

Firewall®

AREA SEPARATION WALLS FOR INDUSTRIAL BUILDINGS



Boral's Purpose ...

to create sustainable solutions for a worldwide building and construction industry.

Boral is a leading Australian supplier of building and construction materials, operating also throughout Asia and in the United States.

Boral offers a wide range of building solutions for the residential, commercial and infrastructure sectors, including Bricks, Roof Tiles, Plasterboard, Concrete, Asphalt and many others. Information on the full range of Boral products can be found at www.boral.com.au

Boral Plasterboard specialises in the manufacture, distribution and installation of plasterboard based wall and ceiling systems. In Australia, Boral operates plasterboard manufacturing facilities in New South Wales, Queensland and Victoria. Boral Plasterboard also operates Australia-wide distribution network of company owned stores and independent resellers.

Striving to create sustainable building solutions for a worldwide building and construction industry, Boral aims to reduce the impact of its operations on the environment and to make a positive difference to the communities in which it operates.

Boral Plasterboard prides itself on its leadership in the area of lightweight building solutions.

Among the successful solutions introduced by the company over the years are: Partiwall® and InRwall® separating wall systems, OutRwall® and FireClad® fire rated exterior wall systems, CinemaZone® acoustic walls and ceilings for home cinemas, and many others.

Boral Plasterboard's Product and Systems Development (PSD) team boasts unrivalled expertise in lightweight fire rated and acoustic systems, and routinely works with customers to select and, if required, tailor solutions for specific projects.

Together with the TecASSIST® customer help line, Boral Plasterboard's PSD team is well positioned to provide technical support to projects of any size and complexity.

For expert advice on lightweight Building Systems, contact Boral TecASSIST® 1800 811 222.



The new Gypsum receiving/conveying system over Lorimer Street, Port Melbourne.

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Introduction

Firewall® Area Separation Walls are recommended for use in buildings that have a steel roof structure such as warehouses, cinemas and factories. Firewall® Area Separation Walls can be utilised in the retail, commercial and industrial sector to provide sub-divisions or fire compartments within a building envelope. These walls can be fire rated up to 4 hours (non-load bearing) and have acoustic ratings up to $R_w = 78\text{dB}$.

This brochure will give the reader an understanding of:

- How a building with a steel roofing system can behave in a fire.
- The design issues when specifying Firewall® Area Separation Walls.
- What systems are available to meet the designer's requirements.
- How to detail the plasterboard application to achieve the required performance when installed.

Design Issues

What Happens in a Fire?

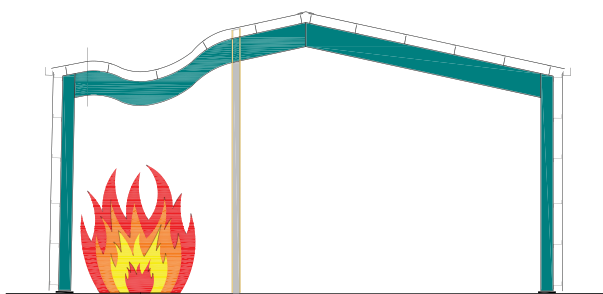
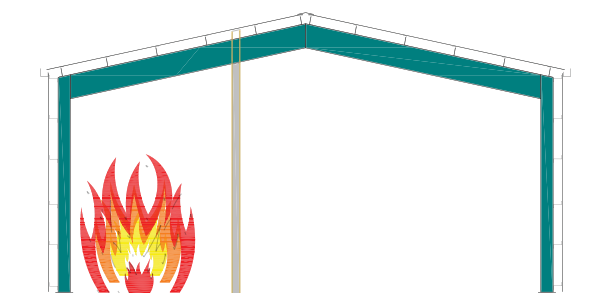
When dividing a building having a sheet roof into two or more fire compartments, the fire-rated wall system selected is often assumed to be non-load bearing as the structure is already standing. The fire walls are thought of only as 'infill' walls. This assumption is true before a fire.

However, if a fire should occur, structural roof components exposed to the fire may lose their strength requiring the adjacent 'non-load bearing' wall to support the dead load of these structural roof components and any loadings generated by structural components on the unaffected side of the fire wall.

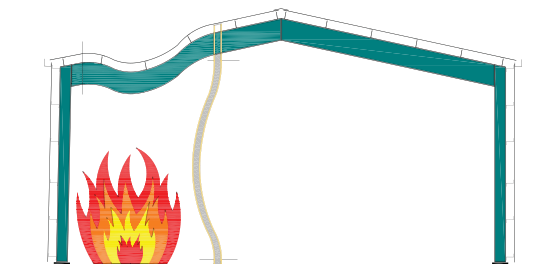
As shown in the following diagrams, a fire begins in one of the areas in the steel framed building separated from the adjacent area with a fire rated wall running perpendicular to portal frame.

As the fire continues and temperature increases, it can cause the steel in the portal frame to lose strength and sag under its own weight. As a consequence, the fire rated dividing wall may be required to carry the loads of the collapsing section of the portal and the unaffected part of the portal frame.

If the fire rated wall is unable to carry these imposed loads and were to collapse then the fire would no longer be contained within the fire compartment and spread to the rest of the building.



A similar situation will occur when the fire wall runs parallel to the portal roof beams whereby the dead loads of the fire affected portal frames may be transferred into the fire wall via the roof purlins spanning from portal frame to portal frame.



When designing the wall to support the imposed axial loads during a fire, the Engineer needs to be aware that the fire rated wall may bow out of plane as the heat affects the studs. In steel stud walls the wall tends to bow toward the fire as the stud flange closest to the fire heats up. This may have an impact on the axial load carrying capacity of the stud due to 'P-delta' effects. The presence of the plasterboard insulates the stud flanges slowing the heating process and the amount of bowing in the wall.

A further issue to be considered by the designer is the conduction of heat along steel members that penetrate the fire rated Area Separation Wall. Steel is a very good conductor of heat and precautions need to be taken to ensure that combustible material in contact with the steel member does not catch fire.

Fire testing undertaken at Victoria University of Technology in conjunction with Bluescope Steel and OneSteel examined how heat flows along steel members passing through Boral plasterboard walls and what simple methods could be employed to prevent the steel reaching temperatures that could allow a fire to cross the Firewall® Area Separation Wall – refer construction details on pages 15-22 of this publication.

Note:

Refer CSIRO Assessment FCO-2440 'Industrial Wall Systems' for certification of Firewall systems and behaviour of Boral plasterboard in fire conditions outlined in this publication.

» Design Issues

What About Acoustics?

The acoustic performance of a wall is measured by a term called the Weighted Sound Reduction Index, R_w and is expressed as a single number rating. The higher the R_w the better the wall is in preventing sound passing through it.

The R_w alone is not a good indicator of how well the partition isolates low frequency (bass) sounds which may be an important factor when choosing an appropriate area separation wall system. To choose a wall with improved low frequency performance, the $R_w + C_{tr}$ should be considered. For instance, the Building Code of Australia requires specific walls separating dwellings to have a minimum $R_w + C_{tr} = 50$ dB.

This may be a good starting point for factories where noisy machinery is being used and an area separation wall is required to reduce sound to a level that does not annoy the occupants on the other side.

For walls dividing cinemas, a typical Specification has required the performance of the wall to be a minimum $R_w = 65$ dB with particular emphasis on noise reduction performance in selected octave band centre frequencies. The D-Stud™ system has been successfully used on many Cinema projects.

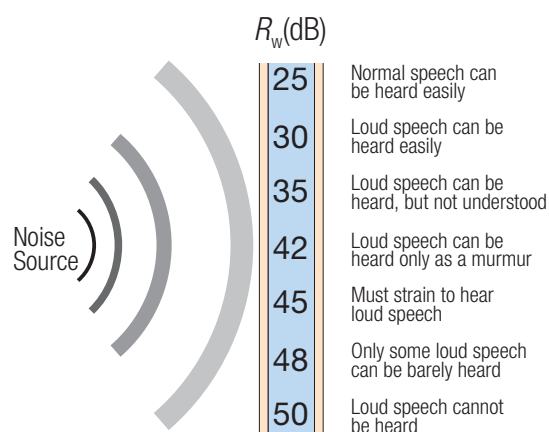
The higher the $R_w + C_{tr}$ value the better the sound isolation performance, particularly in the low frequencies.

The amount of sound isolation a wall provides is a function of:

- Mass of plasterboard on each side
- Size of the wall cavity
- Whether cavity insulation is present
- If there is a connection between the linings from one side to the other.

Sound isolation can be improved by adding more layers of plasterboard, increasing the wall cavity and adding insulation into the wall cavity. For greater performance, it is important that there is no mechanical linkage between the plasterboard leaves from one side of the wall to the other. This can be achieved through using either the Twin Stud wall system or the Boral D-Stud™ wall system.

The diagram below provides an indication of the R_w rating as it relates to speech isolation. For example speech will be heard through a partition that has an $R_w = 36$ dB rating.

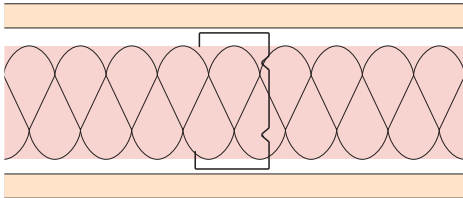


Typical R_w Ratings

(10mm plasterboard each side of stud wall is approx $R_w = 36$ dB)

Firewall System Types

Single Stud Walls

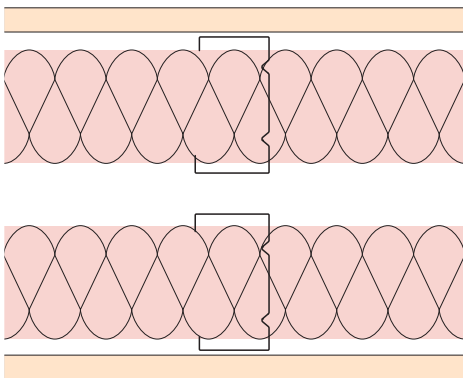


Single stud walls comprise steel studs, lined on both sides of the stud with plasterboard. Rows of noggings or bridging are normally required to provide stability to the stud section.

The fire rating will be dependent upon the number of layers of plasterboard fixed to the studwork.

The walls are usually non load bearing, but can be designed to carry axial loads. The size of the studs will be dependent upon the anticipated design loadings and should be determined by a Structural Engineer. Load bearing members can be installed within the wall cavity and be protected by the plasterboard linings on each side of the wall.

Twin Stud Walls

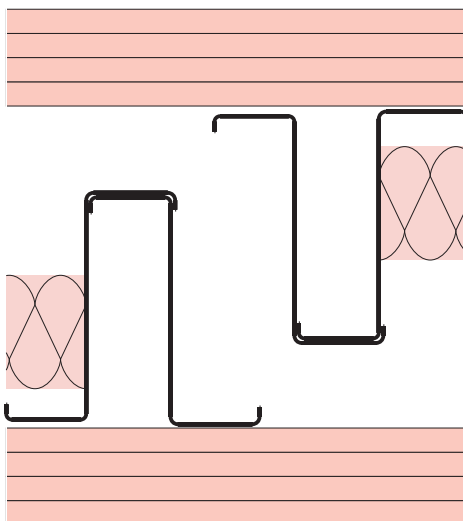


Twin stud walls comprise two sets of steel studs, each one lined on one side only with plasterboard. Rows of noggings or bridging are required to provide stability to the stud section.

Twin stud walls can be used where improved acoustic performance is required or the wall width is dictated by the size of steel columns or other fixtures present within the wall cavity.

The fire rating will be dependent upon the number of layers of plasterboard fixed to the studwork. The size of the studs will be dependent upon the anticipated design loadings and should be determined by a Structural Engineer.

D-Stud™ Walls



D-Stud™ walls are non load bearing and can be used where increased acoustic performance is required, especially in Cinemas.

The D-Stud™ wall system does not need noggings or bridging between the studs, and allows stud centres greater than 600mm max centres.

The system with four layers of 16mm Boral Firestop® on each side, cavity insulation and an overall width of 500mm has been used at the Chadstone Cinemas in Victoria.

Note:

D-Stud™ systems are subject to Australian Patent Number 697958

Design

Structural Design

When designing Firewall® Area Separation Walls, the Engineer must consider the lateral pressures that may be exerted upon the wall. With most factory/warehouse type buildings, they often have large doorways to facilitate the loading and unloading of trucks. These large or 'dominant' openings allow the air pressure within the building to respond more quickly to the external environment than would occur if the building had small openings or was sealed. The building designer will need to take these loads into account when designing the structure of the building, especially in regards to the lateral loadings that the wall may apply to the bottom chords of roof beams or purlins supporting the top of the walls.

For this reason the connections between the top of area separation wall and the supporting structure have to have a greater capacity than those normally used for fire rated walls where light gauge deflection head tracks are used. Similarly the base connections will also have to be capable of resisting the internal pressures acting on the wall.

If the wall is to be non-load bearing (except in fire service) then the Engineer has to ensure that an appropriate deflection head is selected that will allow for any upward or downward deflections in the roof so that the wall will not impact upon the existing structure as it was originally designed to perform.

For fire rated walls running perpendicular to portal frames or roof beams, additional structural columns may be required to support the roof structure during a fire event.

Similarly, for fire rated walls running parallel and not to full length of main roof structure additional columns may be required. Refer construction details in pages 15-22.

The Engineer must consider appropriate wall bracing systems to account for any racking loads exerted on the separation wall, in particular walls running parallel to portal frames. At no time must the plasterboard be assumed to provide bracing to the separation wall.

The Building Code of Australia sets out minimum deflection criteria in Specification C1.8 for fire rated walls depending upon the purpose of the wall. For 'walls generally' the deflection criteria is height/240 to a maximum of 30mm when the wall is subjected to a design load of 250Pa. This means that all walls over 7.2m in height under this classification have a maximum allowable deflection of 30mm.

If the wall forms part of a fire escape passageway, then the design load is increased to either 350Pa or 1kPa depending upon the use of the building.

Materials

All materials must be delivered in their original unopened packages where appropriate and stored clear of the ground in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials must be removed from site.

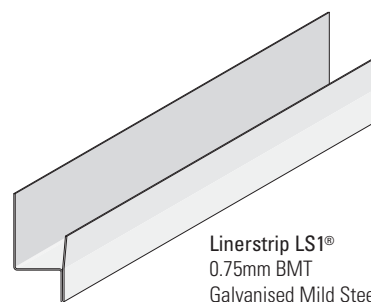
The stud sections and fixing details used to build the wall are to be designed by a Structural Engineer to resist the design loads determined to be acting upon the wall before, during and after a fire.

For details of D-Stud™ wall systems refer to current Boral Plasterboard technical literature.

Boral Linerstrip LS1® has been developed to simplify installation of Shaftliner™ plasterboard.

Note:

Linerstrip LS1® sections are subject to Australian Registered Design Numbers 302762, 302763 and 302765 and New Zealand Registered Design Numbers 406256, 406258 and 406259



Single and Twin Stud Firewall® Systems

Fire Design

The following board configurations to each side of single stud wall or twin stud wall may be used for load bearing and non load bearing fire rated walls achieving the FRL's stated under the conditions listed in the table below.

Where walls are non load bearing and columns used to support the structure during or after a fire require fire protection, the designer should refer to the Boral Plasterboard Column and Beam Protection Systems brochure.

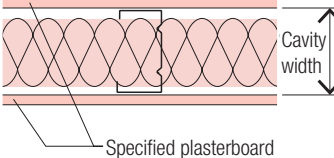
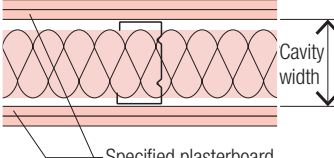
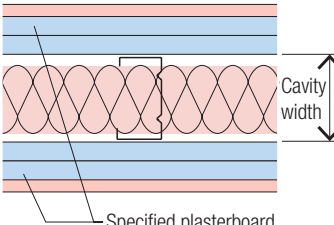
Board Configuration			
Firestop®		FRL	Fire Attack Direction
Side 1	Side 2		
1x13	1x13	30/30/30	Both
1x16	1x16	60/60/60	Both
2x13	2x13	90/90/90	Both
2x16	2x16	120/120/120	Both
1x25*	1x25*	120/120/120	Both
1x16	1x16		
1x25*	1x25*	-/180/180	Both
1x16	1x16		
2x25*	2x25*	180/180/180	Both
1x16	1x16		
2x25*	2x25*	-/240/240	Both
1x16	1x16		

* Denotes 25mm thick Shaftliner™ with Linerstrip LS1®

Notes:

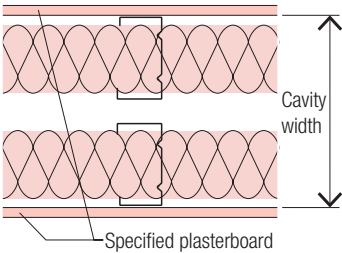
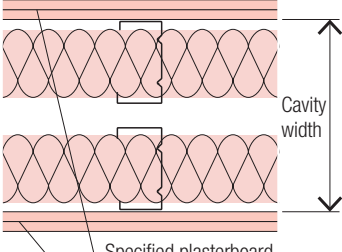
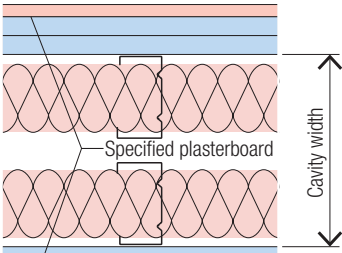
- For load bearing walls with up to 2 layers of 16mm Firestop® on each side, all joints in the first layer to be backed by noggings or studs. Elsewhere noggings to be provided at 1200mm maximum centres.
- Bracing to be provided within the wall as required by Structural Engineer ignoring plasterboard contribution.
- Cold formed steel wall studs to be designed by a suitably qualified Structural Engineer and shall comply with AS/NZS 4600:1996 Cold Formed Steel Structures.
- Any structure providing support, including lateral support, to the load bearing wall must have an FRL of at least that of the wall (assuming that the particular structure will be required to provide the support whilst being exposed to the fire).
- 25mm Shaftliner™ sheets fixed to wall studs using Linerstrip LS1®.
- Stud splicing not allowed.
- Unless noted otherwise, walls to be lined to standard Boral Plasterboard non load bearing fire rated details.
- Construction details contained in this brochure have been assessed by CSIRO FCO-2765, refer to report for fire performance.
- **It is the Designer's/Builder's responsibility to ensure that systems and details contained in this brochure meet their project requirements and specifications.**

» Single Stud Firewall® Systems

Assembly	System Reference	Nom Cavity Width (mm)	Stud Size (mm)	Pbd Weight (kg/m ²)	Fire FRL Basis	Acoustic Ratings		
						R _w	R _w +C _{tr}	Insulation
	S1313F	150 200 150 200	Refer Engineer	21.0 21.0 21.0 21.0	30/30/30 Both sides FCO-1045	38	—	Nil
	1 layer 13mm Firestop® each side of frame					39	—	Nil
						41	33	100G14, 100P14
						42	34	100G14, 100P14
		S1616F	150 200 150 200	Refer Engineer	26.0 26.0 26.0 26.0	60/60/60 Both sides FCO-1045	39	—
	1 layer 16mm Firestop® each side of frame	40					—	Nil
		42					34	100G14, 100P14
		43					35	100G14, 100P14
		S2626F	150 200 150 200	Refer Engineer	42.0 42.0 42.0 42.0	90/90/90 Both sides FCO-1045	43	—
	2 layers 13mm Firestop® each side of frame	44					—	Nil
		47					42	100G14, 100P14
		48					43	100G14, 100P14
		S3232F	150 200 150 200	Refer Engineer	52.0 52.0 52.0 52.0	120/120/120 Both sides FCO-1045	43	—
	2 layers 16mm Firestop® each side of frame	44					—	Nil
		47					42	100G14, 100P14
		48					43	100G14, 100P14
		S4141F	150 200 150 200	Refer Engineer	67.0 67.0 67.0 67.0	120/120/120 -/180/180 Both sides FCO-2440	47	—
	Linerstrip LS1® 1x25 Shaftliner™ and 1x16 Firestop® each side of frame	48					—	Nil
		51					46	100G14, 100P14
		52					47	100G14, 100P14
		S6666F	150 200 150 200	Refer Engineer	108.5 108.5 108.5 108.5	180/180/180 -/240/240 Both sides FCO-2440	50	—
	Linerstrip LS1® 2x25 Shaftliner™ and 1x16 Firestop® each side of frame	50					—	Nil
		55					50	100G14, 100P14
		55					50	100G14, 100P14

• Wall system thumbnails are for illustrative purposes only • Acoustic ratings based on 2.0mm BMT studs at 600mm centres by Graeme Harding & Associates
 • 100G14 denotes 100mm thick glasswool insulation, min density 14kg/m³ • 100P14 denotes 100mm thick polyester insulation, min density 14kg/m³

» Twin Stud Firewall® Systems

Assembly	System Reference	Nom Cavity Width (mm)	Stud Size (mm)	Pbd Weight (kg/m ²)	Fire FRL Basis	Acoustic Ratings		
						R _w	R _w +C _{tr}	Insulation
	ST1313F							
	1 layer 13mm Firestop® each side of frame	350	Refer Engineer	21.0	30/30/30 Both sides FCO-1045	42	—	Nil
		400		21.0		43	—	Nil
		450		21.0		44	—	Nil
		350		21.0		55	46	200G14, 200P14
		400		21.0		56	47	200G14, 200P14
		450		21.0		56	49	200G14, 200P14
		ST1616F						
	1 layer 16mm Firestop® each side of frame	350	Refer Engineer	26.0	60/60/60 Both sides FCO-1045	45	—	Nil
		400		26.0		46	—	Nil
	450		26.0		47	—	Nil	
	350		26.0		57	49	200G14, 200P14	
	400		26.0		57	50	200G14, 200P14	
	450		26.0		58	50	200G14, 200P14	
	ST2626F							
	2 layers 13mm Firestop® each side of frame	350	Refer Engineer	42.0	90/90/90 Both sides FCO-1360 FCO-1045	51	—	Nil
		400		42.0		52	—	Nil
		450		42.0		53	—	Nil
		350		42.0		66	58	200G14, 200P14
		400		42.0		67	59	200G14, 200P14
		450		42.0		68	60	200G14, 200P14
		ST3232F						
	2 layers 16mm Firestop® each side of frame	350	Refer Engineer	52.0	120/120/120 Both sides FCO-1360 FCO-1045	55	—	Nil
		400		52.0		56	—	Nil
	450		52.0		57	—	Nil	
	350		52.0		68	59	200G14, 200P14	
	400		52.0		69	60	200G14, 200P14	
	450		52.0		70	63	200G14, 200P14	
	ST4141F							
	Linerstrip LS1® 1x25 Shaftliner™ and 1x16 Firestop® each side of frame	350	Refer Engineer	67.0	120/120/120 -/180/180 Both sides FCO-2440	58	—	Nil
		400		67.0		59	—	Nil
		450		67.0		60	—	Nil
		350		67.0		72	63	200G14, 200P14
		400		67.0		73	64	200G14, 200P14
		450		67.0		74	65	200G14, 200P14
		ST6666F						
	Linerstrip LS1® 2x25 Shaftliner™ and 1x16 Firestop® each side of frame	350	Refer Engineer	108.5	180/180/180 -/240/240 Both sides FCO-2440	63	—	Nil
		400		108.5		64	—	Nil
	450		108.5		65	—	Nil	
	350		108.5		76	67	200G14, 200P14	
	400		108.5		77	68	200G14, 200P14	
	450		108.5		78	69	200G14, 200P14	

• Wall System thumbnails are for illustrative purposes only • Acoustic ratings based on 2.0mm BMT studs at 600mm centres by Graeme Harding & Associates
 • 200G14 denotes 200mm thick glasswool insulation, min density 14kg/m³ • 200P14 denotes 200mm thick polyester insulation, min density 14kg/m³

D-Stud™ Wall System

The D-Stud™ wall provides superior acoustic performance, enabling it to be applied in many areas where high acoustic rating is required. D-Stud™ wall also provides up to 3.0 hours fire protection and can achieve wall heights up to 13.40 metres. A popular application for D-Stud™ wall is for walls between two cinemas that require high acoustic performance ($R_w = 65\text{dB}$ or greater), and often are more than 10 metres in height.

The structural and acoustic performance of D-Stud™ wall provides many design and construction advantages to a variety of building projects including auditoriums, theatres, sporting stadium and warehouse conversions.

Below are D-Stud™ wall specifications that may be used for area separation applications at the building designer's discretion.

Note that the lateral pressure on the wall is to be determined by Structural Engineer prior to selecting a D-stud™ wall as an Area Separation Wall.

Non Load Bearing D-Stud™ Walls

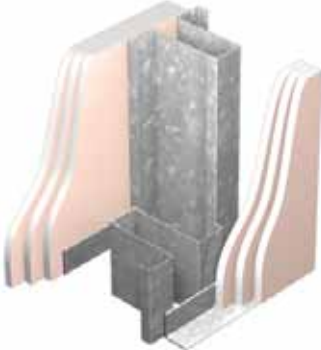
Max Wall Heights (mm)
(Max Wall Pressure: 0.25kPa)

Stud Size	Stud ctrs (mm)		
	900	1000	1200
2xZ15012	8500	8300	8000
2xZ15015	9000	8800	8400
2xZ15019	9500	9300	8900
2xZ20015	11000	10700	10200
2xZ20019	11700	11400	10900
2xZ25019	13400	13000	12500

Notes:

- Deflection limit is height/240 to a maximum of 30mm.
- Wall heights tabled are for non load bearing walls and not for axial loads, but include self weight and lateral pressures stated.
- Shelf loading is not permitted for the tabulated maximum wall heights. Refer Boral Plasterboard for maximum heights with shelf loadings.
- The maximum heights tabulated are based on testing performed using Boral Firestop® plasterboard.
- Minimum yield stress of steel sections to be 450MPa UNO.
- Walls to be constructed with 13mm or 16mm Boral Firestop® or Wet Area Firestop® or 10mm Boral Standard Core plasterboard to standard Boral Plasterboard fire rated D-Stud™ wall details.
- 50Pa pressure assumed for fire design. Where greater pressures and fire loadings are likely to be coincident Boral should be consulted.
- For construction details refer Boral Plasterboard publication 'D-Stud™ High Performance Wall Systems'.
- Structural Engineer to verify D-Stud™ wall construction details are appropriate for specific projects.

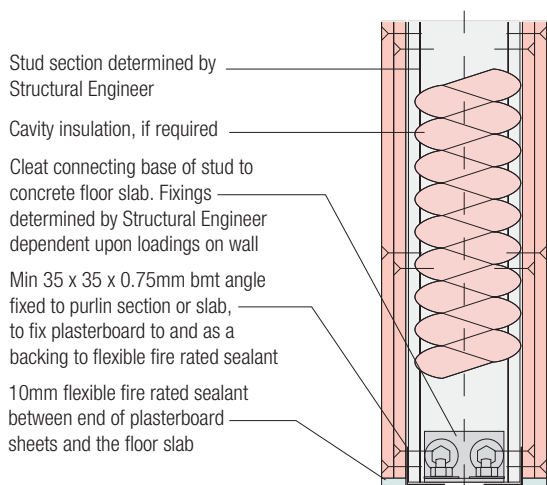
» D-Stud™ Wall System

Assembly	System Reference	Nom Cavity Width (mm)	Stud Size (mm)	Pbd Weight (kg/m ²)	Fire FRL Basis	Acoustic Ratings		
						R _w	R _w +C _{tr}	Insulation
 <p>System D4848F illustrated</p>	D4848F	500 500	Refer Engineer	78.0 78.0	-/180/180 FSV-1073	63	—	Nil
	3 x 16mm Firestop® pbd layers to each side of frame					74	65	200G14, 200P14
	D4864F	500 500	Refer Engineer	91.0 91.0	-/180/180 FSV-1073	64	—	Nil
	3 x 16mm Firestop® pbd layers to one side of frame 4 x 16mm Firestop® pbd layers to other side					76	67	200G14, 200P14
	D6464F	500 500	Refer Engineer	104.0 104.0	-/180/180 FSV-1073	64	—	Nil
	4 x 16mm Firestop® pbd layers to each side of frame					77	68	200G14, 200P14

Note:

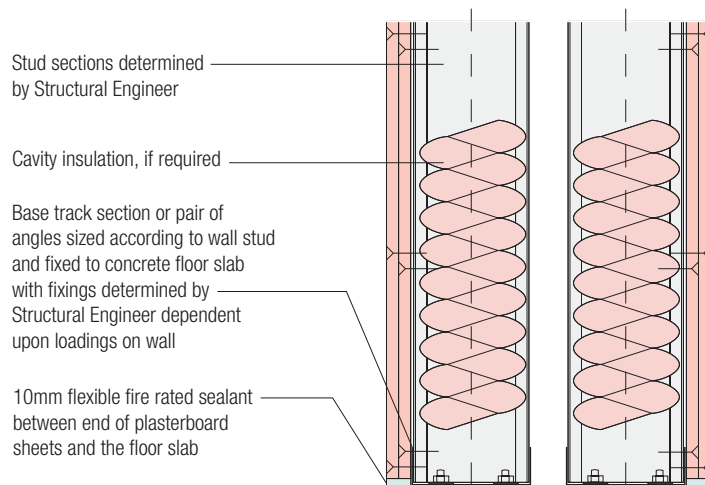
D-Stud™ systems are subject to Australian Patent Number 697958.

Details



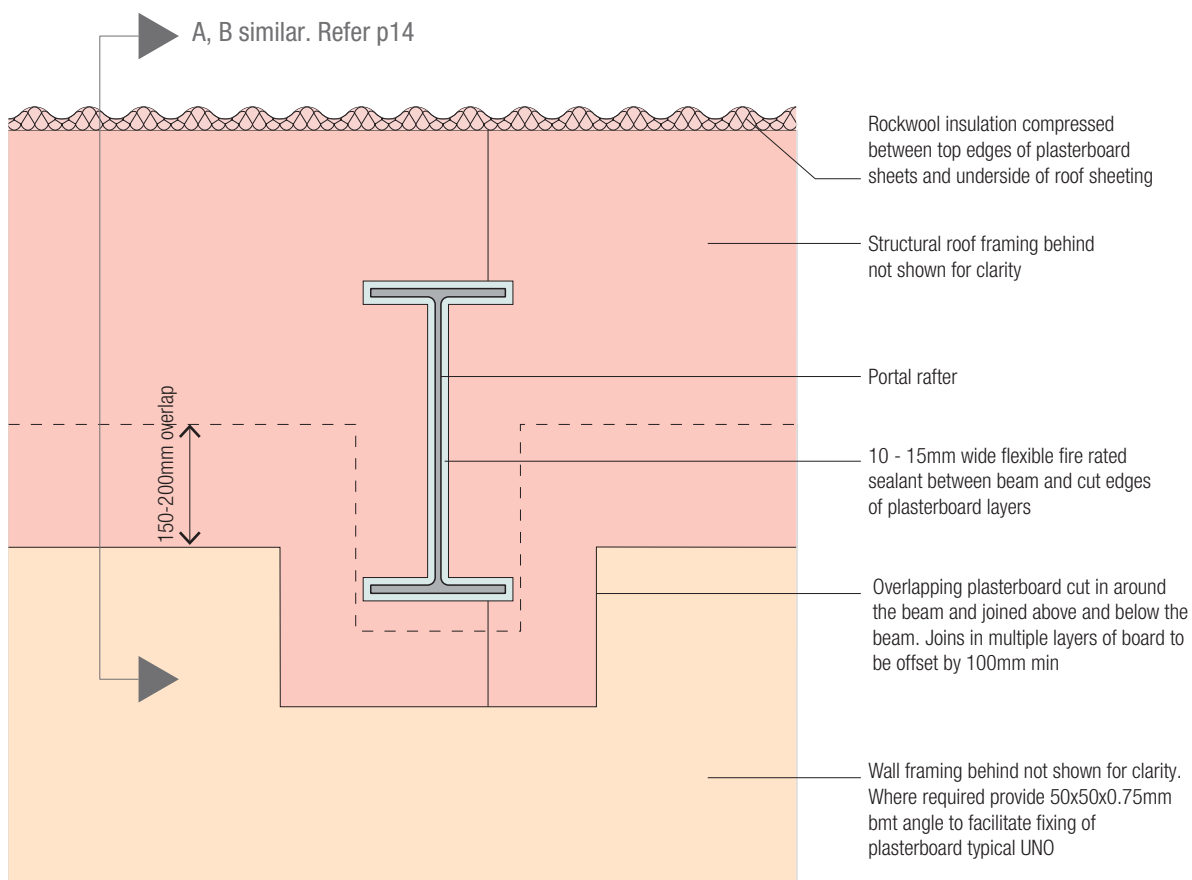
Base Detail of Single Stud Wall

Note: Refer to FCO-2765 for fire performance.



Base Detail of Twin Stud Wall

Note: Refer to FCO-2765 for fire performance.



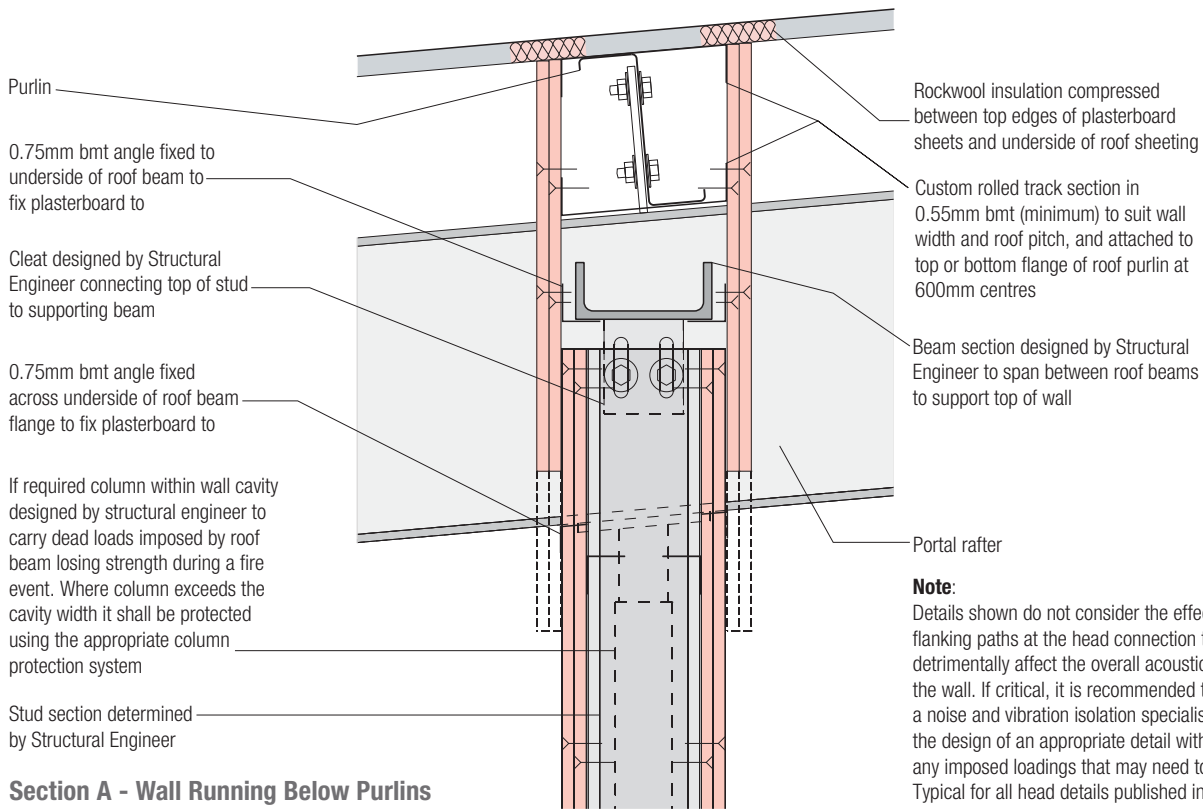
Single Stud Wall Head Elevation - Perpendicular to Portal Frame

Note:

Refer page 23 for construction notes.

Refer to FCO-2765 for fire performance.

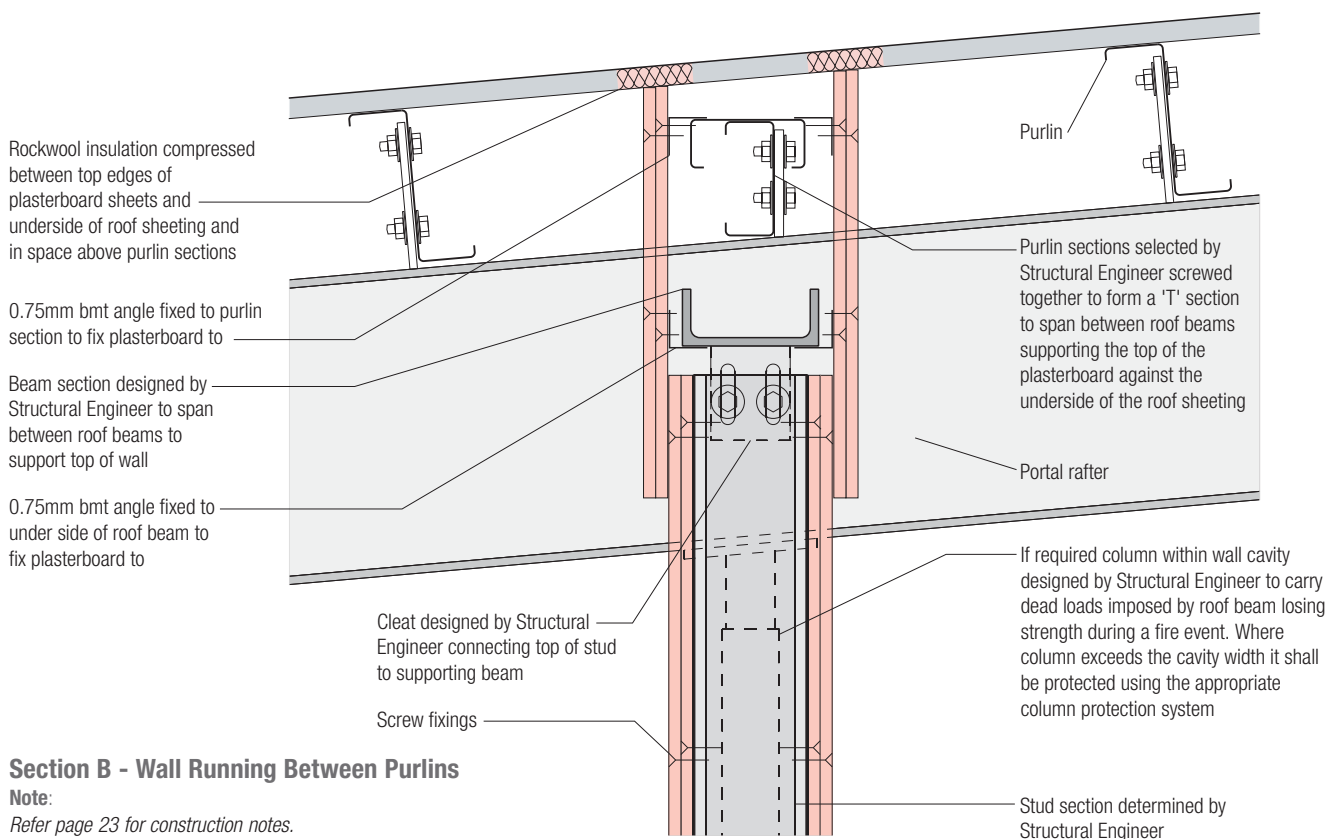
» Details



Section A - Wall Running Below Purlins

Note:

Refer page 23 for construction notes.
Refer to FCO-2765 for fire performance.

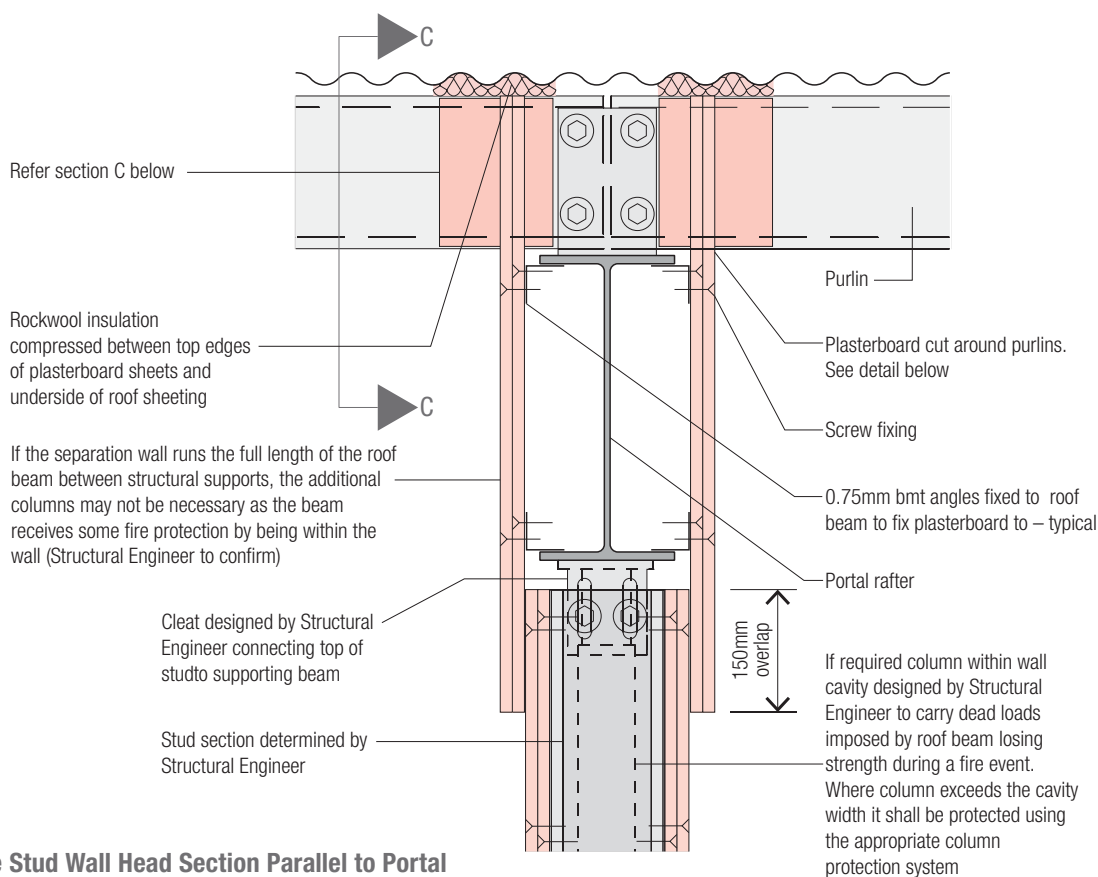


Section B - Wall Running Between Purlins

Note:

Refer page 23 for construction notes.
Refer to FCO-2765 for fire performance.

» Details

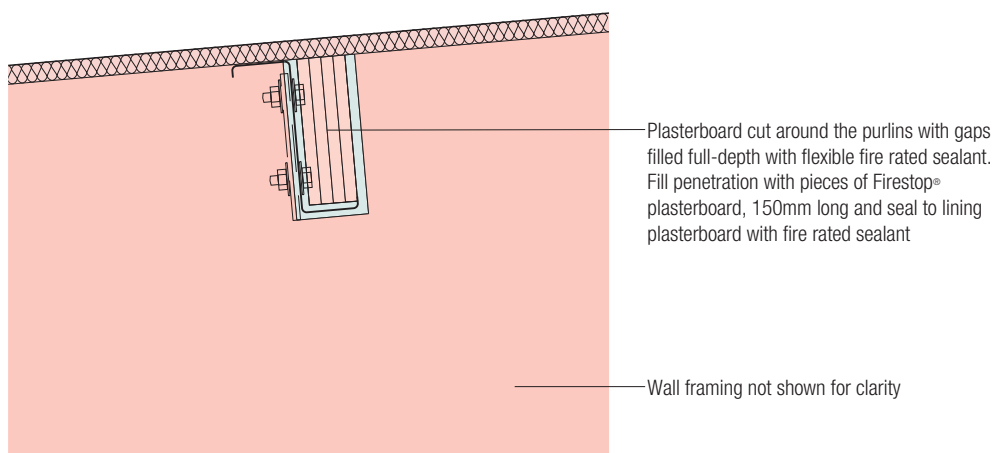


Single Stud Wall Head Section Parallel to Portal

Note:

Refer page 23 for construction notes.

Refer to FCO-2765 for fire performance.

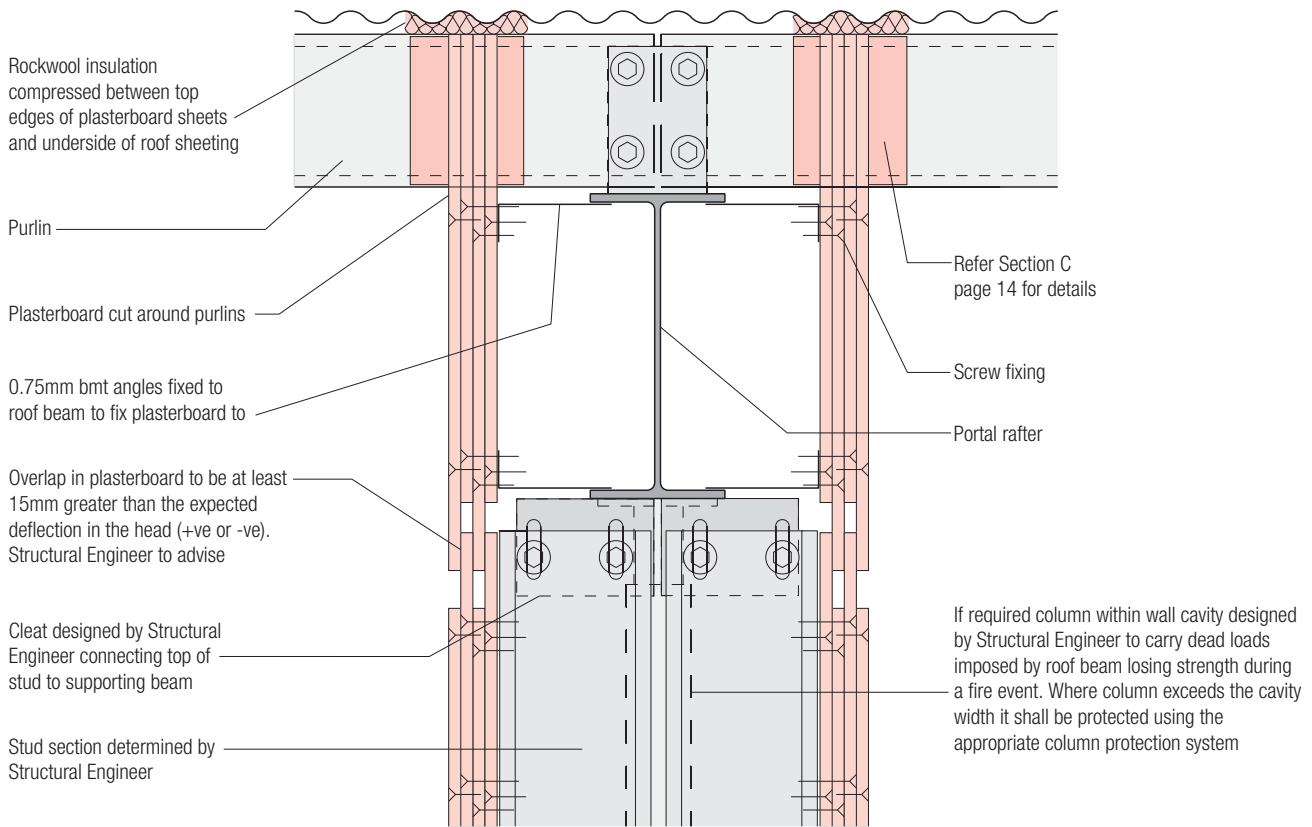


Section C - Single Stud Wall Head Elevation Parallel to Portal

Note:

Refer to FCO-2765 for fire performance.

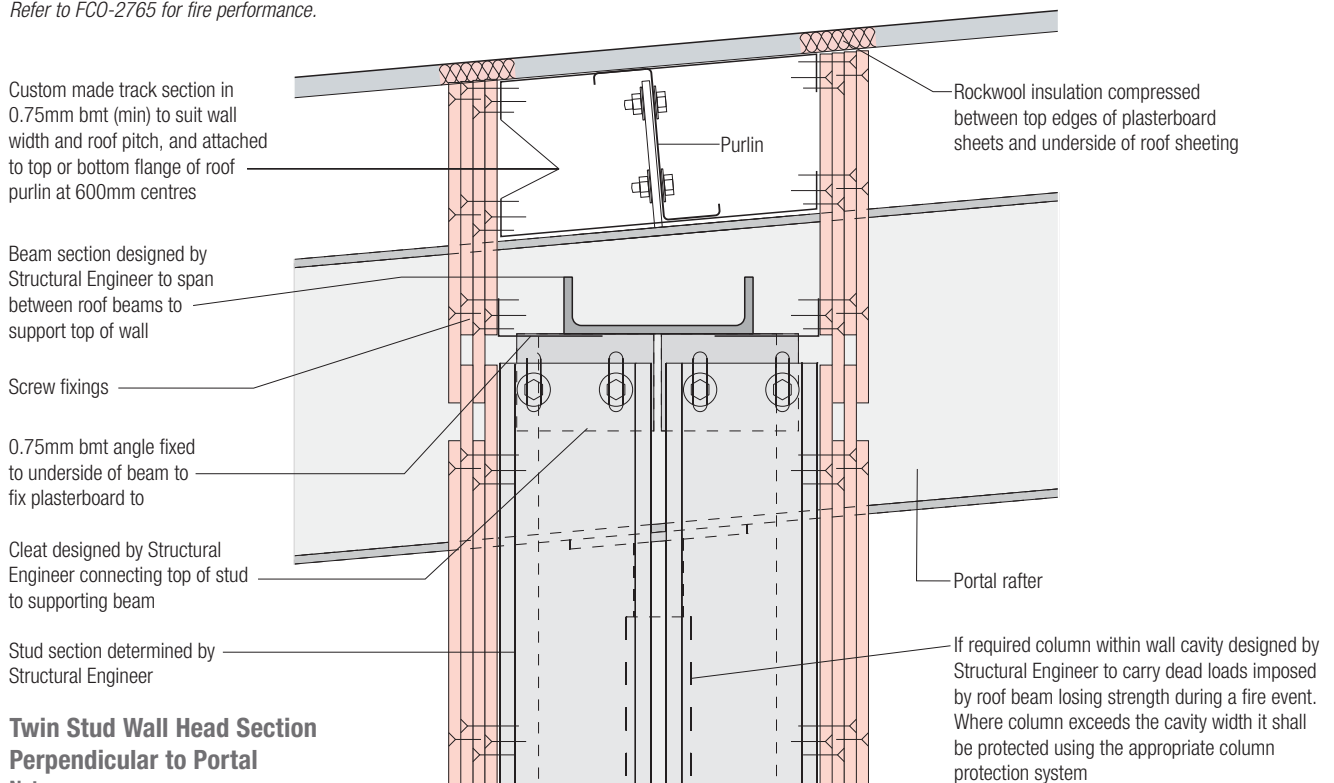
» Details



Twin Stud Wall Head Section Parallel to Portal

Note:

Refer page 23 for construction notes.
Refer to FCO-2765 for fire performance.

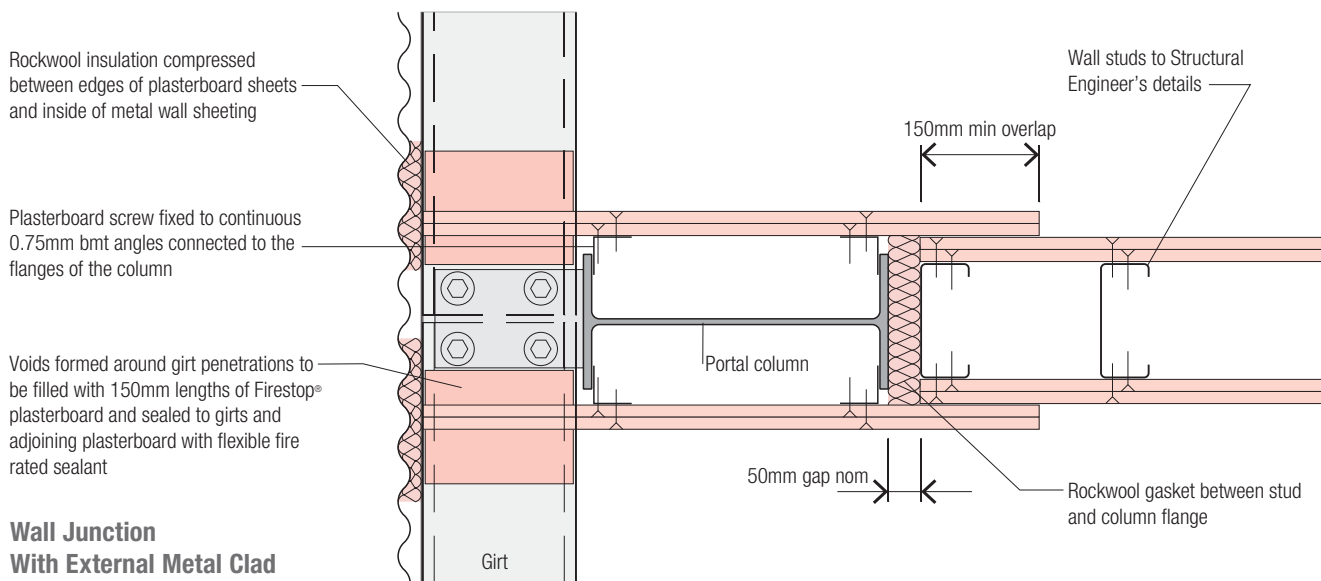


Twin Stud Wall Head Section Perpendicular to Portal

Note:

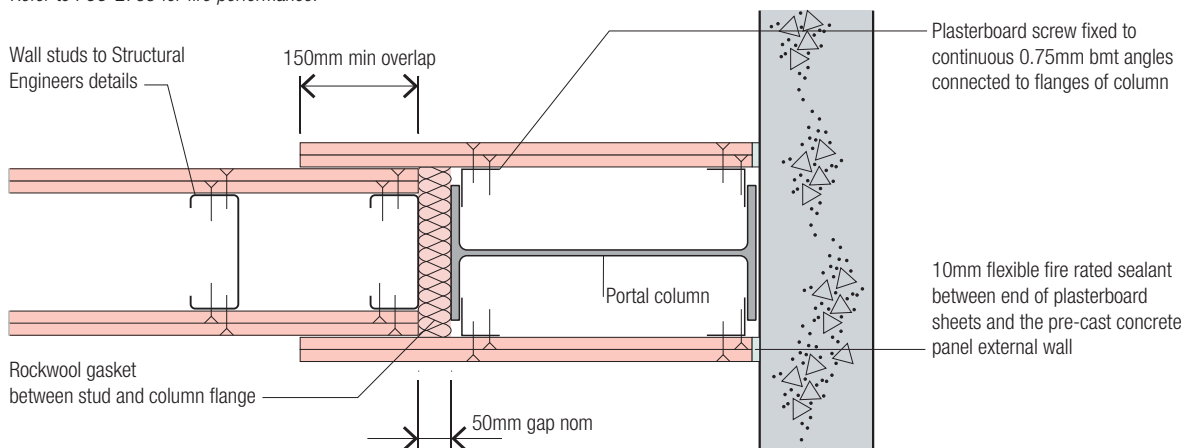
Refer page 23 for construction notes.
Refer to FCO-2765 for fire performance.

» Details



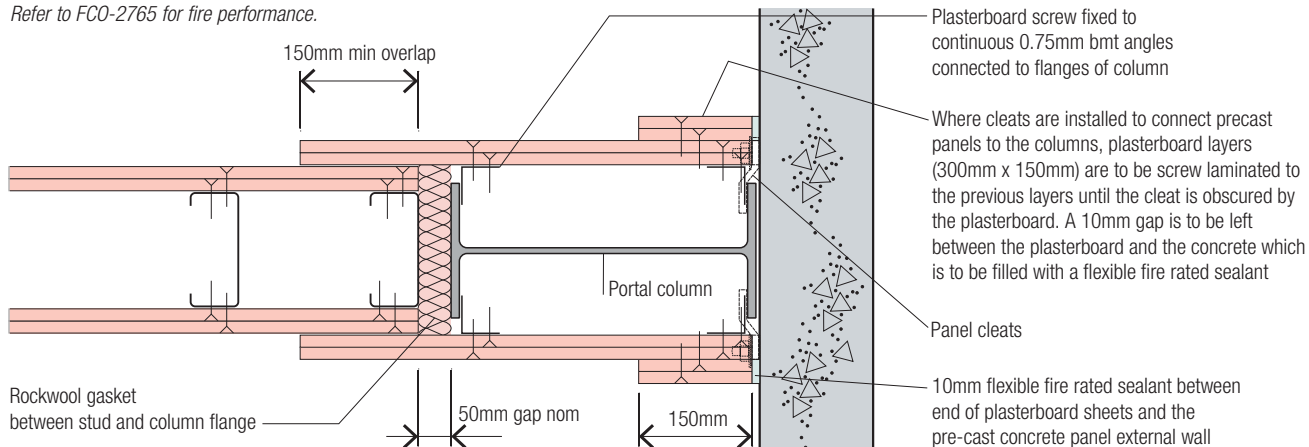
Wall Junction With External Metal Clad Non Fire Rated Wall

Note:
Refer to FCO-2765 for fire performance.



Wall Junction With External Pre-cast Concrete Panel Wall - No Cleats

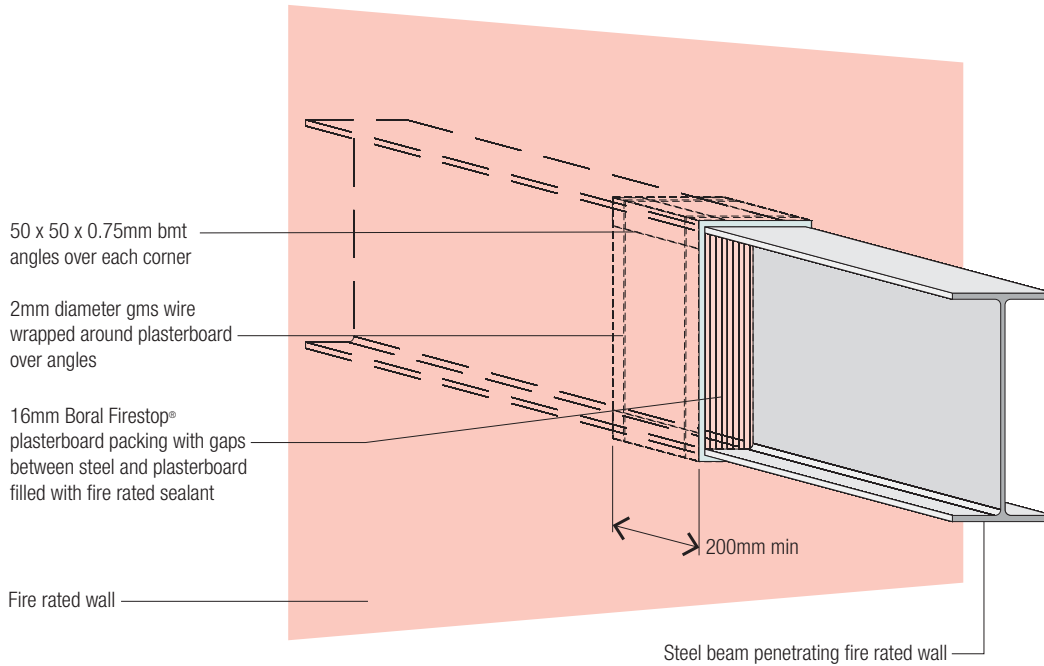
Note:
Refer to FCO-2765 for fire performance.



Wall Junction With External Pre-cast Concrete Panel Wall - Using Cleats

Note:
Refer to FCO-2765 for fire performance.

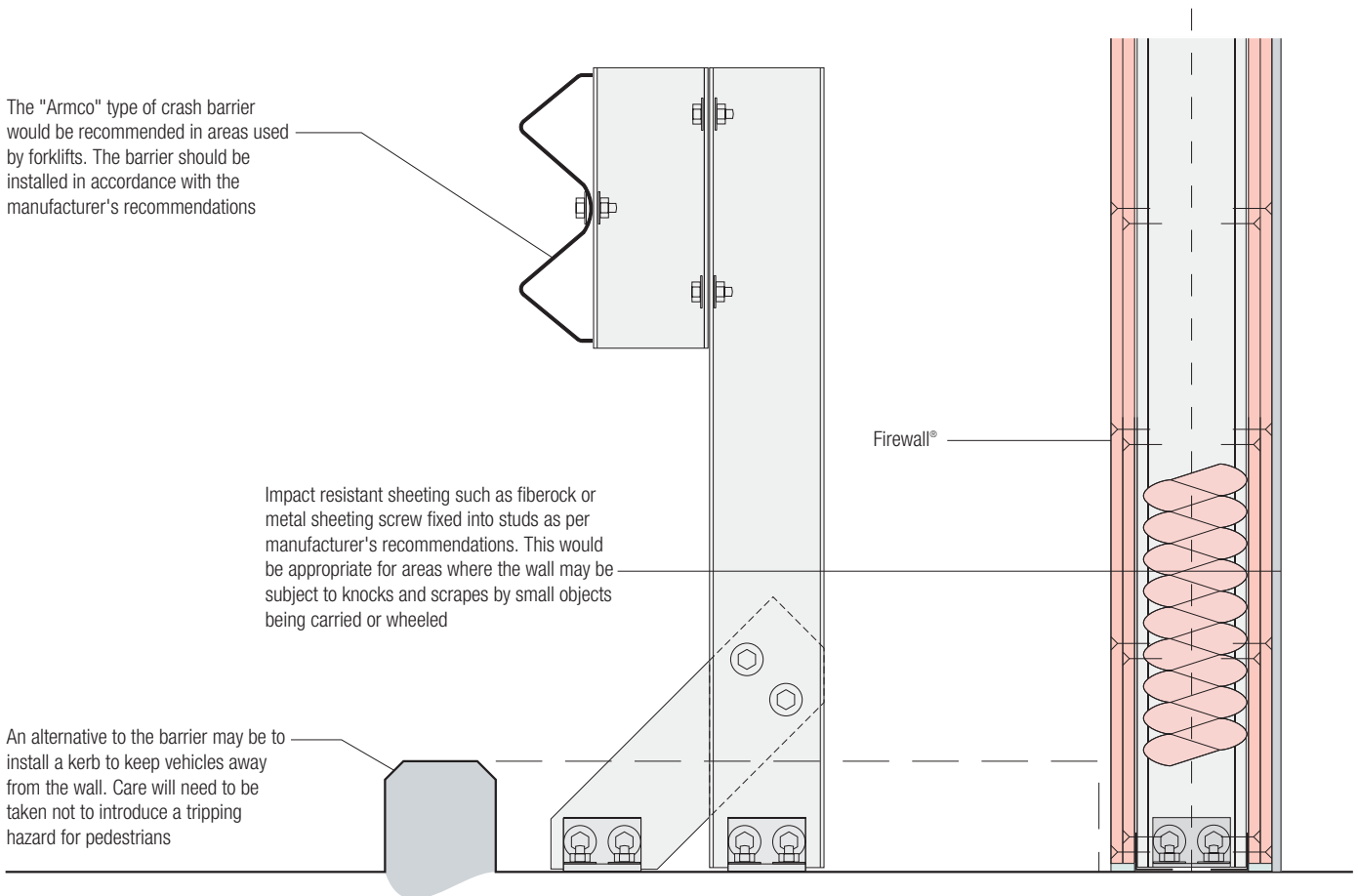
» Details



Treatment of Steel Members Penetrating Firewall®

Note:

Refer to FCO-2765 for fire performance.

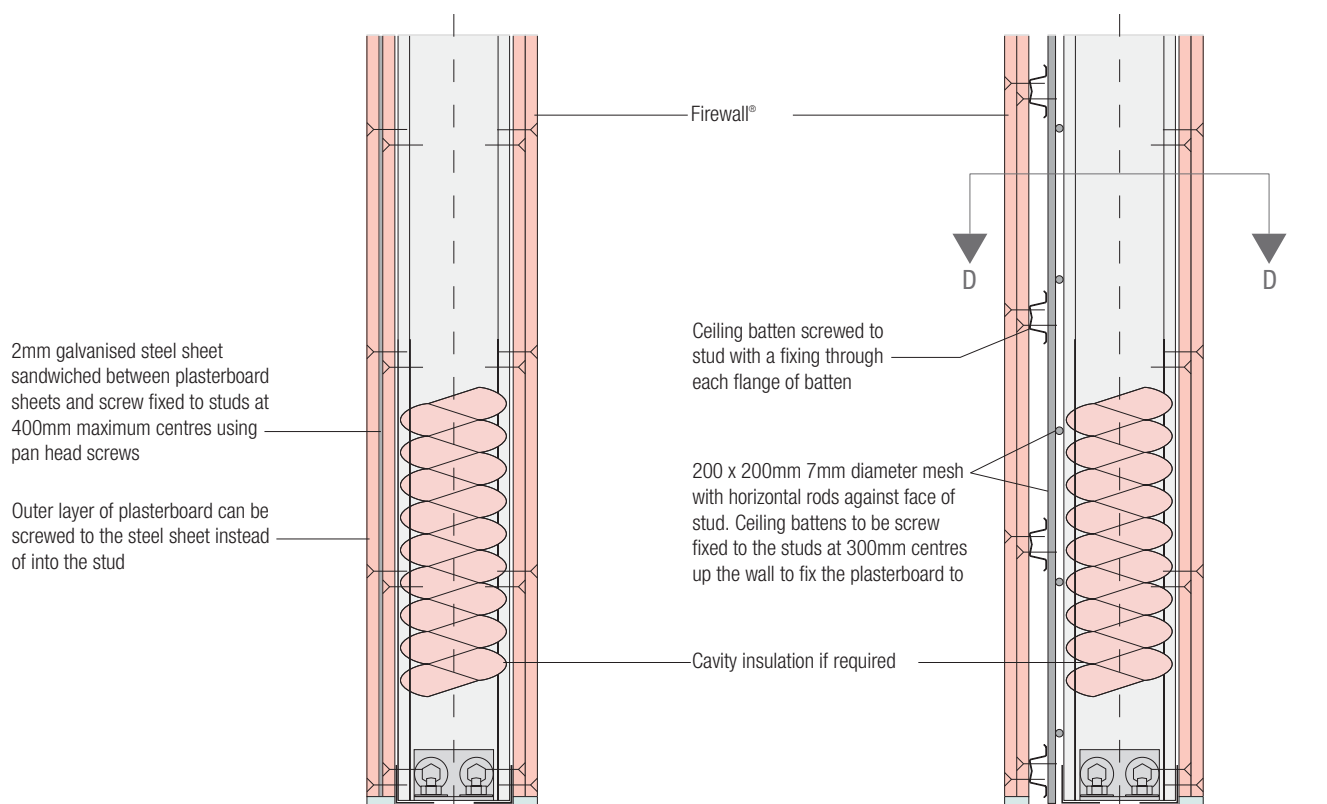


Impact Protection

Note:

Refer to FCO-2765 for fire performance.

» Details



Wall With Steel Sheet Between Plasterboard Layers

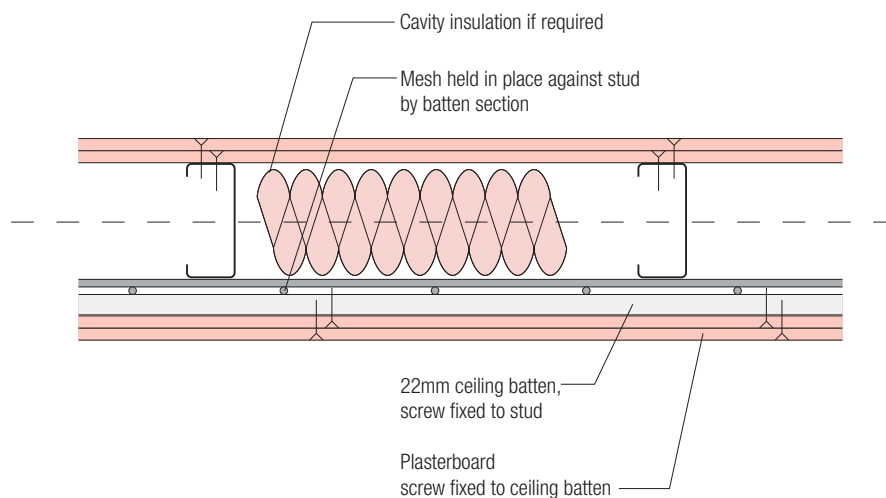
Note:

Refer to FCO-2765 for fire performance.

Wall With Mesh Reinforcement

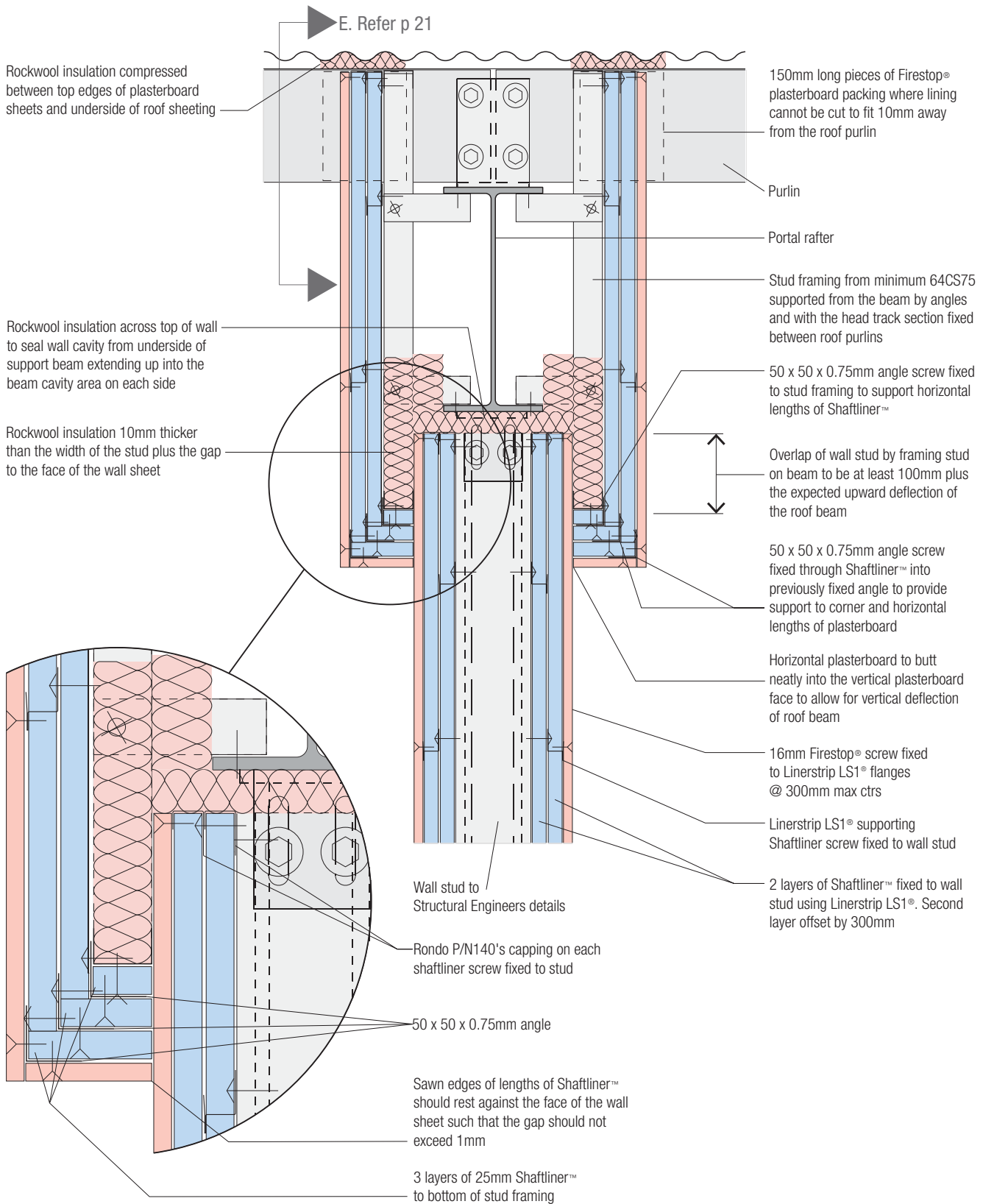
Note:

Refer to FCO-2765 for fire performance.



Section D - Wall With Mesh Reinforcement

» Details

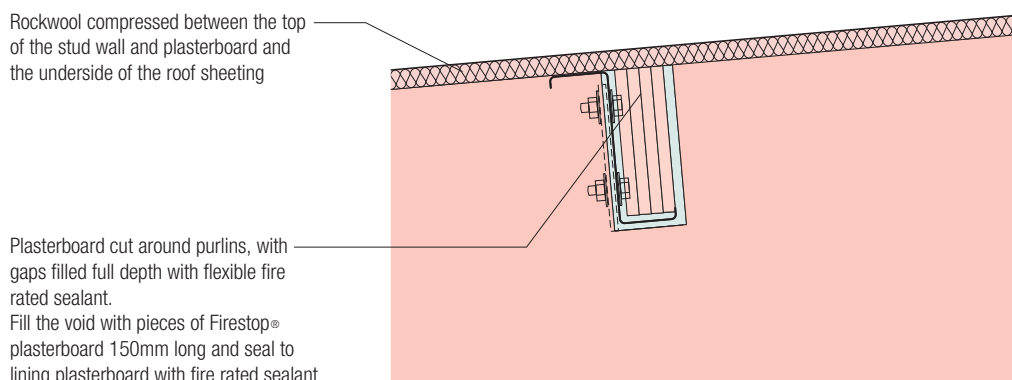


Head Detail for Non Load Bearing 4 Hour Wall

Note:

Systems utilising Linerstrip LS1® sections are subject to Australian Patent Application Number 2006203282. Refer to FCO-2765 for fire performance.

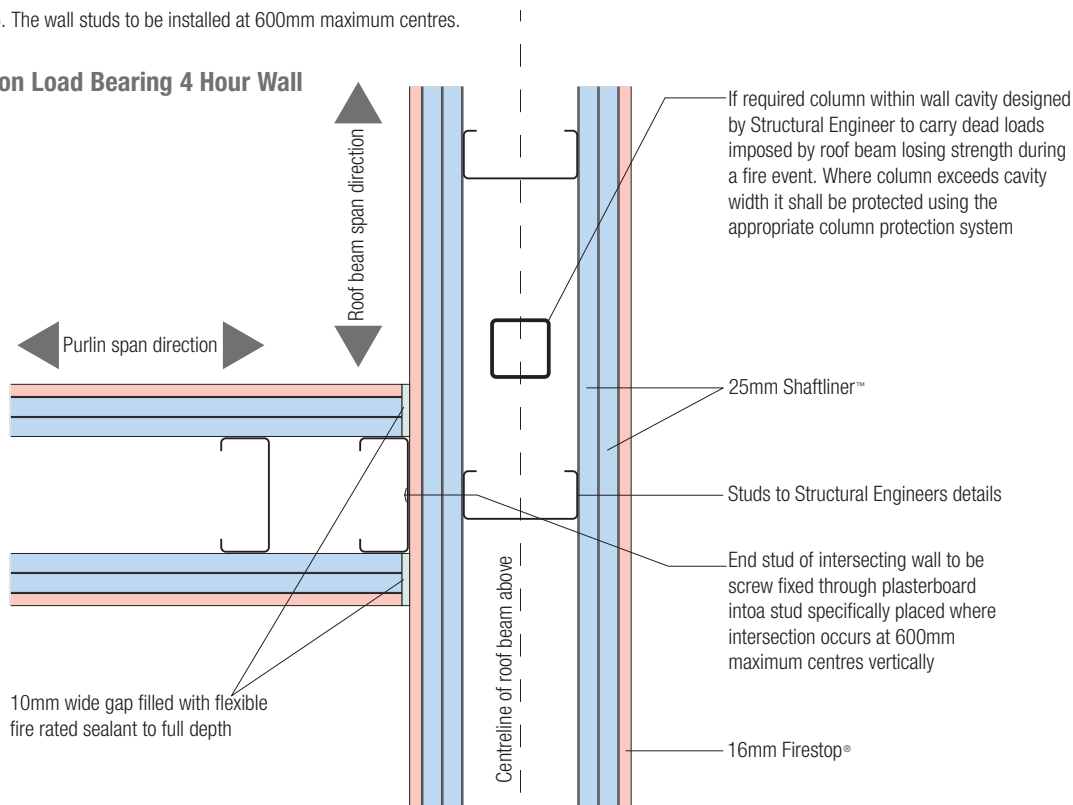
» Details



Notes:

1. The wall studs should be sized by the Structural Engineer designing the structure and be capable of withstanding lateral pressure loads and axial forces that will act on the wall before and after a fire event.
2. For a four hour non load bearing wall (-/240/240), 2 layers of Shaftliner™ supported by Linerstrip LS1® with a single layer of 16mm Firestop® screw fixed to the Linerstrip LS1® supporting the outer layer of Shaftliner™ on each side of the wall.
3. The width that the higher plasterboard overlaps the lower plasterboard to be 100mm plus the expected deflection due to uplift of the roof beam.
4. The plasterboard should be installed in accordance with Boral Plasterboard's standard requirements for fire rated wall.
5. The wall studs to be installed at 600mm maximum centres.

Section E - Non Load Bearing 4 Hour Wall

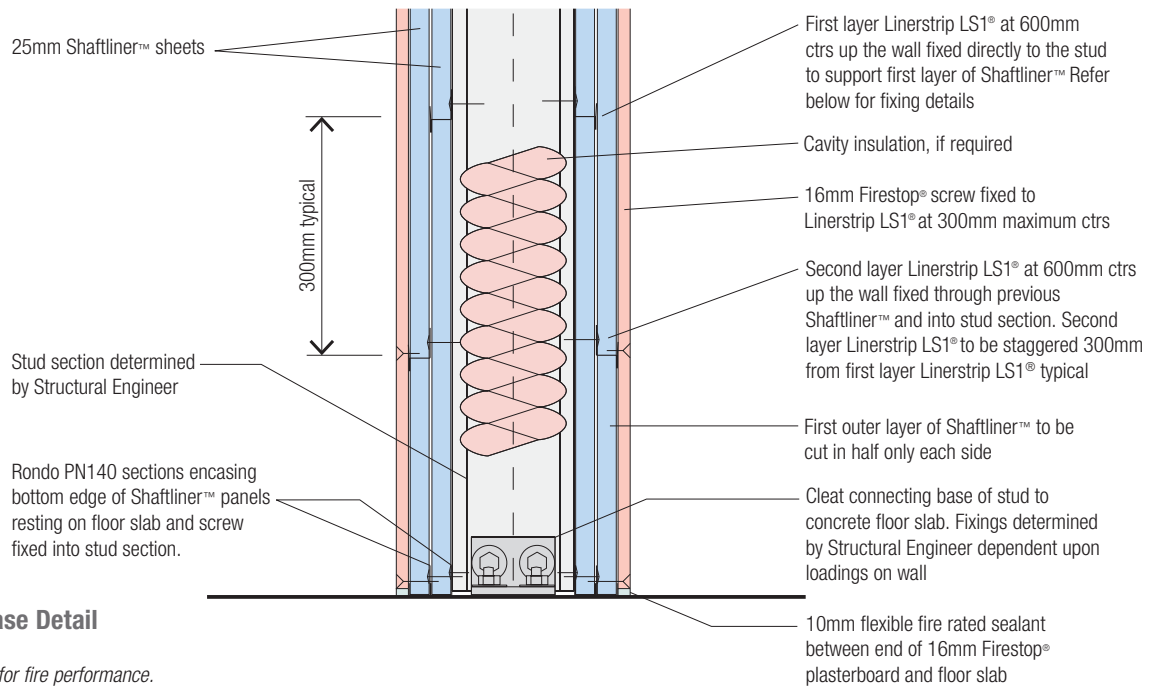


Wall "T" Intersection - Non Load Bearing 4 Hour Wall

Note:

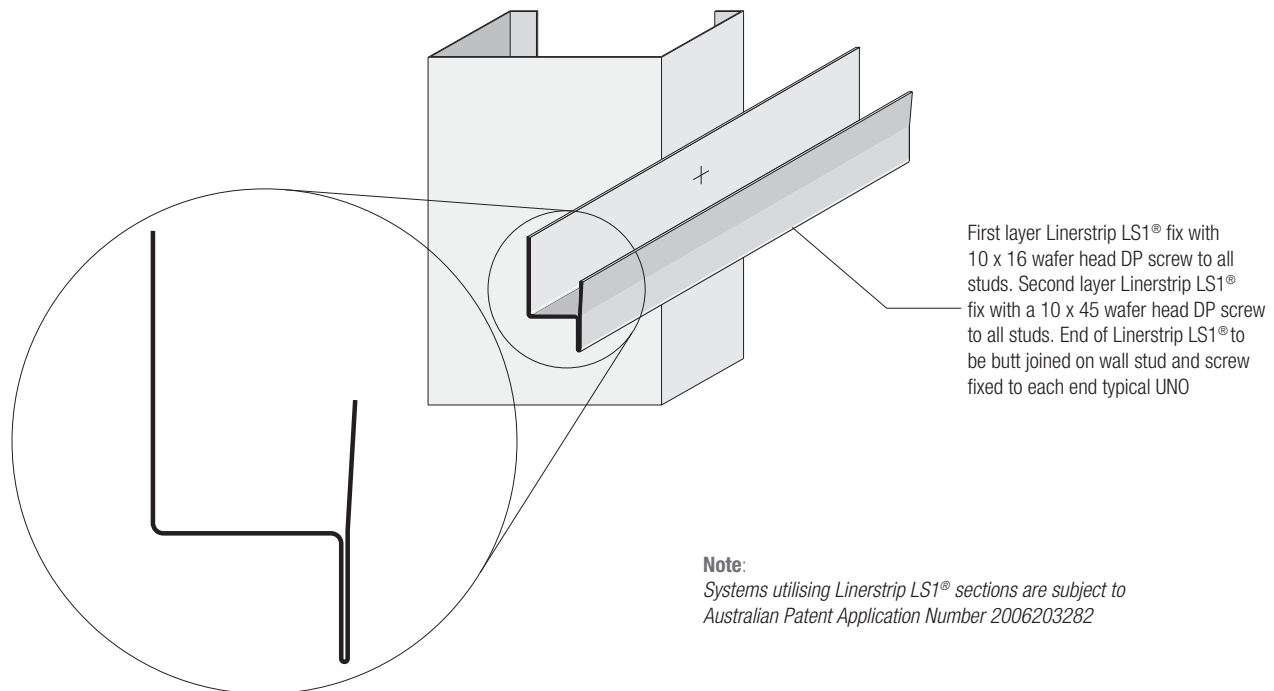
Refer to FC0-2765 for fire performance.

» Details



4 Hour Wall Base Detail

Note:
Refer to FCO-2765 for fire performance.



Note:
Systems utilising Linerstrip LS1® sections are subject to Australian Patent Application Number 2006203282

Linerstrip LS1® Fixing Detail

Construction Notes

- The slotted holes in the cleats supporting wall studs and the spigot connection on the beam supporting column to allow the roof system to deflect without applying axial loading onto the wall. The length of the slots in the cleats and the spigot will be subject to +ve and -ve deflections in the structure and should be sized by project Structural Engineer.
- The number of layers and type of plasterboard used will be dependent upon the fire or acoustic performance required from the system.
- The width that the higher plasterboard overlaps the lower plasterboard to be 150mm minimum.
- The plasterboard shall be installed in accordance with Boral Plasterboard's standard requirements for fire rated walls.
- The wall studs to be installed at 600mm maximum centres unless approved otherwise by Boral Plasterboard.
- Unless detailed or specified, penetrations in Firewall® Area Separation Walls should be referred to Boral Plasterboard for assessment prior to commencement of work.
- Control joints should be provided in long continuous runs of area separation walls at 12 metre centres maximum and wherever structural expansion joints are located. Control joints to be verified by Structural Engineer prior to commencement of work. Refer to standard Boral Plasterboard fire rated wall systems for details.

Approved Sealants

The following fire grade sealants can be used in the installation of the Firewall® Area Separation Wall systems:

Approved Fire Grade Sealants

Product Name	Manufacturer
Fyreflex sealant	Grinnel
Promaseal Mastic	Promat
Lorient Fire Sealant	Lorient
Multiflex	Pyropanel
Fireban 1	Bostik
FireSound	HB Fuller

Sustainability

Boral Plasterboard aims to minimise the environmental impact of its operations and to make a positive difference to the environment and communities in which it operates. Plasterboard is manufactured from abundant natural gypsum resources and 100% recycled paper liner.

Plasterboard waste can be recycled back into new plasterboard or used as a soil conditioner. Please contact Boral Plasterboard regarding waste collection services available in your region.

Health and Safety

For information regarding the safe use of Boral Plasterboard products and accessories please refer to instructions on the product packaging or contact your local Boral Plasterboard Sales Office or TecASSIST® for a current copy of the Material Safety Data Sheet.

Technical Enquiries 1800 811 222

TecASSIST® provides technical advice to builders, architects, contractors, engineers, regulators and home owners throughout Australia.

Our friendly team can offer both practical and design input at all levels of the plasterboard industry. Get your next project off on the right track by contacting TecASSIST® weekdays 8.30am - 4.30pm AEST on 1800 811 222 or www.boral.com.au/tecassist.

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South Australia	39 Burleigh Avenue, Woodville North 5012	F: (08) 7002 6381
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www.boral.com.au/firewall

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