Issue date: 13th October 2006

Key changes since original publication (July 2005):

13 October 2006	Page 174 – Changes to wall thicknesses on 60, 90 and 120 minute fire rating sections. Page 177 – New Table 4 'Limiting heights' inserted after this page. Page 178 – Text addition referencing new Table 4 'Limiting heights' on previous page. Page 181 – Heading for construction detail 9 changed. Page 182 – New construction detail 11 drawing inserted. 122mm deleted from Key No. 10.
22 December 2005	Page 173 - Maximum partition height of A306004/011 changed from 6400mm to 6000mm.

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

Technical enquiries

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Telephone: 08705 456123 #1 (Literature), #2 (Specifiers), #3 (Merchants), #4 (Contractors)
For quality and security reasons, calls may be recorded.

Fax: 08705 456356 E-mail: bgtechnical.enquiries@bpb.com
Training enquiries: 08702 406040

THE WHITE BOOK 2005

British Gypsum

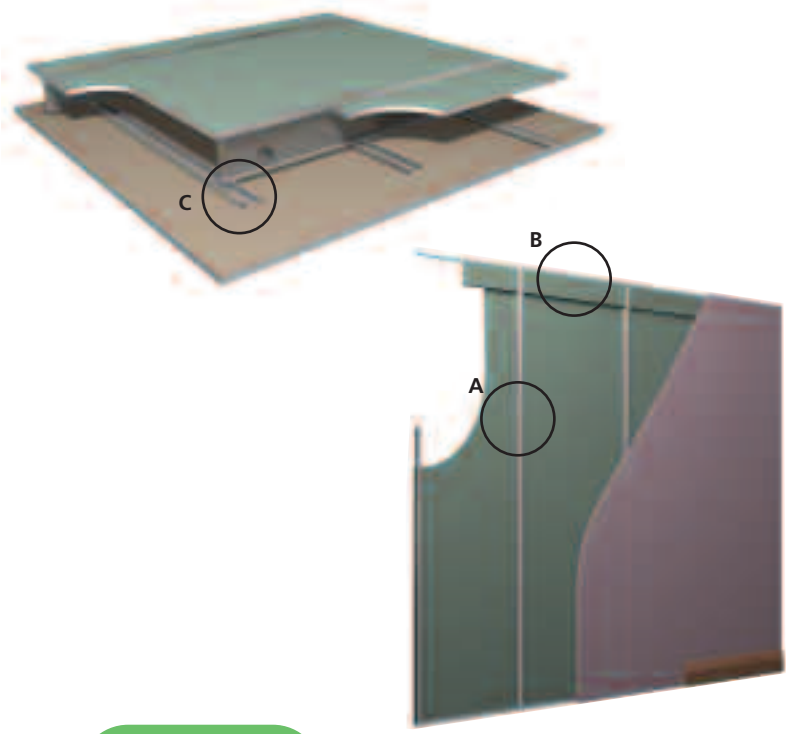
ShaftWall™

Shaft and duct encasement system

ShaftWall™ provides a fast-track solution for encasing shafts, stairwells and fire-capping escape corridors

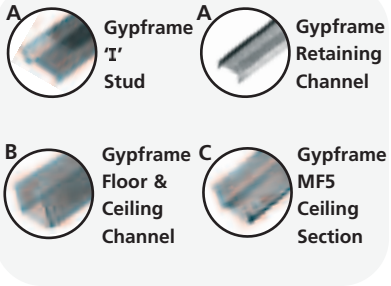
39 – 53 dB 60 – 120 mins

ShaftWall™ provides a lightweight, fire-resistant structure to protect elements within the service cores of modern fast-track developments. It is also used to protect all forms of shafts and ducts in conventional buildings. The system provides a protective structure which can be incorporated at an early stage of the building before the building envelope is sealed. The system can also be built horizontally to provide a fire-rated membrane. **StairWall** is a derivative of the **ShaftWall** system which is used to protect stairwells.



Sector

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

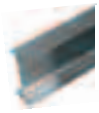


Key facts

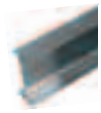
- Lightweight, fast-track construction
- Provides fire protective shaft enclosures, stairwells and horizontal membranes
- Shaft enclosures built from one side only
- Horizontal membranes built entirely from below
- Can be installed prior to making the building envelope weather-tight
- Minimal wall thickness from 80 mm
- Satisfies deflection and air pressure requirements

System components

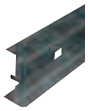
Gypframe metal products



60 I 70 'I' Stud — **Length**
70 I 70 'I' Stud — 3600, 4200mm
4500mm (70 I 70 'I' Stud)

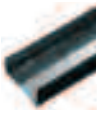


92 I 90 'I' Stud — **Length**
3600, 5000, 6000mm

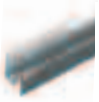


146 TI 90 Tabbed 'I' Stud — **Length**
5000, 6000mm

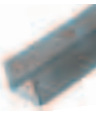
Starter Channels — **Length**
60 SC 55 — 3600, 4200mm
70 SC 70



Starter Channels — **Length**
92 SC 90 — 5000, 6000mm
146 TSC 90



'J' Channel — **Length**
62 JC 70 — 3600mm



Standard Floor & Ceiling Channels
62 C 50
72 C 50
94 C 70
148 C 50
Deep Flange Floor & Ceiling Channels
62 DC 60
72 DC 60
148 DC 60
Extra Deep Flange Floor & Ceiling Channels
72 EDC 80
94 EDC 70
148 EDC 80
All channels available in 3600mm only

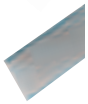
MF5 Ceiling Section — **Length**
Main support section — 3600mm

Retaining Channels
G102 (for 60mm and 146mm 'I' Studs)
G110 (for 70mm 'I' Studs)
G105 (for 92mm 'I' Studs)
All channels 2400mm

Retaining Clips
G108 (for 92mm 'I' Studs)
G109 (for 146mm 'I' Studs)

Gypframe metal products (continued)

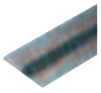
GA3 Steel Angle — **Length**
3200mm



99 FC 50 Fixing Channel — **Length**
2400mm

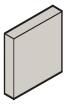
GFS1 Fixing Strap — **Length**
2400mm

or

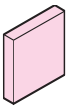


GFT1 Fixing 'T' — **Length**
2400mm

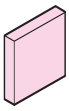
Gyproc board products



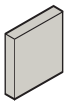
Gyproc WallBoard
Thickness — 12.5mm
Width — 1200mm



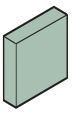
Gyproc FireLine
Thickness — 12.5, 15mm
Width — 1200mm



Gyproc FireLine MR
Thickness — 12.5, 15mm
Width — 1200mm



Gyproc DuraLine
Thickness — 15mm
Width — 1200mm



Gyproc CoreBoard
Thickness — 19mm
Width — 600mm

Fixing and finishing products

Gyproc Profilex Access Panel
For access to the plenum for maintenance purposes.

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 Jack-Point Screws
For metal-to-metal fixing 0.8mm thick or greater and 'I' studs greater than 0.55mm thick.

Always use genuine branded British Gypsum components to qualify for **SpecSure®** lifetime warranty

System components (continued)

Fixing and finishing products (continued)

Gyproc Sealant
Sealing air paths for optimum sound insulation and sealing structure to meet air pressure criteria.

Gyproc jointing materials
For seamless jointing.

Gyproc FireStrip
For fire-stopping deflection heads.

Fixing and finishing products (continued)

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

Isowool APR 1200
25mm, for improved acoustic performance.

Installation overview

Run of lining
Gypframe Floor & Ceiling Channel (or 'J' Channel) is fixed to the structure and Gypframe Starter Channel to vertical abutments. Gyproc FireStrip is used in a continuous line to seal at the head.

ShaftWall is assembled from the non-shaft side using Gypframe 'I' Stud framing. Gyproc CoreBoards are located between studs and secured using Gypframe Retaining Channel. All horizontal joints in the Gyproc CoreBoard layer are fire-stopped. Gyproc FireLine board linings are fixed to the non-shaft side of the frame. Deflection is accommodated at the head by incorporating plasterboard fire stops (cut on site, if required).

Isowool APR 1200 is included in the cavity (if required) to enhance the acoustic performance.

Pressurised shafts and service ducts are sealed using Gyproc Sealant. This is applied to all board-to-metal junctions.

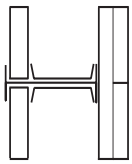
Services
Penetrations for services, ducting and access panels require the construction of a framed opening. Fire-stopping is installed by specialist contractors.

For full installation details, refer to the British Gypsum ***SiteBook*** or visit www.british-gypsum.com

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

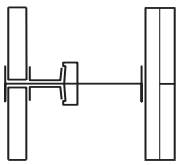
EN Table 1a – ShaftWall (vertical elements)

1



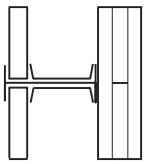
Gypframe 60, 70 or 92mm 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

2



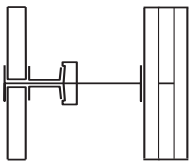
Gypframe 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

3



Gypframe 60, 70 or 92mm 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

4



Gypframe 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

Detail	Lining boards to non-shaft side[2] Board type	Thickness mm	Stud size mm	Wall thickness mm	Approx. weight kg/m²	Max. partition height[1] mm	Sound insulation R_w No insulation dB	Sound insulation R_w Sealed structure plus 25mm Isowool APR 1200 dB	Duty rating[3]	System reference
60 minutes fire resistance EN										
1	FireLine	2 x 12.5	60	90	39	4400	40	44	Severe	A306002/012
1	FireLine	2 x 12.5	70	100	39	4400	40	44	Severe	A306002/012
1	FireLine	2 x 12.5	92	120	40	6000	45	47	Severe	A306005/014
2	FireLine	2 x 12.5	146	175	42	6000	48	52	Severe	A306008/020
90 minutes fire resistance EN										
1	FireLine	2 x 15	60	95	43	4500	42	45	Severe	A306003/023
1	FireLine	2 x 15	70	105	43	4500	42	45	Severe	A306003/023
1	FireLine	2 x 15	92	125	44	6000	44	46	Severe	A306006/025
2	FireLine	2 x 15	146	180	46	6000	48	50	Severe	A306009/028
120 minutes fire resistance EN										
3	FireLine	3 x 15	60	110	55	4500	43	45	Severe	A306030/035
3	FireLine	3 x 15	70	120	55	4500	43	45	Severe	A306030/035
3	FireLine	3 x 15	92	140	56	6000	45	46	Severe	A306031/036
4	FireLine	3 x 15	146	195	58	6000	49	50	Severe	A306032/033

[1] The maximum heights quoted are limited by the fire state field of application or by limiting deflection of L/240 at 200Pa, whichever is the more onerous.

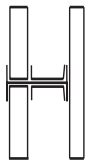
[2] For improved durability and impact resistance, the outer layer of 15mm Gyproc FireLine can be replaced with a layer of 15mm Gyproc DuraLine. On single layer linings this will improve duty rating to Severe Duty.

[3] Estimated rating from non-shaft side only.

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 performance 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.

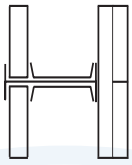
BS Table 1b – ShaftWall (vertical elements)

1



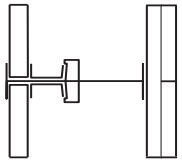
Gypframe 60, 70, 92 or 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

2



Gypframe 60, 70 or 92mm 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

3



Gypframe 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-shaft side only (see table).

Detail	Lining boards to non-shaft side[3] Board type	Thickness	Stud size	Wall thickness	Approx. weight	Max. partition height[1]	Sound insulation R_w No insulation	Sound insulation R_w Sealed structure plus 25mm Isowool APR 1200	Duty rating[4]	System reference
		mm	mm	mm	kg/m²	mm	dB	dB		
60 minutes fire resistance[2] BS										
1	FireLine	1 x 15	60	80	30	4200	39	42	Heavy	A306001/010
1	FireLine	1 x 15	70	90	30	4200	39	42	Heavy	A306001/010
1	FireLine	1 x 15	92	110	31	6000	40	43	Heavy	A306004/011
1	FireLine	1 x 15	146	165	33	7700	43	46	Heavy	A306007
90 minutes fire resistance[2] BS										
2	FireLine	2 x 12.5	60	90	39	4400	40	44	Severe	A306002/012
2	FireLine	2 x 12.5	70	100	39	4400	40	44	Severe	A306002/012
2	FireLine	2 x 12.5	92	120	40	6400	45	47	Severe	A306005/014
3	FireLine	2 x 12.5	146	175	42	7900	48	52	Severe	A306008/020
120 minutes fire resistance[2] BS										
2	FireLine	2 x 15	60	95	43	4500	42	45	Severe	A306003/023
2	FireLine	2 x 15	70	105	43	4500	42	45	Severe	A306003/023
2	FireLine	2 x 15	92	125	44	6700	44	46	Severe	A306006/025
3	FireLine	2 x 15	146	180	46	7900	48	50	Severe	A306009/028

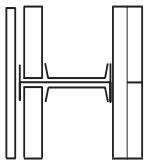
[1] Based on a limiting deflection of L/240 at 200Pa.
[2] The temperature of exposed metal may exceed the requirements of *BS 476: Part 22: 1987* within the fire test period, and therefore relaxation should be sought from the approving Authority on the basis that no combustible materials are likely to be stored adjacent to the structure. In situations where the full period of insulation is required, contact the British Gypsum Drywall Academy Advice Centre.
[3] For improved durability and impact resistance, the outer layer of 15mm Gyproc FireLine can be replaced with a layer of 15mm Gyproc DuraLine. On single layer linings this will improve duty rating to Severe Duty.
[4] Estimated rating from non-shaft side only.

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 performance 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)

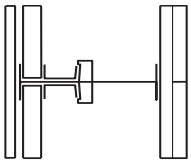
EN Table 2a – StairWall (vertical elements)

1



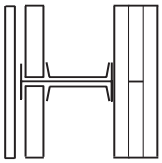
Gypframe 60, 70 or 92mm 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-stairwell side (see table) plus decorative lining of 12.5mm Gyproc WallBoard to stairwell side.

2



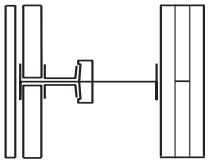
Gypframe 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-stairwell side (see table) plus decorative lining of 12.5mm Gyproc WallBoard to stairwell side.

3



Gypframe 60, 70 or 92mm 'I' Stud framework with Gypframe CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-stairwell side (see table) plus decorative lining of 12.5mm Gyproc WallBoard to stairwell side.

4



Gypframe 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to non-stairwell side (see table) plus decorative lining of 12.5mm Gyproc WallBoard to stairwell side.

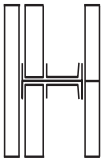
Detail	Lining boards to non-shaft side[2] Board type	Thickness	Stud size	Wall thickness	Approx. weight	Max. partition height[1]	Sound insulation R_w No insulation	Sound insulation R_w Sealed structure plus 25mm Isowool APR 1200	Duty rating[3]	System reference
		mm	mm	mm	kg/m²	mm	dB	dB		
60 minutes fire resistance EN										
1	FireLine	2 x 12.5	60	100	39	4400	40	44	Severe	A306002/012
1	FireLine	2 x 12.5	70	110	39	4400	40	44	Severe	A306002/012
1	FireLine	2 x 12.5	92	135	40	6000	45	47	Severe	A306005/014
2	FireLine	2 x 12.5	146	190	42	6000	48	52	Severe	A306008/020
90 minutes fire resistance EN										
1	FireLine	2 x 15	60	105	43	4500	42	45	Severe	A306003/023
1	FireLine	2 x 15	70	115	43	4500	42	45	Severe	A306003/023
1	FireLine	2 x 15	92	140	44	6000	44	46	Severe	A306006/025
2	FireLine	2 x 15	146	195	46	6000	48	50	Severe	A306009/028
120 minutes fire resistance EN										
3	FireLine	3 x 15	60	120	55	4500	43	48	Severe	A306037
3	FireLine	3 x 15	70	130	55	4500	43	48	Severe	A306037
3	FireLine	3 x 15	92	155	56	6000	45	49	Severe	A306038
4	FireLine	3 x 15	146	215	58	6000	49	53	Severe	A306034

[1] The maximum heights quoted are limited by the fire state field of application or by limiting deflection of L/240 at 200Pa, whichever is the more onerous.
[2] For improved durability and impact resistance, the outer layer of 15mm Gyproc FireLine can be replaced with a layer of 15mm Gyproc DuraLine. On single layer linings this will improve duty rating to Severe Duty.
[3] Estimated rating.

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 performance 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 2b – StairWall (vertical elements)

1



Gypframe 60, 70, 92 or 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Lining boards to both sides (see table).

Detail	Lining boards to each side[2] Board type	Thickness	Stud size	Wall thickness	Approx. weight	Max. partition height[1]	Sound insulation R_w No insulation	Sound insulation R_w Sealed structure plus 25mm Isowool APR 1200	Duty rating[3]	System reference
		mm	mm	mm	kg/m²	mm	dB	dB		
90 minutes fire resistance BS										
1	FireLine	1 x 12.5	60	90	39	4400	42	45	Medium	A306046/048
120 minutes fire resistance BS										
1	FireLine	1 x 15	60	95	43	4400	42	47	Heavy	A306047/049

[1] Based on a limiting deflection of L/240 at 200Pa.
[2] For improved durability and impact resistance, the outer layer of 15mm Gyproc FireLine can be replaced with a layer of 15mm Gyproc DuraLine. On single layer linings this will improve duty rating to Severe Duty.
[3] Estimated rating.

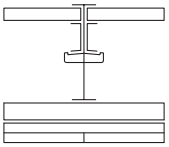
NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with joints taped and filled, or skimmed according to British Gypsum's recommendations. The quoted performance are achieved only if British Gypsum components are used throughout, 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

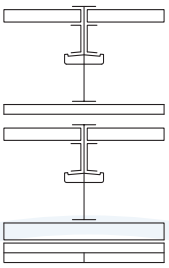
Table 3a - ShaftWall (non-loadbearing horizontal elements)

1



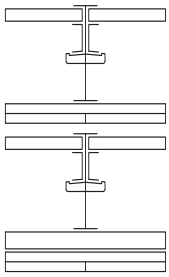
Gypframe 60, 92 or 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Gypframe MF5 sections fixed to ceiling side at 450mm centres. Lining boards to ceiling side (see table).

2



Two Gypframe 146mm Tabbed 'I' Stud frameworks with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). On the lower framework only, Gypframe MF5 sections fixed to ceiling side at 450mm centres. Lining boards to ceiling side (see table).

3



Two Gypframe 146mm Tabbed 'I' Stud frameworks with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). On the lower framework only, Gypframe MF5 sections fixed to ceiling side at 450mm centres. Lining boards to ceiling side (see table).

Detail	Lining boards ceiling side		Stud size	Membrane thickness	Approx. weight	Max. span[1]	Sound insulation R_w		System reference
	Board type	Thickness					No insulation	Sealed structure plus 25mm Isowool APR 1200	
		mm	mm	mm	kg/m²	mm	dB	dB	
60 minutes fire resistance EN									
1	FireLine	2 x 15	60	120	39	2500	42	45	C106053
1	FireLine	2 x 15	92	150	39	3000	44	46	C106054
1	FireLine	2 x 15	146	200	39	4000	48	50	C106055
90 minutes fire resistance EN									
2	FireLine upper frame	1 x 15	146	380	77	4000	48	50	C106057
	FireLine lower frame	2 x 15	146						
120 minutes fire resistance EN									
3	FireLine upper frame	2 x 15	146	400	88	4000	48	50	C106056
	FireLine lower frame	2 x 15	146						

[1] Based on a limiting deflection of L/400.

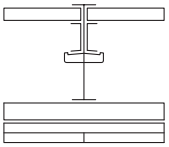
NB The fire resistance and sound insulation performances are for imperforate partitions, walls and ceilings incorporating boards with joints taped and filled, or skimmed according to British Gypsum's recommendations. The quoted performance are achieved only if British Gypsum components are used throughout,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

NB The fire resistances quoted are for imperforate constructions. Light fittings should therefore be surface mounted or supported from independent struts.

NB ShaftWall used horizontally should not be used for materials storage or for access for personnel.

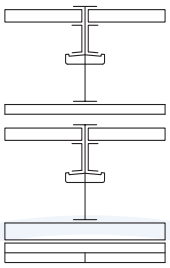
BS Table 3b - ShaftWall (non-loadbearing horizontal elements)

1



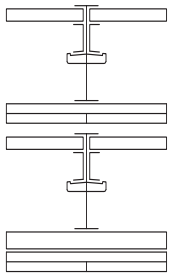
Gypframe 60, 92 or 146mm Tabbed 'I' Stud framework with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). Gypframe MF5 sections fixed to ceiling side at 450mm centres. Lining boards to ceiling side (see table).

2



Two Gypframe 146mm Tabbed 'I' Stud frameworks with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). On the lower framework only, Gypframe MF5 sections fixed to ceiling side at 450mm centres. Lining boards to ceiling side (see table).

3



Two Gypframe 146mm Tabbed 'I' Stud frameworks with Gyproc CoreBoard between studs, secured by Gypframe Retaining Channel. 25mm Isowool APR 1200 in cavity (optional). On the lower framework only, Gypframe MF5 sections fixed to ceiling side at 450mm centres. Lining boards to ceiling side (see table).

Detail	Lining boards ceiling side		Stud size	Membrane thickness	Approx. weight	Max. span[1]	Sound insulation (R_w)		System reference
	Board type	Thickness					No insulation	Sealed structure plus 25mm Isowool APR 1200	
		mm	mm	mm	kg/m²	mm	dB	dB	
60 minutes fire resistance BS									
1	FireLine	2 x 15	60	120	39	2500	42	45	C106053
1	FireLine	2 x 15	92	150	39	3700	44	46	C106054
1	FireLine	2 x 15	146	200	39	5100	48	50	C106055
90 minutes fire resistance BS									
2	FireLine upper frame	1 x 15	146	380	77	5100	48	50	C106057
	FireLine lower frame	2 x 15	146						
120 minutes fire resistance BS									
3	FireLine upper frame	2 x 15	146	400	88	5100	48	50	C106056
	FireLine lower frame	2 x 15	146						

[1] Based on a limiting deflection of L/400.

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 performance 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.

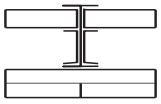
NB The fire resistances quoted are for imperforate constructions. Light fittings should therefore be surface mounted or supported from independent struts.

NB ShaftWall used horizontally should not be used for materials storage or for access for personnel.

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

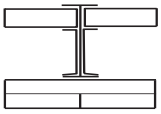
Table 4 - Limiting heights at various air pressures and allowable deflections

1



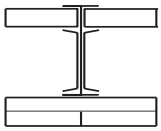
60mm 'I' Stud framework with two layers of 15mm Gyproc FireLine

2



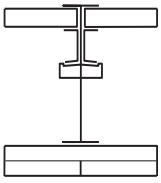
70mm 'I' Stud framework with two layers of 15mm Gyproc FireLine

3



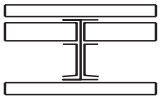
92mm 'I' Stud framework with two layers of 15mm Gyproc FireLine

4



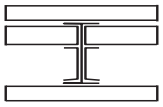
146mm 'I' Stud framework with two layers of 15mm Gyproc FireLine

5



60mm 'I' Stud framework with one layer of 12.5mm Gyproc FireLine on each side

6



60mm 'I' Stud framework with one layer of 15mm Gyproc FireLine on each side

Detail	System	Allowable deflection	Limiting height (mm) at stated air pressure (N/m²) 200	240	300	360	400	480	500	600	650	System reference
1	ShaftWall	L/125	5200	4900	4600	4300	4100	4000	3800	3600	3500	A306003/023
		L/240	4500	4200	3900	3700	3500	3400	3300	3100	3000	
		L/360	3900	3700	3400	3200	3100	3000	2900	2700	2600	
2	ShaftWall	L/125	5200	4900	4600	4300	4100	4000	3800	3600	3500	Based on
		L/240	4500	4200	3900	3700	3500	3400	3300	3100	3000	A306003/023
		L/360	3900	3700	3400	3200	3100	3000	2900	2700	2600	
3	ShaftWall	L/125	8400	7900	7300	6900	6600	6400	6200	5800	5600	A306006/025
		L/240	6700	6300	5900	5500	5300	5100	5000	4700	4500	
		L/360	5600	5300	4900	4600	4500	4300	4100	3900	3800	
4	ShaftWall	L/125	9900	9300	8600	8100	7800	7500	7200	6800	6600	A306009/028
		L/240	7900	7400	6900	6500	6300	6000	5800	5500	5300	
		L/360	6900	6500	6000	5700	5500	5300	5100	4800	4700	
5	StairWall	L/125	5300	5000	4700	4400	4200	4100	3900	3700	3600	Based on
		L/240	4400	4100	3800	3600	3500	3300	3200	3000	2900	A306046/048
		L/360	3900	3600	3400	3200	3100	2900	2800	2700	2600	
6	StairWall	L/125	5400	5000	4700	4400	4200	4100	3900	3700	3600	A306047/049
		L/240	4400	4100	3800	3600	3500	3300	3200	3000	2900	
		L/360	3900	3600	3400	3200	3100	2900	2800	2700	2600	

Table gives the limiting heights for ShaftWall and StairWall systems when subjected to air pressures ranging from 200N/m² through to 650N/m² and at three allowable deflection levels - L/125, L/240, L/360. For reference, partition heights are normally quoted within the British Gypsum White Book for air pressures of 200N/m² at an allowable deflection of L/240.

When the fire performance of ShaftWall is specified in terms of EN 1364-1: 1999, then the maximum height cannot exceed that given in the relevant White Book table, irrespective of air pressure or allowable deflection.

NB For heights between 4,200mm and 8,000mm Gypframe Deep Flange Floor and Ceiling Channel (DC) should be used at the head and base. For heights in excess of 8,000mm Gypframe Extra Deep Flange Floor and Ceiling Channel (EDC) should be used at the head and base.

Design

Planning - key factors

The position of services should be pre-determined and their installation planned into the frame erection stage. If a plastered finish is specified, the thickness of the door or glazing frame must allow for the thickness of the plaster finish. Timber sole plates should be considered where the floor is uneven.

▶ Refer to 2.5 – Service installations.

It is important that a good standard of control is exercised on site to ensure that the adoption of dry lining techniques at such an early stage of construction is fully integrated into the planning and site progress. If the building envelope is left unsealed while **ShaftWall** or **StairWall** is under construction, Gyproc FireLine MR or Gyproc DuraLine MR should be used for the lining. The position of services should be pre-determined and their installation planned into the frame erection stage.

All penetrations will need to be adequately fire-stopped.

Limiting heights at different air pressures

The maximum heights quoted in the performance tables are based on a limiting deflection of L/240 at 200Pa, or by the fire state field of application. In practice, deflection from L/125 to L/360 may be allowed and pressure conditions between 200 and 650N/m^2 may be encountered. These variations will affect the maximum wall height. Refer to **Table 4** or contact the British Gypsum Drywall Academy Advice Centre for further guidance.

Connection to the structure

Structural steelwork and its associated connections often result in complex junctions around shafts. If **ShaftWall** or **StairWall** is built on the same line as the beamwork framing the shaft, problems frequently arise in trying to seal the wall up to the steelwork. It is recommended that, wherever possible, the wall should be located to one side of the beams and fixed floor to soffit.

Fixing the floor track

The floor track must have continuous support along its full length in order to maintain specified performance levels. If continuous support is not provided by the structure, e.g. **Z** section running transverse to a steel beam, the designer should detail the installation of a rigid non-combustible material between the **Z** section. In situations where the floor channel is fixed to diagonal structural steel, the studs should be accurately scribed to the rake of the channel to maintain the full bearing surface.

Fixing to metal decking

Where **ShaftWall** or **StairWall** is to be located transverse to the profiles of the decking, all slots or perforations above the head track should be sealed using a proprietary fire barrier or fire spray. Fire-stopping material can be applied prior to the head channel being positioned providing that any surplus is removed flush with the steel decking.

Fixing to fire-sprayed and stone mineral wool protected structural steel

If it should be necessary to build the wall on the line of steel beams, then a method must be used to minimise the disruption of the fire protection. **Z** section, with a depth equal to the thickness of the fire protection being applied, should be fixed to the beam at maximum 600mm centres prior to application of the fire protection. The dimensions of the **Z** section should be determined by the designer, but as a guide should not be less than 2mm gauge steel. The applied fire protection incorporating the **Z** section should then provide a continuous fire-stopped support above the head channel of the **ShaftWall** or **StairWall** when this is secured into position (see **Construction detail - 8**). The head channel should be securely fixed to each **Z** section using two Gyproc Wafer Head Jack-Point Screws. Where it is necessary to fix **Z** sections to previously fire protected beams, making good above the 'J' channel and around the **Z** sections is essential.

Fixing to structural steel encasements

Where **ShaftWall** abuts a column or beam encasement, the framing will generally require fixing to the structural steelwork.

Where **ShaftWall** abuts the web of the steelwork a **Z** section can be located to provide a fixing point level with the flanges of the steelwork. With **FireCase** encasements it may be possible to fix directly to the board cladding subject to fire resistance and loading criteria. In all situations contact the British Gypsum Drywall Academy Advice Centre for guidance.

Off-set fixing

Where **ShaftWall** is off the line of the steelwork or supporting structure, it can be cantilevered back using **Z** section or flat steel plate as determined by the designer. These will require separate fire protection to maintain the fire performance of the system.

Wall positioned adjacent to steel beams

Where **ShaftWall** abuts the floor decking adjacent to a steel beam, provision will be required to maintain fire protection of the composite structure e.g. filling voids at head of partition with suitable fire stopping materials.

Airshafts and service ducts

The use of pressure conditions in various types of shaft / duct requires that the boards should be sealed into the framing members using Gyproc Sealant in addition to the normal sealing of the framing to adjoining structures. It is essential that these areas are identified at a very early stage of the contract and that other trades are instructed to recognise the need for application of sealant and its replacement if subsequently damaged or removed.

In order that the integrity of the pressurised system can be maintained, Gyproc Sealant should be specified for all board-to-metal applications, and the sealing of Gyproc CoreBoard to the framing (see **Construction details - 1 and 18-20**).

Horizontal ShaftWall

ShaftWall can be specified for horizontal applications as a free-spanning membrane with no support from the soffit. The membrane can be constructed entirely from below and can achieve spans up to 5100mm and fire resistance up to 120 minutes. Typical application is in fire escape corridors.

▶ Please refer to **2 - Basic principles of system design** for general guidance.

Where the Gypframe "' Stud framing is fixed to a metal stud partition forming the corridor walls, Gypframe 99 FC 50 Fixing Channel should be installed to provide a ground for fixing at reduced centres, or alternatively "' Stud centres can be closed down. Contact the British Gypsum Drywall Academy Advice Centre for guidance.

Deflection heads

Deflection heads, by definition, must be able to move and, therefore, achieving an airtight seal is difficult. Inevitably, this will have a detrimental effect on the acoustic performance of any wall which incorporates deflection at the head. In most cases, a suspended ceiling will assist in minimising loss of performance. Standard head details are shown in **Construction details - 10-18**. Note that Gyproc FireStrip must be applied as a continuous seal where indicated in order to maintain fire performance. Also, board fixings must not be inserted above the uppermost line depicted by the red arrow in each drawing. Designs incorporating Gypframe Retaining Clips are **not suitable** for live loads. Where greater deflection needs to be accommodated contact the British Gypsum Drywall Academy Advice Centre.

Control joints

These may need to be considered in conditions where excessive movement is likely to occur, or to coincide with constructional expansion joints. In order that the deflection criteria can be maintained throughout the building, it is necessary to introduce horizontal movement joints in the lining where this would normally be required to extend through the height of the building, e.g. stairwells.

The horizontal movement joint can be accommodated adjacent to the floor slab (see **Construction detail - 9**).

Doors

In the case of both normal access doors and lift doors, the door and frame assembly must have been shown by a fire resistance test to achieve the required standard of performance in this form of construction.

Lift doors must be substantiated in conjunction with **ShaftWall** complete with their framing members and transom panels. In order to achieve a satisfactory level of compatibility, a suitable starter channel should be mechanically fixed to the door frame at 300mm centres (see **Construction detail - 23**).

Access for maintenance

For access doors, openings should be framed to avoid impairing the structural or fire resistant properties of **ShaftWall**. In order to provide an opening ready to receive a door set, the jambs to storey height should be capped with Gypframe 'J' Channel incorporating a plasterboard packer. A preformed spandrel panel assembled between starter channels (see **Construction detail - 22**), should be inserted between jambs and engaged into the head channel, retaining the 15mm gap for deflection at the head. Support is provided by a 'J' Channel transom. The door frame is secured to both "' Stud and 'J' Channel jambs and also to the transom member (see **Construction detail - 24**).

A range of Gyproc Profilex Access Panels providing fire integrity is available from Artex-Rawlplug.

Services

Penetrations

Penetrations of fire resistant constructions for services need careful consideration to ensure that the integrity of the element is not impaired and also that the services themselves do not act as the mechanism of fire spread.

▶ Refer to 2.5 – Service installations.

Independent support

When designing for the installation of services such as fire dampers and associated ductwork through a GypWall partition, consideration should be given to the size and weight of the damper - this will determine whether it can be supported directly from the partition or needs to be independently supported from the structure (see **Construction detail - 21**).

▶ Refer to 2.5 – Service installations.

Opening bridging studs

Openings should be constructed using channels for the trimming members. The web of the channel should be rebated to allow the flanges to oversail the stud. The flanges are secured with two fixings. Channels are cut and inserted to maintain the 25mm gap surround and fixed to the trimming channels (see **Construction detail - 20**).

Opening between studs

The opening is constructed using channels for the trimming members. The web should be rebated and the flanges allowed to oversail the studs. The stud is secured with two fixings. Channels are cut and inserted with the webs folded to provide fixings. A plasterboard packer is inserted adjacent to the stud.

Electrical services

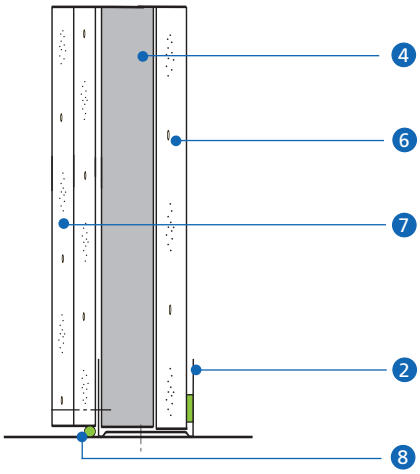
The positions for light switches and other electrical outlets should be predetermined in order that provision can be made for support, and also for the fire integrity of the system. Gypframe 99 FC 50 Fixing Channel should be cut to bridge adjoining studs, with the edges flattened to permit fixing. The fixing channel should be backed with stone mineral wool. Gyproc FireLine linings should be cut to allow a close fitting entry of the switch box which can be secured to the fixing channel (see **Construction detail - 25**). Back switch boxes with stone mineral wool to maintain fire integrity.

Board finishing

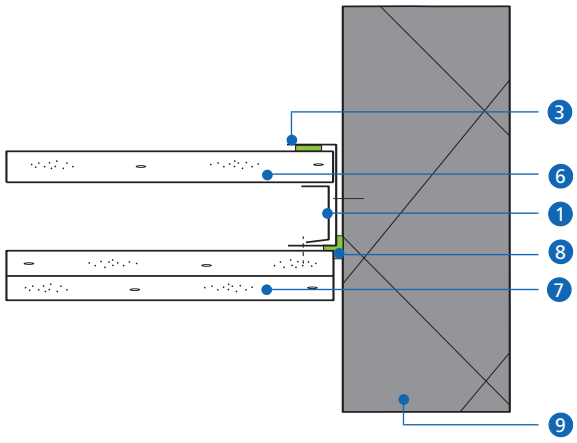
▶ Refer to 10 – Finishing systems and decorative effects.

Construction details

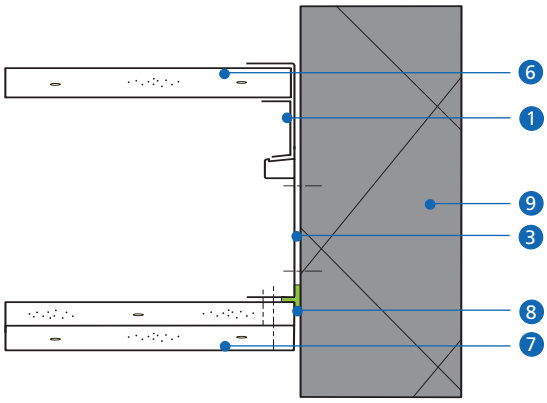
1 Base detail (Gyproc CoreBoard only requires sealing into channel for pressurised system).



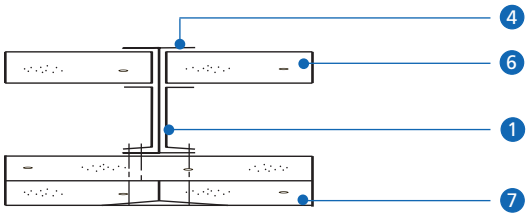
2 Junction with other elements (pressurised system).



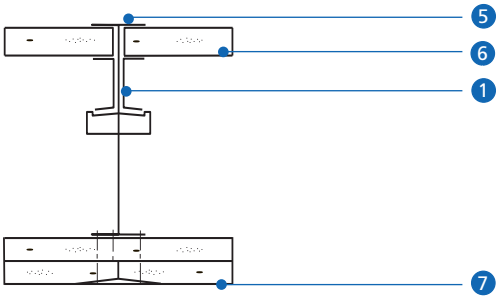
3 Junction with other elements (146mm framework showing Gypframe Tabbed Starter Channel).



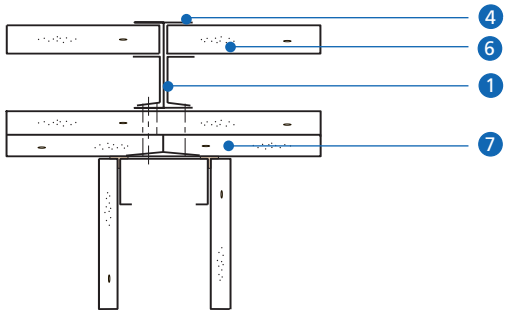
4 Intermediate stud (typical).



5 Intermediate stud (146mm framework showing Gypframe Tabbed 'I' Stud).



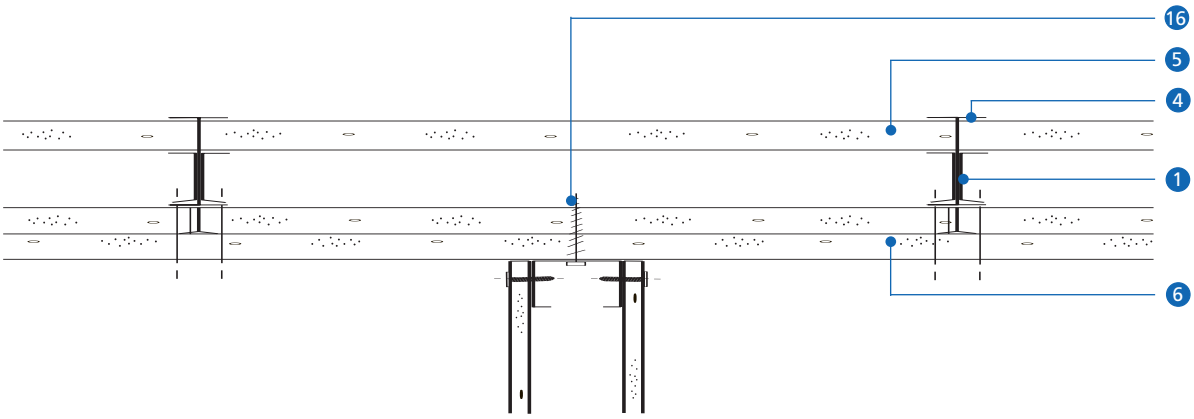
6 Partition junction (on-stud).



1. Gypframe Retaining Channel
2. Gypframe Floor & Ceiling Channel
3. Gypframe Starter Channel
4. Gypframe 'I' Stud
5. Gypframe Tabbed 'I' Stud
6. Gyproc CoreBoard
7. Gyproc FireLine / Gyproc DuraLine linings
8. Gyproc Sealant
9. Structure

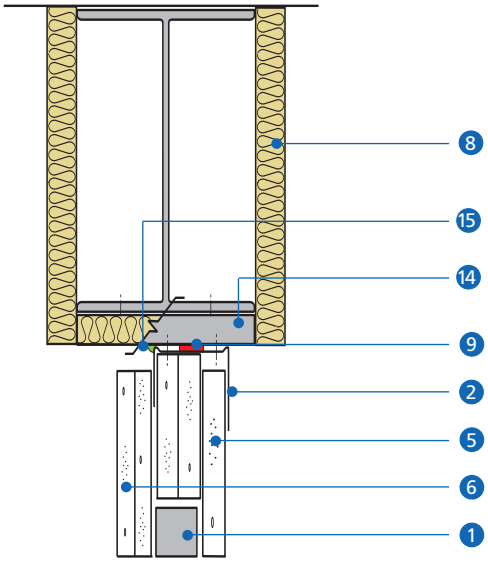
NB Gypframe 60mm 'I' Stud framework and double layer linings are generally shown for the purposes of illustration.

7 Retro-fit partition junction (off-stud, fixed with Rawl metal self-drive fixing)

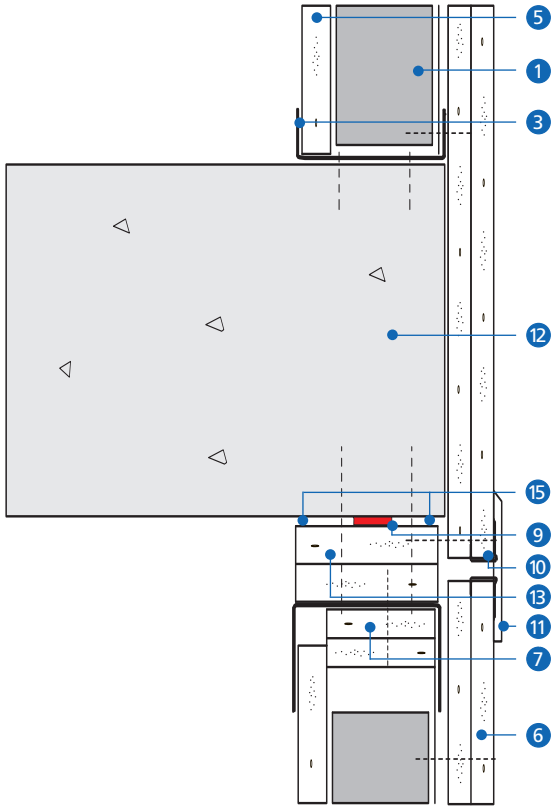


Connection to the structure

8 Fixing head channel to Z section at underside of beams.



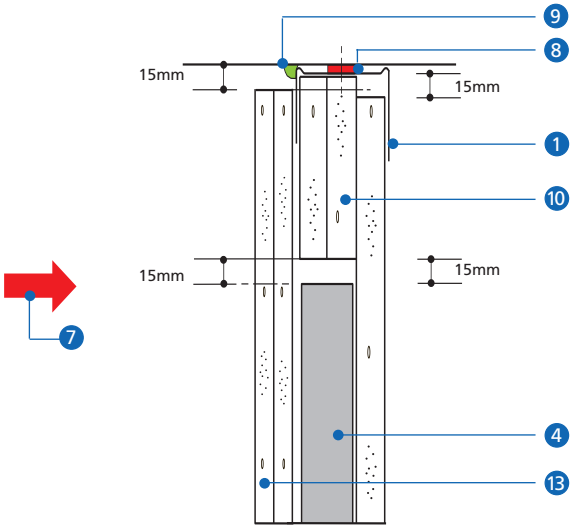
9 Movement joint at floor slab junction where lining boards continue.



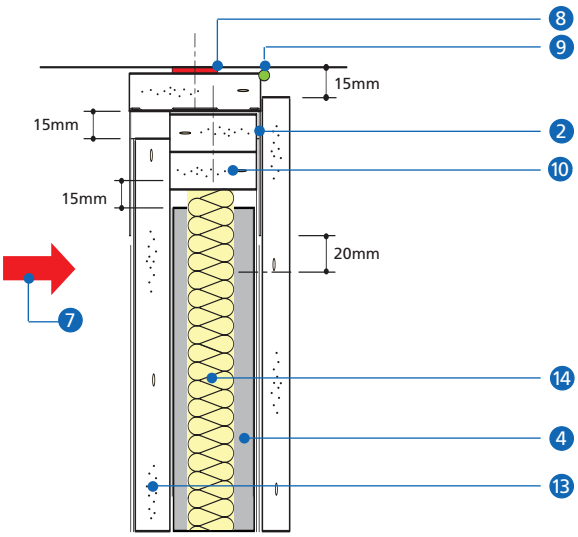
1 Gypframe Retaining Channel
2 Gypframe 'J' Channel
3 Gypframe Floor & Ceiling Channel
4 Gypframe 'I' Stud
5 Gyproc CoreBoard
6 Gyproc FireLine / Gyproc DuraLine linings
7 Plasterboard fire stops
8 Beam encasement
9 Gyproc FireStrip
10 Gyproc Edge Bead - if no cover strip is used
11 Cover strip (by others)
12 Structure
13 Glasroc FireCase s as dropped soffit
14 Z section
15 Gyproc Sealant
16 Rawl metal self-drive fixing

Head details incorporating 15mm downward deflection

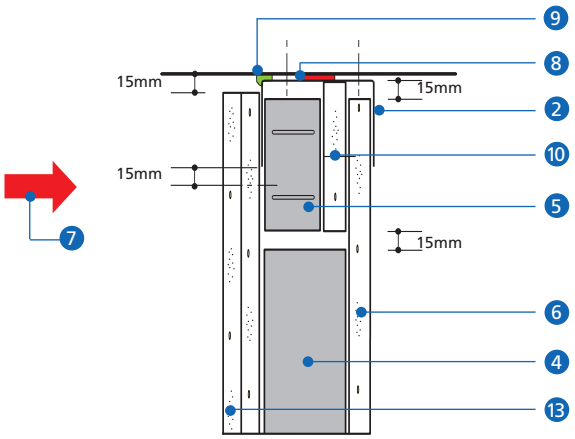
10 60mm framework (live loads).



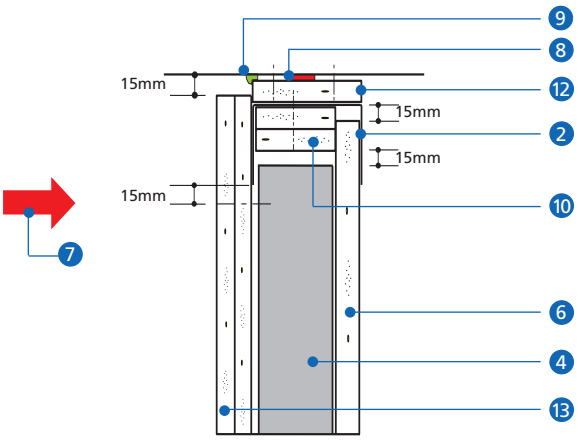
11 70mm framework (live loads).



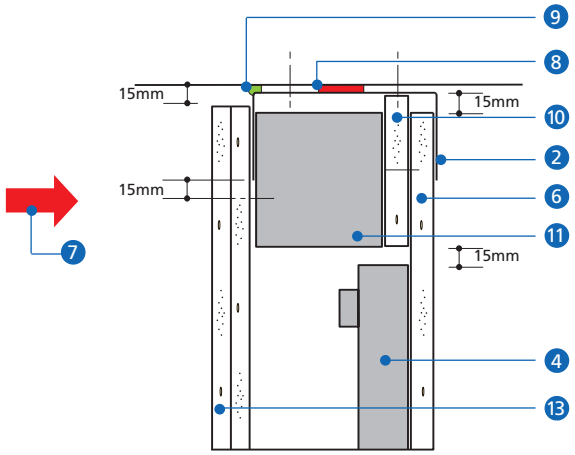
12 92mm framework (not suitable for live loads).



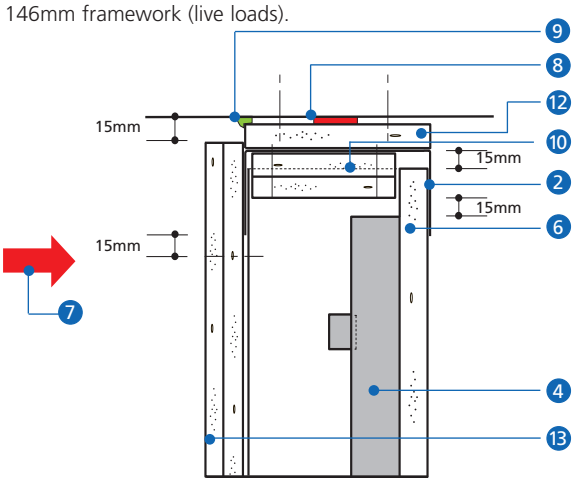
13 92mm framework (live loads).



14 146mm framework (not suitable for live loads).



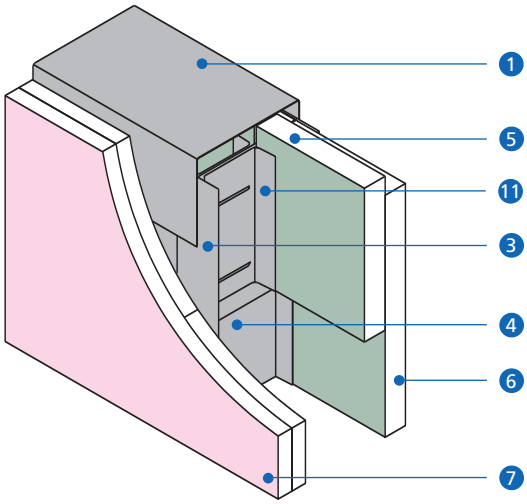
15 146mm framework (live loads).



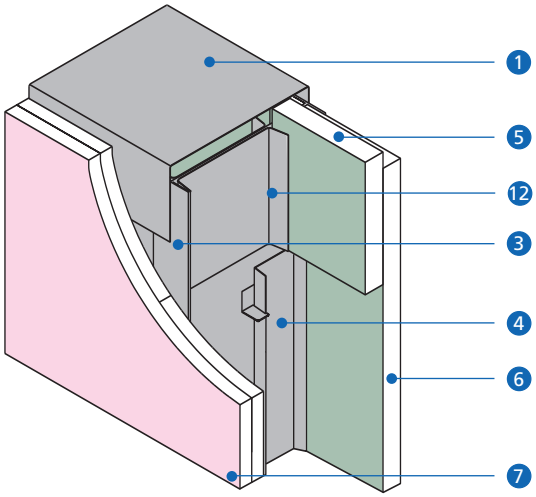
1. Gypframe 'J' Channel
2. Gypframe Extra Deep Flange Floor & Ceiling Channel (EDC)
3. Gypframe 'I' Stud
4. Gypframe Retaining Channel
5. Gypframe G108 Retaining Clip
6. Gyproc CoreBoard
7. ➡ Upper line of board fixing into Gypframe 'I' Stud
8. Gyproc FireStrip
9. Gyproc Sealant
10. Gyproc CoreBoard fire stop (cut on site)
11. Gypframe G109 Retaining Clip
12. Gyproc CoreBoard as dropped soffit
13. Gyproc FireLine / Gyproc DuraLine linings
14. Isover insulation

Head details with Retaining Clips

16 Isometric of head detail incorporating Gypframe G108 Retaining Clip.

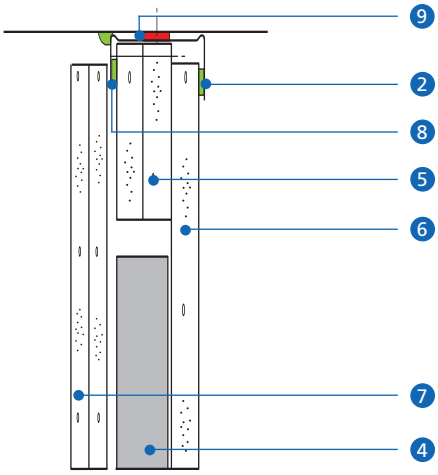


17 Isometric of head detail incorporating Gypframe G109 Retaining Clip.

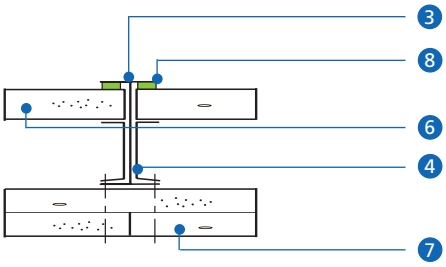


Sealing air shafts and service ducts

18 Sealing at head (pressurised system).



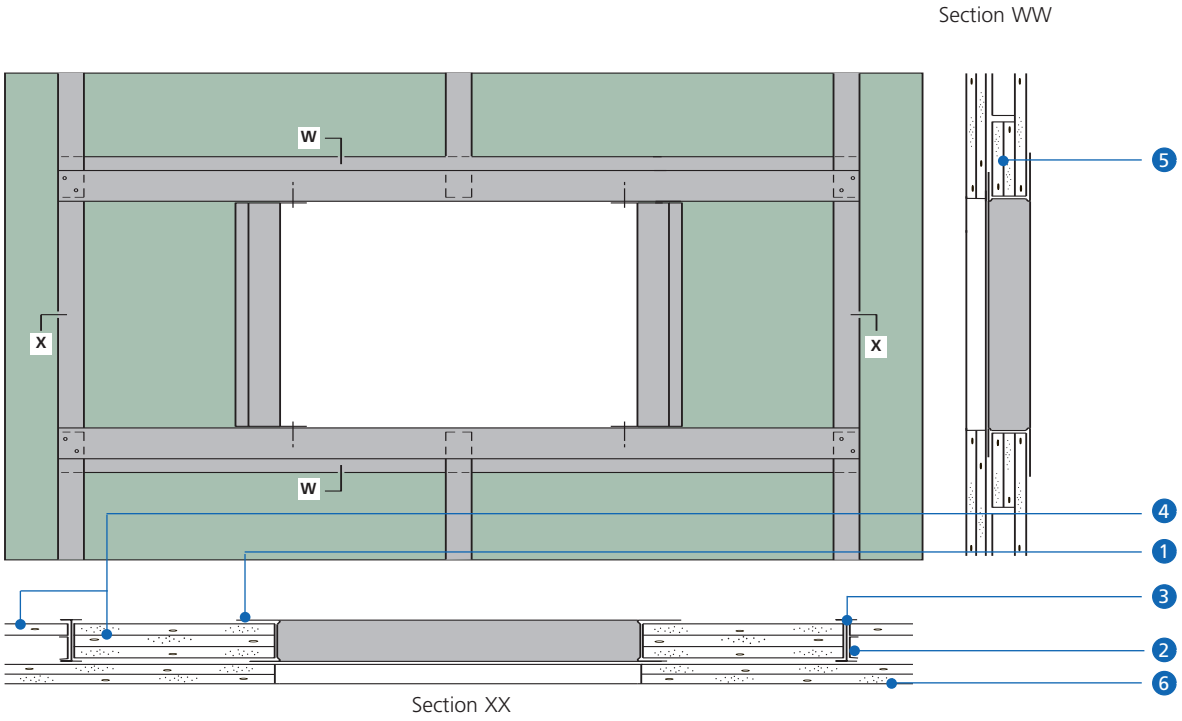
19 Sealing of Gyproc CoreBoards to Gypframe 'I' Stud (pressurised system).



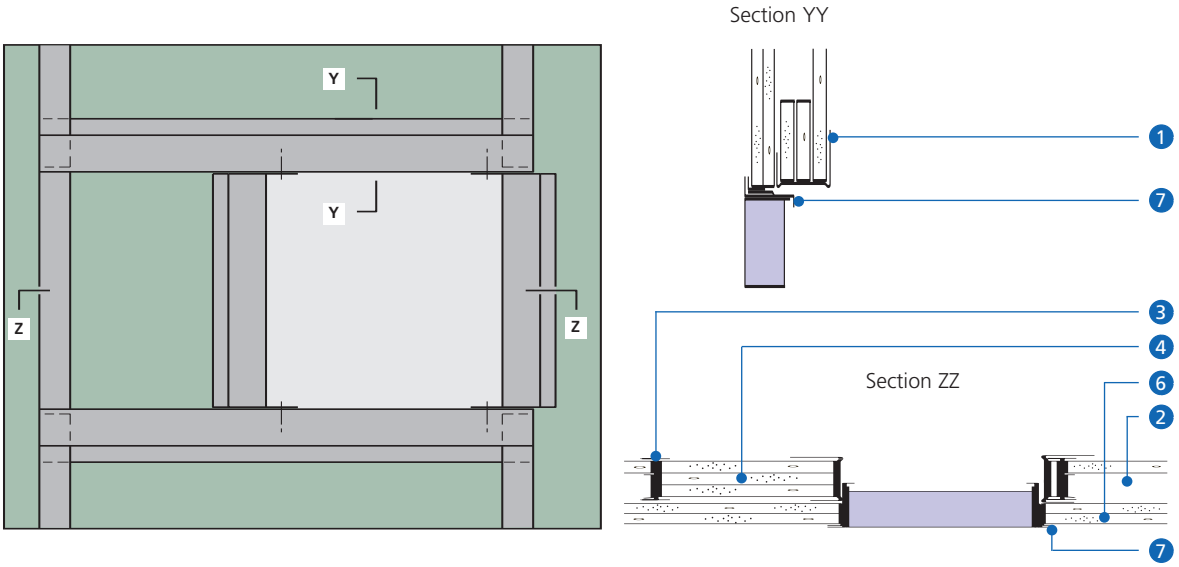
1. Gypframe Extra Deep Flange Floor & Ceiling Channel (EDC)
2. Gypframe 'J' Channel
3. Gypframe 'I' Stud
4. Gypframe Retaining Channel
5. Gyproc CoreBoard fire stop (cut on site)
6. Gyproc CoreBoard
7. Gyproc FireLine / Gyproc DuraLine linings
8. Gyproc Sealant
9. Gyproc FireStrip
10. Gypframe Starter Channel
11. Gypframe G108 Retaining Clip
12. Gypframe G109 Retaining Clip

Openings

20 a) Opening bridging studs

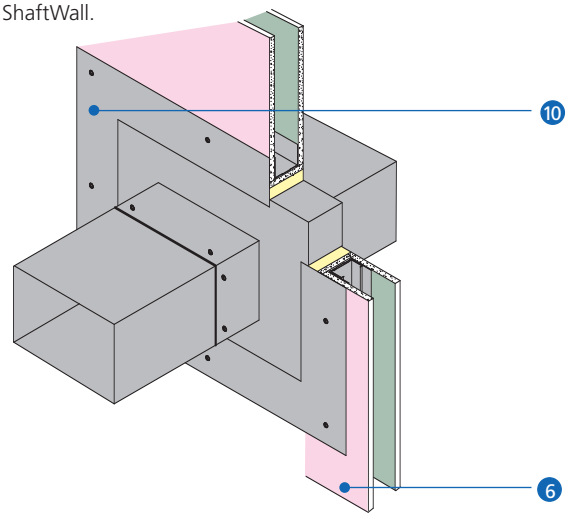


20 b) Opening between studs

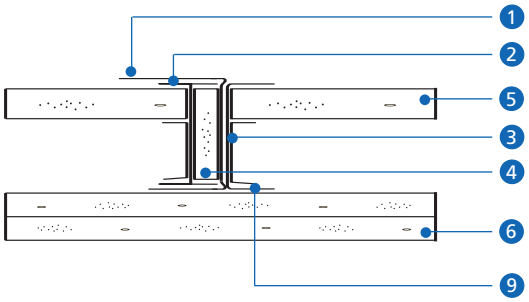


1. Gypframe 'J' Channel (to frame the opening)
2. Gypframe Retaining Channel
3. Gypframe 'I' Studs
4. Gyproc CoreBoard
5. Plasterboard fire stops (cut on site)
6. Gyproc FireLine / Gyproc DuraLine lining
7. Door / panel frame (by others)

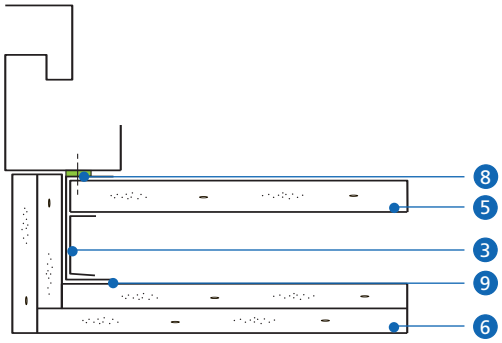
21 Fire tested construction, the damper is supported by the ShaftWall.



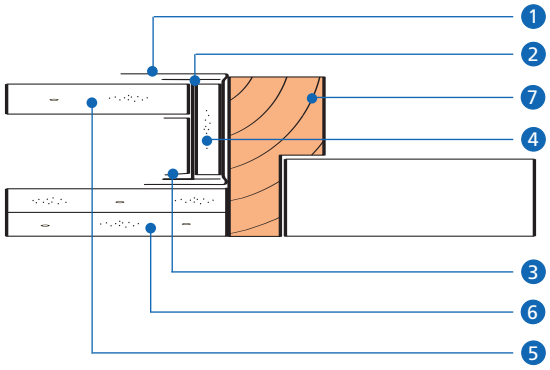
22 Access door - spandrel panel detail



23 Lift door (Gypframe Starter Channel mechanically fixed to frame).



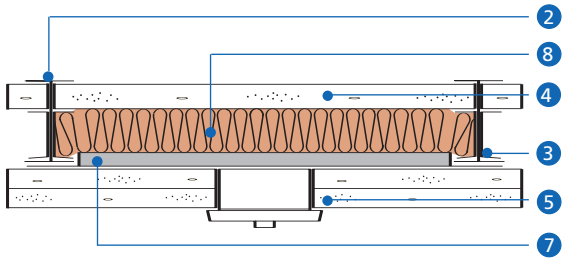
24 Access door jamb detail

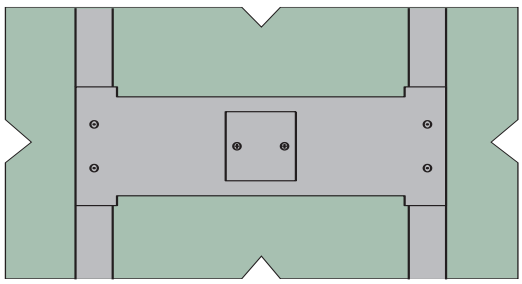


1. Gypframe 'J' Channel
2. Gypframe 'I' Stud
3. Gypframe Retaining Channel
4. Gyproc CoreBoard packer (cut on site)
5. Gyproc CoreBoard
6. Gyproc FireLine / Gyproc DuraLine linings
7. Door frame
8. Gyproc Sealant
9. Gypframe Starter Channel
10. Dampers (by others)

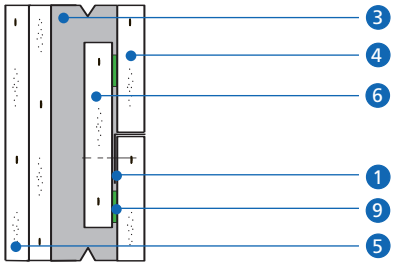
Fire-stopping

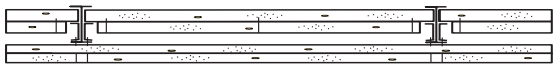
25 Socket outlet / switch box.





26 Fire-stopping to horizontal Gyproc CoreBoard joints.





1. Gypframe GA3 Steel Angle
2. Gypframe 'I' Stud
3. Gypframe Retaining Channel
4. Gyproc CoreBoard
5. Gyproc FireLine / Gyproc DuraLine lining
6. Gyproc CoreBoard strip (cut on site)
7. Gypframe 99 FC 50 Fixing Channel
8. Stone mineral wool
9. Gyproc Sealant