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Key changes since original publication (July 2005):

15 January 2007	Page 245 – Note 3 edited in table 3. Page 246 – Table 4 note 1 edited and reference No. moved from column 3 to column 4.
22 December 2005	Page 245 – PSR reference number B216016 changed to B216026.

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For a comprehensive and up to date library of information visit our website at: www.british-gypsum.com

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THE WHITE BOOK 2005

GypLyner™ IWL
Independent wall lining system



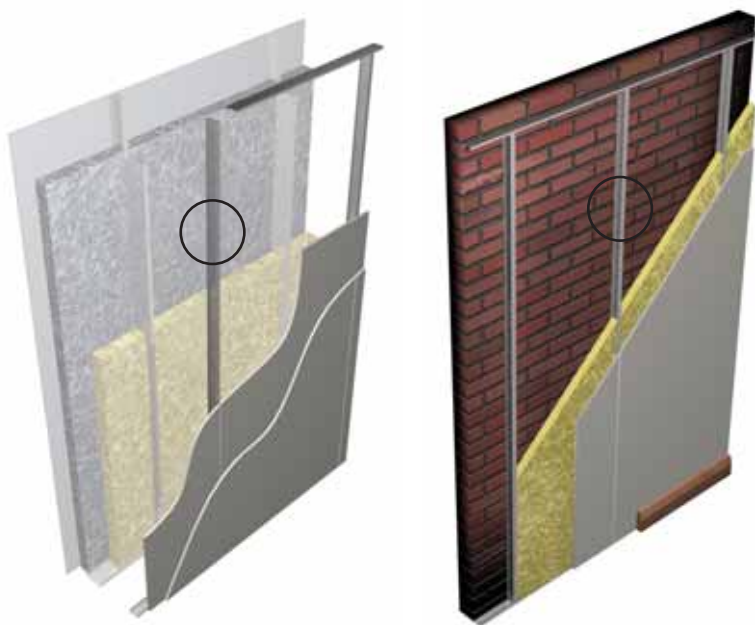
Photograph courtesy of Phillip Brier

GypLyner™ IWL

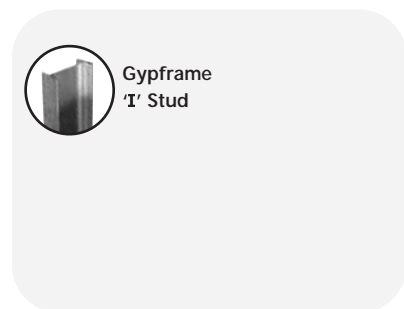
Independent wall lining system

59 – 61 dB
30 – 180 mins
0.35 – 0.33 W/m²K

GypLyner™ IWL independent wall lining is a lightweight, non-loadbearing drylining which is erected independently of the external wall construction. The system is used in all types of building, but is particularly suitable for those with reinforced concrete or steel frames. The lining provides fire resistance to structural steel sections clad with lightweight metal sheeting, and can also be used in association with new or existing masonry walls to increase sound insulation and meet thermal performance requirements.



Sector	
✓	Office / commercial
✓	Educational
✓	Residential
✓	Healthcare
✓	Leisure
✓	Industrial



Key facts




- Fully independent wall lining
- Compatible with external wall constructions including curtain walling, rain screen claddings, industrial claddings, brickwork and glazed atriums
- Used to line non fire-rated service risers
- Used horizontally to form a corridor ceiling
- Satisfies BS 5234 strength and robustness requirements up to Severe Duty
- Provides fire protection to structural steelwork
- Provides fire resistance in association with external structure
- Used to upgrade the sound and thermal performance of an existing masonry wall
- Provides service void

System components

Gypframe metal products

	48 I 50 'I' Stud	Length 2700, 3000mm
	60 I 50 'I' Stud 60 I 70 'I' Stud	Length 3600, 4200mm
	70 I 70 'I' Stud	Length 3600, 4200mm
	92 I 90 'I' Stud	Length 5000, 6000mm
	146 I 80 'I' Stud	Length 5000, 6000mm
	Standard, Deep Flange (DC) and Extra Deep Flange (EDC) Floor & Ceiling Channels	All channels are available in 3600mm only.
	99 FC 50 Fixing Channel	Length 2400mm
	GFS1 Fixing Strap or GFT1 Fixing 'I'	Length 2400mm
	GA5 Internal Fixing Angle	Length 3600mm
	GA6 Splayed Angle	Length 2400, 3600mm

Gyproc board products



	Gyproc WallBoard¹	Thickness 12.5, 15mm Width 900, 1200mm
	Gyproc FireLine¹	Thickness 12.5, 15mm Width 1200mm
	Gyproc SoundBloc¹	Thickness 12.5, 15mm Width 1200mm

Gyproc board products (cont'd)

	Gyproc DuraLine	Thickness 13, 15mm Width 1200mm
	Gyproc ThermalLine laminates	Thickness 18 - 65mm Width 600, 1200mm

¹ Moisture resistant boards are specified in intermittent wet use areas e.g. shower cubicles.

Fixing and finishing products

	Gyproc Drywall Screws	For fixing boards to stud framing up to 0.79mm thick.
or	Gyproc Jack-Point Screws	For fixing boards to stud framing 0.8mm thick or greater and 'I' studs greater than 0.55mm thick.
	Gyproc Wafer Head Drywall Screws	For metal-to-metal fixing up to 0.79mm thick.
or	Gyproc Wafer Head Jack-Point Screws	For metal-to-metal fixing 0.8mm thick or greater and 'I' studs greater than 0.55mm thick.
	Gyproc Sealant	Sealing air paths for optimum sound insulation.
	Gyproc jointing materials	For seamless jointing.
	Gyproc edge beads	Protecting and enhancing board edges.
	Gyproc Control Joint	To accommodate structural movement.
	Gyproc FireStrip	For fire-stopping deflection heads.
	Thistle Board Finish or Thistle Multi-Finish	To provide a plaster skim finish.
	Isover Acoustic Slabs - High Performance	50mm and 75mm, for improved acoustic performance.



Installation overview



Run of lining

Gypframe Floor & Ceiling Channel is fixed at the head and base. Gypframe 'I' Studs are friction-fitted vertically within the channel sections to form the framework. This allows for adjustment during boarding. If specified, Isover Acoustic Slab is fitted between studs. Additional framing is installed as required to support heavy fixtures.

Boards are screw-fixed to all framing members to form the lining. Horizontal board-end joints should be backed with Gypframe GFS1 Fixing Strap or Gypframe GFT1 Fixing 'T'.

Services

Electrical and other services are normally installed at the frame erection stage. Horizontal runs are fixed to the background or can be routed through cut-outs in the studs. Gypframe 99 FC 50 Fixing Channel can be installed between studs to support recessed switch boxes / socket outlets.

Performance (▶ Refer to 2 - Basic principles of system design)

Table 1 - Maximum heights¹ for Gypframe 'I' Studs at 600mm centres

Stud type	12.5mm boards		15mm boards		ThermaLine laminates single
	single	double	single	double	
48 I 50	2400	2700	2400	2800	2400
60 I 50	2400	3000	2700	3300	2400
60 I 70	3000	3600	3300	3900	3000
70 I 70	3600	4200 ²	3900	4300 ²	3600
92 I 90	5100 ²	5700 ²	5400 ²	6000 ²	5100 ²
146 I 80	6900 ²	7200 ²	7200 ²	7500 ²	6900 ²

¹ Based on a limiting deflection of L/240 at 200Pa.

² For heights of 4200mm or greater, Gypframe Deep Flange (DC) or Extra Deep Flange (EDC) Floor & Ceiling Channel should be used at the head and base.

Table 2 - U-values¹ for external claddings with lining / insulation combinations - based on a well vented lining cavity

External cladding	ThermaLine laminate	Lining thickness mm	Isover Acoustic Slabs - High Performance	U-value W/m ² K
Curtain walling/ concrete cladding/ panels/brickwork/ blockwork, etc	ThermaLine SUPER	50	50mm (with Gypframe 48 I 50 Studs)	0.34
	ThermaLine PLUS	45	75mm (with Gypframe 70 I 70 Studs)	0.35
	ThermaLine PLUS	40	100mm (with Gypframe 92 I 90 Studs)	0.33
	ThermaLine BASIC	22	150mm (with Gypframe 148 I 80 Studs)	0.33

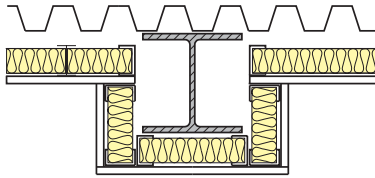
¹ U-values are calculated by proportional area method. Contact the British Gypsum Drywall Academy Advice Centre for U-value calculations on specific constructions including insulated render systems and stone claddings.

EN

BS

Table 3 - Linings to structural steel columns¹

1



Board linings to one side of Gypframe 'I' Stud framework and 50mm Isover Acoustic Slabs - High Performance, forming an independent lining to structural steel columns, in association with external steel cladding. Lining as in table.

Detail	Board type ⁴	Lining thickness mm	Duty rating	System reference
Fire resistance² – 30 minutes integrity : 30 minutes insulation³ EN BS				
1	WallBoard	2 x 12.5	Severe	B216003
1	SoundBloc	2 x 12.5	Severe	B216003
1	WallBoard	2 x 15	Severe	B216004
1	SoundBloc	2 x 15	Severe	B216004
Fire resistance² – 60 minutes integrity : 30 minutes insulation³ EN BS				
1	FireLine	1 x 12.5	Medium	B216025
1	FireLine or DuraLine	1 x 15	Heavy	B216026
Fire resistance² – 90 minutes integrity : 30 minutes insulation³ EN BS				
1	FireLine	2 x 12.5	Severe	B216027
1	FireLine or DuraLine	2 x 15	Severe	B216028

¹ The fire resistances apply to external walls, whose construction incorporates structural steel sections with a profiled steel cladding, when the inside of the wall is exposed to fire.

² Where the external wall is more than 1m from the boundary, Building Regulations allow relaxation of the provision for insulation to 15 minutes in certain circumstances.

³ The figures quoted relate to the complete wall structure including the external cladding. The lining also offers fire protection to steel columns, subject to A/V (Hp/A) factor. Refer to Table 4.

⁴ For improved durability and impact resistance, the outer layer of board can be replaced with a layer of Gyproc DuraLine of equivalent thickness.

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

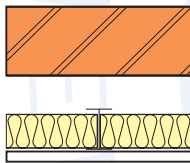
Performance (▶ Refer to 2 - Basic principles of system design)

EN BS
Table 4 – Fire protection to structural steel

Board type	Lining thickness mm	Fire resistance mins	Section factor ¹ A/V (Hp/A) m ⁻¹
FireLine	1 x 12.5	30	Up to 300
WallBoard or SoundBloc	2 x 12.5	30	Up to 300
FireLine	2 x 12.5	60	Up to 300
FireLine	2 x 12.5	90	Up to 200 (BS only)
FireLine	2 x 15	90	Up to 300

¹ Based on four sided exposure. Protection is afforded to universal column sections as described in *BS 4: Part 1: 1980*. Based on critical temperature 550°C (information on other critical temperatures is available).

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

BS
Table 5 – Linings to masonry construction
1


Single or double layer board to one side of Gypframe 'T' Stud framework and 50mm Isover Acoustic Slab - High Performance forming an independent lining to masonry construction.

Lining as in table.

Detail	Board type	Lining thickness mm	Approx. weight kg/m ²	Sound insulation R _w (R _w + Ctr) dB	Duty rating	System reference
180 minutes fire resistance¹ BS						
1	WallBoard	1 x 12.5	11	59 (51)	Medium	B216001
1	WallBoard	1 x 15	13	59 (51)	Medium	B216002
1	WallBoard	2 x 12.5	20	61 (54)	Severe	B216031
1	WallBoard	2 x 15	23	61 (54)	Severe	B216033

¹ The fire resistance quoted is that provided by the masonry wall without contribution from the lining.

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

Design

Planning - key factors

The position of services should be pre-determined and their installation planned into the frame erection stage. It is important that all parts of the lining system, including the thermal insulation, should remain independent of the external walling. The lining is erected with the external walling in place and the windows and doors fixed. Where the lining is used in specialist applications e.g. as a horizontal corridor ceiling, please contact the British Gypsum Drywall Academy Advice Centre for span and boarding specification data.

Extended heights

Where the wall height exceeds the available length of 'I' stud, sections of stud can be spliced together to the required length using 600mm lengths of the appropriate floor and ceiling channel, fixed with four Gyproc Wafer Head Drywall Screws in each flange to each side. See **Construction details - 2**. Where greater heights than listed in **Table 1** are required, the lining will need to be braced back to the structure. Note that the system is non-loadbearing and should not be used to provide lateral restraint to masonry or other external wall constructions.

Acoustic performance

GypLyner IWL can be used as an independent lining to improve the sound insulation of new or existing masonry walls. Acoustic testing on a basic masonry wall construction achieving R_w 45dB sound insulation gave a 14dB improvement when the wall was lined with GypLyner IWL (single board). A 16dB improvement was achieved with a double layer lining. Please contact the Drywall Academy Advice Centre for details. Special detailing is required at junctions with sound insulating partitions in order to maintain acoustic performance. See **Construction details - 12**.

Cavity barriers

Cavity barriers should be included where necessary. If both sides of the cavity are formed by non-combustible or Class 0 materials, barriers are necessary only every 20m. The nature of the barrier and its fixing should not detract from the general performance of the wall.

▶ Refer to 7 – Cavity fire barriers.

Fixing floor and ceiling channels

Floor channels must be securely fixed with a line of fixings at 600mm maximum centres. With 148mm and 94mm channels, two rows of staggered fixings are required, each line at 600mm centres and each fixing 25mm in from the flange. If the floor is uneven, a 38mm thick timber sole plate, equal to the width of the channel, should be used. If the concrete or screeded floor is new, consideration should be given to the installation of a damp proof membrane between the floor surface and the channel or sole plate.

Head channels must be securely fixed at 600mm maximum centres. With 148mm and 94mm channel, two lines of staggered fixings are required, each line at 600mm centres and each fixing 25mm in from the flange.

Deflection heads

The system can accommodate deflection at the head with suitable detailing incorporating Gypframe Deep Flange or Extra Deep Flange Floor & Ceiling Channels. Please contact the British Gypsum Drywall Academy Advice Centre for guidance.

Damp or rain penetration

In refurbishment projects, where damp or rain penetration may exist, normal corrective measures, such as a new damp course, tanking, or external wall coating, should be taken prior to the installation of the dry internal lining. If this is not possible, the cavity between the external wall and the lining system will need to be drained and ventilated to the outside.

Thermal performance

Uncontrolled air movement through the drylining cavity can result in excessive heat loss from the building. This can be reduced in practice if the abutting elements and the background are well fitted, and junctions are sealed.

When the perimeter of the cavity is to be sealed by the drylining contractor the recommended method is to apply a continuous fillet of Gyproc Dri-Wall Adhesive or Gyproc Sealant to the perimeter of the external wall and around any openings.

The designer should also specify a method of restricting air movement around the perimeter of suspended timber floors, such as the provision of a flexible seal between the floor and walls.

Insulation

Isover Acoustic Slabs - High Performance are inserted to a friction-fit within the stud cavity. The slabs are self-supporting, receiving internal support from the stud flanges, except where 50mm insulation is fitted into Gypframe 92 I 90 'I' Studs or Gypframe 146 I 80 'I' Studs. In this case, a 150mm x 50mm strip of Isover Acoustic Slab is inserted to retain the slab, see **Construction details - 5**. With Gypframe 146 I 80 'I' Stud, two strips of insulation should be inserted to retain the slab.

Services

The stud cut-outs can be used for services provided that the Isover insulation remains in place. The positioning of stud cut-outs is shown in **Construction details - 1**.

Both horizontal and vertical services can be included behind the lining system, and accessed via a fire-rated Gyproc Proflex Access Panel (or similar). See **Construction details - 10**.

Surface mounted services should be located against the plasterboard lining, and fixed through the lining to the stud framework. Any interruptions in the lining integrity will downgrade its performance. The installation of electrical services should be carried out in accordance with the recommendations of the Institution of Electrical Engineers.

▶ Refer to 2.5 – Service installations.

Fixtures

Lightweight fixtures can be made directly to the lining. Medium weight fixtures can be made to Gypframe 99 FC 50 Fixing Channel. Heavy fixtures should be made to the metal studs or independent framing installed before boarding.

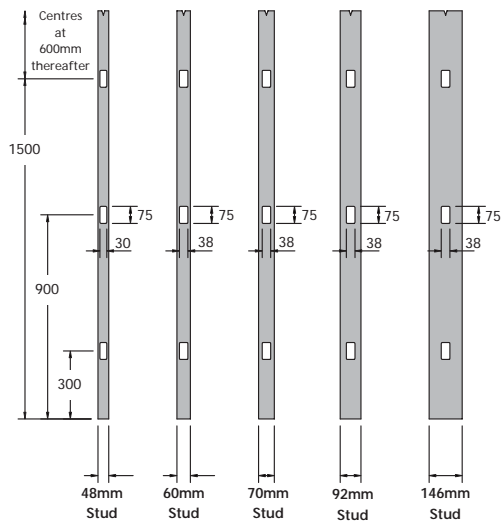
▶ Refer to 2.4.3 – Robustness, Fixings into drywall systems.

Board finishing

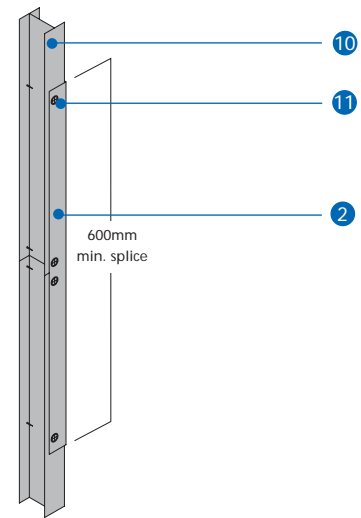
▶ Refer to 10 – Finishing systems and decorative effects.

Construction details

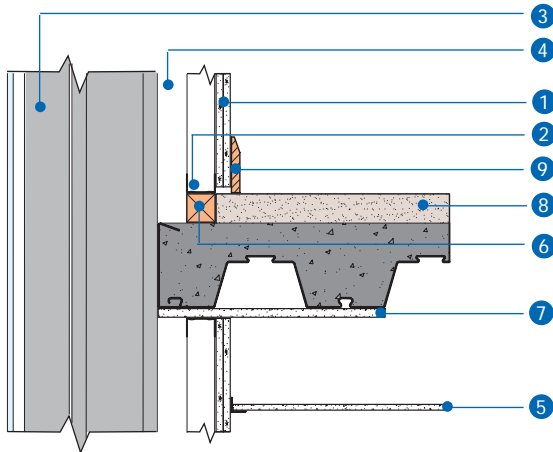
1 Service cut-outs (all dimensions in mm)



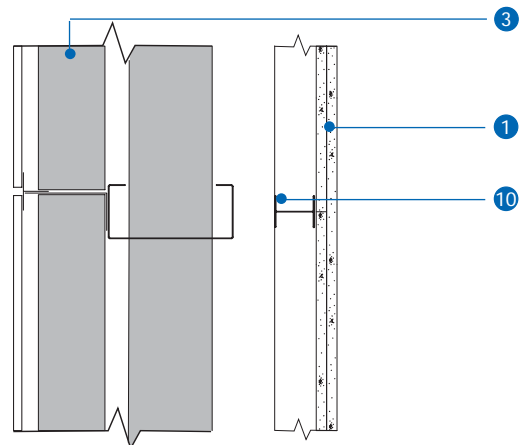
2 Extending Gypframe 'I' Studs



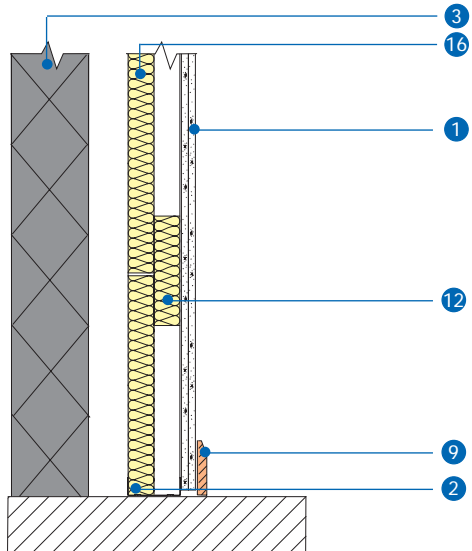
3 Junction of profiled steel decking concrete floor and external wall



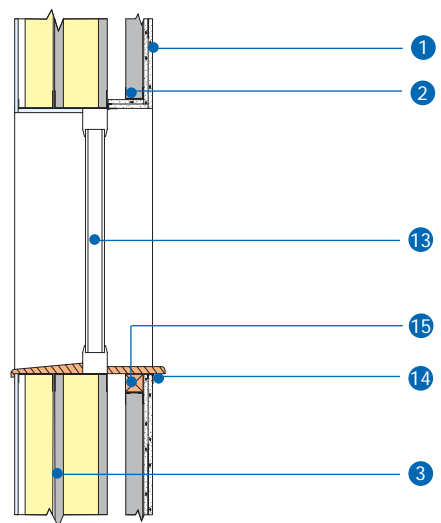
4 Internal lining to curtain walling



5 Retaining insulation in Gypframe 92 I 90 'I' Studs



6 Window opening (vertical section)

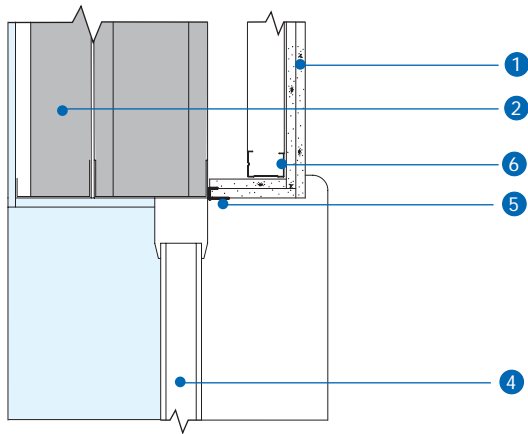


- 1 Gyproc plasterboard
- 2 Gypframe Floor & Ceiling Channel
- 3 External wall construction
- 4 Ventilated cavity
- 5 Gyproc plasterboard ceiling
- 6 Timber sole plate
- 7 Glasroc FireCase s soffit support
- 8 Floor screed

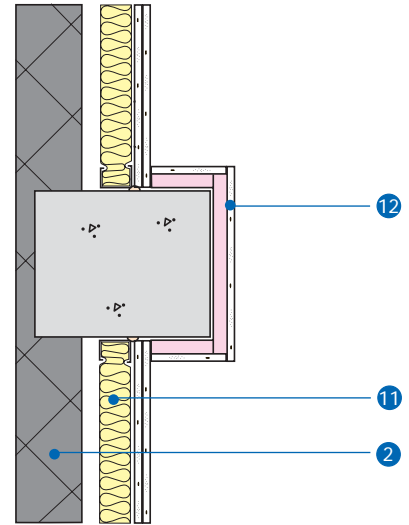
- 9 Skirting
- 10 Gypframe 'I' Stud
- 11 Gyproc Wafer Head Jack-Point Screws
- 12 Isover Acoustic Slab packer
- 13 Window unit
- 14 Gyproc edge bead
- 15 Timber head piece
- 16 Isover Acoustic Slab - High Performance

NB Service cut-out dimensions are the same for Gypframe 'C' and 'I' Studs.

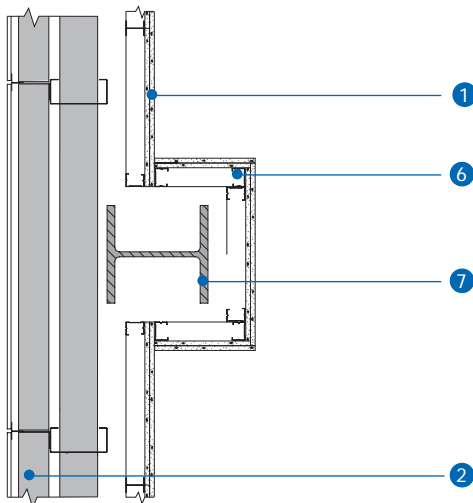
7 Window opening (horizontal plan section)



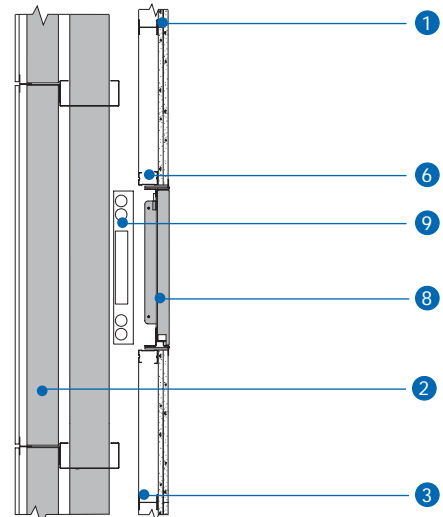
8 Typical internal cladding to concrete column



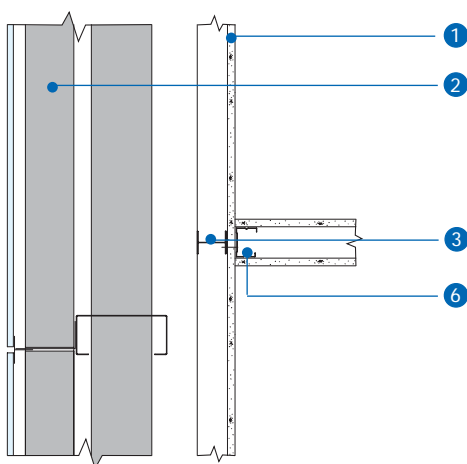
9 Typical internal cladding to steel column



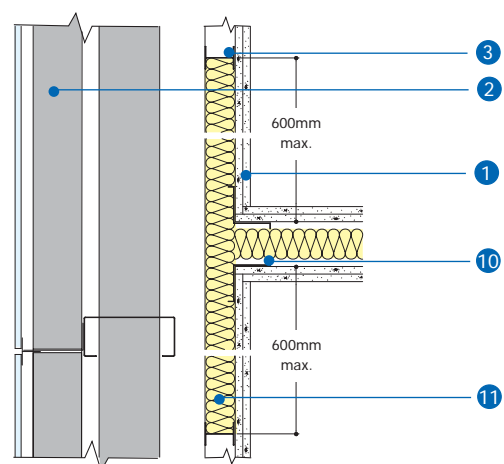
10 Typical access panel



11 Partition junction – standard detail



12 Partition junction – acoustic detail



- 1 Gyproc plasterboard
- 2 External wall construction
- 3 Gypframe 'I' Stud
- 4 Window unit
- 5 Gyproc Edge Bead
- 6 Gypframe 'C' Studs

- 7 Steel column
- 8 Gyproc Proflex Access Panel
- 9 Services
- 10 Gypframe GA5 Internal Fixing Angle
- 11 Isover Acoustic Slab - High Performance
- 12 Gyproc ThermaLine laminate