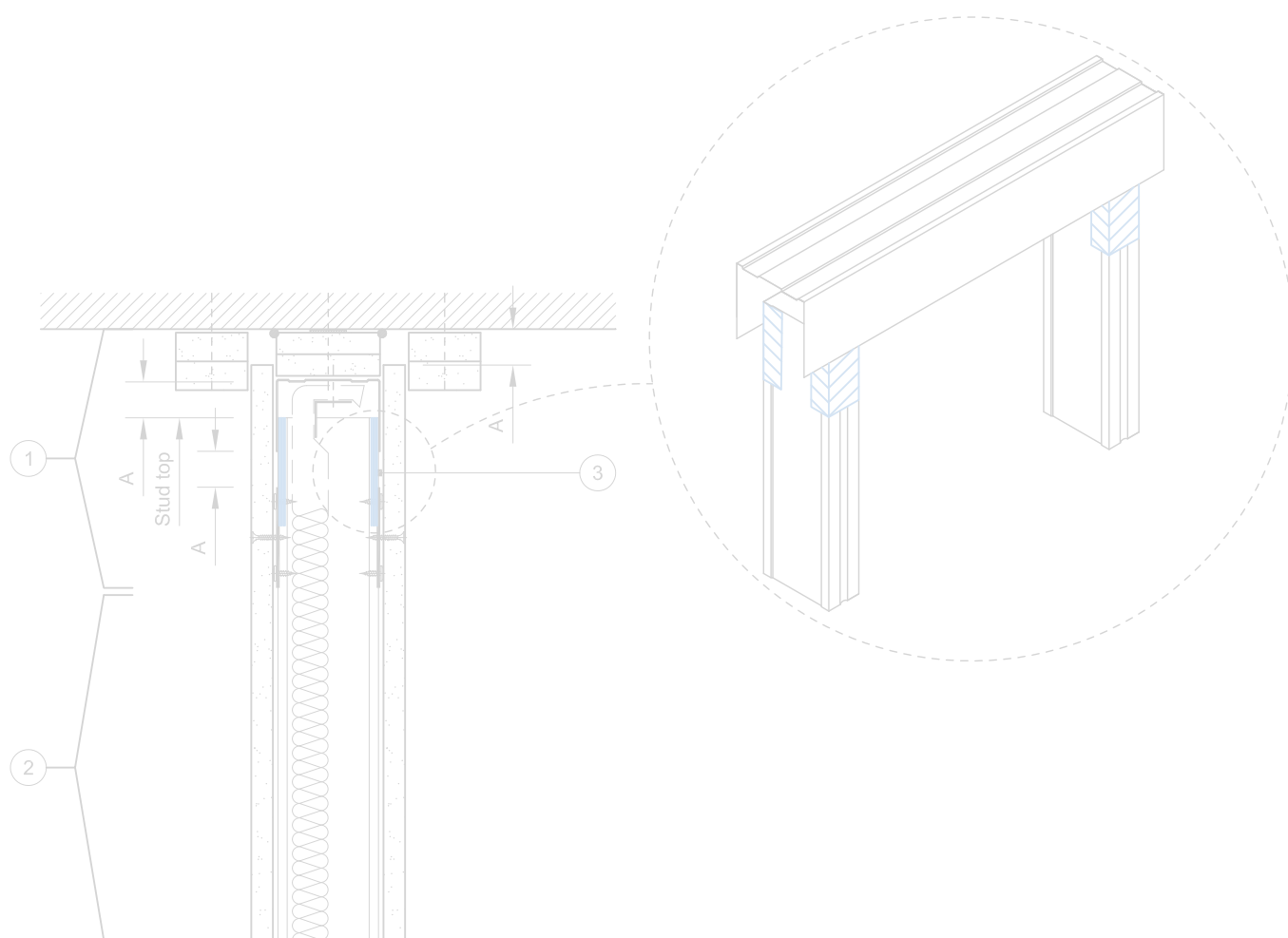


Best practice guidance

Drylining to facilitate building movement



15 January 2024

BPG003

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Contents

3 Introduction

4 Best Practice Guidance

5 Good Practice Guidance for Installation of Fric-Lo® 2020 5M Instant Friction Reduction Tape

10 Examples of good and bad installation practice

12 Details to minimise the risk of the consequences of movement

Section A – Walls

13 – Detail 1 – GypWall Single with Fric-Lo® 2020 5M Instant Friction Reduction Tape

14 – Detail 2 – GypWall Twin Frame systems detail

15 – Detail 3 – GypWall Shaft

Section B – Ceilings

16 – Detail 4 – GypCeiling MF with floating perimeter

17 – Detail 5 – GypWall Single Frame junction with GypCeiling MF

Section C – Abutments to superstructure

18 – Detail 6 – Rip of plasterboard

19 Revisions

Over the last 30 years, improvements in design, material and construction methods have in combination with changes in the building regulations enabled the delivery of increasingly taller and more slender buildings for both commercial and residential use.

Typically, tall, modern structural designs allow for greater building movement than smaller, lower rise designs to allow buildings to be more resilient to environmental conditions.

A significant increase in demand for technology from heating and lighting control to building management systems has increased the amount of mechanical and electrical services (M&E) in buildings, resulting in the interior systems having to adapt to suit these ever-changing demands.

While the structural elements of the buildings have become lighter and more flexible, how we create internal spaces has evolved in a different way, focussing on the delivery of durability, acoustic comfort and fire compartmentation.

A consequence of these different approaches was highlighted in work completed by the Finishes & Interiors Sector (FIS) Tall Building Working Group* which concluded that

- “External loads make the building move: non-structural elements should be installed in such a way as to allow for the movements freely.
- Any locked in movement will cause distress in the non-structural elements.
- Any frictional resistance to movements will cause noise.”

And furthermore

“The key to reducing the phenomenon occurring in future tall towers is sharing the information contained in the structural engineer’s movement and tolerance reports early with the system owners of the drylining, and providing movement joints to allow the elements of the internal fit out to move independently.”

The purpose of this guide is to supplement “BPG002 Best Practice Guidance: Deflection Heads” where the topic of axial (vertical) deflection is covered

extensively. As shown in the FIS report, both vertical and horizontal (lateral) movement can occur. This guide summarises our current best practice guidance within our systems for facilitating vertical building movement, including some specific details for reducing the risk of consequences of relative movement between building elements.

Good design and install practices are key to ensuring all of the desired specified performances are met. The details contained within this guide are about creating optimal conditions to minimise risk of consequences of movement. All other performances must be considered when designing and installing our systems; this includes, but is not limited to fire, structural (maximum height) and acoustic performances. It is the responsibility of the design and management authority relevant to the project to satisfy themselves that all necessary performance requirements have been met.

Many of the internal non-structural construction elements (for example plumbing, mechanical, electrical, heating and ventilation) could have undesirable consequences resulting from resisting building movement, including the potential to create noise. These are not within the control of the drylining designer or installer and cannot be considered in any detail for this guidance.

Where systems by others interact with our drylining systems, design consideration must be given to the interaction between building elements for all performances, including the potential to resist movement. It is the responsibility of the design and management authority relevant to the project to satisfy themselves that all necessary performance requirements have been met.

* <https://www.thefis.org/knowledge-hub/technical/tall-buildings-research/>

Best practice guidance

Drylining to facilitate building movement

Best practice guidance

Installing partitions and ceilings right first time, every time, is the goal of every contractor. Errors in installation can cause delays in the build programme, loss of quality and failure to meet design performance. All of these add up to cause client dissatisfaction and increased costs.

It must be noted that the range of unintended forces being applied to a partition as a result of structural movement due to wind loading on tall buildings are complex in their nature and outside the scope of the partition system design. As such, British Gypsum is unable to offer an opinion on the long-term effect of these forces on the integrity of its systems. Damage or performance loss witnessed by the partition as a result of these forces over time will fall outside the scope of the **SpecSure®** lifetime system warranty.

This guide has been developed by working with specialist contractors and site management teams to understand the installation issues that occur most frequently on tall building sites and cause day-to-day problems on their projects.

General site guidance

We recognise the importance of always following good site practice. In this section we detail general site guidance outlining safe practice for handling and storing British Gypsum products and systems, helping you to work better and stay safe. These notes are for guidance purposes only and are not intended to be exhaustive. We advise that you read and familiarise yourself with all of the relevant information in this guide prior to commencement of work. Where other manufacturers' products or systems are being used in association with our systems, reference should always be made to the manufacturer's own installation instructions and product data.

The following documents have been used as reference in the creation of this guide and should be considered as essential supplementary reading for a complete overview on the topic.

1. BPG001 Best Practice Guidance: Openings within Fire Rated Systems
2. BPG002 Best Practice Guidance: Deflection Heads
3. BS 8000-8:2023 Workmanship on Construction Sites, Part 8: Design and Installation of Drylining Systems – Code of Practice (with attention to specific sections below)
 - 7.1.1 Selection of a drylining system
 - 7.4.6 Ability to Accommodate Movement
 - 7.4.6.4.1 General
 - 7.4.6.4 Lateral Movement
 - 7.5 Deviations and tolerances
 - 7.9 Environmental conditions
 - 8 Installation
4. FIS Report: Designing for Tall Building Movement (A Short Guide)*

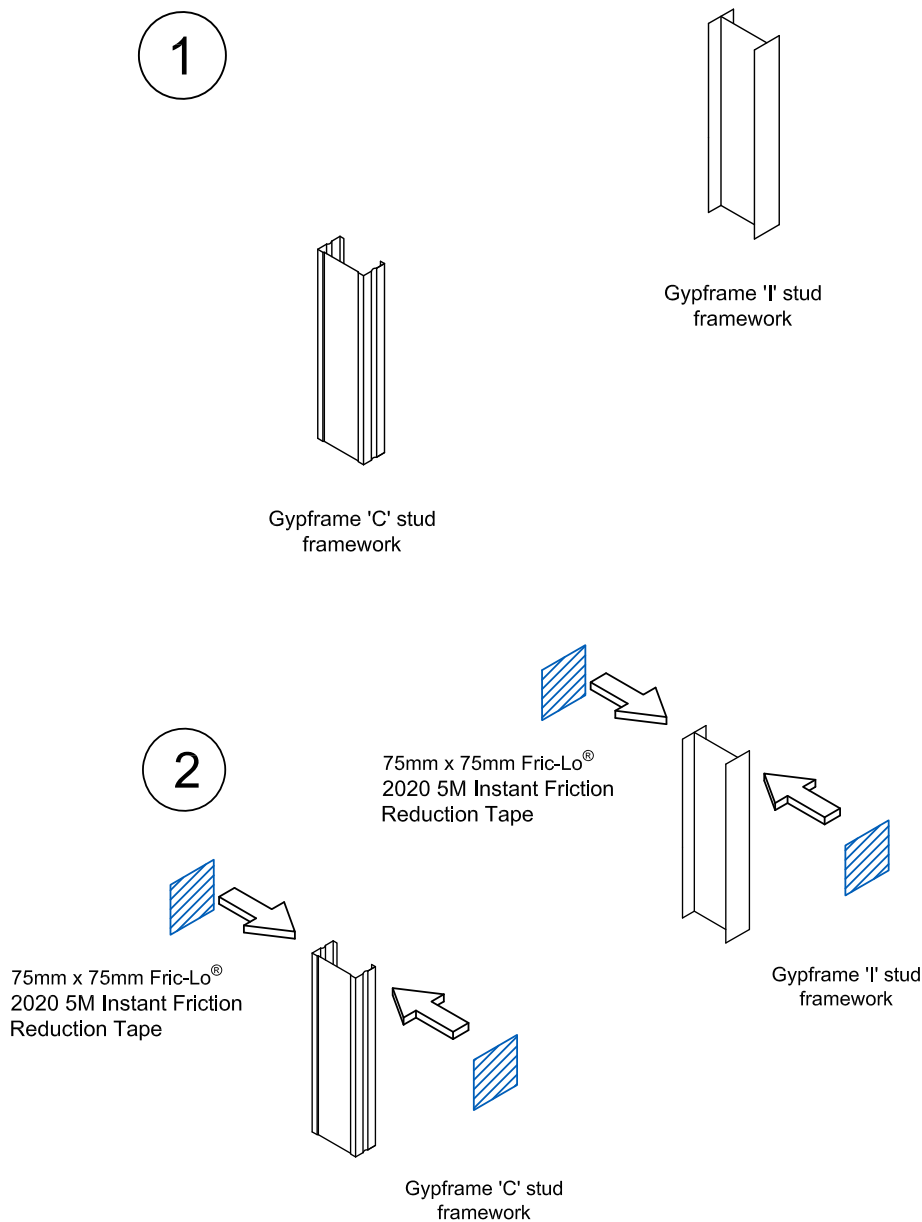
For all the following guidance details the site conditions below are applicable:

1. All substrates shall be level, regular and free of residue, debris and surface defects. All defects which may lead to the deformation of channels and studs during installation will be rectified prior to commencement.
2. All metal profiles used in the installation will be straight, true and cuts formed to avoid abrasion where movement between components may occur.

Good practice guidance for installation of Fric-Lo® 2020 5M Instant Friction Reduction Tape

Part 1: This method is based upon sections of tape being applied to the stud only.

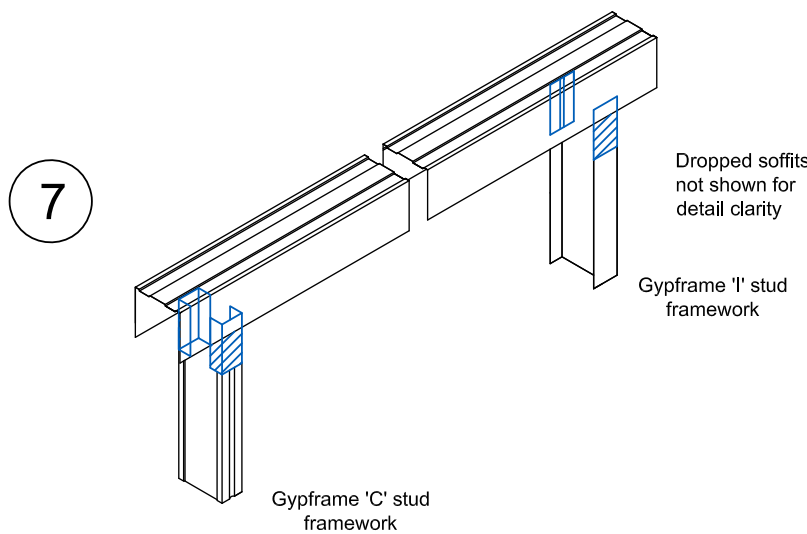
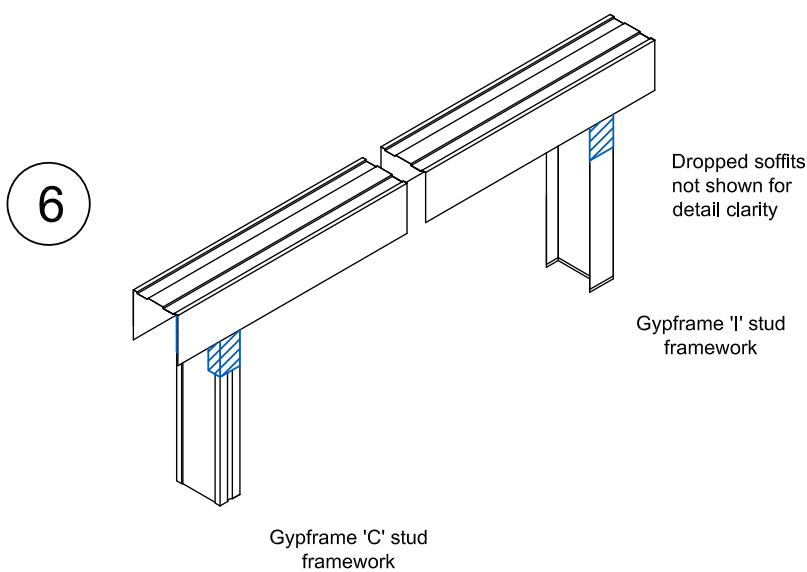
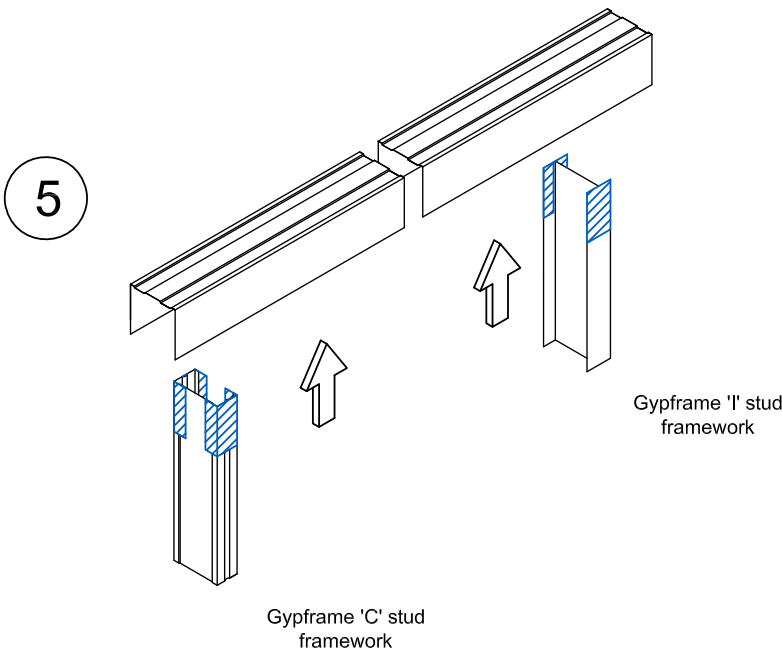
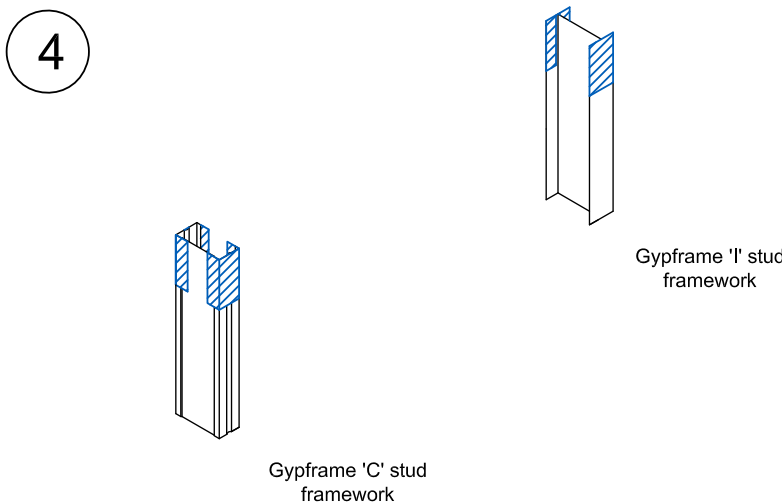
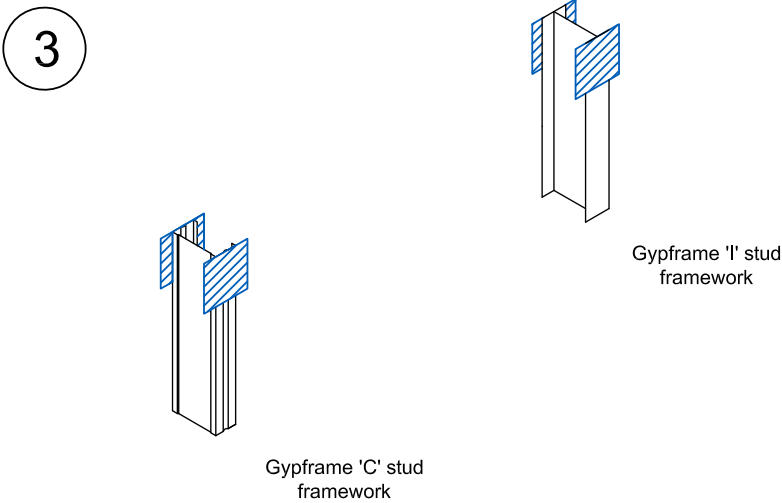
- 1) Ensure that all the stud surfaces are clean, dry and free of any contaminants.
- 2) Apply a section of the Fric-Lo® 2020 5M Instant Friction Reduction Tape to each flange of the studs at the factory cut end of the stud.
- 3) Using puncture-resistant protective gloves, hand apply firm pressure over the whole area of tape. Any overhanging pieces of the tape should be pressed firmly around the edges of studs. Please ensure that the tape covers the whole of the flange width and extends to the top of the stud leaving no metal exposed.
- 4) Locate the factory cut end of the stud within the head channel. If this cannot be done then ensure that all steel burrs are removed from the site cut end of the stud.
- 5) The longer the tape is left after application the better the adhesion. For best practice, apply the sections to the factory cut ends of the studs prior to framework installation to allow for a tack time in the region of 5 minutes. 24 hours is a rough guide for pressure sensitive adhesives to “wet out” and achieve maximum adhesion.
- 6) The head of the stud must be inserted into the head channel first before the bottom is twisted into place.



* <https://www.thefis.org/members-login/?redirect=/wp-content/uploads/2019/12/TBWG-WSP-ZZ-RP-S-0002-rev-01.pdf>

Best practice guidance

Drylining to facilitate building movement

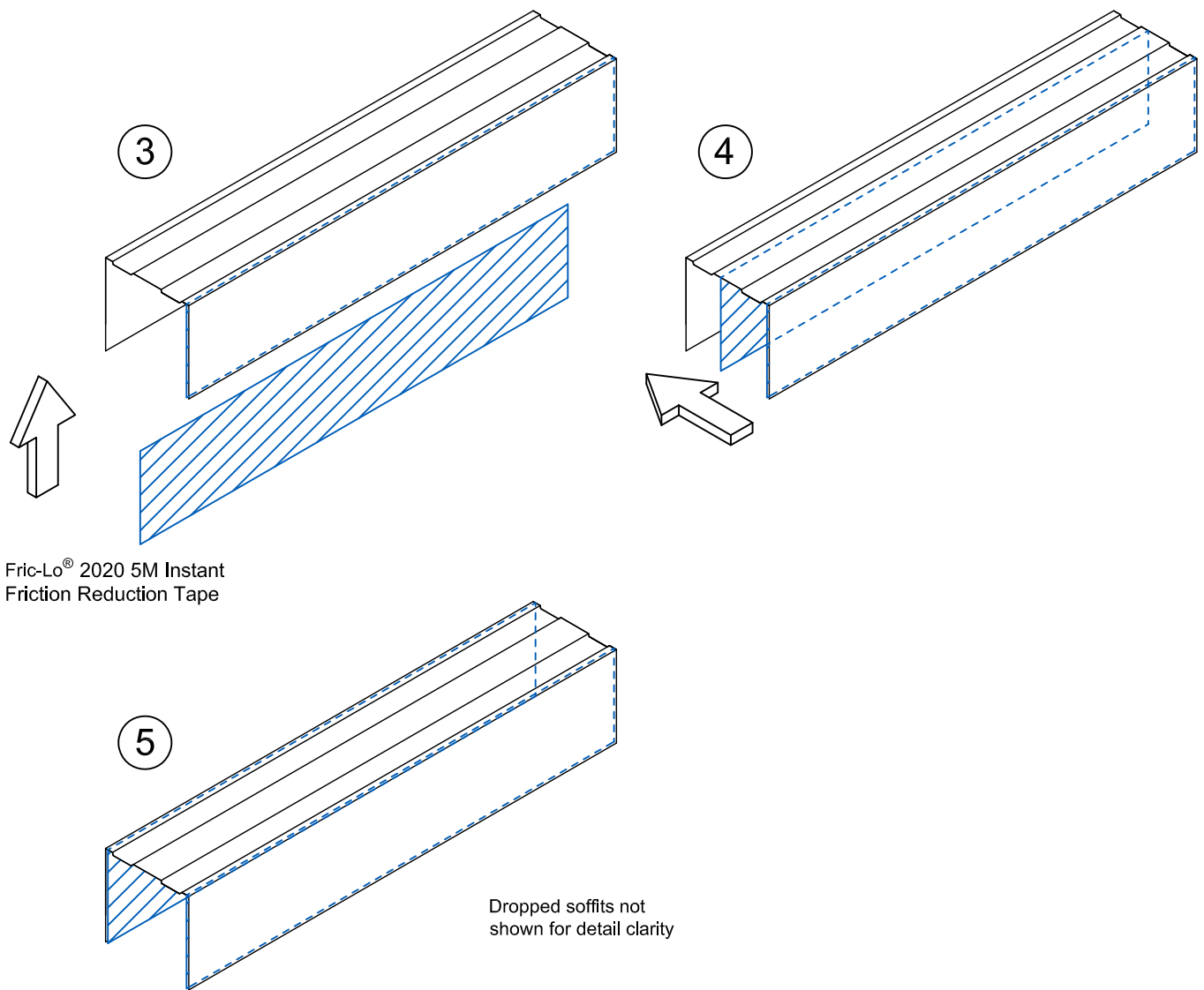
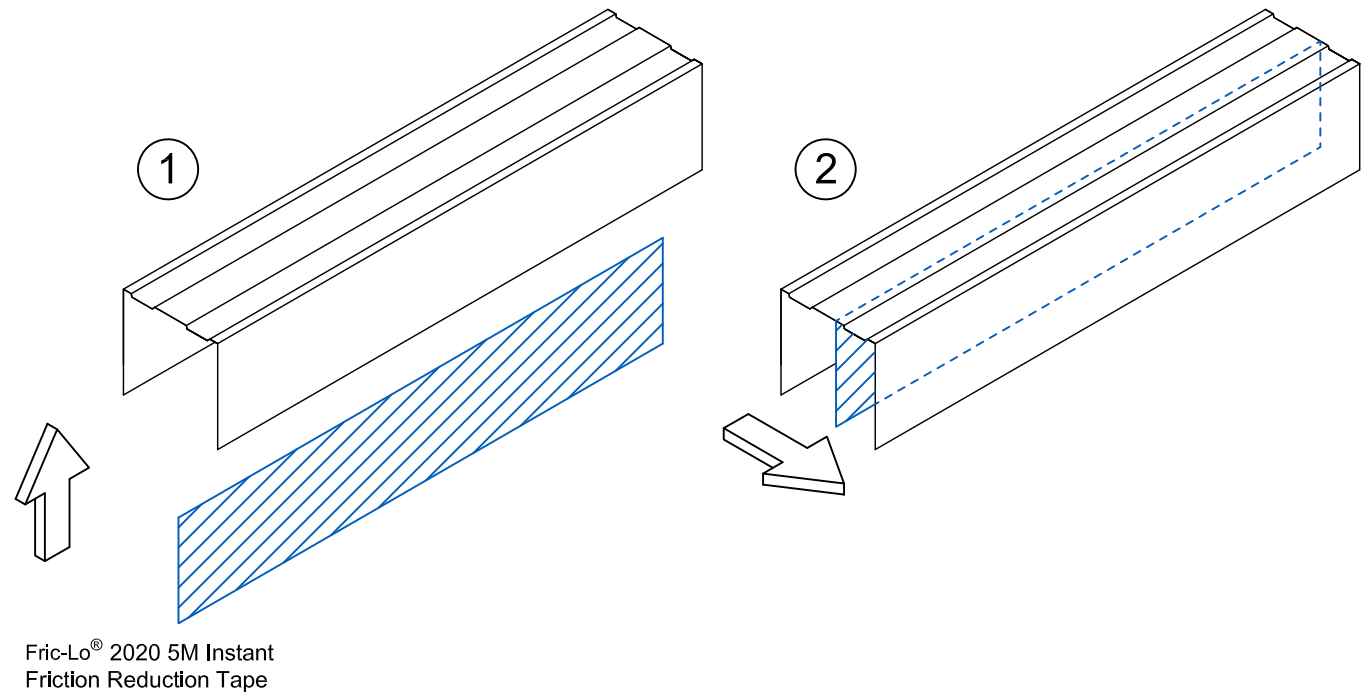


Best practice guidance

Drylining to facilitate building movement

Part 2: This method is based upon applying continuous lengths of tape to the channel only.

- 1) Ensure that all the internal flange surfaces of the channel are clean, dry and free of any contaminants.
- 2) Apply a continuous length of Fric-Lo® 2020 5M Instant Friction Reduction Tape to both internal flange faces of the head channel.
- 3) Using puncture-resistant protective gloves, hand apply firm, smooth pressure over the whole area of tape.
- 4) Any overhanging pieces of the tape should be pressed firmly around the edges of the channel. Please ensure that the tape covers the whole of the internal flange faces.
- 5) The longer the tape is left after application the better the adhesion. For best practice, apply the lengths of tape to the channel prior to framework installation to allow for a tack time in the region of 5 minutes. 24 hours is a rough guide for pressure sensitive adhesives to “wet out” and achieve maximum adhesion.
- 6) The head of the stud must be inserted into the head channel first before the bottom is twisted into place. Locate the factory cut end of the stud within the head channel. If this cannot be done then ensure that all steel burrs are removed from the site cut end of the stud.



Best practice guidance

Drylining to facilitate building movement

Examples of good and bad installation practice



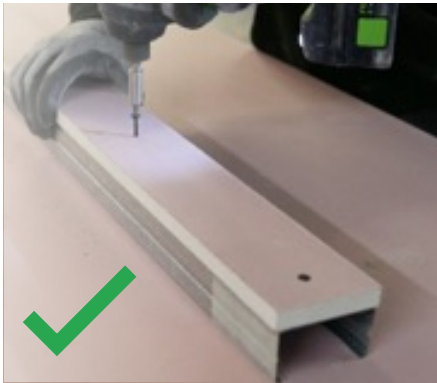
Installing the Fric-Lo® 2020 5M Instant Friction Reduction Tape to the stud ensuring smooth application and adhesion



Installing the Fric-Lo® 2020 5M Instant Friction Reduction Tape to the channel ensuring smooth application and adhesion



Locating head of stud in head channel prior to base of stud in base channel



Pre-fix plasterboard rip/strip to stud web prior to fixing stud to wall. This abutment detail limits the contact between drylining steel frame and building structural elements. A “softer” joint may help to reduce energy transferred between structural elements and the drylining.



Using a factory cut end with Fric-Lo® 2020 5M Instant Friction Reduction Tape. A factory cut end will have fewer burrs, and is more likely to be straight and true, helping to avoid abrasion between elements.

Best practice guidance

Drylining to facilitate building movement

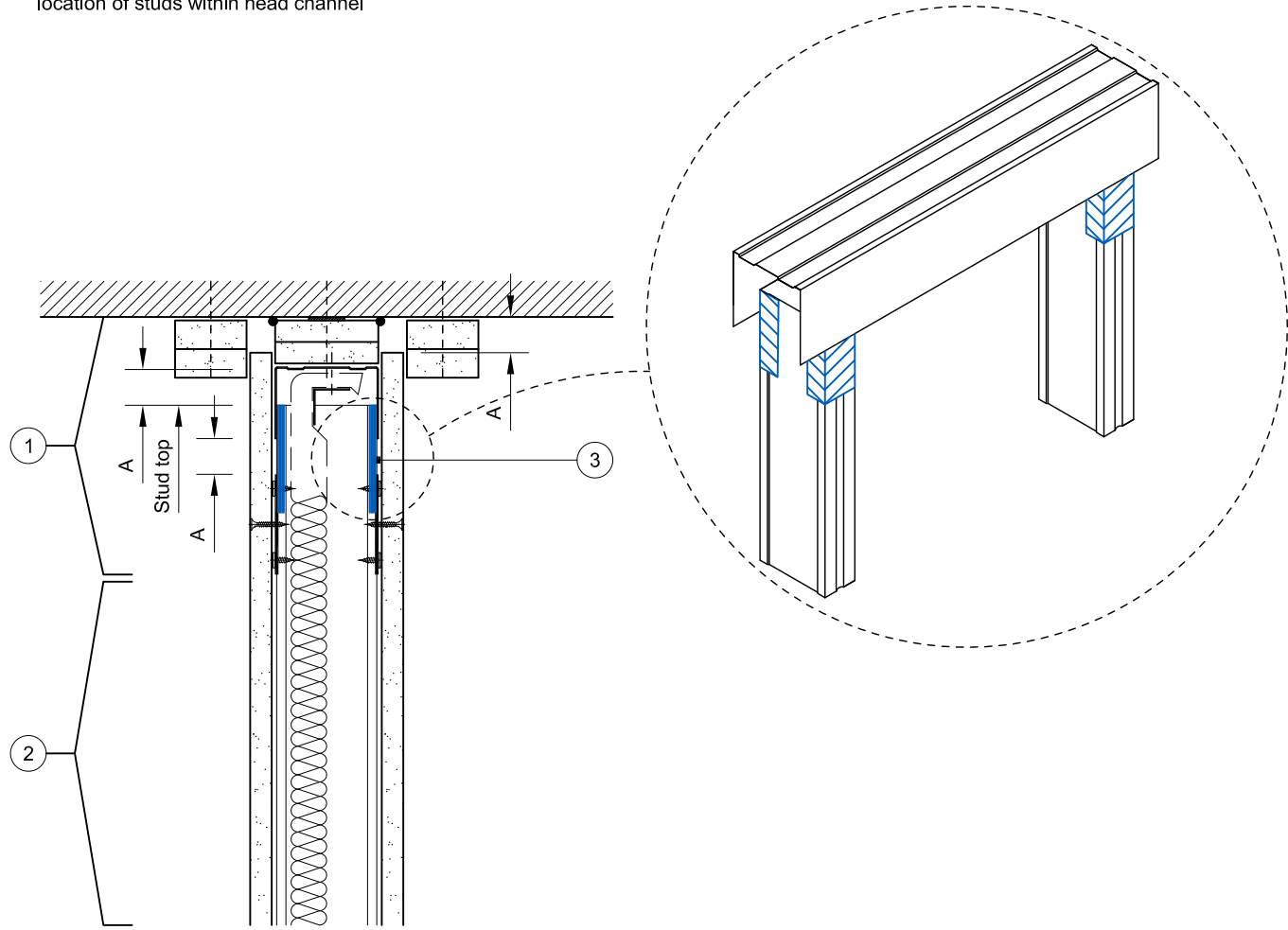
Details to minimise the risk of the consequences of movement

Good design and install practices are key to ensuring all of the desired specified performances are met. The following details are about creating optimal conditions to minimise risk of consequences of movement. All other performances must be considered when designing and installing our systems; this includes, but is not limited to fire, structural (maximum height) and acoustic performances. It is the responsibility of the design and management authority relevant to the project to satisfy themselves that all necessary performance requirements have been met.

Section A – Walls

Detail 1 – GypWall Single Frame and GypWall Single Frame Enhanced with Fric-Lo® 2020 5M Instant Friction Reduction Tape

- 1 GypWall partition deflection head detail as per project specification and required movement as determined by Structural Engineer, please refer to British Gypsum standard details
- 2 GypWall partition system as per project specification and British Gypsum standard details
- 3 75mm x 75mm Fric-Lo® 2020 5M Instant Friction Reduction Tape applied to top of each stud, on both flanges, prior to location of studs within head channel



Deflection head

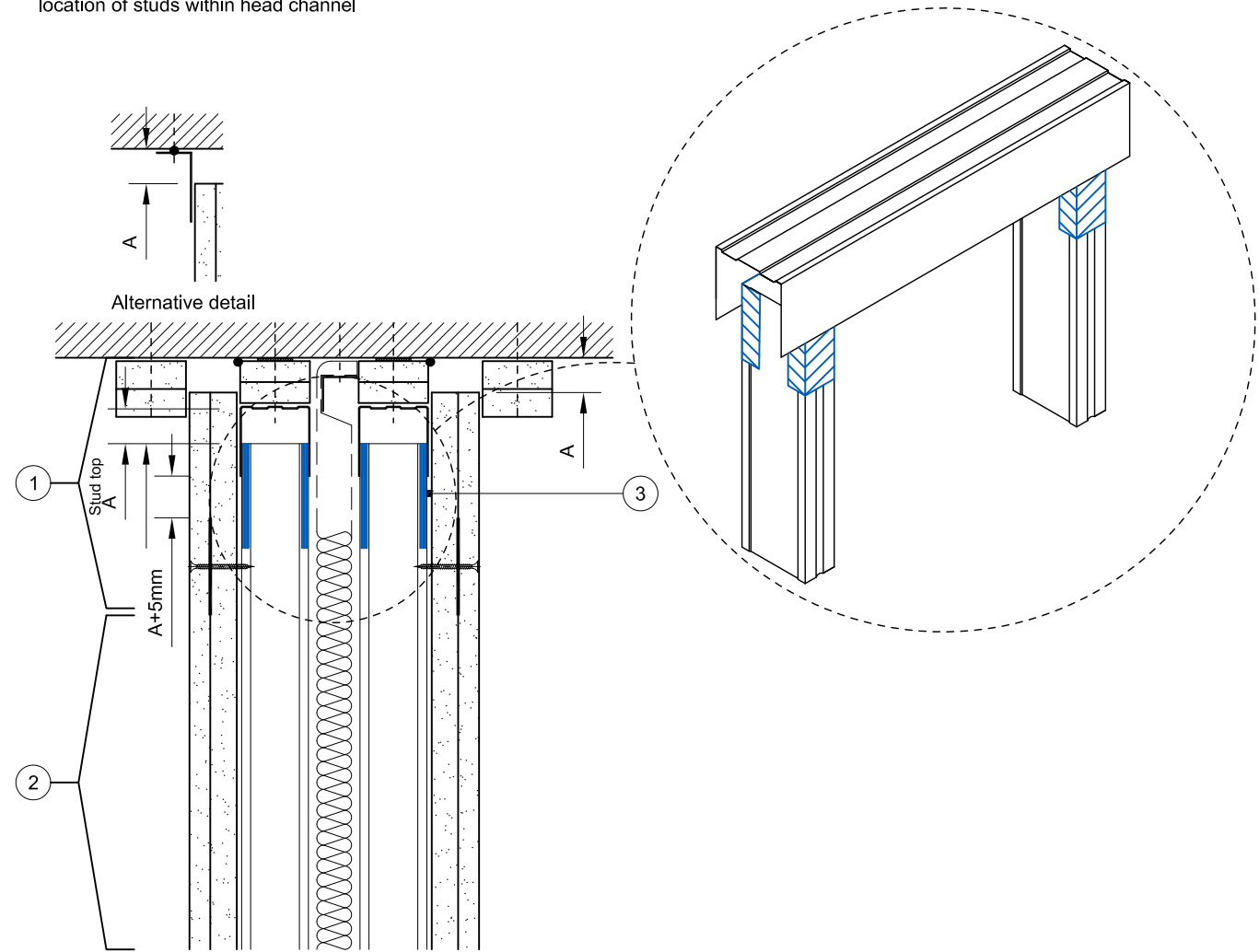
Downward (vertical) movement

A = Required project vertical deflection, to be determined by Structural Engineer, please refer to British Gypsum standard details for further guidance on permitted range of movement and detail configuration

Section A – Walls

Detail 2 – GypWall Twin Frame Systems Detail

- 1 GypWall Twin Frame partition deflection head detail as per project specification and required movement as determined by Structural Engineer, please refer to British Gypsum standard details
- 2 GypWall Twin Frame partition system as per project specification and British Gypsum standard details
- 3 75mm x 75mm Fric-Lo® 2020 5M Instant Friction Reduction Tape applied to top of each stud, on both flanges, prior to location of studs within head channel



Deflection head

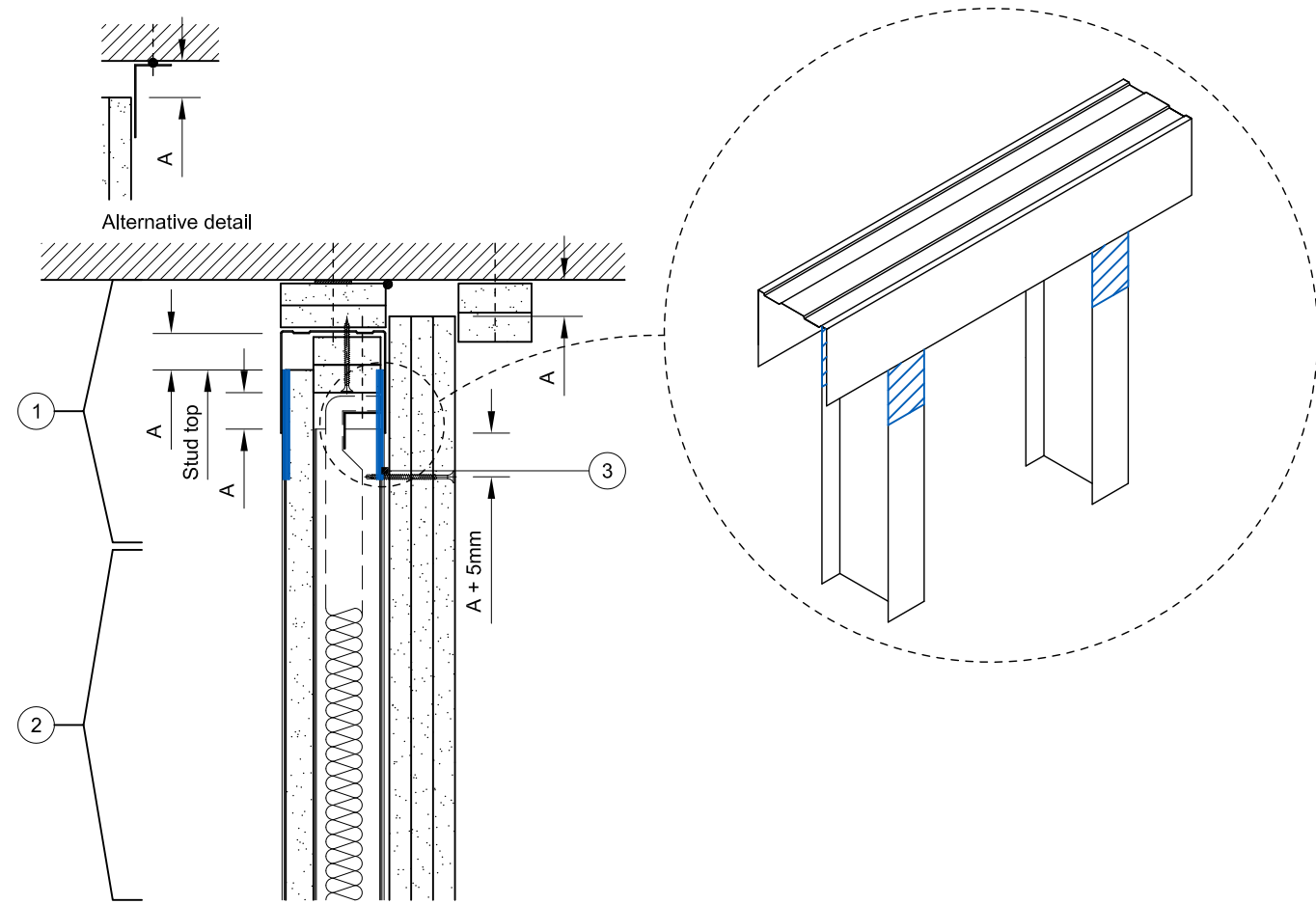
Downward (vertical) movement

A = Required project vertical deflection, to be determined by Structural Engineer, please refer to British Gypsum standard details for further guidance on permitted range of movement and detail configuration

Section A – Walls

Detail 3 – GypWall Shaft

- 1 GypWall Shaft deflection head detail as per project specification and required movement as determined by Structural Engineer, please refer to British Gypsum standard details
- 2 GypWall Shaft system as per project specification and British Gypsum standard details
- 3 75mm x 75mm Fric-Lo® 2020 5M Instant Friction Reduction Tape applied to top of each stud, on both flanges, prior to location of studs within head channel



Deflection head

Downward (vertical) movement

A = Required project vertical deflection, to be determined by Structural Engineer, please refer to British Gypsum standard details for further guidance on permitted range of movement and detail configuration

Section B – Ceilings

Detail 4 – GypCeiling MF with floating perimeter

- 1

Two layers Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 230mm centres in field of board and 150mm centres at board ends
- 2

Gypframe MF5 Ceiling Sections at max. 450mm centres fixed to each MF7 with two suitable British Gypsum wafer head screws or MF9 Connecting Clip
- 3

Gypframe MF6 Perimeter Channel fixed to each MF7 with suitable British Gypsum wafer head screws
- 4

Gypframe MF7 Primary Support Channels at specified centres
- 5

Gypframe MF8 Strap Hanger or FEA1 Steel Angle hangers at specified centres fixed to MF7 with two suitable British Gypsum wafer head screws
- 6

Gypframe MF12 Soffit Cleat fixed to hanger with MF11 Nut and Bolt and suitably fixed to soffit
- 7

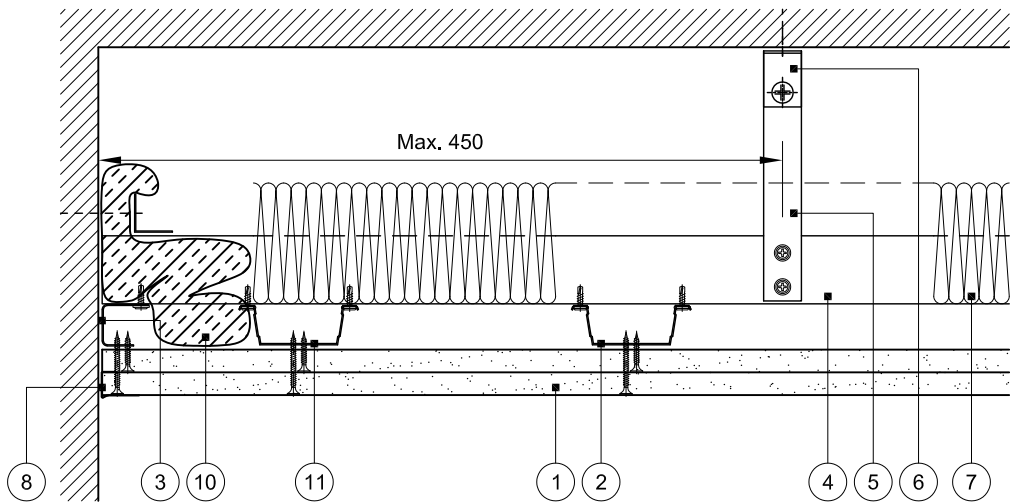
Isover insulation where required
- 8

Gyproc Drywall Edge Bead
- 9

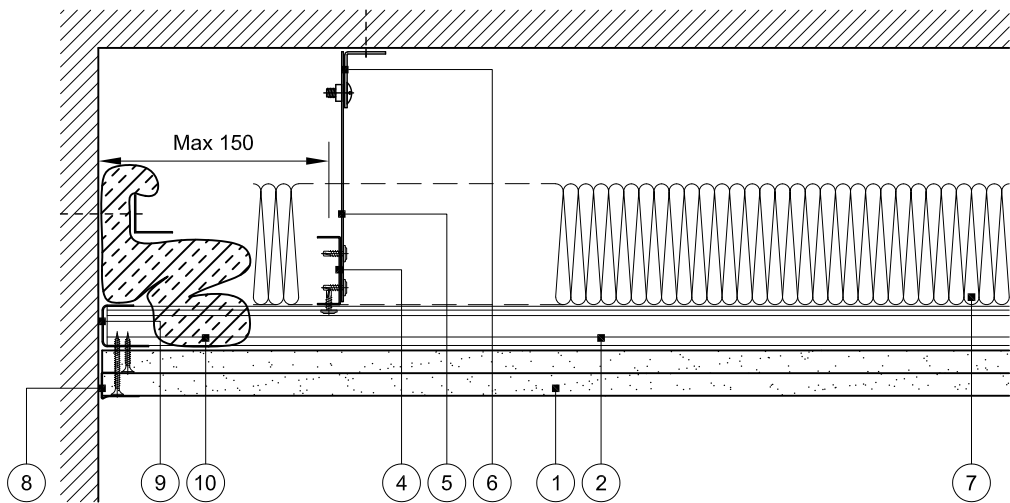
Gypframe MF6 Perimeter Channel
- 10

To minimise loss of sound insulation and maintain fire resistance of system, cloak unfixed perimeter using stone mineral wool (33 Kg/m³) by others secured with Gypframe FEA1 Steel Angle suitably fixed to wall at 600mm centres
- 11

Additional Gypframe MF5 Ceiling Section at perimeter fixed to each MF7 with two suitable British Gypsum wafer head screws or MF9 Connecting Clip



Unfixed perimeter 1
Gypframe MF5 Ceiling Section parallel to wall



Unfixed perimeter 2
Gypframe MF5 Ceiling Section perpendicular to wall

Section B – Ceilings

Detail 5 – GypWall Single Frame Junction with GypCeiling MF

- 1

GypCeiling MF system as per project specification and British Gypsum standard details, bound around perimeter by structural wall or full height GypWall partition spanning between structural floor and soffit
- 2

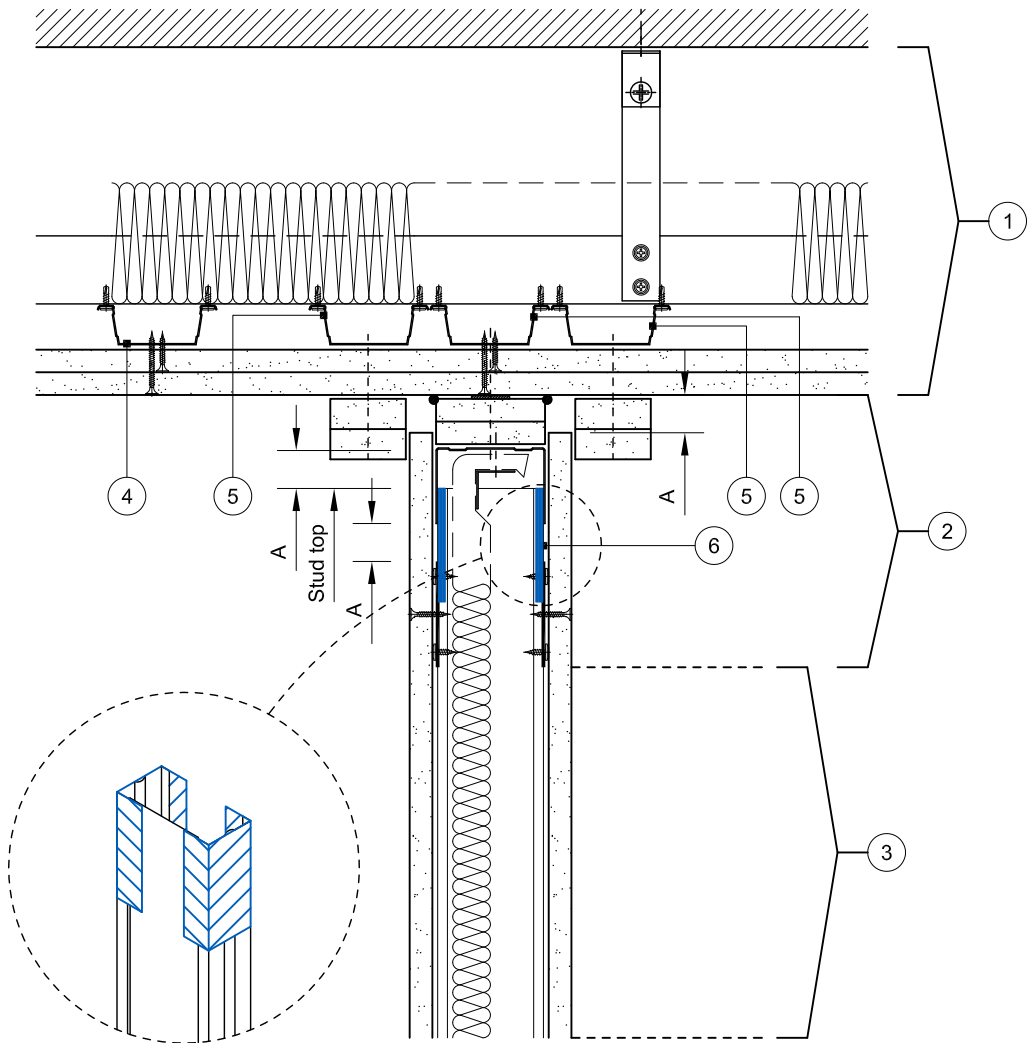
GypWall partition deflection head detail as per project specification and required movement as determined by Structural Engineer, please refer to British Gypsum standard details
- 3

GypWall partition system as per project specification and British Gypsum standard details
- 4

Gypframe MF5 Ceiling Sections at max. 450mm centres fixed to each MF7 with two suitable British Gypsum wafer head screws or MF9 Connecting Clip
- 5

Additional Gypframe MF5 Ceiling Sections as required to provide fixing ground for GypWall partition head channel fixings and deflection head cloaking elements fixings, fixed to each MF7 with two suitable British Gypsum wafer head screws
- 6

75mm x 75mm Fric-Lo® 2020 5M Instant Friction Reduction Tape applied to top of each stud, on both flanges, prior to location of studs within head channel



GypWall Partition & GypCeiling MF Ceiling Junction

A = Required project vertical deflection, to be determined by Structural Engineer, please refer to British Gypsum standard details for further guidance on permitted range of movement and detail configuration

Section C – Abutments to superstructure

Detail 6 – Rip of plasterboard

- 1

Two layers Gyproc plasterboard or Glasroc specialist board fixed with suitable British Gypsum screws at 300mm centres (200mm centres at external angles)
- 2

Gypframe 'C' studs at specified centres
- 3

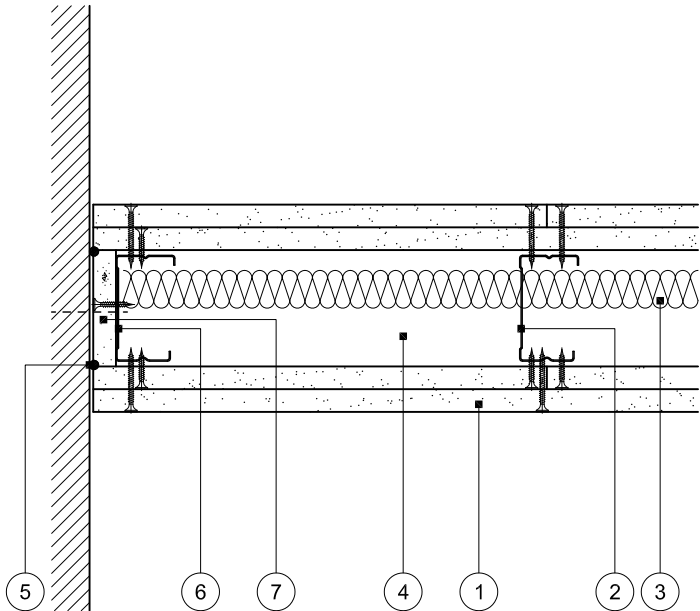
Isover insulation where required
- 4

Gypframe Channel suitably fixed to floor at 600mm centres (in two lines staggered by 300mm for 94mm and 148mm channels). Deep Channel for heights between 4200mm and 8000mm or Extra Deep Channel for heights over 8000mm
- 5

Gyproc Sealant for optimum sound insulation
- 6

Gypframe 'C' stud suitably fixed through Gyproc plasterboard strip to wall at 600mm centres (in two lines staggered by 300mm for 92mm and 146mm studs)
- 7

Channel width strip of Gyproc plasterboard type to match partition specification, pre-fixed to stud with British Gypsum Drywall Screws at 300mm centres



Wall abutment

Revisions

DATE	CHANGES
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