

## Ordering of Panels

Hebel Horizontal Wall Panels are designed and manufactured for specific designs and locations. To ensure that this is done to the clients requirements, clients are required to sign off a panel schedule at the time of order. This details panel lengths, thickness, quantity, location and wind loading.

Panels are supplied stacked vertically on pallets, one panel high.

## Panel Installation

Prior to installation, locate the pallets of panels around the site with panels as close to their final position in the structure as possible. Panels have an identification code on one end to correspond with the panel schedule.

The bottom panel in a wall has to be fixed in position at the base as fastening of a Tension Tie at the bottom of the first panel is not possible. On a full foundation, this is normally done with the installation of stainless steel pins set in the foundation, as shown in Detail 6. Holes are drilled in the underside of the panel to locate over the rods.

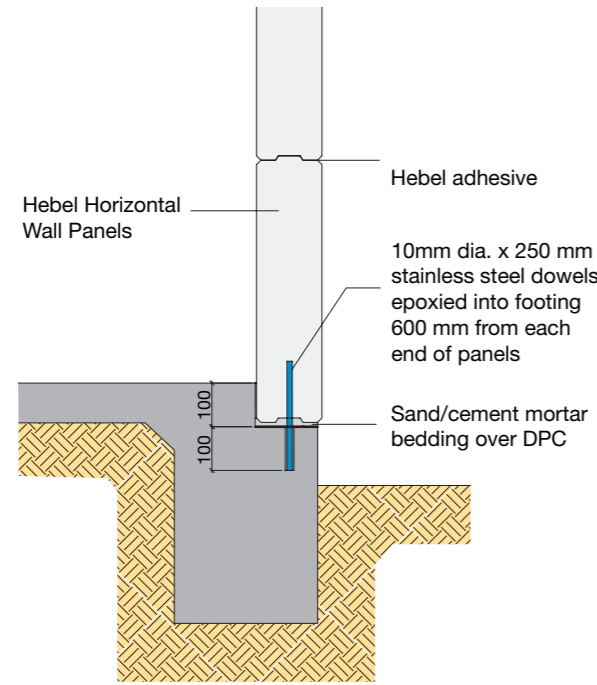
A layer of DPC is laid along the foundation under the panel location to provide a slip joint between the AAC and the concrete foundation. A nominal 10 mm layer of sand/cement mortar is then placed on top of the DPC for bedding the bottom of the panel.

The panels are lifted into place using a scissor lift which is available on loan from LCNZ Ltd or its' distributors. This lifts the panels vertically in the centre straight from the delivery pallets.

With the panel located in the correct position lengthwise, the Tension Ties are hooked around the flange of the steel columns, and the location marked on the upstanding tongue. A slot is quickly chiseled out in the tongue for the tie and the V nails are then driven down through the holes in the ties, into the panel.

Hebel adhesive is spread along the top of each panel, before the next panel is lowered into place. Excess adhesive should be removed before it has set.

If panels have to be cut, a diamond blade is required to cut through the reinforcing. Panels are cut dry.



Detail 6. Typical base fixing of panels

Where panels meet longitudinally at a steel column, a 10mm gap is left between panels for movement control joints. These consist of a foam backing rod pushed into the gap and the surface joint filled with polyurethane sealer, after first removing all dust, for good adhesion. See Detail 3.

Where the panels have been installed between the flanges of the columns, Hebel facing blocks or panel can be used to cover the steel to give a uniform coating/plastering surface. These can also be used over movement control joints, but care must be exercised to ensure that the Hebel facing is only glued to one side of the joint, so that relative movement between the panels on either side of the joint is still possible.

## Surface Finish

The surface of the wall panels should be coated for waterproofing. This can either be in the form of one of the many compatible acrylic coating systems, or the wall can be rendered with Hebel Render and given two or 3 coats of acrylic paint. In some structures, straight application of an acrylic paint system over the dust free panels may be all that is required but the end user must satisfy themselves that this will perform satisfactorily.

Table 1

Hebel Horizontal Wall Panels										
Maximum Clear Span										
Panel Thickness mm	Wind Load kPa									
	0.75	1	1.25	1.5	1.75	2	2.25	2.5	2.75	3
125	4.5	4.5	4.5	4.25	4	3.85	3.7	3.55	3.45	3.3
150	5.85	5.85	5.85	5.45	5.2	4.95	4.75	4.6	4.45	4.3
175	5.85	5.85	5.85	5.85	5.85	5.85	5.75	5.55	5.35	5.2
200	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85	5.85

Note: Spans are based on maximum deflection = L/180

Table 2

Hebel Tension Tie Capacity			
End Distance mm	Flange Thickness mm	V Nail Location	Maximum Safe Load kN
60	15	B & C	1.17
100	15	B & C	1.46

Note: Hole A is provided for cases where nail hits reinforcing mesh

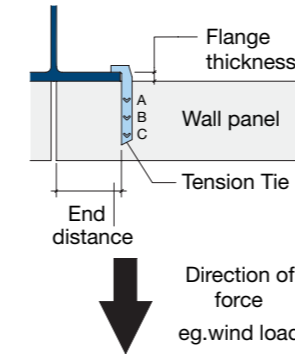


Table 3

Thermal and Acoustic Properties				
Panel Thickness mm	Panel only		Render on both sides	
	R Value m2k/W	STC rating decibels	R Value m2k/W	STC rating decibels
125	0.86	39	1.04	45
150	1.03	41	1.21	46
175	1.2	42	1.38	47
200	1.37	43	1.55	48

Note: R & STC values are for dry state



Authorised NZ Hebel Supplier

**Lightweight Concrete NZ Ltd**

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# Hebel HORIZONTAL WALL PANELS

THERMAL INSULATION • SOUND INSULATION • FIRE RESISTANT • QUALITY



**Commercial  
and Industrial  
construction just  
got quicker!**

# Hebel HORIZONTAL WALL PANELS

## What are Hebel Horizontal Wall Panels

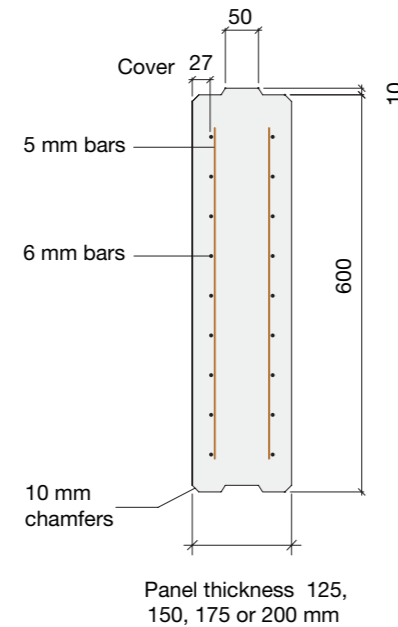
Hebel Horizontal Wall Panels are precast reinforced autoclaved aerated concrete (AAC) panels for construction of walls where load bearing is not required. Panels are a very fast way of cladding a structure where thermal, fire and soundproofing properties are desired. They are an ideal complement to steel frame construction in commercial applications and panels are individually manufactured in varying thicknesses and lengths for specific projects.

Panels are available in thicknesses of 125, 150, 175 and 200 mm.

Panels are manufactured with a tongue on the top and a groove on the underside to lock them together for lateral load transference between panels. All panels are manufactured with two layers of reinforcing welded into a mesh, which is dipped in an anti-corrosive agent before placing in moulds.

The AAC compressive strength of the panels is 4.5MPa and dry density is 550 kg/m<sup>3</sup>. Density at 30% moisture content (delivered state) is 750 kg/m<sup>3</sup>.

Typical panel dimensions are shown in Detail 1.



Detail 1. Typical panel details

Panels are attached to steel frames using stainless steel Hebel Tension Ties which hook around the flanges of the steel columns. One tie is normally used at each end of the panel. These are fastened into the top of each wall panel using stainless steel V nails driven through shaped holes in the Tension Ties. See Details 2 and 3.

Tension Ties are available from Lightweight Concrete NZ Ltd and their distributors, in varying lengths depending on panel thickness.

## Benefits

- Hebel Horizontal Wall Panels are approximately one quarter of the density of standard reinforced concrete. Therefore, bracing demand is substantially reduced, as are freight costs to site. Crane capacity required for placement of panels is also reduced, with resultant cost savings.
- Installation time is very fast, especially if the design has been specifically done to reduce panel cutting. Installation rates of 1 panel every 5 – 6 minutes are achievable.
- Fastening methods using Hebel Tension Ties are very simple and quick and require only a few minutes instruction.
- Panels can be easily cut or drilled on site, if required, to form openings for services.
- Panels have all the inherent thermal and acoustic advantages of AAC.
- Panels have a minimum fire rating of 240/240/240 minutes for structural adequacy, integrity, and insulation requirements.
- Installed wall panels provide a perfect substrate for acrylic coating and plaster systems.

## Panel Details

All Hebel Horizontal Wall Panels are manufactured in 600 mm widths (height). If narrower panels at the top of a wall are required, these can easily be site cut. Panels are manufactured to specified lengths to exactly fit a building frame. The maximum panel length is 6.0 metres. However, shipping constraints, at present, can limit panel length to 5.85 metres with longer panels only being available for larger orders.

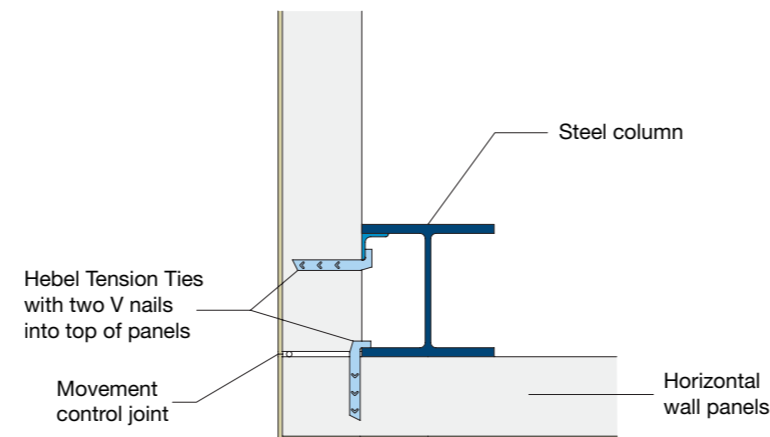
## Structural Design

Hebel Horizontal Wall Panels are designed primarily for wind loading, to transfer horizontal wind loads to structural steel frames. Table 1 shows the recommended maximum clear spans of panels for varying wind pressures and panel thicknesses. Panels are not assumed to contribute to the bracing of the structure due to the way they are clipped to the structural steel.

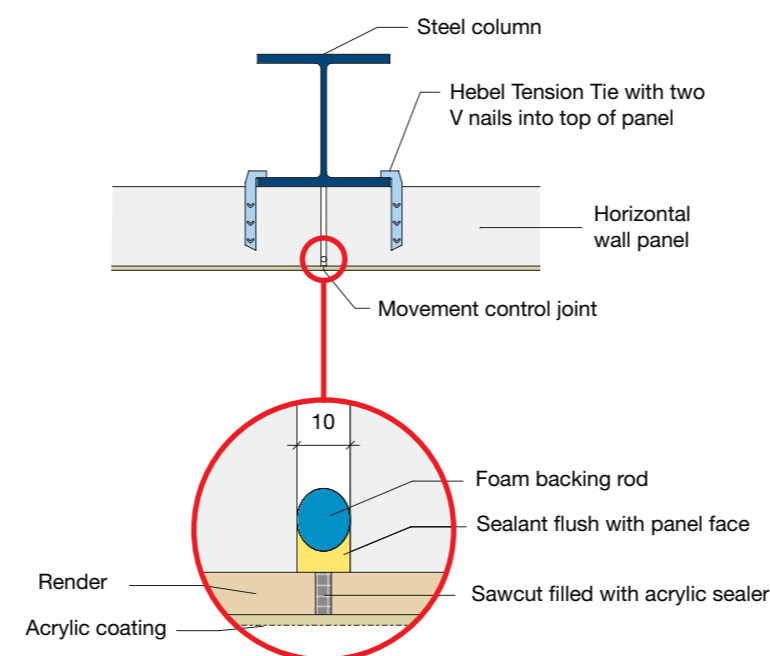
The load capacity of the Hebel Tension Ties is shown in Table 2. For high wind loads, it may be necessary to install intermediate columns to enable the use of additional Tension Ties to reduce the loading on each tie.

All Hebel Horizontal Wall Panels have a fire rating in excess of 240 minutes so specific design of reinforcing cover is not required.

Thermal resistance and the Sound transmission Class (STC) for varying thicknesses of panel are shown in Table 3.



Detail 2. Typical corner fixing of panels



Detail 3. Typical column fixing and control joint



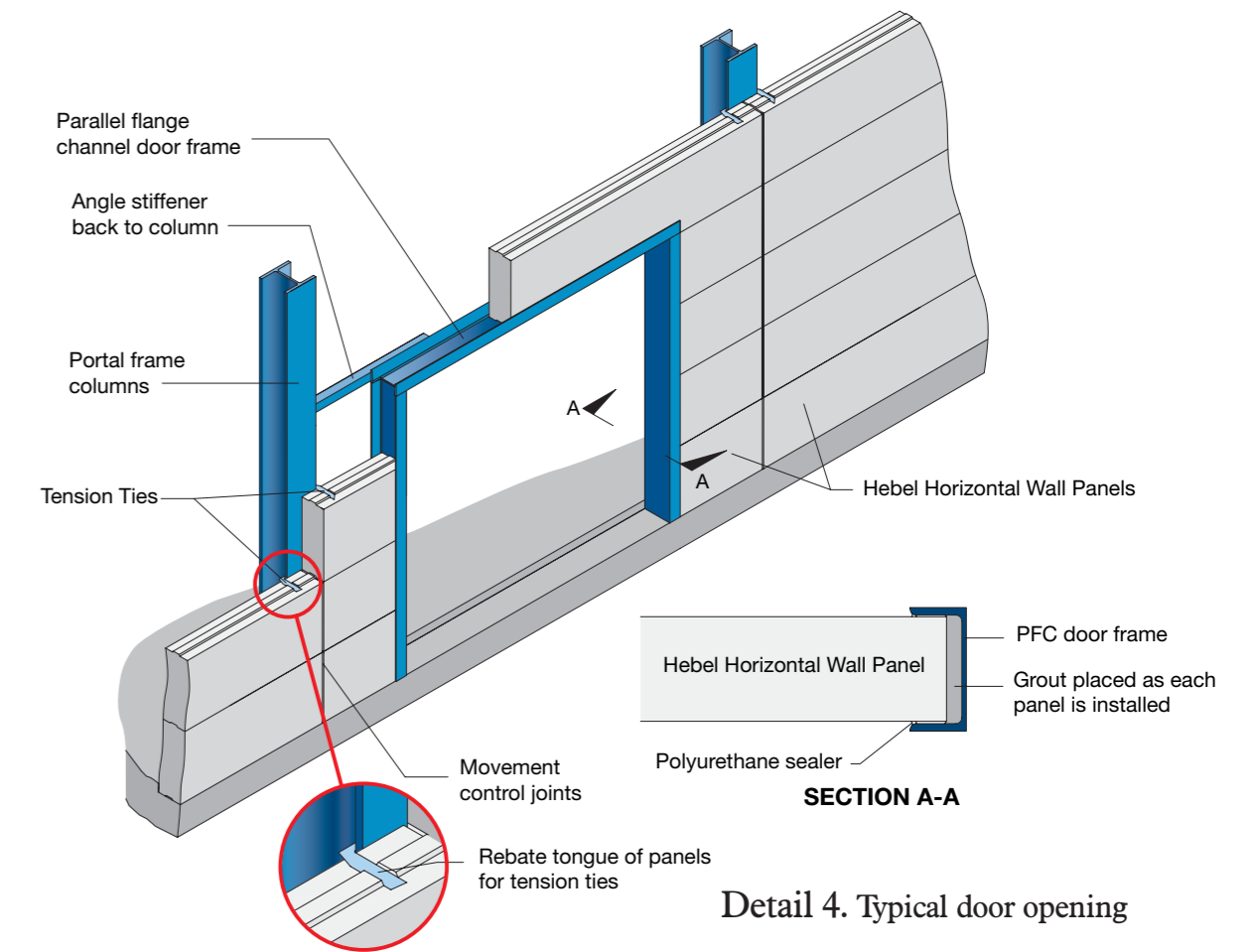
Whirinaki Power Station

Where openings are required in panels that will necessitate the cutting of reinforcing, these openings must be detailed prior to panel manufacture to enable additional reinforcing to be placed around the opening.

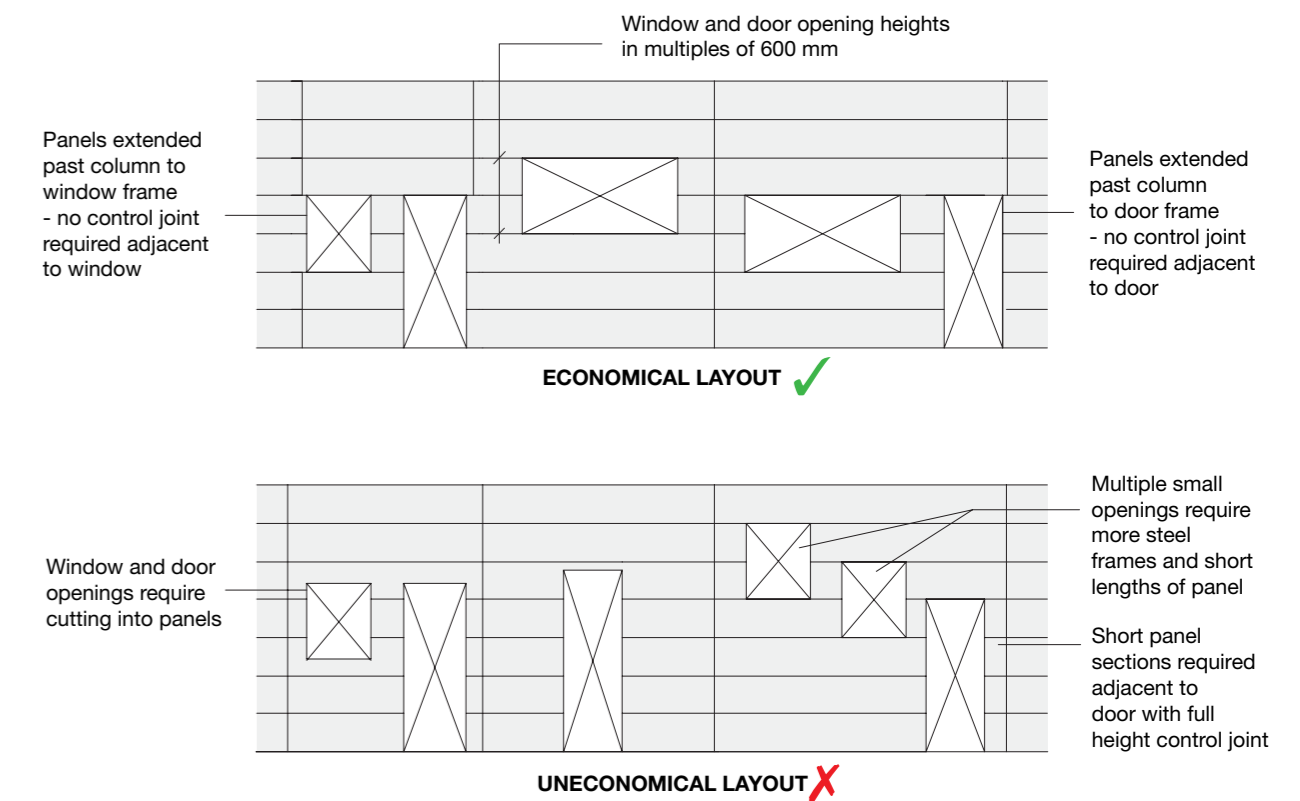
Where panels are interrupted by door or window openings, a steel channel frame is required to frame the opening, into which the ends of the panels are slotted. A typical door arrangement is shown in Detail 4. Door frame steel needs to be installed prior to placing panels. Window steel can be installed when panels reach the sill height. These steel frames can be constructed using either rolled steel channel sections or bent up from flat steel, depending on thickness required from design loadings. Panels can be used as lintels over their full length providing the bearing pressure at supports is acceptable.

In some type of structures (eg. sound barriers), the wall panels can be slotted between the flanges of universal columns, and the flanges used to laterally restrain the panels. Care is required in detailing this type of construction to ensure that the ends of panels are snug between the flanges without any lateral movement possible. Also, consideration must be given to how waterproofing the ends of panels will be achieved.

For economic design, the size and location of openings should be based on 600 mm modules of panel height, to avoid site cutting of panels. Locating openings adjacent to columns can also reduce the number of short panel lengths. Typical examples are shown in Detail 5.



Detail 4. Typical door opening



Detail 5. Economics of panel layout