STAACWall75®
by STODDART® GROUP

75mm Intertenancy Walls for House & Low Rise Multi Residential Building

DESIGN AND INSTALLATION GUIDE

STODDART® GROUP

CONTENTS

CodeMark Australia

CMI CERTIFICATION

Certificate CM40282

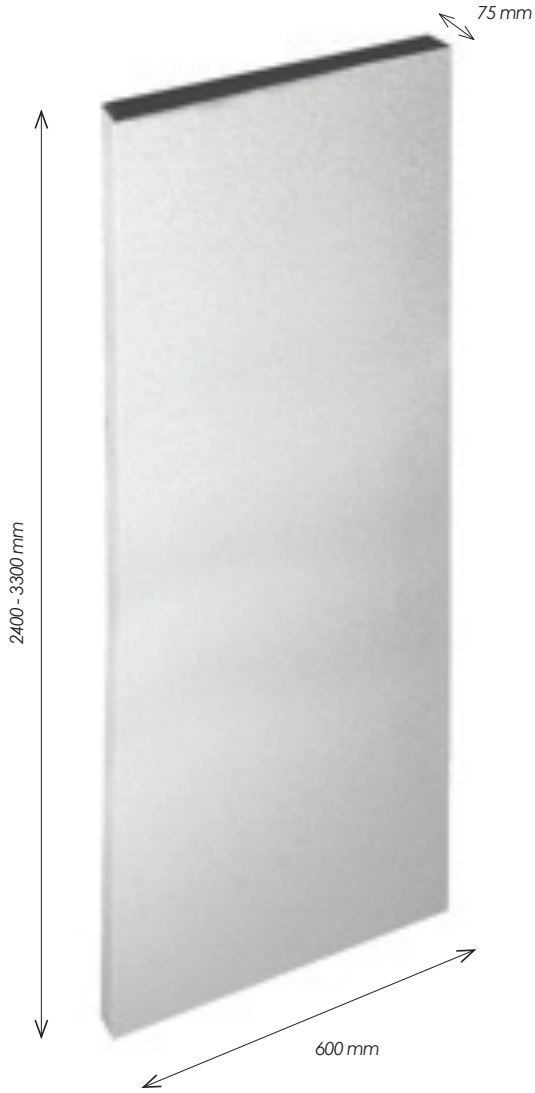
1. INTRODUCTION

STAAC WALL® is a cladding system of Autoclaved Aerated Concrete, designed as an intertenancy wall system for residential, commercial or light industrial buildings.

STAAC WALL® is a cladding system of Autoclaved Aerated Concrete (AAC) that is designed as an intertenancy wall system for residential, commercial or light industrial buildings. The STAAC WALL® system can deliver exceptional advantages in terms of performance, quality, speed of install and risk minimisation. STAAC WALL® is non-combustible and manufactured in Australia. AAC is well-known for it's exceptional thermal performance. It is also lightweight when compared with traditional masonry materials.

The 75mm STAAC WALL® panel is reinforced with steel mesh in both directions. It has a standard width of 600mm and is available standard lengths are 2400, 2550, 2700, 2800, 2850, 3000 and 3300mm, making STAAC WALL® a robust and versatile system for residential construction. STAAC WALL® is commonly installed vertically for speedy construction.

The 75mm STAAC WALL® intertenancy wall system delivers a high level of fire resistance for townhouse, retirement and other low rise multi-residential projects where a fire barrier is required between 2 lots with zero boundary construction. 75mm STAAC WALL® panel has the acoustic performance to reduce the transfer of sound between properties. The 75mm STAAC WALL® party wall system does not require fire-rated plasterboard between floor levels or in the roof space. It may be installed without steel tracks and with reduced fixings in an intertenancy system, making STAAC WALL® a faster, simpler and cheaper way to construct a fully compliant intertenancy wall structure to the National Construction Codes of Australia (NCC). Section 2 provides a summary of performance conformances of 75mm STAAC WALL® for intertenancy wall applications meeting NCC Volumes 1 and 2. It is aimed to ease the work load of Building Certifiers by clearly and transparently demonstrating how STAAC WALL® satisfies the performance requirements of the NCC through either Deemed-to-Satisfy provisions or Performance Solutions, or a combination of both. Test reports by NATA accredited laboratories, expert evaluation statements and technical data are referenced in Section 2 and may be provided upon request.



2. COMPLIANCE WITH THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA (NCC)

All building solutions such as walls, floors, ceilings, etc. must comply with the regulations outlined in the NCC or other authority.

The NCC is a performance based document, and is available in two volumes which align with two groups of 'Class of Building':

- Volume 1 – Class 2 to Class 9 Buildings; and
- Volume 2 – Class 1 & Class 10 Buildings & Housing Provisions.

Each volume presents Regulatory Performance Requirements for different Building Solutions for various classes of buildings and performance provisions.

These Performance Provisions include: Structure, Fire Resistance, Damp & Weatherproofing, Sound Transmission, Insulation and Energy Efficiency.

This guide presents tables, charts and information necessary to assist in the design of a system incorporating 75mm STAAC WALL® that complies with the Performance Requirements of the NCC. The designer must check the adequacy of the building solution for Performance Requirements outlined by the appropriate authority.

75mm STAAC WALL® has been CodeMark® certified for intertenancy and dual zero boundary wall applications. Tables 2.1 and 2.2 summarise the relevant clauses which 75mm STAAC WALL® complies with. The documentation that provides evidence of suitability as defined by NCC may be provided upon request, subject to commercial confidence.

2.1 COMPLIANCE WITH AS 5146 AAC STANDARDS

STAAC WALL® systems conform with the Australian Standards for Reinforced Autoclaved Aerated Concrete (AAC), AS 5146 Part 1 – Structures, Part 2 – Design and Part 3 - Construction. The standards are referenced in the Building Code of Australia making compliant AAC products Deemed-to-Satisfy (DTS) building materials. AS 5146.3 – Construction, Section 4 contains construction details for 75mm reinforced AAC external walls in houses and low rise multi-residential buildings, considered a DTS building system. This provides the endorsement and confidence to regulatory and building certification bodies that the STAAC WALL® Intertenancy External Wall System is a NCC compliant construction system.

2.2 SIDE-BY-SIDE RESIDENTIAL CONSTRUCTION ON A SINGLE ALLOTMENT

NCC requires an internal fire separating wall to be constructed when single dwellings are constructed side-by-side on a single allotment. Such walls commonly start at the ground level on top of a slab or concrete foundation. The FRL required for such load bearing applications are 60/60/60 and -/60/60 for non-load bearing applications. The top of the wall must reach the underside of the non-combustible roof sheets or tile. Gaps must be fully sealed with fire-resisting material as per the requirement detailed in Figure. 3.7.3.3 of NCC 2019 Vol. 2.

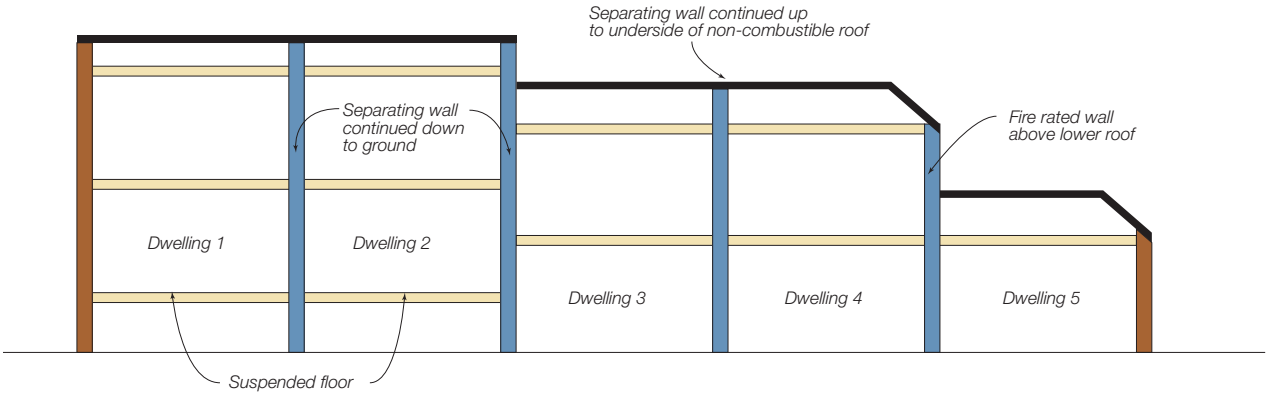
2.3 SIDE-BY-SIDE RESIDENTIAL CONSTRUCTION ON A SINGLE ALLOTMENT ON SEPARATE TITLES

Where it is proposed to construct single dwellings side-by-side on separate allotments, or if subsequent subdivision is proposed, the wall might be considered an external wall. In this case, each dwelling may be required to have its own wall starting from the ground level (top of concrete footings or top of floor slab) and each achieving a 60/60/60 FRL if load bearing, or –/60/60 FRL if non-load bearing. Contact your local authorities, as there may also be applicable legislation or discretionary powers available to vary these provisions. Please refer to the 75mm STAAC WALL® External Walls technical manual for zero boundary wall applications.

2.4 SIDE-BY-SIDE RESIDENTIAL CONSTRUCTION ON A SINGLE ALLOTMENT WITH POSSIBLE FUTURE SUBDIVISION

Refer to Section 2.2

Figure 2.1 Typical party wall applications



2.5 SUMMARY OF COMPLIANCE TO NCC FOR 75MM STAAC WALL® - INTERTENANCY WALL

Table 2.1 Summary of compliance to NCC Volume 1

NCC 2022 VOL.1			
	CLAUSE	**APPLICATION**	**EVIDENCE OF SUITABILITY**
PERFORMANCE REQUIREMENT(S)	B1P1(1) & (2)(a), (b), (c)	Structural Provisions	Structural Provision A5G3(1)(e). Reports from Qualified Professional Engineer
DEEMED-TO-SATISFY PROVISION(S)	C2D2(2)	Fire Resistance and Stability – FRL varies, dependant of the configuration of the wall	Fire safety provision A5G3(1)(d)&(e). Reports from Accredited Testing Laboratories and Qualified Professional Engineer

Table 2.2 Summary of compliance to NCC Volume 2

NCC 2022 VOL.2 & HOUSING PROVISIONS			
	CLAUSE	**APPLICATION**	**EVIDENCE OF SUITABILITY**
PERFORMANCE REQUIREMENT(S)	H1P1(1) & (2) (a), (b), (c)	Structural reliability and resistance	Structural Provision A5G3(1)(e). Reports from Qualified Professional Engineer
DEEMED-TO-SATISFY PROVISION(S)	9.3.1(1)(a)(i)	Protection from the Spread of Fire - FRL varies, dependant of the configuration of the wall	Fire safety provision A5G3(1)(d)&(e). Reports from Accredited Testing Laboratories and Qualified Professional Engineer

2.6 OTHER RELEVANT TECHNICAL INFORMATION

Non-combustibility

STAAC WALL 50 – Autoclaved Aerated Concrete (AAC) panel had been tested for Combustibility for Materials in accordance with AS 1530.1:1994. The material is NOT deemed combustible - Limited to the panel only.

Source: CSIRO; NATA Accreditation No. 165; Report No. FNC12427A; dated 24/07/2019.

Acoustic performance

For system acoustic performance of STAAC WALL 75 AAC panel used in conjunction with other building materials for intertenancy refer to Table 8.1 and CodeMark certificate of Conformity CM40282 for minimum system build-up requirements.

3. MATERIAL PROPERTIES

Material Properties are determined in accordance with AS 5146 Parts 1 & 2 - Reinforced Autoclaved Aerated Concrete.

3.1 PHYSICAL PROPERTIES

- **Thickness:** 75mm, tolerance: ±1.5mm
- **Standard Width:** 600mm, tolerance: ±1.5mm
- **Standard Length:** 2400, 2550, 2700, 2800, 2850, 3000, 3300mm, tolerance: ±5mm
- **Edge Straightness Deviation (max.):** ±1.5mm
- **Reinforcement:** 4x 4mm diameter longitudinal steel bars and 6-8 x 4mm diameter transverse steel bars per panel
- **Nominal dry density** = 400 kg/m^3
- **Average working density** = 540 kg/m^3 at 35% moisture content
- **Average service life density** = 440 kg/m^3 at 10% moisture content

3.2 STRENGTH PROPERTIES

- **Characteristic Compressive Strength of AAC**, f 'm= 2.38 MPa
- **Average Compressive Strength of AAC** = 2.8 MPa
- **Characteristic Modulus of Rupture**, f 'ut = 0.4 MPa

3.3 ACOUSTIC PROPERTIES

- **Panel only with no plasterboard or other lining:** Rw = 34dB, Rw+Ctr = 30dB.

  (Acoustic Logic report 2010861.15/2602A/R2/GW)

3.4 CUTTING

- Panels typically should not be less than 270mm wide. Where narrower panels are used, these panels must not be less than 100mm in width and must be installed between full width panels. Reinforced fibreglass mesh must also be embedded in a base levelling coat across the full width of this narrow panel.

4. SYSTEM COMPONENTS

Typical intertenancy wall system components are shown below.

Table 4.1 STAAC WALL® components (1)

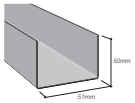
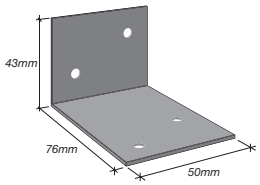
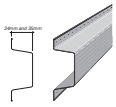
<table>
<tr><th>PRODUCT</th><th>DESCRIPTION</th><th>DIAGRAM</th></tr>
<tr><td>75mm STAAC WALL®</td><td>The core component of the Intertenancy System is the 75mm thick, steel mesh reinforced STAAC WALL® panel. The panel is manufactured in a range of stock sizes as detailed below:
<table><tr><th>Length (mm)</th><th>Mass (kg)</th></tr><tr><td>2400</td><td>63</td></tr><tr><td>2550</td><td>67</td></tr><tr><td>2700</td><td>71</td></tr><tr><td>2800</td><td>73</td></tr><tr><td>2850</td><td>74</td></tr><tr><td>3000</td><td>78</td></tr><tr><td>3300</td><td>86</td></tr></table>Standard width: 600mm</td><td>  </td></tr>
<tr><td>Deflection Head Track</td><td>For positioning and restraining the base connection of the panels to the concrete slab. The deflection head track is nominally 76 x 50 x 0.7mm BMT x 3000mm length.</td><td>  </td></tr>
<tr><td>Wall bracket</td><td>The brackets are components which enable the AAC panel to be fixed to the wall frame. This provides a cavity space, which can result in increased acoustic insulation performance.
The bracket is nominally 76 x 43 x 1.6mm BMT x 50mm wide aluminium angle. Used in 75mm Intertenancy Wall Systems.</td><td>  </td></tr>
<tr><td>Steel battens</td><td>Perforated steel hat top hat battens in 24mm and 35mm depth to provide support to STAAC WALL® panels.</td><td>  </td></tr>
<tr><td rowspan="5">Fasteners & Fixings</td><td>Fixing of top hat / angle bracket to timber stud frame: 12-11x35mm hex head type 17 screw.</td><td>  </td></tr>
<tr><td>Fixing of top hat / angle bracket to steel framing; 10-16x16mm hex head self drilling screw.</td><td>  </td></tr>
<tr><td>Fixing back-to-back tracks at end to end STAAC WALL® panel joint: 10-16x16 wafer head screw</td><td>  </td></tr>
<tr><td>Fixing of aluminium bracket to STAAC WALL® panels: 14-10x65mm hex head type 17 screw</td><td>  </td></tr>
<tr><td>Fixing of STAAC WALL® panels to bottom angle 14-10x90mm hex head type 17 screw</td><td>  </td></tr>
</table>

Table 4.2 STAAC WALL® components (2)

PRODUCT	DESCRIPTION
HEBEL® Mortar	Mortar (supplied in 20kg bags) when required is used as a thick bed mortar base to provide a level base for STAAC WALL® installation, as well as providing acoustic and fire protection at the base of the panels.
HEBEL® CSR Adhesive	CSR Adhesive (supplied in 20kg bags) is used for gluing the STAAC WALL® panels together at vertical and horizontal joints.
HEBEL® Patch	Minor chips or damage to STAAC WALL® panels are to be repaired using Patch (supplied in 10kg bags).
HEBEL® Anti-Corrosion Protection Paint	To coat exposed reinforcement during cutting.
Backing Rod	Backing rod is used to enable correct filling of joints with sealant. It is recommended that backing rod be of open cell type to enable sealant to cure from behind. The diameter of backing rod must be appropriate for the width of the gap being filled.

4.1 TOOLS & EQUIPMENT

The basic tools required to install STAAC WALL® System are:

- **Stirrer** – fitted to the electric drill, the stirrer is used to mix the Mortar/CSR Adhesive/base levelling coat render inside the mixing bucket.
- **Notched trowel** – the notched trowel is used to apply adhesive to the panel surfaces. The width of the trowel must match the panel thickness to ensure the adhesive is applied with full and even coverage.
- **Panel lifters** – used to carry the panels around the work site.
- **Sand float** – used to remove excess adhesive and smooth joints between panels.
- **Levelling plane** – used to even out inconsistencies in the panels.
- **Power drill (clutch driven)**
- **Power saw with diamond tipped cutting blades**
- **Dust extraction system -** that complies with the M or H class requirements of AS/NZS 60335.2.69 - 2017.
- **Power screw gun**
- **Sockets for screws**
- **Personal Protective Equipment (PPE)** such as goggles, ear muffs/plugs and fit tested class P1/P2 face mask must be used in strict accordance with manufacturer's instructions when cutting the STAAC WALL® panels.

5. INSTALLATION GUIDELINES

5.1 GENERAL

Before commencing any installation work, clean and tidy up the work area. Mark out the location of the walls.

5.2 WALL FRAMING

Ensure frames are installed plumb and mechanically fixed to the support. All timber framework is to be fabricated and installed to the manufacturer's specifications and AS 1684 or AS 1720.1. Steel stud framing should be designed and erected in accordance to NASH standards and handbook.

5.3 BASE CONNECTION

(a) Deflection Head Plate

When the wall locations have been set out for the 75mm STAAC WALL® Intertenancy Wall System, fix the deflection head tracks to the substrate. This is done using suitable fixings (see Table 9.1) at 600mm maximum centres and maximum 100mm from ends. At changes in wall directions, ensure deflection head track is mitred with no gaps at the corners. Seal all butt joints with fire and acoustic sealant.

(b) Mortar

In some base arrangements for the 75mm STAAC WALL® Intertenancy Wall System, mortar is placed directly on the slab and should only be run out roughly 3 panels (1800mm) ahead of panel installation. The mortar bed fills any gap at the base. Generally, the mortar is 10mm thick and must extend the full width of the panel. Mixing of the mortar must be done in accordance with the instructions on the bag.

5.4 ALUMINIUM WALL BRACKETS

GROUND LEVEL: Screw fix wall brackets to top and bottom plates of wall frame and to the 75mm STAAC WALL® panel. No brackets are required at bottom plate when using a continuous deflection head track or continuous steel angle for base connection.

UPPER LEVEL: Screw fix wall bracket at top and bottom plates of wall frame and to the 75mm STAAC WALL® panel. Wall brackets are screw fixed to 75mm STAAC WALL® panel at 600mm centres, within 50mm either side of centreline of each panel. Use fixings specified in Table 9.1.

ROOF LEVEL: Screw fix wall bracket to trusses and STAAC WALL® panel.

5.5 PANEL INSTALLATION

The 75mm STAAC WALL® panel in Intertenancy Wall Systems must be installed vertically. The panels can be cut on-site using a circular saw equipped with diamond tipped cutting blade (for panel cutting limitations refer to Section 12.6) and vacuum extraction system. All the loose AAC particles should be brushed off the panel with a rough broom. Steel reinforcement that is exposed during cutting must be coated with a liberal application of corrosion protection coating (See Table 4.2). Any minor damage and chips to the panels must be repaired using patch. For the 75mm STAAC WALL® Intertenancy Wall System, apply adhesive to the vertical edge and install the next panel. Repeat the installation process until the wall is complete. Aluminium brackets provide restraint of the wall to the frame.

5.6 ADHESIVE

Adhesive is applied to the panel with a 75mm notched trowel. When the panels are pushed together the joints are to be 2-3mm thick. Sufficient pressure must be applied to the panels when gluing to ensure the adhesive is fully bedded across the joint. Scrape off any excess adhesive protruding from the joints and fill any gaps. Adhesive is to be mixed to the proportions and consistency as per the instructions on the bag.

5.7 CONTROL JOINTS

Control joints must be provided at a maximum of 6m spacing. Recommended control joint widths should be 10mm minimum between STAAC WALL® panels and another building component. Control joints must also be provided to coincide with any control joint in the main structure. Larger joint width may be required to accommodate building movements, and these values must be nominated by the designer (refer to control joint Section 15.3).

5.8 SEALANTS

All movement joints and other gaps must be sealed off and finished neatly with polyurethane fire and acoustic rated sealants. Installation of sealants must be carried out in accordance with the manufacturer's specifications. When using fire rated sealant for external applications, protect from rain until sealant has developed a thick skin. Once cured, if the sealant is exposed to external weather conditions for a longer period of time the sealant should be painted over with a compatible external grade acrylic coating.

5.9 SERVICES

Installation of electrical, plumbing and other services into walls should be carried out in an appropriate construction sequence. This will allow easy access to cavities and wall frames, where services can be easily installed and neatly hidden. It is recommended to commence the plumbing and cabling after the panels have been installed. The builder or project manager should confirm the appropriate construction sequence for services on a project-by-project basis. Contact your consultant for detailing of penetrations through STAAC WALL® panels to ensure the nominated acoustic and fire performance is achieved.

5.10 FASTENERS & FIXINGS

All fixings and fasteners should be installed in accordance with the manufacturer's specifications.

6. DESIGN RESPONSIBILITIES

The STAAC WALL® intertenancy wall system has been developed based upon numerous tests and assessments by design consultants.

Tests were conducted at NATA accredited testing laboratories. Reports were issued to document the performance of the wall in accordance with the relevant Australian Standards. Consultants were engaged to provide their professional opinions based on the information in these reports (estimates of laboratory performance). The performance levels of walls documented in this guide are either what is reported in a test or the documented opinion of consultants.

Performance in projects is typically the responsibility of design consultants, builders and certifiers. Any party using the information contained in this guide or supplied by Stoddart group in the course of a project must satisfy themselves that it is true, current and appropriate for the intended application, consequently accepting responsibility for its use. It is the responsibility of the architectural designer and engineering parties to ensure that the details in this design guide are appropriate for the intended application. The recommendations in this guide are formulated along the lines of good building practice, but are not intended to be an exhaustive statement of all relevant data.

7. DESIGN STEPS

Follow the simple steps below to efficiently design a 75mm STAAC WALL® solution for intertenancy wall applications.

1	Establish building wind class, support framing layout and what panel height is most suitable for the building.
2	Confirm Fire Resistance Level (Commonly minimum 60mins FRL is required for external walls of a residential dwelling).
3	Refer to Table 8.1 to select insulation and lining specifications to suit sound insulation requirements.
4	Document and confirm design selection for building approval / certification.

8. 75MM STAAC WALL® INTERTENANCY WALL SYSTEM

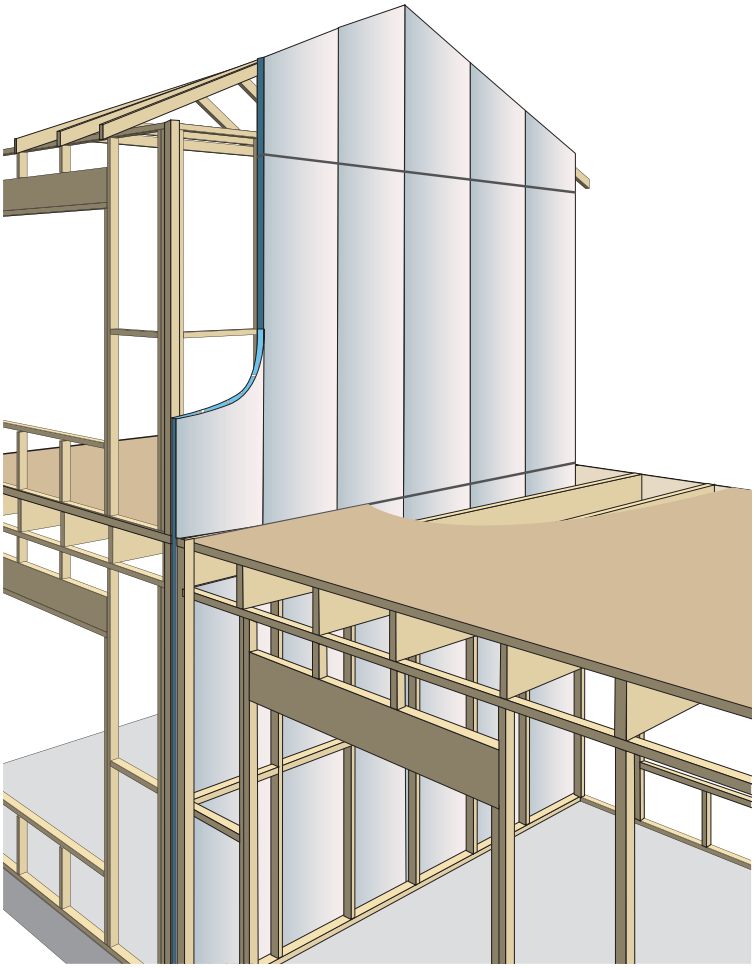


Figure 8.1 STAAC WALL® Intertenancy Systems

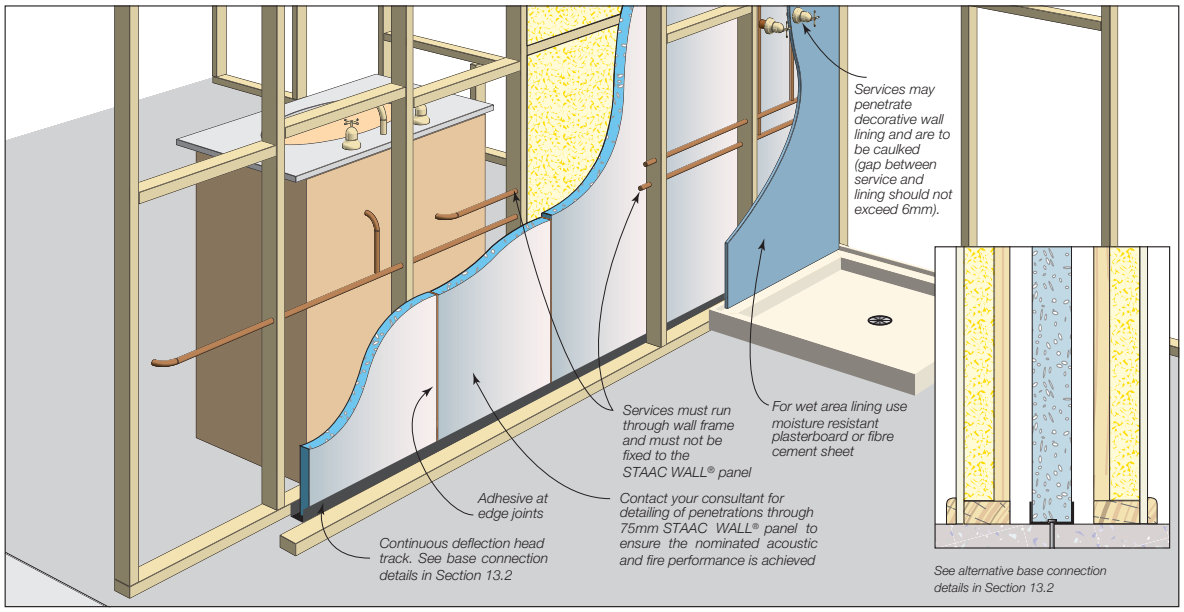


Table 8.1 STAAC WALL® Intertenancy Systems

Nominal wall thickness		FRL	Rw / Rw+Ctr		Cavity insulation	Wall lining both sides
Stud depth			Stud depth			
70mm	90mm		70mm	90mm		
281	321	90/90/90	43/34	45/36	Nil - both sides	13mm Plasterboard
			64/52	67/55	90mm Bradford Gold Batt R2.0 - both sides	
275	315		42/34	44/35	Nil - both sides	10mm Plasterboard
			61/51	63/54	90mm Bradford Gold Batt R2.0 - both sides	
273	313		44/35	45/36	NIL - both sides	9mm fibre cement sheet
			67/55	70/58	90mm Bradford Gold Batt R2.0 - both sides	

NOTE:

1. Timber framing to be in accordance to AS 1684 or AS 1720.1. For steel framing, frames to be designed in accordance with NASH standards or AS/NZS 4600.
2. 75mm STAAC WALL® Intertenancy Wall Systems have been assessed to comply with the NCC requirements for 'Discontinuous Construction' - NCC Vol.2 & Housing Provisions, Clause 10.7.1.
3. This table must be read in conjunction with all the information provided in this Design Guide, and acoustic opinion 2010861.19/0504A/R1/TN provided by Acoustic Logic and fire assessment WRFA 45771.10 provided by Exova Warringtonfire (Aust) Pty Ltd.
4. Selection of the most suitable 75mm STAAC WALL® Intertenancy Wall System should be undertaken with specialist consultant's advice.
5. 20mm separation between the frame and STAAC WALL® panel with aluminium bracket connection.
6. More intertenancy wall system options are available with proprietary wall lining products. Contact Stoddart Group for details.
7. Selection of the most suitable STAAC WALL® Intertenancy Wall System should be undertaken with specialist consultant's advice.
8. The performance values in the table above were evaluated based on the properties of the specified components. Products with similar or equivalent properties may achieve the same performance. Consult product manufacturer for substitution recommendation and evidence of conformity.

9. STRUCTURAL DESIGN

9.1 LOADING

The 75mm STAAC WALL® intertenancy wall systems are designed to be non-load bearing. They are adequate to transfer self-weight to the support.

9.2 CONSTRUCTION LOADINGS

During construction of intertenancy walls, the STAAC WALL® panel may be subject to wind loading. Adequate temporary bracing must be provided to the panel until both structural frames and external veneer / claddings are installed so as to prevent the panels from exposure to external wind pressures. The normal fixing used to install the STAAC WALL® panels are not designed to take bracing load and must not be considered as adequate bracing.

9.3 WALL FRAME

The steel stud frame must be designed and constructed in accordance with NASH standards & handbooks and AS/NZS 4600 (NCC Performance Requirement). The timber stud frame must be designed and constructed in accordance with AS 1684. The support framing system must have adequate structural integrity to support the AAC panels. Furthermore, the nominated stud sizes in Table 8.1 are for acoustic designs. The structural adequacy of the support frame must be confirmed by the design structural engineer.

9.4 WALL HEIGHT

The overall wall height limit is 12m for the STAAC WALL® intertenancy wall system. The wall must be constructed of 3.3m long STAAC WALL® panels as much as possible.

9.5 EARTHQUAKE LOADS

Earthquake loading has not been considered in this design and installation guide. It is the designer's responsibility to ensure the connection system has adequate capacity to resist any imposed earthquake loading.

9.6 FASTENER SPECIFICATION

Most screw fixings are type 17 self drilling fasteners for timber applications, which is sufficient for penetrating the metal thicknesses outlined in this guide. Connections that have thicker metal thicknesses may require a self-drilling screw and will need to be specified by the fastener manufacturer or the frame designer.

Fixings – Deflection head track to substrate

The fixing to secure the angles and tracks to the concrete slab must be capable of withstanding a shear load of 0.75 kN/m. For high wind pressures during construction, the designer must determine if mechanical fasteners are required:

- Drive pins and concrete nails (check size and suitability for fire rated applications with the manufacturer);
- 8mm diameter mechanical fasteners.

Table 9.1 outlines the connection type and requirements for fastening 75mm STAAC WALL® panels. The project engineer or framing manufacturer is responsible for specification of alternative details. The minimum performance requirement of the screw is coating class 3 in accordance with AS 3566.

Table 9.1 Screw specification for discontinuous intertenancy wall

TYPE OF FIXING	APPLICATION	NUMBER OF FIXINGS AND SPACING
M8 Dynabolt	Bottom angle / track to structure	600mm max. centres
14-10 x 90mm hex head Type 17 screws	Bottom angle to 75mm STAAC WALL® panel	2 fixings per panel, 50mm min. from panel edge
10-16 x 16mm wafer head screws	Track back-to-back	600mm max. centres
14x10 x 65mm hex head type 17 screws	Aluminium bracket to STAAC WALL® panel	2 fixing per bracket
12-11 x 35mm hex head type 17 screws	Aluminium bracket to timber frame	2 fixing per bracket
10-16 x 16mm hex head self-drilling screws	Aluminium bracket to steel frame	2 fixing per bracket
12-11 x 35mm hex head type 17 screws	Aluminium bracket to STAAC WALL® panel	2 fixing per bracket

10. ACOUSTIC DESIGN

The National Construction Code (NCC) presents the Performance Requirements for sound insulation ratings. These acoustic performance ratings set minimum values in considering two types of sound: airborne sound and impact generated sound.

The performance requirements for airborne sound insulation and impact sound insulation ratings are dependent upon the form of construction (i.e. walls or floors), class of building, and the type of areas being separated.

The airborne sound performance requirement is a value that could be the weighted sound reduction index (Rw) or weighted reduction index with spectrum adaptation term (Rw + Ctr). The impact sound performance requirement is a value called the weighted normalised impact sound pressure level with spectrum adaptation term (Ln,w + Cl).

The NCC does provide performance requirements for the airborne sound and impact generated sound insulation ratings for an intertenancy wall. Refer to Table 8.1 of this guide for sound insulation resistance levels of the 75mm STAAC WALL® Intertenancy Wall System.

10.1 IMPACT SOUND PERFORMANCE

Impact sound is caused by vibrations, which are transferred directly through the wall and re-radiated as sound in the adjacent room. These sound vibrations can be generated by actions such as closing of a cupboard door.

The transfer of impact sound can be minimised by ensuring no mechanical connection exists between the two sides of the wall. For impact rated walls the NCC requires walls to be of 'discontinuous construction'. This refers to a wall maintaining a cavity between two separate leaves except at the periphery.

10.2 ACOUSTIC PERFORMANCE DESIGN RECOMMENDATIONS

1. It is recommended to engage a specialist acoustic consultant on a project-by-project basis to provide design advice, confirmation of anticipated field performance, detailing and installation inspections.
2. When selecting the appropriate STAAC WALL® Intertenancy Wall System, the designer or specifier must be aware that the laboratory Rw values are almost always higher than the field measured values. Allowances should be made for the lower expected field values during the selection of the system.
3. Separate advice from a specialist acoustic consultant should be sought to determine the effect on acoustic performance due to any changes to the 75mm STAAC WALL® Intertenancy Wall System, and any required modification of the installation details pertaining to the systems.
4. Increasing framing cavity widths, using higher density or thicker insulation or plasterboard, will generally maintain or increase the acoustic performance of the 75mm STAAC WALL® Intertenancy Wall System.
5. The acoustic performance values of the STAAC WALL® Intertenancy Wall System shown in Table 8.1 is a guide only. They do not constitute a field performance guarantee. Factors such as the presence of flanking paths, quality of installation of the system, onsite detailing of junctions, room shapes and size etc can significantly affect field performance. Maximising the field performance is dependent on the following factors:
   - The systems are installed in accordance with the manufacturer's standard installation details.
   - Good quality installation practices including the sealing of all junctions and joints and maintaining specified clearances.
   - The systems are installed with all junctions acoustically sealed so that negligible sound transmission occurs at these points.
   - Flanking paths are eliminated and the structures into which the systems are installed are capable of allowing the nominated rating to be achieved.
   - Site testing conditions.
   - To minimise the transfer of sound through the 75mm STAAC WALL® Intertenancy Wall System into the adjacent unit, it is suggested that a control joint be provided to break the mechanical path for the transmission of impact sound and other vibration.
   - All service penetrations, etc are acoustically sealed and treated so that negligible sound transmission occurs through these points.
   - Contact your acoustic consultant for detailing of penetrations to ensure the nominated acoustic performance is achieved.

11. FIRE RESISTANCE DESIGN

11.1 FRL

The fire resistance level (FRL) rating performance of the 75mm STAAC WALL® Intertenancy Wall System detailed in this guide has been derived from Exova Warringtonfire assessment WFRA - 45771.10, WFRA - 45772.10. (for STAAC WALL® Intertenancy Wall Systems).

This guide has no recommendations for penetrations through the Intertenancy Wall system. We recommend contacting the appropriate consultant for design and detailing advice.

11.2 COMPONENT VARIATIONS

Some variations to the installation of the 75mm STAAC WALL® Intertenancy Wall system may not affect the FRL as given in the previous section. However, these variations need to be approved by a fire engineer or building certifier. The possible variations to the system include:

- Changing the insulation between polyester, glasswool and rockwool.
- Putting the insulation on both sides of the 75mm STAAC WALL® panel.

12. DELIVERY, STORAGE & HANDLING

12.1 UNLOADING PANEL PACKS

Panel packs should only be unloaded and moved with approved lifting devices. Before use, the lifting devices should be checked for the required lifting tags. Packs should be unloaded as close as possible to the intended installation area. This will increase work efficiency and minimise the need for secondary lifting.

NOTE: Secondary handling increases the risk of panel damage. The repair of damage sustained during lifting and moving is the responsibility of the lifter. Where damage is excessive, the panels must be replaced.

12.2 STORAGE

All materials must be kept dry and preferably stored undercover. Care should be taken to avoid sagging or damage to ends, edges and surfaces.

All STAAC WALL® products must be stacked on edge and properly supported off the ground, on a level platform. Panel bundles can be stacked two high. The project engineer should be consulted as to the adequacy of the structure to support the stacked bundles.

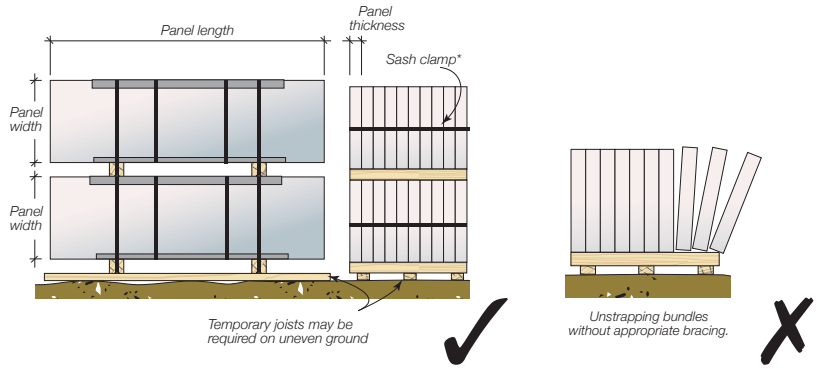
If outside, STAAC WALL® panels must be stored off the ground and protected from the weather. Only single bundles positioned on the ground can be opened. To provide a level surface, we recommend placing temporary joists beneath the supporting cleats.

When storing, the panel orientation must be horizontal with the long edge supported to timber bearers.

12.3 UNSTRAPPING PACKS

Ensure appropriate bracing is installed to packs prior to removal of strapping to prevent panels from falling. Panels can be held together with sash clamps, ratchet, straps or stabilising bars.

Figure 12.1 Stacking packs of STAAC WALL® panels



12.4 HANDLING

Moving and handling STAAC WALL® panels should be done as much as possible using mechanical aids such as forklifts, cranes or panel lifting trolleys. Manual handling where people physically move a panel should be kept to a minimum, with the weight being supported by an individual kept as small as possible. Any concerns regarding the weight to be handled should be discussed with the panel installation supervisor.

Follow the suggestions below to avoid injuries to installation personnel:

- Use mechanical lifting / support equipment, such as trolleys, forklifts, cranes and levers
- Manual lifting and moving of panels should be carried out in accordance with safe work requirements
- Keep the work place clean to reduce the risk of slips, trips and falls, which can cause injury
- Plan the sequence of installation to minimise panel movements and avoid unnecessary lifts
- Train employees in good lifting techniques to minimise the risk of injury
- Lift panels only from the edges and not to be handled flat

12.5 HEALTH, SAFETY & PERSONAL PROTECTIVE EQUIPMENT (PPE)

Always wear gloves when handling panels, AAC is produced from cement and may cause skin irritation.

Approved respirators to AS/NZS 1715 and AS/NZS 1716 and safety eyewear to AS 1336 must be worn at all times when cutting and chasing AAC material. Check the STAAC WALL® Material Safety Data Sheets for material safety information.

12.6 CUTTING

The standard STAAC WALL® panel can be reduced in length by cutting 150mm maximum from each end when used in an intertenancy wall application, and to a minimum width of 270mm.

Penetration through intertenancy wall must be avoided at all time. Consult relevant design consultants (fire, acoustic & thermal) on the effect of penetration to intertenancy wall performance.

Cutting of cement based products may cause dust, which contains respirable crystalline silica, with the potential to cause bronchitis, silicosis and lung cancer after repeated and prolonged exposure. When using power or hand tools, on AAC products, wear a P1 or P2 respirator and eye protection. When cutting, routing or chasing AAC products with power tools, use dust extraction equipment that complies with M or H class requirements of AS/NZS 60335.2.69-2017 and wear hearing protection. Wet cutting may be mandatory in certain Australian States. Please confirm with local work safe authority on cutting / chasing requirements for AAC products. Refer to the appropriate STAAC WALL® MSDS for further information.

Reinforcement exposed during cutting must be coated with a liberal application of STAAC WALL® recommended Anti-corrosion protection paint.

13. CONSTRUCTION DETAILS

13.1 CONSTRUCTION DETAILS - INTERTENANCY WALL

Figure 13.1.1 Typical layout of 75mm STAAC WALL® Discontinuous Intertenancy Walls

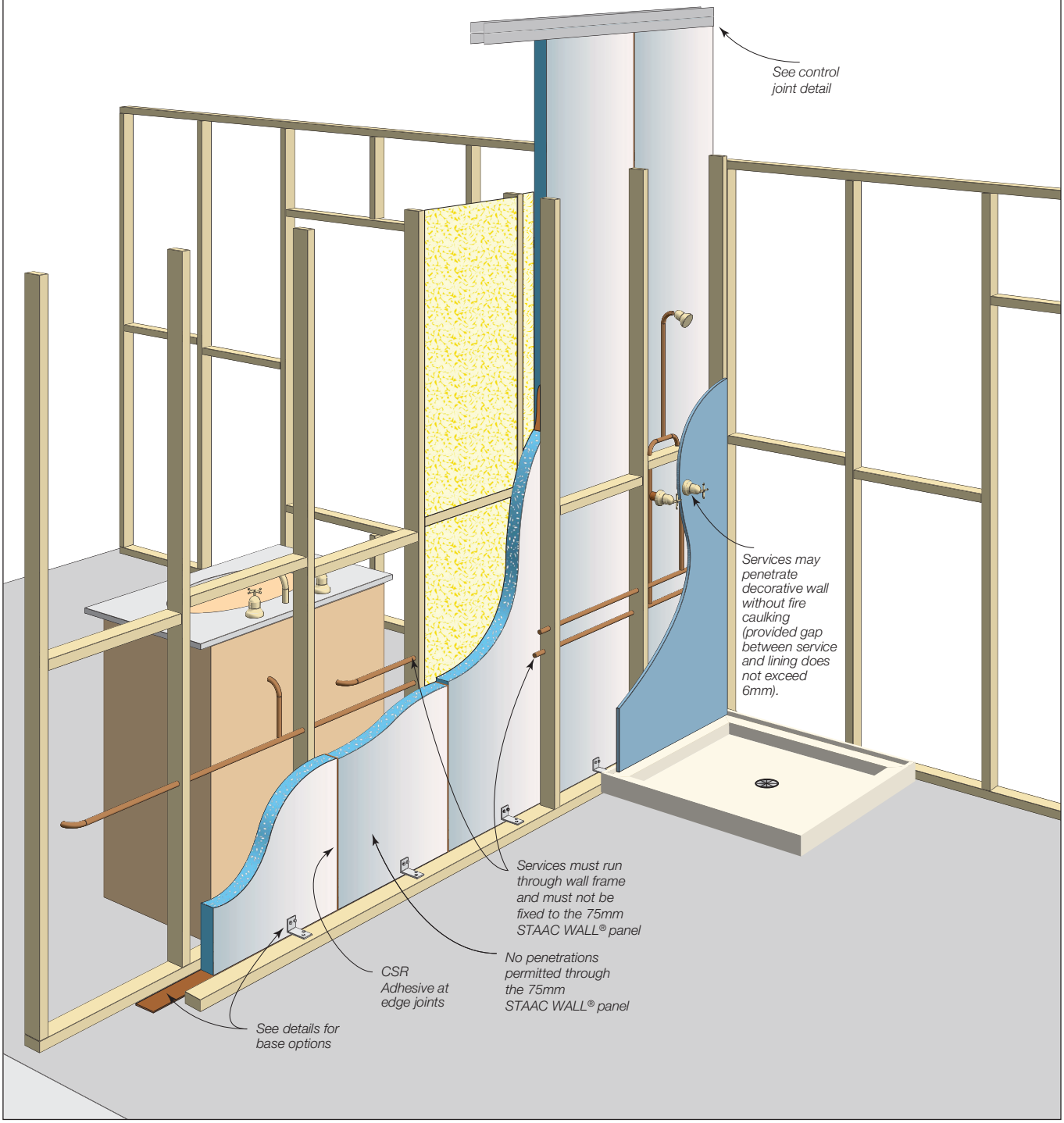
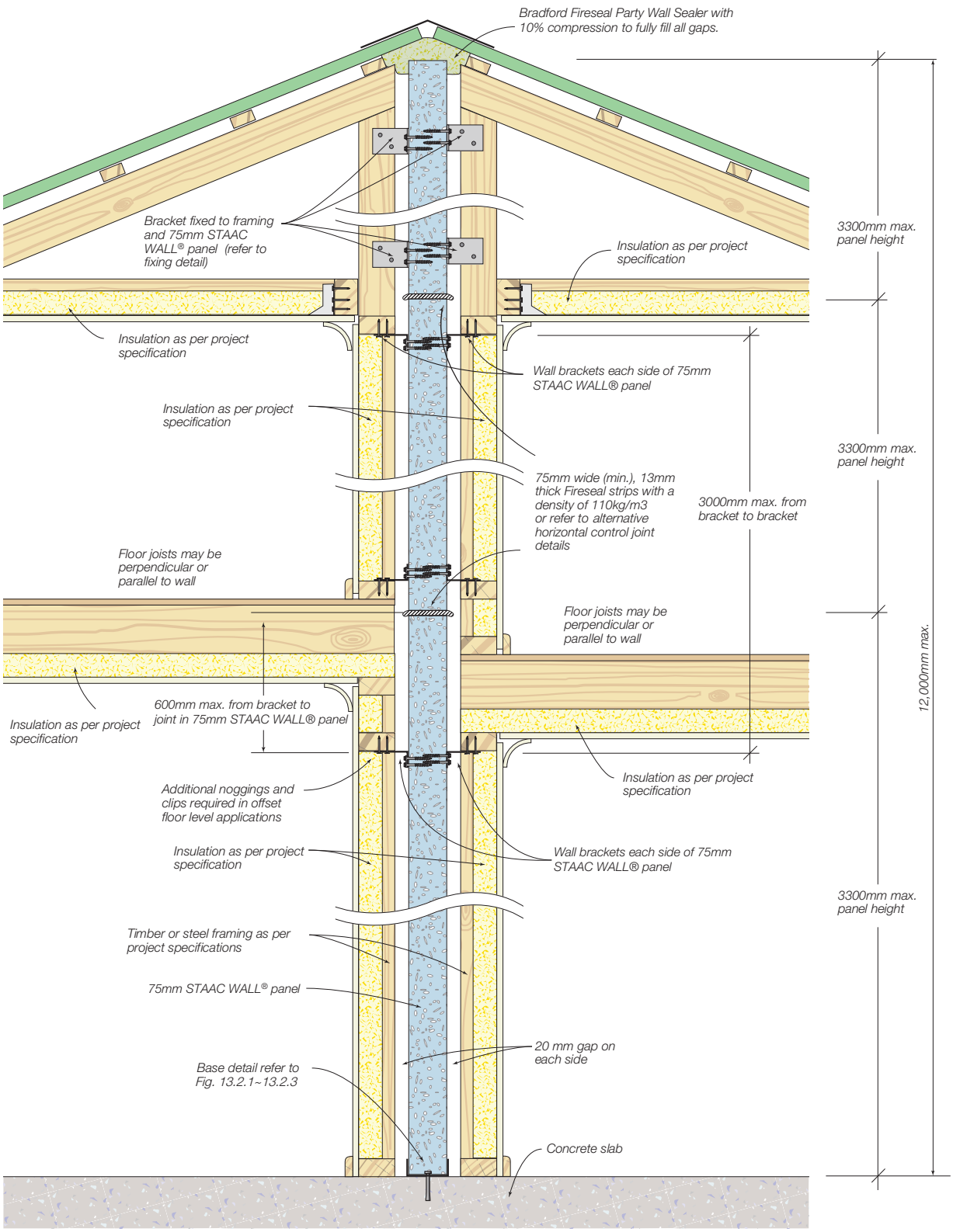


Figure 13.1.2 Vertical cross section of 75mm STAAC WALL® Discontinuous Intertenancy Walls



NOTE: Wall brackets can be fixed to studs or noggins within a distance of 150mm from ceiling or floor.

13.2 BASE CONNECTIONS

Figure 13.2.1 Base connection Option 1 - Continuous deflection head track

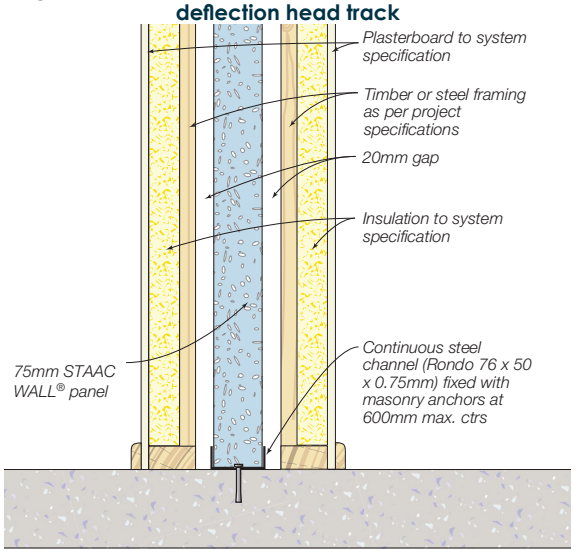


Figure 13.2.2 Base connection Option 2 - Continuous steel angle

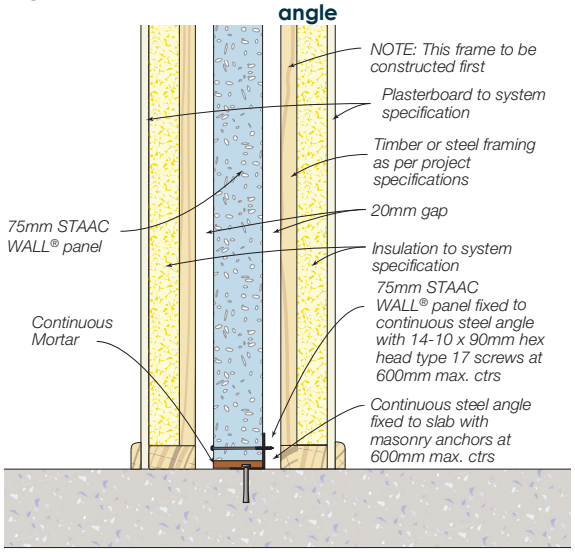
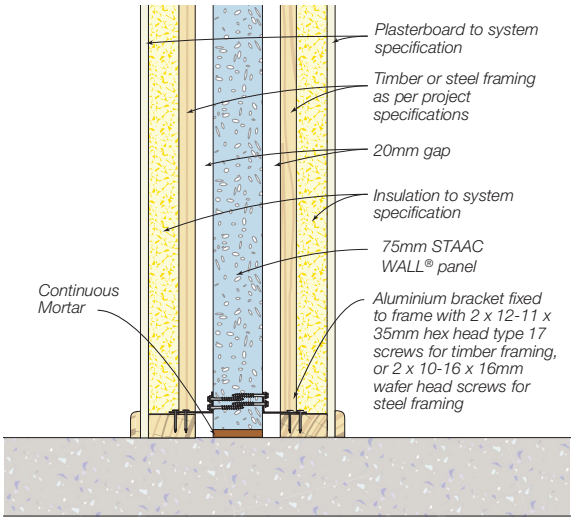
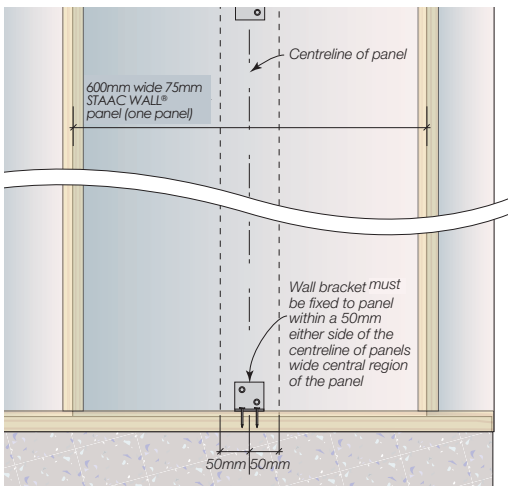


Figure 13.2.3 Base connection Option 3 - Wall bracket



13.3 BRACKET FIXING

Figure 13.3.1 Bracket fixing



13.4 CONTROL JOINTS

Figure 13.4.1 Horizontal joint fixing - Option 1 (FRL: 90 min)

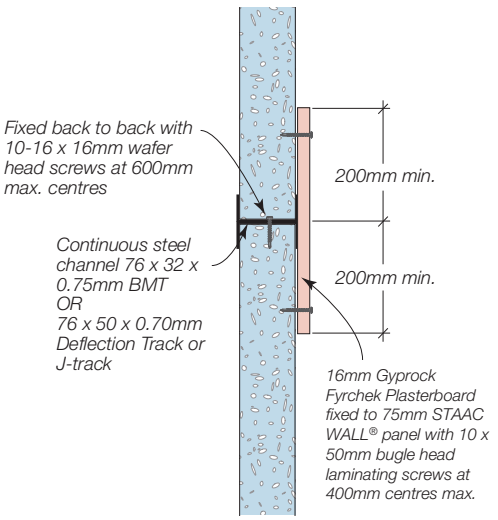


Figure 13.4.2 Horizontal joint fixing - Option 2 (FRL: 90 min)

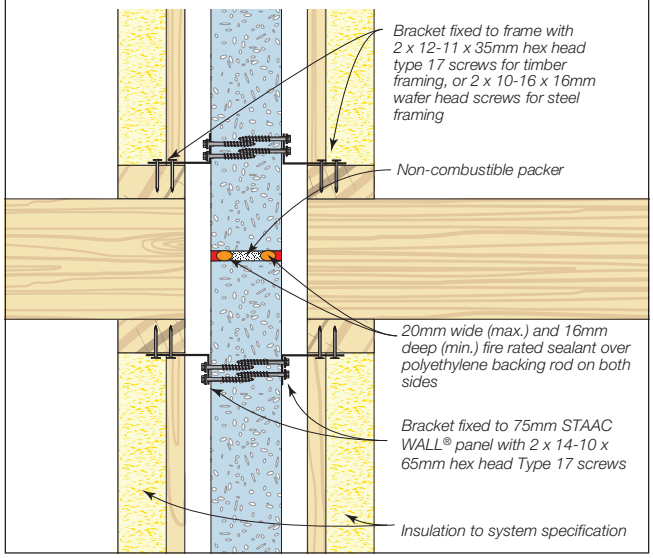


Figure 13.4.3 Horizontal joint fixing - Option3 (FRL: 60 min)

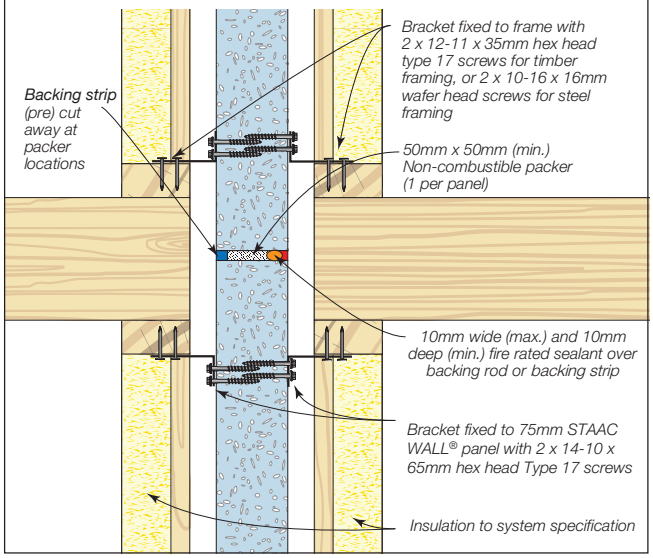


Figure 13.4.4 Horizontal joint fixing - Option 4 (FRL: 60 min)

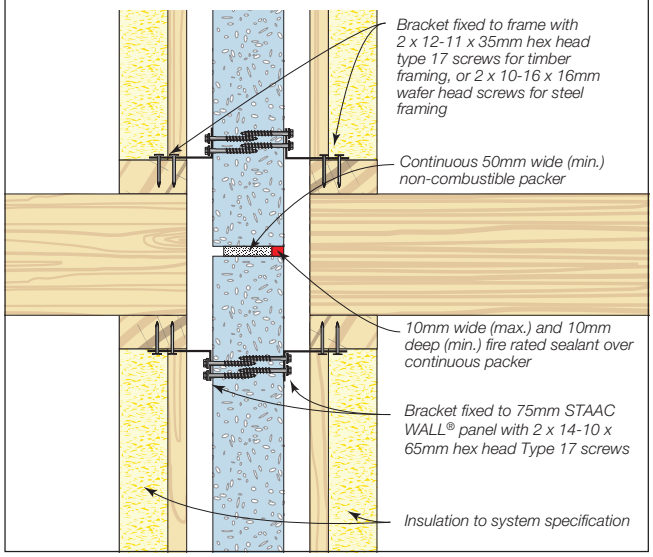


Figure 13.4.5 Horizontal joint fixing - Option 5 (FRL: 90 min)

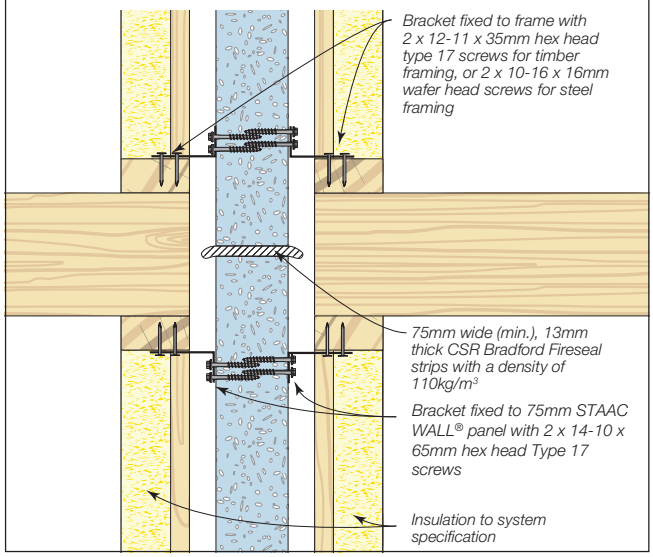


Figure 13.4.6 Vertical joint fixing - Option 1 (FRL: 60 min)

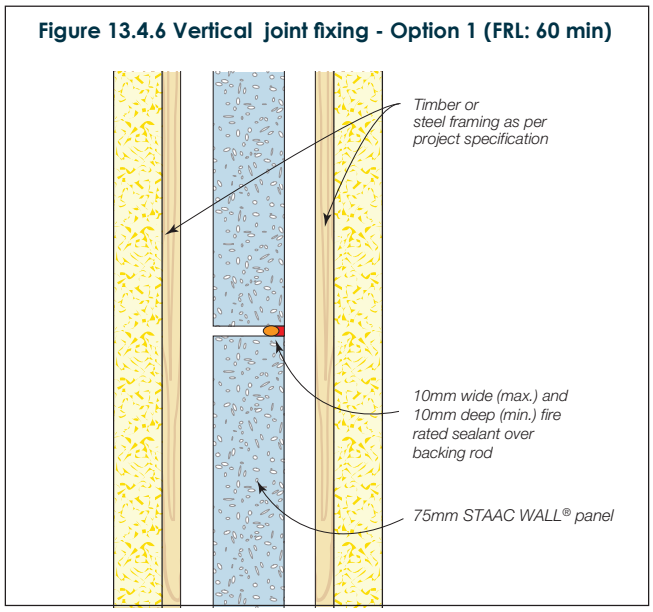
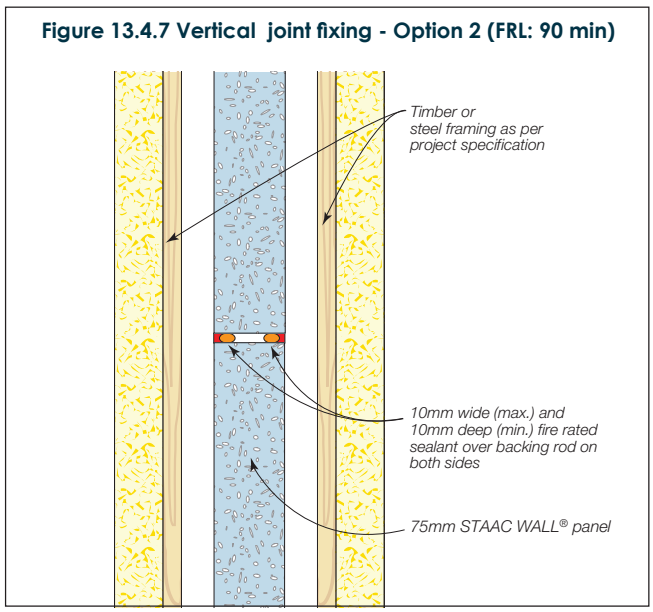


Figure 13.4.7 Vertical joint fixing - Option 2 (FRL: 90 min)



13.5 ROOF VALLEY AND PARAPET

Figure 13.5.1 Roof valley

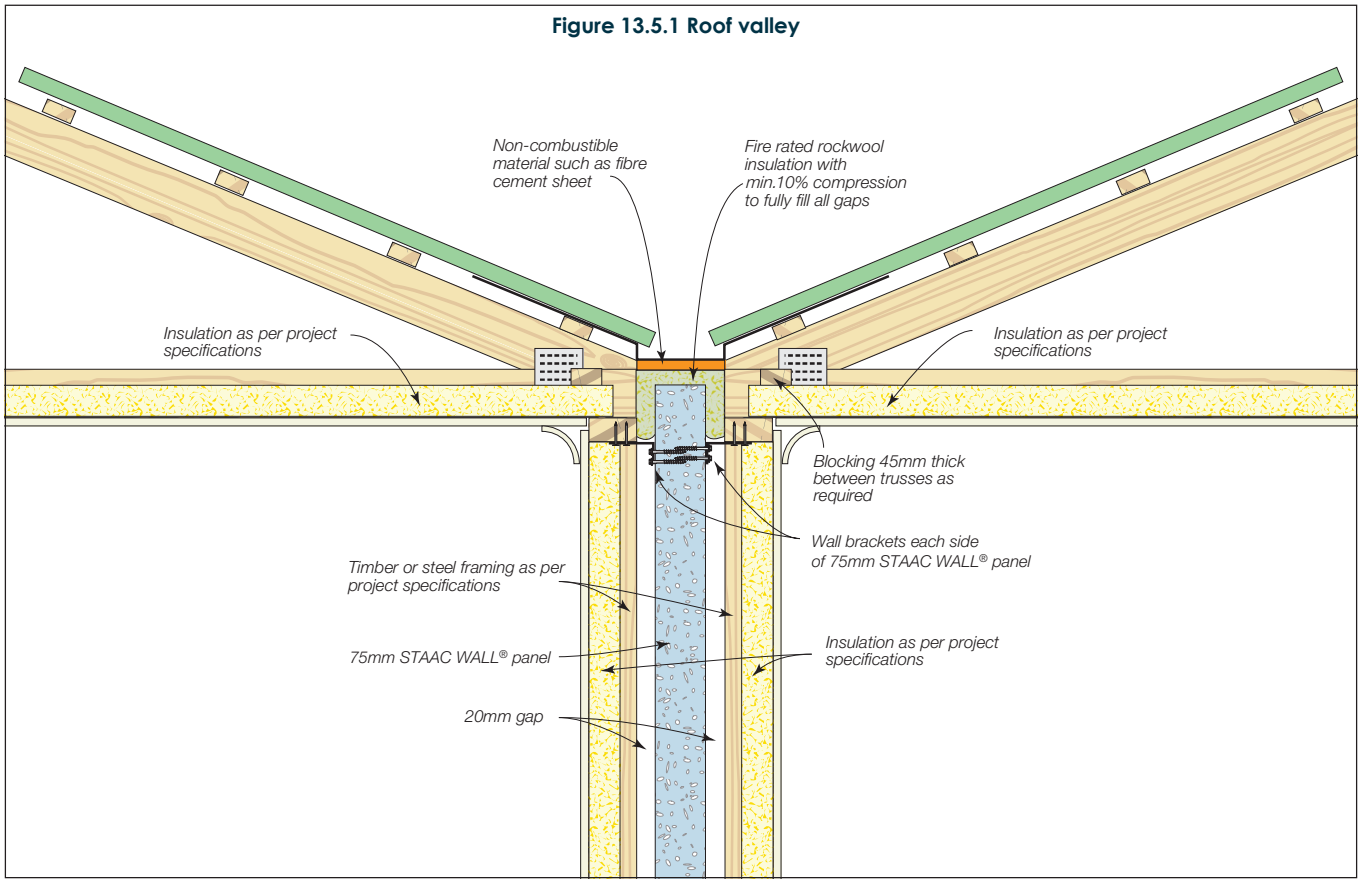
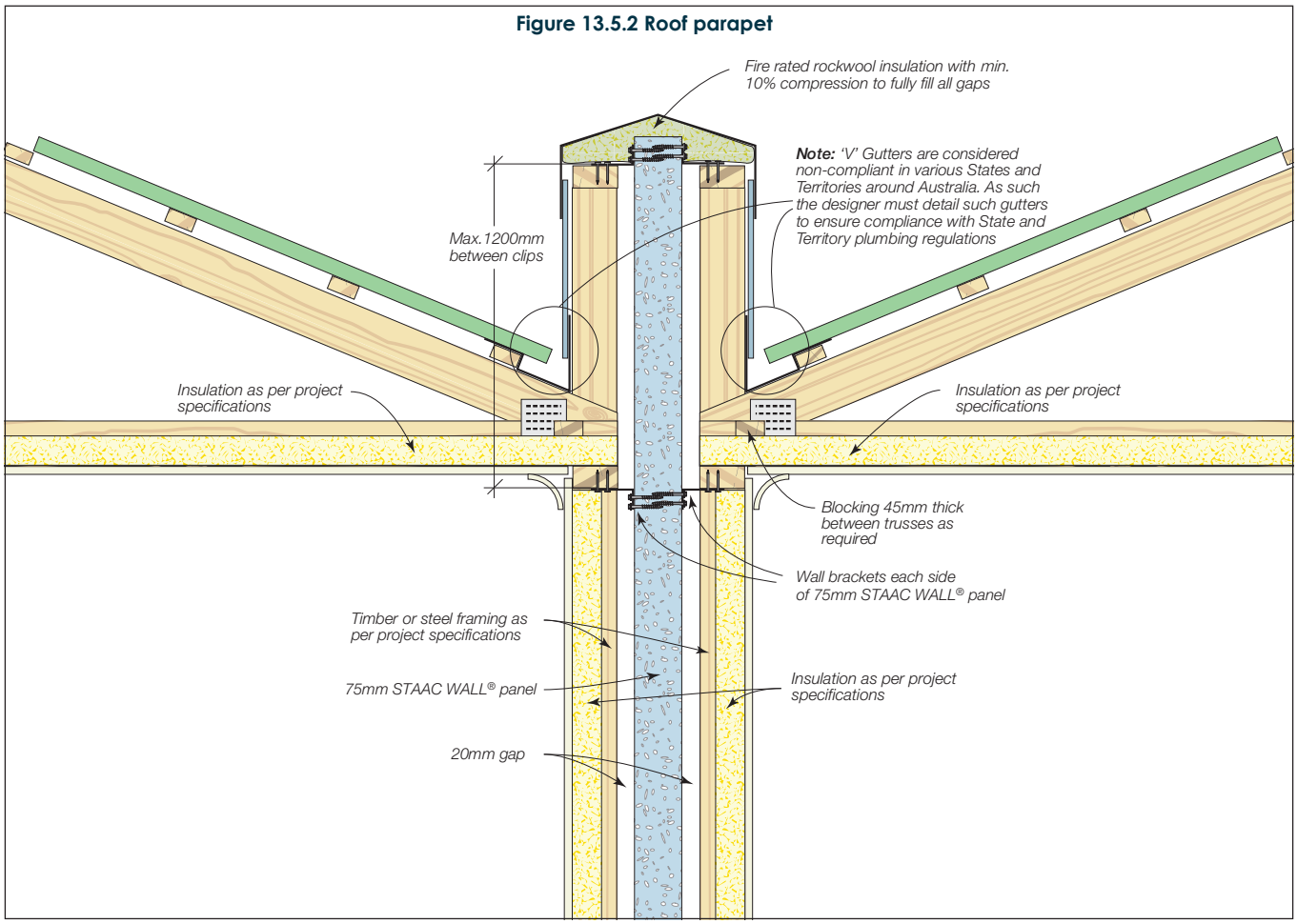
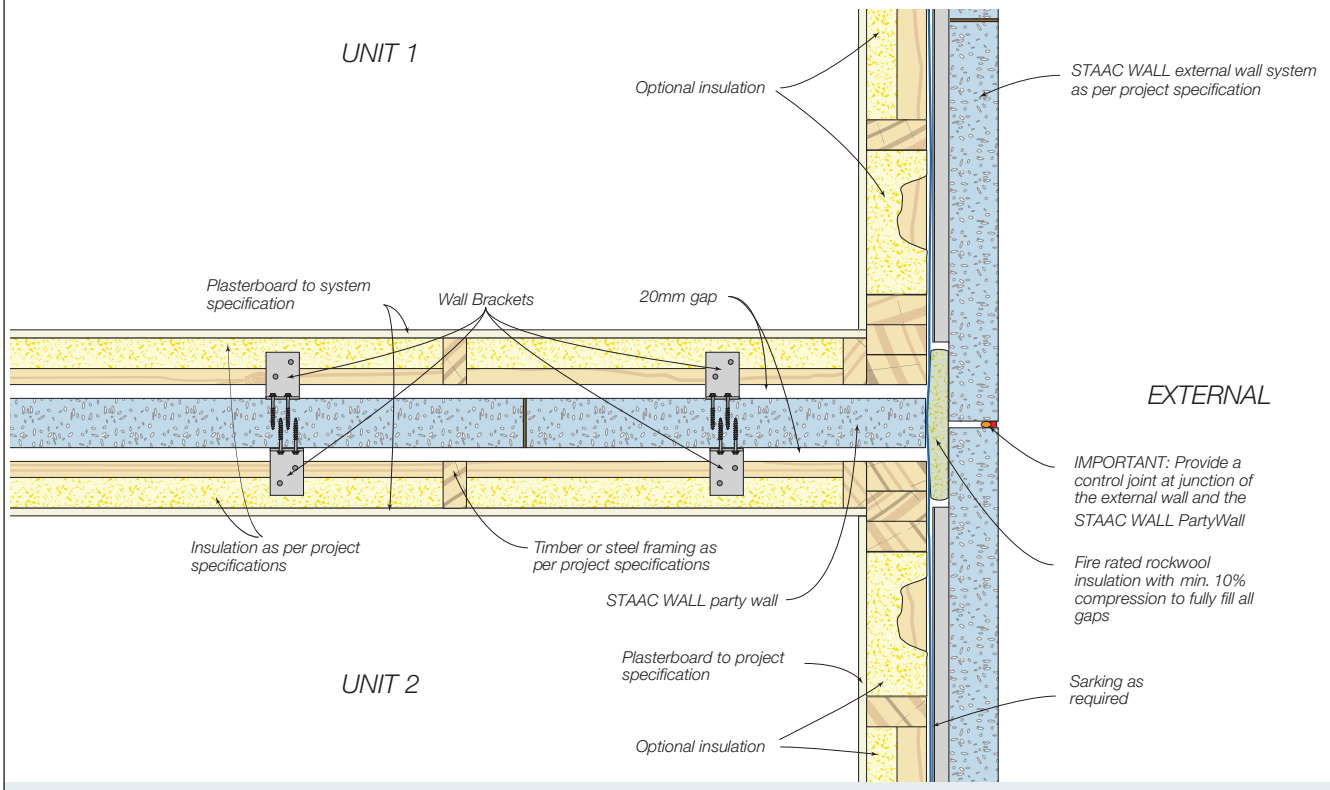


Figure 13.5.2 Roof parapet



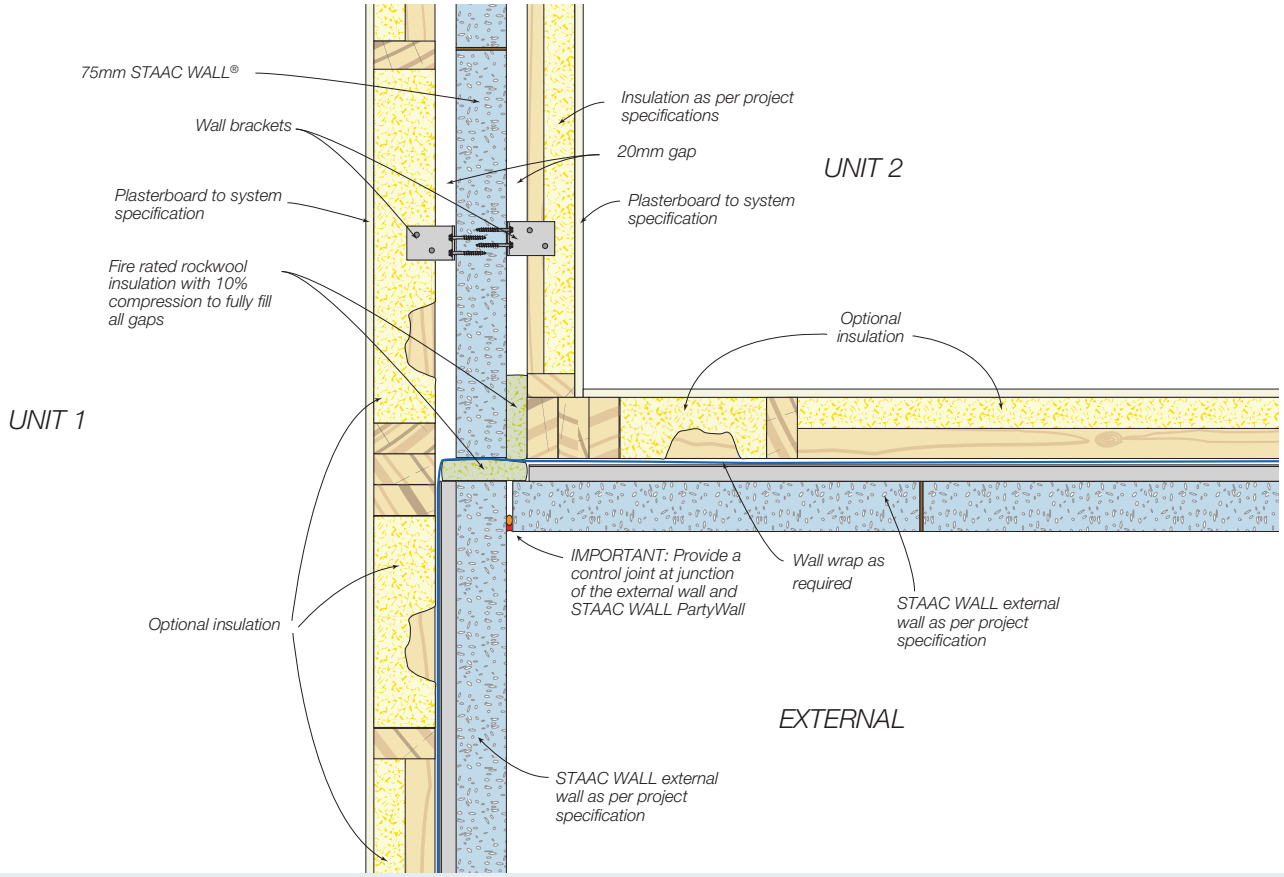
13.6 JUNCTION DETAILS

Figure 13.6.1 External wall junction



NOTE: Refer to STAAC WALL® Houses and Low Rise Multi Residential External Walls Design & Installation Guide for reference for fixings.

Figure 13.6.2 External wall corner junction



NOTE: Refer to STAAC WALL® Houses and Low Rise Multi Residential External Walls Design & Installation Guide for reference for fixings.

Figure 13.6.3 Blade wall junction detail

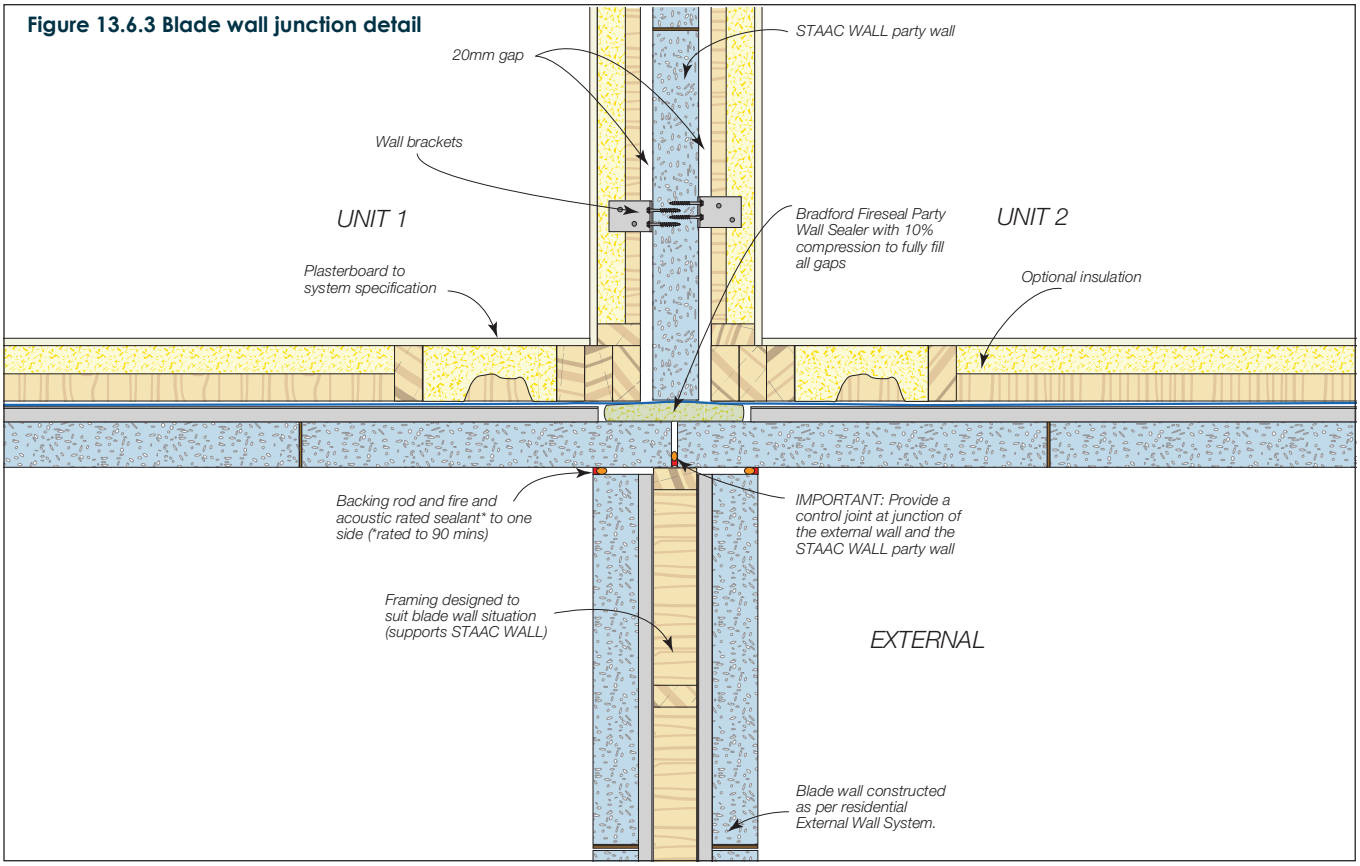
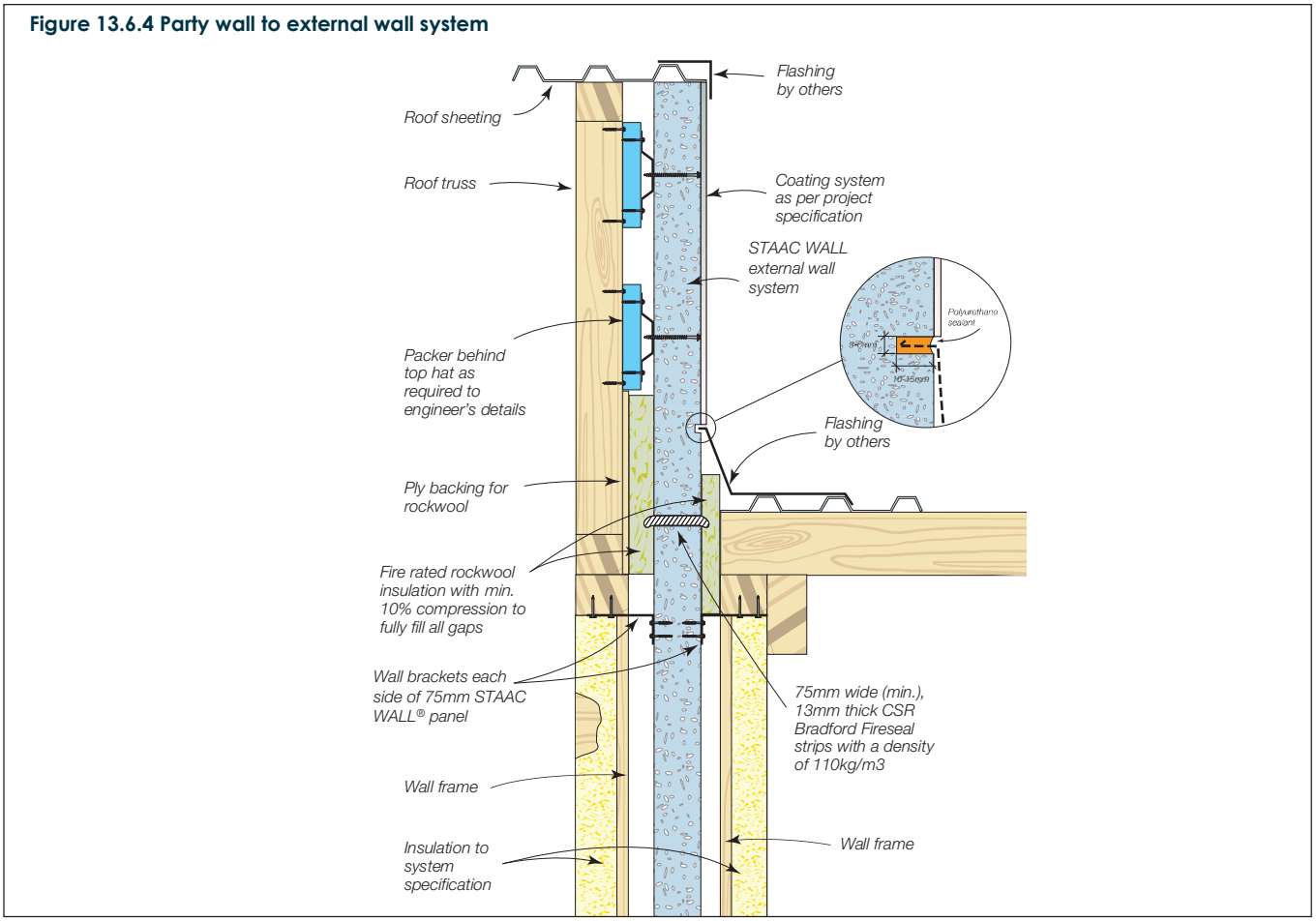
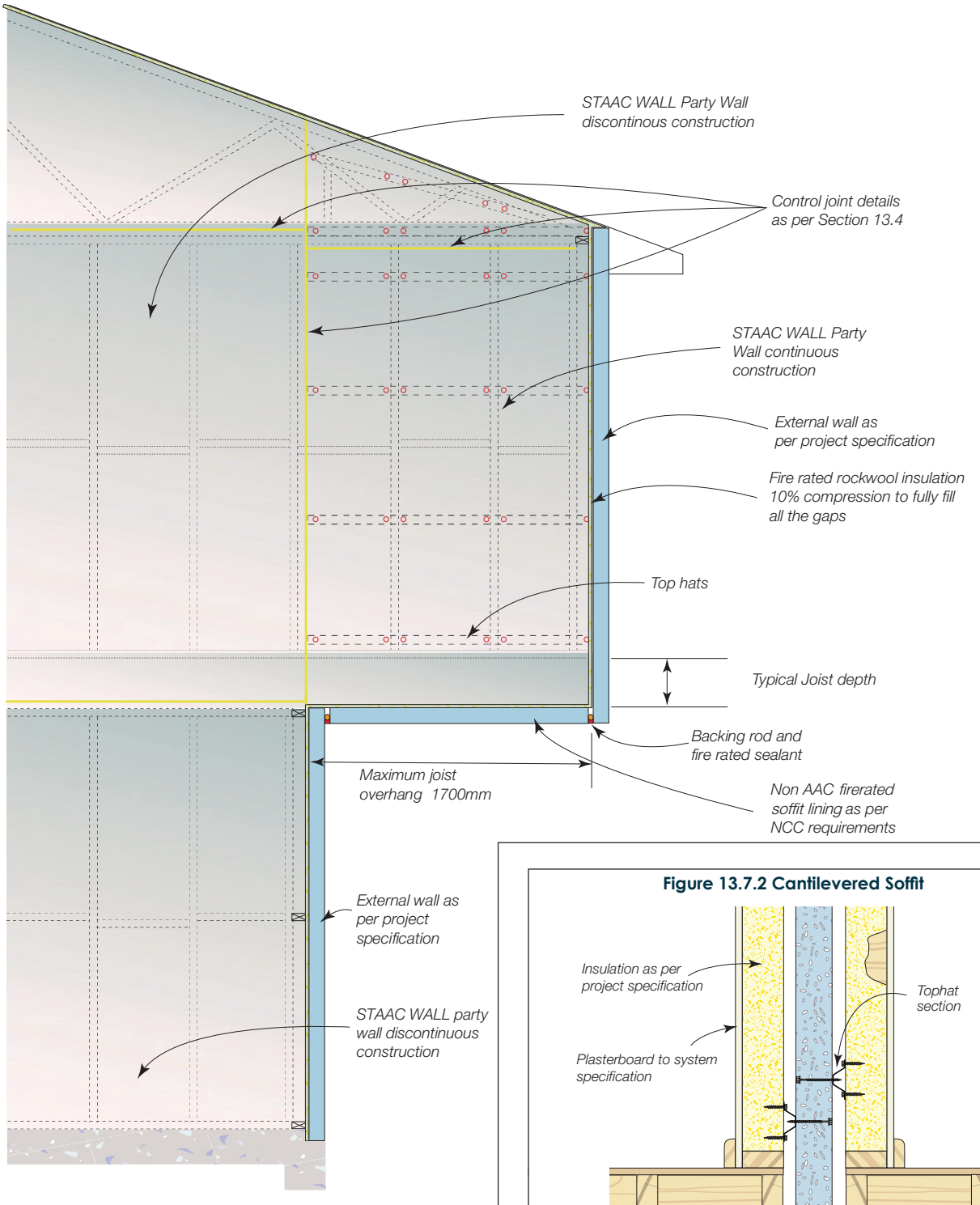


Figure 13.6.4 Party wall to external wall system



13.7 CANTILEVERED CONSTRUCTION

Figure 13.7.1 Intertenancy wall overhang



NOTE:

1. Max. panel length 3300mm
2. Max. span between support anchors 3000mm
3. Max. panel cantilever from restraint bracket 600mm
4. Discontinuous and continuous construction as defined by the NCC shall not be mix used in a single continuous wall

Figure 13.7.2 Cantilevered Soffit

14. APPENDIX: REFERENCING CODES AND STANDARDS

- AS 3566.1 - 2002 - Self-drilling screws for the building and construction industries Part 1: General requirements and mechanical properties
- AS 5146.1: 2015 – Reinforced Autoclaved Aerated Concrete Part 1: Structures (Incorporating Amendment No.1)
- AS 5146.2: 2018 – Reinforced Autoclaved Aerated Concrete Part 2: Design
- AS 5146.3: 2018 – Reinforced Autoclaved Aerated Concrete Part 3: Construction
- AS/NZS 1170.2: 2021 Structural design actions Wind actions
- AS/NZS 1336:2014 Eye and face protection – Guidelines
- AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment
- AS/NZS 1716:2012 Respiratory protective devices
- AS/NZS 4600: 2018 Cold-formed steel structures
- AS/NZS 4859.1:2018 Thermal insulation materials for buildings General criteria and technical provisions
- NASH Hand book – Design of residential & low-rise steel framing
- NASH Standard – Residential and low-rise steel framing Part 1: Design Criteria
- NASH Standard – Residential and low-rise steel framing Part 2: Design Solutions
- National Construction Code 2022 Volume One: Building Code of Australia - Class 2 to Class 9 Buildings
- National Construction Code 2022 Volume Two & Housing Provisions - Class 1 and 10 Buildings

37 Gravel Pit Rd, Darra QLD 4076
P. (07) 3725 5935 / stoddartgroup.com.au

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