

Hebel panel retaining wall system

III BRAACE™

Designed for Future Living





8 strong

BRAACE for

1 Versatility & style

BRAACE is a proprietary system developed to offer a cost effective masonry retaining wall system for a wide variety of residential and commercial applications. CSR Hebel lightweight panels (3m x 300mm x 75mm) are used as the façade to a galvanized steel post and mesh structure. Within current design parameters, the wall can be constructed in 300mm increments up to 1,800mm high. The system also allows the flexibility of the carriage of surcharge loads. In addition, boundary fencing, walls and sound barriers can be built into the system. Hebel panels provide the perfect substrate for a range of finishes. You can choose from a simple acrylic paint treatment to a variety of texture finishes or a decorative rendered approach. Hebel panels also provide an ideal substrate for stone finishes.

2 Quick to Install

The key to the BRAACE system is the unique support structure and the lightweight nature of the Hebel panels. This makes it considerably easier and faster to install, without the need for mechanical lifting equipment. 40 metres of wall can be erected to finishing stage in just 2 days! The panels and posts are stocked in standard sizes, reducing lead times and reducing the need for on-site cutting. If panels need to be cut, standard conventional power tools are used, again saving time. There is a wide range of experienced contractors who can construct BRAACE retaining walls, so completion is reached much sooner.

3 Cost Effective

The streamlined design of the BRAACE system is quick to install, with simple post holes instead of labour intensive strip footings or earth straps. The Hebel panels and BRAACE posts can be easily moved without mechanical lifters and unlike other retaining wall systems, BRAACE requires access of as little as 1 metre to facilitate construction. This, coupled with the modular nature of the system and the availability of standard sizes of Hebel panels means that there is very little excavation waste removal, reduced site disturbance and a lower labour requirement, all of which translates into real cost savings.

4 Fire and Pest Resistance

Fire resistance is an important consideration, particularly in bushfire prone areas. Hebel panels will not ignite and are an excellent choice where a high fire resistant barrier is desired. Neither the Hebel panels nor the BRAACE support structure are a food source for termites or vermin so the integrity of the structure will not be compromised by pests. Hebel's construction methods and recommended finishing systems make sure that BRAACE is not affected by wet weather and will not rot.



strong reasons to use your retaining wall

5 Enviro- Friendly

We care about our environment and are proud to have Hebel panels as an integral part of our systems. The production of Hebel uses less than 25% of the raw materials used to produce the same volume of standard masonry, produces no toxic gasses and almost no waste substances. Also, during installation, the modular nature and standard panel size creates very little waste which in other wall systems can end up as landfill. Importantly, unlike treated timber systems, BRAACE components contain no harmful chemicals which can leech into the soil.

6 Great for DIY

The easy handling of the system components and simple installation make BRAACE an ideal choice for the home handyman, By following the step by step instructions in this brochure, a BRAACE retaining wall is not difficult to construct. Foundation holes are dug with a spade or post hole digger - available at any hire shop - and the structure is attached to the posts using basic tools such as a spirit level, measuring tape, string line and screw gun or drill. The panels can be lifted into place by 2 people. Just backfill as detailed in the construction notes and the job's done!

7 Solid & Durable

Although Hebel panels are just 25% of the weight of concrete, they are solid masonry and reinforced with corrosion-protected steel. When screwed to the galvanised BRAACE support components that are anchored to the ground within concrete foundations, the result is a monolithic structure with the high degree of strength that is essential in a retaining wall system. The waterproof membrane is UV resistant, rot proof and completely impermeable. Hebel's recommended finishing systems ensure the system's long-term durability. Other systems which are based on the combination of galvanised steel and Hebel panels have been successfully used in Australia for over 15 years and for more than 50 years in Europe.

8 It's The Right Decision

When you choose to build your retaining wall with the BRAACE system, you can be assured that the system design has been thoroughly researched and tested by Façade Retaining Systems. Hebel panels are quickly becoming the building material of choice in both residential and commercial construction and Hebel has a proven track record of over 50 years worldwide. And Hebel is backed by CSR, one of the world's largest building materials manufacturers. Your BRAACE retaining wall will be strong, durable, easy to install and very cost effective when compared to other systems. The simplicity of the system makes it ideal for just about any retaining wall requirements up to 1,800 mm. But we know that some projects have special requirements so please contact us for advice at any time.



Installation is as easy as...

The BRAACE system has been designed for easy installation. All components are easily managed by hand. You'll need:

- String line
- Screw gun (drill)
- Measuring tape
- Post Hole digger
- Spirit level

STEP 1

- A minimum working area of 700mm is required behind the wall.
- Set out wall at 1 metre centres as desired alignment and mark post centres.
- Drill or excavate 300mm diameter holes to the required depth (see spec. table).
- Ensure the foundation hole is cleaned of loose soil and debris.



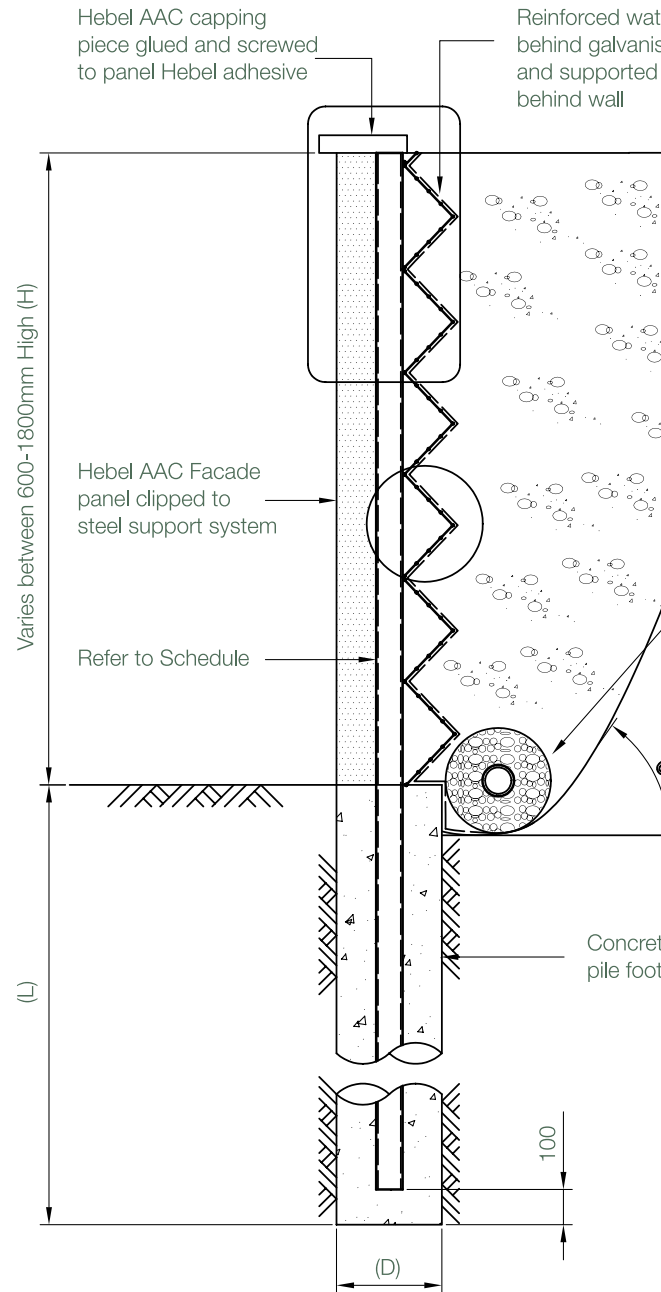
STEP 2

- Set a string line to the required height (retained height) of the wall, 75mm from the front face of the retaining wall. This will become the alignment and height mark for the front face of the support post.
- Place the post into the hole and pour concrete in the foundation hole and fill to the top.
- Align the top front edge of the post to be level with the string line.
- Use a spirit level to plumb vertical.
- Leave to set overnight.



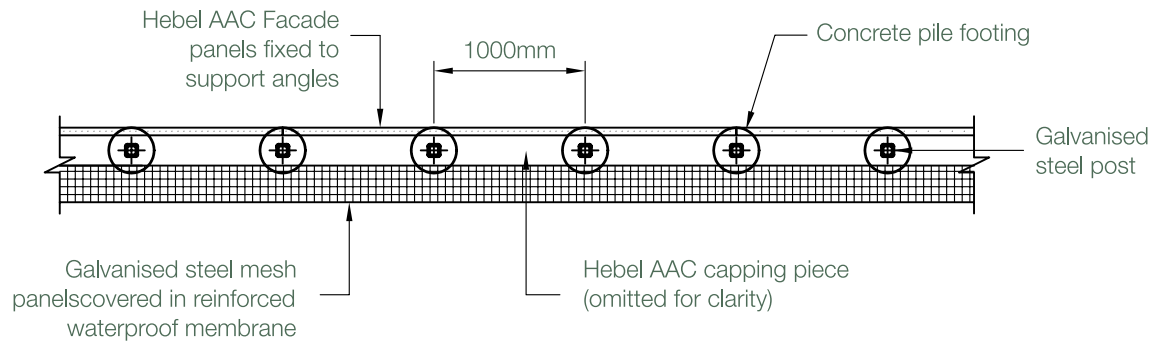
STEP 3

- Apply bituminous coating to the first 150mm of the post at the base.
- Fix the panel connection angles to the post at a height to suit the centre of the panel.
- Starting at the base and ensuring that the panel is sitting firmly on the foundation or packer, place the panel at the front of the post and screw through the fixing bracket at the rear using the type 2 screws. (Do not over tighten). Continue until all panels are placed.
- Starting at the base, place the mesh panel at the rear of the post and secure using the U-clip and type 1 screws. Continue until all panels are secured.
- Place the waterproof membrane over the mesh, leaving a sufficient amount at the top to allow for stretching during backfilling.
- Backfill in accordance with the specification.
- Place the cap using Hebel Adhesive and fix using the type 3 screws (do not over tighten).



TYPICAL SECTION





TYPICAL PLAN

Note

Facade Retaining System P/L should be contacted for anything outside the current design parameters. The wall has been designed to carry a surcharge load of 2.5 KPa and can also incorporate boundary walls or fencing heights over 1800mm.

Loading Criteria and Assumed Geotechnical Parameters

1. Backfill dry density = 18 KN/m³
2. Ka = 0.238
3. $\phi = 38$
4. Cu = 50 KPa
5. Surcharge = 2.5 KPa

Note: The batter slope (angle \ominus) and assumed geotechnical parameters are to be confirmed by a qualified geotechnical engineer for each particular site, prior to commencement of work.

The Perfect Finish

From a simple paint-based finishing system to the use of Hebel renders and acrylic texture coatings, there is a Hebel finishing system to meet the needs of any project.

Coating selection	Appearance	Coating sequence	Coating thickness	Application methods			Selection considerations	
				Render	Texture profile	Paint	For	Against
Texture profile SkimCoat render	Texture coating finishes from crisp uniform sand texture to an elegant circular scratch appearance	1. SkimCoat render 2. Primer 3. Texture profile 4. Two coats of acrylic high build paint	2-6mm	Hawk & trowel	Hawk & trowel, plastic float to finish	Roller/ brush/spray	Fast application, good looking sharp texture profile, good flexibility & great weather resistance protection. Long term durability	Panels need to be fixed flat to achieve the best finish
HighBuild sponge finished render	Traditional solid plaster appeal	1. HighBuild render 2. Primer 3. Two coats of acrylic high build paint	4-12mm	Hawk & trowel, wood/ polystyrene float to flatten & sponge float to finish		Roller/ brush/spray	Provides a thick traditional solid plaster appearance, good impact resistance	Must be sponge finished perfectly to produce a uniform texture profile
Mediterranean bag finished SkimCoat render	Rough undulating sand swept appearance	1. SkimCoat render 2. Two coats of acrylic mediterranean texture	2-5mm	Hawk & trowel	Mitt application or roll-on to finish		Quick application. Possible semi-skilled workmanship	Panels need to be fixed flat to achieve the best finish Limited in appearance to bag finish
Texture coating and paint	Texture coating finishes from crisp uniform sand texture to an elegant circular scratch appearance	1. Primer 2. Texture profile 3. Two coats acrylic High build paint	1-3mm		Roll-on or hawk & trowel on or spray on to finish (dependent on texture profile selected)	Roller/ brush/spray	Fast application, good flexibility and great weather resistance protection offering long term durability	Panels need to be fixed flat to achieve the best finish
High build paint	Finish appearance will match appearance and profile of the panel	1. Primer 2. Two coats of acrylic high build paint	0.1-0.3mm			Roller/ brush/spray	Fast application	Hebel Patch may need to be used to fill any imperfection prior to paint application

Specification

Construction Generally

Set Out:

Set out the retaining wall line and mark the positions of steel posts at 1 metre centres.

Clearing:

Except trees or shrubs to be retained, clear vegetation within 1 metre of the wall alignment. Grub out the stumps and roots of removed trees or shrubs and trim the grass to ground level, but do not remove the topsoil. Require a minimum of 700mm clearance behind cutting of excavation and retaining wall alignment.

Excavation:

Excavate post holes so that they have vertical sides and a firm base.

Line and level:

Erect steel posts vertically.

Concrete Footing:

In ground, place mass concrete around steel posts and finish with a weathered top falling 25mm from the post to ground level. Concrete to be minimum 20MPa strength with 20mm nominal aggregate.

- Cu denotes unconfined shear strength of soil
- Piers to be mass concrete 300mm min. diameter.

Galvanised Tube:

All sides of galvanised tube to be coated to a level of 150mm above finished concrete footing level with bituminous paint.

Steel Mesh Wall:

Place and fix galvanised steel mesh on retaining face of vertical steel posts and fix using galvanised 'U' clip and deep self-drilling.

Hex metal 'class 3' 12-24x32 Tek screws.

'U' clip to be fixed and screwed to mesh at all supporting edges of mesh and post.

Hebel Panels:

CSR Hebel lightweight AAC masonry panels in contact with the ground to be coated on all sides with bituminous paint to a level 50mm above finished ground level.

Subsoil Drains and Filter Fabric

Place Nicotarp 200 reinforced waterproof membrane behind welded steel mesh and support prior to back filling behind wall.

Lapping of waterproof membrane of a minimum 300mm is required when joining sections of membrane.

Subsoil Drains

General:

Provide subsoil drains to intercept groundwater seepage and prevent water build-up behind walls. Connect subsoil drains to surface drains or to the storm water drainage system as applicable.

Pipe Depth:

Provide the following minimum clear depths, measured to the crown of the pipe, where the pipe passes below the following elements:

- 100mm below the average gradient of the bottom of wall.

Jointing:

At junctions of subsoil pipes provide tees, couplings or adapters to AS 2439.1.

Pipe Underlay:

General: Grade the trench floor evenly to the gradient of the pipeline. If the trench floor is rock, correct any irregularities with compacted bedding material. Bed piping on a continuous underlay of bedding material, at least 75mm thick after compacting.

Chases: If necessary, form chases to prevent projections such as sockets and flanges from bearing on the trench bottom or underlay.

Pipe Surrounds:

General: Place the material in the pipe surrounds in layers 200mm loose thickness, and compact without damaging or displacing the piping.

Depth of Overlay:

- To the underside of the bases of overlying structures such as pavements, slabs and channels.
- To within 150mm of the finished surface of unpaved or landscaped areas.

Filter Socks:

Provide polyester permeable socks capable of retaining particles of 0.25mm size. Securely fit or join the sock at each joint.

Back Fill

Provide coarse grained soil without admixture of fine soil particles.

Back fill type: clean sand or gravel

Structural Steel

All steel to be galvanised.

Areas of special corrosivity with high to very high corrosion rates occur in marine, underwater, in splash zones, industrial zones and in chemical plants. For these areas, specification protection from the aggressive conditions is essential.

The selection of a coating system for any of these conditions is outside the scope of this guide. Consult your paint company or other expert for further details.

All dimensions in (mm) U.N.O.

All angles, clips, bolts, nuts and washers used shall be galvanised.

Member Schedule				
Retaining Height (H) (mm)	Retaining Wall Post Spacing (mm)	Steel Post Size	Bored Pier Dia (D) (mm)	Bored Pier Depth (L) (mm)
600	1000	50x50x3 SHS	300	700
900	1000	50x50x3 SHS	300	1000
1200	1000	65x65x3 SHS	300	1200
1500	1000	75x75x5 SHS	300	1500
1800	1000	75x75x6 SHS	300	1800



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