase plate with Gypframe Fixing Channel supports at the head, spanning a void above. A GypWall Single Frame partition system with a deflection head was installed below the plate. Practically it wasn't possible to test with a profiled floor at the head, so a Glasroc F bridge detail was used to represent the fixing method used.

Previously the partition elements had been tested substantiated for 60 minutes and 120 minutes fire resistance respectively according to BS EN 1364-1: 2015 flat configurations in accordance with the requirements of Approved Document B.



### Design considerations

**60 minute solution**  
GypWall Single Frame partition below consisting of single layer Gyproc FireLine 15 mm on Gypframe 48 S 50 'C' studs with a 15 mm deflection head. The plate at the head was Glasroc F FireCase 15 mm board.

**120 minute solution**  
GypWall Single Frame partition below consisting of double layer Gyproc FireLine 12.5 mm on Gypframe 48 S 50 'C' studs with a 15 mm deflection head. The plate at the head was Glasroc F FireCase 20 mm board.



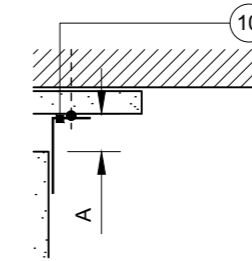
### Tests BTC 21440F, BTC 21964F and outcome

The specimens achieved over 60 minutes and 120 minutes respectively for fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015 which is expected for these specifications. The head detail maintained the performances of the partitions.

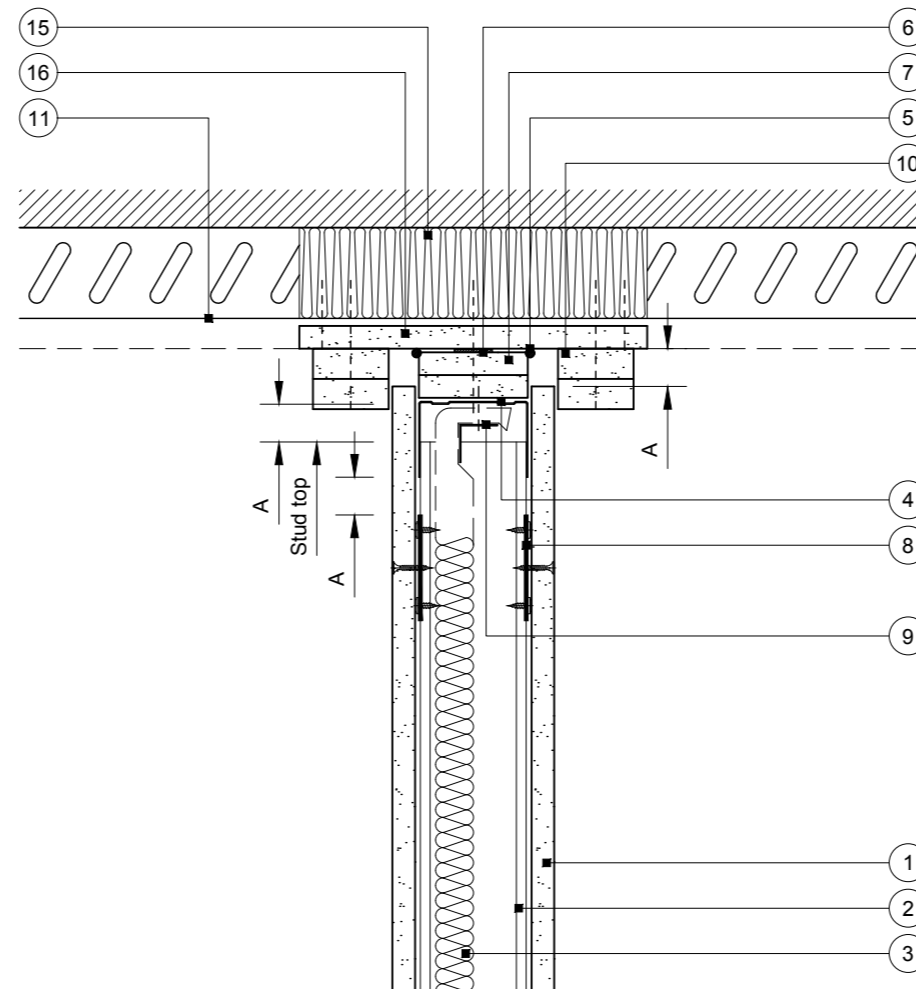
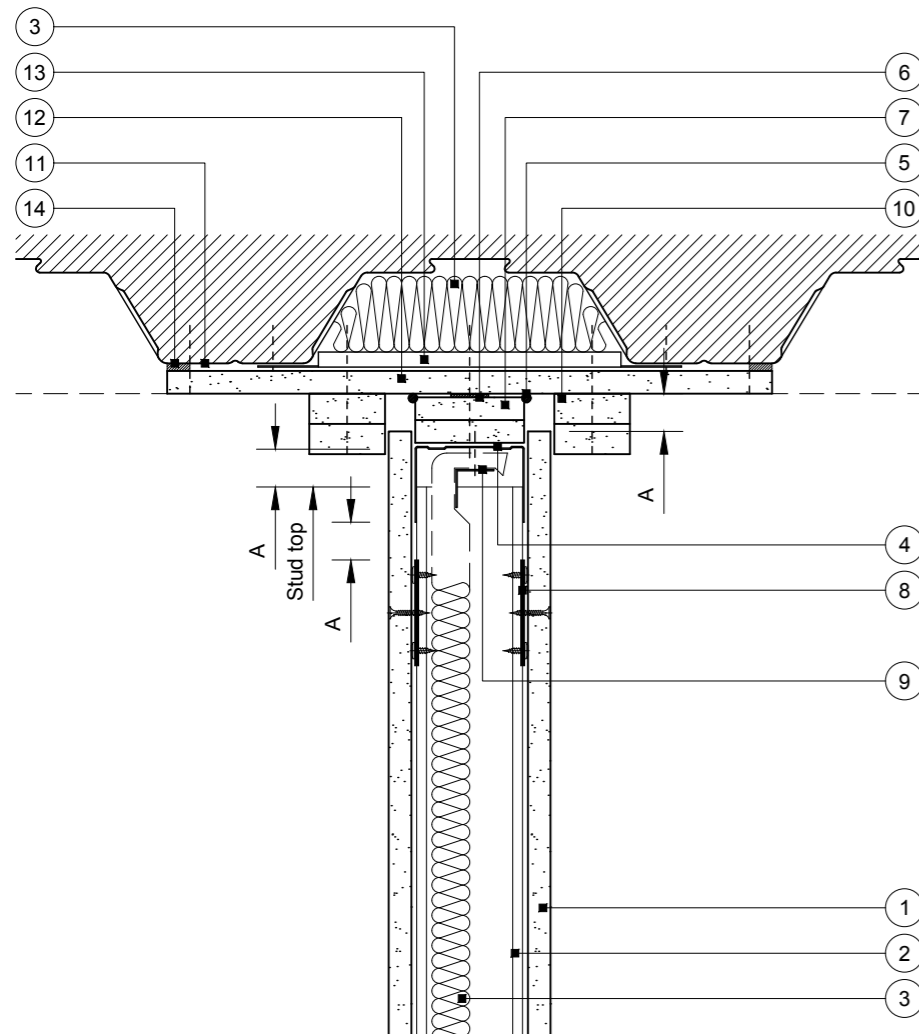
# Section 5

## Standard details for partitions under profiled decks 1

- 1 One layer Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Gypframe stud type and centres as specified
- 3 Isover insulation where required
- 4 Gypframe Deep Channel or Extra Deep Channel (see table) suitably fixed through board to fixing channel or soffit at 600 mm centres (in two lines staggered by 300 mm for 94 mm and 148 mm channels)
- 5 Gyproc Sealant for optimum sound insulation
- 6 Gyproc FireStrip
- 7 One or two channel width strip(s) of board (see table). Two strips pre-fixed to channel with suitable British Gypsum screws at 600 mm centres
- 8 Gypframe GFS1 Fixing Strap fixed to each stud with two suitable British Gypsum wafer head screws to receive uppermost board fixings (no fixings into head channel)
- 9 Gypframe steel angle or timber batten suitably fixed to channel to retain insulation where required
- 10 Two 50 mm width strips of Glasroc F FireCase fixed through board to fixing channel or soffit with suitable fire resistant fixings at 600 mm centres, or Gypframe Steel Angle bedded on bead of Gyproc Sealant and fixed through board to fixing channel or soffit with suitable fire resistant fixings at 600 mm centres (see table)
- 11 Profile sheet decking
- 12 15 mm Glasroc F FireCase suitably fixed to soffit at 150 mm centres (min. 50 mm overlap on soffit)
- 13 Gypframe 99 FC 50 Fixing Channel at 600 mm centres (300 mm centres for 94 mm and 148 mm channels) suitably fixed to soffit (flanges snapped and bent flat to facilitate fixing)
- 14 Fire resistant sealant manufactured and supplied by others
- 15 Suitable fire stopping material by others (see important information)
- 16 Packer of 15 mm Glasroc F FireCase suitably fixed to soffit



Alternative cloaking detail



### DEFLECTION (VERTICAL) HEAD DESIGN

DEFLECTION DIM. A	DROPPED SOFFIT NOTE 7	CHANNEL NOTE 4	CLOAKING ELEMENT NOTE 10
1-15 mm	One 19 mm <sup>A</sup> or 20 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup> or GA4
16-20 mm	Two 15 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup> or GA4
21-25 mm	Two 15 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup> or GA4
26-30 mm	Two 20 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup> or GA7
31-35 mm	Two 20 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup> or GA7
36-40 mm	Two 25 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup> or GA7
41-45 mm	Two 25 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup> or GA7
46-50 mm	Two 30 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup> or GA7

<sup>A</sup> Gyproc CoreBoard  
<sup>B</sup> Glasroc F FireCase

### Important information

- Fire resistance BS EN 1364-1
- 30 or 60 minutes through partition subject to specification
  - 30 or 60 minutes evidence based opinion room to room through junction subject to partition specification

Performance is based on maintaining compartmentation through the British Gypsum partition up to the line of the abutting structural element. This is on the basis the structural element has at least the equivalent fire resistance performance to that of the partition. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

Performance characteristics of the British Gypsum system must be maintained. It is important that a suitable fire stopping product with appropriate fire resistance substantiation is sought from a third party manufacturer.

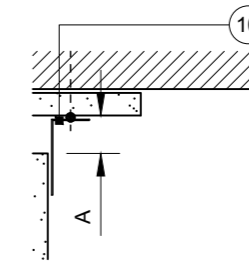
### Deflection head parallel and perpendicular to trapezoidal profile soffit

Downward (vertical) movement

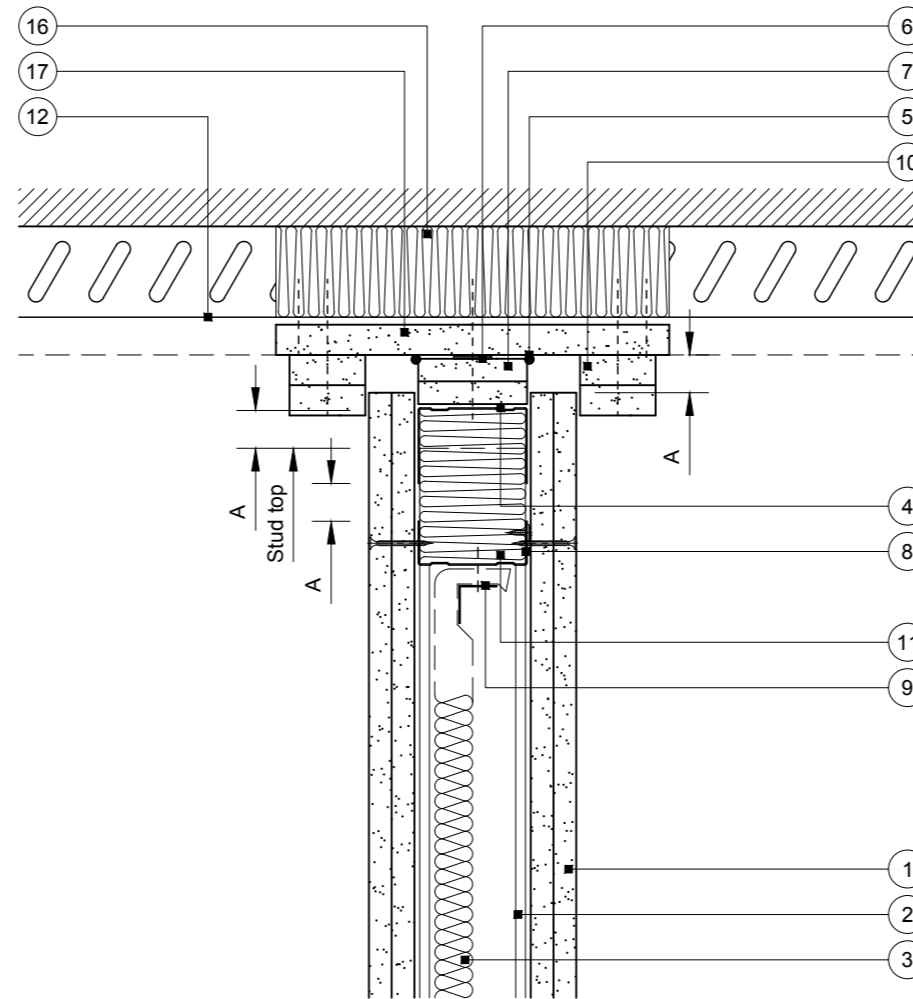
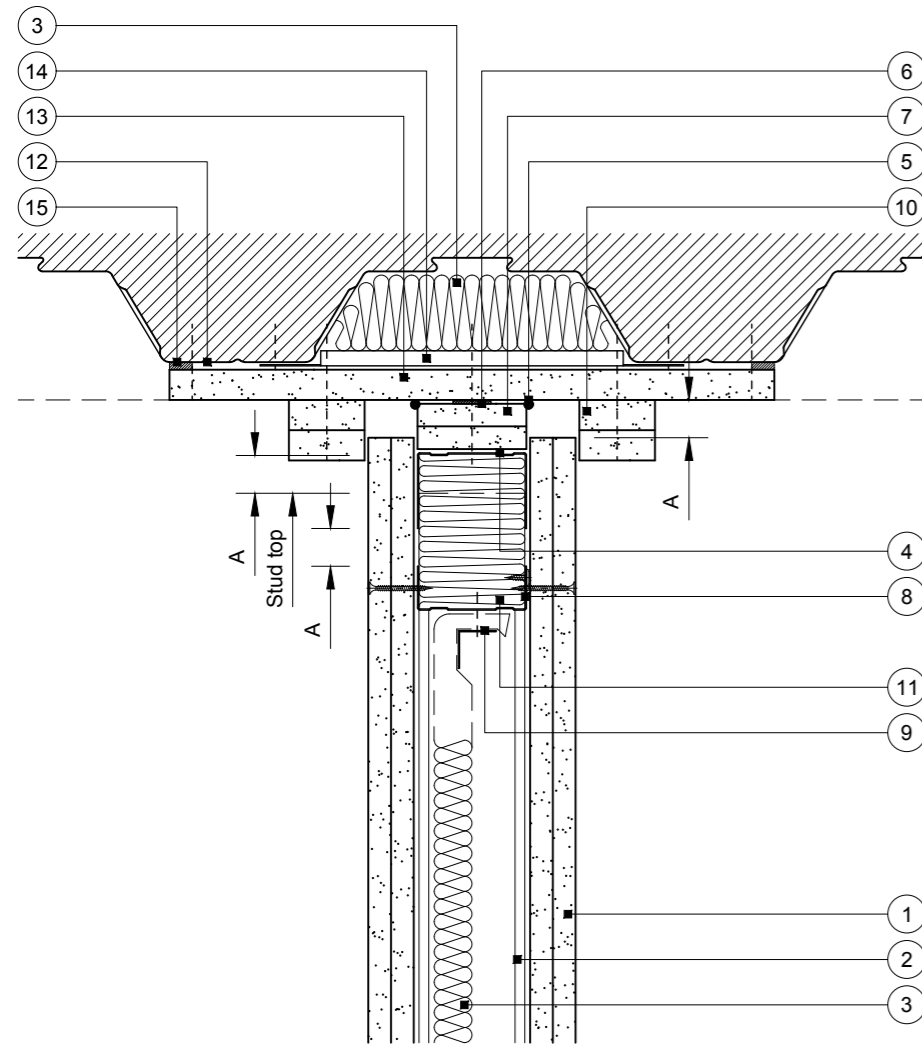
# Section 5

## Standard details for partitions under profiled decks 2

- |   |  |   |
|---|--|---|
| <ol style="list-style-type: none"> <li>1 Two layers Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)</li> <li>2 Gypframe stud type and centres as specified</li> <li>3 Isover insulation where required</li> <li>4 Gypframe Deep Channel or Extra Deep Channel (see table) suitably fixed through board to fixing channel or soffit at 600 mm centres (in two lines staggered by 300 mm for 94 mm and 148 mm channels)</li> <li>5 Gyproc Sealant for optimum sound insulation</li> <li>6 Gyproc FireStrip</li> </ol> | <ol style="list-style-type: none"> <li>7 One or two channel width strip(s) of board (see table). Two strips pre-fixed to channel with suitable British Gypsum screws at 600 mm centres</li> <li>8 Gypframe Channel noggings with ends notched around studs and fixed with suitable British Gypsum wafer head screws, to receive uppermost board fixings (no fixings into head channel). Alternatively Gypframe stud noggings tightly fitted between studs</li> <li>9 Gypframe steel angle or timber batten suitably fixed to channel to retain insulation where required</li> <li>10 Two 50 mm width strips of Glasroc F FireCase fixed through board to fixing channel or soffit with suitable fire resistant fixings at 600 mm centres, or Gypframe GA4 Steel Angle bedded on bead of Gyproc Sealant and fixed through board to fixing channel or soffit with suitable fire resistant fixings at 600 mm centres (see table)</li> </ol> | <ol style="list-style-type: none"> <li>11 Stone mineral wool 33 kg/m<sup>3</sup> minimum density by others</li> <li>12 Profile sheet decking</li> <li>13 20 mm Glasroc F FireCase suitably fixed to soffit at 150 mm centres (min. 50 mm overlap on soffit)</li> <li>14 Gypframe 99 FC 50 Fixing Channel at 600 mm centres (300 mm centres for 94 mm and 148 mm channels) suitably fixed to soffit (flanges snipped and bent flat to facilitate fixing)</li> <li>15 Fire resistant sealant manufactured and supplied by others</li> <li>16 Suitable fire stopping material by others (see important information)</li> <li>17 Packer of 20 mm Glasroc F FireCase suitably fixed to soffit</li> </ol> |
|---|--|---|



Alternative cloaking detail



### DEFLECTION (VERTICAL) HEAD DESIGN

DEFLECTION DIM. A	DROPPED SOFFIT NOTE 7	CHANNEL NOTE 4	CLOAKING ELEMENT NOTE 10
1-15 mm	One 19 mm <sup>A</sup> or 20 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup> or GA4
16-20 mm	Two 15 mm <sup>B</sup>	DC	Two 15 mm <sup>B</sup>
21-25 mm	Two 15 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup>
26-30 mm	Two 20 mm <sup>B</sup>	DC	Two 20 mm <sup>B</sup>
31-35 mm	Two 20 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup>
36-40 mm	Two 25 mm <sup>B</sup>	EDC	Two 25 mm <sup>B</sup>
41-45 mm	Two 25 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup>
46-50 mm	Two 30 mm <sup>B</sup>	EDC	Two 30 mm <sup>B</sup>

<sup>A</sup> Gyproc CoreBoard  
<sup>B</sup> Glasroc F FireCase

### Important information

- Fire resistance BS EN 1364-1
- 90 or 120 minutes through partition subject to specification
  - Estimated 90 or 120 minutes room to room through junction subject to partition specification

Performance is based on maintaining compartmentation through the British Gypsum partition up to the line of the abutting structural element. This is on the basis the structural element has at least the equivalent fire resistance performance to that of the partition. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

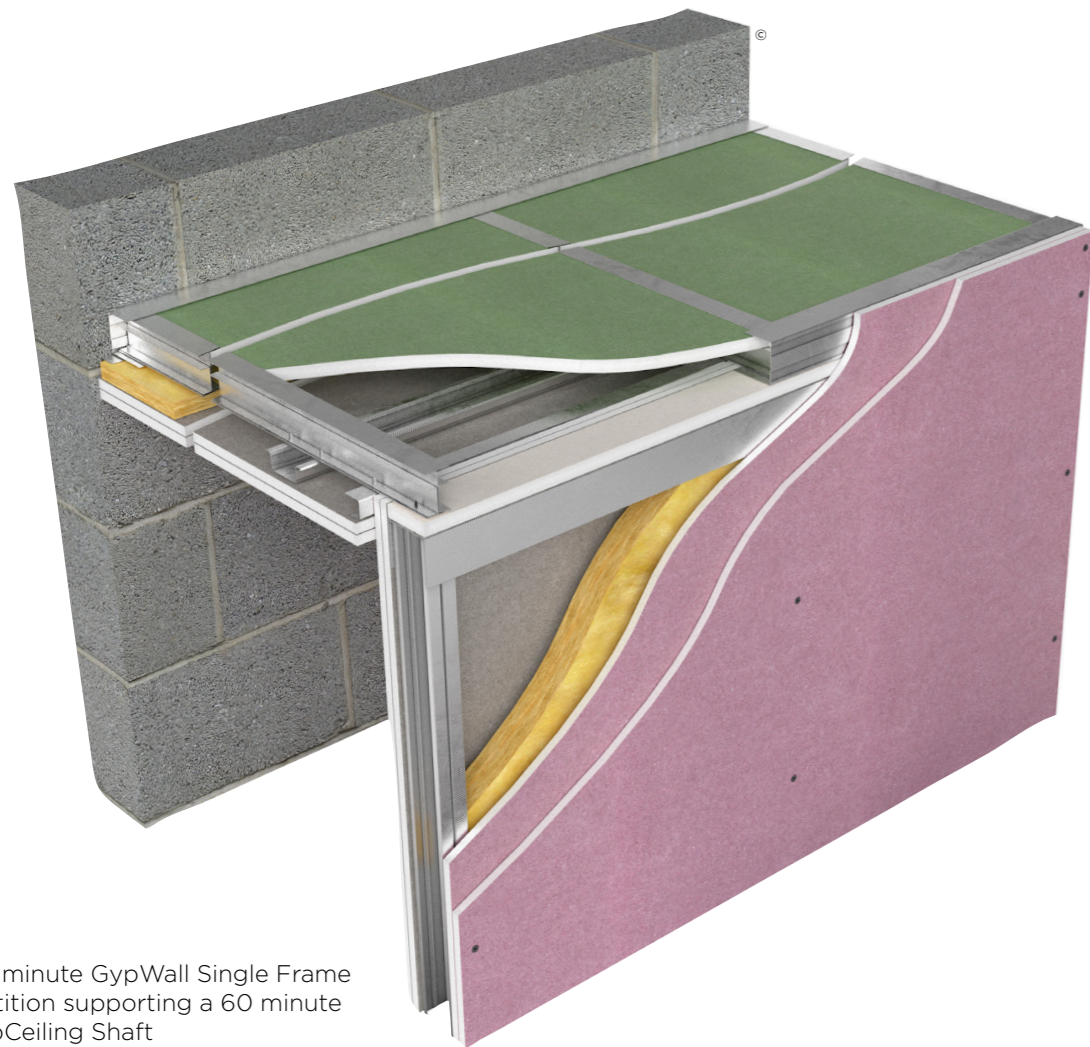
Performance characteristics of the British Gypsum system must be maintained. It is important that a suitable fire stopping product with appropriate fire resistance substantiation is sought from a third party manufacturer.

# Section 6

## Partition to ceiling lid junction

In drylining and fire-rated construction, the junction between partition systems and ceilings represents a critical interface – one that must maintain structural, acoustic, and fire performance while accommodating movement and buildability constraints. Commonly used in escape corridor applications, this junction has historically lacked dedicated fire testing as a combined assembly, instead relying on testing of its component systems.

As the horizontal section is partially supported by the partition we work on the principle that the part-height partition supporting it must be double the fire resistance of the ceiling element. The work completed on this example has successfully demonstrated this assumption.



120 minute GypWall Single Frame partition supporting a 60 minute GypCeiling Shaft

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

### Test design

120 minute GypWall Single Frame partition supporting a 60 minute horizontal GypCeiling Shaft. The test was ad-hoc following the principles of both BS EN 1364-1: 2015 and BS EN 1364-2: 2018 with a target performance of 60 minutes insulation and integrity.

Previously the partition and ceiling elements had been tested substantiated for 120 minutes and 60 minutes fire resistance respectively, in accordance with BS EN 1364-1: 2015 and BS EN 1364-2: 2018 standards in flat configurations but hadn't been tested as a combined system.

### Design considerations

120 minute GypWall Single Frame partition consisting of double layer Gyproc FireLine 12.5 mm on Gypframe 70 S 50 'C' studs.

60 minute horizontal GypCeiling Shaft consisting of double layer Gyproc FireLine 15 mm on Gypframe 146 TI 90 'I' studs with Gyproc CoreBoard 19 mm. The ceiling free spanned over 4 m.



Junction between the partition and ceiling before the test



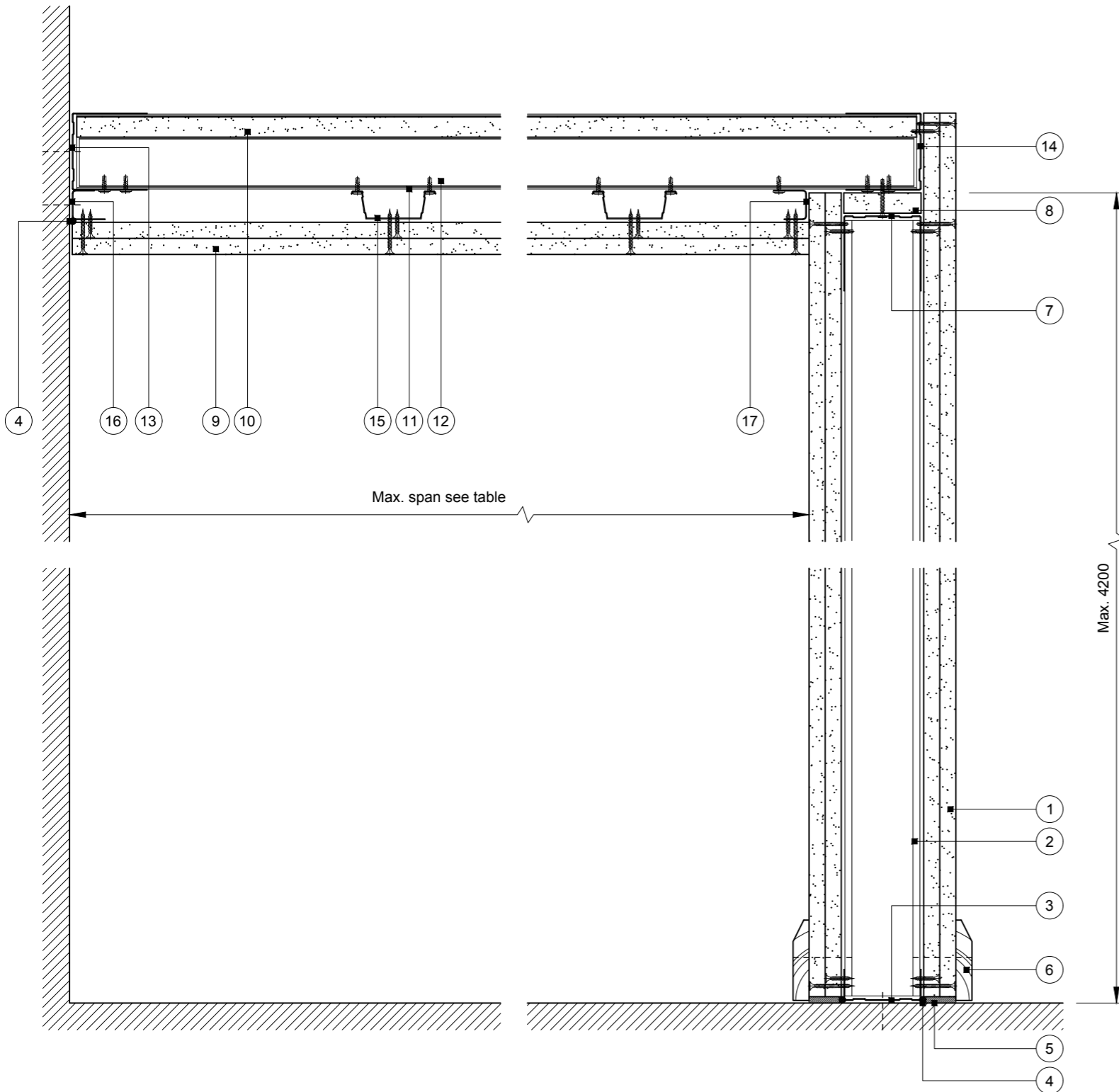
View from inside the test furnace before the test

### Test FCC-F324B and outcome

The specimen achieved over 60 minutes fire resistance (insulation and integrity), following the principles of both BS EN 1364-1: 2015 and BS EN 1364-2: 2018, which successfully met the target. The junction between the two elements performed in excess of 60 minutes, tested from inside to outside.

# Section 6

Standard detail for partition to ceiling lid junction



- 1 Two layers 12.5 mm Gyproc FireLine fixed with 25 mm and 40 mm British Gypsum Drywall Screws at 300 mm centres (200 mm centres at external angles)
- 2 Gypframe 70 S 50 'C' studs at 600 mm centres (to coincide with horizontal studs above)
- 3 Gypframe 72 FEC 50 Channel suitably fixed to floor at 600 mm centres
- 4 Gyproc Sealant for optimum sound insulation
- 5 Gyproc jointing material bulk fill where gap exceeds 5 mm
- 6 Indicative skirting
- 7 Gypframe 72 EDC 80 Extra Deep Channel fixed to channel above with British Gypsum Jack-Point Screws at 600 mm centres
- 8 Channel width strip of 19 mm Gyproc CoreBoard
- 9 Two layers 15 mm Gyproc FireLine fixed with 25 mm and 40 mm British Gypsum Drywall Screws at 230 mm centres in field of board and 150 mm centres at board ends and ceiling perimeter
- 10 19 mm Gyproc CoreBoard
- 11 Gypframe 'I' studs (see table) at 600 mm centres fixed into channel through bottom flange with two suitable British Gypsum wafer head screws. Studs to coincide with studs in wall below
- 12 Gypframe Retaining Channel
- 13 Gypframe Extra Deep Channel ('J' Channel for 62 mm) suitably fixed to wall at 300 mm centres (600 mm centres in two lines staggered by 300 mm for 94 mm and 148 mm channels)
- 14 Gypframe Extra Deep Channel ('J' Channel for 62 mm)
- 15 Gypframe MF5 Ceiling Sections at max. 450 mm centres fixed to each stud with two suitable British Gypsum wafer head screws
- 16 Gypframe MF6 Perimeter Channel suitably fixed to wall at 600 mm centres
- 17 Gypframe MF6 Perimeter Channel fixed to each stud with British Gypsum Wafer Head Jack-Point Screws

### CEILING DESIGN

STUD SIZE	MAXIMUM SPAN FIRE FROM BELOW ONLY	MAXIMUM SPAN FIRE FROM BOTH DIRECTIONS
Gypframe 60 I 70	2500 mm	2500 mm
Gypframe 70 I 70	2800 mm	2800 mm
Gypframe 92 I 90	3000 mm	3000 mm
Gypframe 146 TI 90	4000 mm	3000 mm

### Important information

Fire resistance BS EN 1364-1

- 60 minutes through partition

Fire resistance BS EN 1364-2

- 60 minutes through ceiling from below
- Estimated 60 minutes through ceiling from above

As there is no recognised method for fire resistance testing of junctions, any performance characteristics, stated or inferred, in this detail are estimated based on each system tested in isolation and other relevant test data. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

This construction must not be used for material storage or access for personnel.

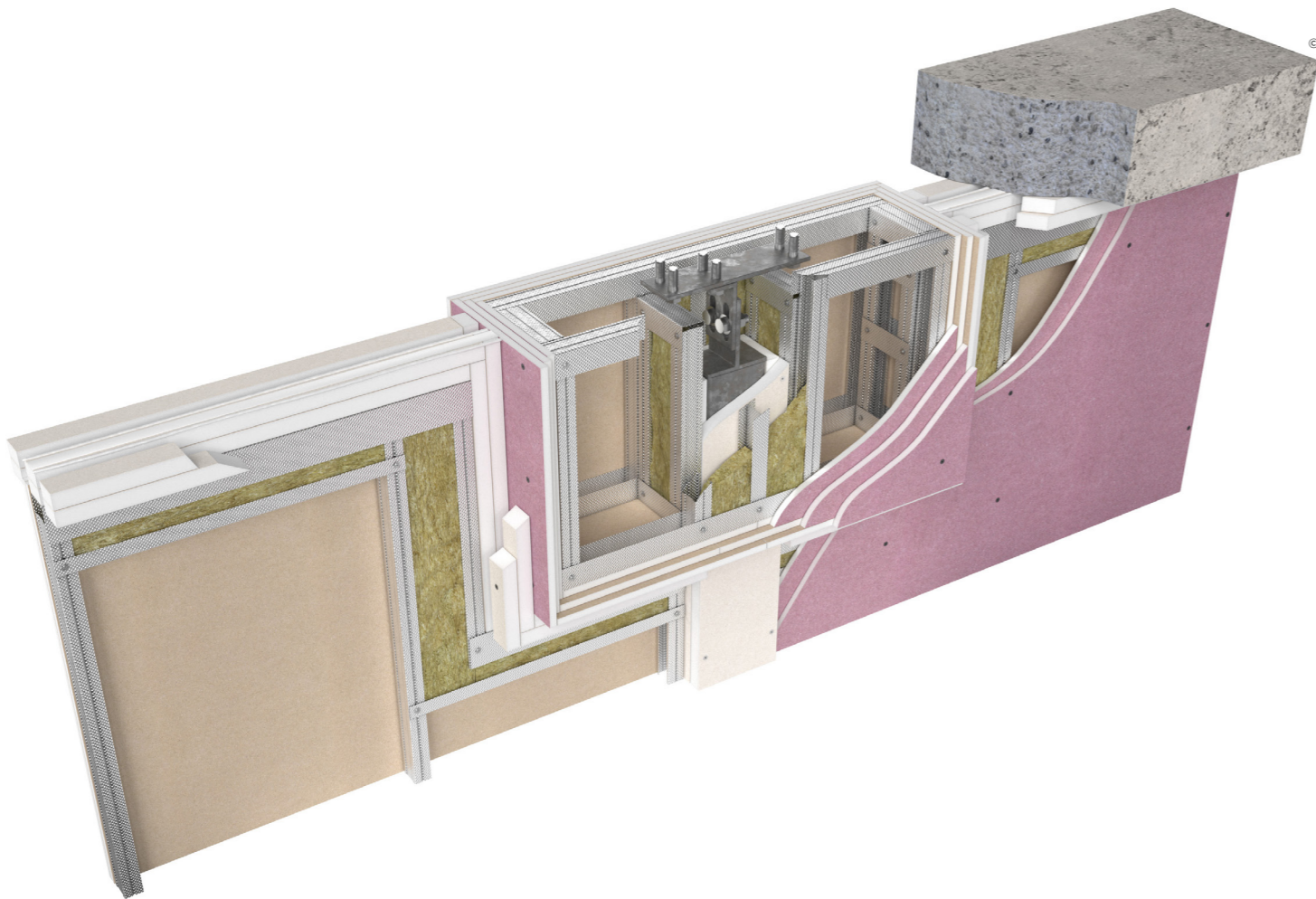
### Lean-to enclosure

Based on GypWall Single Frame and GypCeiling Shaft

## Section 7

### Drylining secondary steelwork with movement joints at the head

The integration of columns with deflection head details within partition systems to support door assemblies presents a unique set of design and performance challenges. These columns – often introduced to accommodate structural requirements – must not only provide structural support for heavy door sets but also provide fire protection to the structural framing and maintain the fire resistance, acoustic, and duty rating of the surrounding partition system.



120 minute column detail with movement joint at the head

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

### Test design

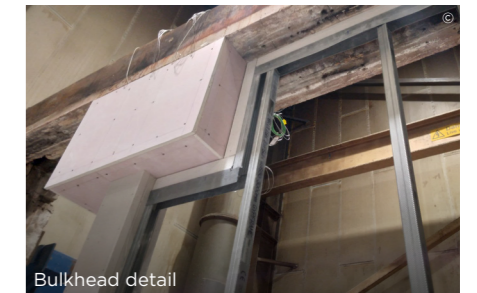
The test specimen consisted of an RHS column section with plate bracket deflection head fixing to the test frame head. The RHS section was encased with the Glasroc FireCase system below the deflection joint.

A sliding bulkhead detail using Gypframe components was installed around the RHS column allowing for vertical deflection movement.

A 120 minute GypWall Single Frame partition consisting of double layer Gyproc FireLine 12.5 mm on Gypframe 48 S 50 'C' studs incorporating a 50 mm deflection head was then installed up to and around the bulkhead and column.



Encased column and bulkhead framework under construction



Bulkhead detail



Completed specimen ahead of fire test



Unexposed face at 120 minutes (no failure yet)

### Test BTC 22590F and outcome

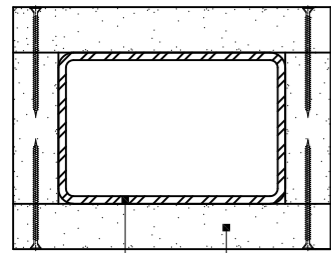
The specimen achieved over 120 minutes fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015 which successfully met the target. The junction between the two elements performed for over 120 minutes.

The column thermocouples applied demonstrated the column temperature was maintained below 500 °C for 120 minutes.

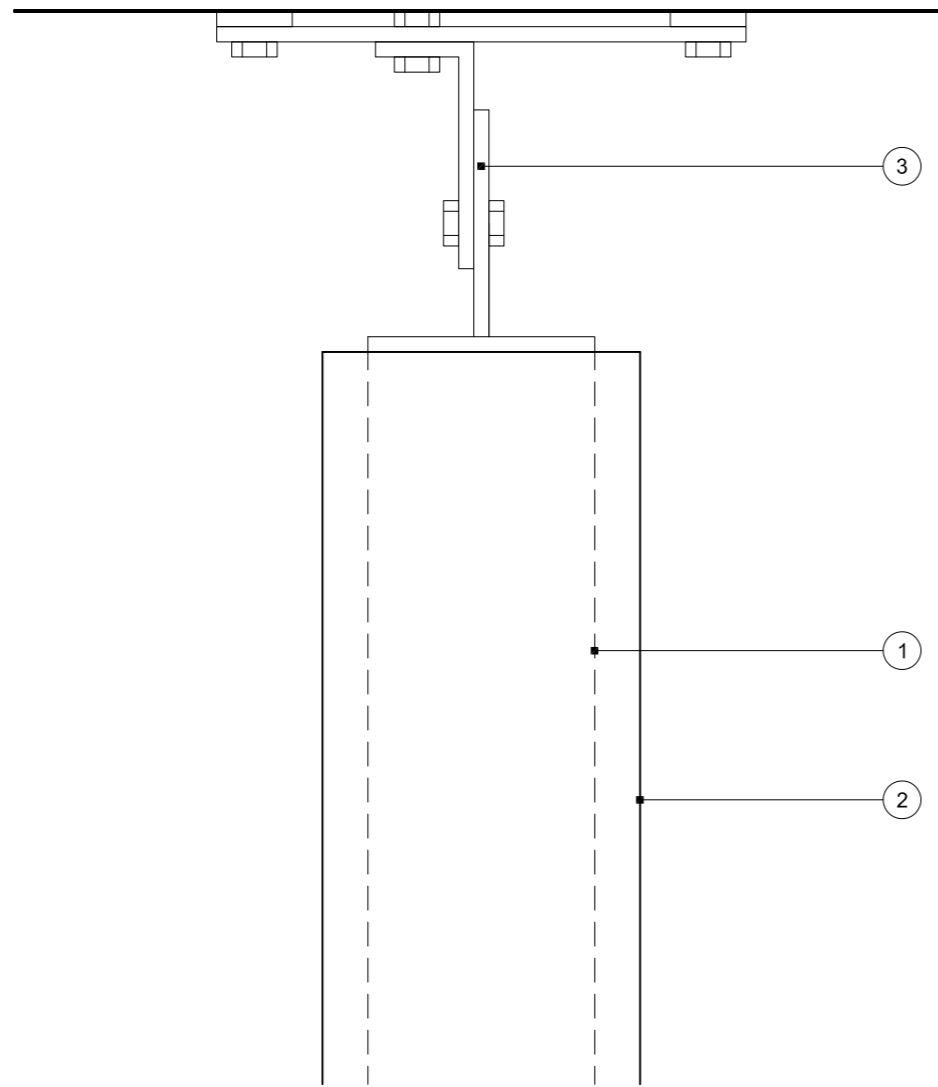
## Section 7

Standard details for drylining secondary steelwork with movement joints at the head 1

- 1 Indicative of RHS column up to A/V (H<sub>2</sub>A) 260 m<sup>-1</sup>
- 2 One layer 30 mm Glasroc F FireCase fixed together with 70 mm Glasroc F FireCase Screws at 150 mm centres. Board joints staggered by minimum 600 mm between adjacent sides
- 3 Indicative of angle / bracket arrangement at soffit junction to allow for up to 50 mm deflection
- 4 Ensure Glasroc board joints are not exposed from the fire risk side



Plan



Elevation

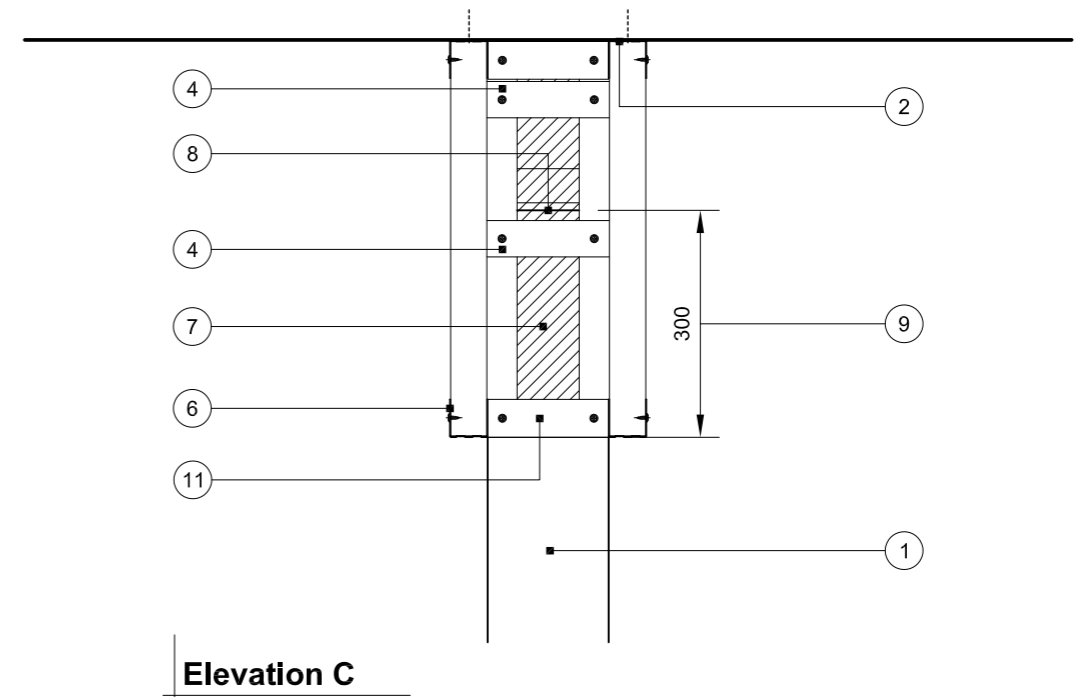
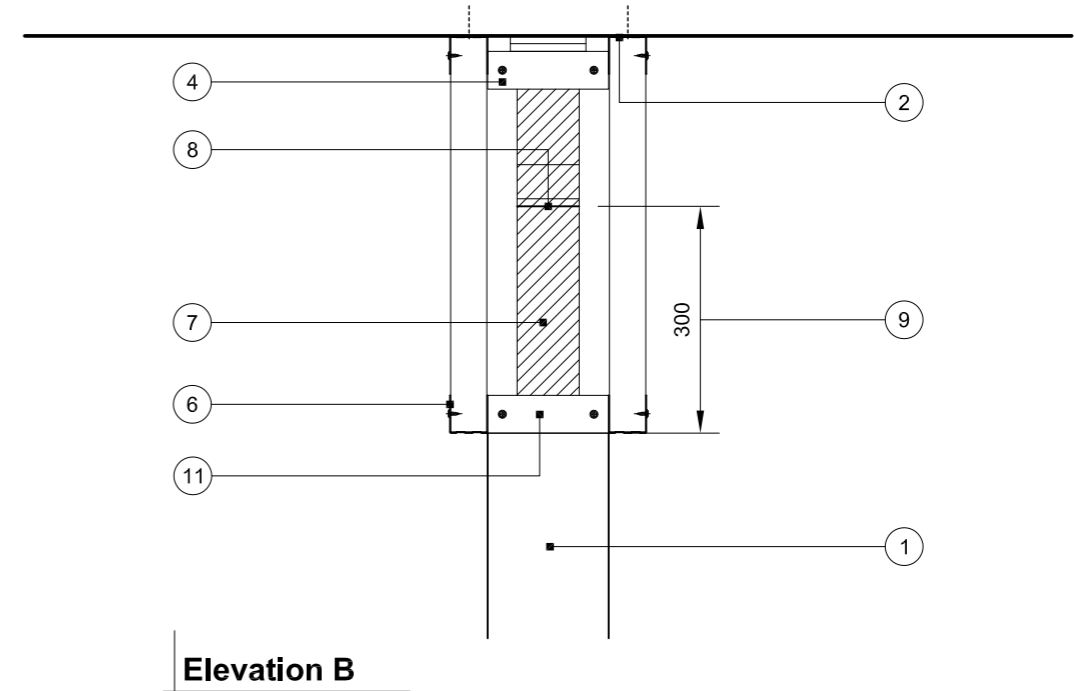
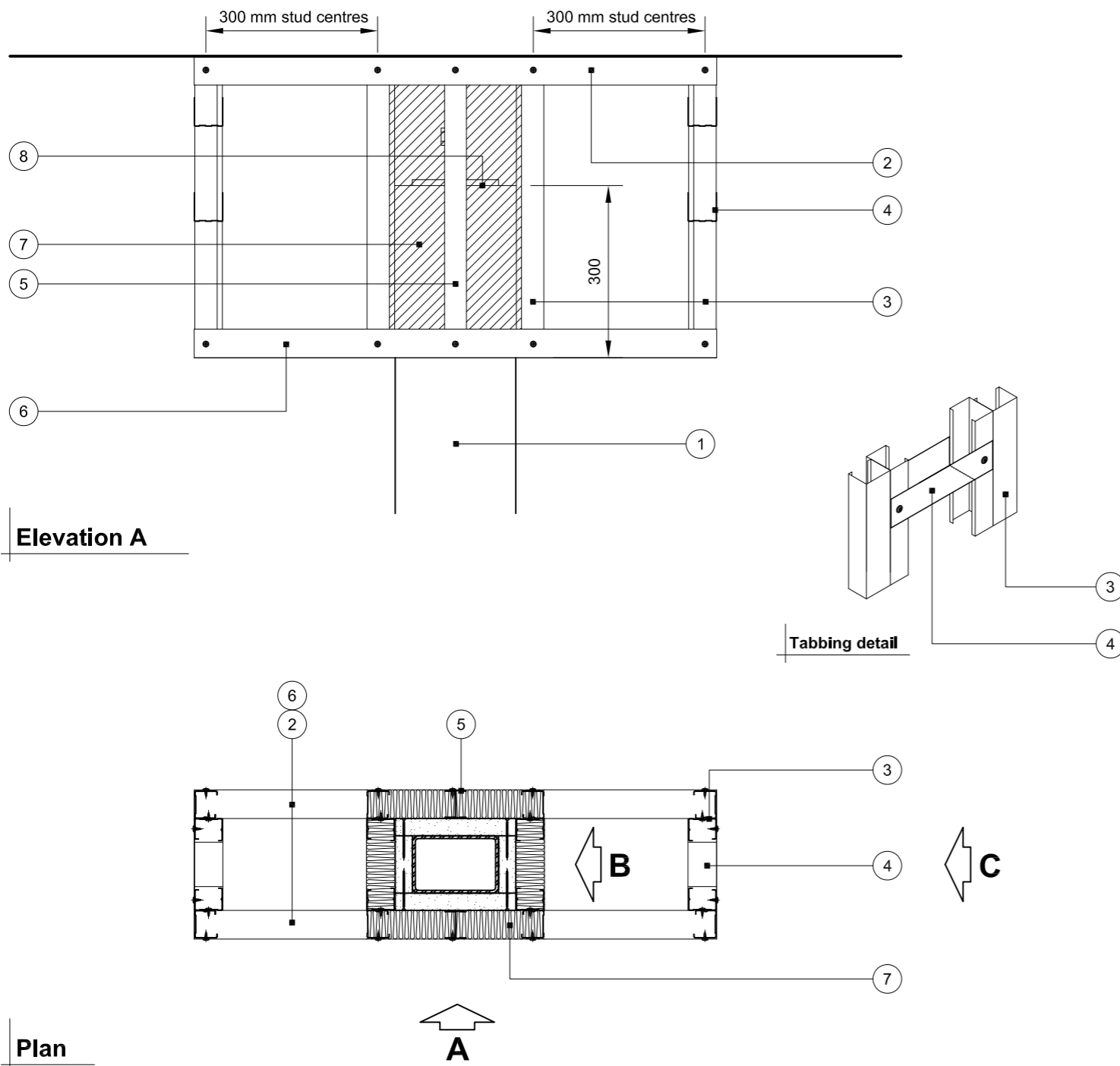


View of the FireCase system encasing the steel column together with the bracket at the head designed to accommodate structural movement

# Section 7

## Standard details for drylining secondary steelwork with movement joints at the head 2

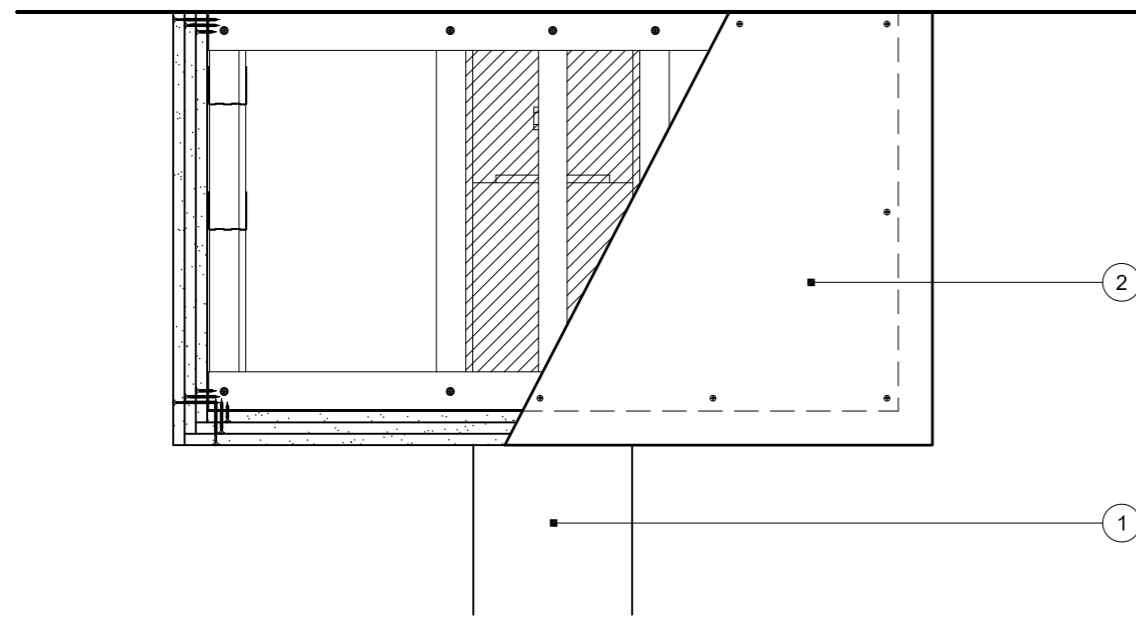
- 1 Encased RHS
- 2 Gypframe 50 DC 60 Deep Channel suitably fixed to soffit at max. 600 mm centres, minimum 3 fixings
- 3 Gypframe 48 S 50 'C' studs fixed to top and bottom Gypframe channels and fixed together back to back at 600 mm centres all with British Gypsum Wafer Head Drywall Screws
- 4 Cross brace section of 50 DC 60 Deep Channel to receive fixing of abutting partition - ends cut to form tabs for fixing to outer face of vertical studs
- 5 Gypframe 48 I 50 'I' stud located mid width of RHS fixed into head and base channel with British Gypsum Wafer Head Drywall Screws
- 6 Gypframe 50 DC 60 Deep Channel fixed to ends of studs with British Gypsum Wafer Head Drywall Screws
- 7 Stone mineral wool (supplied by others) full fill around column bracket deflection joint and in framework to column min. density 45 kg/m<sup>3</sup>
- 8 Top of Glasroc encasement
- 9 300 mm overlap of framing below top of Glasroc encasement
- 10 Ensure that framework to column is aligned vertically to allow sliding fit over Glasroc F FireCase encasement
- 11 50 DC 60 Deep Channel capping ends of studs and fixed to outer face of studs with British Gypsum Wafer Head Drywall Screws



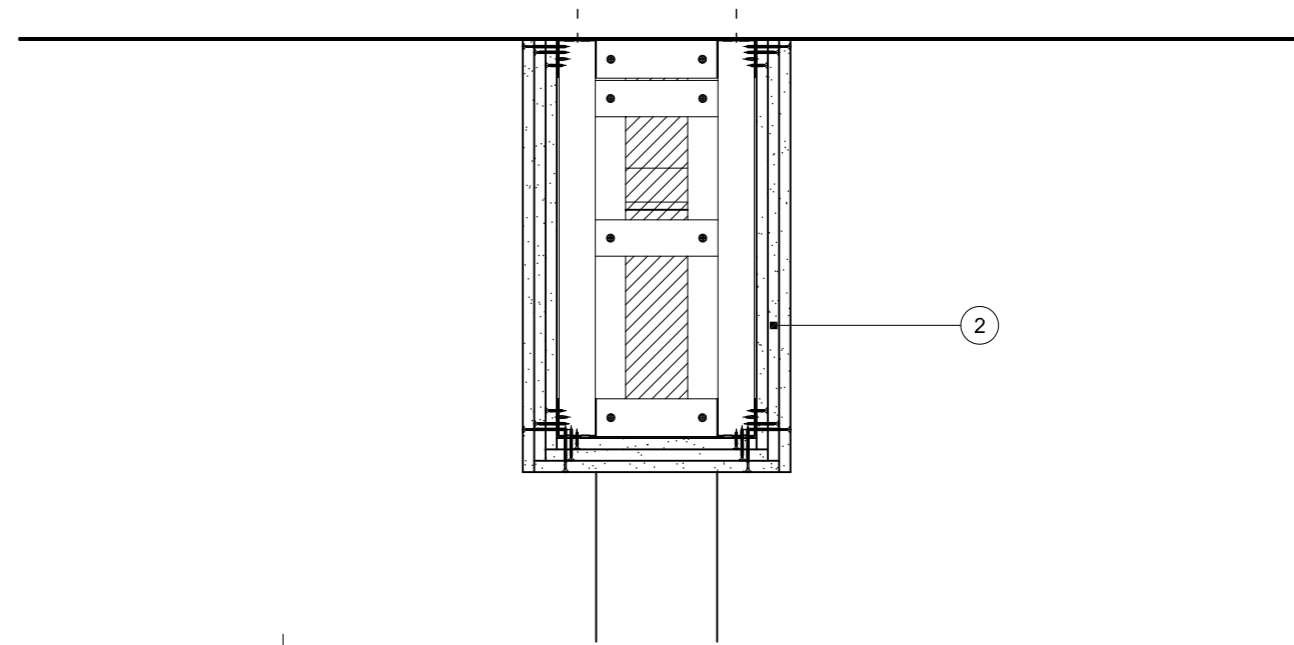
## Section 7

Standard details for drylining secondary steelwork with movement joints at the head 3

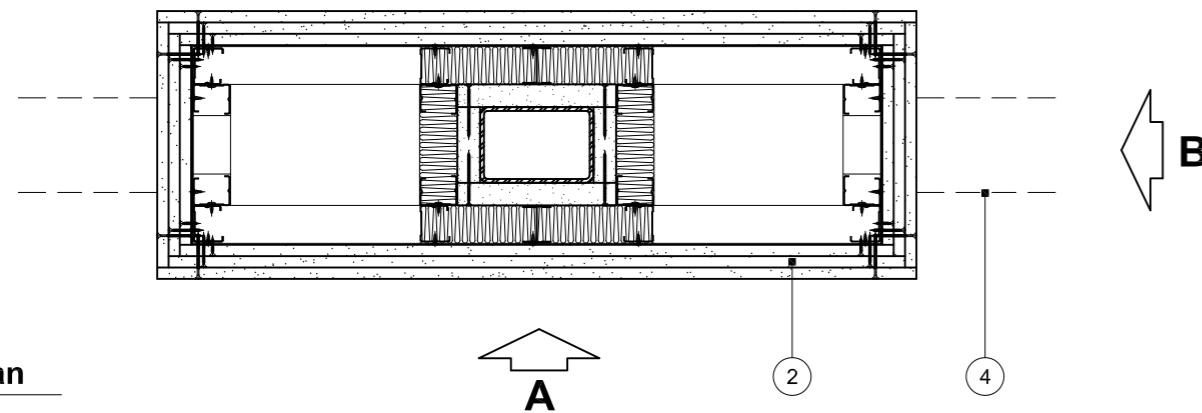
- 1 Encased RHS
- 2 Three layers 15 mm Gyproc FireLine fixed with 25 mm, 40 mm and 55 mm British Gypsum Drywall  
Screws to all framing sections at 300 mm centres. Outer most layer of horizontal soffit board to have 2 lines of fixings at 300 mm centres staggered by 150 mm either side of encased RHS
- 3 See Drg 1032460-DR-052 for framework and associated annotation
- 4 Dotted line denotes line of abutting partition



Elevation A



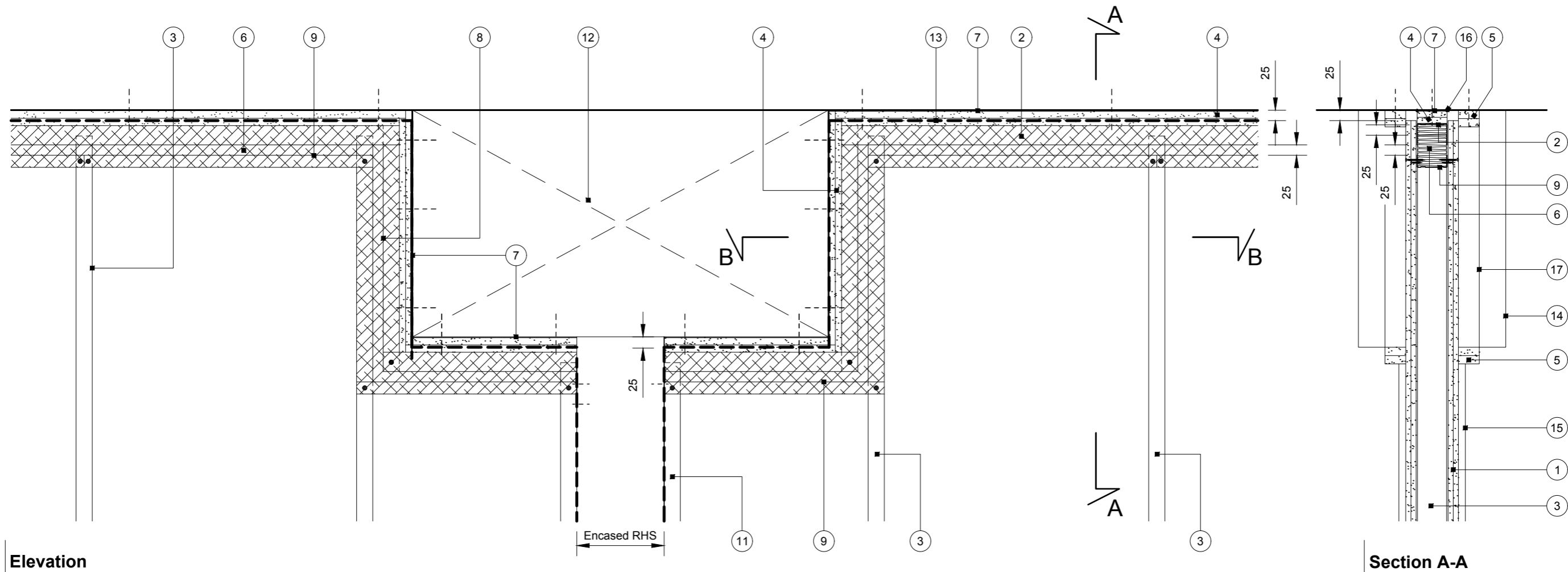
Elevation B



Plan

# Section 7

Standard details for drylining secondary steelwork with movement joints at the head 4



Elevation

Section A-A

- 1 Two layers 12.5 mm Gyproc FireLine fixed with 25 mm and 35 mm British Gypsum Drywall Screws at 300 mm centres
- 2 Gyproframe 50 DC 60 Deep Channel suitably fixed through to soffit / bulkhead framing at max. 600 mm centres
- 3 Gyproframe 48 S 50 'C' studs at 600 mm centres, cut 25 mm short at head to allow for deflection
- 4 Two channel width strips of 15 mm Glasroc F FireCase pre-fixed to channel / stud with suitable British Gypsum screws at 600 mm centres
- 5 Two 50 mm width strips of 20 mm Glasroc F FireCase fixed to soffit / bulkhead framing with suitable fire resistant fixings at 600 mm centres
- 6 Stone mineral wool 33 kg/m<sup>3</sup> minimum density (supplied by others)
- 7 Continuous Gyproc Firestrip
- 8 Gyproframe 48 S 50 'C' stud fixed through to channel noggings sections in bulkhead with suitable British Gypsum screws at nominally 300 mm centres, 3 fixings minimum
- 9 Gyproframe 50 FEC 50 Channel noggings with ends notched around studs and fixed with suitable British Gypsum wafer head screws, to receive uppermost board fixings (no fixings into head channel)
- 10 Gyproframe 50 DC 60 noggings at nominal 300 mm centres
- 11 Gyproframe 48 S 50 'C' stud fixed through to RHS at 600 mm centres, cut 25 mm short in head channel to allow for deflection
- 12 Dotted line denotes boarded bulkhead - see Drg 1177206-DR-005
- 13 Dotted line denotes partition boarding cut 25 mm short of soffit and cut around bulkhead
- 14 Line of bulkhead
- 15 Line of encased RHS
- 16 Gyproc Sealant
- 17 Two 50 mm width strips of 20 mm Glasroc F FireCase fixed through to Gyproframe 48 S 50 studs at 300 mm centres, minimum 3 fixings

## Important information

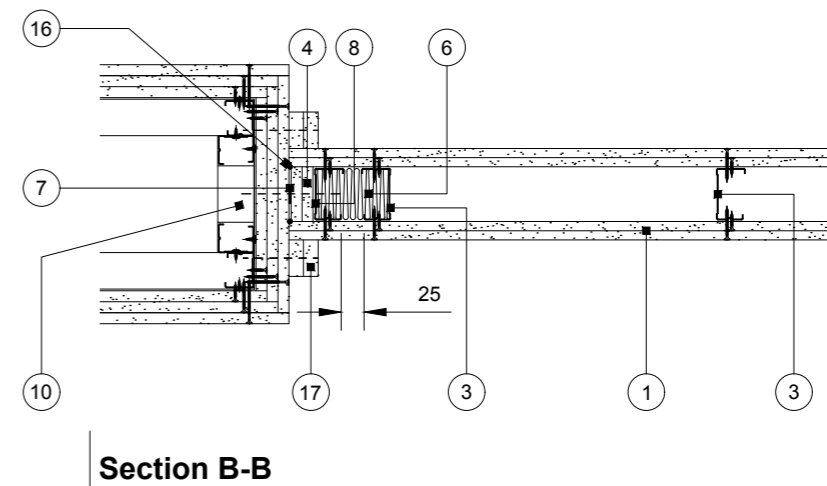
Fire resistance following the methodology of BS EN 1364-1

- 120 minutes through the partition system
- 120 minutes through the bulkhead (room to room)
- 120 minutes through the column encasement

Fire protection

- 120 minutes evidence based opinion fire protection of universal steel column and associated head plate/bracket junction, steel column section factor up to an A/V 260 m<sup>-1</sup>, critical temperature 550 °C, in accordance with BS EN 13381-4. Head plate/bracket junction based on thermocouple data from methodology of BS EN 1364-1, critical temperature 550 °C

Whilst there is no recognised method for fire resistance testing of junctions the above detail has been subjected to a fire test following the methodology of BS EN 1364-1. The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements.

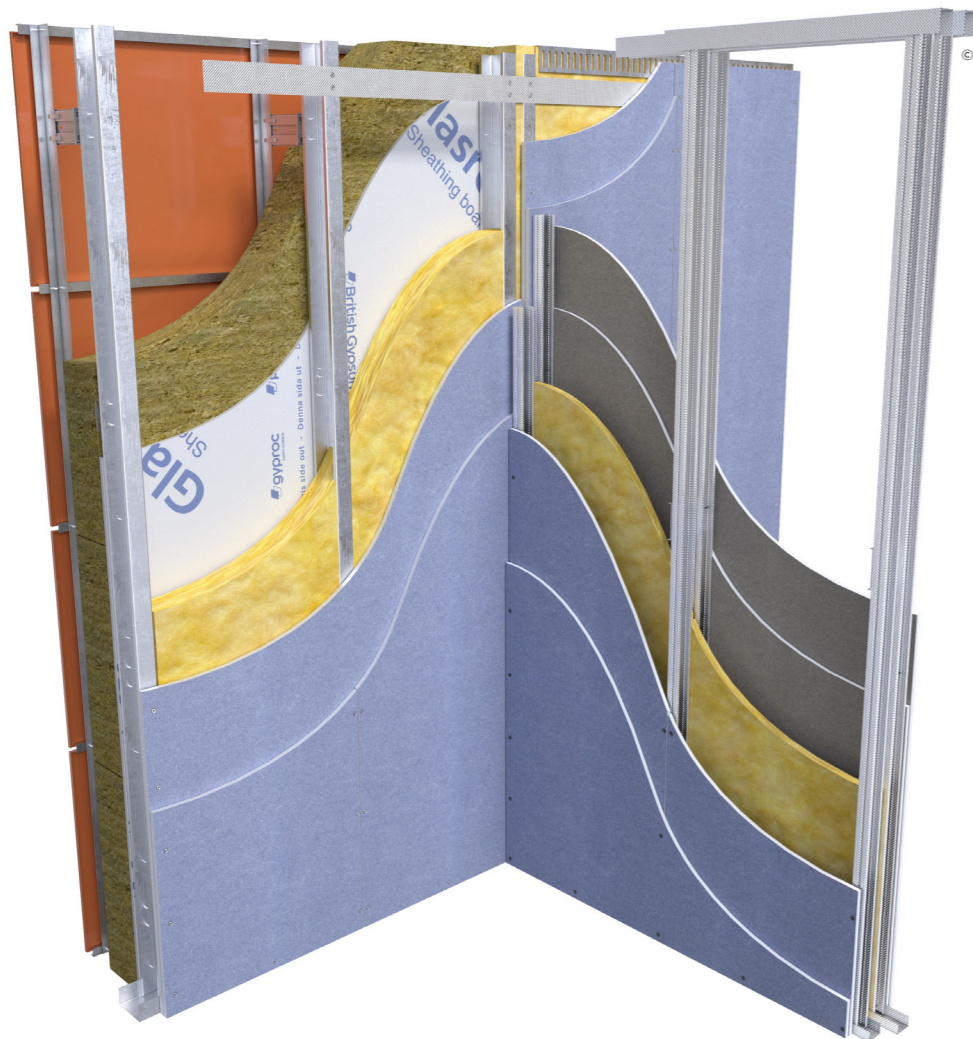


Section B-B

# Section 8

## Drylining 'T' Junctions with GypLyner Xternal walls

T-junctions between external and internal wall systems are a common yet often under-considered detail in drylining construction. Where a GypLyner Xternal system intersects an internal GypWall Twin Frame Braced wall at a perpendicular angle, the junction is critical to overall performance, influencing structural robustness, fire resistance and acoustic separation. Despite their prevalence on-site, such mixed-system junctions have seen limited direct fire testing; standards such as BS EN 1364-1:2015 focus on systems tested in isolation, offering little insight into the behaviour of intersecting constructions and leading to a reliance on generic detailing.



### 90 minute GypLyner Xternal system intersecting internal GypWall Twin Frame Braced wall

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

The design team should confirm cavity barrier requirements in line with the building's fire strategy and Approved Document B.

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### Test design

This example outlines the specifications and testing methodologies for a commonly used GypWall Twin Frame Braced partition system and a GypLyner Xternal system. Previously the two systems had been tested and substantiated for 90 minutes fire resistance according to BS EN 1364-1: 2015 flat configurations in accordance with the requirements of Approved Document B. Both 'T' junction details tested are common on projects but have significant differences in design, necessitating the need for two separate tests.

#### Test BTC 24110F

The purpose of the test was to confirm the in-to-out performance of the 'T' junction with particular focus on the acoustic flanking detail in the GypLyner Xternal board lining, contained within the GypWall Twin Frame Braced partition cavity, as the main perceived risk in the junction design. The test is particularly onerous because the GypWall Twin Frame Braced partition is subjected to the furnace conditions from both sides simultaneously which wouldn't be the case in a standard test to BS EN 1364-1: 2015.

#### Test BTC 24189F

The second test has the same systems but with the GypWall Twin Frame Braced partition running into the GypLyner Xternal cavity with additional studs included to aid fixing. Again, this test is particularly onerous because the GypWall Twin Frame Braced partition is subjected to the furnace conditions from both sides simultaneously.

### Design considerations

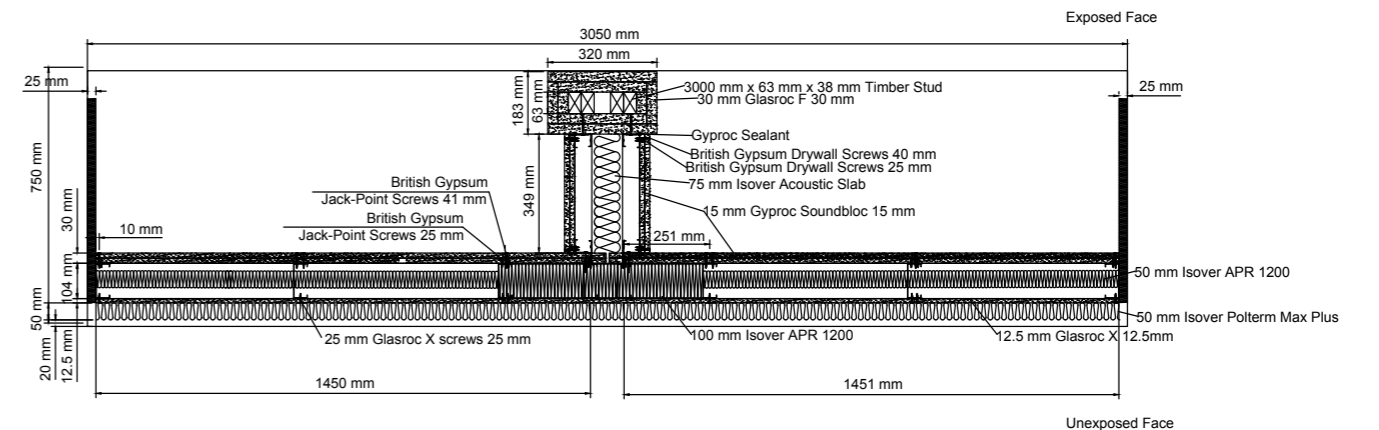
The following systems were incorporated into the specimen design for tests BTC 24110F and BTC 24189F, based on drawing 'Standard details for Drylining 'T' Junctions with GypLyner Xternal walls 1 and 2' respectively.

#### 90 minute GypWall Twin Frame Braced system

250 mm wide partition system consisting of two layers of Gyproc SoundBloc 15 mm on twin Gypframe 48 S 50 'C' studs with 75 mm Isover Acoustic Slab insulation in the cavity, and a 25 mm deflection head.

#### 90 minute GypLyner Xternal system

Non-loadbearing external wall infill system consisting of two layers of Gyproc SoundBloc 15 mm on 100 mm x 50 mm x 1.2 mm Intrastack SFS cold rolled 'C' studs, with 12.5 mm Glasroc X sheathing boards and 50 mm Isover Polterm Max Plus on the outside. The cavity contained 50 mm Isover APR 1200 and the system featured a slotted head track and a 25 mm deflection head.



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# Section 8

## Drylining 'T' Junctions with GypLyner Xternal walls

### Test BTC 24110F and outcome



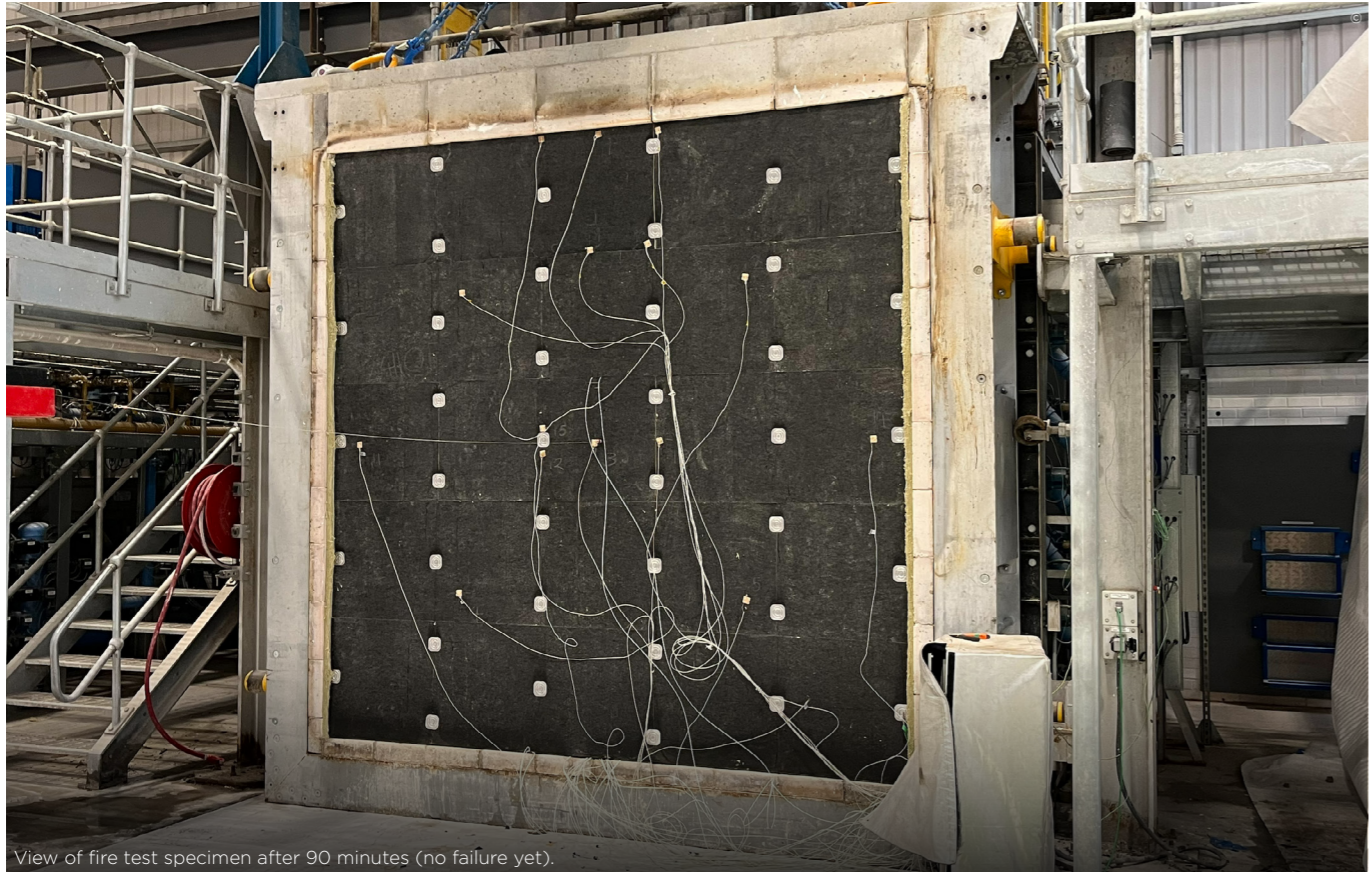
View of fire test specimen exposed face prior to test.

### Test BTC 24189F and outcome



View of fire test specimen exposed face under construction.

The two specimens achieved over 90 minutes fire resistance (insulation and integrity), following the principles of BS EN 1364-1: 2015. The GypWall Twin Frame Braced partition system and the GypLyner Xternal wall system had both previously been substantiated for 90 minutes fire resistance according to BS EN 1364-1: 2015 in flat configurations.



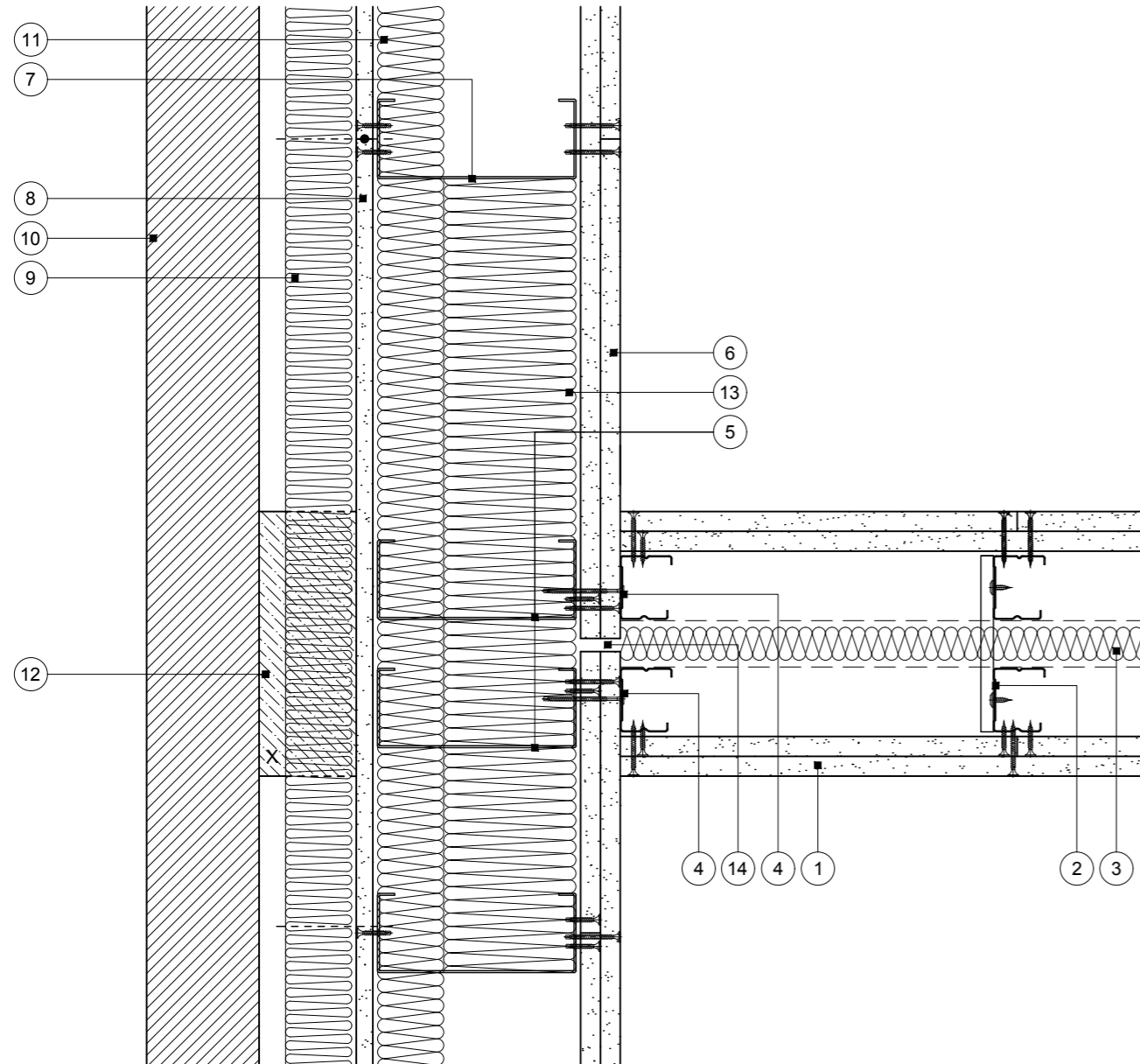
View of fire test specimen after 90 minutes (no failure yet).



View of fire test specimen after 120 minutes

## Section 8

### Standard details for Drylining 'T' Junctions with GypLyner Xternal walls 1



- 1 Two layers Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Two lines of Gypframe 'C' studs at specified centres cross braced with Gypframe 99 FC 50 Fixing Channel at 1200 mm centres (staggered by 600 mm between stud pairs for heights over 2400 mm) fixed to each stud with two suitable British Gypsum wafer head screws
- 3 Isover insulation where required
- 4 Gypframe 'C' studs fixed through board to SFS stud with suitable screws (British Gypsum Jack-Point Screws max. 2 mm metal thickness) at 600 mm centres in two lines staggered by 300 mm
- 5 Additional SFS studs at junction
- 6 Two layers 15 mm Gyproc SoundBloc fixed with 25 mm and 41 mm British Gypsum Jack-Point Screws (max. 2 mm metal thickness) at 300 mm centres
- 7 Indicative Intrastack SFS studs at specified centres
- 8 One layer 12.5 mm Glasroc X Sheathing Board fixed with 25 mm Glasroc X Screws (max. 2 mm metal thickness) at 300 mm centres. Continuous 6 mm bead of Glasroc X Sealant at board joints
- 9 Isover Polterm Max Plus (thickness to suit specification) suitably fixed through board to SFS studs
- 10 Indicative external finish
- 11 Indicative insulation
- 12 Cavity barrier where required (see important information)
- 13 Isover insulation between SFS studs at junction to reduce risk of flanking sound transmission
- 14 Nominal 10 mm break in lining to reduce risk of flanking sound transmission

#### Important information

##### Fire resistance BS EN 1364-1

- Up to 90 minutes through partition subject to specification
- Up to 90 minutes through non-load bearing British Gypsum GypLyner Xternal SFS wraparound system subject to specification
- Fire resistance duration of partition and external SFS system must match

Where using British Gypsum GypLyner Xternal SFS wraparound system as there is no recognised method for the fire resistance testing of junction, any performance characteristics, stated or inferred, in this detail are estimated based on each system tested in isolation and other relevant test data\*

Subject to regulatory requirements for cavity barrier installations and fire resistance of insulation board used in steel frame lining cavity, it may be necessary to include a cavity barrier to external cladding\*

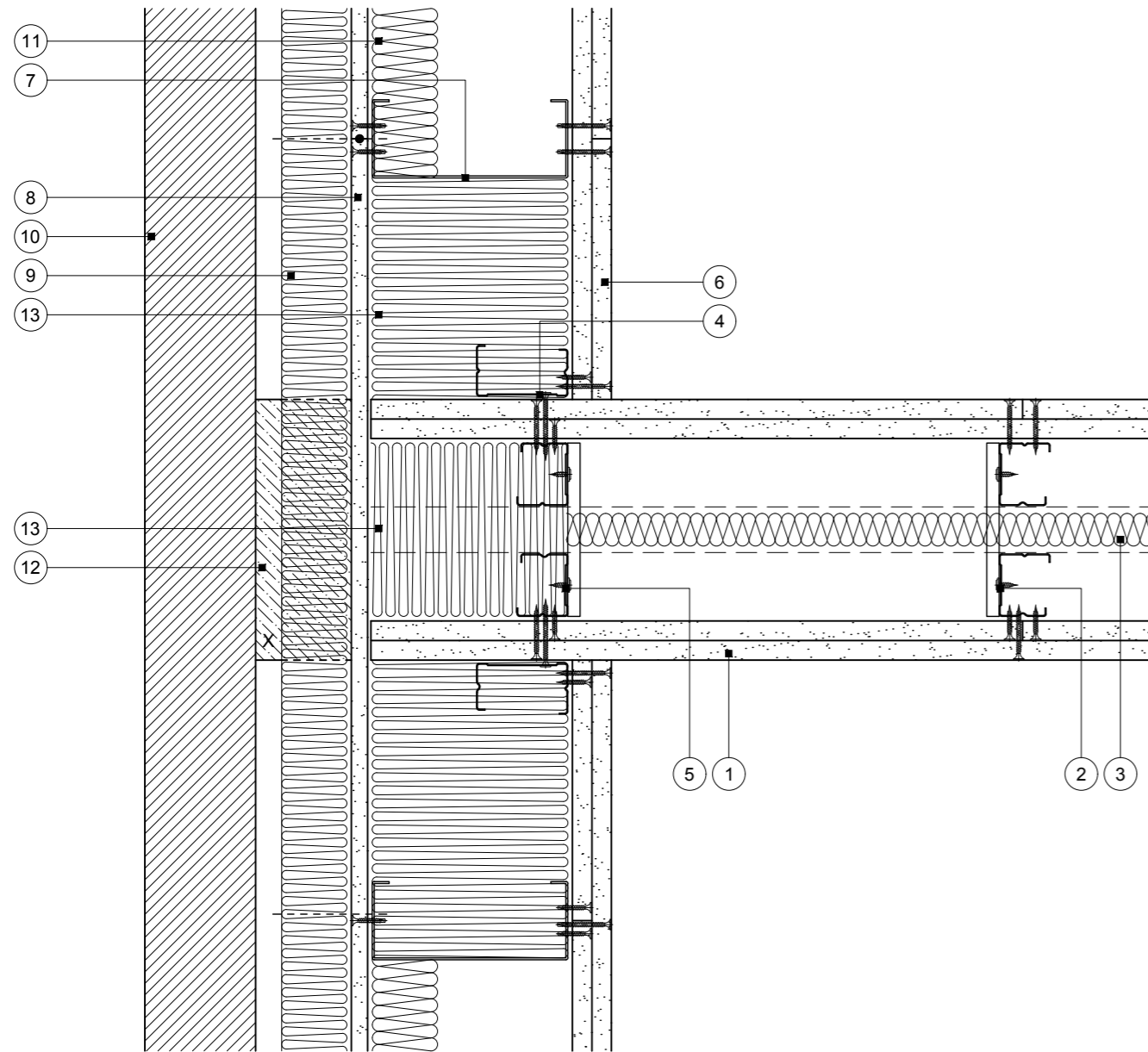
The exact construction depicted on this drawing has not been tested and assumes materials highlighted with 'X' are capable of maintaining performances of the partition. This MUST be verified with the relevant material manufacturer prior to construction

\* The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements and the overall fire strategy for compartmentation and cavity barrier requirements (as per Approved Document B)

### External SFS wall junction between SFS studs with additional SFS studs

## Section 8

### Standard details for Drylining 'T' Junctions with GypLyner Xternal walls 2



- 1 Two layers Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300 mm centres (200 mm centres at external angles)
- 2 Two lines of Gypframe 'C' studs at specified centres cross braced with Gypframe 99 FC 50 Fixing Channel at 1200 mm centres (staggered by 600 mm between stud pairs for heights over 2400 mm) fixed to each stud with two suitable British Gypsum wafer head screws
- 3 Isover insulation where required
- 4 Gypframe 'C' stud fixed through board to stud with suitable British Gypsum screws at 600 mm centres
- 5 Additional Gypframe 'C' stud at junction
- 6 Two layers 15 mm Gyproc SoundBloc fixed with 25 mm and 41 mm British Gypsum Jack-Point Screws (max. 2 mm metal thickness) at 300 mm centres
- 7 Indicative Intra-stack SFS studs at specified centres
- 8 One layer 12.5 mm Glasroc X Sheathing Board fixed with 25 mm Glasroc X Screws (max. 2 mm metal thickness) at 300 mm centres. Continuous 6 mm bead of Glasroc X Sealant at board joints
- 9 Isover Polterm Max Plus (thickness to suit specification) suitably fixed through board to SFS studs
- 10 Indicative external finish
- 11 Indicative insulation
- 12 Cavity barrier where required (see important information)
- 13 Stone mineral wool 100 kg/m<sup>3</sup> minimum density by others

#### Important information

##### Fire resistance BS EN 1364-1

- Up to 90 minutes through partition subject to specification
- Up to 90 minutes through non-load bearing British Gypsum GypLyner Xternal SFS wraparound system subject to specification

Where using British Gypsum GypLyner Xternal SFS wraparound system as there is no recognised method for the fire resistance testing of junction, any performance characteristics, stated or inferred, in this detail are estimated based on each system tested in isolation and other relevant test data\*

Subject to regulatory requirements for cavity barrier installations and fire resistance of insulation board used in steel frame lining cavity, it may be necessary to include a cavity barrier to external cladding\*

The exact construction depicted on this drawing has not been tested and assumes materials highlighted with 'X' are capable of maintaining performances of the partition. This MUST be verified with the relevant material manufacturer prior to construction

\* The drawing should be approved by the project design and management authority before use to ensure that it meets with their specific project requirements and the overall fire strategy for compartmentation and cavity barrier requirements (as per Approved Document B)

#### External SFS wall abutment with partition penetration



View of the deflection head detail during construction, with the GypWall Twin Frame Braced lining plasterboards 'notched' underneath the GypLyner Xternal head channel

As the construction industry continues to evolve under the influence of tighter regulations and heightened expectations, the need for robust, evidence-based solutions has never been more critical. This guide represents a significant step forward in addressing one of the industry's long-standing gaps: the lack of standardised fire testing for drylining junctions.

Through a series of bespoke fire resistance tests, British Gypsum has demonstrated that it is not only possible – but essential – to validate the performance of complex junctions such as internal corners, external corners, T-junctions, partition-to-column interfaces, offset beams and ceiling junctions.

These tests, conducted using adapted methodologies from BS EN 1364-1: 2015, BS EN 13381-4: 2013, etc. have confirmed that our systems can meet or exceed the expected fire performance criteria, even in challenging configurations.

This work is more than a technical milestone – it is a reflection of our commitment to thought leadership, innovation, and customer collaboration. By formalising our approach and sharing our findings, we aim to empower designers, specifiers, and contractors to make safer, more confident decisions. We also hope to influence the future development of industry standards, contributing to the creation of new test methods that better reflect the realities of modern construction.

British Gypsum's in-house expertise, rigorous testing protocols, and collaborative mindset position us as trusted partners in fire protection. We are proud to lead the way in setting new benchmarks for safety, performance, and reliability – and we remain committed to supporting the industry as it moves toward a more resilient and accountable future.

Whilst some of the details are those accepted as industry good practice, the performances achieved and indicated in the tests and the document are valid only for British Gypsum systems and should not be used to infer any performance of non British Gypsum systems.

## Revisions and notes

DATE	CHANGES
26.5.2026	Section 8 – Drylining 'T' Junctions with GypLyner Xternal walls

### Ad-hoc fire test

A non-standardised fire resistance test conducted using the principles of one or more recognised standards, but not following a formalised or published test procedure in its entirety.

### Bulkhead

A framed or enclosed structure that projects from a wall or ceiling, typically used to conceal services, accommodate structural elements, or create architectural features.

### Ceiling lid

A non-loadbearing horizontal fire-rated ceiling assembly installed over a compartment or enclosed space, typically used as an alternative to extending partition walls all the way up to the structural soffit or deck.

### Deflection head

Junction detail used at the top of partition systems to accommodate vertical movement—either upward, downward, or both—of the structural elements above, such as floors or roof slabs

### External corner

Formed where two partition walls meet at an angle that projects outward, forming a convex junction.

### Insulation performance

The ability of a fire-rated barrier to limit heat transmission, ensuring the non-fire side does not reach temperatures that could ignite adjacent materials.

### Integrity performance

The ability of a fire-rated barrier to prevent the passage of flames and hot gases from the fire-exposed side to the non-fire side.

### Internal corner

Formed where two partition walls meet at an angle inside the building, typically at 90°. It is the inward-facing junction.

### Offset beam

A steel beam that is not aligned directly above or below the partition wall or compartment line it is intended to support or interface with.

### Part-height partition

A type of internal wall that does not extend fully from floor to soffit or ceiling, but instead stops at a defined intermediate height and then suitably retained back to structure

### Profiled deck

A corrugated or shaped metal sheet used as a formwork and structural base for concrete slabs in floors or roofs

### RHS column

A Rectangular Hollow Section steel column, which is a structural element characterised by its hollow rectangular cross-section.

### Secondary steelwork

Steel components in a building that do not form part of the primary structural frame, but are required to support, stabilise, or connect other elements such as partitions, ceilings, cladding, or architectural features.

### Splayed angles

A junction where two partition walls meet at an angle other than 90°, typically used to create angled corners or transitions in wall systems.

### Structural column

A vertical load-bearing element designed to transfer compressive loads from the upper parts of a building—such as floors, beams, or roofs—down to the foundation.

### T-junction

Where one partition intersects another at a perpendicular angle, forming a "T" shape.

### Trapezoidal steel deck

A profiled steel sheet used primarily as a structural base for floors and roofs. Its defining feature is its trapezoidal profile, which consists of alternating ribs and valleys shaped like trapezoids.

### Universal steel beam

Also known as an I-beam, is a structural steel member characterised by its I-shaped cross-section, consisting of two parallel flanges connected by a central vertical web.



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