X-RAY SHIELDING WALLS AND CEILINGS

GIB X-Block® is a lead free plasterboard system used as an effective radiation barrier. Barium Sulphate in the **GIB X-Block** plasterboard and compound provide protection against X-rays. X-ray shielding requirements are usually specified as a thickness of lead. The lead equivalence of **GIB X-Block** systems depend on the energy level of the radiation. Tables 1 and 2 state the lead equivalence of **GIB X-Block** systems at various X-ray energy levels. Always seek advice from a Health Physicist to ensure that the requirements for radiation shielding are met.

This section contains radiation test results, shielding requirements, systems, installation instructions and construction details for **GIB X-Block** systems.

[REFER TO SECTION 3.3 FOR MORE INFORMATION ON X-RAY RESISTANCE].

RADIATION TEST RESULTS

TABLE 1

GIB X-BLOCK® MILLIMETERS OF LEAD EQUIVALENCE FOR DIFFERENT X-RAY ENERGIES

13mm GIB X-BLOCK® LEAD EQUIVALENCE (mm)				
X-ray energy (kVp)	1 layer	2 layers	3 layers	4 layers
80	0.8	1.6	2.4	*
100	0.75	1.5	2.25	2.9
125	0.5	1.0	1.4	1.9
150	0.4	0.7	1.0	1.3

Uncertainites ± 0.1mm
Source: National Radiation Laboratory Reports 24062003/1, 24062008, 20022009.
*Quote from Report 20022009: 'Determination of lead equivalence for 4 layers of X-Block Plasterboard at 80kVp was not feasible owing to the extremely low transmission of the X-rays through this sample thickness'.
kVp - kilovolts peak. Maximum voltage applied across the X-ray tube. The kVp controls the maximum energy of the emitted X-rays.

TABLE 2

GIB X-BLOCK® MASS OF LEAD EQUIVALENCE FOR DIFFERENT X-RAY ENERGIES

13mm GIB X-BLOCK® LEAD EQUIVALENCE (kg/m²)				
X-ray energy (kVp)	1 layer	2 layers	3 layers	4 layers
80	9.1	18.1	27.2	-
100	8.5	17.0	25.5	32.9
125	5.7	11.3	15.9	21.5
150	4.5	7.9	12.5	14.7

Source: Calculated from Table 1 using the density of lead (11340 kg/m³).

X-RAY RESISTANCE ENERGY LEVELS

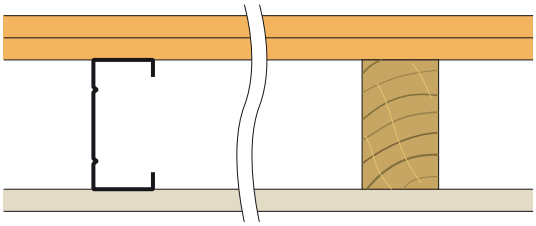
X-ray radiation is measured in kilovolts peak (kVp). Depending on the type of radiation equipment used in the room, diagnostic facilities will have different requirements for shielding:

- CT 120-140 kVp
- General radiographic rooms 60-90 kVp
- Dental 60-80 kVp
- Mammography 25-35 kVp

LXB1

WALL LINING: [SIDE 1] 2 layers of 13mm **GIB X-Block**
[SIDE 2] 1 layer of 13mm **MastaShield**

FRAME: Steel or timber studs at maximum 600mm centres



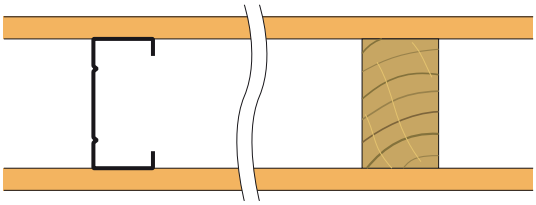
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Timber wall heights calculated using MGP10]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)			
	Stud Depth	Stud BMT / Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 Glasswool	65mm Polyester ISB3	
- / - / -	Steel 64	0.5	3.72	3.93	103	44 (38)	51 (42)	51 (42)	Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.01	4.16	109	42 (37)	46 (41)	-	
		45	4.14	4.31					

LXB2

WALL LINING: [SIDE 1] 1 layer of 13mm **GIB X-Block**
[SIDE 2] 1 layer of 13mm **GIB X-Block**

FRAME: Steel or timber studs at maximum 600mm centres



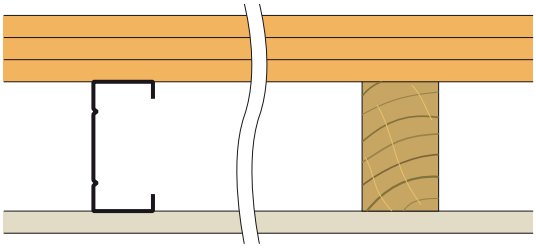
[Timber wall heights calculated using MGP10]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)			
	Stud Depth	Stud BMT / Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 Glasswool	65mm Polyester ISB3	
- / - / -	Steel 64	0.5	3.72	3.93	90	40 (35)	49 (40)	48 (40)	Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	96	38 (33)	42 (38)	-	
		45	4.70	4.84					

LXB3

WALL LINING: [SIDE 1] 3 layers of 13mm **GIB X-Block**
[SIDE 2] 1 layer of 13mm **MastaShield**

FRAME: Steel or timber studs at maximum 600mm centres



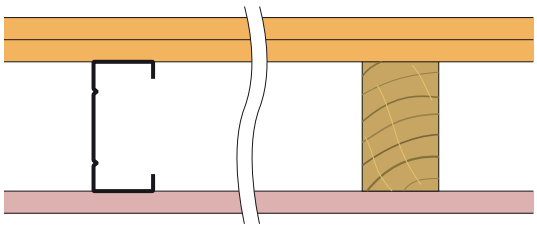
[13mm **MastaShield** can be substituted with 13mm **WaterShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Timber wall heights calculated using MGP10]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)			
	Stud Depth	Stud BMT / Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 Glasswool	65mm Polyester ISB3	
- / - / -	Steel 64	0.5	3.72	3.93	116	47 (41)	55 (45)	54 (45)	Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.01	4.16	124	45 (40)	49 (44)	-	
		45	4.14	4.31					

LXB5

WALL LINING: [SIDE 1] 2 layers of 13mm **GIB X-Block**
[SIDE 2] 1 layer of 13mm **FireShield**

FRAME: Steel or timber studs at maximum 600mm centres



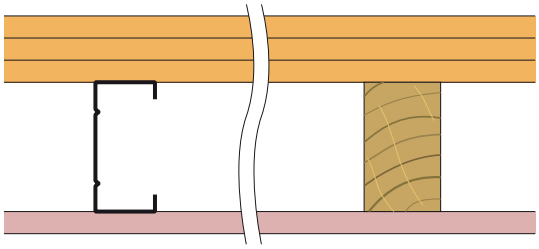
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Timber wall heights calculated using MGP10]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)			
	Stud Depth	Stud BMT / Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 Glasswool	65mm Polyester ISB3	
- /60/60 rated from both sides FAR 2320	Steel 64	0.5	3.72	3.93	103	45 (39)	52 (43)	52 (43)	Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	109	43 (37)	46 (41)	-	
		45	4.70	4.84					

LXB6

WALL LINING: [SIDE 1] 3 layers of 13mm **GIB X-Block**
[SIDE 2] 1 layer of 13mm **FireShield**

FRAME: Steel or timber studs at maximum 600mm centres



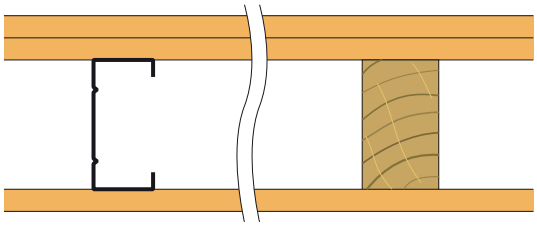
[13mm **FireShield** can be substituted with 13mm **MultiShield** or 13mm **ImpactShield** or 13mm **QuadShield**]
[Timber wall heights calculated using MGP10]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)			
	Stud Depth	Stud BMT / Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 Glasswool	65mm Polyester ISB3	
- /60/60 rated from both sides FAR 2320	Steel 64	0.5	3.72	3.93	116	47 (41)	55 (47)	55 (47)	Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	124	46 (40)	49 (45)	-	
		45	4.70	4.84					

LXB7

WALL LINING: [SIDE 1] 2 layers of 13mm **GIB X-Block**
[SIDE 2] 1 layer of 13mm **GIB X-Block**

FRAME: Steel or timber studs at maximum 600mm centres



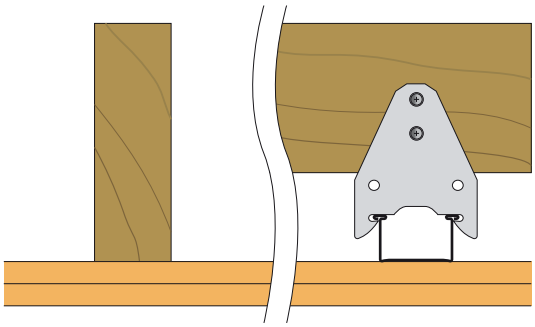
[Timber wall heights calculated using MGP10]

FRL	STUD SIZE (mm)		MAX HEIGHT UDL 0.25 kPa (m)		WIDTH (mm)	ACOUSTICS Rw (Rw + Ctr)			
	Stud Depth	Stud BMT / Stud Width	Non-Load Bearing Studs at 600mm	Non-Load Bearing Studs at 450mm		No Insulation	R1.5 Glasswool	65mm Polyester ISB3	
- /60/60 rated from both sides FAR 2320	Steel 64	0.5	3.72	3.93	103	44 (39)	53 (46)	53 (46)	Day Design 3094-4
		0.75	4.22	4.43					
	Timber 70	35	4.61	4.72	109	43 (38)	46 (42)	-	
		45	4.70	4.84					

LXB4

CEILING LINING: 2 layers of 13mm **GIB X-Block**

FRAME: [OPTION 1] Steel or timber ceiling joists
[OPTION 2] Steel or timber joists with with A-clips and furring channel



	MAX FRAMING CENTRES (mm)	ACOUSTICS Rw (Rw + Ctr)	
FRL **- / - / -**	600	35 (33)	Ceiling only Day Design 3094-4

GENERAL REQUIREMENTS

	NON-FIRE RATED	FIRE RATED
Install control joints in plasterboard walls at: › 12m maximum intervals › All control joints in the structure › Any change in the substrate material	✓	✓
Use **GIB X-Block** jointing compound: › In the gap between the sheets › To fill the recessed joints on every layer › As the bedding coat with paper tape and as the second coat for the face layer. For the finish coat use **MastaFinish** or **MastaLite**. › To fill any other gaps and to cover all face layer fastener heads. Never joint sheets with fire sealant [REFER TO SECTION 5].	✓	✓
Treat all penetrations as shown in the construction details to maintain radiation protection or use lead of the appropriate thickness.	✓	✓
Use approved fire rated penetration details. Fire penetrations may require fire collars or other devices to maintain fire performance.		✓
Pack any gaps between the top of the wall and the underside of the roof covering with mineral fibre or other suitable fire resisting material. This maintains the fire rating of the system. [REFER TO MINERAL FIBRE MANUFACTURERS SPECIFICATIONS FOR MINIMUM WIDTHS REQUIRED].		✓
Use fire sealant around perimeter, vermiculite plaster is not permitted.		✓

For acceptable modifications or variations to fire rated systems [REFER TO SECTION 3.3 FIRE RESISTANCE].

FRAMING

	NON-FIRE RATED	FIRE RATED
Framing members must be spaced at 600mm maximum centres.	✓	✓

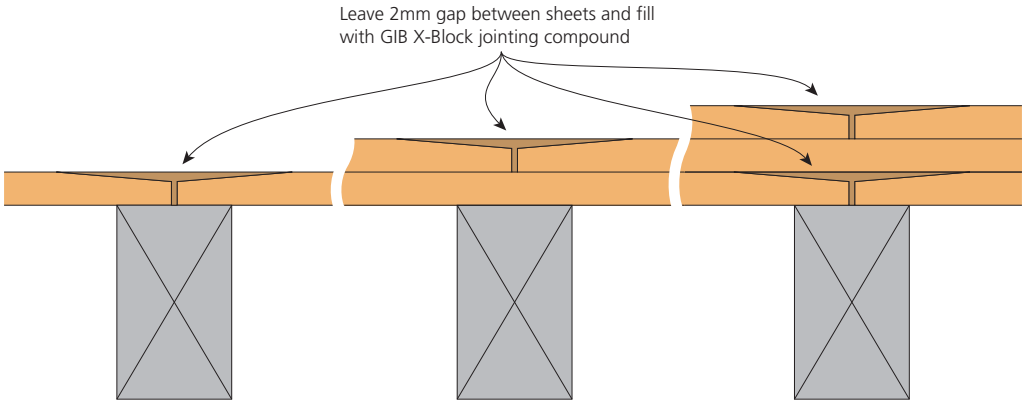
- Noggings are permitted to assist the fixing of services.
- Plumbing and electrical services must not protrude beyond the face of the stud

PLASTERBOARD LAYOUT

	NON-FIRE RATED	FIRE RATED
VERTICAL LAYOUT ONLY		
Sit **GIB X-Block** directly on the floor, leave no gap at the base of the sheet.	✓	✓
All recessed and butt joints must be backed by a framing member.	✓	✓
Leave a gap of 2mm between **GIB X-Block** sheets to allow **GIB X-Block** jointing compound to fill any gaps between and behind the sheets [FIGURE 1].	✓	✓
Vertical joints must be 200mm minimum from the edge of any opening such as windows and doorways to minimise cracking at the joints.	✓	✓
Stagger recessed edges by 600mm minimum between layers and on opposite sides of the wall.	✓	✓
Stagger butt joints by 600mm minimum on adjoining sheets, between layers and on opposite sides of the wall.	✓	✓

FIGURE 1

Completely filling all gaps and recessed joints



PLASTERBOARD FIXING

	NON-FIRE RATED	FIRE RATED
Drive screws to just below the sheet surface, taking care not to break the paper linerboard.	✓	✓
Do not fix plasterboard to steel more than 2mm BMT.	✓	✓
SCREW ONLY METHOD		
Use the Screw Only Method.	✓	✓

SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO STEEL

PLASTERBOARD THICKNESS	1ST LAYER	2ND LAYER	3RD LAYER
13mm	25mm – 6g S screw	40mm – 6g S screw	60mm – 6g S screw

For steel up to 0.8mm BMT use Type 'S' fine thread needle point screws.
For steel 0.8mm to 2.0mm BMT use Type 'S' fine thread drill point screws.

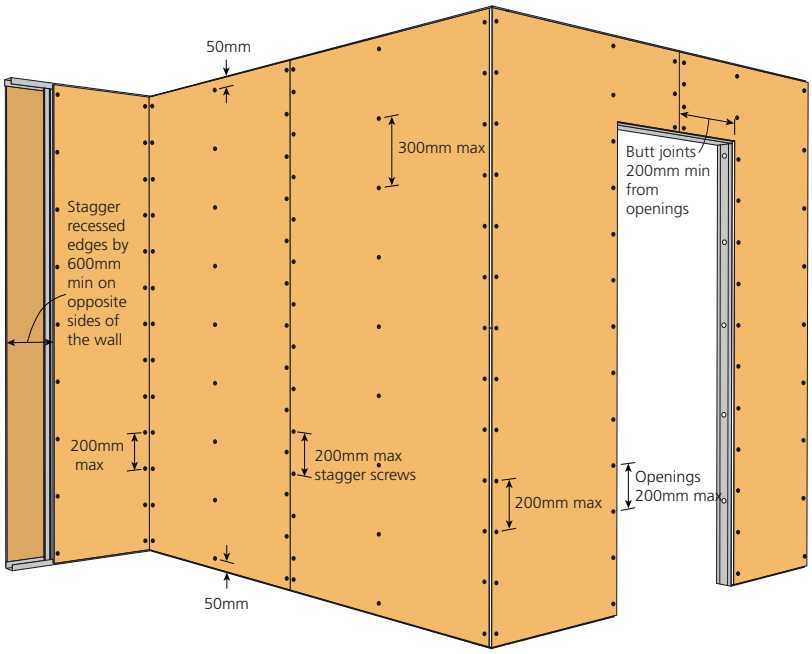
SCREW TYPE AND MINIMUM SIZE FOR THE INSTALLATION OF PLASTERBOARD TO SOFTWOOD TIMBER

PLASTERBOARD THICKNESS	1ST LAYER	2ND LAYER	3RD LAYER
13mm	30mm – 6g Type W screw	45mm - 6g W screw	65mm - 8g W screw

For timber use Type 'W' coarse thread needle point screws.

FIGURE 2

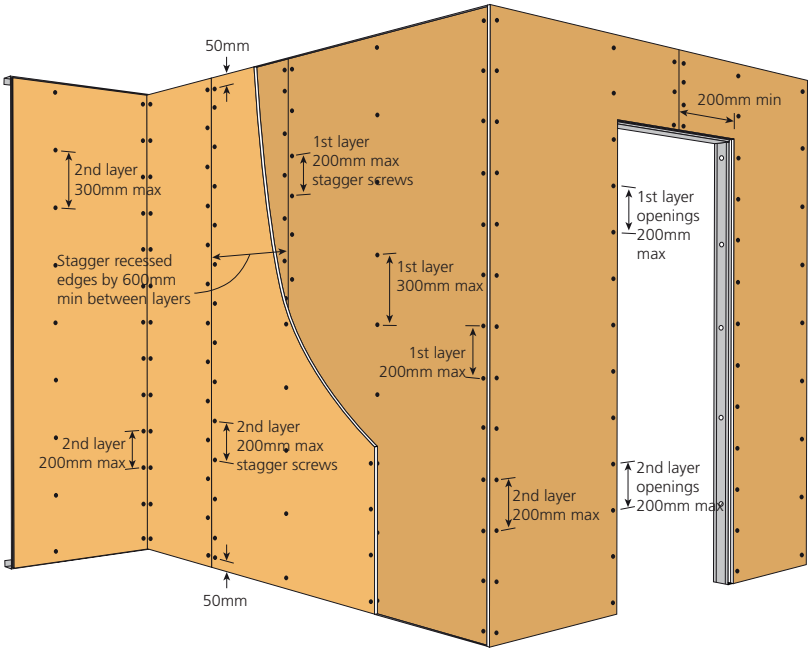
X-Block 1 layer - Vertical on Steel Studs
Screw Only Method



Fixing	SCREW ONLY METHOD
Sheet Layout	Vertical.
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	Fix at 300mm max centres.
Recessed Edges	Fix at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. Butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres.
Openings	Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS]
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 3

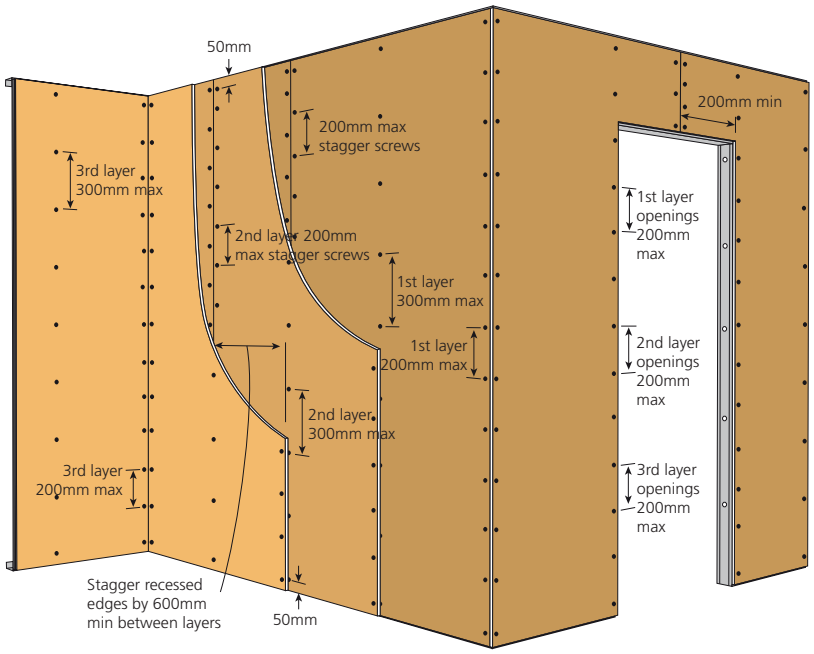
X-Block 2 layers - Vertical + Vertical on Steel Studs
Screw Only Method



Fixing	SCREW ONLY METHOD
Sheet Layout	1st layer: Vertical. 2nd layer: Vertical.
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st layer: Fix at 300mm max centres. 2nd layer: Fix at 300mm max centres.
Recessed Edges	1st and 2nd layers: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min between layers and on opposite sides of the wall. All recessed edges must be backed by a stud.
Butt Joints	1st and 2nd layers: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st layer: Fix at 200mm max centres. 2nd layer: Fix at 200mm max centres.
Openings	1st layer: Fix at 200mm max centres. 2nd layer: Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS]
Jointing 1st Layer	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 4

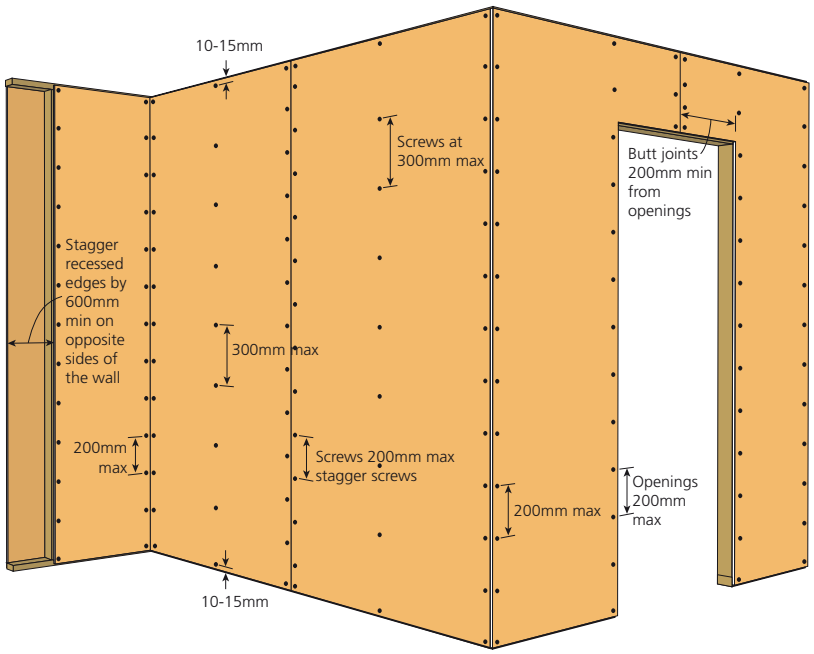
X-Block 3 layers - All Vertical on Steel Studs
Screw Only Method



Fixing	SCREW ONLY METHOD
Sheet Layout	1st, 2nd and 3rd layers: Vertical.
Perimeter	Perimeter screws 10-15mm from sheet edges except at top and bottom tracks. Plasterboard must not be fixed to top and bottom tracks.
Field	1st, 2nd and 3rd layers: Fix at 300mm max centres.
Recessed Edges	1st, 2nd and 3rd layers: Fix at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min between layers and on opposite sides of the wall. All recessed edges must be backed by a stud.
Butt Joints	1st, 2nd and 3rd layers: Fix at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st, 2nd and 3rd layers: Fix at 200mm max centres.
Openings	1st, 2nd and 3rd layers: Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS]
Jointing 1st and 2nd Layers	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 5

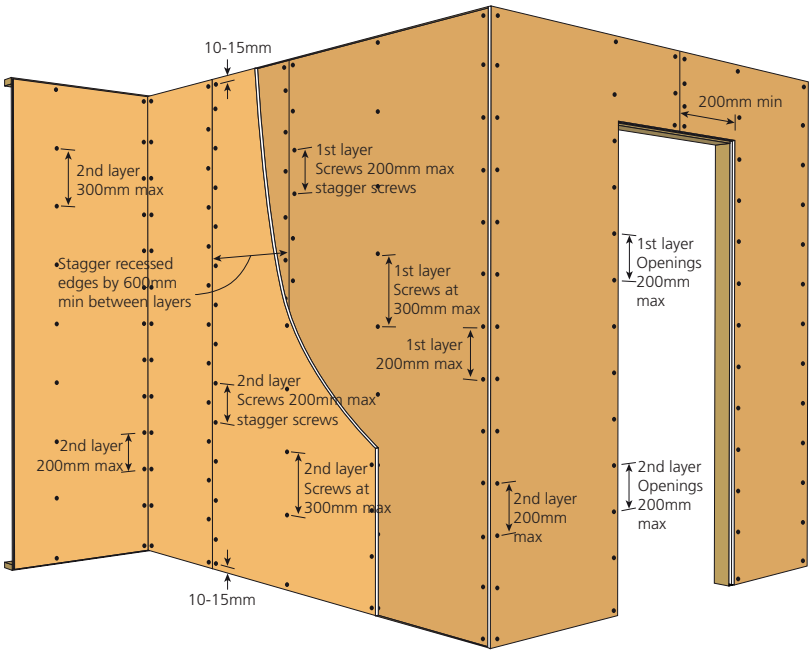
X-Block 1 layer - Vertical on Timber Studs
Screw Only Method



Fixing	SCREW ONLY METHOD
Sheet Layout	Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges.
Field	Fix screws at 300mm max centres.
Recessed Edges	Fix screws at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min on opposite sides of the wall. Recessed edges must be backed by a stud.
Butt Joints	Fix screws at 200mm max centres and stagger scerws. Stagger butt joints by 600mm min on adjoining sheets and on opposite sides of the wall. Butt joints must be backed by a nogging.
Internal and External Corners	Fix at 200mm max centres.
Openings	Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS].
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 6

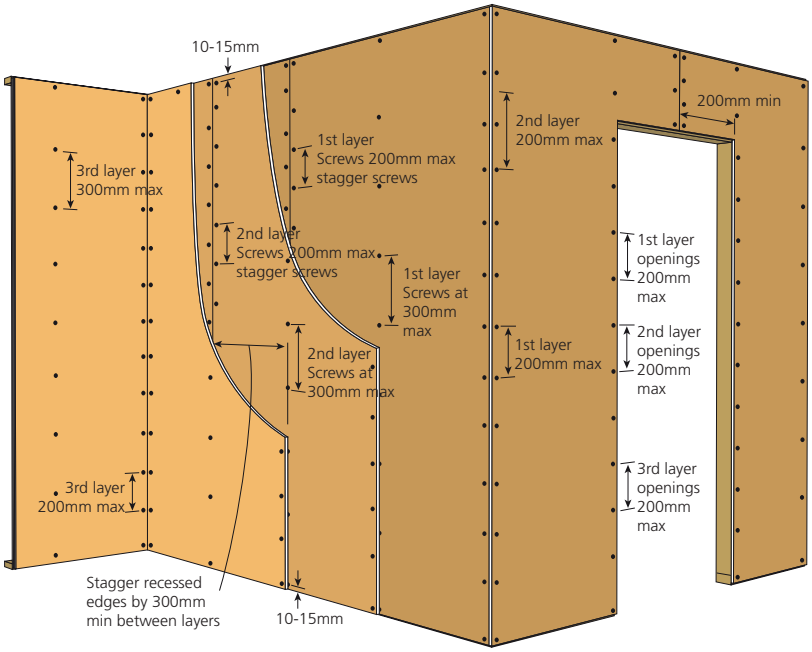
X-Block 2 layers - Vertical + Vertical on Timber Studs
Screw Only Method



Fixing	SCREW ONLY METHOD
Sheet Layout	1st layer: Vertical 2nd layer: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges.
Field	1st and 2nd layers: Fix screws at 300mm max centres.
Recessed Edges	1st and 2nd layers: Fix screws at 200mm max centres and stagger screws. Stagger recessed edges by 600mm min between layers, and on opposite sides of the wall. All recessed edges must be backed by a stud.
Butt Joints	1st and 2nd layers: Fix screws at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st layer: Fix at 200mm max centres. 2nd layer: Fix at 200mm max centres.
Openings	1st layer: Fix at 200mm max centres. 2nd layer: Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS].
Jointing 1st Layer	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 7

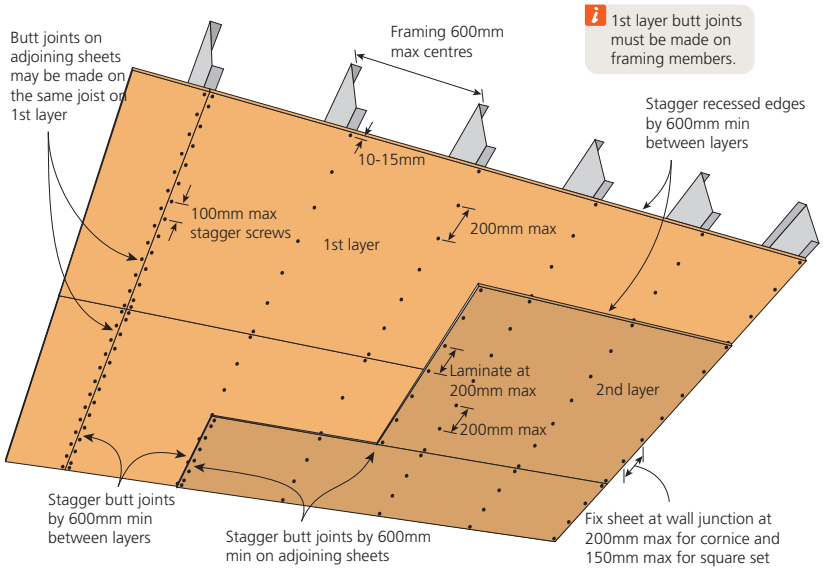
X-Block 3 layers - All Vertical on Timber Studs
Screw Only Method



Fixing	SCREW ONLY METHOD
Sheet Layout	1st, 2nd and 3rd layers: Vertical
Perimeter	Perimeter screws 10-15mm from sheet edges.
Field	1st, 2nd and 3rd layers: Fix screws at 300mm max centres.
Recessed Edges	1st, 2nd and 3rd layers: Fix screws at 200mm max centres and sagger screws. Stagger recessed edges by 600mm min between layers, and on opposite sides of the wall. All recessed edges must be back by a stud.
Butt Joints	1st, 2nd and 3rd layers: Fix screws at 200mm max centres and stagger screws. Stagger butt joints by 600mm min on adjoining sheets, between layers and on opposite sides of the wall. All butt joints must be backed by a nogging.
Internal and External Corners	1st, 2nd and 3rd layers: Fix at 200mm max centres.
Openings	1st, 2nd and 3rd layers: Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS].
Jointing 1st and 2nd Layers	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIGURE 8

X-Block 2 layers
Screw Only Method



Framing	TIMBER OR STEEL JOISTS OR STEEL FURRING CHANNEL
Fixing	Screw Only Method.
Perimeter	Perimeter screws 10-15mm from sheet edges.
Field	Fix at 200mm max centres.
Recessed Edges	Fix on each framing member. Stagger recessed edges by 600mm min between layers.
Butt joints on framing members	Fix at 100mm max centres and stagger screws. Butt joints on the 1st layer may be made on the same joist. Stagger butt joints by 600mm min between layers.
Floating butt joints on 2nd layer	Locate centrally between framing members and laminate to 1st layer at 200mm max centres. Stagger butt joints by 600mm min on adjoining sheets.
Wall Abutment	Cornice: Fix at 200mm max centres. Square Set: Fix at 150mm max centres.
Openings and Control Joints	Fix at 200mm max centres.
Fire Sealant	Use fire sealant around perimeter to maintain fire and acoustic integrity. [REFER TO CONSTRUCTION DETAILS]
Jointing 1st Layer	Completely fill recess joints and any gaps with GIB X-Block jointing compound. Paper tape is not required.
Jointing Face Layer	Use paper tape with two coats of GIB X-Block jointing compound. Fill any gaps with GIB X-Block jointing compound. Finish with a third coat of MastaFinish.

FIRE RATED AND NON-FIRE RATED
WALL JUNCTIONS, DOORS AND WINDOWS - PLAN VIEW
SYSTEMS LXB1 AND LXB5 ONLY

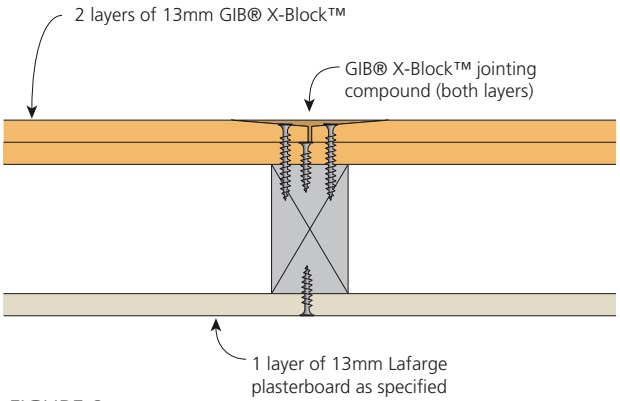


FIGURE 9
Typical section

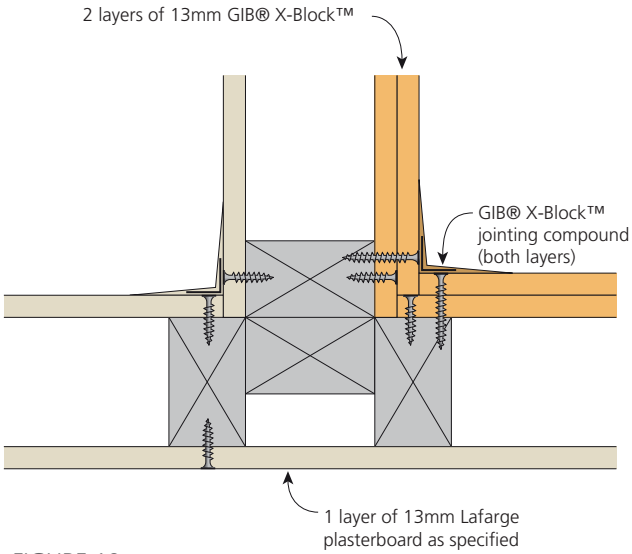


FIGURE 10
T junction

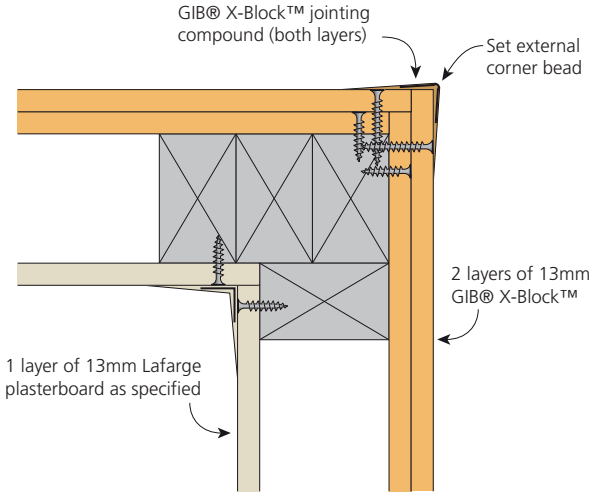


FIGURE 11
External corner

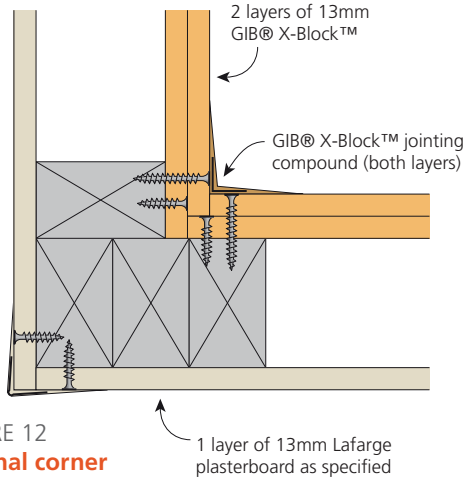


FIGURE 12
Internal corner

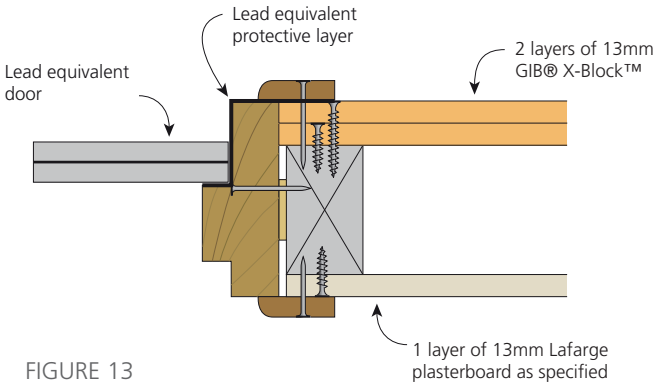


FIGURE 13
Door jamb

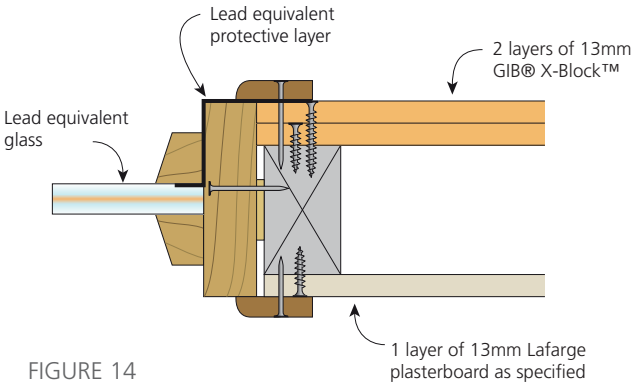


FIGURE 14
Window jamb

FIRE RATED AND NON-FIRE RATED PENETRATIONS
SYSTEMS LXB1 AND LXB5 ONLY

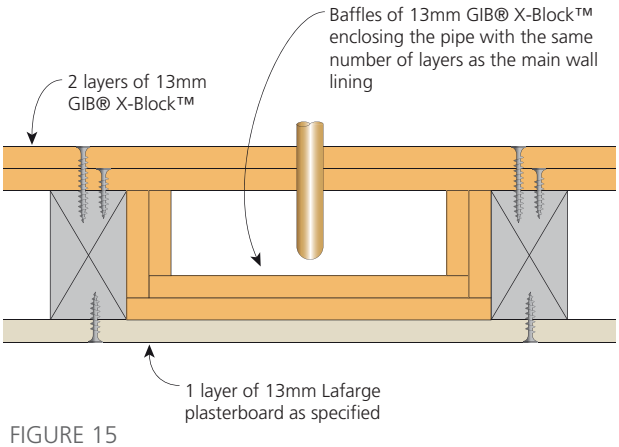


FIGURE 15
Pipe penetration - Plan view

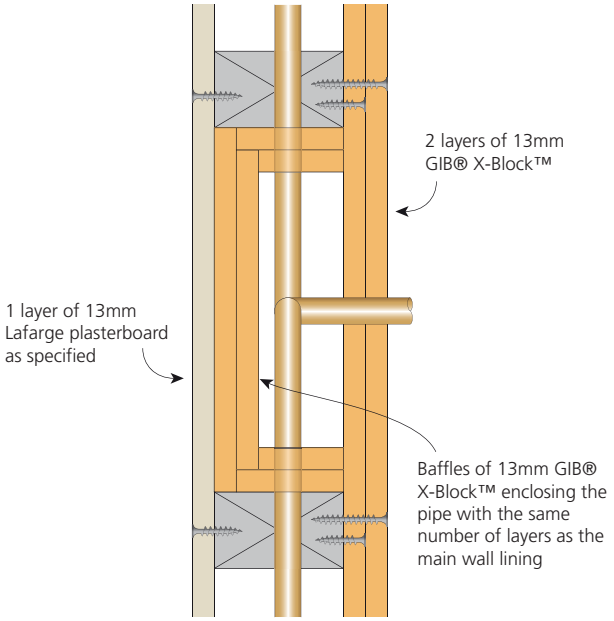


FIGURE 16
Pipe penetration - Elevation

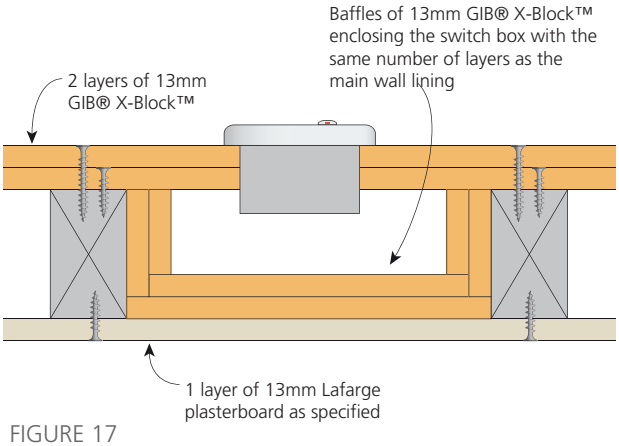


FIGURE 17
Switch boxes - Plan view

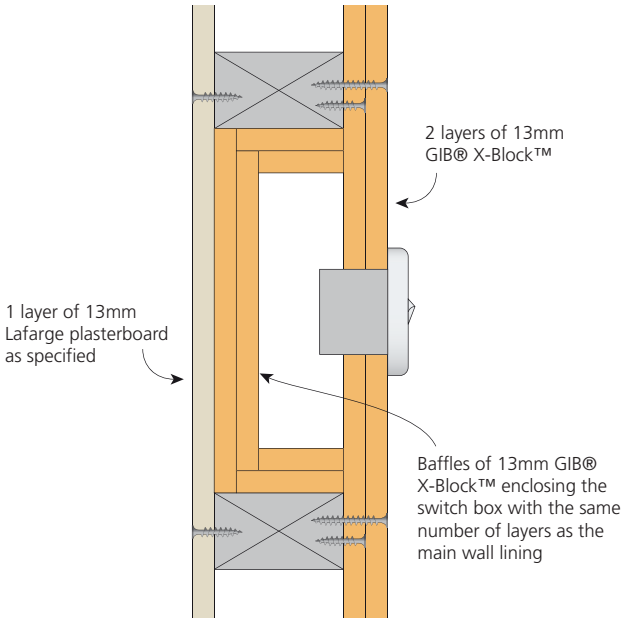


FIGURE 18
Switch boxes - Elevation

NON-FIRE RATED
WALL JUNCTIONS, DOORS AND WINDOWS - PLAN VIEW
SYSTEM LXB2 ONLY

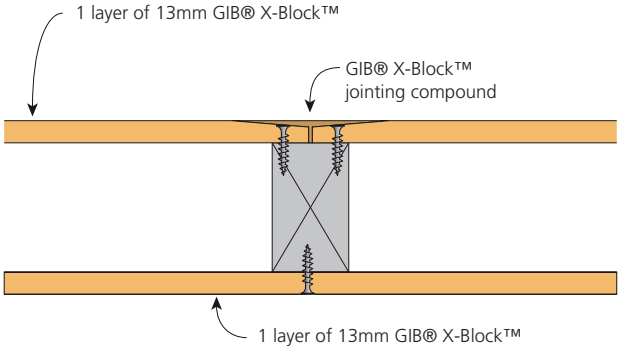


FIGURE 19
Typical section

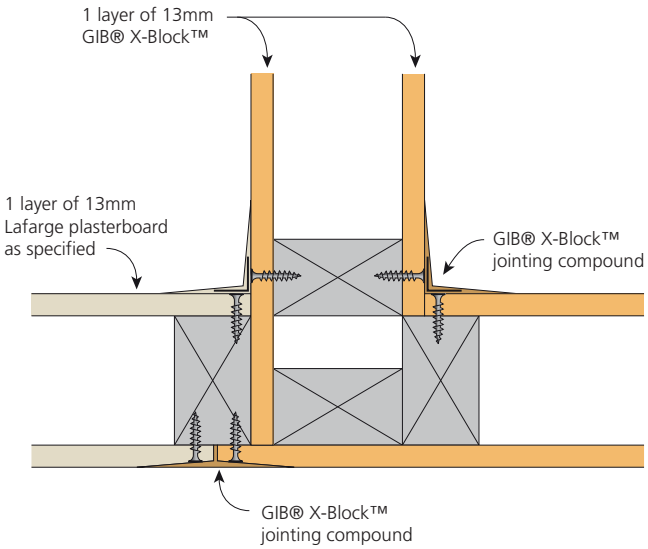


FIGURE 20
T junction

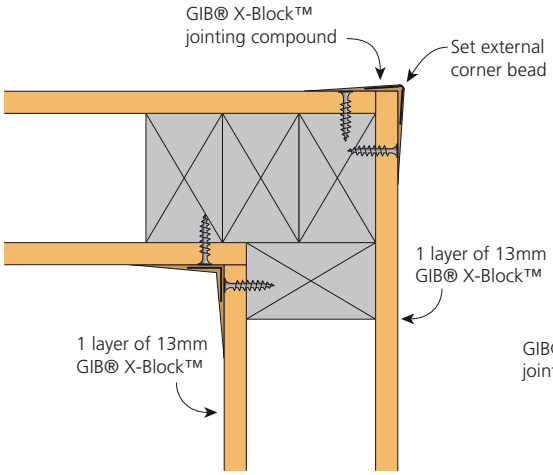


FIGURE 21
External corner

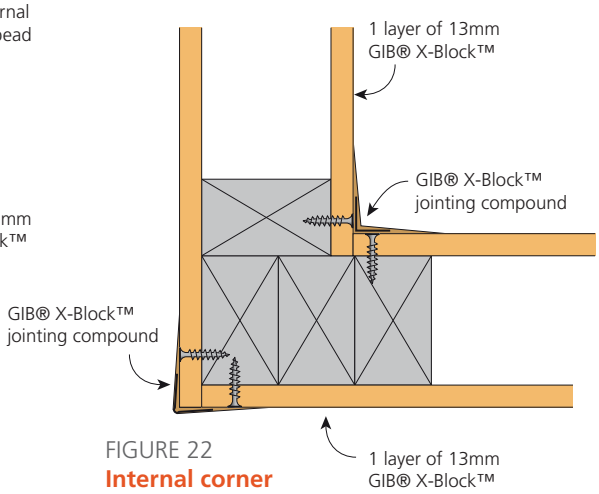


FIGURE 22
Internal corner

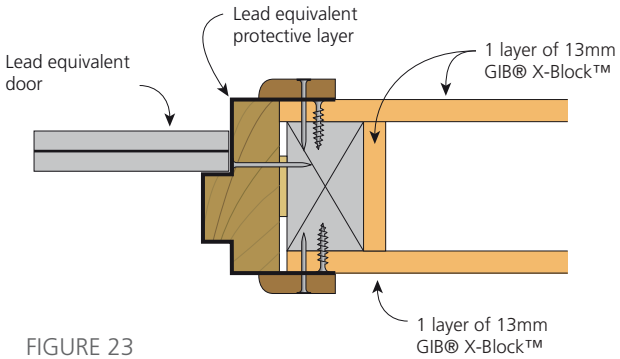


FIGURE 23
Door jamb

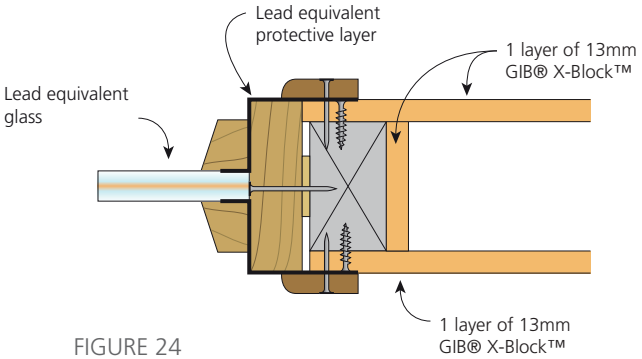


FIGURE 24
Window jamb

NON-FIRE RATED
PENETRATIONS
SYSTEM LXB2 ONLY

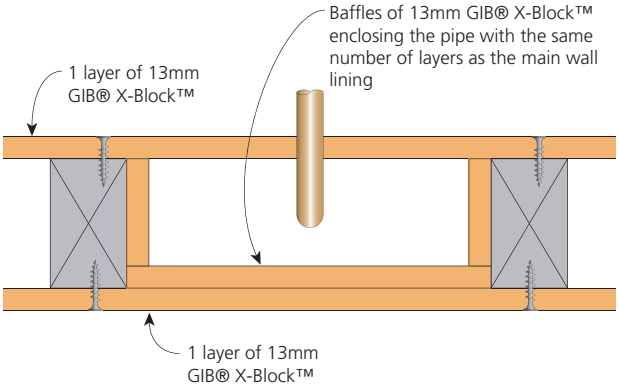


FIGURE 25
Pipe penetration - Plan view

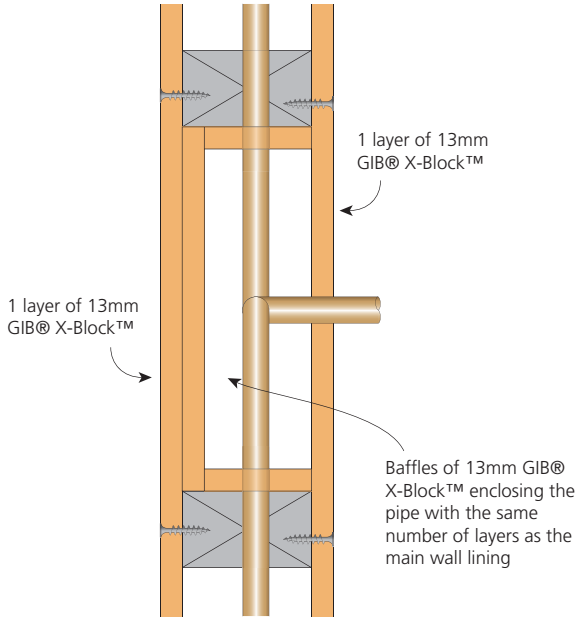


FIGURE 26
Pipe penetration - Elevation

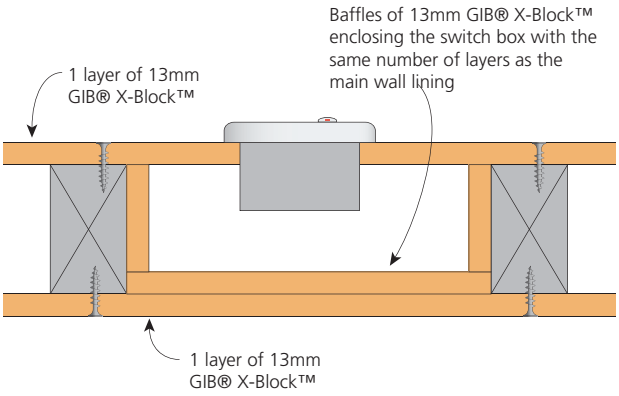


FIGURE 27
Switch boxes - Plan view

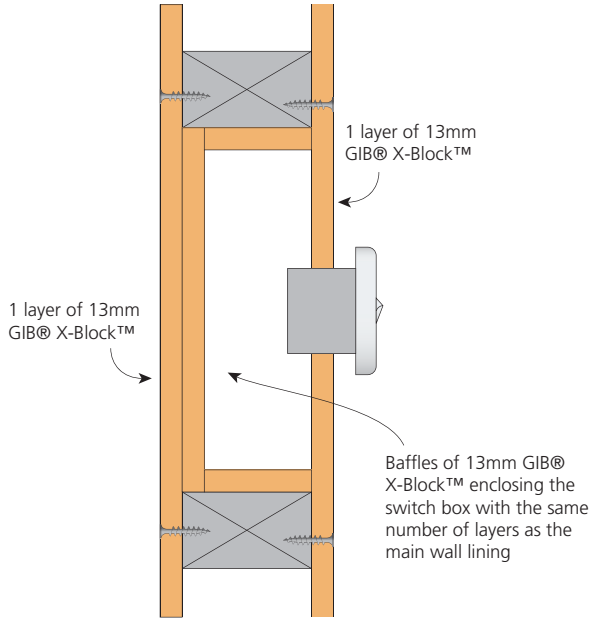


FIGURE 28
Switch boxes - Elevation

FIRE RATED AND NON-FIRE RATED
WALL JUNCTIONS, DOORS AND WINDOWS - PLAN VIEW
SYSTEMS LXB3 AND LXB6 ONLY

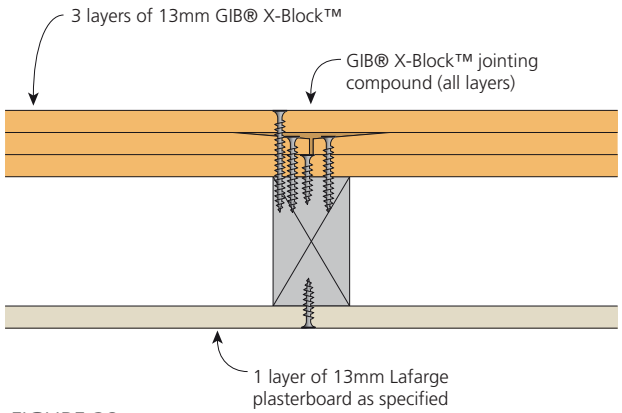


FIGURE 29
Typical section

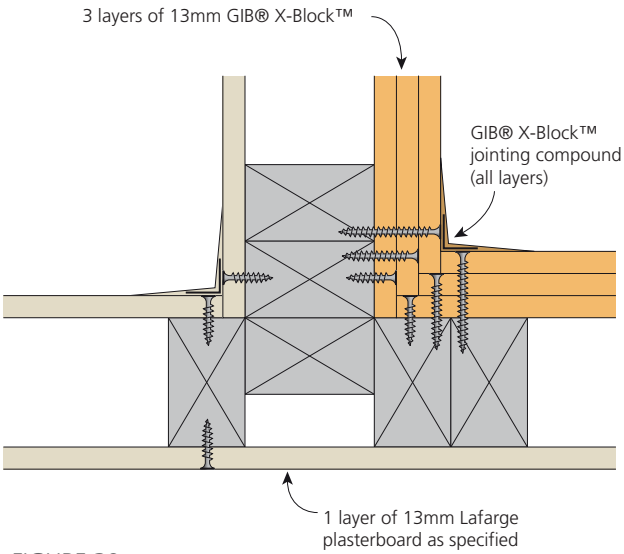


FIGURE 30
T junction

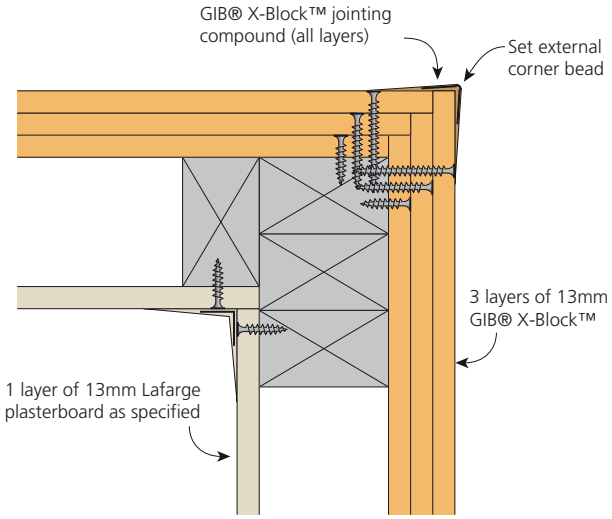


FIGURE 31
External corner

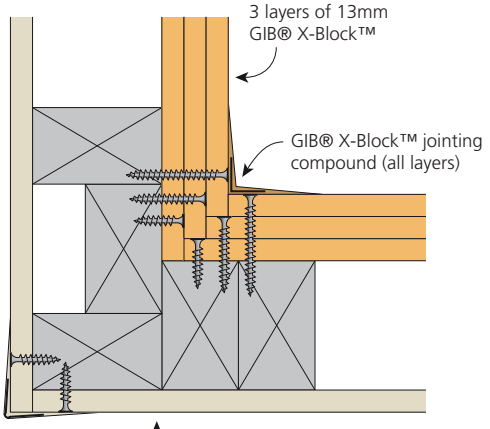


FIGURE 32
Internal corner

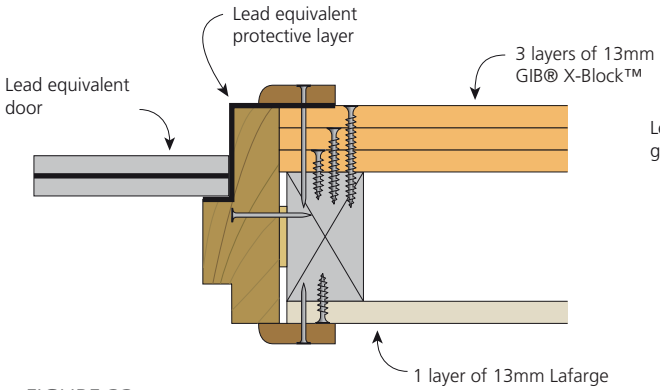


FIGURE 33
Door jamb

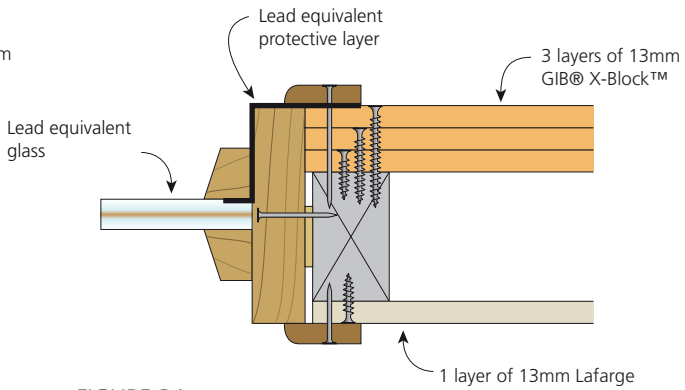


FIGURE 34
Window jamb

FIRE RATED AND NON-FIRE RATED PENETRATIONS
SYSTEMS LXB3 AND LXB6 ONLY

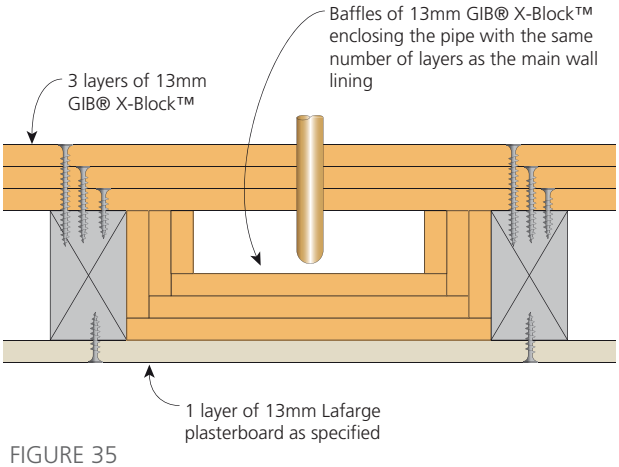


FIGURE 35
Pipe penetration - Plan view

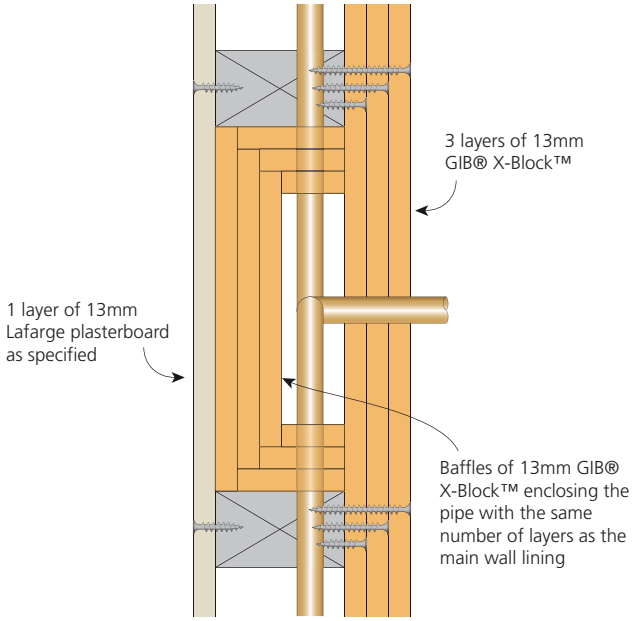


FIGURE 36
Pipe penetration - Elevation

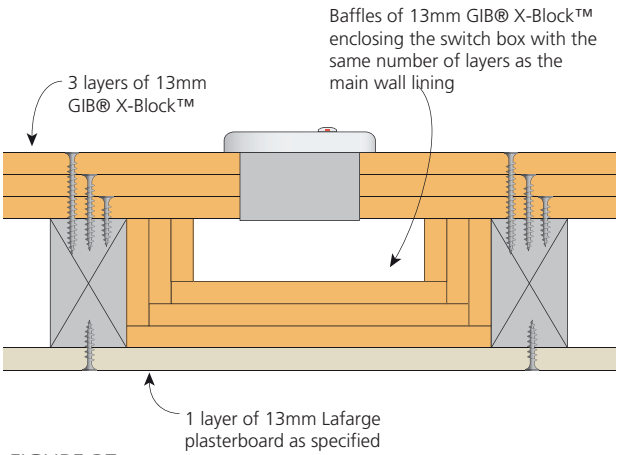


FIGURE 37
Switch boxes - Plan view

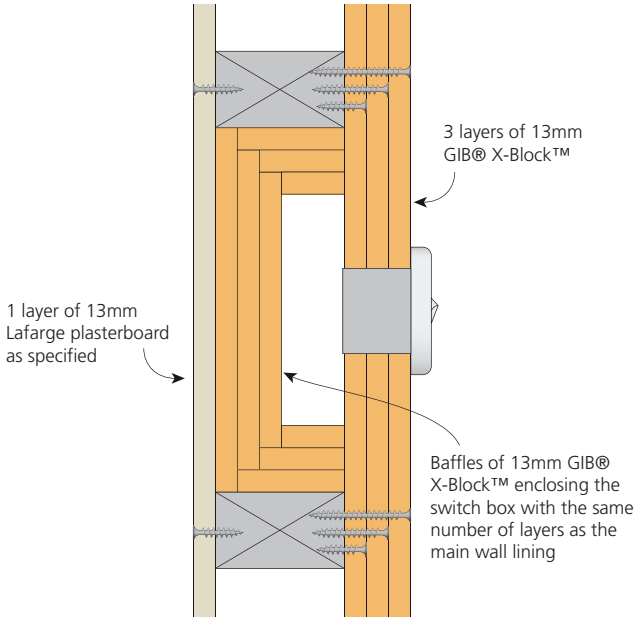


FIGURE 38
Switch boxes - Elevation

FIRE RATED
WALL JUNCTIONS, DOORS AND WINDOWS - PLAN VIEW
SYSTEM LXB7 ONLY

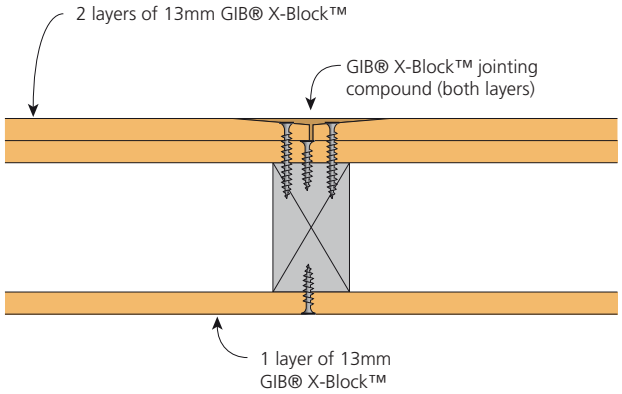


FIGURE 39
Typical section

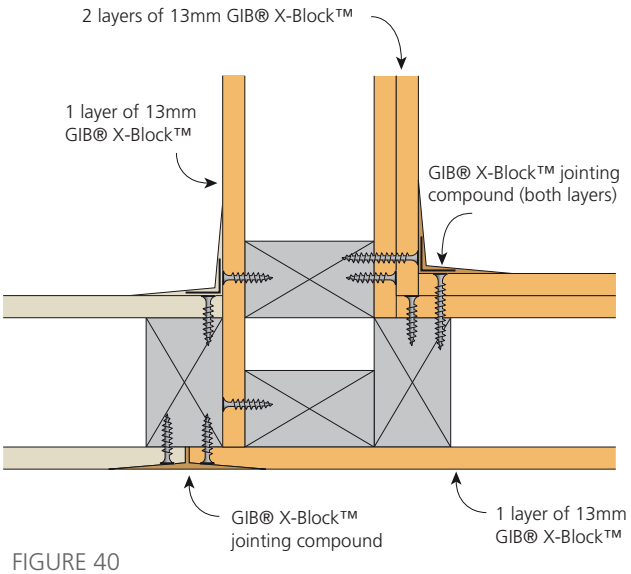


FIGURE 40
T Junction

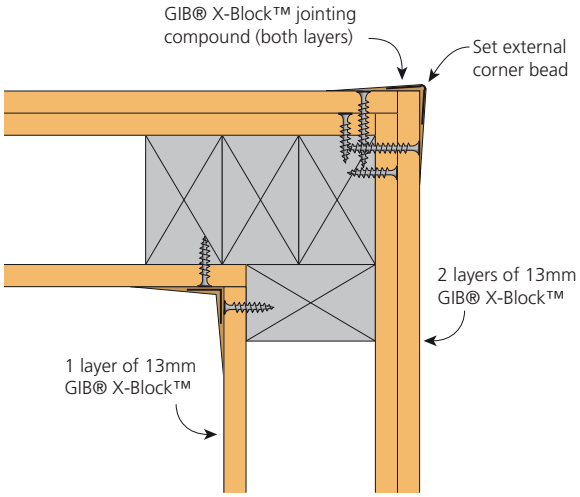


FIGURE 41
External corner

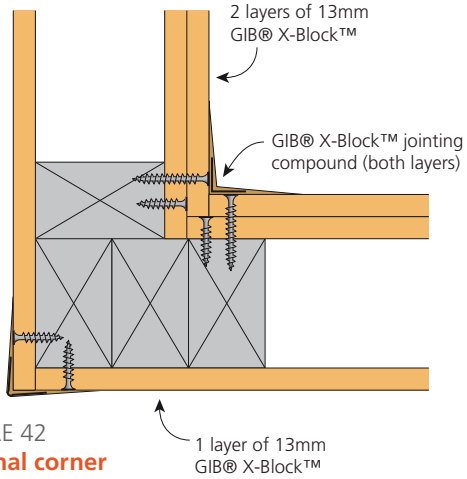


FIGURE 42
Internal corner

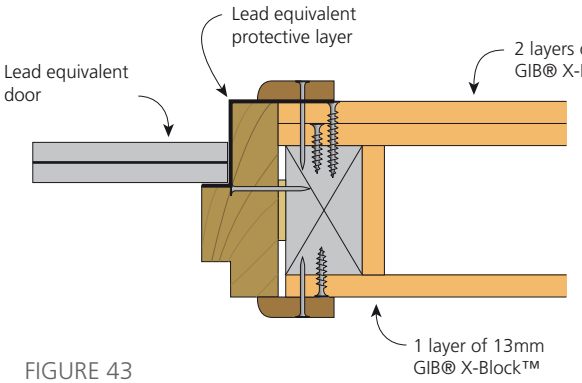


FIGURE 43
Door jamb

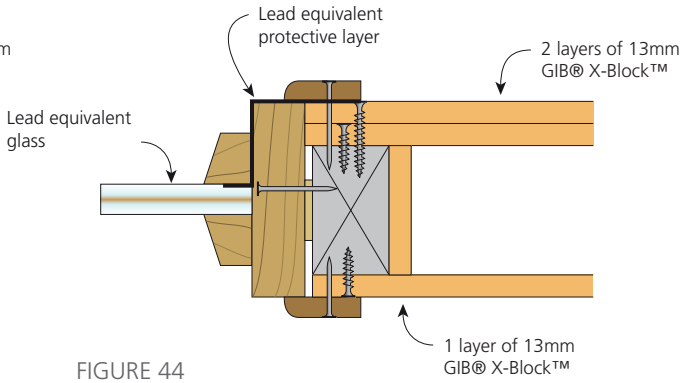


FIGURE 44
Window jamb

FIRE RATED PENETRATIONS SYSTEM LXB7 ONLY

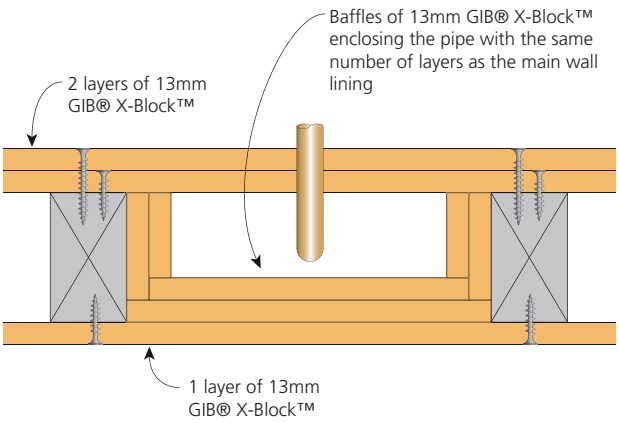


FIGURE 45
Pipe penetration - Plan view

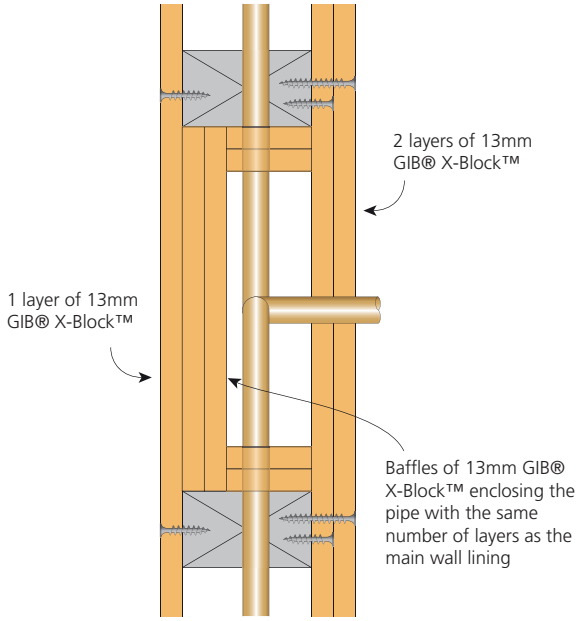


FIGURE 46
Pipe penetration - Elevation

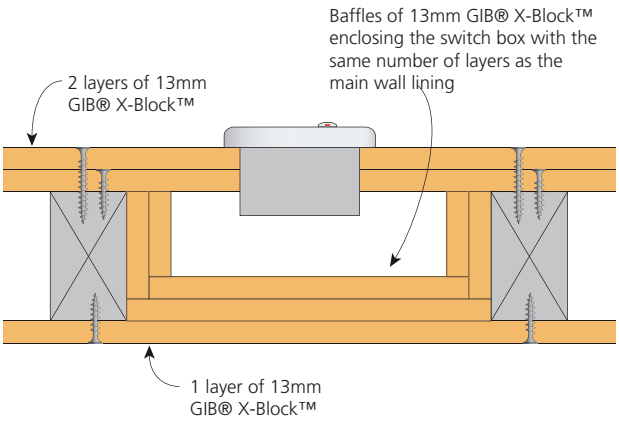


FIGURE 47
Switch boxes - Plan view

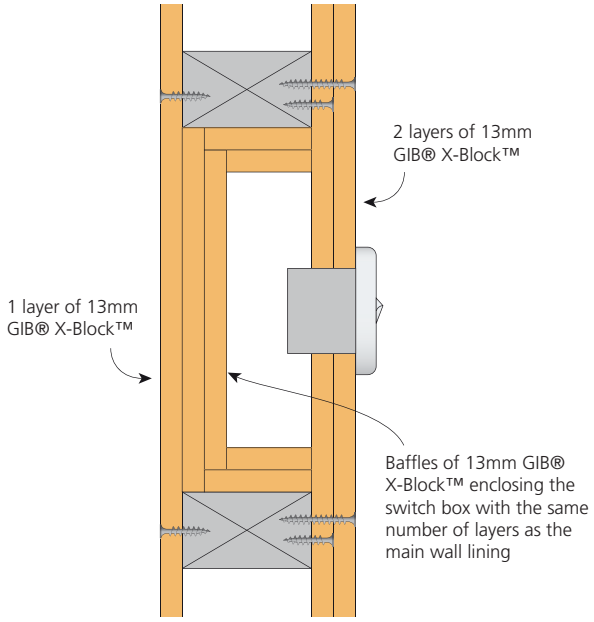


FIGURE 48
Switch boxes - Elevation