USG BORAL
INNOVATION INSPIRED BY YOU.™

# PARTIWALL®
## INTERTENANCY SOLUTIONS

# INSTALLATION MANUAL
NEW ZEALAND

BRANZ Appraised
Appraisal No.898 [2015]

Certified System™
Quality
ISO 9001
SAI GLOBAL

# USG BORAL'S PURPOSE ...
## TO CREATE SUSTAINABLE SOLUTIONS FOR A WORLDWIDE BUILDING AND CONSTRUCTION INDUSTRY.

## PREFACE

USG Boral Building Products is a plasterboard and ceilings manufacturing Joint Venture between USG Corporation and Boral Limited, and is one of the leading players in this field.

Operating throughout Asia, Australasia and in the Middle East, USG Boral Building Products combines USG's innovative building products technologies with Boral's extensive plasterboard manufacturing and distribution footprint in Asia and Australia.

Among the successful solutions introduced by the company over the years are: Partiwall® and IntRwall® separating wall systems, OutRwall® and FireClad® fire rated exterior wall systems and many others.

USG Boral Building Products is well positioned to service the Australasian market through its manufacturing facilities in New South Wales, Queensland, Victoria and Auckland.

For more information on USG Boral Building Products refer to **www.usgboral.com**

## INTRODUCTION

This manual is intended for use by industry professionals and building practitioners. It outlines recommended methods for installation and finishing of USG Boral Partiwall®.

## TecASSIST®

USG Boral's Product and Systems Development (PSD) team boasts 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, USG Boral'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 USG Boral TecASSIST® by calling 0800 USGBORAL (0800 874 267).

## ISO 9001 QUALITY ASSURANCE

USG Boral Building Products Pty Ltd is a certified ISO 9001 - 2008 manufacturer No. QEC 0400 by SAI Global

Certified System
Quality
ISO 9001
SAI GLOBAL

## STANDARDS

The following Australasian and other Standards are referenced in this publication:

- AS/NZS 2588 *Gypsum plasterboard*
- AS/NZS 2589 *Gypsum linings — Application and finishing*
- NZS 3604 *Timber framed buildings*
- AS/NZS 1170.2 *Wind actions*
- NZS 1170.5 *Earthquake Actions*
- AS 1397 *Steel sheet and strip — hot dipped, zinc coated or aluminium/zinc coated*
- AS 3566 *Self-drilling screws for the building and construction industries*
- AS/NZS 1716 *Respiratory protective devices*
- ISO 9001 *Quality systems — Model for quality assurance in production, installation and servicing*
- AS/NZS 4600 *Cold-formed steel structures.*

## NZBC COMPLIANCE

USG Boral has all the necessary evidence to support that Partiwall® complies with the relevant provisions of the New Zealand Building Code (NZBC) as at 1 April 2017.

Partiwall® complies with NZBC:

- Structure B1
- Durability B2
- Fire Affecting Areas Beyond the Fire Source C3
- Hazardous Building Materials F2
- Airborne/Impact Sound G6

Refer USG Boral Partiwall® System Technical Statement for further compliance details.

## BRANZ APPRAISAL

USG Boral Partiwall® has been assessed by BRANZ as meeting the relevant NZBC performance clauses.

BRANZ Appraised
Appraisal No.898 [2015]

# CONTENTS

# INTRODUCTION

The pioneering USG Boral Partiwall® system is one of the most widely used separating wall systems in the Australian market.

Excellent acoustic performance, ease of construction and design flexibility has made USG Boral Partiwall® the system of choice on many multi-residential townhouse projects.

Continuous innovation of the Partiwall® system has kept it in step with the changing regulatory and market requirements over the years. Some of the Partiwall® innovations that can be found in this brochure and at www.usgboral.com are as follows:

- Compliance with New Zealand Building Code (NZBC). Refer to USG Boral Partiwall® System Technical Statement (STS200/1).
- New cost effective configuration to achieve up to FRR 90/90/90.
- Staggered aluminium clips on opposite sides of Partiwall® stud for offset floors.
- Services penetrations through Shaftliner™ barrier allowed in the roof space.

USG Boral Partiwall® is an innovative solution for separating walls between attached dwellings:

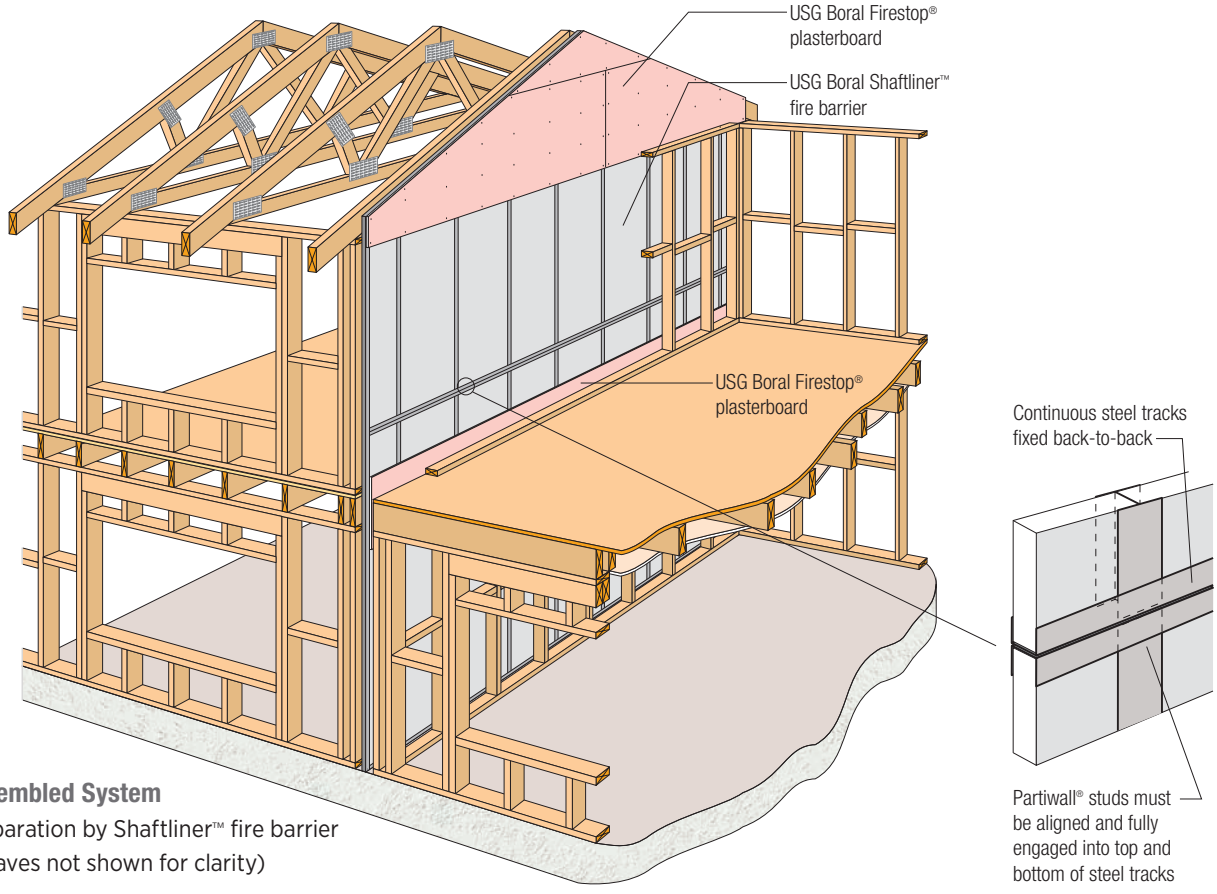
- that are designed with timber framing within the scope of NZS 3604:2011, or
- are to a specific engineering design using NZS 3603:1993 and AS/NZS 1170:2002.

**Material substitution in the Partiwall® system and non-compliance with the instructions in this brochure will void all manufacturers warranties and claims of Code compliance.**

## WHAT IS PARTIWALL®?

The Partiwall® system is a twin wall system that will provide fire rated and acoustical performance provided it is specified and installed in accordance with this document.

USG Boral Partiwall® has been tested to meet Fire Resistance Rating (FRRs) of 60/60/60 and 90/90/90 as outlined in the table on page 5.




**Assembled System**
(Separation by Shaftliner™ fire barrier at eaves not shown for clarity)

# » INTRODUCTION

USG Boral Partiwall® has been shown when specified with appropriate insulation will meet acoustical performance of no less than STC 55. (Refer Systems Tables pages 9-11).

Partiwall® was developed to suit the normal pattern of construction and follow-up trades. The fire-resistant Shaftliner™ panels are held in position by lightweight steel H or I section studs and track. No plasterboard fixing, jointing or finishing is required at this stage.

## PARTIWALL® SYSTEM CONFIGURATIONS

| Partiwall® System Type | Fire Barrier | FRR achieved |
|---|---|---|
| PWT60.1 60/60/60 | 1 x 25mm Shaftliner™ | 60/60/60[1] |
| PWT90.1 90/90/90 | 1 x 25mm Shaftliner™ with 1 x 16mm Firestop® plasterboard laminated to the Shaftliner™ | 90/90/90[2] |
| PWT90.2 90/90/90 | 2 x 25mm Shaftliner™ | 90/90/90[3] |

[1] CSIRO FCO-2016, FSV 381
[2] CSIRO FCO-2713
[3] CSIRO, FCO-1446 and FCO-2016

This installation procedure is easily carried out during the framing stage. The internal wall linings are installed at the plastering stage using conventional installation methods.

USG Boral Partiwall® has been tested and certified to meet Fire Resistance Ratings (FRR's) of 60/60/60 and 90/90/90 and acoustic performance up to and exceeding STC 55 under NZBC clause G6.3.1.

The inclusion of USG Boral's 10mm or 13mm Soundstop® plasterboard provides additional options where the application requires STC greater than 55 acoustic rating.

This brochure covers timber framed Partiwall® systems. USG Boral can also advise on using the Partiwall® system in steel framed buildings.

## FEATURES AND BENEFITS

- Cost effective and fast to construct.
- No wet trades are required.
- Modular construction of Shaftliner™ fire barrier permits easy installation at framing stage - no additional trades are required.
- Permits easy inclusion of service penetrations, such as switches, power points, light fittings and pipes within the partition.
- Internal wall linings are installed at the plastering stage as per normal construction sequence.

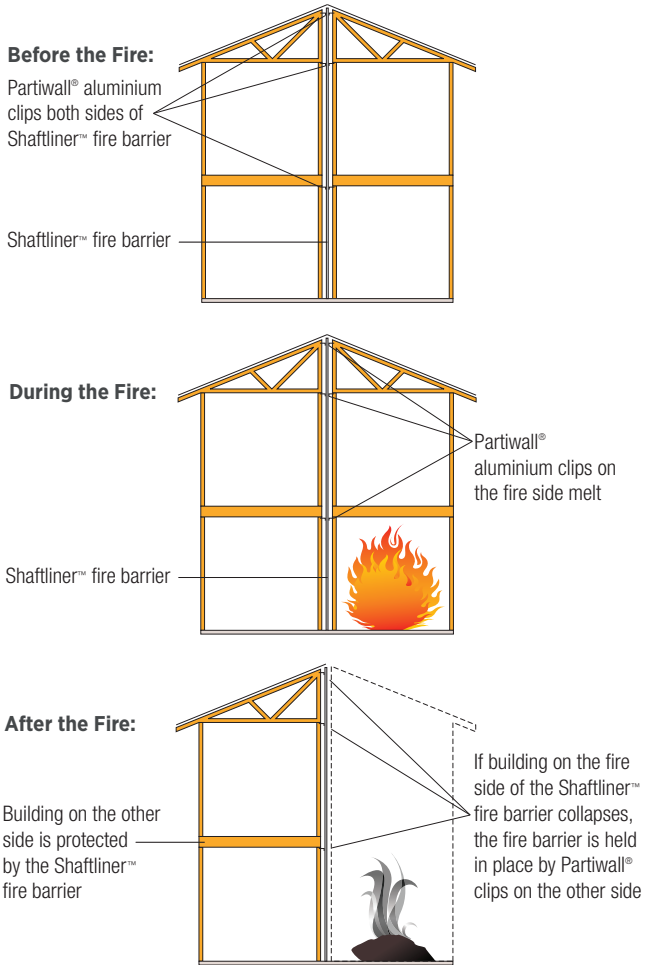
## HOW PARTIWALL® WORKS

While in a conventional fire rated wall system fire resistant outer linings provide protection to the wall substrate, in the Partiwall® system the main fire barrier is located within the wall cavity and is designed to protect the structure on the side opposite to the fire.

At the same time, the Shaftliner™ fire barrier relies on this structure for the support as the structure on the fire side loses stability or collapses.

In order to ensure that the Shaftliner™ fire barrier is not damaged by the collapse of the structure on the fire side, Partiwall® aluminium clips are utilised to attach the fire barrier to the timber frames on both sides. As the clips on the fire side melt, the Shaftliner™ fire barrier is disconnected from the collapsing structure and is supported by the clips and the structure on the protected side for the specified fire rating period.

**Steel clips must not be used in the Partiwall® system as their use compromises the integrity of the Shaftliner™ fire barrier during the fire.**



# DESIGN CONSIDERATIONS

## FIRE

The Partiwall® system has been fire tested at CSIRO's laboratory at North Ryde in Sydney. The performance of the various systems has been assessed in CSIRO's assessment number FSV 0381, FCO-2256, FCO-2713, FCO-2016 and FCO-1446.

Partiwall® system provides Fire Resistance Ratings (FRR) of 60/60/60 and 90/90/90. In the case of a fire, the structural adequacy and load bearing capacity is provided by the wall frame on the other side of Shaftliner™ fire barrier.

As the primary fire barrier, the Shaftliner™ is located in the cavity between the frames. The system permits easy inclusion of services such as water and waste pipes, electrical and communication cables, as long as the primary Shaftliner™ fire barrier is not penetrated. Service penetrations are allowed through Shaftliner™ fire barrier in the roof space.

The following penetrations, individually or in combinations, or back-to-back, are allowed in the outer linings and are not required to be fire rated:

- normal residential electrical switches and power points
- data, communications or electrical cables passing through the linings into the cavity
- copper, galvanized steel, or plastic water or wastewater pipes of up to 50mm nominal diameter passing through the linings into the cavity
- cabinets, baths, shower bases or vanities.

For other penetrations contact USG Boral 0800 USGBORAL (0800 874 267).

The following requirements are essential to maintain the fire-rating integrity and acoustic performance of the Partiwall® Shaftliner™ fire barrier:

- Use only the specified Partiwall® clips to attach the Partiwall® studs to framing members. In the event of a fire, this aluminium clip is designed to melt to allow the framing members on the fireside to fall away leaving the Shaftliner™ fire barrier intact.
- Other than the clips, there should be no attachments to the Shaftliner™ fire barrier.
- There should be no penetrations through the Shaftliner™ fire barrier. Where a penetration in the roof space is required it must be specified by a Fire Engineer.

For design and installation requirements of internal plasterboard wall linings, refer to USG Boral Plasterboard Installation Manual NZ.

## ACOUSTIC

The Partiwall® system has been the subject of a series of acoustic tests at the CSIRO Acoustic Laboratory at Highett, Victoria.

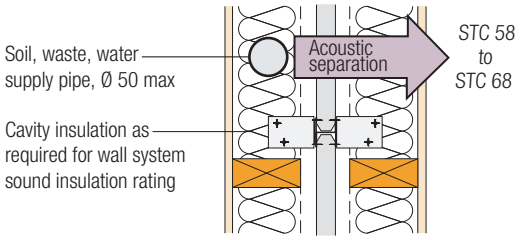
Acoustical estimates have been determined by Renzo Tonin and Associates Pty Ltd a member firm of the Association of Australian Acoustical Consultants (AAAC).

Selection of internal lining and insulation material will determine ultimate acoustical performance of the Partiwall® system. Refer to this manual when specifying these elements of the system.

Small penetrations of linings in occupancy areas ie switches, power points, light fittings and pipes need to be acoustically sealed. (ref page 12, lower diagram)

Shaftliner™ fire barrier base and internal lining junctions with floors must be sealed with Firesound™ sealant.

Partiwall® allows services such as soil & waste and water supply pipes to be located in the cavities on one or both sides. These pipes emanate noise whilst in use and consideration should be given to providing adequate acoustic separation to the room in the adjacent dwelling.




**Plan - Partiwall® Basic Configuration**

The acoustic separation provided by Partiwall® can range from STC 58 to STC 68 depending on the fire rated Partiwall® system selected, the inclusion of cavity insulation and the type of lining on the outer layer.

To maintain acoustic performance, service pipes must not be in contact with the Shaftliner™ fire barrier.

All services should be run through the framing. Insulation thicker than the stud framing is allowed.

The clear distance between the Shaftliner™ fire barrier and wall framing on both sides should not be less than 20mm nor more than 40mm.

The 16mm Firestop® plasterboard laminated to the Shaftliner™ fire barrier should not come into contact with the stud or floor framing. It is recommended the gap between Shaftliner™ fire

# » DESIGN CONSIDERATIONS

barrier and timber framing be increased to a minimum 25mm on the Firestop® side to ensure adequate clearance.

### ISOLATED SUPPORT FOR STAIRS

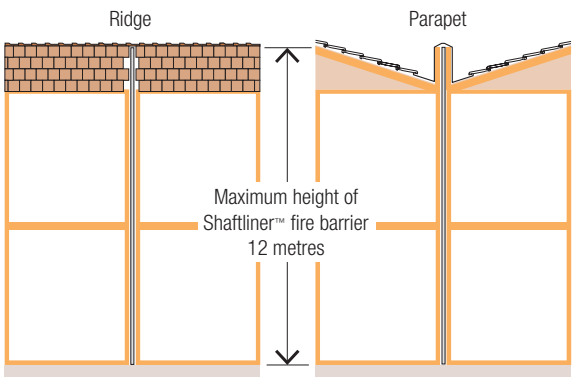
Impact sound from stair usage typically vibrates its way into separating walls, thus creating a greater likelihood of sound passing across the wall into attached dwellings. The recommended way to prevent this is by isolating the stair structure. Options include:

- Using the stringers to support the stairs, at each floor level, without intermediate support from the separating wall in between, ie free standing, or alternatively
- Using newel posts rather than the separating wall to support the stair structure
- Keeping the treads clear of the separating wall.

## STRUCTURAL

### MAXIMUM PERMISSIBLE HEIGHT

Height of the Shaftliner™ fire barrier should not exceed 12 metres.




### CONTROL JOINTS

Where control joints are necessary in the Shaftliner™ fire barrier, contact USG Boral 0800 USGBORAL (0800 874 267) for construction details.

### WIND SPEED AND SEISMIC

The Partiwall® system is suitable for use in all NZS 3604 Wind and Earthquake Zones. The Partiwall® system may also be specifically engineered for other designs using AS/NZS 1170.

### POST FIRE STRENGTH

The exposed Shaftliner™ will resist a 0.5kPa wind load after a fire, in accordance with NZBC Verification Method B1/VM1 Section 2.2.4.

### SUPPORT CLIP SEPARATION

Clips each side of the Shaftliner™ fire barrier H-stud must be spaced at no more than 2700mm vertically and 600mm horizontally unless noted otherwise. For clips spaced between 2700mm and 3000mm please contact USG Boral for installation details.

### FRAMING

Timber framing to be designed in accordance with NZS 3604 or specifically engineered in accordance with AS/NZS 1170 by a suitably qualified Structural Engineer to meet NZBC requirements and relevant New Zealand Standards.

Note: Stud spacing not to exceed 600mm centres.

### BRACING

If the Partiwall® is required to provide structural bracing values, please contact USG Boral.

### WET AREAS

In wet areas USG Boral recommends the use of moisture resistant internal lining plasterboards such as Multistop 4 and Fiberock® Aqua-Tough™ in order to achieve required fire and acoustic ratings:

For installation details of USG Boral Wet Area Systems refer USG Boral Plasterboard Installation Manual NZ.

## LININGS FOR OCCUPANCY AREAS

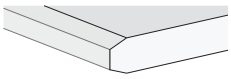
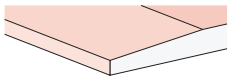
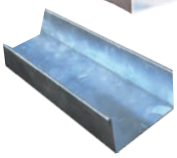
Linings in the occupancy areas (including Wet Area specified in some Partiwall® Wet Area Systems) do not need be fire rated and are constructed using the normal installation and finishing methods outlined in the USG Boral Plasterboard Installation Manual NZ. Base of linings must be acoustically sealed with specified Firesound™ sealant.

# MATERIALS

All materials are available from USG Boral and must be installed in accordance with current instructions found on the USG Boral website (www.usgboral.com). All materials should be stored clear of the ground and provided protection from damage and exposure to the elements.

The following materials are required for the installation of the Shaftliner™ fire barrier:

### USG Boral Partiwall® Components

| Product Image | Item Description | Item Codes |
|---|---|---|
|  | 25mm Shaftliner™ 600 x 3000mm | 25SW0630 |
| | 25mm Shaftliner™ 600 x 3600mm | 25SW0636 |
|  | 16mm Firestop® 1200 x 2400mm | 16FS1224 |
| Partiwall® stud  | 25mm H-Stud x 3000mm | R25HS3055 |
| | 25mm H-Stud x 3600mm | R25HS3655 |
| | 51mm I-Stud x 3000mm | RO51IS300055 |
| | 51mm I-Stud x 3600mm | RO51IS360055 |
| Partiwall® track  | 25mm Track x 3000mm x 3600mm | PT2530 PT2536 |
|  | 51mm Wall Track x 3000mm | WT51 |
| Partiwall® clip  | Aluminium wall clip | RPWALLCLIP |

### USG Boral Partiwall® Components

| Product Image | Item Description | Item Codes |
|---|---|---|
|  | HB Fuller Firesound™ sealant, 450g tube | FBSOUND450 |
|  | Firesound™ sealant, 600ml sausage | FBSOUND900 |
|  | 6g x 25mm Type 'W' Timber Screws | S625WB |
|  | 6g x 32mm Type 'W' Timber Screws (for bracing systems) | S632WB |
|  | 10g x 40mm Type 'L' Laminating Screws Pkt 1000 | S1040LB |
|  | 10g x 16mm Type 'D' Drill Point Wafer Head Screws | S1016DBB |
| | 10g x 30mm Type 'D' Drill Point Wafer Head Screws | S1030DB |
|  | 30mm Galvanized Nails | NC3028PO |
| USG Boral Firepack™  | Mineral wool packer 5m x 200 x 50mm, Pkt 3 | IIPWBATT |

Call USG Boral for information on the range of insulation listed in the Partiwall® Systems tables

**Note:**
Partiwall® performance values stated in this document are based on the use of materials and components listed above. Material substitution may effect the performance of Partiwall® systems. Please contact TecASSIST on 0800 USGBORAL (0800 874 267) for advice.

# PARTIWALL® SYSTEMS

## FRR 60/60/60 (SYSTEM TYPE PWT60.1)

**PWT60.1**

**FIRE RESISTANCE RATING**
LB **60/60/60**
**FROM BOTH SIDES**

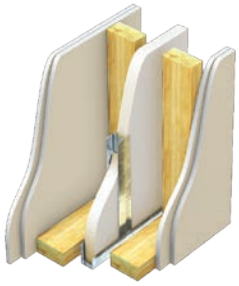
**FRR Basis:** FCO-2016, FSV 381

### SYSTEM DESCRIPTION

**Side 1:**
- Non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table)

**Fire Barrier:**
- 1x25mm SHAFTLINER™ between 25mm H-studs @ 600mm ctrs

**Side 2:**
- Non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table).



### SYSTEM DESCRIPTION

**Side 1: PWT60.4D**
- 2 Layers of non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table)

**Fire Barrier:**
- 1x25mm SHAFTLINER™ between 25mm H-studs @ 600mm ctrs

**Side 2:**
- 2 Layers of non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table).

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F19

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WIDTH mm | STUD SIZE (GAP) mm / INSULATION | 70 (20) $R_w$ | 70 (20) $R_w+C_{tr}$ | 70 (20) STC | 90 (20) $R_w$ | 90 (20) $R_w+C_{tr}$ | 90 (20) STC |
|---|---|---|---|---|---|---|---|---|---|---|
| **PWT60.1A** | 1x10mm [1] SOUNDSTOP | 1x10mm [1] SOUNDSTOP | 265 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 63 | 50 | 61 |
| **PWT60.1B** | 1x13mm [1] SOUNDSTOP | 1x13mm [1] SOUNDSTOP | 231 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 62 | 52 | 60 | NA | NA | NA |
| | | | 271 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 64 | 55 | 62 |
| | | | | 110mm Fibreglass Insulation (one cavity only) | NA | NA | NA | 59 | 51 | 58 |
| **PWT60.1AC** | 1x10mm [1] SOUNDSTOP | 1x10mm MULTISTOP 4 | 265 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 63 | 50 | 61 |
| | | | | 110mm Acoustic Fibreglass Insulation (both cavities) | NA | NA | NA | 65 | 53 | 63 |
| **PWT60.1AD** | 1x13mm [1] SOUNDSTOP | 1x10mm MULTISTOP 4 | 228 | 90G24 (both cavities) | 61 | 51 | 60 | NA | NA | NA |
| | | | 268 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 64 | 55 | 62 |
| **PWT60.1AE** | 1x10mm MULTISTOP 4 | 1x10mm MULTISTOP 4 | 265 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 63 | 50 | 61 |
| **PW60.1X** | 2x10mm SHEETROCK | 2x10mm SHEETROCK | 285 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 64 | 54 | 62 |

[1] 10 or 13mm Soundstop® available for larger projects and on indent

* **R2.0 GW** Wall Fibreglass Insulation and **110mm** Fibreglass Insulation - density 11kg/m$^3$
**90G24** Glasswool Insulation - density 24kg/m$^3$

For the full range of USG Boral systems refer to **www.usgboral.com**

# » PARTIWALL® SYSTEMS

## **FRR 90/90/90** (SYSTEM TYPE PWT90.1)

**PWT90.1**

**FIRE RESISTANCE RATING**
LB **90/90/90**
**FROM BOTH SIDES**

**FRR Basis:** FCO-2713

### SYSTEM DESCRIPTION

**Side 1:**
- Non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table)

**Fire Barrier:**
- 1x25mm SHAFTLINER™ between 25mm H-studs @ 600mm ctrs + 1x16mm FIRESTOP® direct fixed to H-studs

**Side 2:**
- Non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table).

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F19

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WIDTH mm | STUD SIZE (GAP) mm / INSULATION | 70 (20) $R_w$ | 70 (20) $R_w+C_{tr}$ | 70 (20) STC | 90 (20) $R_w$ | 90 (20) $R_w+C_{tr}$ | 90 (20) STC |
|---|---|---|---|---|---|---|---|---|---|---|
| **PWT90.1B** | 1x10mm [1] SOUNDSTOP | 1x10mm [1] SOUNDSTOP | 245 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 64 | 52 | 62 | NA | NA | NA |
| | | | 285 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 67 | 55 | 64 |
| **PWT90.1C** | 1x13mm [1] SOUNDSTOP | 1x13mm [1] SOUNDSTOP | 290 | R2.0 GW Wall Fibreglass Insulation (one cavity only) | NA | NA | NA | 62 | 50 | 61 |
| **PWT90.1AC** | 1x10mm MULTISTOP 4 | 1x10mm MULTISTOP 4 | 285 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 67 | 55 | 64 |
| **PWT90.1AD** | 1x10mm [1] SOUNDSTOP | 1x10mm MULTISTOP 4 | 285 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 67 | 55 | 64 |
| **PWT90.1AE** | 1x13mm [1] SOUNDSTOP | 1x10mm MULTISTOP 4 | 245 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 64 | 54 | 62 | NA | NA | NA |
| | | | 285 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 68 | 59 | 66 |
| **PWT90.1AF** | 1x13mm MULTISTOP 4 | 1x13mm MULTISTOP 4 | 250 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 66 | 54 | 64 | NA | NA | NA |
| | | | 290 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 68 | 57 | 67 |
| **PWT90.1AG** | 1x13mm [1] SOUNDSTOP | 1x13mm MULTISTOP 4 | 290 | R2.0 GW Wall Fibreglass Insulation (one cavity only) | NA | NA | NA | 62 | 50 | 61 |

[1] 10 or 13mm Soundstop® available for larger projects and on indent

* **R2.0 GW** Wall Fibreglass Insulation and **110mm** Fibreglass Insulation - density 11kg/m$^3$
**90G24** Glasswool Insulation - density 24kg/m$^3$

For the full range of USG Boral systems refer to **www.usgboral.com**

# » PARTIWALL® SYSTEMS

## **FRR 90/90/90** (SYSTEM TYPE PWT90.2)

**PWT90.2**

**FIRE RESISTANCE RATING**
LB **90/90/90**
**FROM BOTH SIDES**

**FRR Basis:** FCO-1446, FCO-2016

### SYSTEM DESCRIPTION

**Side 1:**
- Non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table)

**Fire Barrier:**
- 2x25mm SHAFTLINER™ between 51mm I-studs @ 600mm ctrs

**Side 2:**
- Non fire resistant lining (refer to table)
- Timber framing
- 20mm min gap between timber frame and fire barrier
- Insulation (refer to table).

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F19

| SYSTEM | LINING SIDE 1 | LINING SIDE 2 | NOM WIDTH mm | STUD SIZE (GAP) mm | 70 (20) | | | 90 (20) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | INSULATION | $R_w$ | $R_w+C_{tr}$ | STC | $R_w$ | $R_w+C_{tr}$ | STC |
| **PWT90.2B** | 1x10mm [1] SOUNDSTOP | 1x10mm [1] SOUNDSTOP | 250 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 64 | 52 | 62 | NA | NA | NA |
| | | | 290 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 68 | 56 | 66 |
| | | | | 110mm Acoustic Fibreglass Insulation (one cavity only) | NA | NA | NA | 62 | 51 | 61 |
| **PWT90.2C** | 1x13mm [1] SOUNDSTOP | 1x13mm [1] SOUNDSTOP | 296 | R2.0 GW Wall Fibreglass Insulation (one cavity only) | NA | NA | NA | 62 | 50 | 61 |
| **PWT90.2AD** | 1x10mm MULTISTOP 4 | 1x10mm MULTISTOP 4 | 290 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 68 | 56 | 66 |
| **PWT90.2AE** | 1x10mm [1] SOUNDSTOP | 1x10mm MULTISTOP 4 | 290 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 68 | 56 | 66 |
| **PWT90.2AF** | 1x13mm [1] SOUNDSTOP | 1x10mm MULTISTOP 4 | 253 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 66 | 56 | 64 | NA | NA | NA |
| | | | 293 | R2.0 GW Wall Fibreglass Insulation (one cavity only) | NA | NA | NA | 62 | 53 | 61 |
| **PWT90.2AG** | 1x13mm [1] SOUNDSTOP | 1x13mm MULTISTOP 4 | 256 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 67 | 55 | 65 | NA | NA | NA |
| | | | 296 | R2.0 GW Wall Fibreglass Insulation (one cavity only) | NA | NA | NA | 62 | 50 | 61 |
| **PWT90.2AH** | 1x13mm MULTISTOP 4 | 1x13mm MULTISTOP 4 | 256 | R2.0 GW Wall Fibreglass Insulation (both cavities) | 67 | 55 | 65 | NA | NA | NA |
| | | | 296 | R2.0 GW Wall Fibreglass Insulation (both cavities) | NA | NA | NA | 70 | 58 | 68 |
| | | | | 110mm Acoustic Fibreglass Insulation (one cavity only) | NA | NA | NA | 64 | 53 | 63 |

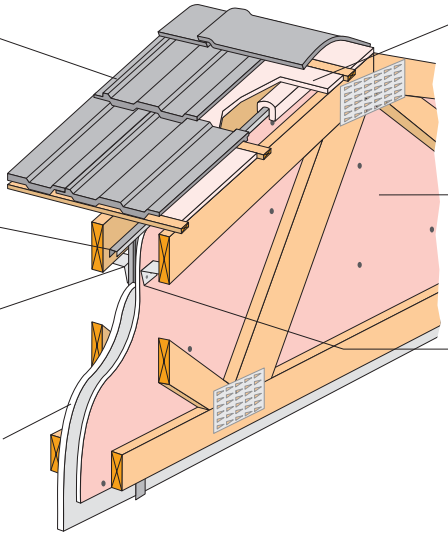
[1] 10 or 13mm Soundstop® available for larger projects and on indent

* **R2.0 GW** Wall Fibreglass Insulation and **110mm** Fibreglass Insulation - density 11kg/m$^3$
**90G24** Glasswool Insulation - density 24kg/m$^3$

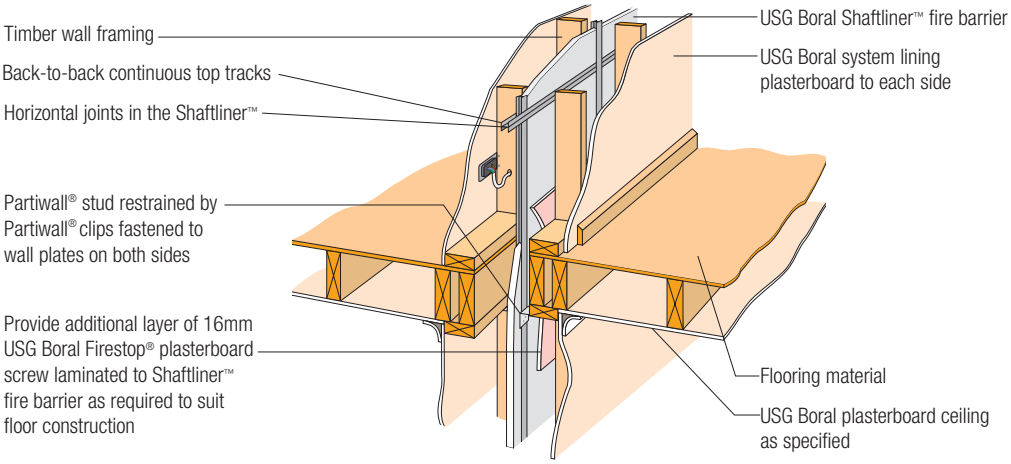
For the full range of USG Boral systems refer to **www.usgboral.com**

# DETAILS

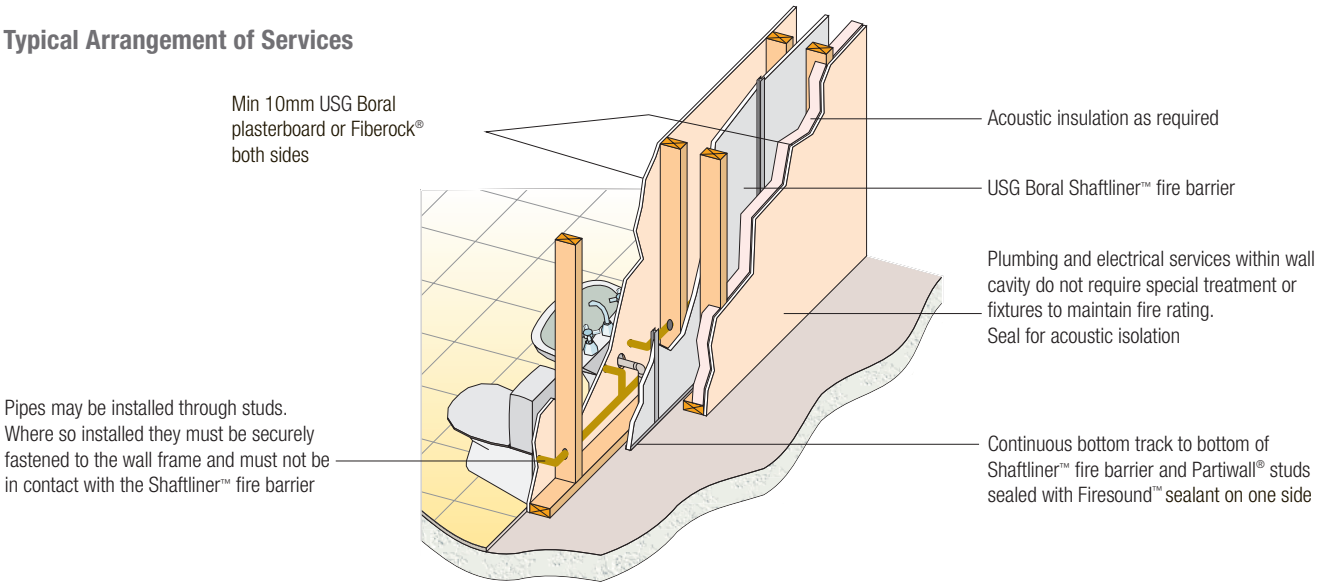
## Perspective - Section at Roof




## Typical Floor/Wall Junction

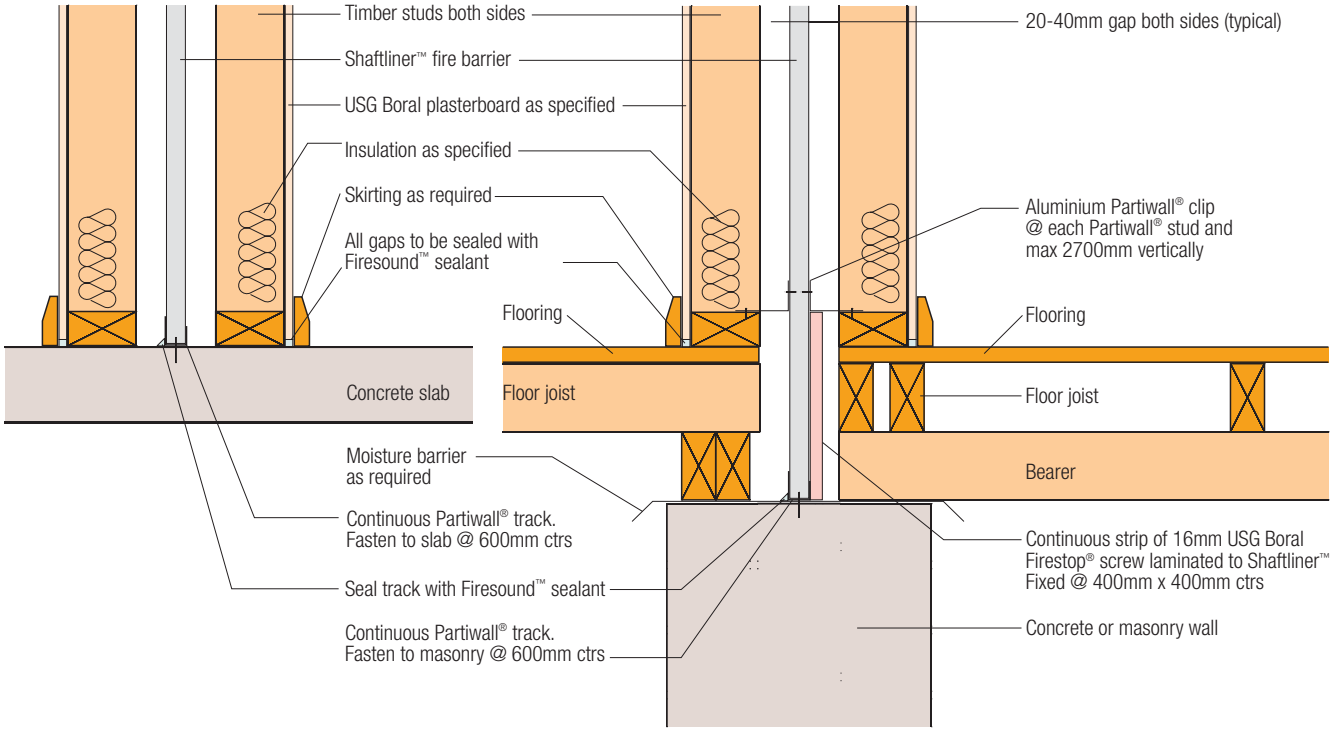



## Typical Arrangement of Services



# » DETAILS

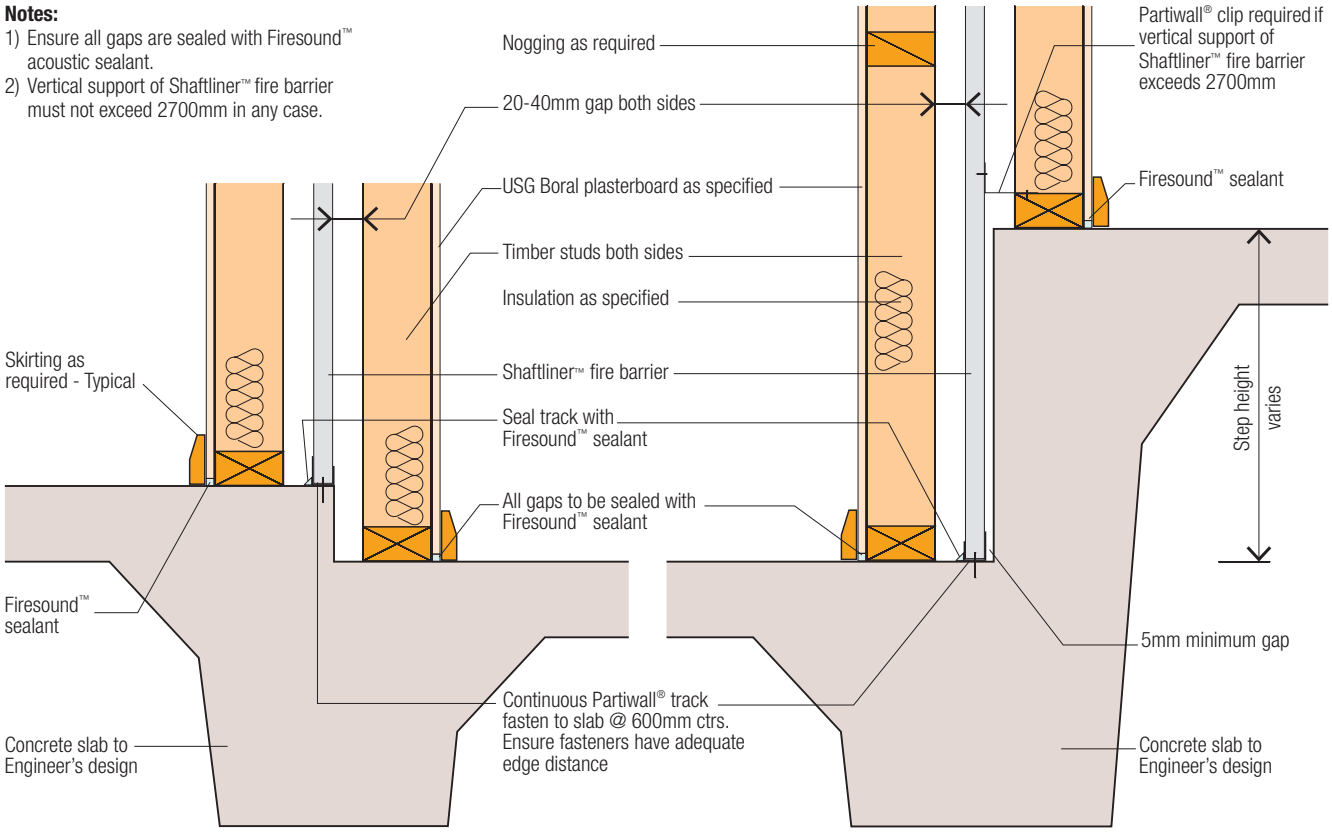
**NOTE:**
**These and other construction details are available as CAD files on: usgboral.com/partiwall-nz**




**Concrete Base Detail - FRR 60/60/60** (PW05a)

**Masonry Base Detail - FRR 60/60/60** (PW05b)

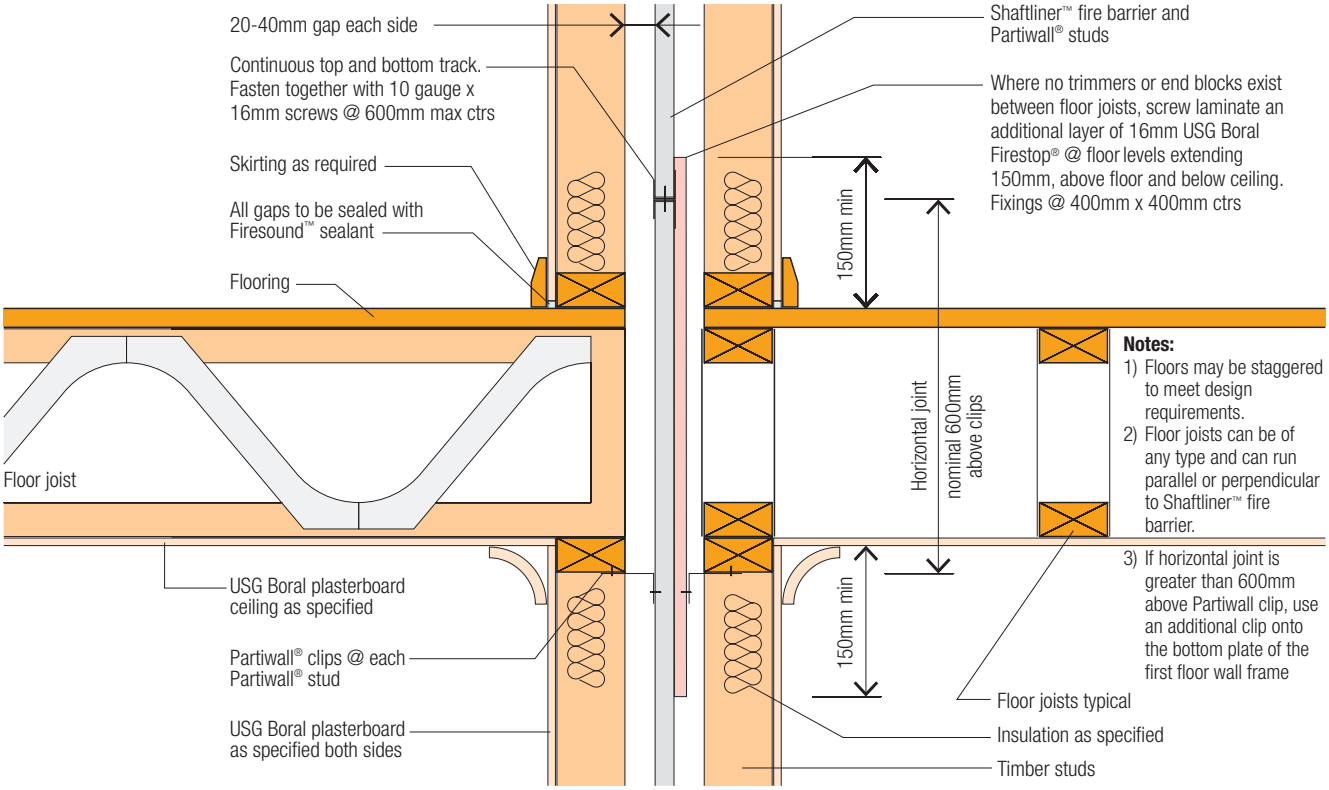
**Notes:**
1) Ensure all gaps are sealed with Firesound™ acoustic sealant.
2) Vertical support of Shaftliner™ fire barrier must not exceed 2700mm in any case.



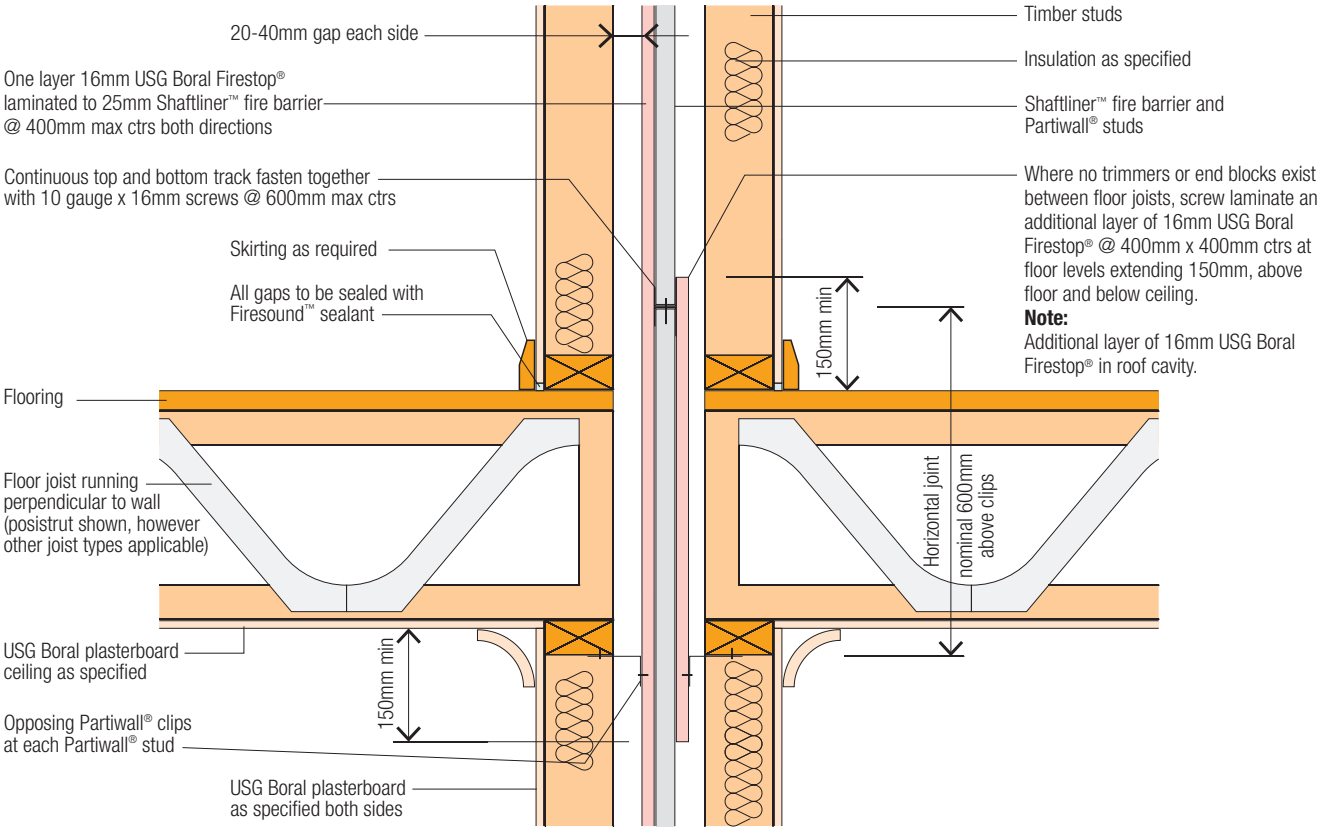

**Step in Slab Detail - FRR 60/60/60** (PW06a)

**Step in Slab Detail - FRR 60/60/60** (PW06b)

# » DETAILS

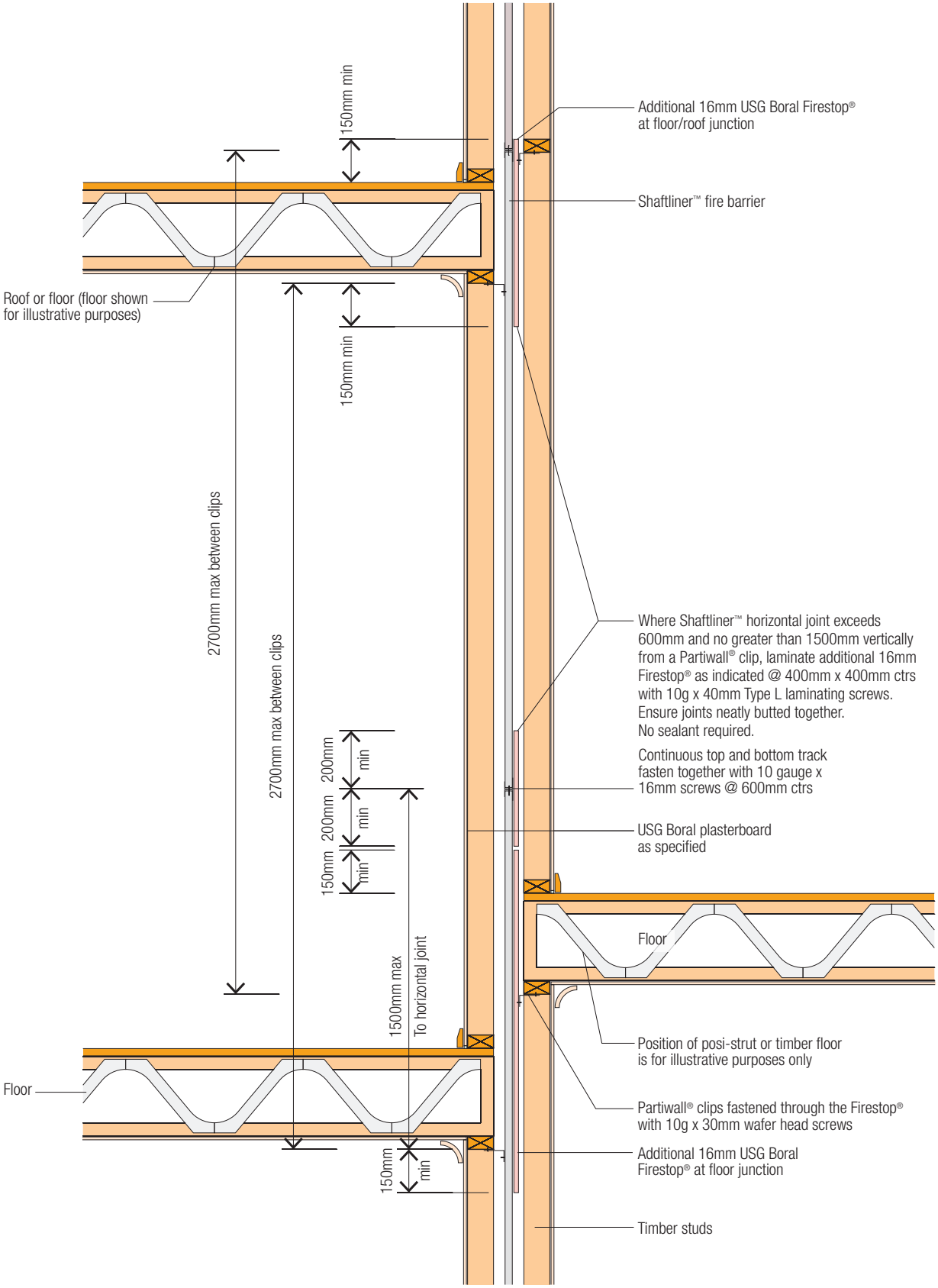



**Typical Floor/Wall Junction - FRR 60/60/60** (PW01)



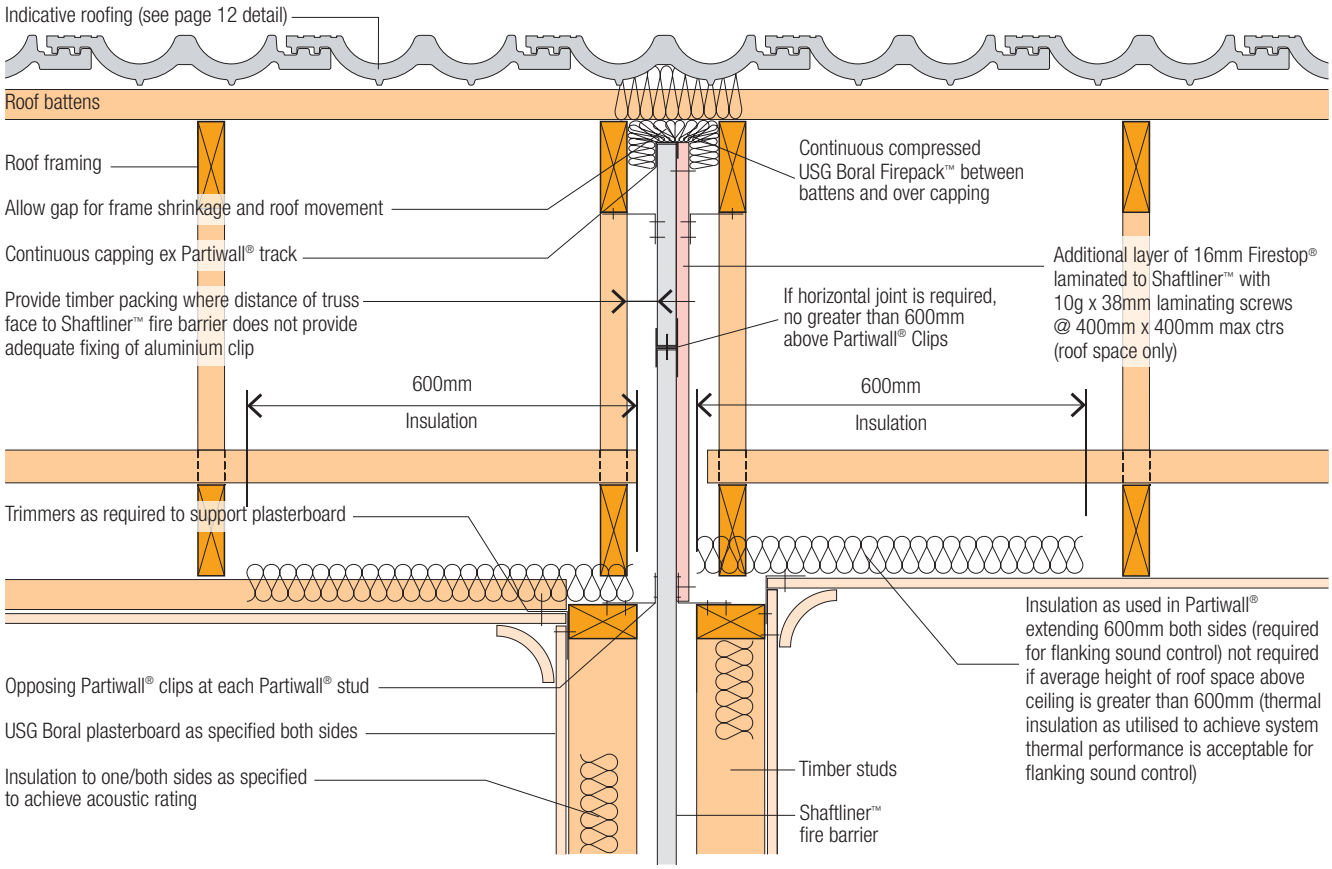

**Typical Floor/Wall Junction - FRR 90/90/90** (PW03)

# » DETAILS

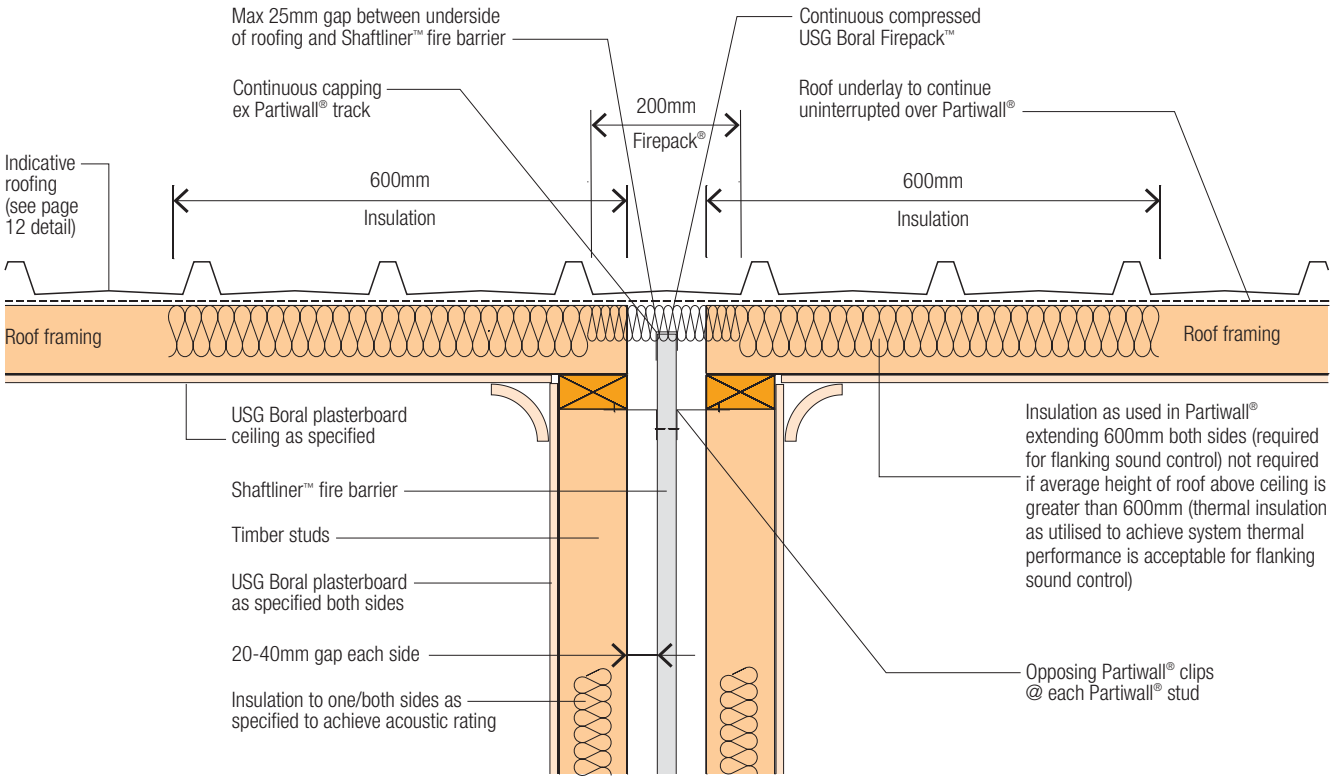



**Staggered Floor Detail - FRR 60/60/60** (PW04)

# » DETAILS



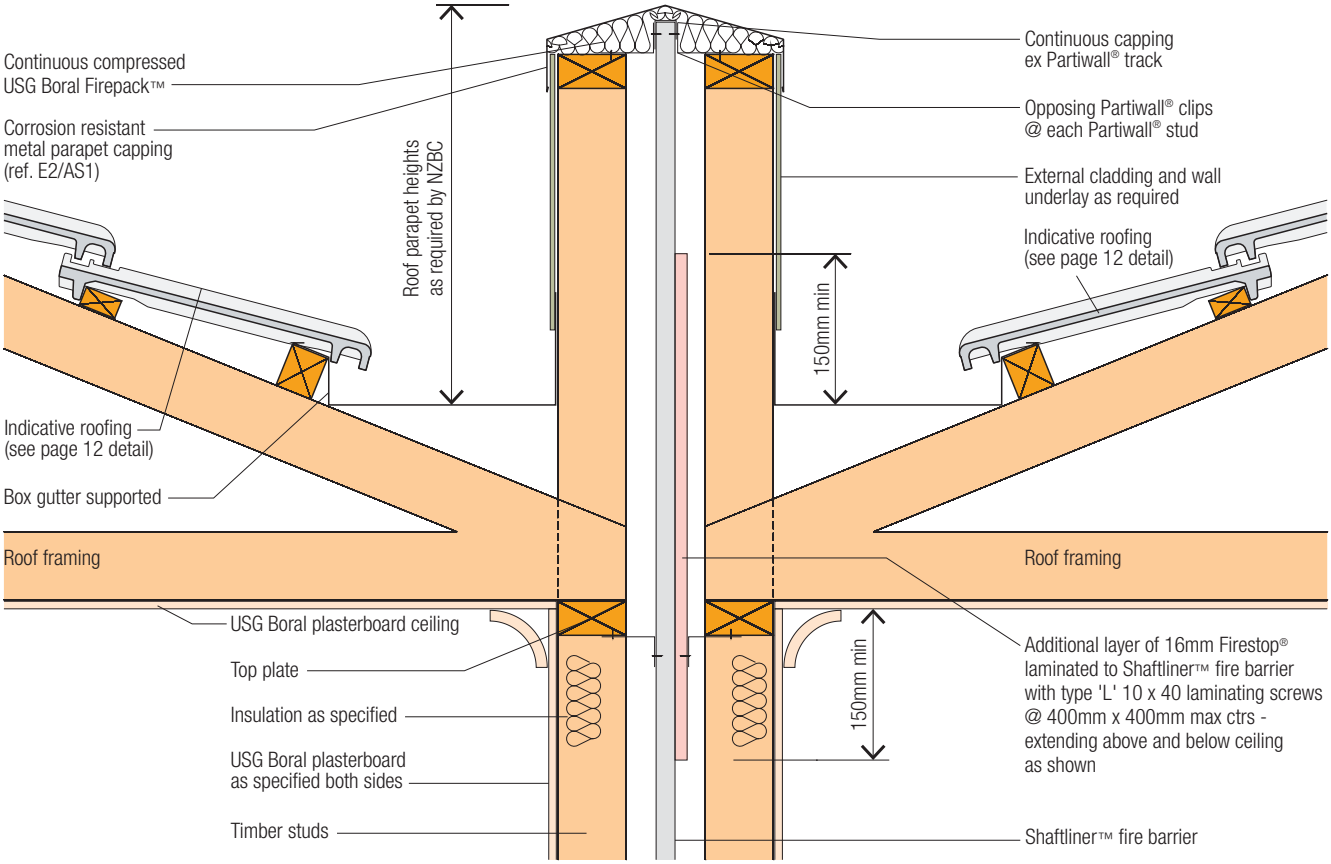

**Pitched Roof - Wall/Roof Junction Detail - FRR 60/60/60** (PW11)



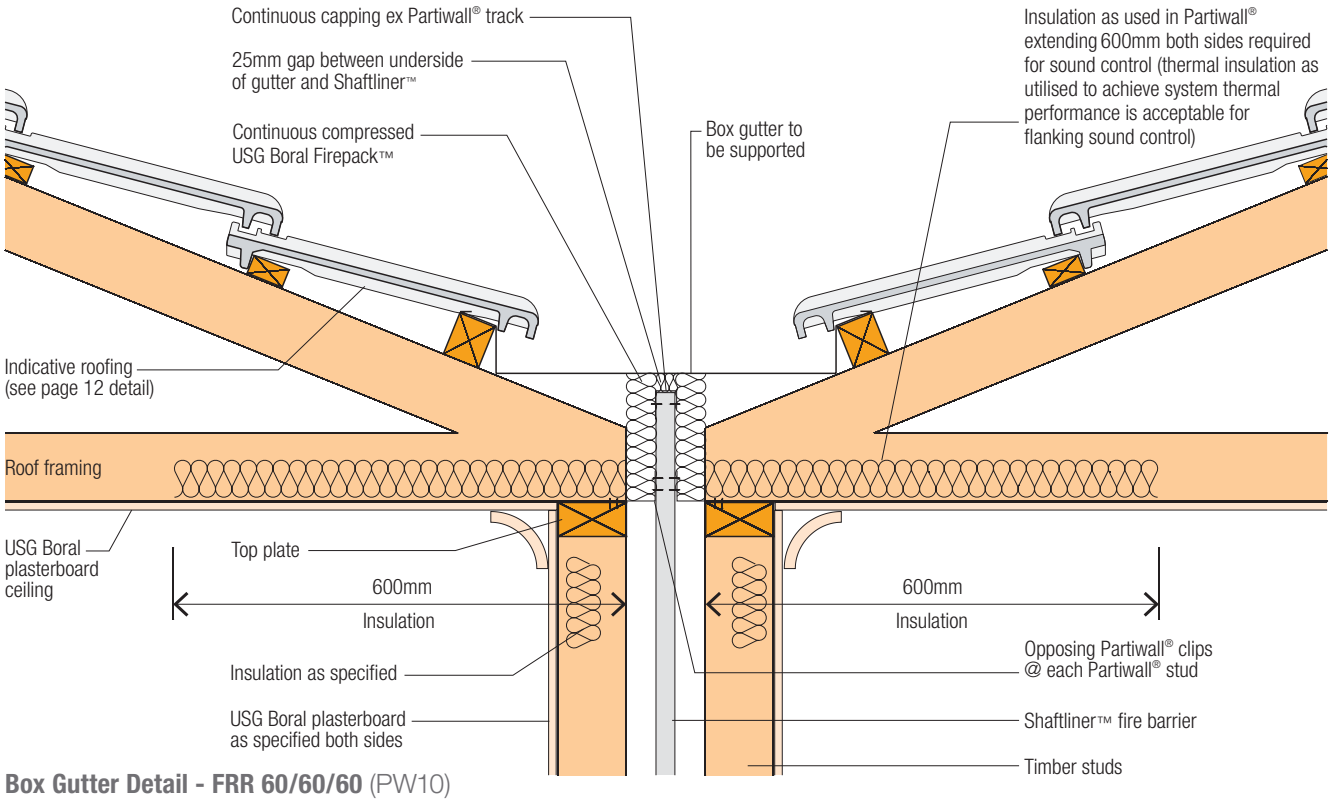

**Flat Roof - Wall/Roof Junction Detail - FRR 60/60/60** (PW12)

# » DETAILS

*Note: Roofing and flashing weather tightness details are indicative only and are outside the scope of Partiwall® installation. Refer roofing manufacturer's installation requirements.*

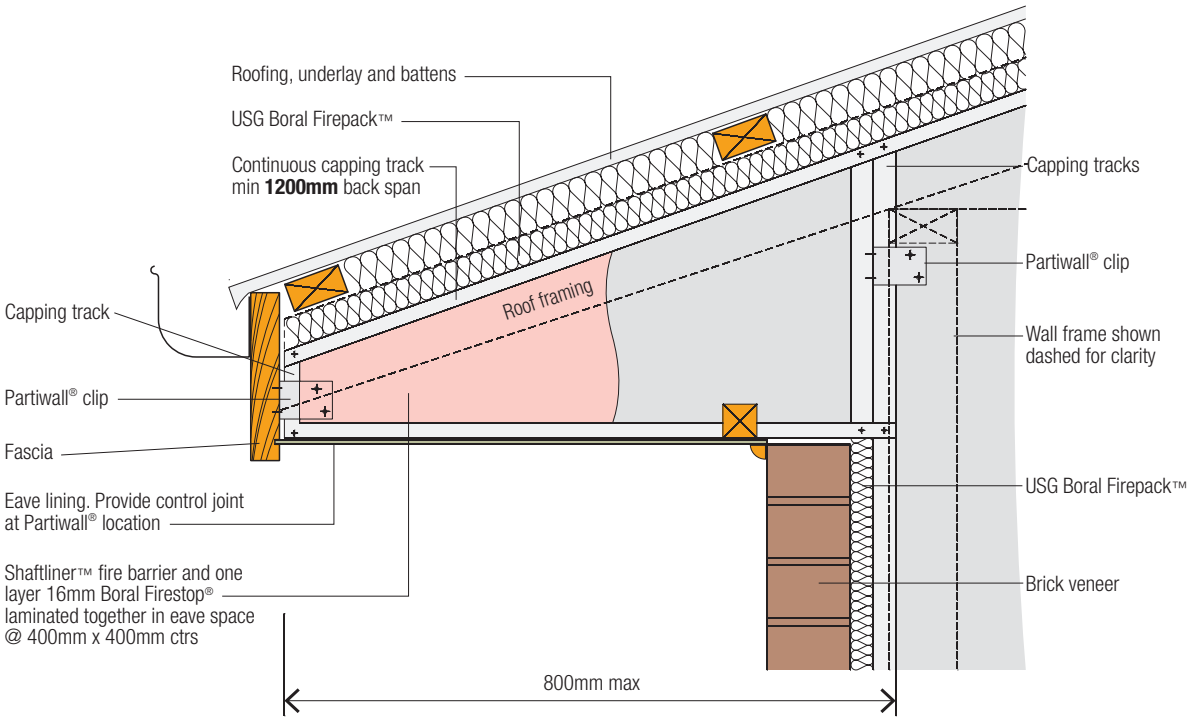



**Roof Parapet - Junction Detail - FRR 60/60/60** (PW09)



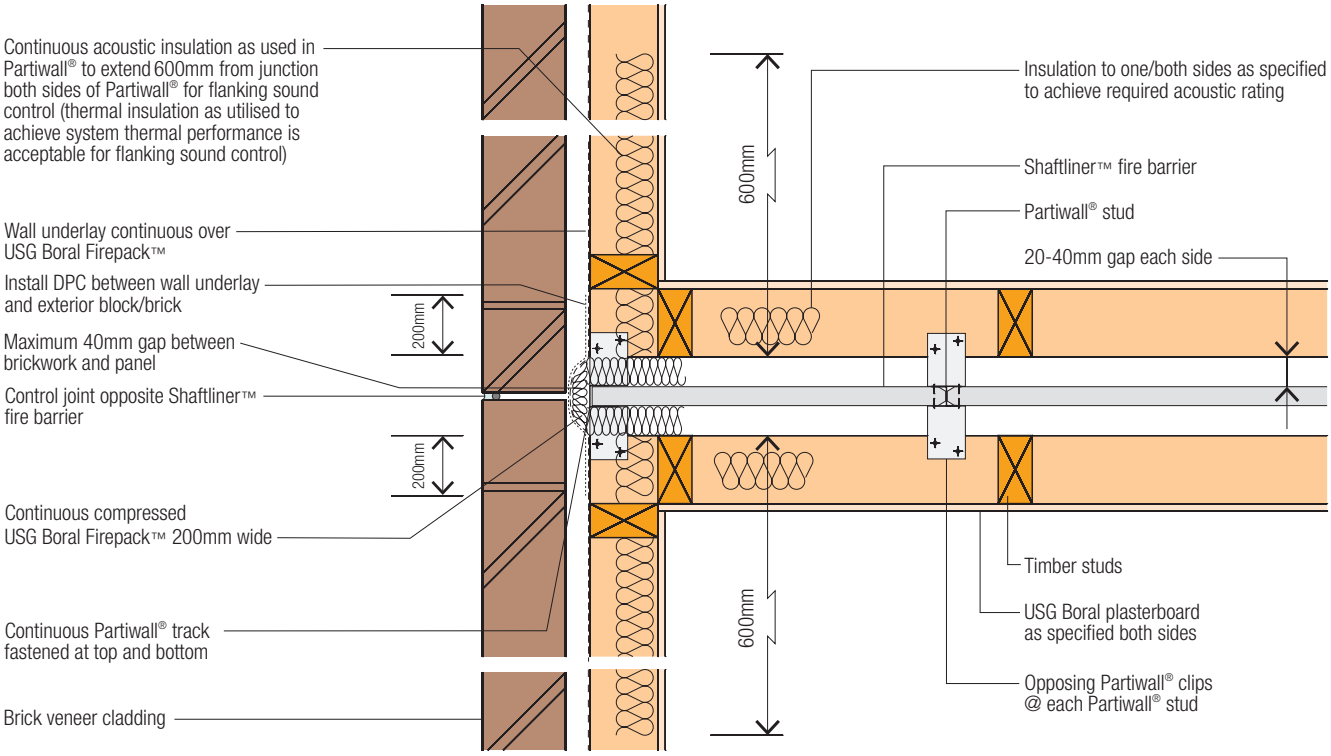

**Box Gutter Detail - FRR 60/60/60** (PW10)

# » DETAILS



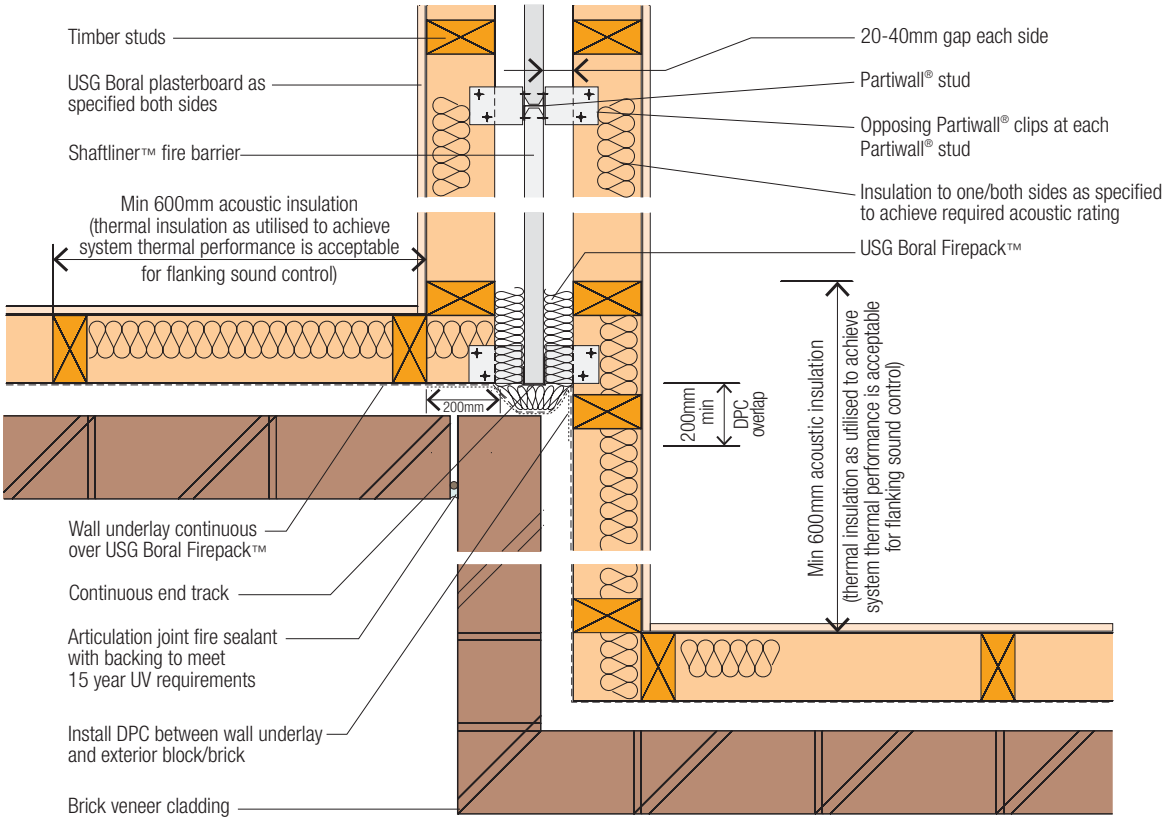

**Eave Closure Detail - FRR 60/60/60** (PW19) (if FRR 90/90/90 required, contact USG Boral)

# » DETAILS

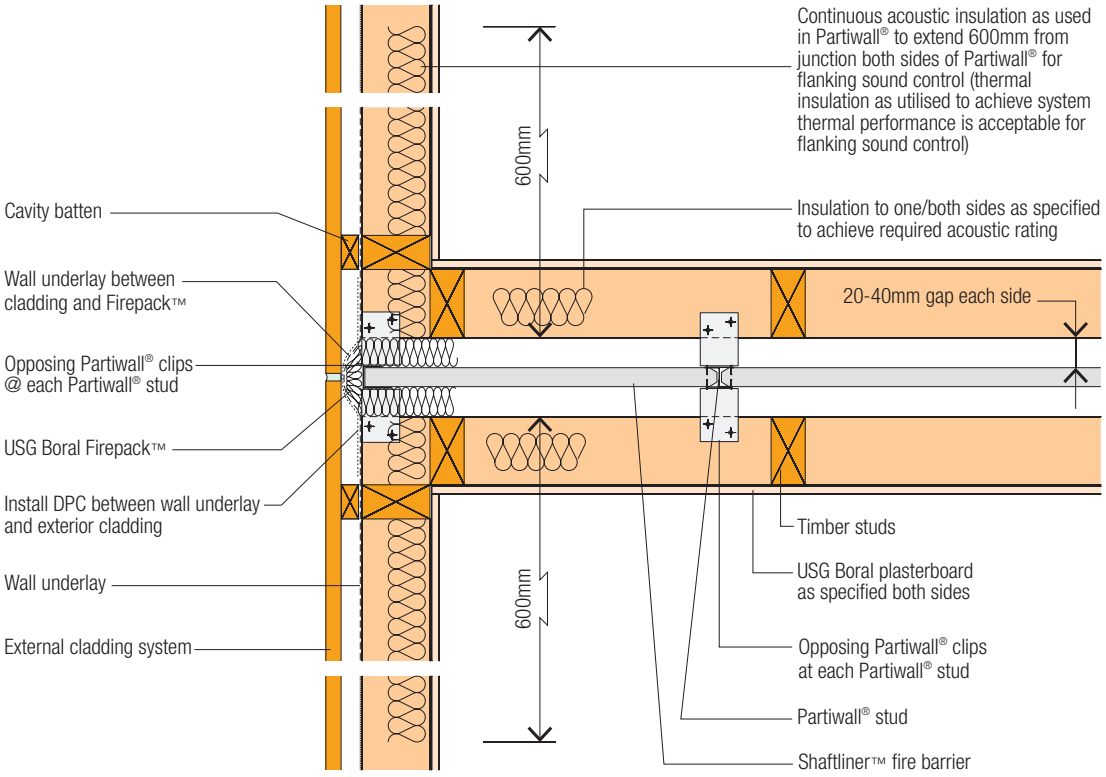



**Brick Veneer Wall - Junction Detail 1 - FRR 60/60/60** (PW32) Plan View

# » DETAILS

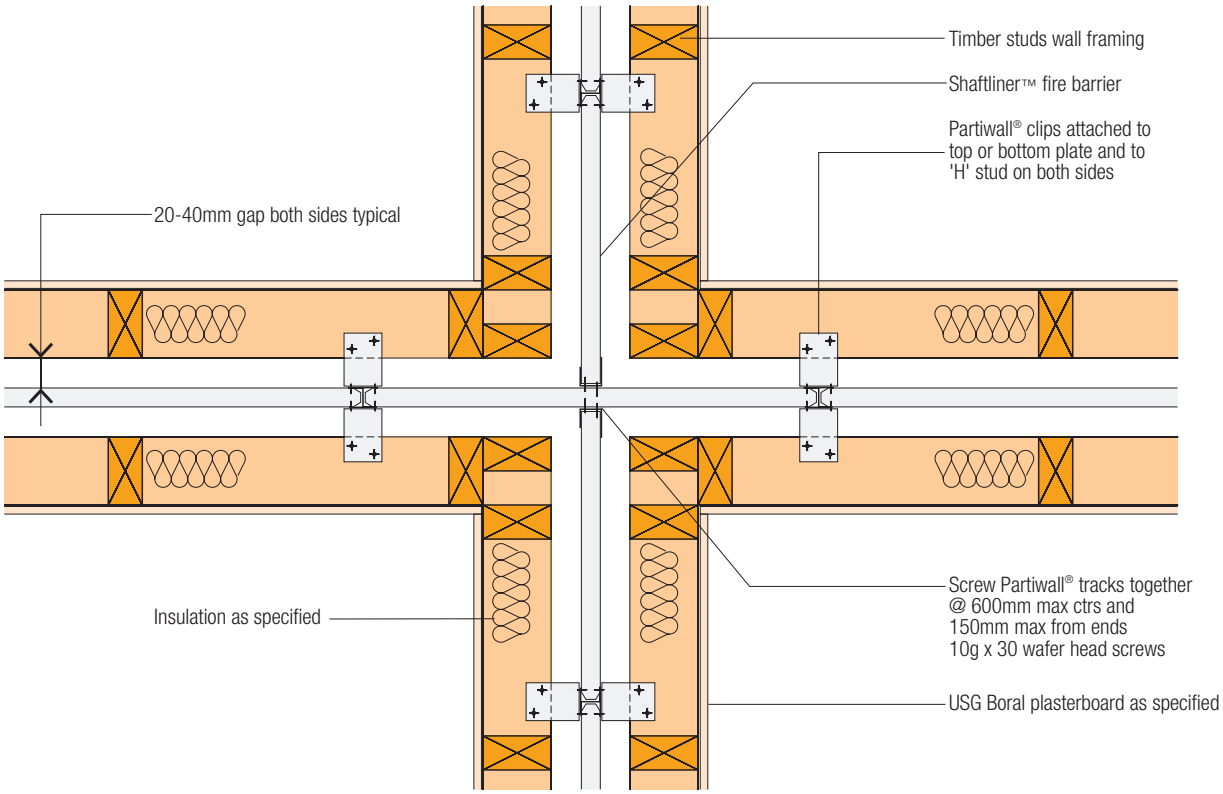



**Brick Veneer Wall Junction - Detail 2 - FRR 60/60/60** (PW33) Plan View

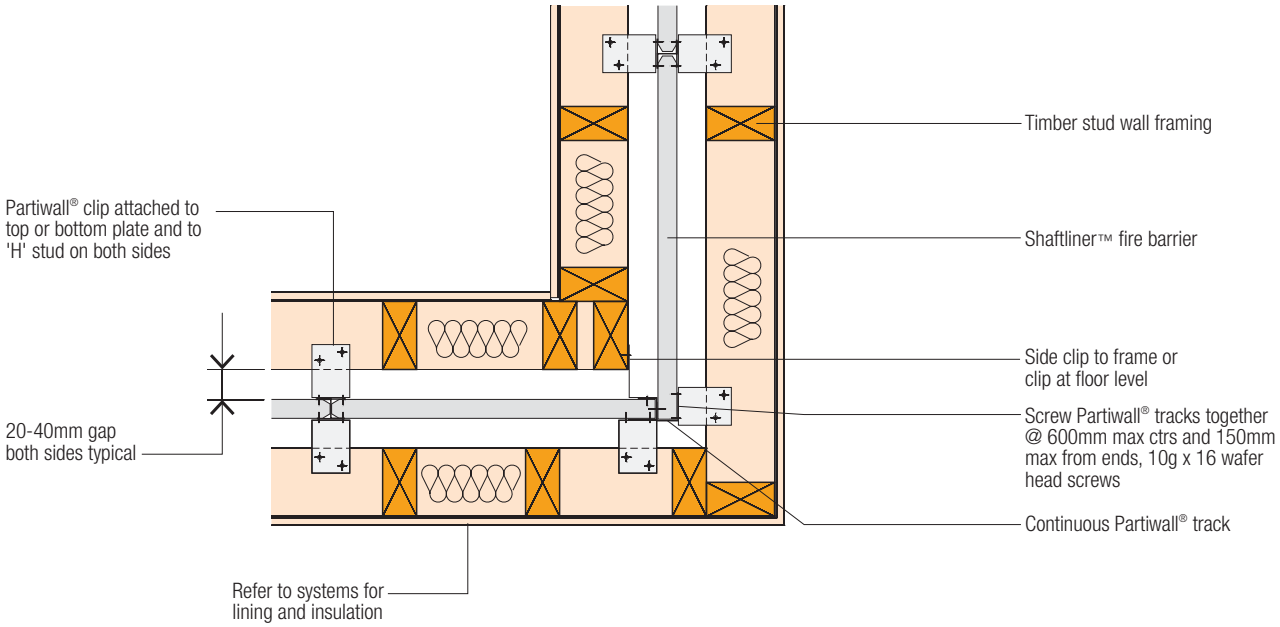



**Clad Wall - Junction Detail - FRR 60/60/60** (PW28a) Plan View

# » DETAILS

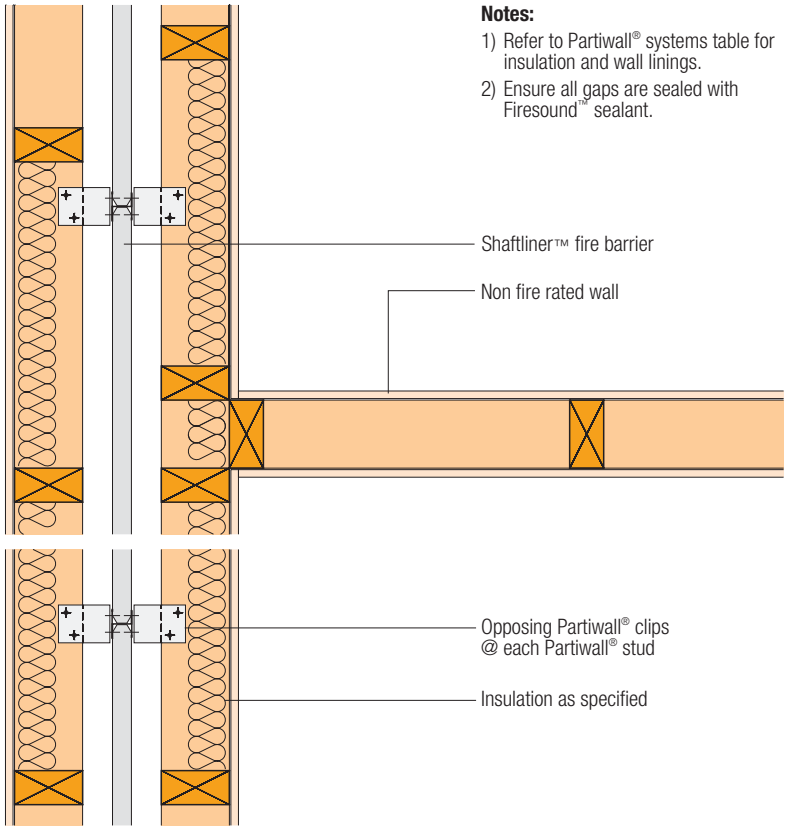



**4-Way Intersecting Wall - Plan Detail - FRR 60/60/60** (PW25) Plan View

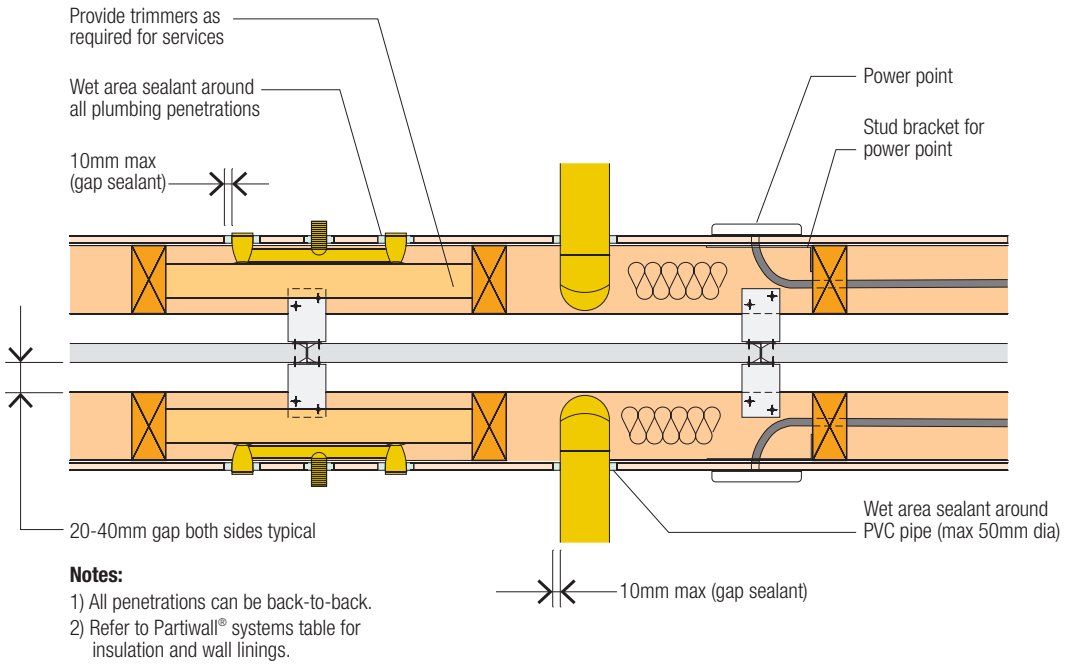



**Typical Corner - Plan Detail - FRR 60/60/60** (PW24) Plan View

# » DETAILS

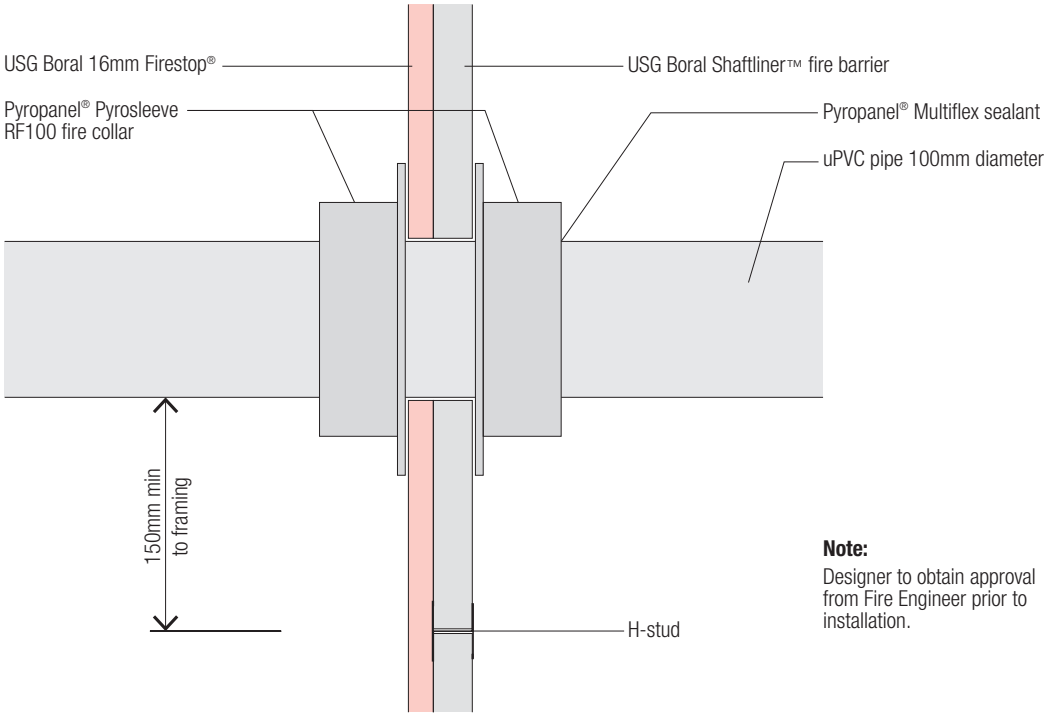



**Internal Wall/Partiwall® Junction - FRR 60/60/60** (PW26) Plan View

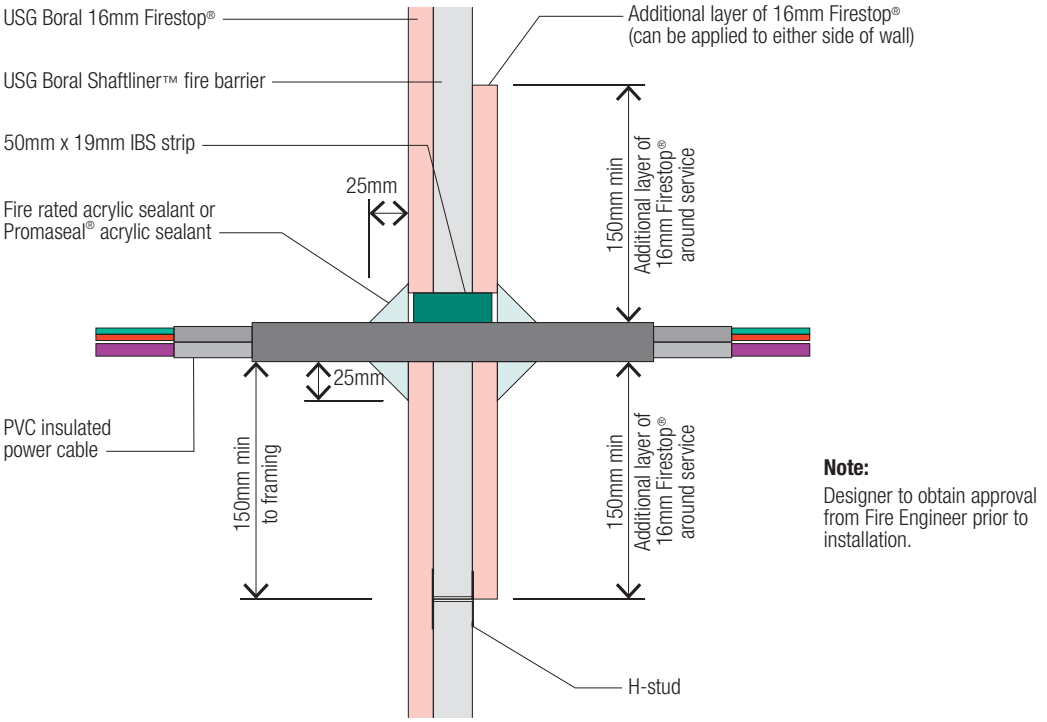



**Wall Penetrations - Plan Details - FRR 60/60/60** (PW34) Plan View

# » DETAILS

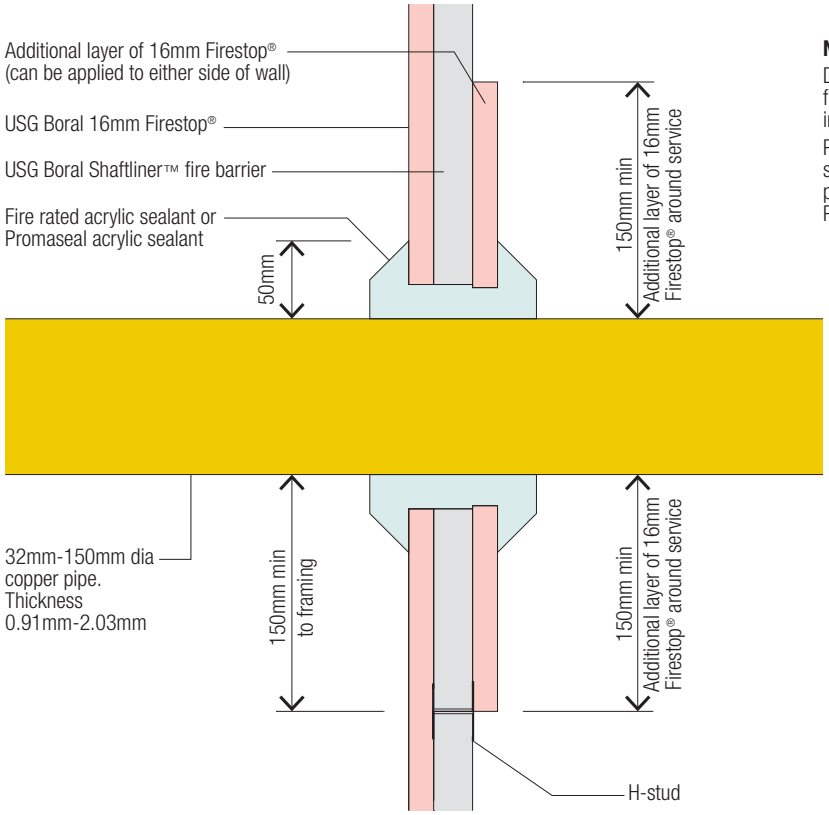



**uPVC Pipe Penetration at Roof Space - FRR -/60/60** (PW35a)




**Power Cables Penetrations at Roof Space - FRR -/60/-** (PW35b)

# » DETAILS




**Note:**

Designer to obtain approval from Fire Engineer prior to installation.

Pipe must be independently supported both sides of penetration through the Partiwall®

**Copper Pipe Penetration at Roof Space - FRR -/60/-** (PW35c) Plan View

# INSTALLATION OF SHAFTLINER™ FIRE BARRIER

Installation of the Shaftliner™ fire barrier requires the attachment of the supporting Partiwall® studs to framing members using Partiwall® clips. Set out framing to allow for the required clearances on both sides of the Shaftliner™ fire barrier and later clipping of the Partiwall® studs to wall plates and roof trusses.

After the framing on one side has been completed, the Shaftliner™ fire barrier is installed and clipped to the completed side. When framing on the other side is completed the Shaftliner™ fire barrier is clipped to that side.

The sequence of construction should be planned to accommodate the progressive erection of the Shaftliner™ fire barrier.

## DELIVERY, ONSITE HANDLING AND STORAGE

To reduce the risk of damage, plasterboard should be delivered to site just prior to installation.

During handling, sheets should be carried in an 'upright' position with particular care taken to protect the edges.

Plasterboard should be stored in neat, flat stacks off the ground/floor in a dry covered area. This will prevent sagging and minimise damage to board edges and surfaces.

If storing outdoors, stack sheets on a level, moisture-free platform, and keep fully protected from the weather. Ensure the platform can support a load up to 800kg/$m^3$ density.

Plasterboard stacking supports when not on pallets should be spaced at 600mm centres.

## PROTECTION FROM WEATHER

To prevent damage from the weather all materials must be suitably protected during construction.

Shaftliner™ fire barrier and Firestop® must not be exposed to the weather for longer than 30 days (one month) when installed. Where exposure is likely to be longer or where heavy rain is predicted temporary (protection) cover should be used.

Internal lining shall not take place until the Shaftliner™ is dry and framing moisture content is less than 18%.

Temporary exposure of Shaftliner™ fire barrier to moisture should not downgrade its fire resisting properties as long as there is no physical damage to the panels in a wet state.

USG Boral also recommends that concrete slabs on which the Shaftliner™ fire barrier is erected should be level, free draining, and free of depressions where water can collect, removing the possibility of the panel standing in the water for any length of time. The specified 6mm gap between the adjacent bottom track lengths will facilitate drainage of water from the track.

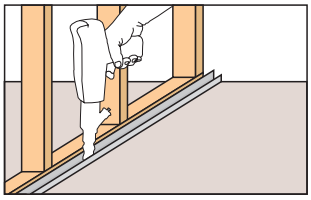
## DO'S

- **Do** use Partiwall® clips at every Partiwall® stud and not more than 2700mm above lower clip line or base track.
- **Do** locate and fix down bottom track adequately.
- **Do** seal at bottom track.
- **Do** install USG Boral Firepack™ at wall ends and top, as specified.
- **Do** cut Partiwall® stud and Shaftliner™ panels to the same length.
- **Do** insert Partiwall® stud and Shaftliner™ fully into the base track.
- **Do** insert Shaftliner™ panels fully into the Partiwall® studs.
- **Do** use the specified fasteners for the aluminium Partiwall® clips.

## DON'TS

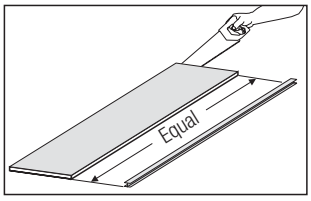
- **Don't** use damaged materials.
- **Don't** penetrate the Shaftliner™ other than in the roof space as per USG Boral's details.
- **Don't** exceed specified clip spacing.
- **Don't** use steel clips.
- **Don't** position track 6mm gap under Partiwall® studs. Tracks should be used in full lengths.
- **Don't** run services in the gap between Shaftliner™ fire barrier and framework.
- **Don't** use Partiwall® H-stud in lieu of Partiwall® track as edge capping nor as horizontal joint in Shaftliner™ fire barrier.

# » INSTALLATION OF SHAFTLINER™ FIRE BARRIER



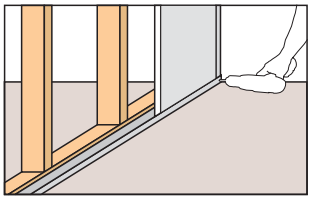
### Step 1: Fixing bottom track

- Position track at the base level centred in the Partiwall® cavity and attach to foundation with power actuated fasteners at both ends and at 600mm maximum spacing. Use DPC underneath when on concrete
- Use full lengths spaced 6mm apart and 20-40mm from the frame.
- Start and end nominal 40mm from inside of external brickwork or flush with the external timber stud framing.
- Apply fire rated acoustic sealant along track/floor junction on one side. Refer to Step 7.



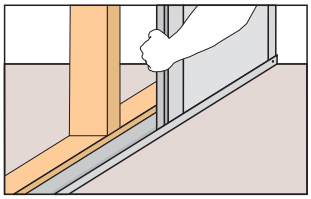

### Step 2: Cut Shaftliner™ panels and Partiwall® stud to the same length if required

- Handsaw
- Box Knife
- Power Saw (use dust mask)



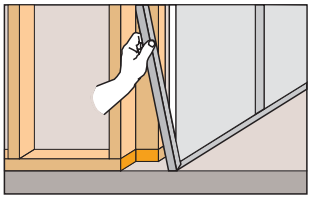
### Step 3: First Shaftliner™ panel fitted into base track

- To enable later fixing of Partiwall® aluminium clips, cut this Shaftliner™ panel to width so that its edge falls at least 50mm from a wall frame stud.
- Cap the outside edge at the end of the wall with the track.
- Screw this end track to the base track where they meet with 10g x 16mm 'D' type screw.



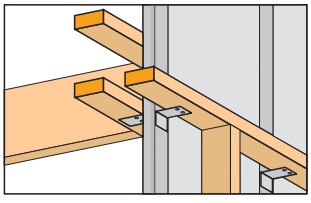
### Step 4: First Partiwall® stud fits fully down into track

- Move it along the track to fully encase the edge of the Shaftliner™.
- Lightly tap up to give a snug fit.
- Fit the second Shaftliner™ panel.
- Fix H-stud to timber frame with Partiwall® aluminium clip.



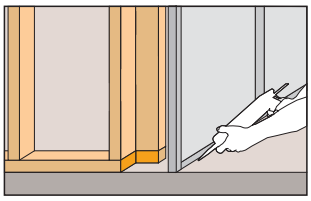
### Step 5: Continue fitting Partiwall® studs and Shaftliner™ panels

- Continue to erect Partiwall® studs and Shaftliner™ panels progressively until the fire barrier is completed.
- Cap last Shaftliner™ panel with track at the end of the wall.
- Exposed Shaftliner™ barrier, may be subjected to high wind forces and so must be adequately braced while exposed to the wind.



### Step 6: Aluminium Partiwall® clips fasten all Partiwall® studs to wall frame

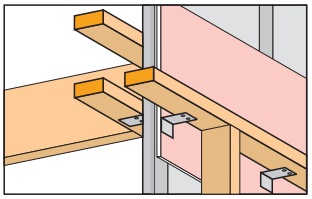
- Must be at every Partiwall® stud.
- Maximum 2700mm apart vertically.
- For aligned floors, must be directly opposite on both sides of the Partiwall® studs. Alternatively, Partiwall® clips can be staggered in line with offset floors.
- Where Shaftliner™ panels butt to external wall, cap the vertical edge of panels with Partiwall® track screw fixed to base track with 10g x 16mm drill point wafer head screws.



### Step 7: Seal for acoustics and fire

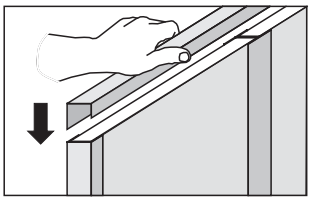
- Provide continuous USG Boral Firepack™ at wall ends and roof as specified.
- Seal bottom track with a recommended fire rated acoustic sealant.

# » INSTALLATION OF SHAFTLINER™ FIRE BARRIER



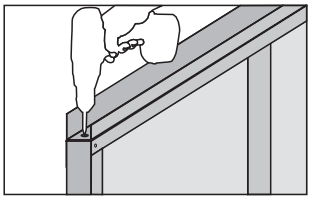
### Step 8: At mid-floor

- Cut and screw laminate 16mm Firestop® plasterboard to one side ensuring minimum 150mm overlap above floor and below ceiling level.
- It is recommended the gap from Shaftliner™ panel to wall stud framing be increased to a minimum of 25mm on this side to ensure adequate clearance for the Firestop® plasterboard.
- Fasten at maximum 400mm x 400mm centres with 10g x 40mm Type 'L' laminating screws minimum 10mm from edge of the board.
- Fix clips to Partiwall® studs with 2 x 10g x 16mm 'D' type screws.
- Fix clips to timber plates with 2 x 2mm dia x 30mm nails or 2 x 6g x 25mm 'W' type screws.
- Fix clips through 16mm Firestop® to Partiwall® studs with 2 x 10g x 30mm 'D' type screws.
- As framing progresses, clip Partiwall® studs to wall plates on the other side.



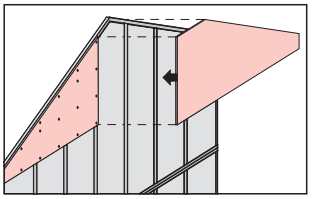
### Step 9: Cap top of Shaftliner™ panels and Partiwall® studs with track

- Use full lengths, end to end, spaced 6mm apart.
- Caps top of Partiwall® studs, end tracks and Shaftliner™ panels.
- Screw this capping track to the end tracks where they meet with 10g x 16mm 'D' type screws.



### Step 10: Upper sections

- Back capping track with base track.
- Fasten with minimum 10g x 16mm screws at 600mm centres.
- Cut Shaftliner™ panels and Partiwall® studs, cut to a length not exceeding 600mm above clip support points.
- Install as previously Partiwall® H-studs to align vertically with bottom section H-studs.



### Step 11: At roof

- Measure and cut Shaftliner™ panels and Partiwall® studs to pitch of roof.
- Allow gap for frame shrinkage and roof movement in pitched roof application. Provide max 25mm gap between the underside of flat metal roof/parapet box gutter applications.
- Cap on rake and clip Partiwall® studs to roof frame on one side.
- Cut and screw laminate 16mm Firestop® plasterboard to one side of Shaftliner™ fire barrier in the roof space with 10g x 40mm Type 'L' laminating screws at 400mm x 400mm centres, minimum 10mm from edge of Firestop®.
- Fix Partiwall® clips to Partiwall® studs through 16mm Firestop® plasterboard with 10g x 30mm Type 'D' drill point screws and to framing.
- Provide nominal 25mm gap between top end of Shaftliner™ fire barrier and roofing.
- Install USG Boral Firepack™ at wall ends and top, as specified.

### Step 12: Internal linings and insulation

- Ensure any wall penetrations are installed per details page 22.
- Install selected insulation type each side.
- Install selected Partiwall® plasterboard linings each side
- Install selected Firesound™ sealant at floor under one layer of plasterboard lining each side for single or multi layer systems.
- Finish plasterboard joints as other normal linings.

# PARTIWALL® INSTALLATION PRODUCER STATEMENT PS3

Date:

Builder:

Installer:

Project Site Address:

Building Consent Number:

LBP Number:

| Item | Checked |
|---|---|
| Confirm DPC is laid under the Partiwall® base track which is fixed to concrete slab at 600mm centres maximum | ☐ |
| Confirm no significant damage to Shaftliner™ panels e.g. holes or fractures otherwise rectification is required | ☐ |
| Confirm 6mm nominal gap between Partiwall® tracks - base, horizontal joint and capping tracks (to allow for water drainage) | ☐ |
| Confirm end wall Partiwall® track is screwed to base, horizontal joint and capping tracks | ☐ |
| Confirm the cavity gap between Partiwall® H studs and the wall frames is in the range of 20-40mm (refer Architectural Drawings) | ☐ |
| Confirm Firesound™ sealant is installed at least one side at base of Shaftliner™ panel | ☐ |
| Confirm Partiwall® clips fixed to every H stud and wall framing (on both sides of Partiwall®) and NOT more than 2700mm above lower clips support line or base track | ☐ |
| Confirm Partiwall® H studs are full length pieces and NOT spliced | ☐ |
| Confirm Partiwall® horizontal joint is not more than 600mm ABOVE aluminium clips support | ☐ |

| Item | Checked |
|---|---|
| Confirm Partiwall® Firepack™ is in place over ridge of wall and at wall ends | ☐ |
| Confirm Shaftliner™ panels are NOT penetrated for services etc | ☐ |
| Confirm Partiwall® H studs and end tracks are vertically aligned | ☐ |
| Confirm Partiwall® tracks (back to back) are used for horizontal joints (H Studs must NOT be used) and screwed together at 600mm centres | ☐ |
| Confirm 16mm Firestop™ has been correctly laminated at 400mmx400mm maximum centres at floor/ceiling junction and in the roof cavity | ☐ |
| Confirm Firestop™ is NOT in contact with the Partiwall® timber framing | ☐ |
| Confirm top of Partiwall® is terminated nominally 25mm below roof framing | ☐ |
| Confirm Partiwall® is terminated nominally 25mm from external wall framing | ☐ |
| Confirm no services are in contact with Shaftliner™ Panels | ☐ |
| Confirm insulation is installed in wall cavity before installation of internal plasterboard lining | ☐ |
| Confirm correct plasterboard and number of layers is installed for internal lining | ☐ |
| Confirm the base of internal plasterboard lining is sealed with Firesound™ sealant, both sides | ☐ |
| RBW Memorandum completed if applicable | ☐ |

**All the above actions have been completed and the USG Boral Partiwall® system has been installed as per USG Boral's literature guidelines.**

Partiwall® Installer's Signature

Builder's/Supervisor's Signature

LBP Number (where applicable)

LBP Number

# NOTES

# NOTES

## SUSTAINABILITY

USG Boral 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.

## HEALTH AND SAFETY

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

## TECHNICAL ENQUIRIES 0800 USGBORAL FOR NZ

USG Boral provides technical advice to Builders, Architects, Contractors, Engineers, Regulators and Home Owners throughout New Zealand.

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 USG Boral weekdays 8.30am - 5.00pm on 0800 USGBORAL (0800 874 267).

## SALES ENQUIRIES

| | |
|---|---|
| **Auckland** | (09) 270-2595 |
| **Wellington** | (04) 560-4528 |
| **Christchurch** | (03) 365-4245 |