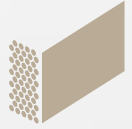


hebel[®]



The better way to build

Low Rise Multi Residential 75mm PowerPanel^{XL} & 50mm PowerPanel⁵⁰ Intertenancy Walls

DESIGN AND INSTALLATION GUIDE
NEW ZEALAND



CSR

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CODEMARK

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This Design and Installation Guide has been prepared as a source of information to provide general guidance to consultants – and in no way replaces the services of the professional consultant and relevant engineers designing the project.

It is the responsibility of the architectural designer and engineering parties to ensure that the details in this Design and Installation Guide are appropriate for the intended application.

The recommendations of this guide are formulated along the lines of good building practice, but are not intended to be an exhaustive statement of all relevant data.

WHY HEBEL® SYSTEMS ARE A BETTER WAY TO DESIGN AND BUILD

Whether you're a developer, architect, designer, builder or wall installer, Hebel wall systems deliver exceptional advantages in terms of performance, quality, speed, efficiency, risk minimisation and sustainability values.

Creating high performance buildings using Hebel PowerPanel^{XL} and PowerPanel⁵⁰

At the heart of the Hebel intertenancy wall system for low rise multi-residential buildings is the Hebel PowerPanel^{XL} and PowerPanel⁵⁰ steel reinforced panel made from autoclaved aerated concrete (AAC).

Developed and warranted by CSR Hebel PowerPanel^{XL} and PowerPanel⁵⁰ can reduce heating and cooling loads on buildings and is non-combustible. It can be produced to the size needed, is easily cut, makes construction fast and efficient, creates minimal waste and is a better choice for the environment compared with concrete or brick.

Maximising quality with the Hebel 'solid wall' advantage

There's a very good reason why developers want Hebel internal wall systems. They can increase market potential and return for a minimal initial investment. The PowerPanel^{XL} and PowerPanel⁵⁰ intertenancy walls create a value-adding sense of safety and security - solid when you knock on them, can't be cut through with a knife and overall provide quality long-term.

Construction speed and efficiency plus cost certainty

PowerPanel^{XL} and PowerPanel⁵⁰ Intertency Wall Systems goes up quickly and easily which is why developers and construction companies rely on it to keep control of their project schedules and costs.

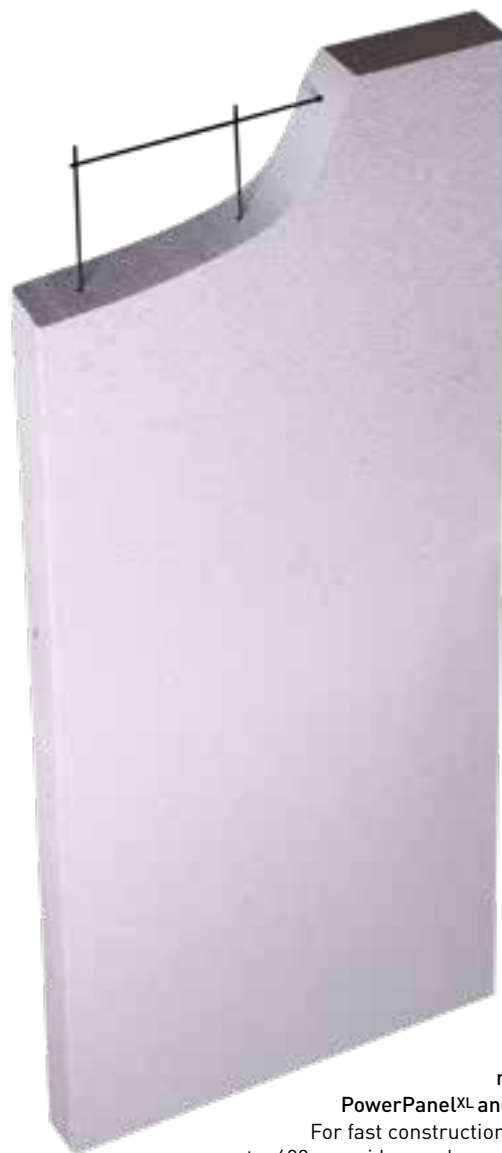
Builders are already ahead on their project when they specify Hebel systems as delivery of the Hebel panels and installation of the PowerPanel^{XL} and PowerPanel⁵⁰ wall construction isn't held up by wet or damp conditions.

Constructing with the Hebel PowerPanel^{XL} and PowerPanel⁵⁰ Intertency Wall System means logistics are simple, work flows easily, project schedules are controlled and cost certainty is maximised.

Minimising risk

Hebel wall systems provide a solid foundation for risk minimisation in design and construction. They are tested, well proven and designed to achieve the Building Code fire and acoustic compliance easily. Combining the non-

combustible property of PowerPanel^{XL} and PowerPanel⁵⁰ with advanced system designs, CSR Hebel delivers high value cost effective solutions that significantly reduce the number of fire and acoustic risk points in construction.



75mm steel reinforced Hebel PowerPanel^{XL} and PowerPanel⁵⁰.

For fast construction with minimised waste, 600mm wide panels can be ordered in stock lengths of 2200 (PowerPanel⁵⁰ only), 2400, 2550, 2700 and 3000.

Gaining high sustainability values

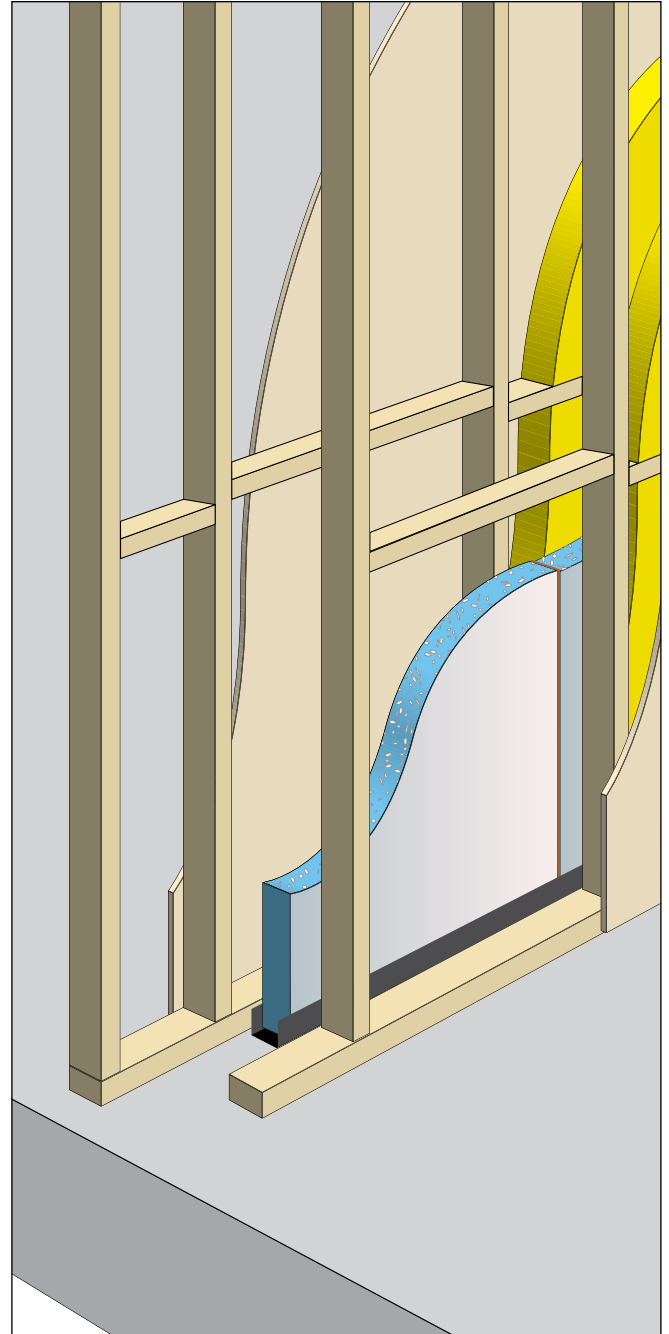
Hebel AAC is a durable inert product, made from raw materials in a process that minimises embodied energy. The low bulk density of Hebel AAC means less than a quarter of the resources in raw materials are used in its production than for concrete and bricks.

Waste in production is reduced through extensive recycling. Production waste, slurry and even the steam generated are all recycled back into the manufacturing process while waste steel and oil are recycled off site. Even the non-toxic citrus based solvents used for cleaning are recycled. Onsite the combination of panel sizes designed to suit standard building modules and the ease of working with standard power tools means there is very little waste. This goes a step further when panels are made-to-order. Altogether, Hebel is one of the most environmentally responsible building materials for wall system construction.

Leveraging the exceptional value-add of Hebel systems

Quite simply the Hebel intertenancy wall system for low rise multi-residential projects delivers a holistic solution that no other systems can match. It benefits all stakeholders in the project lifecycle through its role in value-adding to the project's quality, design and construction efficiency, risk minimisation and cost and time certainty.

Hebel Low Rise Multi Residential PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System



Hebel PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System for load bearing and non-load bearing intertenancy / party walls in low rise multi-residential projects.

This wall configuration consists of Hebel (non-load bearing) PowerPanel^{XL} / PowerPanel⁵⁰ panels installed vertically and secured to the structural load bearing frame. The system utilises an aluminium bracket system which provides the wall with a discontinuous construction for acoustic performance.

BENEFITS OF BUILDING WITH HEBEL



STRONG AND SOLID

Hebel panels are high-performance building products made from autoclaved aerated concrete (AAC) containing steel reinforcement for added strength, with an anti-corrosion layer on the steel for maximum durability.



ENERGY EFFICIENT

Hebel panels perform well thermally, helping to keep your house cool from the heat in summer, and keeping it warm and cosy in winter. That means less reliance on heating and cooling, and can lead to savings on energy costs.



QUALITY AND SPEED

Building with Hebel can mean faster construction times, without sacrificing on quality. One standard Hebel panel is the equivalent of 75 traditional bricks. A high quality building material, Hebel provides a great solution in terms of speed and ease of construction which is why it is increasingly becoming the preferred choice of builders and developers.



ECO-FRIENDLY

Hebel is an environmentally friendly choice of building material, treading lightly on this planet. Manufactured in Australia, Hebel is made using readily available raw materials. Waste generated in the manufacturing process is recycled, even down to the steam that's produced.



NOISE REDUCTION

A Hebel home is a quiet one because it reduces noise transmission. Compared to polystyrene and many fibre cement substrates, the use of Hebel for external walls reduces noise from external sources like traffic, meaning more peace and quiet. And when used for upper floors, can reduce sound transference between levels as well.



FIRE RESISTANT

Hebel is renowned for its fire resistant properties, and is a non-combustible building material. Hebel systems have been tested by the CSIRO and are proven to achieve Fire Resistance Levels (FRLs) of 60 minutes through to 240 minutes. This makes it an ideal choice in bushfire zones.



PROVEN

CSR Hebel is the only manufacturer of AAC in Australia. With over 25 years of experience in developing, testing and producing AAC you can be assured you're getting high quality products and systems and unmatched technical expertise with Hebel.

1.1 POWERPANEL^{XL} / POWERPANEL⁵⁰ INTERTENANCY WALLS

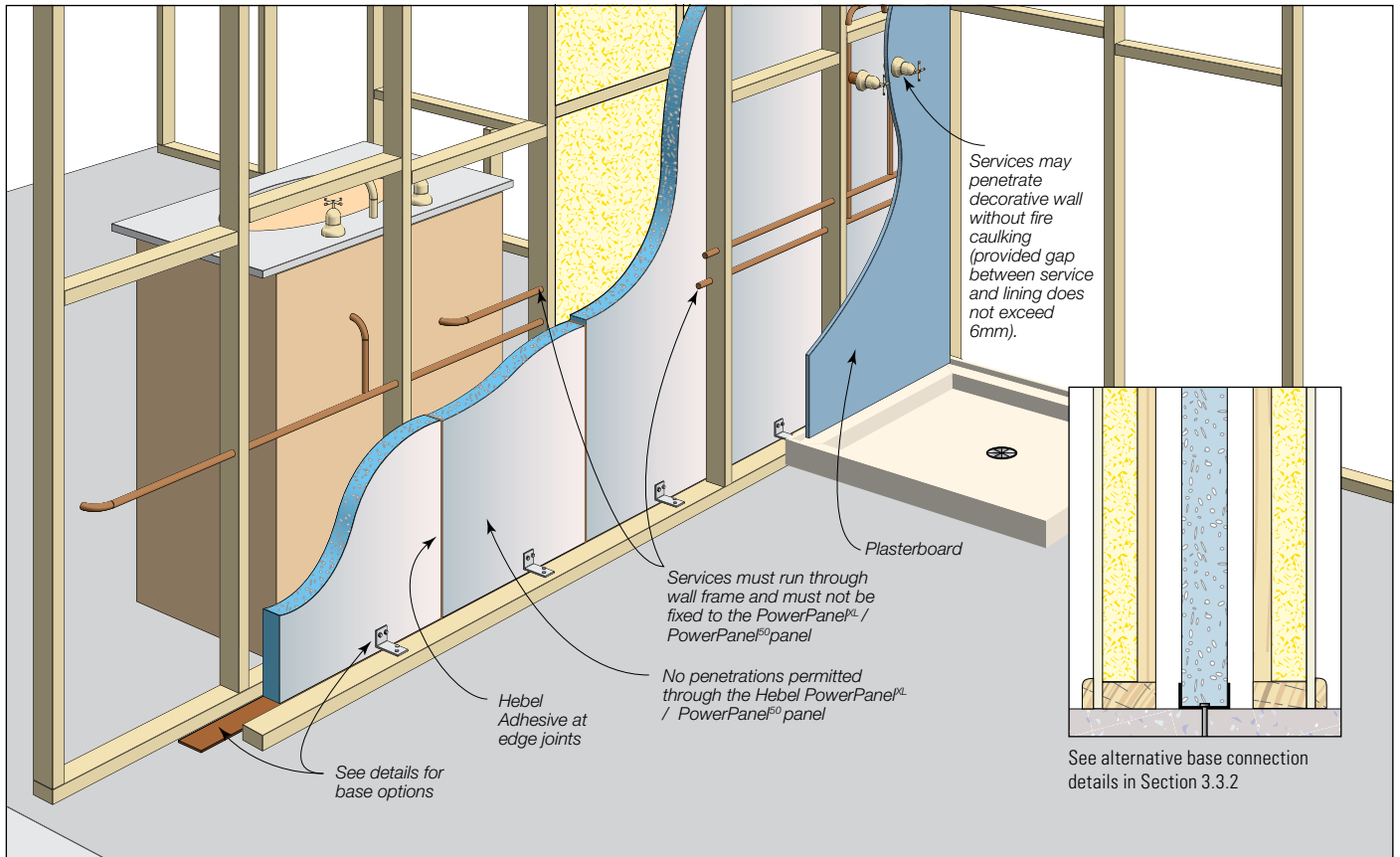


Table 1.1.1 Hebel intertenancy wall system using PowerPanel^{XL}

| System | | Wall thickness | | FRL | STC | | Cavity insulation | Wall lining both sides |
|----------------|------------|----------------|------|----------|----------------|------|---|---|
| Separation gap | | Separation gap | | | Separation gap | | | |
| 10mm | 20mm | 10mm | 20mm | | 10mm | 20mm | | |
| Hebel 1908 | Hebel 1909 | 295 | 315 | 90/90/90 | 59 | 60 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 1x10mm plasterboard (lining mass min. 5.7 kg/m ²) |
| Hebel 1912 | Hebel 1913 | 301 | 321 | | 64 | 64 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 1x13mm plasterboard (lining mass min. 8.5 kg/m ²) |
| Hebel 1916 | Hebel 1917 | 315 | 335 | | 64 | 64 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 2x10mm plasterboard (lining mass min. 5.7 kg/m ²) |
| Hebel 1920 | Hebel 1921 | 327 | 347 | | 65 | 65 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 2x13mm plasterboard (lining mass min. 8.5 kg/m ²) |

NOTES:

1. Timber framing to be in accordance to NZS 3604.
2. This table must be read in conjunction with all the information provided in this Design Guide, acoustic opinion 20171728.18/0511A/R3/AW provided by Acoustic Logic and Exova Warringtonfire assessment WFRA - 45771 and CSIRO fine assessment report FCO-3255.
3. Selection of the most suitable Powerpanel^{XL} / PowerPanel⁵⁰ Intertency Wall System should be undertaken with specialist consultant's advice.
4. 10mm or 20mm separation between the frame and Hebel Powerpanel^{XL} / PowerPanel⁵⁰ with aluminium bracket connection.
5. The values are for 90mm steel or timber stud with standard 600mm stud spacing.
6. The maximum total wall height of Hebel PowerPanel^{XL} intertenancy wall system is 12m and achieves FRL 90/90/90 mins.

Table 1.1.2 Hebel intertenancy wall system using PowerPanel⁵⁰

| System | | Wall thickness | | FRL | STC | | Cavity insulation | Wall lining both sides |
|----------------|------------|----------------|------|---|----------------|------|---|--|
| Separation gap | | Separation gap | | | Separation gap | | | |
| 10mm | 20mm | 10mm | 20mm | | 10mm | 20mm | | |
| Hebel 1924 | Hebel 1925 | 270 | 290 | Max. 90/90/90 (Refer to note 6 for total wall height) | 58 | 59 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 1x10mm plasterboard (lining mass min. 5.7 kg/m ²) |
| Hebel 1928 | Hebel 1929 | 276 | 296 | | 63 | 63 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 1x13mm plasterboard (lining mass min. 8.5 kg/m ²) |
| Hebel 1932 | Hebel 1933 | 290 | 310 | | 63 | 63 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 2x10mm plasterboard (lining mass min. 5.7 kg/m ²) |
| Hebel 1936 | Hebel 1937 | 302 | 322 | | 64 | 64 | 90mm Bradford insulation min. R1.8 - both sides (Or equivalent insulation with min. density of 8.4kg/m ³) | 2x13mm plasterboard (lining mass min. 8.5 kg/m ²) |

NOTES:

1. Timber framing to be in accordance to NZS 3604.
2. This table must be read in conjunction with all the information provided in this Design Guide, acoustic opinion 20171728.18/0511A/R3/AW provided by Acoustic Logic and Exova Warringtonfire assessment WFRA - 45771 and CSIRO fire assessment report FCO-3255.
3. Selection of the most suitable Powerpanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System should be undertaken with specialist consultant's advice.
4. 10mm or 20mm separation between the frame and Hebel Powerpanel^{XL} / PowerPanel⁵⁰ with aluminium bracket connection.
5. The values are for 90mm steel or timber stud with standard 600mm stud spacing.
6. A Fire Resistance Level (FRL) of 90/90/90 mins is only achieved for a total height of 7.2m. The FRL of the wall system is reduced to 60/60/60 mins for a total wall height of up to 10m.

1.2 STRUCTURAL PROVISIONS

STRUCTURAL PERFORMANCE

The PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System can be either a loadbearing or non-loadbearing wall. The panel within the wall system is non-loadbearing with the exception of self weight.

CONSTRUCTION LOADINGS

During construction of intertenancy walls, the Hebel PowerPanel^{XL} / PowerPanel⁵⁰ panel could be subject to wind loading. The builder shall provide the necessary temporary bracing of the panel until both structural frames and external veneer and/or claddings are installed so as to prevent the Hebel panels from exposure to external wind pressures.

NOTE: The screw connections are not adequate to stabilise the panel against construction loadings.

CUTTING OF HEBEL POWERPANEL^{XL} / POWERPANEL⁵⁰

The standard Hebel PowerPanel^{XL} / PowerPanel⁵⁰ panel can be cut to a minimum width of 270mm. All exposed steel reinforcement shall be liberally coated with Hebel anti-corrosion protection paint available through Hebel.

WALL FRAME

The wall framing presented in this guide for various wall systems are nominated for the acoustic and fire performance values. It is the designer's responsibility to determine an appropriate wall framing system to satisfy structural adequacy. Several items the designer must allow for are:

- lateral loadings
- wall height
- deflection limits
- offset distance (gap) from the panel
- building movement
- control joint locations.

WALL HEIGHT

The overall wall height limit is 12m for the PowerPanel^{XL} Intertency Wall System and 10m for PowerPanel⁵⁰ Intertency Wall System. The wall shall be constructed of Hebel PowerPanel^{XL} / PowerPanel⁵⁰ available up to 3000mm maximum length.

EARTHQUAKE LOADING

The Hebel Low Rise Multi-Residential Intertency Wall System is applicable to all seismic zones within New Zealand and soil classification types listed in AS/ANZ1170. The building designer must take into account the seismic mass of the Hebel panels when designing the bracing of the main building structure. This may be achieved by assuming the wall to be equivalent of a wall with medium weight cladding if using NZS3604 based design methods, or by specific engineering classifications.

FIXINGS

Fasteners & fixings

Most screw fixings are timber type, which is sufficient for penetrating the metal thicknesses outlined in this design guide. Connections that have larger metal thicknesses may require a metal type screw and will need to be designed and approved by the project engineer.

Fixings – Deflection head track to substrate

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

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

Table 1.2.1 outlines the connection type and requirements for constructing the PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System detailed in this guide.

BRACING REQUIREMENTS

The Hebel Low Rise Multi-Residential Intertency Wall System does not provide in-plane nor out-of-plane bracing capacity to the building. While the aluminium brackets, connecting the panel to the stud frames, provide continuity between adjacent tenancies, these brackets may not be adequate to transfer diaphragm forces between tenancies. Tenancy units should be individually braced to provide sufficient lateral load resisting capacity.

Designers should include the mass of the Hebel panels if carrying out a specific bracing design, or, use a 'medium' weight cladding wall if using the bracing unit approach in NZS3604.

POST FIRE STABILITY

Connections are also required to ensure that the stability of the framed walls (either side of the PowerPanel^{XL} / PowerPanel⁵⁰ panel) are maintained in case of a fire on one side of the wall. AS/NZS1170 as modified by the verification method BI/VMI (Amendment17) addresses this issue.

- The method is to design the element and supporting structure so that after fire, until the building is repaired or demolished, the residual structure is able to withstand the thermal actions resulting from the fire, plus a lateral force usually taken to be uniformly distributed horizontal face

load of 0.5kPa in any direction. Refer to BI/VMI and AS/NZS1170 Part O for details.

Assuming a complete fire-cell burnout, the residual structure (the intertenancy wall) must be able to resist a 0.5kPa face load. The standard fixing between the aluminium bracket and the stud will resist this post fire load should one side of the wall be lost in a fire.

Table 1.2.1 Fixings for PowerPanel^{XL} Intertency Wall System

| Fixings for PowerPanel ^{XL} Intertency Discontinuous Wall Systems | Fixing type | Number of fixings and spacing |
|--|--|---|
| Bottom angle / track to structure | M8 Dynabolt | 600mm max. centres |
| Bottom angle to PowerPanel ^{XL} panel | 14-10 x 90mm hex head type 17 screws | 2 fixings per panel, 50mm min. from panel edge. |
| Track back-to-back | 10-16 x 16mm wafer head screws | 600mm max. centres |
| Aluminium bracket to timber frame | 12-11 x 35mm hex head type 17 screws | 2 fixings per bracket |
| Aluminium bracket to steel frame | 10-16 x 16mm hex head self-drilling screws | 2 fixings per bracket |
| Aluminium bracket to PowerPanel ^{XL} panel | 14-10 x 65mm hex head type 17 screws | 2 fixings per bracket |
| Plasterboard to framing | Refer to Plasterboard manufacturer | |

Table 1.2.2 Fixings for PowerPanel⁵⁰ Intertency Wall System

| Fixings for PowerPanel ⁵⁰ Intertency Discontinuous Wall Systems | Fixing type | Number of fixings and spacing |
|--|--|---|
| Bottom angle / track to structure | M8 Dynabolt | 600mm max. centres |
| Bottom angle to PowerPanel ⁵⁰ panel | 14-10 x 65mm hex head type 17 screws | 2 fixings per panel, 50mm min. from panel edge. |
| Aluminium bracket to timber frame | 12-11 x 35mm hex head type 17 screws | 2 fixings per bracket |
| Aluminium bracket to steel frame | 10-16 x 16mm hex head self-drilling screws | 2 fixings per bracket |
| Aluminium bracket to PowerPanel ⁵⁰ panel | 12-11 x 35mm hex head type 17 screws | 2 fixings per bracket |
| Plasterboard to framing | Refer to Plasterboard manufacturer | |

1.3 DESIGN & DETAILING CONSIDERATIONS

CONTROL JOINTS

Control joints must be provided at a maximum of 6m spacing. Recommended control joint widths should be 10mm minimum between Hebel PowerPanel^{XL} / PowerPanel⁵⁰ 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 shall be nominated by the designer.

WET AREA WALL CONSTRUCTION


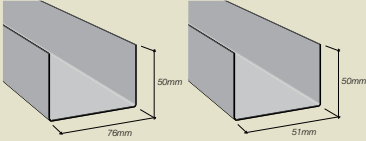
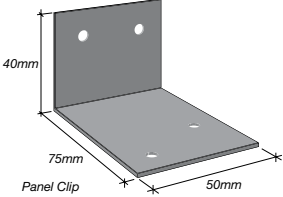


Wet area wall construction requires a system that enables services to be installed in a cavity. All plumbing should be acoustically treated as required by the NZBC. All wet area walls shall be lined and waterproofed in accordance with NZBC requirements. Refer to the plasterboard manufacturer's specification for suitable lining materials for wet area application.

NON-HEBEL COMPONENTS USED IN INTERTENANCY WALL

Components, which are not manufactured by Hebel, such as plasterboard, timber and steel stud wall frames, Bradford insulation and others must be designed, installed and handled in accordance with their manufacturer's guidelines and recommendations.

CSR Building Products Limited, guarantees only the products that are manufactured by CSR Building Products Limited, not the components, products or services supplied by others.

1.4 SYSTEM COMPONENTS

| Product | Description | Supplied by CSR Hebel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|---|--|-------------|------------|--|--|------|-----|----|----|------|-----|----|----|------|-----|----|----|------|-----|----|----|------|-----|----|----|--|----------|---|
| <p>Hebel PowerPanel^{XL} and PowerPanel⁵⁰ panel</p> <table border="1"> <thead> <tr> <th colspan="4">Panel weight (kg)</th> </tr> <tr> <th>Length (mm)</th> <th>Width (mm)</th> <th>Weight (kg) at 35% M.C. for PowerPanel⁵⁰</th> <th>Weight (kg) at 35% M.C. for PowerPanel^{XL}</th> </tr> </thead> <tbody> <tr> <td>2200</td> <td>600</td> <td>45</td> <td>NA</td> </tr> <tr> <td>2400</td> <td>600</td> <td>50</td> <td>58</td> </tr> <tr> <td>2550</td> <td>600</td> <td>53</td> <td>62</td> </tr> <tr> <td>2700</td> <td>600</td> <td>56</td> <td>66</td> </tr> <tr> <td>3000</td> <td>600</td> <td>62</td> <td>73</td> </tr> </tbody> </table> <p>NOTE: Average panel weight calculated at 35% moisture content.</p> | Panel weight (kg) | | | | Length (mm) | Width (mm) | Weight (kg) at 35% M.C. for PowerPanel ⁵⁰ | Weight (kg) at 35% M.C. for PowerPanel ^{XL} | 2200 | 600 | 45 | NA | 2400 | 600 | 50 | 58 | 2550 | 600 | 53 | 62 | 2700 | 600 | 56 | 66 | 3000 | 600 | 62 | 73 | <p>The core component of PowerPanel^{XL} Intertency Wall Systems is the 75mm thick, steel mesh reinforced Hebel PowerPanel^{XL} panel. PowerPanel⁵⁰ is a 50mm thick panel. The panel is manufactured in a range of stock sizes as detailed below:</p> | <p>✓</p> |  |
| Panel weight (kg) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Length (mm) | Width (mm) | Weight (kg) at 35% M.C. for PowerPanel ⁵⁰ | Weight (kg) at 35% M.C. for PowerPanel ^{XL} | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200 | 600 | 45 | NA | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2400 | 600 | 50 | 58 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2550 | 600 | 53 | 62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2700 | 600 | 56 | 66 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3000 | 600 | 62 | 73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Hebel Deflection Head Track</p> | <p>For positioning and restraining the bottom and mid connection of the panels.</p> | <p>✓</p> |  <p>For PowerPanel^{XL} For PowerPanel⁵⁰</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Hebel Wall Brackets</p> | <p>The brackets are proprietary components which enable the Hebel PowerPanel^{XL} and PowerPanel⁵⁰ 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 75 x 40 x 1.6mm x 50mm wide aluminium angle.</p> | <p>✓</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Hebel Adhesive</p> | <p>Hebel Adhesive is used for bonding the panels together at vertical joints. Supplied in 20kg bags.</p> | <p>✓</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Hebel Mortar</p> | <p>Hebel Mortar is used to provide a level base for panel installation as well as providing acoustic and fire protection at the base of the panels. Used in some PowerPanel^{XL} and PowerPanel⁵⁰ Intertency Discontinuous Wall base arrangements. Supplied in 20kg bags.</p> | <p>✓</p> |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Product | Description | Supplied by CSR Hebel | |
|---------------------------------------|---|--------------------------|---|
| Hebel Patch | Minor chips or damage to PowerPanel ^{XL} and PowerPanel ⁵⁰ panels are to be repaired using Hebel Patch (supplied in 10kg bags). | ✓ |  |
| Hebel anti-corrosion protection paint | To coat exposed reinforcement during cutting. | ✓ |  |
| CSR Fireseal | Superior light grey adhesive sealant with acoustic and fire related properties. | ✓ | |
| Bradford Fireseal Damper Strip | Used at horizontal control joints. | ✓ | |
| Bradford Fibretex 350 | Used to fill and gaps between top of Hebel panel and underside of roof and junction of Hebel Intertenancy and external wall system | ✓ | |

BRADFORD INSULATION

The PowerPanel^{XL} and PowerPanel⁵⁰ Intertenancy Wall System incorporates Bradford Insulation materials. Additional information regarding Bradford insulation materials is available from www.bradfordinsulation.co.nz

PLASTERBOARD

The PowerPanel^{XL} and PowerPanel⁵⁰ Intertenancy Discontinuous Wall System incorporates plasterboard on both sides. The type, thickness and densities of plasterboard will be as per the specified wall requirements.

FIRE & ACOUSTIC SEALANT

To attain the specified FRL and / or R_w requirements, all perimeter gaps and penetrations must be carefully and completely sealed with a polyurethane fire and acoustic rated sealant installed to manufacturer's specifications.

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.

2.1 REGULATORY ISSUES

DWELLINGS CONSTRUCTED SIDE-BY-SIDE ON A SINGLE ALLOTMENT

Where it is proposed to construct single dwellings side-by-side on a single allotment the internal wall between dwellings is a fire separation as defined in the NZBC.

DWELLINGS CONSTRUCTED SIDE-BY-SIDE ON SEPARATE ALLOTMENTS

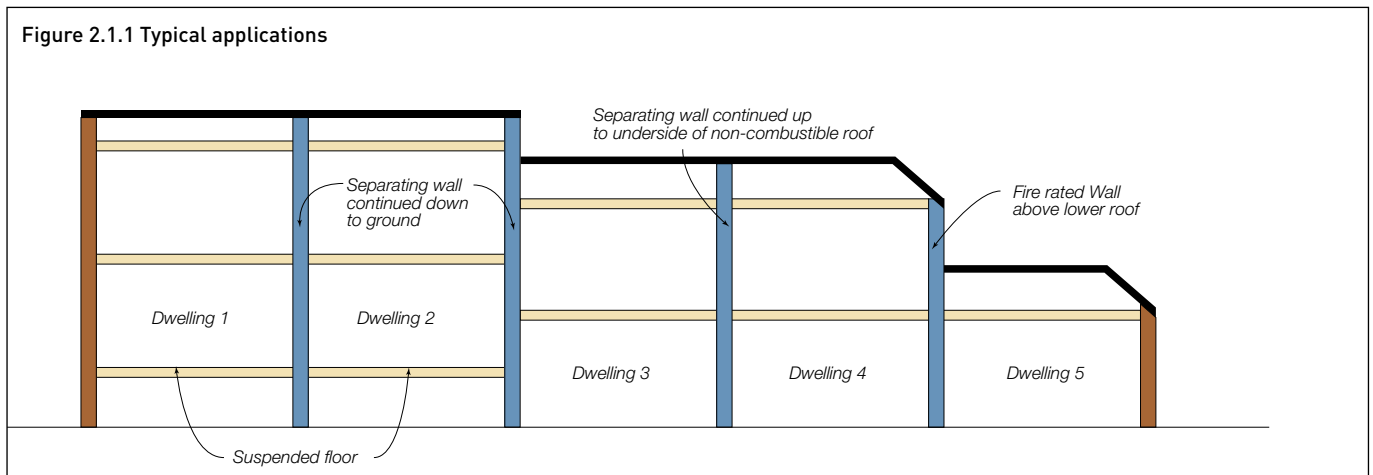
Where it is proposed to construct single dwellings side-by-side on separate allotments, or if subsequent subdivision is proposed, the wall might also be considered an external wall and each dwelling may be required to have its own wall starting from the ground level (top of concrete footings or top of floor slab) and each achieving a 30/30/30 FRL if load bearing, or -/30/30 FRL if non-load bearing. Contact your professional fire engineer, as there may also be applicable legislation or discretionary powers available to vary these provisions.

DWELLINGS CONSTRUCTED SIDE-BY-SIDE ON A SINGLE ALLOTMENT WHERE SUBDIVISION MAY SUBSEQUENTLY OCCUR

Where it is proposed to construct single dwellings side-by-side on a single allotment the internal wall between dwellings is a fire separation as defined in the NZBC. The fire separating wall must start from the ground level (top of concrete footings or top of floor slab) and achieve a 60/60/60 FRL if load bearing, or -/30/30 FRL if non-load bearing. The wall must go to the underside of a non-combustible roof covering and any gaps be filled with fire stop as described in C/AS1. Acceptable Solution for buildings with sleeping (residential) and outbuilding (Risk Group SH) or C/ASZ Acceptable Solution for buildings other than Risk Group SH.

POWERPANEL^{XL} / POWERPANEL⁵⁰ INTERTENANCY SOLUTIONS IN TIERED APPLICATIONS

Where the internal fire separation wall extends beyond the roof line on one side only and becomes an external wall, contact Hebel Engineering Services for advice on PowerPanel^{XL} and PowerPanel⁵⁰ external wall solutions.



COMPLIANCE WITH THE NEW ZEALAND BUILDING CODE (NZBC)

In New Zealand, the building of houses and other buildings is controlled by the Building Act 2004. This applies to the construction of new buildings as well as the alteration of existing buildings.

The Building Act 2004 requires that all building work comply with the New Zealand Building Code (NZBC), whether or not a building consent is required in respect of that building work. Where a building consent is required, this will be issued by a Building Consent Authority (BCA) once they have established that compliance with NZBC will be achieved with respect to the building work. One means of establishing compliance with NZBC is to achieve certification under the CodeMark Product Certification scheme which is administered in New Zealand by the Ministry of Business Innovation and Employment (MBIE). CodeMark certificates have the same legal status as a compliance document and must be accepted by a Building Consent Authority.

The Hebel PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System is compliant with the performance requirements of the New Zealand Building Code (NZBC) as evidenced by achieving CodeMark product certification.

The CodeMark certificate sets out which clauses of NZBC are being complied with along with any conditions or limitations that need to be applied. For the Hebel PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System, the following conditions and limitations apply:

1. To be designed and installed in accordance with the information provided in this design guide
2. All joinery used in conjunction with this Design and Installation Guide must meet the requirements of NZS 4211:2008
3. For use in Importance Level 1 & Importance Level 2 buildings, as defined in NZS 3604:2011, Table 1.1, up to and including three storeys high and situated in wind zones up to and including Extra High as determined in NZS 3604:2011
4. Compliance with NZBC B1-Structure is also subject to the conditions of the KCL Engineering Services dated 3rd July 2020.

2.2 ACOUSTIC PERFORMANCE

OVERVIEW

The New Zealand Building Code (NZBC) clause G6 - Airborne and impact Sound presents the Performance Requirements for sound insulation ratings. These acoustic performance ratings set minimum values to consider 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.

AIRBORNE AND IMPACT SOUND PERFORMANCE

The NZBC does provide Performance Requirements for the airborne sound and impact generated sound insulation ratings for an Intertenancy wall. Clause G6 of the NZBC provides performance requirements of walls to be no less than STC 55. Refer to Table 1.1.1 and Table 1.1.2 for sound insulation resistance level of the PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System.

ACOUSTIC PERFORMANCE DESIGN RECOMMENDATIONS

- 1) Hebel recommends engaging 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 PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System, the designer or specifier must be aware that the laboratory R_w values are almost always higher than the field measured values. Therefore, 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 PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System, and any required modification of the installation details pertaining to the systems.

4) Increasing of cavity widths, using higher density or thicker insulation or plasterboard, will generally maintain or increase the acoustic performance of the PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System. Any variations to the wall system shall be checked with an acoustic engineer.

5) The acoustic performance values of the PowerPanel^{XL} / PowerPanel⁵⁰ Intertenancy Wall System shown in Table 1.1.1 and Table 1.1.2 is a guide only as to consistently achievable field performance. They do not constitute a field performance guarantee as factors such as the presence of flanking paths, quality of installation of the system, on-site detailing of junctions, room shapes and size, etc can significantly affect field performance. Maximising the field performance depends 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 PowerPanel^{XL} / PowerPanel⁵⁰ 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.

2.3 FIRE RESISTANCE PERFORMANCE

FIRE RESISTANCE LEVEL (FRL) RATING OF INTERTENANCY SYSTEMS

The fire resistance level (FRL) rating performance of the PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System detailed in this guide have been derived from Exova Warrington Fire assessment WFRA - 45771 (for Hebel PowerPanel^{XL} Intertency Wall Systems) and CSIRO fire assesment report FCO-3255 (For Hebel PowerPanel⁵⁰ Intertency Wall Systems).

This design guide has no recommendations for penetrations through the Intertency system. Hebel recommends contacting the appropriate consultant for design and detailing advice.

SYSTEM VARIATIONS

Certain variations to the installation of the PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System will not affect the fire resistance levels listed in the Table 1.1.1 and Table 1.1.2. However these variations need to be approved by the project fire consultant and Building Consent Authority.

- 1) Changing the type of insulation between polyester, glasswool and rockwool;
- 2) Putting the insulation on both sides of the PowerPanel^{XL} / PowerPanel⁵⁰ panel.

3.1 INSTALLATION GUIDELINES

GENERAL

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

WALL FRAMING

Ensure frames are installed plumb and mechanically fixed to the substrate. All timber framework is to be fabricated and installed to the manufacturer's specifications and NZS 3604.

SERVICES

Ensure all services are installed within the wall frame and not on the face of the PowerPanel^{XL} / PowerPanel⁵⁰ panel.

DEFLECTION HEAD TRACK

When the wall locations have been set out, fix the deflection head tracks to the substrate. This is done using suitable fixings (see Table 1.1.1 and Table 1.1.2) 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.

HEBEL MORTAR

Hebel mortar can be used as an alternative option to deflection head track for base of the Hebel intertenancy wall system (see figure 3.3.2.3). Mortar should only be run out roughly 3 panels (1800mm) ahead of panel installation. The mortar bed fills the gap at the base. Generally, the mortar is 10mm thick and shall extend the full width of the panel. Mixing of the mortar should be done in accordance with the instructions on the bag.

WALL BRACKETS

Screw fix the wall bracket to the top and bottom plates of the wall frame and to the PowerPanel^{XL} / PowerPanel⁵⁰ panels at 600mm centres in the discontinuous wall system. Locate within 50mm of the centre width of each panel using fixings specified in Table 1.1.1 and Table 1.1.2.

HEBEL POWERPANEL^{XL} / POWERPANEL⁵⁰ PANEL

The Hebel PowerPanel^{XL} / PowerPanel⁵⁰ panel in the Intertenancy Discontinuous Wall System 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 1.2). 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 Section 1.4). Any minor damage and chips to the panels must be repaired using Hebel Patch. Use packers at the base to maintain the gap and ensure gap is full of mortar (if specified).

The preferred method of fixing should be to screw through the bracket into the panel. Fix the panel to the deflection head (if specified). For following panels, apply Hebel Adhesive to the vertical edge and install the next panel. Repeat the installation process until the wall is complete.

HEBEL ADHESIVE

Hebel Adhesive is applied to the panel with a 75mm or 50mm Hebel 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.

BRADFORD INSULATION

Installation of Bradford insulation should be completed in accordance with manufacturer's handling and installation guidelines. The insulation provided should completely fill the space between the stud framing and form a continuing barrier. If there is any gap in the insulation the acoustic performance of the system may be adversely affected.

PLASTERBOARD

Plasterboard sheets must be cut to fit neatly and should not be forced into position. The plasterboard is to extend the full height of the wall frame, with gaps at top and bottom for the specified sealant. Plasterboard is fixed directly to the stud framework in accordance with the Plasterboard Residential Installation Guide.

SEALANTS

All movement joints and other gaps should 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.

INSTALLATION OF ELECTRICAL, PLUMBING AND OTHER SERVICES

Installation of services into walls should be carried out at an appropriate construction sequence. This will allow easy access to cavities and wall frames, where services can be easily installed and neatly hidden.

Hebel suggests installing the plumbing and cabling after the panels have been installed. The builder or project manager should confirm appropriate construction sequence for services on a project-by-project basis.

FASTENERS & FIXINGS

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

3.2 CONSTRUCTION DETAILS – OVERVIEW

Table 3.2.1 Construction details overview

| | | | |
|---------------------------|--|----------------|---------|
| Overview | Typical layout of PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy Wall System | Figure 3.3.1.1 | Page 17 |
| | Vertical cross section of PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy Wall System | Figure 3.3.1.2 | Page 18 |
| Base connection | Base connection - Continuous deflection head track (Primary option) | Figure 3.3.2.1 | Page 19 |
| | Base connection - Continuous steel angle (Alternative option) | Figure 3.3.2.2 | Page 19 |
| | Base connection - Wall bracket (Alternative option) | Figure 3.3.2.3 | Page 19 |
| Wall bracket fixing | Bracket fixing | Figure 3.3.3.1 | Page 19 |
| Control joints | Horizontal joint as primary option - Option 1 (FRL: -/90/90) | Figure 3.3.4.1 | Page 20 |
| | Horizontal joint as alternative option - Option 2 (FRL: -/90/90) | Figure 3.3.4.2 | Page 20 |
| | Horizontal joint as alternative option - Option 3 (FRL: -/60/60) | Figure 3.3.4.3 | Page 20 |
| | Horizontal joint as alternative option - Option 4 (FRL: -/60/60) | Figure 3.3.4.4 | Page 20 |
| | Vertical joints - Option 1 (FRL: -/60/60) | Figure 3.3.4.5 | Page 20 |
| | Vertical joints - Option 2 (FRL: -/90/90) | Figure 3.3.4.6 | Page 20 |
| Roof valley and parapet | Roof valley for PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy Wall System | Figure 3.3.5.1 | Page 21 |
| | Roof parapet for PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy Wall System | Figure 3.3.5.2 | Page 21 |
| Junction details | External wall junction for PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy Wall System | Figure 3.3.6.1 | Page 22 |
| | External wall corner junction for PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy Wall System | Figure 3.3.6.2 | Page 22 |
| | Blade wall junction detail | Figure 3.3.6.3 | Page 23 |
| | Party wall to external wall system | Figure 3.3.6.4 | Page 23 |
| Cantilevered construction | PowerPanel ^{XL} / PowerPanel ⁵⁰ Intertenancy wall overhang | Figure 3.3.7.1 | Page 24 |
| | Figure 3.3.7.2 Cantilevered Soffit | Figure 3.3.7.2 | Page 24 |

Project specific requirements: please contact CSR Hebel for advice on any project specific designs not covered in this Design and Installation Guide.

3.3 CONSTRUCTION DETAILS

3.3.1 OVERVIEW

Figure 3.3.1.1 Typical layout of PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System

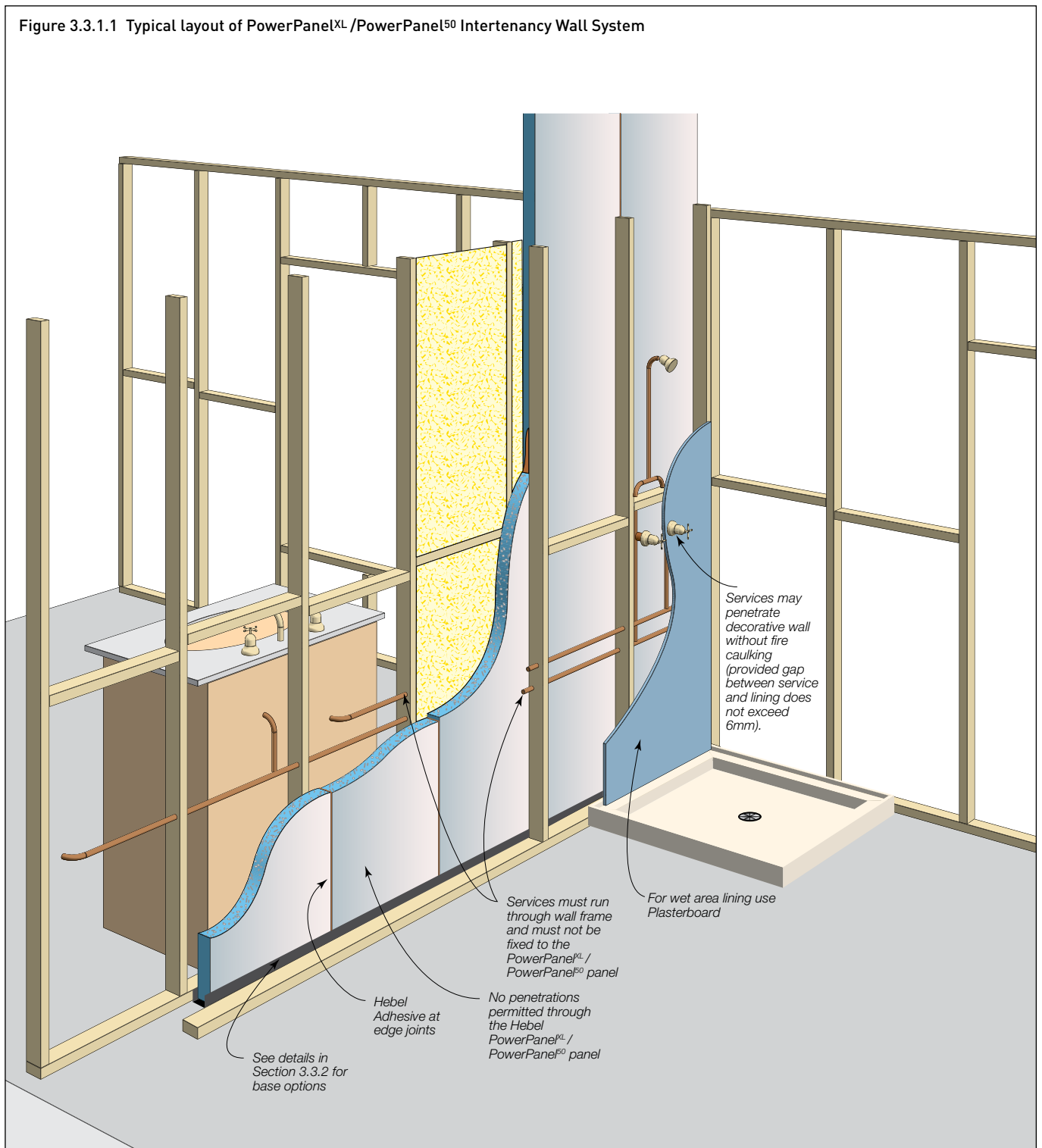
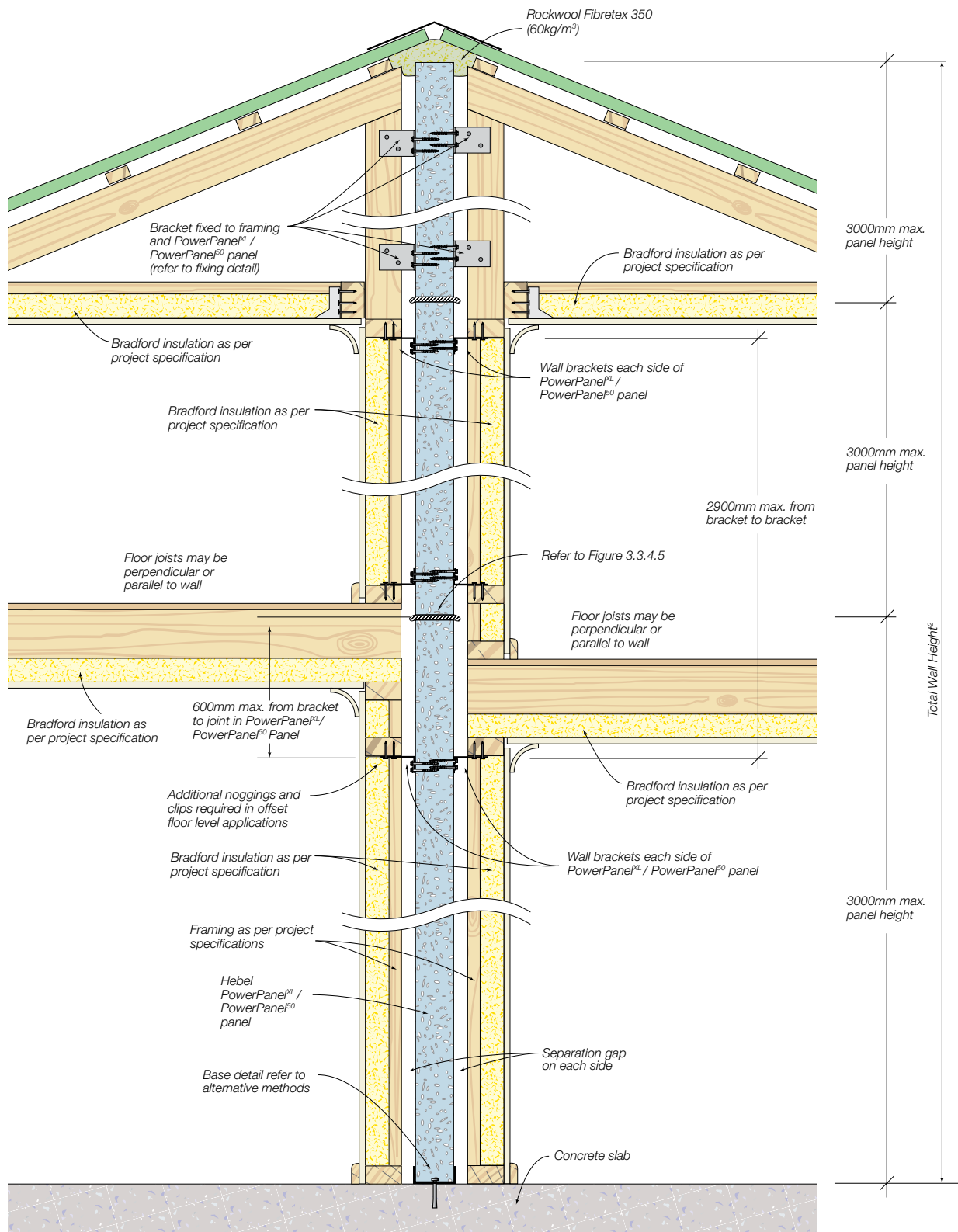


Figure 3.3.1.2 Vertical cross section of PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System



NOTE:

1. Wall brackets can be fixed to studs or noggings within a distance of 150mm from ceiling or floor.
2. For the PowerPanel⁵⁰ Intertency wall system a Fire Resistance Level (FRL) of 90/90/90 mins is only achieved for a total height of 7.2m. The FRL of the wall system is reduced to 60/60/60 mins for a total wall height of up to 10m.
3. The maximum total wall height of Hebel PowerPanel^{XL} intertency wall system is 12m and achieves FRL 90/90/90 mins.

3.3.2 BASE CONNECTION

Figure 3.3.2.1 Base connection - Continuous deflection head track

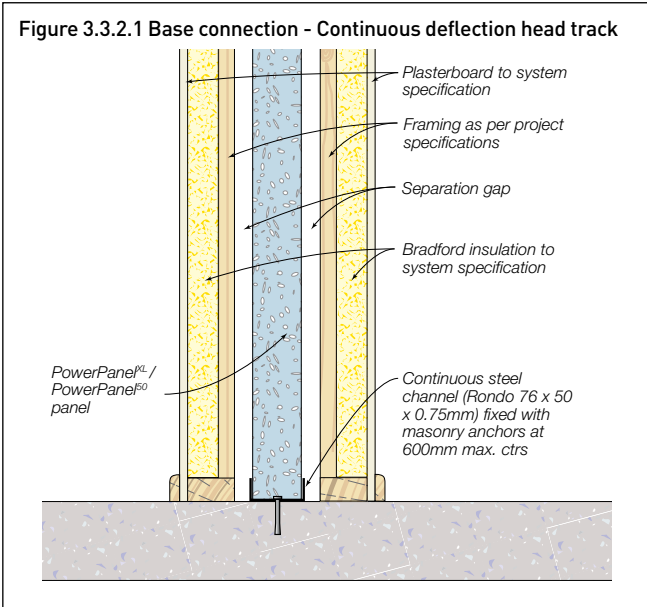


Figure 3.3.2.2 Base connection - Continuous steel angle

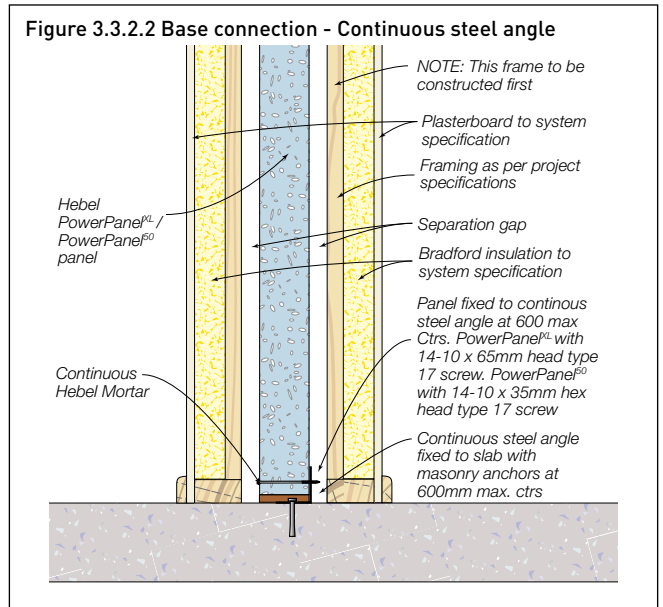
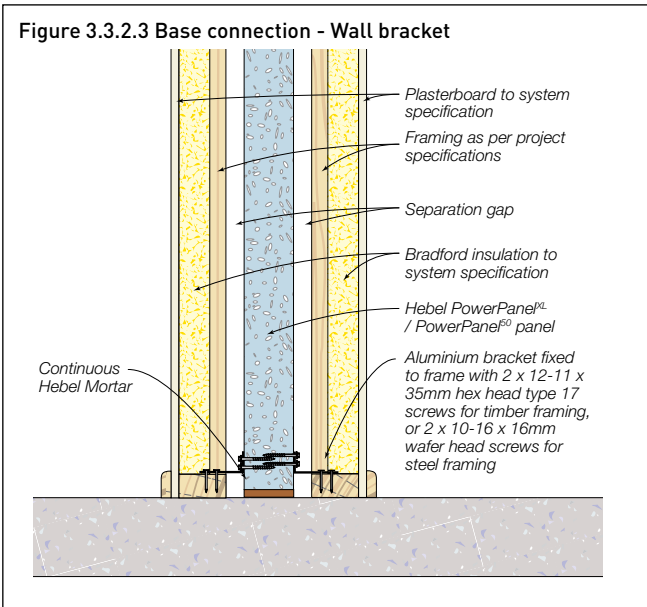
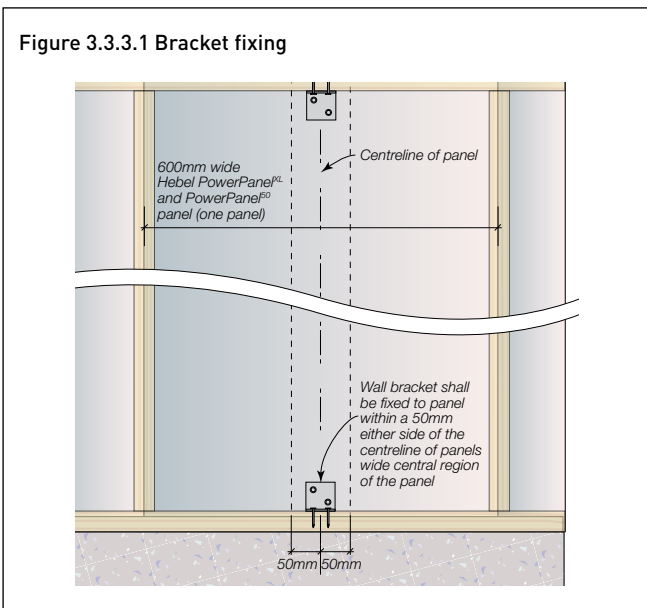


Figure 3.3.2.3 Base connection - Wall bracket

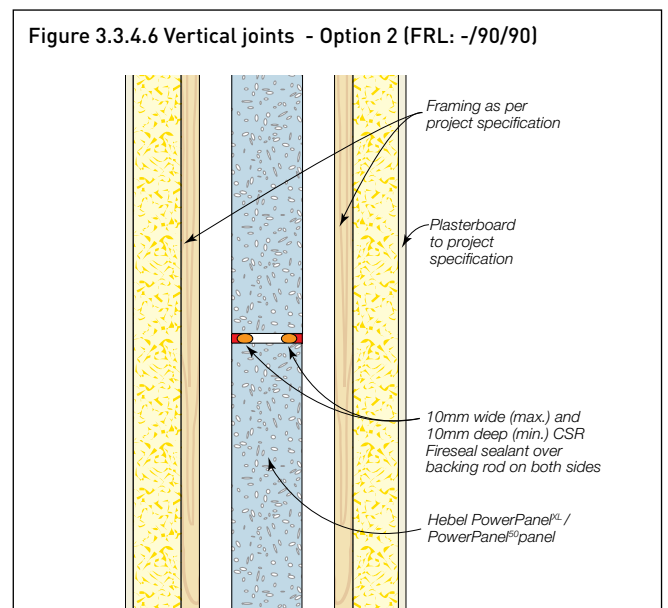
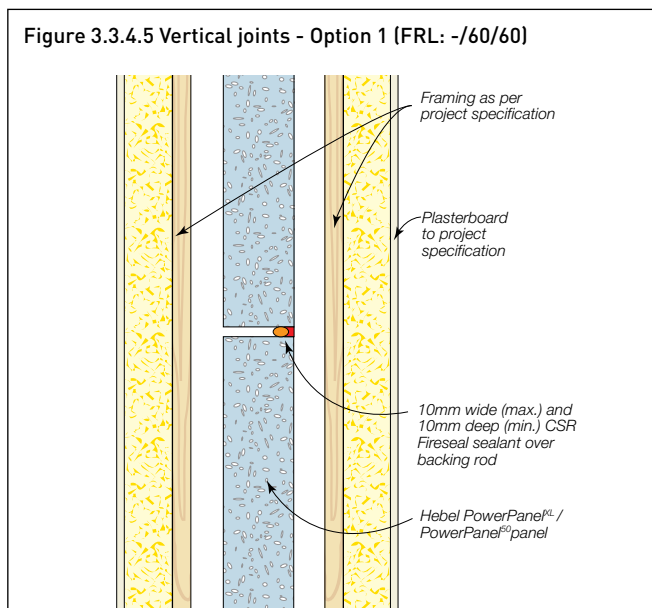
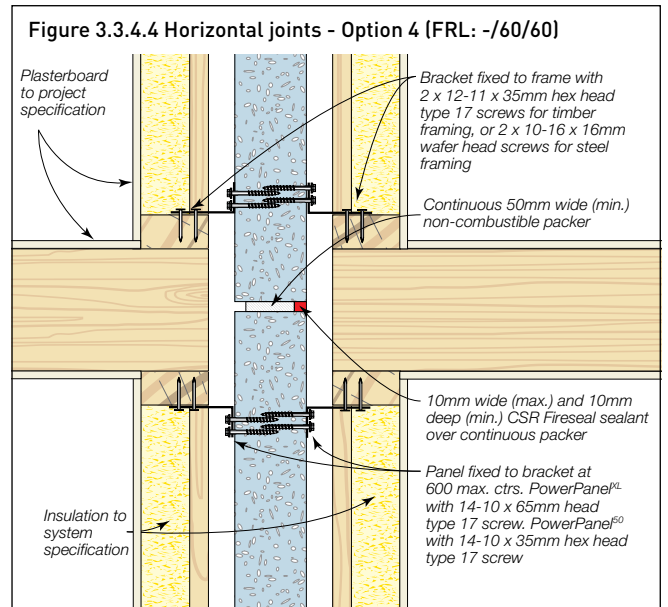
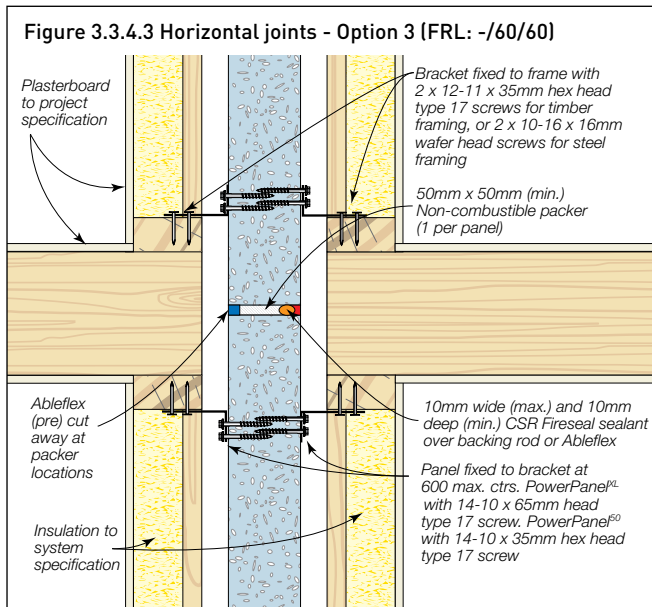
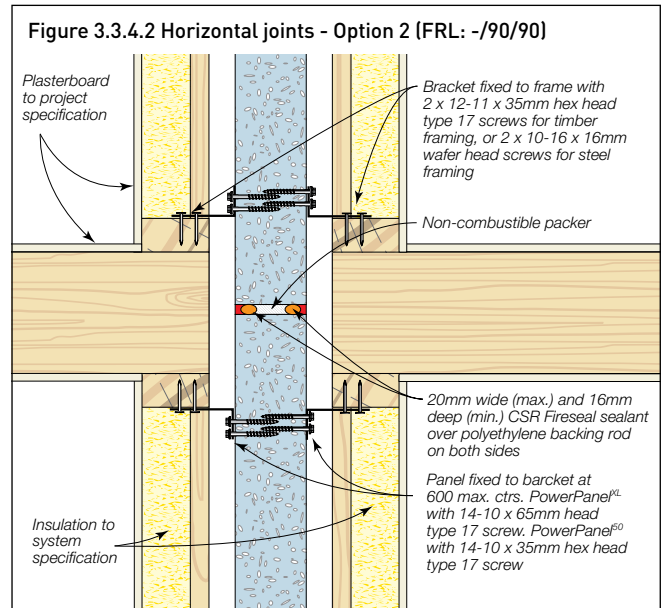
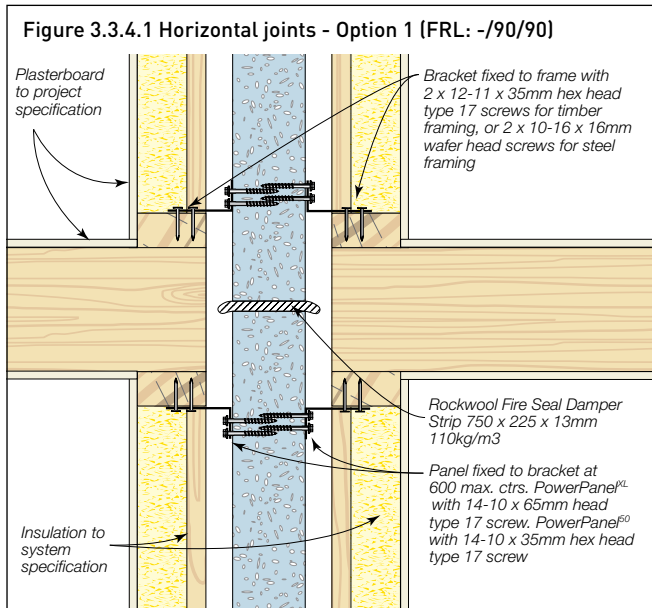


3.3.3 WALL BRACKET FIXING

Figure 3.3.3.1 Bracket fixing



3.3.4 CONTROL JOINTS



3.3.5 ROOF VALLEY AND PARAPET

Detail 3.3.5.1 Roof valley for PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System

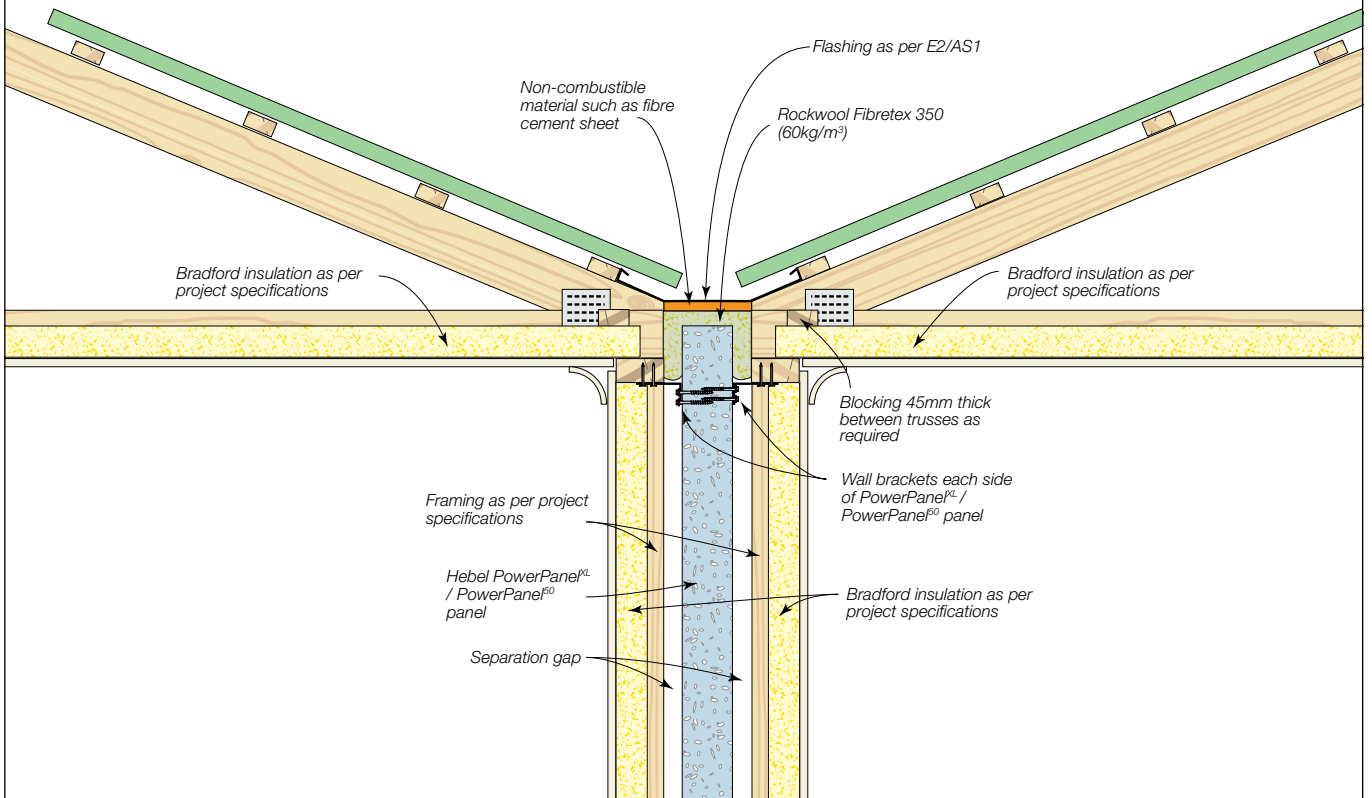
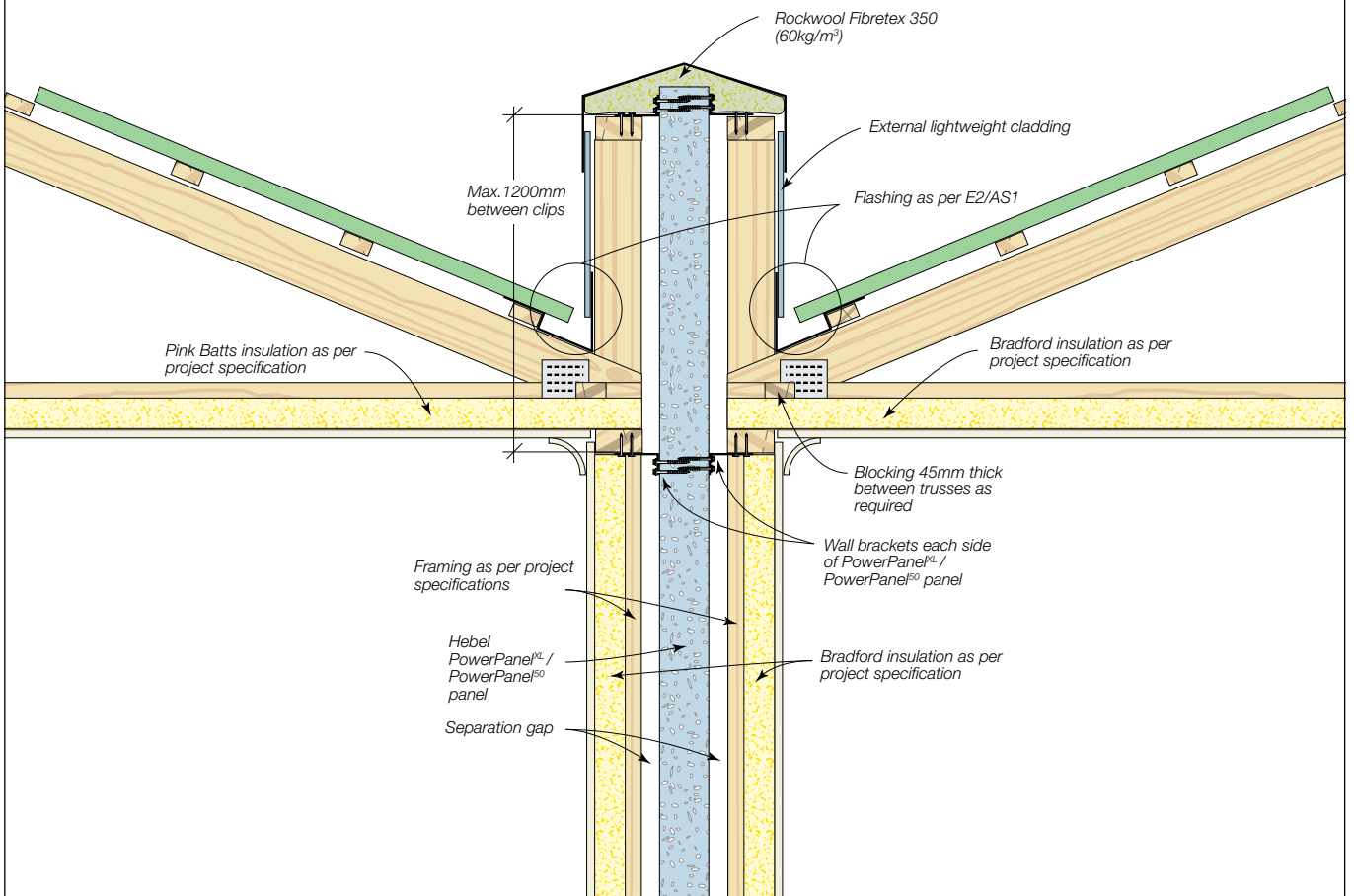


Figure 3.3.5.2 Roof parapet for PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System



3.3.6 JUNCTION DETAILS

Figure 3.3.6.1 External wall junction for PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System

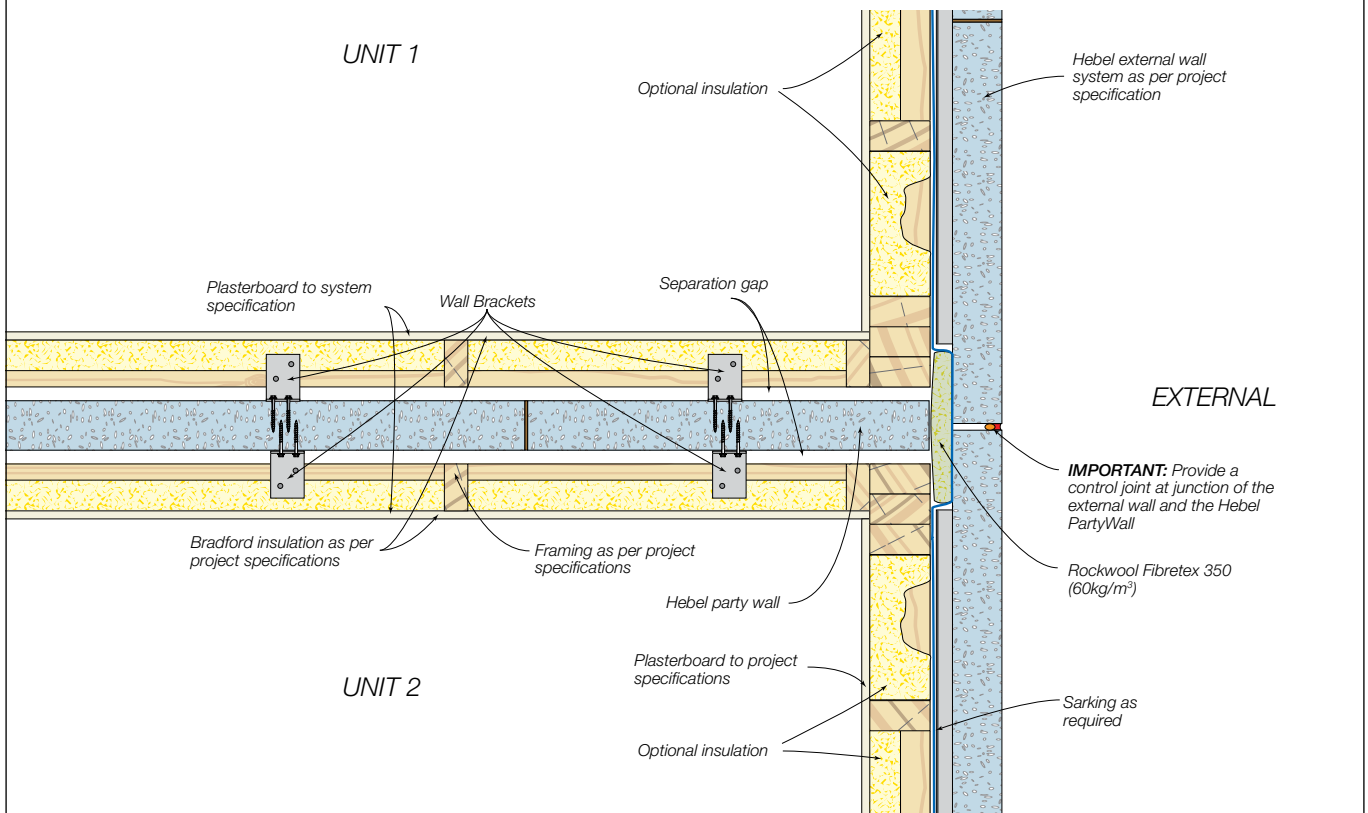
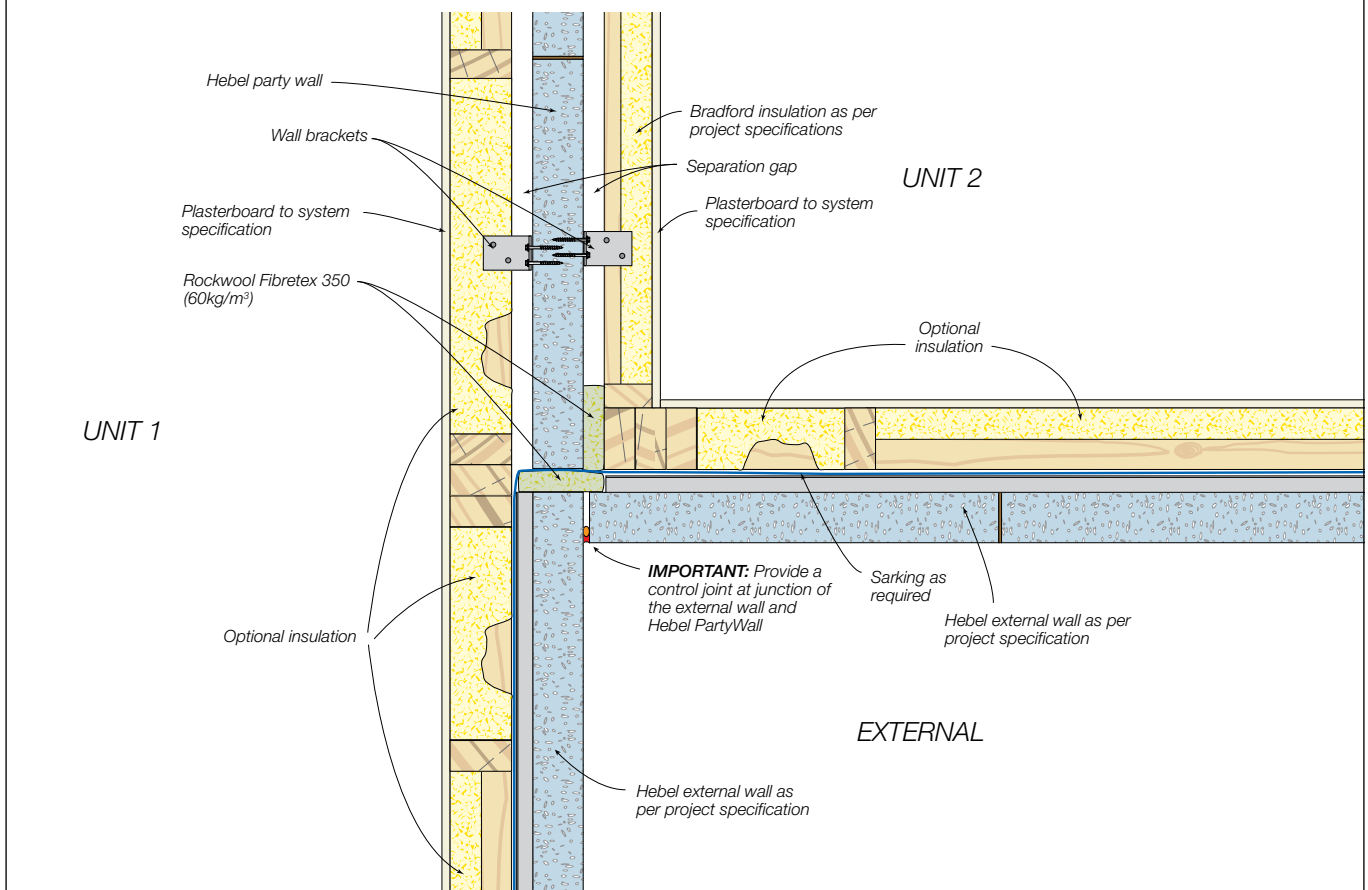


Figure 3.3.6.2 External wall corner junction for PowerPanel^{XL} / PowerPanel⁵⁰ Intertency Wall System



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

Figure 3.3.6.3 Nib junction detail of Hebel Intertenancy wall and external wall system

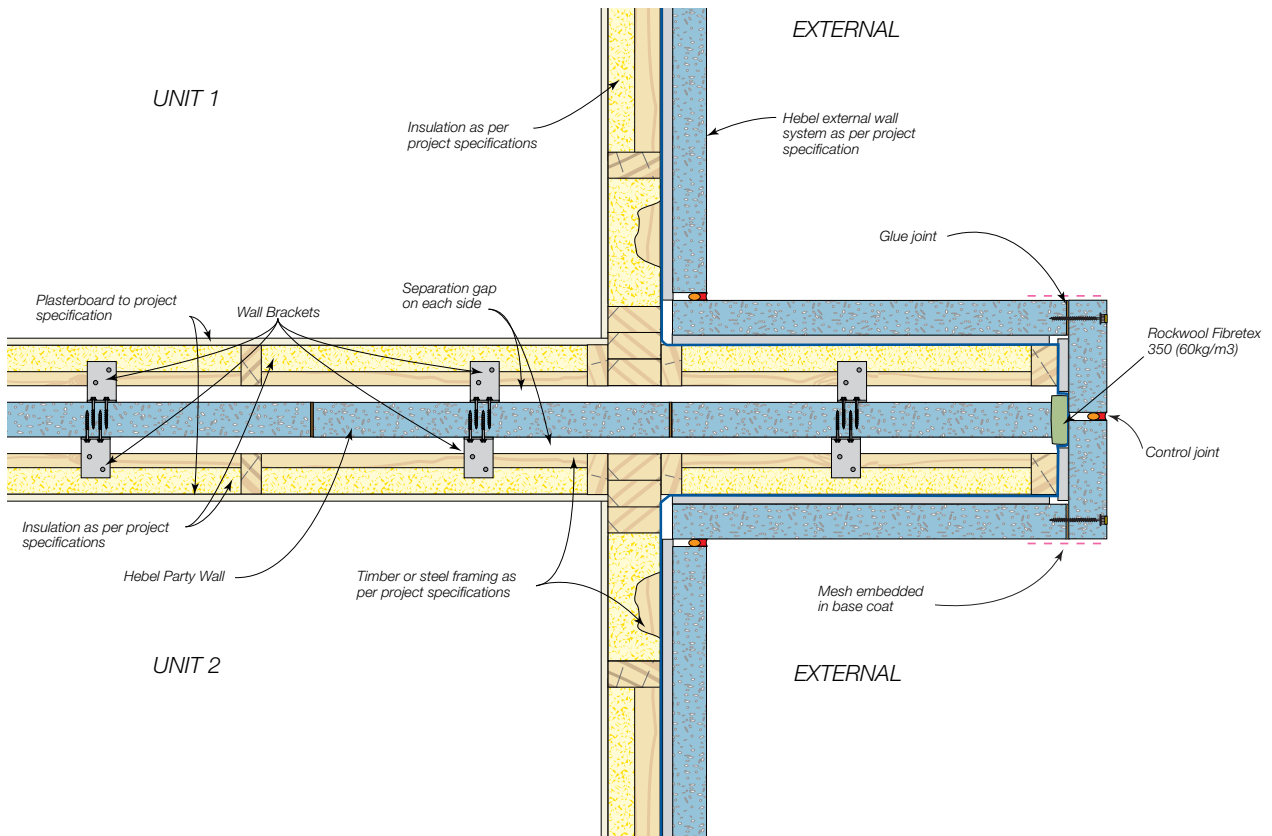
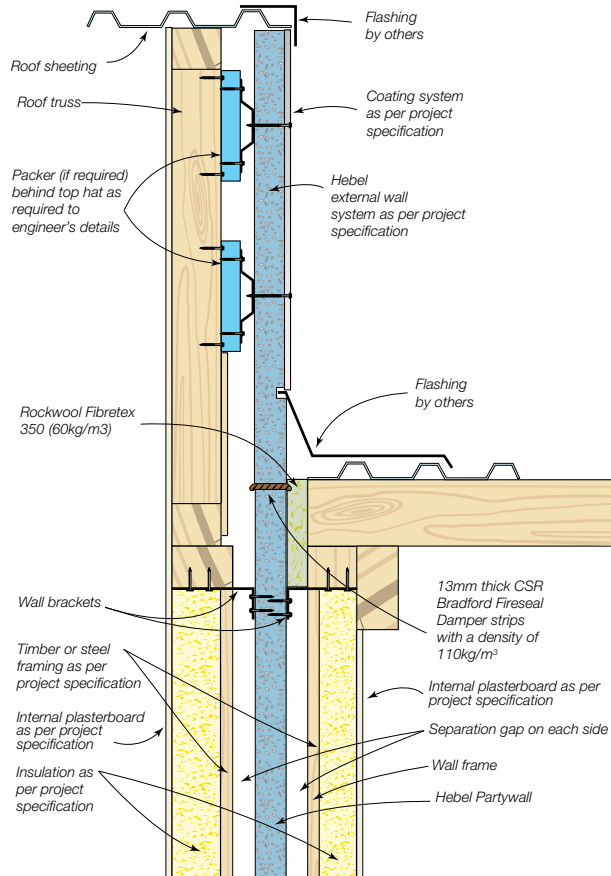
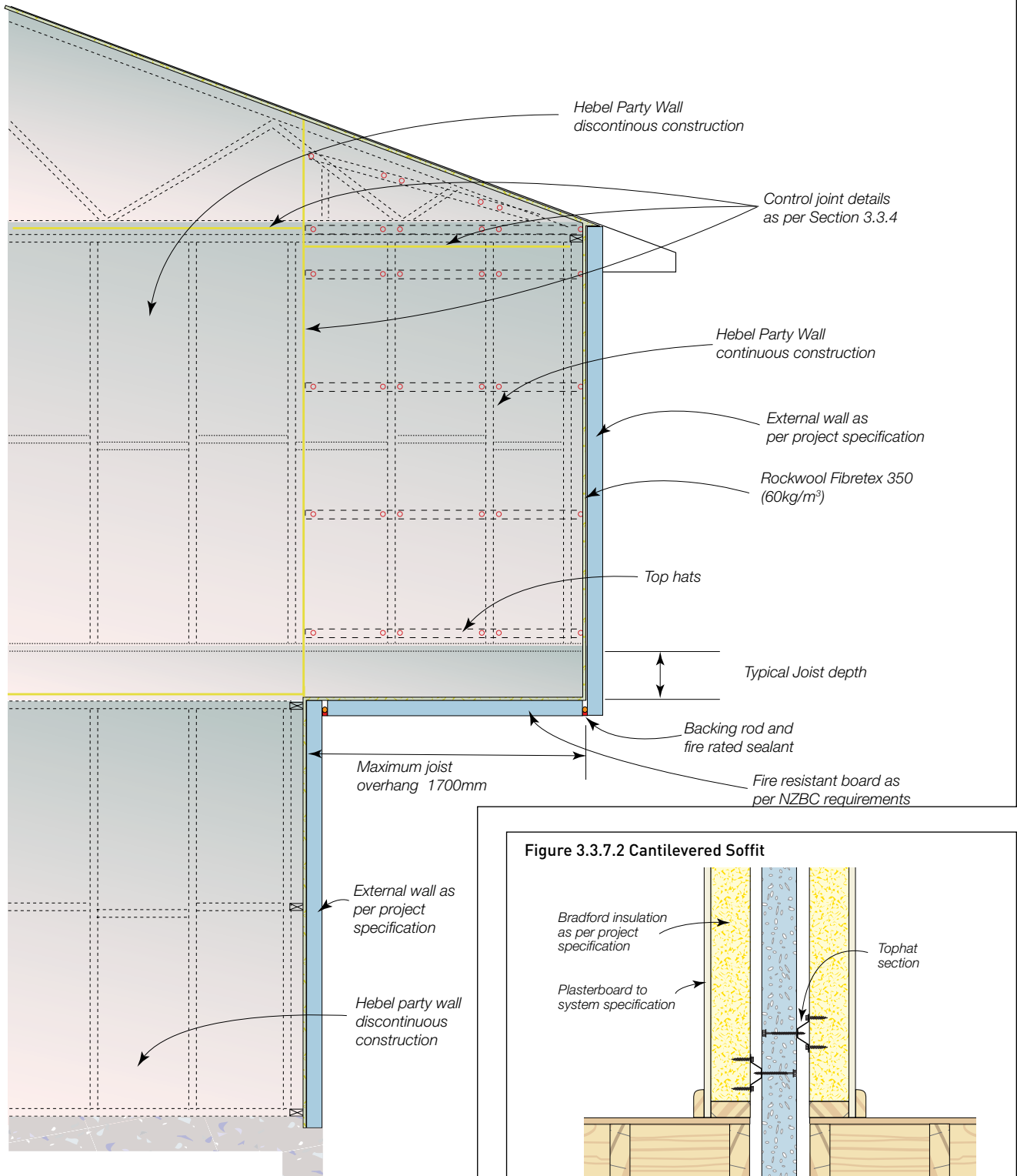


Figure 3.3.6.4 Party wall to external wall system



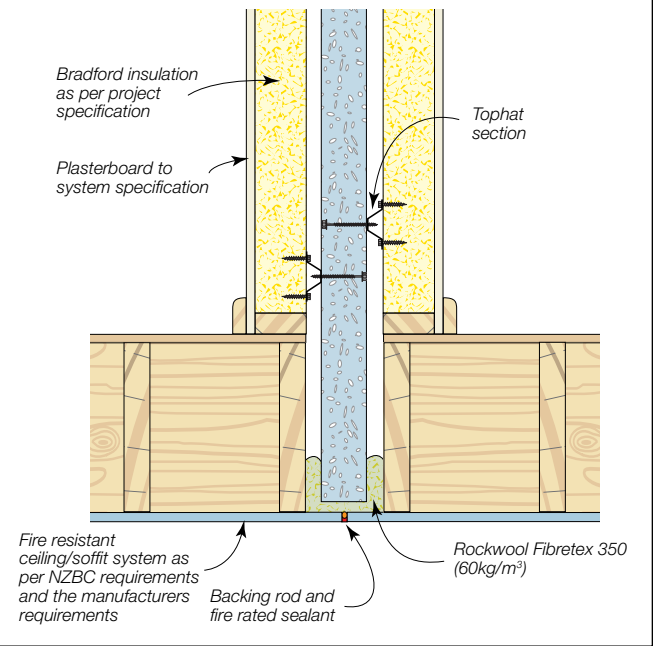
3.3.7 CANTILEVERED CONSTRUCTION

Figure 3.3.7.1 PowerPanel^{XL} / PowerPanel⁵⁰ Intertency wall overhang



NOTE:
 Max. panel length 3000mm.
 Max. span between support anchors 2950mm.
 Max. panel cantilever from restraint bracket 600mm.

Figure 3.3.7.2 Cantilevered Soffit



4.1 DELIVERY AND STORAGE

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, PowerPanel^{XL} panels must be replaced.

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 Hebel 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, Hebel panels must be stored off the ground and protected from the weather. Only single bundles positioned

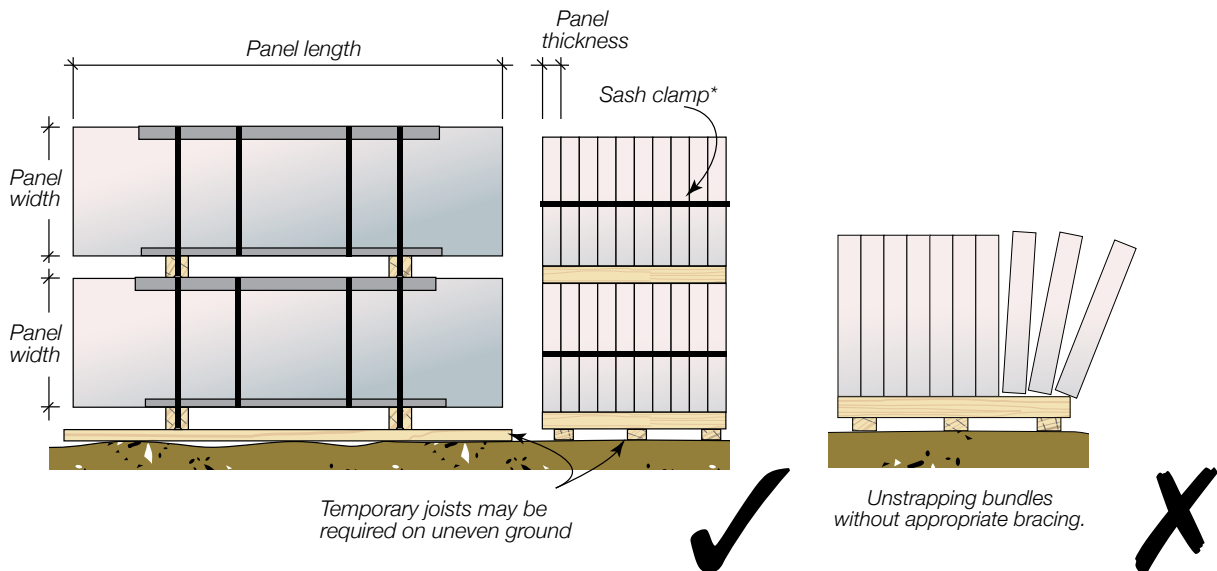
on the ground can be opened. To provide a level surface, we recommend placing temporary joists beneath the supporting cleats.

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 Hebel stabilising bars.



Figure 4.1.1 Stacking packs of Hebel PowerPanel^{XL} / PowerPanel⁵⁰



Note: PowerPanel^{XL} comes with 10 panel in a pallet and PowerPanel⁵⁰ comes with 15 panel in a pallet.

4.2 PANEL HANDLING

MANUAL HANDLING

Hebel recommends using a trolley or other mechanical apparatus to move the PowerPanel^{XL} / PowerPanel⁵⁰ panels around the work site. 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 contractor.

To minimise the possibility of manual handling injuries, Hebel suggests the following:

- Use mechanical aids, such as trolleys, forklifts, cranes and levers, or team lifting to move panels
- 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 awkward lifts
- Train employees in good lifting techniques to minimise the risk of injury.
- Storage and handling of PowerPanel^{XL} / PowerPanel⁵⁰ must be in accordance with the recommendations of CSR to ensure the safety of workers on site. The panels are only to be lifted on edge and not to be handled flat. When storing, the panel orientation must be horizontal with the long edge supported on timber bearers. It is recommended to handle and store the panels as recommended above to ensure no overstress will occur.

Figure 4.2.1 Hebel PowerPanel^{XL} Trolley



MECHANICALLY ASSISTED HANDLING

Moving and handling Hebel panels should be done as much as possible using mechanical aids such as forklifts, cranes and special panel lifting trolleys.

Guidelines for handling Hebel PowerPanel^{XL} / PowerPanel⁵⁰ using the Trolley or panel lifters are detailed in The Hebel Technical Manual Part 6.

HEALTH, SAFETY & PERSONAL PROTECTIVE EQUIPMENT (PPE)

Hebel products are cement-based, which may irritate the skin, resulting in itching and occasionally a red rash. The wearing of gloves and suitable clothing to reduce abrasion and irritation of the skin is recommended when handling Hebel products.

Approved respirators (AS/NZS 1715 and AS/NZS 1716) and eye protection (AS/NZS 1336) should be worn at all times when cutting and chasing. Refer to the Hebel Material Safety Data Sheets. Refer to the back of this Design & Installation Guide for further information regarding health and safety.

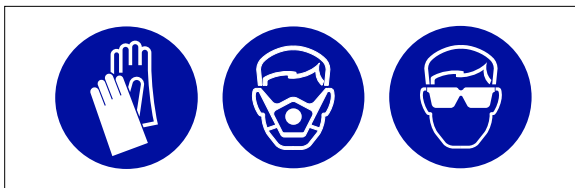
CUTTING

The use of power tools when cutting concrete 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 Hebel products, wear P2 respirator and eye protection. When cutting, routing or chasing Hebel products with power tools, use dust extraction equipment and wear hearing protection. Refer to the appropriate Hebel MSDS. For further information, contact Hebel or visit the website:

www.hebel.co.nz

Reinforcement exposed during cutting must be coated with a liberal application of Hebel Anti-corrosion protection paint.

Figure 4.2.3 Personal protective equipment



4.3 DESIGN, DETAILING AND PERFORMANCE RESPONSIBILITIES

Hebel engages independent testing laboratories to test and report on the performance of a wall in accordance with the relevant Australian and New Zealand Standards. Consultants use these reports as the basis for opinions (estimates of laboratory performance) they issue for variations or different arrangements to the tested system, and also to design and specify walls that meet appropriate criteria for a particular project. Using their experience, the consultant will make judgement about on-site installed performance of various walls. 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:

PROJECT CONSULTANTS (STRUCTURAL, FIRE, ACOUSTIC, ETC.)

These consultants are typically responsible for the following:

- Opinions on expected laboratory performance of wall configurations that vary from actual test configuration, such as substitution products and components
- Judgements about expected field performance using laboratory test reports and practical experience
- Design, specification and certification of structural, fire, acoustic, durability, weather tightness and any other required performance criteria for individual projects

This involves the design and selection of building elements, such as wall and floors and their integration into the building considering the following:

- Interface of different building elements and to the structure / substrate
- Wall and floor junctions
- Penetrations
- Flashing issues
- Room / building geometry
- Acoustic and water penetration field-testing.

PROJECT CERTIFIER AND/OR BUILDER

These professionals are typically responsible for:

- Identifying the performance requirements for the project in accordance with the NZBC and clearly communicating this to the relevant parties.
- Applicability of any performance characteristics supplied by Hebel including test and opinions for the project.
- The project consultant's responsibilities detailed above if one is not engaged in the project.

Hebel does not provide consulting services. Hebel only provides information that has been prepared by others and therefore shall not be considered experts in the field.

Any party using the information contained in this guide or supplied by Hebel in the course of a project must satisfy themselves that it is true, current and appropriate for the 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.

Hebel is not responsible for the performance of constructed walls, including field performance, and does not interpret or make judgements about performance requirements in the New Zealand Building Code (NZBC).

APPENDIX A: HEBEL POWERPANEL^{XL} AND POWERPANEL⁵⁰ MATERIAL PROPERTIES

A.1 Manufacturing tolerances

| | |
|------------------------------------|--------|
| Length | ±5mm |
| Width | ±1.5mm |
| Thickness | ±1.5mm |
| Diagonals (max.) | 5mm |
| Edge Straightness Deviation (max.) | 1.5mm |

A.2 Physical properties

- Hebel PowerPanel^{XL} and PowerPanel⁵⁰ profile and nominal dimensions are shown in Section 1.4.
- Nominal dry density for PowerPanel^{XL} = 400g/m³
Nominal dry density for PowerPanel⁵⁰ = 510g/m³
- Average moisture density for PowerPanel^{XL} = 540kg/m³ at 35% moisture content
Average moisture density for PowerPanel⁵⁰ = 689kg/m³ at 35% moisture content
- Average service life density for PowerPanel^{XL} = 440kg/m³ at 10% moisture
Average service life density for PowerPanel⁵⁰ = 561kg/m³ at 10% moisture

A.3 Strength properties

- Characteristic Compressive Strength of AAC f 'm
PowerPanel^{XL} = 2.38 MPa
Characteristic Compressive Strength of AAC f 'm
PowerPanel⁵⁰ = 2.8 MPa
- Average Compressive Strength of AAC for
PowerPanel^{XL} = 2.8 MPa
Average Compressive Strength of AAC for
PowerPanel⁵⁰ = 3.2 MPa.
- Characteristic Modulus of Rupture for PowerPanel^{XL},
f 'ut = 0.40 MPa
Characteristic Modulus of Rupture for PowerPanel⁵⁰,
f 'ut = 0.60 MPa

A.4 Acoustic properties

- PowerPanel^{XL} only with no plasterboard or other lining
R_w = 34dB, R_w+C_{tr} = 30dB (refer to Acoustic Logic test report 2010861.15/2602A/R2/GW)
PowerPanel⁵⁰ only with no plasterboard or other lining
R_w = 35dB, R_w+C_{tr} = 31dB (refer to Acoustic Logic test report 20130786.1/0209A/RO/GW)

A.5 Thermal properties

- R-Value of PowerPanel^{XL} with no plasterboard or other lining = 0.520m².K/W (8% moisture content)
R-Value of PowerPanel⁵⁰ with no plasterboard or other lining = 0.285m².K/W (8% moisture content)

A.6 Fire hazard indices

Hebel products have BCA Group Number 1 and also the following early fire hazard indices, determined in accordance with AS1530.3:1990:

| | |
|-------------------------|-----|
| Ignitability Index | 0 |
| Spread of Flame Index | 0 |
| Heat Development Index | 0 |
| Smoke Development Index | 0-1 |

A.7 Fire Resistance Level (FRL) Ratings

For fire performance characteristics of Hebel PowerPanel^{XL} and PowerPanel⁵⁰, refer to Section 2.3 of this guide.



CSR HEBEL

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Health & safety

Information on any known health risks of our products and how to handle them safely is on product packaging and / or the accompanying documentation.

Additional information is listed in the Safety Data Sheet (SDS). To obtain a copy of a SDS, download from www.hebel.co.nz. Contractors are required by law to perform their own risk assessments before undertaking work.

Performance & certification

Hebel® products and systems are developed in Australia by CSR Building Products. ABN. 55 008 631 356. It is a manufacturer and supplier of Hebel Autoclaved Aerated Concrete (AAC) products. Because it is a manufacturer and supplier only, CSR does not employ people qualified as Accredited or Principal Certifiers.

CSR is therefore unable to provide Construction Compliance Certificates or Statements of Compliance. CSR conducts appropriate testing of its products and systems to determine performance levels. These include structural, fire and acoustic tests. Testing is conducted and certified by appropriate specialists in these fields. When using Hebel products and systems in specific projects, such specialists should be consulted to ensure compliance with the NZBC & NZ Standard.

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Other

The design of a wall, floor or fence system requires the services of professional consultants. This document has been prepared as a source of information to provide general guidance to those consultants – and in no way replaces the services of the professional consultant and relevant engineers designing the project.

No liability can therefore be accepted by CSR or other parties for the use of this document. Hebel products and systems undergo constant research and development to integrate new technology and reflect ongoing performance enhancement.

Hebel systems are constantly reviewed so as to reflect any changes in legislative building requirements and or general developments in common building practice, due to our commitment to continual development and improving our building systems.

We advise that all users of this document should regularly check that this document is current, and they are applying our latest design information.

The latest editions of our documents are available on our website:

www.hebel.co.nz

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THE BETTER WAY TO BUILD

Hebel is a quality building product, and is backed by CSR Building Products NZ Limited.

For more information visit our website:

www.hebel.co.nz

For sales enquiries or further information, please telephone us from anywhere in New Zealand:

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