

CSR CEMINTEL™

EXPRESSWALL



FC:126



EXTERNAL FACADE SYSTEM (INCLUDING CEMINSEAL BARESTONE™)

OCTOBER 2014

Cemintel ExpressWall™ offers an expressed joint facade system for an extensive range of commercial and industrial applications. Panels available are ExpressPanel™, which can be painted on-site, and BareStone™, a pre-finished panel with a raw concrete appearance.

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## DESCRIPTION

The Cemintel ExpressWall™ Façade System provides a versatile and durable façade which is suitable for an extensive range of commercial and industrial buildings types. Cemintel ExpressWall™ is a highly adaptable system which can be used to conceal most common structural materials such as masonry, precast concrete or steel and timber stud framing. ExpressPanel™ is 9mm thick compressed fibre cement sheet, purpose made for use on building façades, and is suitable for painting. CeminSeal BareStone™ is 9mm thick compressed fibre cement sheet that incorporates embedded waterblock technology to reduce water penetration. It has a non-uniform appearance providing a natural fibre cement colour and does not require painting.

The panels are supported by vertical top hats and fixed with exposed head or concealed screws. The panels may be arranged in a variety of patterns, and surface relief is produced by the square edged panels with expressed joints.

## APPLICATIONS

The Cemintel ExpressWall™ system has been designed to be used for external cladding buildings such as:

- Supermarkets and Shopping Centres.
- Office Buildings.
- Most Commercial Buildings.
- Residential Homes and Apartment Buildings.
- Or any other application not excluded by the Design Considerations section of this brochure.

It however remains the responsibility of the building designer to verify the Cemintel ExpressWall™ system is suitable for the particular requirements of any given project.

The Cemintel ExpressWall™ System has excellent resistance to water penetration and high wind loads, and is suitable for exposed applications.

The ExpressWall™ System can also be used as an exterior ceiling. Contact CSR Gyprock & Fibre Cement for details.



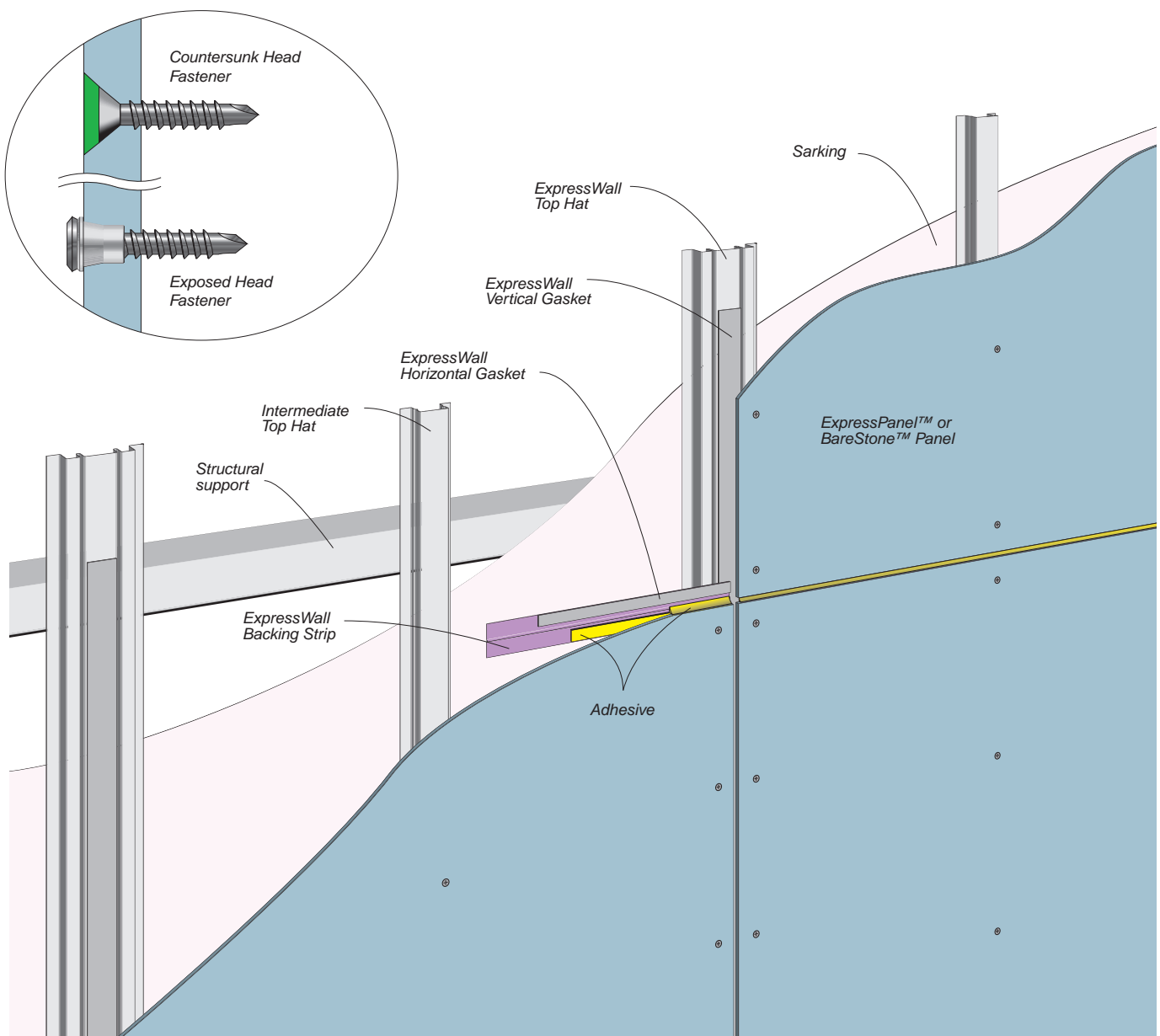
# EXPRESSWALL™ ADVANTAGES

## DESIGN FEATURES

- Expressed joint appearance.
- Flat, smooth finish with countersunk screws.
- Readily accepts many forms of decorative finish.
- Exposed head fasteners for BareStone™ and pre-painted panels.
- Pre-finished BareStone™ with natural cementitious appearance.
- Tested weather resistance.
- Designed for extreme wind pressures.
- Lightweight, low maintenance facade system.
- Suitable for curved applications.

## CONSTRUCTION FEATURES

- Highly durable gaskets.
- Dimensionally accurate panels.
- High prefabrication opportunity.
- Panels easily replaced.
- High performance ExpressWall™ Top Hat 1.15:
  - Suitable for Cyclonic Areas.
  - Wide fixing surface for increased installation tolerance.



## COMPONENTS

### EXPRESSPANEL™

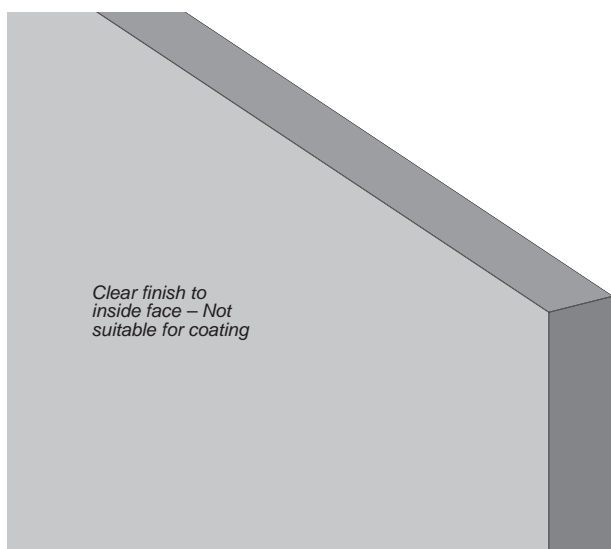
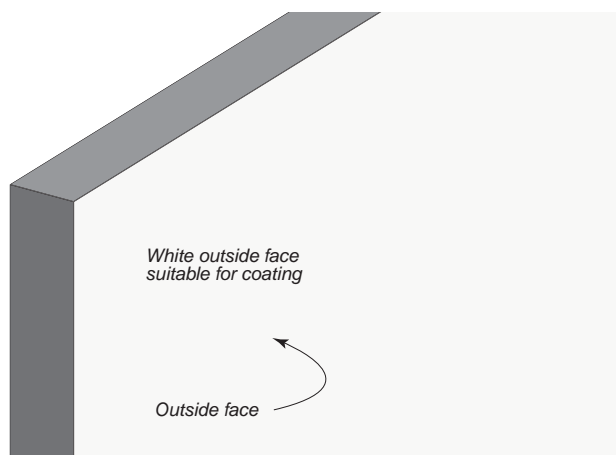
ExpressPanel™ is a compressed fibre cement sheet which is purpose manufactured for use in building facades. ExpressPanel™ is factory sealed on both faces and all edges. The white face is ready to accept a wide range of finishes. ExpressPanel™ is 9mm thick, has a mass of 17kg/m<sup>2</sup>, and is available in the following panel sizes;

#### ExpressPanel™ Sizes. (All panels 9mm thickness)

Width (mm)	Length (mm)				
	1800	2100	2400	2700	3000
900	✓		✓		✓
1200	✓	✓	✓	✓	✓

Note: Please contact CSR Gyprock & Fibre Cement for non-standard ExpressPanel™ sizes.

#### ExpressPanel™ Face Identification



### CEMINSEAL BARESTONE™ PANEL

CeminSeal BareStone™ Panel is a compressed fibre cement sheet which is purpose manufactured for use in building facades. CeminSeal BareStone™ Panel has water blocking agents embedded in the sheet and does not require a finish to be applied. CeminSeal BareStone™ Panel is 9mm thick, has a natural fibre cement colour (grey), a mass of 17kg/m<sup>2</sup>, and is available in the following panel sizes. As a raw cement product, there may be natural variation between BareStone™ Panels that occurs as part of the manufacturing process. CSR recommends that builders/installers inspect BareStone™ Panels to ensure they meet aesthetic requirements prior to installation.

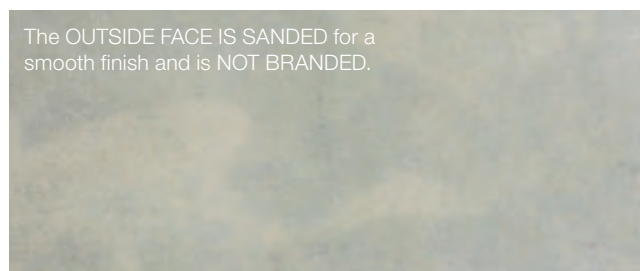
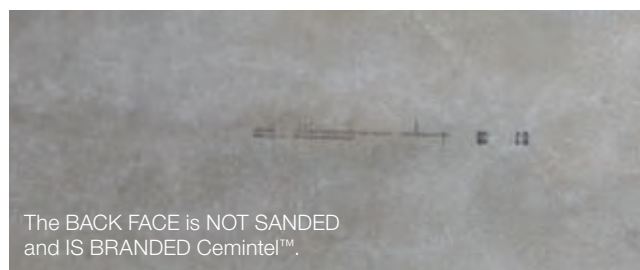
#### CeminSeal BareStone™ Sizes. (All panels 9mm thickness)

Width (mm)	Length (mm)	
	2400	3000
1200	✓	✓

Note: Please contact CSR CeminTel for non-standard CeminSeal BareStone™ Panel sizes.

#### CeminSeal BareStone™ Face Identification

The back face can be identified by the non-sanded surface finish and printed markings.



NOTE: If printing is not clearly visible on the back of the board or if you are unsure about which side is the surface, please contact your CeminTel Account Manager for clarification.

### BARESTONE™ TOUCH-UP KIT

For coating the edges of BareStone™ panels that have been cut on-site.

Order N°	Quantity
100166	200ml



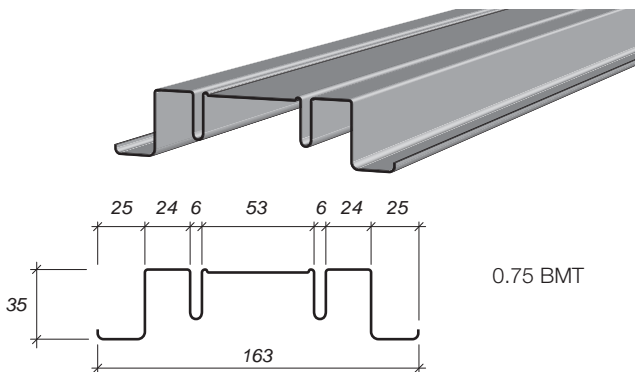
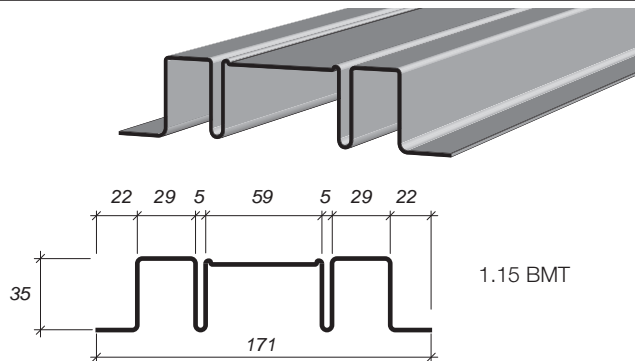
## EXPRESSWALL™ TOP HAT

ExpressWall™ Top Hat is a purpose designed rolled steel section for supporting the vertical edges of the panels. The unique profile also acts to accommodate movement of the sheets at the vertical joints. It is designed to be used in conjunction with the ExpressWall™ Vertical Gasket.

ExpressWall™ Top Hat is manufactured from galvanised (Z275) steel, and is the subject of patent N° 2004240142.

ExpressWall™ Top Hat 1.15 BMT is required for cyclonic areas and when exposed head screws are to be used, including all BareStone™ installations.

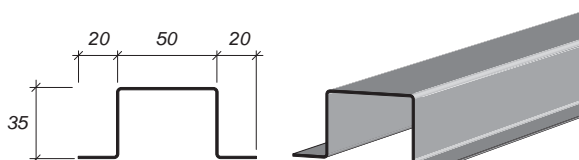
Order N°	BMT	Length (m)	Mass kg/m
39124	1.15	6.0	3.25
84746	0.75	6.0	1.97



## INTERMEDIATE TOP HAT

Intermediate Top Hat is used to support the panels at locations other than vertical joints. Intermediate Top Hat is a Rondo rolled steel section which is manufactured from galvanised (Z275) steel of 1.15mm BMT.

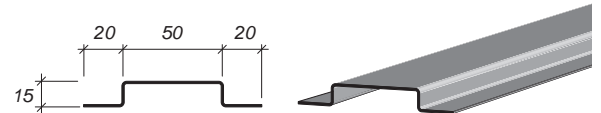
Order N°	BMT	Length (m)	Mass kg/m
21086	1.15	3.6	1.38
21083	1.15	7.2	1.38



## TOP HAT H515

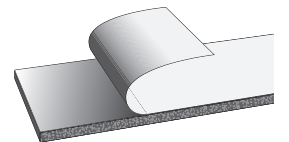
Top Hat H515 is fixed to structural steel framing to support the ExpressWall™ and Intermediate Top Hats. Top Hat H515 is a Rondo rolled steel section which is manufactured from galvanised (Z275) steel of 1.15mm BMT.

Order N°	BMT	Length (m)	Mass kg/m
12884	1.15	3.6	0.91
100896	1.15	7.2	0.91



## EXPRESSWALL™ VERTICAL GASKET

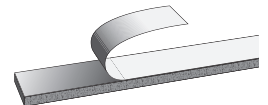
ExpressWall™ vertical gasket is made from EPDM closed cell foam which has high UV resistance. The gasket has adhesive on one side (with a release paper), and is adhered to the ExpressWall™ Top Hat to prevent moisture entry at vertical joints.



Order N°	Description
22106	3.2mm x 48mm x 25m roll (Tesa 61102)

## EXPRESSWALL™ HORIZONTAL GASKET

ExpressWall™ horizontal gasket is made from closed cell PVC Nitrile foam which has a high resistance to abrasion and maintains its properties at high temperatures. The gasket has adhesive on one side (with a release paper), and is adhered to the ExpressWall™ Backing Strip to prevent moisture entry at horizontal joints.

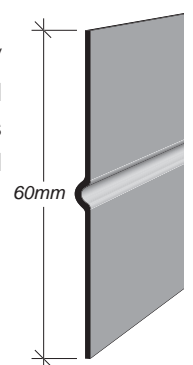


Order N°	Description
22105	3.0mm x 18mm x 9m roll (Tesa 50601)

## EXPRESSWALL™ BACKING STRIP

ExpressWall™ Backing Strip is a rolled steel section designed to support the gasket and/or sealant behind the horizontal expressed joints. ExpressWall™ Backing Strip is manufactured from high tensile Colorbond steel, and is black in colour.

Order N°	Length
21089	1194mm
21088	2394mm
21087	2994mm



## BACKING STRIP ADHESIVE

An adhesive is used for fixing ExpressWall™ Backing Strip to panels. The recommended product is Sikaflex®-11FC. This product is not recommended for filling expressed joints.

Order N°	Description
39378	Sikaflex® 11FC, 310ml tube

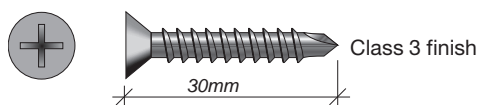
## EXPRESSWALL™ SCREWS

ExpressWall™ Screws are specially designed for the ExpressWall™ System. They are the only screws recommended by CSR for fixing ExpressPanel™ and BareStone™ panels to the steel top hats.

### Countersunk Head Screw:

The Countersunk Head allows concealed fixing, and the buttress thread is designed to provide maximum holding power in light gauge steel. It has a Class 3 finish and is grey in colour. For ExpressPanel™ only.

Order N°	Description
114081	Countersunk Head Class 3 Finish 1000/pack

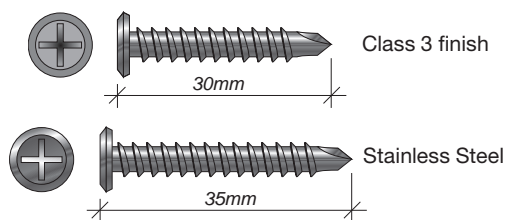


### Exposed Head Screw:

(Suitable for ExpressWall™ Top Hat 1.15. ONLY).

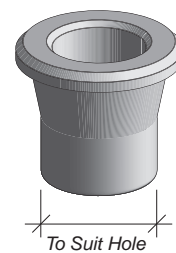
The Exposed Head Screw has a buttress thread which is designed to provide maximum holding power in light gauge steel. It is available in Class 3 finish and Stainless Steel (grade 302) for ExpressPanel™ and BareStone™ panels.

Order N°	Description
114070	Wafer Head Class 3 Finish 1000/pack
122235	Wafer Head 302 Grade Stainless Steel 1000/pack



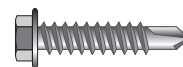
## EXPRESSWALL WEATHER SEAL

The ExpressWall™ Weather Seal is a grey, UV stabilised nylon washer. It is used with ExpressWall™ Exposed Head Screws to provide an interference fit, delivering high weather resistance and acting to lock the screw into position.



Order N°	Description
36484	Weather Seal

## HEX HEAD SCREW

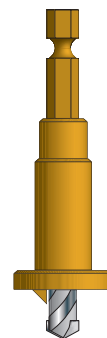


For fixing top hats to steel framing in non-cyclonic areas. Hex head self drilling screw 12-14 x 20. (Suitability to be confirmed by project engineer).

Order N°	Qty
84882	1000

## COUNTERSINKING TOOL

This is a tungsten carbide tipped tool specifically designed for drilling and countersinking the required 6mm diameter screw holes in ExpressPanel™. It is suitable for use with screw guns and drills, and has an adjustable depth setting. This is the only tool recommended by CSR for this purpose. Use only for countersunk head screws.

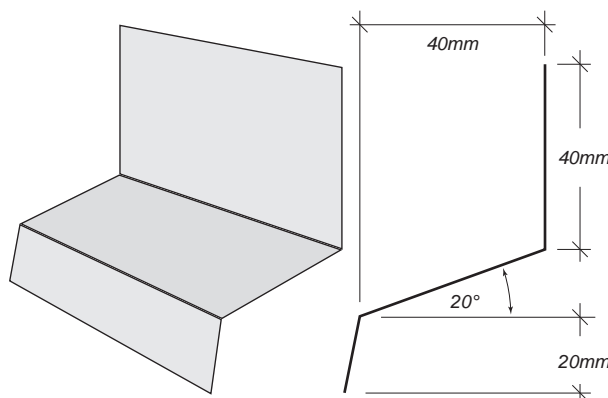


Order N°	Description
22116	Countersinking Tool

## CAVITY BAFFLE

PVC profile used at base of wall to exclude vermin and moisture.

Order N°	Length
38651	3.0m



## SEALANT

Sealant is used to seal ExpressWall™ joints for high wind loads, control joints, junctions, etc. Can be painted over with most paints. It is also required at expressed joints where preprinted ExpressPanel™ has been used.

Order N°	Description
11378	Sikaflex® PRO, 310ml tube (colour Grey)
39488	Sikaflex® PRO, 310ml tube (colour Black)

Other sealants may be used for decorative purposes, when approved by the manufacturer.

## EPOXY

Epoxy is used to conceal the countersunk fastener heads, to prevent moisture penetration, and to provide a flat surface for decorative coating. Epoxy products must be installed to the manufacturer's recommendations.

Recommended products are:

- Megapoxy P1.
- Hilti CA125\*.
- Hilti CA273\* (should be used when ambient temperature is less than 15°C at time of installation)

Order N°	Description
25464	Megapoxy P1, 1 litre kit

## BOND-BREAKER TAPE

Bond-breaker tape is used behind sealant at horizontal joints, for example when the design wind pressure exceeds 4.0kPa.

Order N°	Description
13172	Tesa 7492 (3.2mm x 48mm x 25m).

## 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.



## FLASHINGS & CAPPINGS\*

Flashings are to be designed and installed in accordance with SAA-HB39 1997 and good building practice.

\*Not supplied by CSR.

## WALL WRAP/SARKING



Order N°	Bradford Product	Classification	Water Classification	Quantity
13462 10576	Thermoseal™ Wall Wrap	Non-permeable Reflective	High	1350mm x 20m roll 1350mm x 60m roll
108879 108004 120121	Thermoseal™ Resiwrap	Non-permeable Reflective	High	1350mm x 30m roll 1350mm x 60m roll 1500mm x 30m roll
120923	Enviroseal ProctorWrap™ Residential (RW)	Permeability High	High	1500mm x 50m roll
118593	Enviroseal ProctorWrap™ Commercial (CW)	Permeability High	High	1500mm x 50m roll
81333	Thermoseal™ 733	Non-permeable Reflective	High	1350mm x 60m roll

## INSULATION

Quality Bradford™ glasswool insulation to meet regulatory requirements and environmental and cost efficiency energy targets.



Order N°	Bradford™ Product	Size (mm)	Quantity Batts per Pack
113938	Gold Wall Batts R1.5 (75mm)	1160 x 430	22
113939	Gold Wall Batts R1.5 (75mm)	1160 x 580	22
105209	Gold Wall Batts R2.1 (70mm)	1160 x 430	6
105206	Gold Wall Batts R2.1 (70mm)	1160 x 580	6
105203	Gold Wall Batts R2.5 (90mm)	1160 x 430	8
105202	Gold Wall Batts R2.5 (90mm)	1160 x 580	8
105205	Gold Wall Batts R2.7 (90mm)	1160 x 430	5
105204	Gold Wall Batts R2.7 (90mm)	1160 x 580	5

# DESIGN CONSIDERATIONS

This guide represents good practice, though it is not intended as an exhaustive statement of all relevant information. It remains the responsibility of the building designer to verify that the Cemintel ExpressWall™ system is suitable for the particular requirements of any given project.

## DESIGN RESPONSIBILITY

Panels, top hats and structural framing are required to resist wind loads that are specific to the building site. Additional 'local pressure factors' apply to the panels and top hats in accordance with the wind code, AS1170.2. It is recommended that the building designer assigns responsibility for the facade design to the project engineer. This is to ensure consistency of wind load determination and proper integration of the facade with the structure.

Once wind loads have been determined, top hat spans and spacings, and sheet fixing details, may be selected from the appropriate tables in this manual.

It is also the responsibility of the building designer to select the appropriate corrosivity category. Refer to appropriate details in this guide.

## HIGH WIND LOADS

In areas where the design wind pressures exceed 4.0kPa, additional sealing is required to minimise water ingress. Refer to sealed joint details in the 'Construction Details' section.

In cyclonic areas ExpressWall™ Top Hat 1.15mm must be used.

Wind loads in this guide refer to 'Ultimate Limit State Design Wind Pressures'.

## WALL WRAP/SARKING SELECTION

To ensure occupant comfort and protection of the building frame, the following factors should be considered during the selection of the correct wall wrap/sarking.

- **Condensation Risk:** This is a complex problem and can occur under a variety of conditions (not just in cold and tropical climates) so selection of the right wall wrap/sarking needs to consider the local climate, building use and orientation, material R-Value of the insulation, as well as the degree and location of ventilation.

- **Weather Barrier:** Wind loads can produce lower air pressures within buildings than on the outside, forcing water through small gaps in the building envelope around penetrations and joints, even at low wind speeds.

Careful selection of a wall wrap/sarking with the appropriate level of vapour permeability or vapour resistance is one key factor in reducing condensation risk. The Guidance on Wall Wrap/Sarking Selection table provides recommendations. Key selection characteristics for a suitable wall wrap/sarking are as follows:

- The wall wrap/sarking must have a 'high' water barrier classification – an 'unclassified' rating is not suitable.
- Wall wrap/sarking must meet the requirements of AS/NZS4200.1: Pliable building membranes and underlays – Materials, and be installed in accordance with AS/NZS4200.2: Pliable building membranes and underlays – Installation requirements.

Whilst the requirement to seal joins and penetrations may vary depending upon BCA and/or state requirements, CSR recommends sealing the external wall wrap/sarking to maintain vapour performance and draught proofing effectiveness, as well as to ensure water barrier integrity. As there are a number of factors that need to be considered in assessing and managing condensation risk, it is recommended that designers undertake a condensation risk analysis prior to wall wrap/sarking selection as part of the building design. Additional literature on this subject is available from CSIRO/BRANZ/ASHRAE/ABCB and CSR DesignLINK can help with this assessment.

## INSULATION

Energy efficiency requirements for buildings are set out in the BCA as performance requirements and acceptable construction practices, and are dependant on geographical climate zones. To meet the requirements, it is recommended that CSR Bradford insulation be installed in the wall framing. Check with local building authorities for minimum insulation requirements.

It is recommended that insulation values above the minimum be chosen for energy conservation and occupant comfort. Insulation also improves the acoustic performance of the wall against outside noise.

The level of insulation provided in a wall is described by its R-value. The higher the R-value the greater the insulation provided.

R-values for some systems are given in the Thermal Performance Selection Table.

Refer to 'Components' for product information.



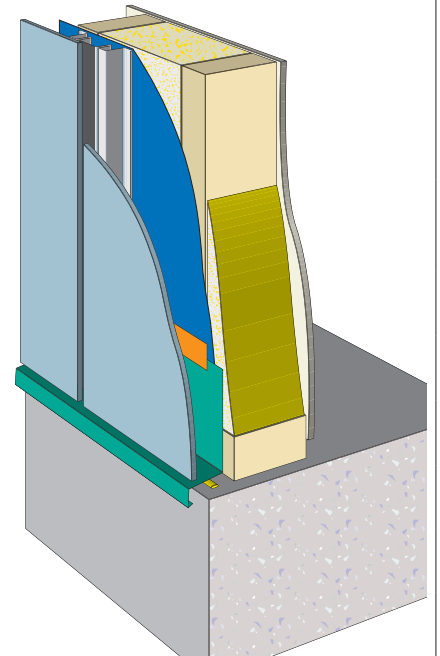
**Table 1: Guidance on Wall Wrap/Sarking Selection**

Climate	Guidance on wall wrap/sarking to be used behind the cladding	Performance Criteria	Recommended Product
Cold Climates*	In cold climates where the risk of condensation is high, vapour permeable membranes should always be installed on the cold external side of the insulation.	Vapour Permeability > 2.5µg/N.s	Enviroseal ProctorWrap RW or CW
Temperate and inland climate zones	It is recommended to use vapour permeable membranes to avoid creating a seasonal moisture trap and to allow drying in either direction – interior or exterior.	Vapour Permeability > 2.5µg/N.s	Enviroseal ProctorWrap RW or CW or
Warm humid coastal and tropical climates	Where vapour flow is typically inward, such as where the building is air-conditioned, membrane should be non-permeable.	Vapour Resistance > 7MN/g	Thermoseal Resiwrap or Thermoseal Wall Wrap or Thermoseal 733

\* For alpine areas and buildings that have high internal levels of humidity (such as indoor swimming pool areas), please contact CSR Bradford for project specific technical advice.

**Table 2 Thermal Performance Selection**

CEMINTEL EXPRESSWALL™			
<ul style="list-style-type: none"> <li>1 layer or BareStone™ or ExpressPanel™ fixed to Cemintel ExpressWall™ top hat framing system.</li> <li>Insulation and Wall wrap/sarking as per system table.</li> <li>Timber or Steel Studs (90mm min.) at 600mm maximum centres.</li> <li>1 layer x 10mm Gyprock standard plasterboard fixed to the inside of framing.</li> </ul>			
Insulation in Cavity	Wall Wrap/Sarking	Winter Total Wall R-Value	Summer Total Wall R-Value
(a) Nil	Bradford Thermoseal Wall Wrap under top hats	1.1	1.0
(b) Nil	Bradford Thermofoil 733* under top hats	1.8	1.6
(c) Bradford 75mm Gold batts R1.5	Bradford Thermoseal Wall Wrap under top hats	2.1	1.9
(d) BRADFORD 70mm Gold Wall Batts R2.1	Bradford Thermoseal Wall Wrap or Enviroseal ProctorWrap RW	2.6	2.4
(e) BRADFORD 90mm Gold Wall Batts R2.5	Bradford Thermoseal Wall Wrap or Enviroseal ProctorWrap RW	3.1	2.8
(f) Bradford 90mm Gold Wall Batts R2.7HP	Bradford Enviroseal Proctorwrap RW or CW	3.3	3.0
(g) Bradford 90mm Gold Wall Batts R2.7HP	Bradford Thermoseal Wall Wrap or Resiwrap	3.3	3.0

**NOTES:**

Values calculated in accordance with AS4859.1, and are based on an un-ventilated cavity and using Bradford Thermal Calculator v1.2.

\* Bright side of foil facing stud cavity. Bradford Thermofoil 733 is wall wrap/sarking with reflective finish both sides. Using an alternative product with anti-glare finish will REDUCE the stated R-value performance.

**PANEL FINISHES**

- ExpressPanel™**

ExpressPanel™ is factory sealed on both faces and all edges. Sealing in this manner increases the durability and stability of the panels. The exterior surface of the ExpressPanel™ must be coated with an appropriate finish. Note that the back face of panels cannot be painted, and is not suitable as an exterior finish.

Where panels are cut on-site, sealing of the cut edges shall be with Dulux Acra-Prime 501/1. The minimum application rate shall be 1 litre per 10m<sup>2</sup> (140grams/m<sup>2</sup>) which results in a dry film thickness of 70 microns. Alternatively, coat with undiluted Bondcrete before applying the finish coating.

The exterior face of ExpressPanel™ can be finished with any of a wide variety of coatings, provided they are compatible with the ExpressPanel™ seal coat, ExpressWall™ screws and with the epoxy used to cover the countersunk heads. High build, exterior grade acrylic paint or aggregate finishes provide the best results. Exposed vertical gaskets should not be painted and Sikaflex Pro sealant may be painted if required

ExpressPanel™ may be painted off-site when exposed head screws are to be used. Refer to appropriate painting contractors for details and colours. For pre-painted panels, it is a requirement that all expressed joints are filled with sealant. Refer to the 'Panel Installation' section.

A minimum dry film thickness of 250 microns is recommended to ensure adequate cover for the concealed fasteners. High

gloss and low build finishes will require additional surface preparation to minimise fastener show-through. In all cases the coating manufacturer's application instructions must be followed. The inside face of the ExpressPanel™ is finished clear and is not suitable for painting.

Before applying finishes in coastal areas (refer to definition), all panels must be thoroughly washed with fresh water to remove any salt residue. Refer to coating manufacturer for additional requirements.

#### • BareStone™

The production of CeminSeal BareStone™ panels incorporates waterblocking agents that are embedded in the sheets. That is, the panels are delivered ready to install and do not require a finish applied. Note that the back face of the panel is clearly marked. It may exhibit production marks and should not be confused with the front.

Where panels are cut on-site, treatment of the cut edges is required. Apply BareStone™ Touch-up Kit liberally by brush.

## CONTROL JOINTS

Control joints in the ExpressWall™ system are required to correspond to control joints in the supporting structure and anywhere that significant structural movement is expected.

A horizontal control joint is required beneath slabs to accommodate any expected deflection. The magnitude of the deflection must be verified by the building designer. Refer to the 'Construction Details' section.

Vertical control joints to allow for differential movement are required at the supports of fascia trusses and at the junction of structural elements of different stiffness, such as between concrete columns and stud frames. Refer to the 'Construction Details' section.

## DURABILITY

Cemintel ExpressPanel™ & CeminSeal BareStone™ panels have many properties which make them very durable products, including:

- Immune to permanent water damage in both short and long-term exposure.
- Will not rot, burn or corrode, and is unaffected by termites, air, steam, salt and sunlight.
- Not adversely affected over a temperature range of 0°C to 95°C.

## MAINTENANCE

The durability of the ExpressWall™ system can be enhanced by periodic inspection and maintenance. Inspections should include examination of the coatings, flashings and seals. Paint finishes must be maintained in accordance with the manufacturer's recommendations.

The natural look of BareStone™ panels is expected to change little over time, and the original appearance can generally be maintained by washing with water. Note that if detergents are used they should be removed with clean water. BareStone™ has water blocking agents embedded in the sheet. To retain its water blocking properties, Cemintel recommends recoating BareStone™ panels with a clear sealer every 10 years.

BareStone™ panels may also be coated with a water based exterior-grade acrylic paint or a clear sealer, and then maintained in accordance with the manufacturer's specifications. The coating product must have suitable durability and be recommended by the manufacturer for use with masonry substrates.

Any cracked or damaged finish or seals which would allow water ingress, must be repaired immediately by recoating or resealing the effected area, or by removing the panel and replacing gaskets. Any damaged flashings, sheets or gaskets must be replaced as for new work.

For details on system requirements in different environments, refer to the 'Corrosivity Categories' section. It is the designer's responsibility to determine the Corrosivity Category, based on site conditions.

The durability of the system can be increased by the additional treatment of steelwork, and by painting all exposed sealants to the sealant manufacturer's recommendations. In corrosivity category C4, barriers to reduce the ingress of salt laden air are required.



**Table 3: Requirements for Corrosive Environments**

Corrosivity Category (AS4312)	Exposed Head Screws	Countersunk Screws	Joints	Additional Maintenance
C1 : Very Low C2 : Low	Class 3 or Stainless Steel	Class 3	Sealed or Expressed	–
C3 : Medium	Class 3 or Stainless Steel*	Class 3	Sealed or Expressed	Wash-down
C4 : High	Not Suitable	Class 3	Sealed	Wash-down
C5 : Very High	Not Suitable	Not Suitable	–	–

Table Notes:

- Sealed Joints: All horizontal and vertical joints must be completely filled with sealant. Refer to FIG 31 and 32.

Wash-down:

- All walls must be sufficiently exposed from above so that rain can perform natural wash-down of the wall.
- OR
- Walls which are protected by soffits above must be washed down twice per year, to remove salt and debris build-up, particularly at joints.
- \* A white deposit may develop on stainless screw heads over time. This can be prevented by regular wash down of the façade and screw heads.

## CORROSIVITY CATEGORIES

Corrosivity categories are as described in AS4312 - Atmospheric corrosivity zones in Australia. The code has methods for determining categories as well as maps and tables of major population centres.

### C1: Very Low

Generally inside buildings, semi-sheltered locations away from marine or industrial influence, and some alpine regions.

### C2: Low

Dry, rural areas, away from the coast or sources of pollution. Most areas of Australia at least 50 kilometres from the coast, which can extend to within one kilometre from quiet, sheltered seas. Most inland towns, such as Canberra,

Ballarat, Toowoomba and Alice Springs, and suburbs of cities on sheltered bays (Brisbane, Melbourne, Hobart) that are more than one kilometre from the sea. Adelaide suburbs more than 6 kilometres from the coast in the southern suburbs, through to 3 kilometres from the coast in the northern suburbs.

### C3: Medium

Coastal areas with low salinity, extended by factors such as wind, topography and vegetation. Sheltered areas such as Port Philip Bay 50 metres from the shoreline to about one kilometre inland. Around less sheltered bays such as Adelaide to about 3 to 6 kilometres inland. Along ocean front areas with breaking surf and significant salt spray extending from about one kilometre inland to between 10 and 50 kilometres inland, depending on the strength of prevailing winds and topography. Includes much of the metropolitan areas of Wollongong, Sydney, Newcastle and the Gold Coast, most of the Yorke Peninsula South Australia, and from Victor Harbour to the Victorian border, extending between 30 and 70 kilometres inland. Urban and industrial areas with low pollution levels, and for several kilometres around large industries such as steelworks and smelters.

### C4: High

Around sheltered bays up to 50 metres inland from the shoreline. Areas with rough seas and surf, extending from several hundred metres inland to about one kilometre inland and depends on winds, wave action and topography. Up to 1.5 kilometres downwind of large industrial plants.

### C5: Very High

Offshore and on the beachfront in regions of rough seas and surf beaches, and inland for several hundred metres, e.g. around Newcastle extending over half a kilometre from the coast. Aggressive industrial areas where the environment may be acidic with a pH of less than 5.

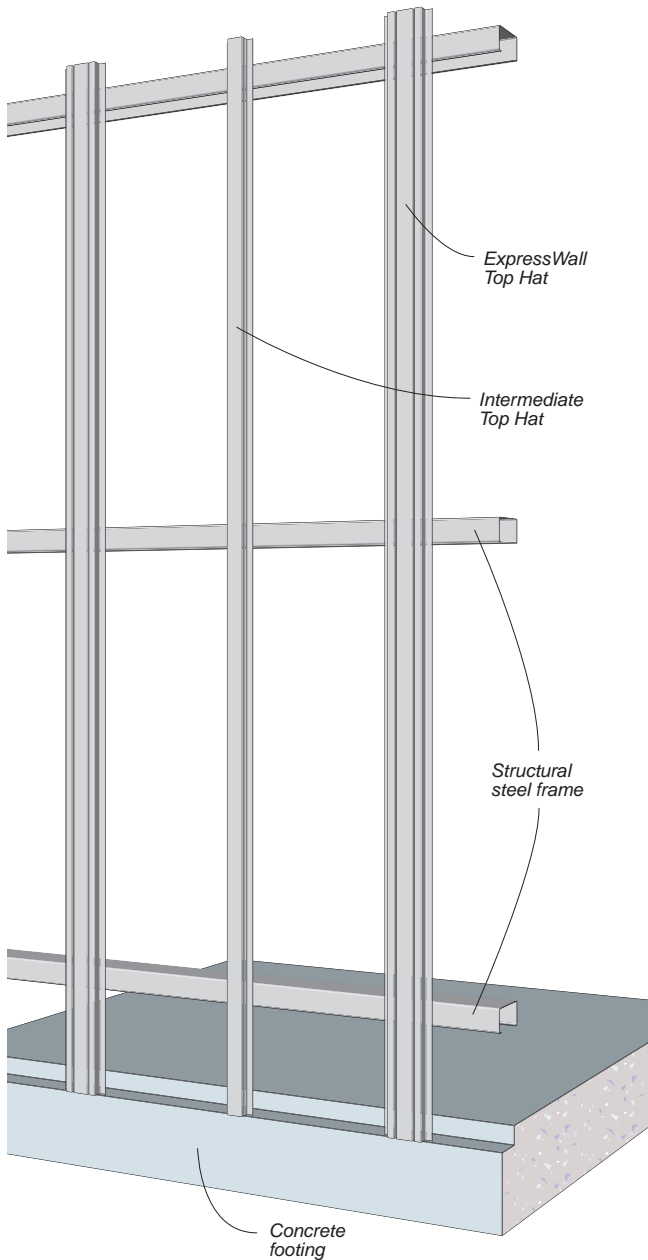


## STRUCTURAL SUPPORT

ExpressWall™ Top Hats and Intermediate Top Hats must be installed vertically, and supported by a primary structural system.

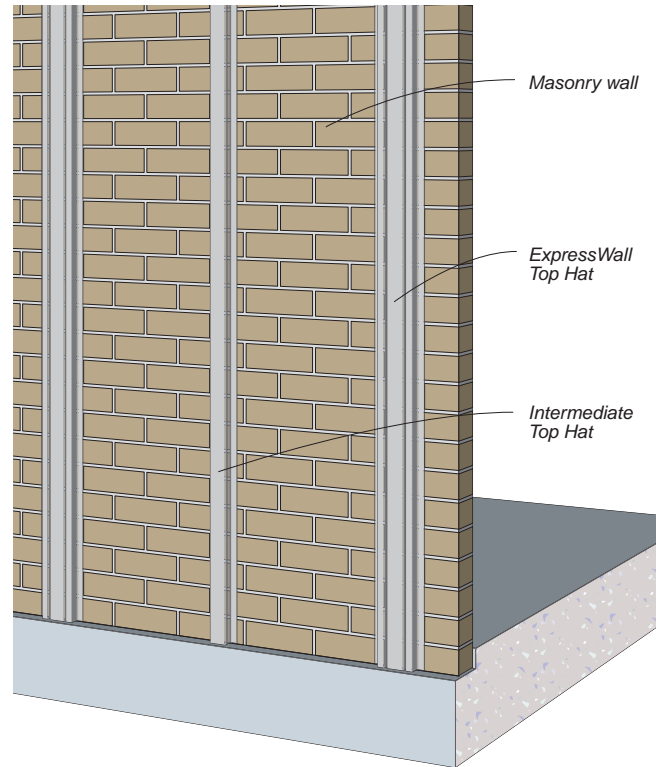
ExpressWall™ top hats can be fixed to horizontal structural steel framing which is commonly used for large walls and buildings.

**FIG 1: Fixing to Structural Steel Framing**



ExpressWall™ framing can also be fixed over masonry or concrete walls. All top hat connections must be designed by the project engineer.

**FIG 2: Fixing to Existing Masonry Wall**

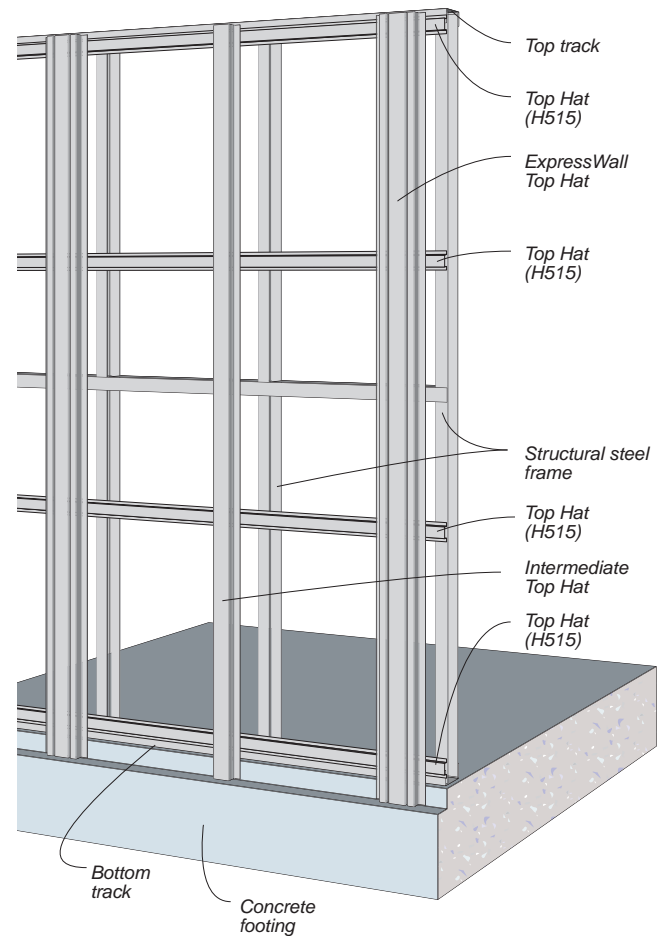




Alternatively, ExpressWall™ framing can be fixed to appropriately designed steel or timber framing. This is commonly used for small walls and buildings. The frame must be designed to support the top hats at the top and bottom of the wall, and at cross members within the span of the wall. The connection of the cross member to the frame requires engineering design.

AS/NZS1170.0 Table C1 suggests that support framing be designed for a maximum deflection of span/250.

**FIG 3: Fixing to Steel or Timber Framing**



**Table 4: Vertical Spacing of H515 Top Hats – Horizontal Top Hats Fixed to Three or More Studs**

Wind Load kPa	Vertical Spacing of H515 Top Hats (mm)					
	Stud Spacing (mm) – Studs 0.75BMT			Stud Spacing (mm) – Studs 1.15BMT		
	300	450	600	300	450	600
1.00	1768	1920	1473	2537	1974	1769
1.50	1179	1280	982	1691	1316	1179
2.00	884	960	737	1268	987	885
2.50	707	768	589	1015	790	708
3.00	589	640	491	846	658	590
3.50	505	549	421	725	564	505
4.00	442	480	368	634	494	442
4.50	393	427	327	564	439	393
5.00	354	384	295	507	395	354
5.50	322	349	268	461	359	322

Notes:

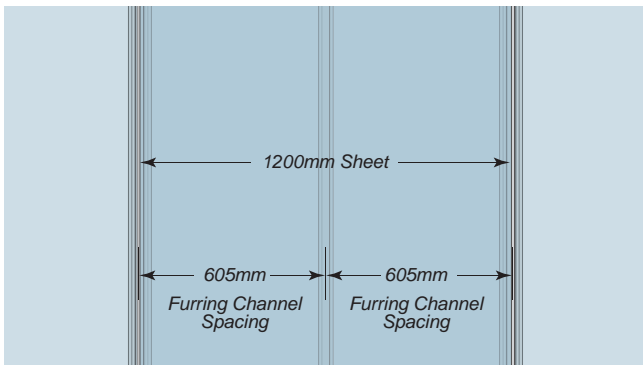
Top Hat to stud connection is 2 x N°12G screws through top hat legs. Wind loads are Ultimate Limit State. Top Hat serviceability deflection < Span / 240. Stud frame design by others.

## PANEL LAYOUT

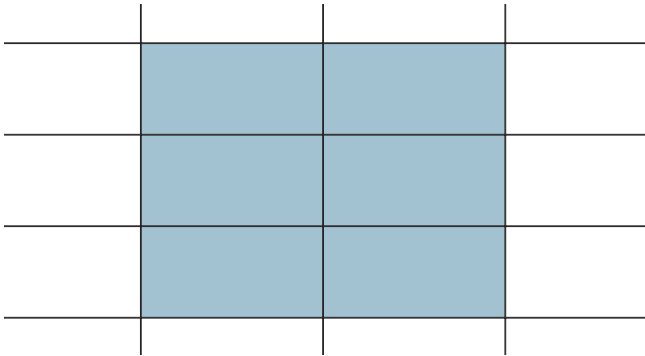
Panel layout for the ExpressWall™ system involves the coordination of the following:

- Aesthetic design.
- Top hat spacing to allow for expressed joint widths. Refer to below detail.
- BareStone™ and ExpressPanel™ size and joint width. (Horizontal joints are 10 to 20mm wide and vertical joints are 6 to 20mm wide).
- Type of structural support.
- Openings – size and location.
- Building size.
- Building control joint location.

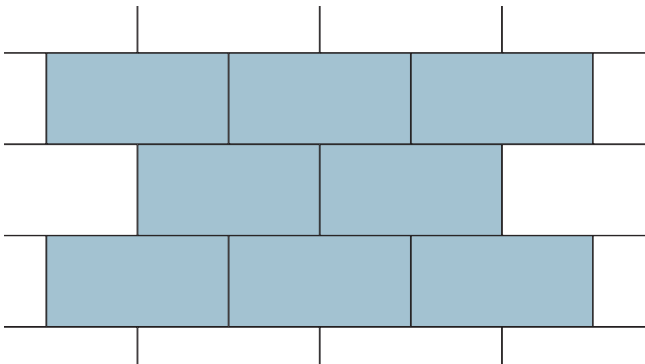
**FIG 4: Typical Top Hat Set-out – 1200mm Width Vertical Panels with 10mm Joints shown**



**FIG 5: Horizontal Sheeting Aligned Grid Pattern**



**FIG 6: Horizontal Sheeting Half-bond Pattern**

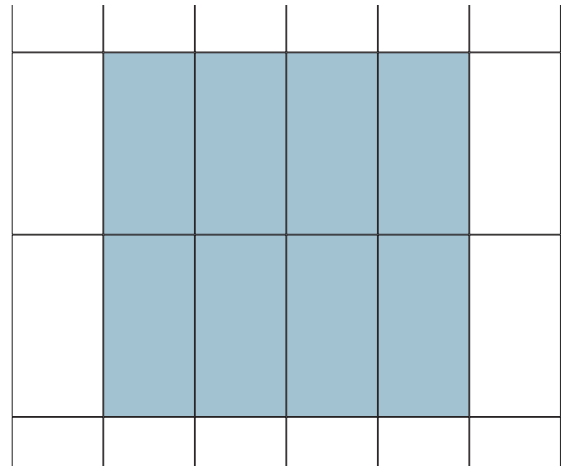


Panel layout can be in a grid pattern where vertical and horizontal joints are continuous. Panels may be positioned vertically, horizontally or rotated up to 45° in the plane of the wall.

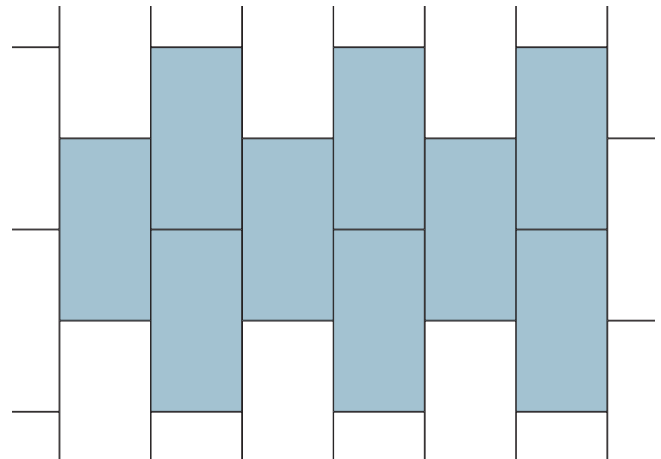
In these layouts, construction joints may be positioned behind any vertical or horizontal sheet joint. For details on control joints, refer to the 'Construction Details' section.

Panel layout can also be in a vertical or horizontal half-bond pattern where some joints are discontinuous.

**FIG 7: Vertical Sheeting Aligned Grid Pattern**



**FIG 8: Vertical Sheeting Half-bond Pattern**



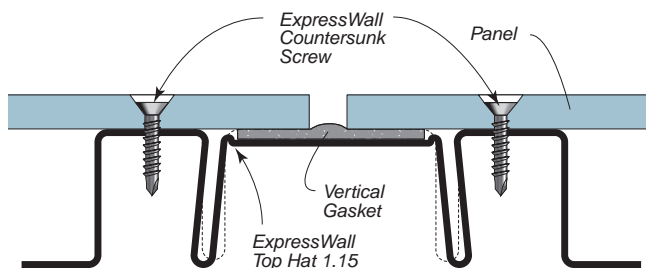
## GASKETS

Gaskets are used at horizontal and vertical joints to maintain weather resistance.

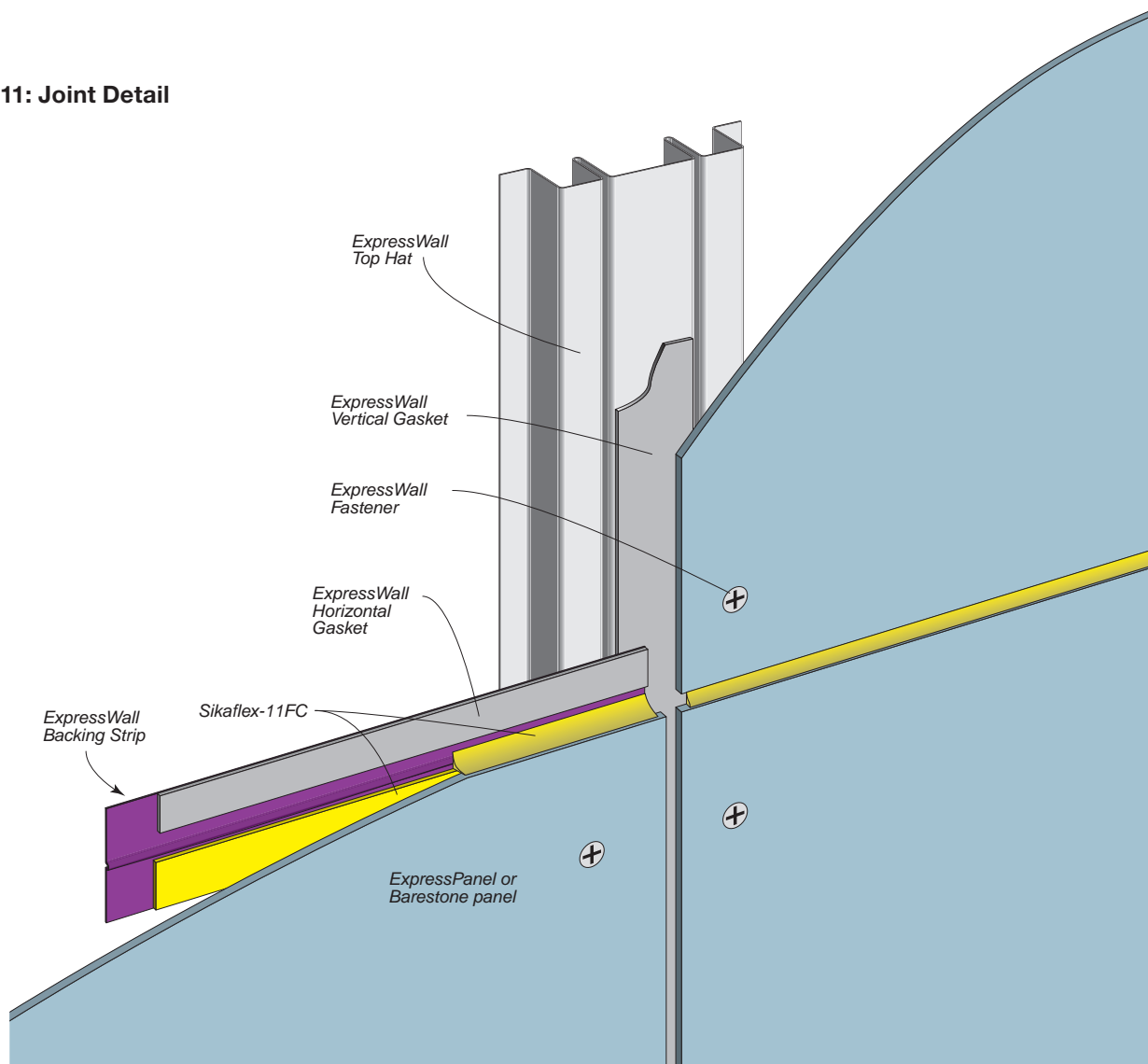
The vertical gasket is made from EPDM rubber which has good weathering and UV resistance. It has very low compression set and water permeability.

ExpressWall™ Top Hat 1.15 has been designed to elastically deform when pressure is applied during panel fixing. ExpressWall™ Top Hat 0.75 has a recessed area to accept the gasket. These designs ensure that only the required pressure is applied to the vertical gasket.

**FIG 9: Vertical Gasket Compression**

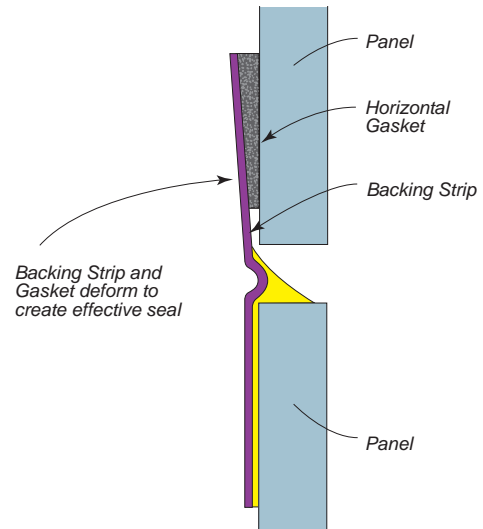


**FIG 11: Joint Detail**



The horizontal gasket is a closed cell PVC Nitrile foam which has a high resistance to abrasion and maintains its properties at high temperatures. It is highly conformable and has excellent resistance to water penetration.

**FIG 10: Horizontal Gasket Compression**



## TOP HAT FRAMING

The design capacities of the ExpressWall™ system are in limit state format and intended for use with AS/NZS1170.2. The system is suitable for cyclonic wind zones, Region C and D, and has been tested in accordance with AS4040.3 1992.

To obtain equivalent permissible load capacity divide the 'Ultimate Wind Capacities' in Table 5 or Table 6 by 1.5.

The top hat capacities have been calculated in accordance with AS4600 : Cold Formed Steel Structures and are applicable for 0.75 and 1.15 BMT ExpressWall™ Top Hats and for 1.15 BMT Intermediate Top Hats. The deflection of the top hats as detailed in these tables is no more than span/250 when subjected to serviceability wind loads of 68% of ultimate wind loads.

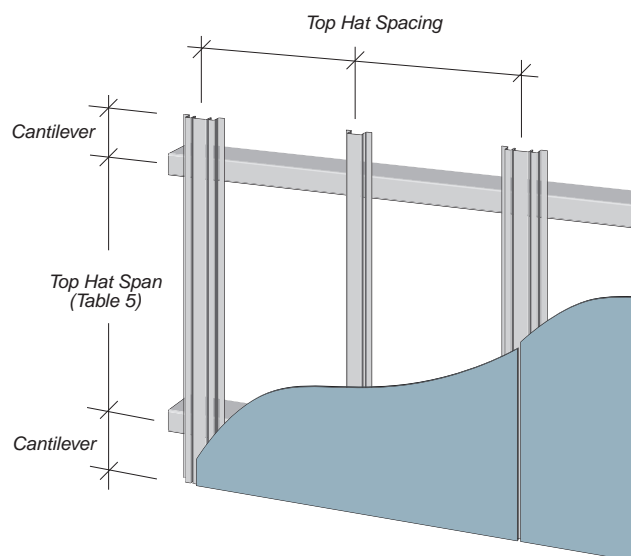
**TABLE 5: Ultimate Wind Capacity**  
(Refer to FIG 12)

### Single Span Installation

Top Hat Span (mm)	Nominal Top Hat Spacing*	
	450mm	600mm
	Ultimate Wind Capacity (kPa)	Ultimate Wind Capacity (kPa)
900	8.19	6.14
950	7.35	5.52
1000	6.63	4.98
1100	5.48	4.11
1200	4.60	3.45
1300	3.92	2.94
1400	3.38	2.54
1500	2.95	2.21
1600	2.54	1.90
1700	2.11	1.59
1800	1.78	1.34
1900	1.51	1.14
2000	1.30	0.97
2100	1.12	0.84
2200	0.98	0.73

\* Nominal top hat spacings of 450mm and 600mm are suitable for actual spacings of up to 460mm and 610mm respectively. For panels fixed to a minimum of three top hats, with top hat spacing of 400mm nominal (410mm max.), and with single or double top hat span of up to 900mm, the ultimate wind capacity is 7.0kPa.

**FIG 12: Single Span Installation**





**TABLE 6: Ultimate Wind Capacity  
(Refer to FIG 13)**

**Double Span Installation**

Top Hat Span (mm)	Nominal Top Hat Spacing*	
	450mm	600mm
	Ultimate Wind Capacity (kPa)	Ultimate Wind Capacity (kPa)
900	6.78	5.09
950	6.23	4.67
1000	5.73	4.30
1100	4.91	3.69
1200	4.26	3.19
1300	3.73	2.80
1400	3.29	2.47
1500	2.93	2.20
1600	2.59	1.94
1700	2.29	1.72
1800	2.05	1.54
1900	1.84	1.38
2000	1.66	1.24
2100	1.50	1.13
2200	1.03	1.03

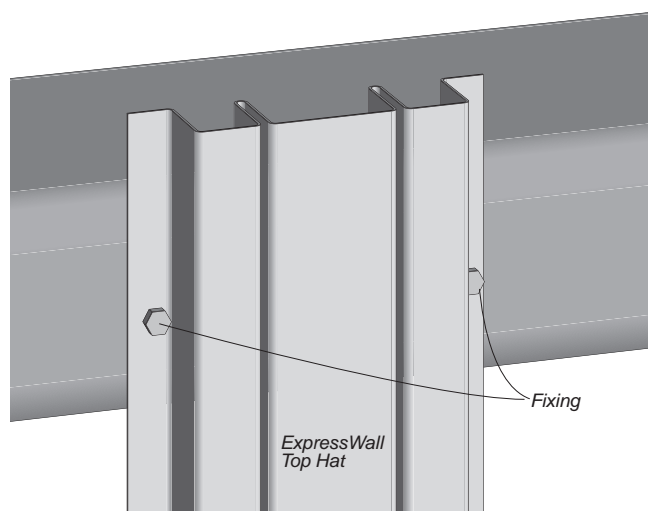
\* Nominal top hat spacings of 450mm and 600mm are suitable for actual spacings of up to 460mm and 610mm respectively. For panels fixed to a minimum of three top hats, with top hat spacing of 400mm nominal (410mm max.), and with single or double top hat span of up to 900mm, the ultimate wind capacity is 7.0kPa.

**TOP HAT FIXING (Refer to FIG 14)**

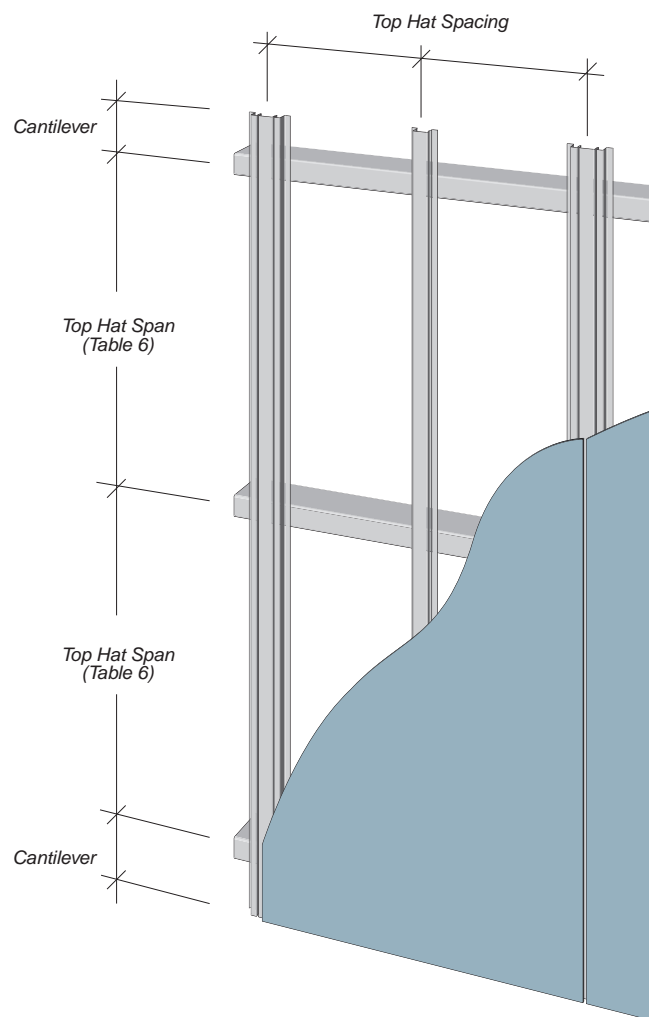
Note: It is the responsibility of the project engineer to specify the connection of the top hats to the support structure.

Each fastener is required to have a minimum 14mm diameter head, such as a 12g hex head screw, for satisfactory top hat performance. In cyclonic areas, minimum 14g hex head screws and 1.15 BMT top hats are required.

**FIG 14: Top Hat Fixing**

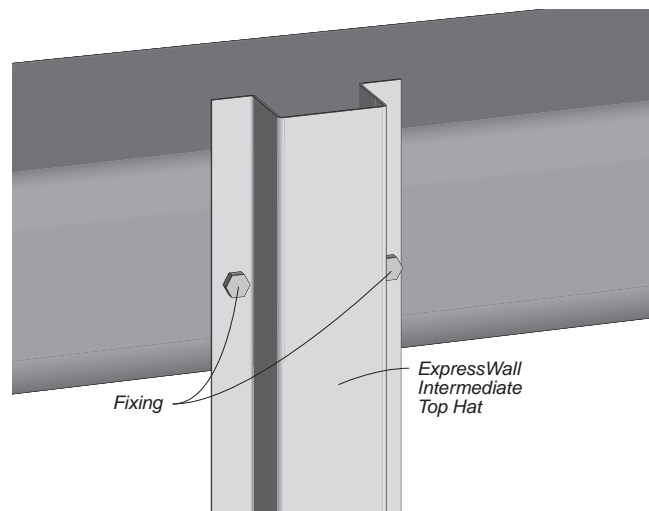


**FIG 13: Double Span Installation**



If adjacent spans differ by more than 25% then single span values must be adopted.

Maximum Cantilever = 0.2 x Adjacent Top Hat Span



# PANEL PREPARATION

ExpressPanel™ and BareStone panel preparation may be performed off-site prior to installation. All cut panels must have edges painted as noted in Panel Finishes.

Prior to lifting into place:

- 1. Drill holes through the panels for screws, and countersink if required.
- 2. Affix horizontal gasket to backing strips.
- 3. Affix backing strips behind the top edge of panels and allow adhesive to set.

## PANEL FIXING SET-OUT

Panels must be fixed in accordance with the following table. Appropriate panel fixing layout should be selected for the project Design Wind Pressure, Top Hat Spacing and Panel Fixing Type. (Refer to FIG 16 and 17).

For curved facades, please refer to the ‘Curved Façades’ section in this guide.

Table 7: Panel Fixing Requirements

Design Wind Pressure (Ultimate) (kPa)	Max. Top Hat Spacing (mm)		Max. Fixing Spacing (mm)	
	Panel Fixed to Two Top Hats See FIG 16.	Panel Fixed to Three or more Top Hats See FIG 17.	at Panel Edge 'X' (mm)	at Intermediate Top Hat 'Y' (mm)
1.0	600	600	600	600
1.5	450	600	600	600
2.0	450	600	400	400
2.5	450	600	400	350
3.0	450	600	400	300
3.5	400	600	350	250
4.0	400	450	300	300
4.5	400	450	300	250
5.0	300	450	300	200
5.5	300	450	250	200
6.0	300	450	250	200
6.5	300	400	250	200
7.0	300	400	250	200

FIG 16: Panel Fixed to Two Top Hats Only

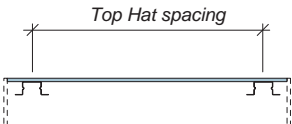
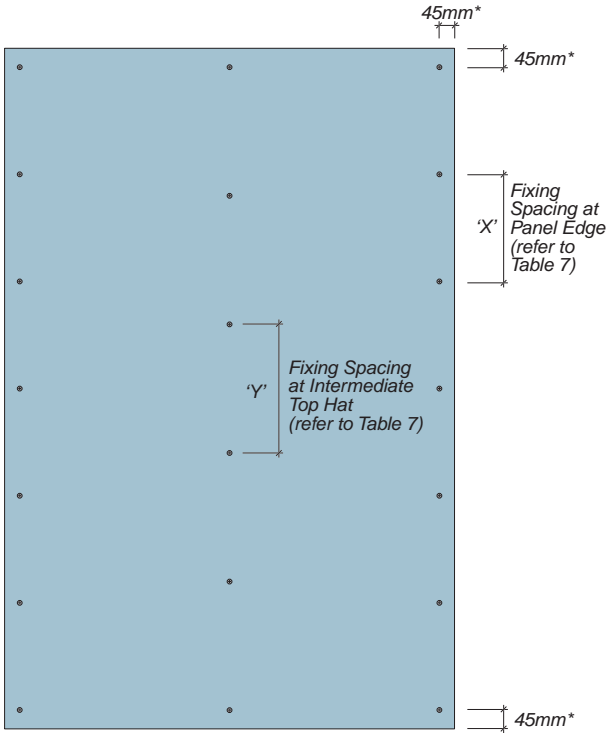
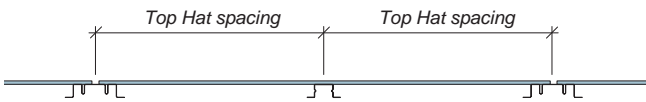


FIG 15: Panel Fixing Set-out



\* Minimum distance of fastener to edge of 35mm.

FIG 17: Panel Fixed to Three or More Top Hats



## PRE-DRILLING HOLES

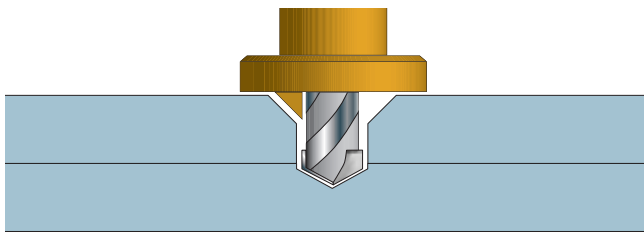
Holes for screws must be pre-drilled. Use the recommended counter sinking tool for countersunk head screws, and a 6mm masonry bit for exposed head screws. Holes must be 6.2mm to 6.3mm in diameter. Do not use hammer action when drilling. Clean dust out of holes.

**FIG 18: Fastener Pre-drilling for Countersunk Head Screws**

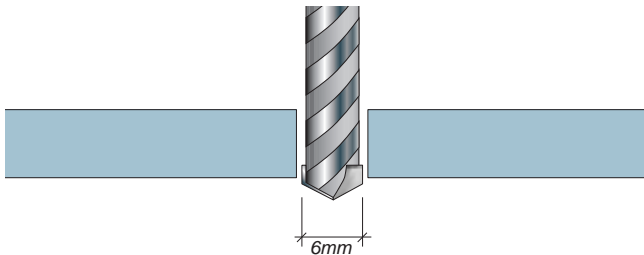


Note: Use only the recommended tool as supplied by CSR. The use of other tools for this purpose may reduce fixing capacity or reduce the weather resistance of the system.

HINT: One way of drilling holes is to drill the top sheet of a pack with the counter sinking drill set to approximately 12mm depth. This will give a starter hole on the sheet below, saving on set out time.



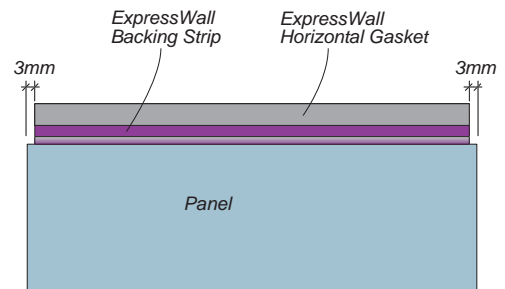
**FIG 19: 6mm Masonry Drill for Exposed Head Screws**



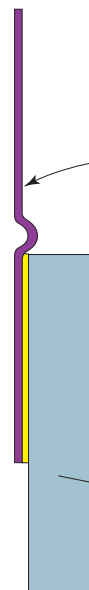
## BACKING STRIP FIXING

Backing strip is installed behind all horizontal panel joints. Backing strip is to be 6mm shorter overall than the width of the panel (cut to length if necessary) and adhered to the back of the panel (along the top edge) with Sikaflex-11FC.

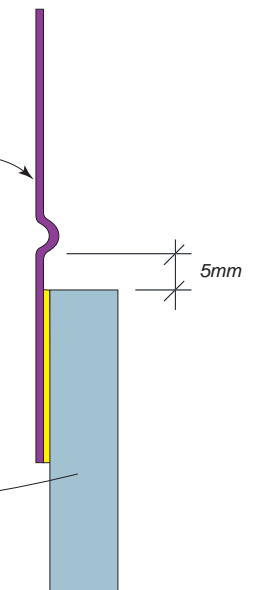
**FIG 20: Backing Strip Positioning**



**For 10mm Horizontal Joint**



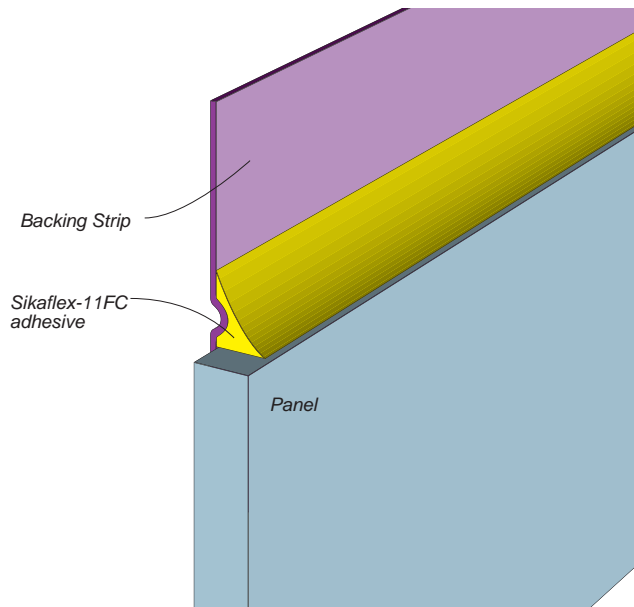
**For 20mm Horizontal Joint**



Backing strip is adhered to the back of panels with a continuous bead of Sikaflex-11FC. The bead must be a suitable size so that when pressed flat, adhesive fully covers the interface between the backing strip and the panel. The adhesive must be allowed to cure before the panel is installed.

A fillet of Sikaflex-11FC is then placed along the top edge of the panel. This ensures that the joint drains and that salt and dirt will not build up at the joint.

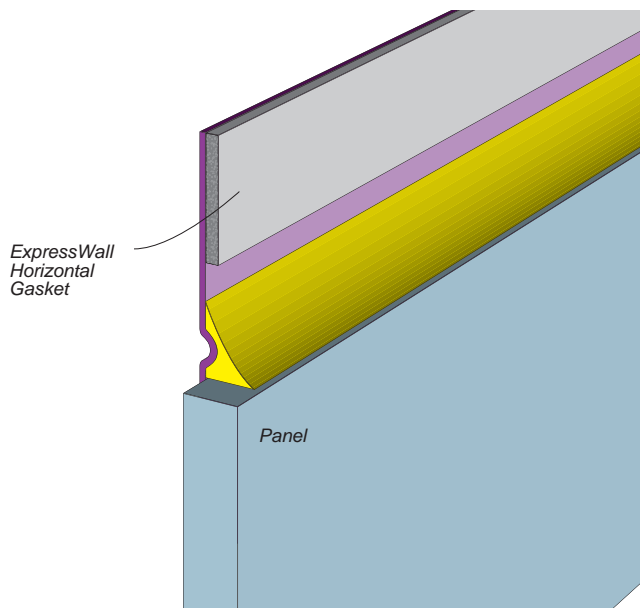
**FIG 21: Horizontal joint**



## HORIZONTAL GASKET FIXING

Apply the ExpressWall™ Horizontal Gasket to the upper section of the backing strip, keeping the gasket in line with the top of the backing strip. (Alternatively, this can be done prior to fixing the backing strip to the panel).

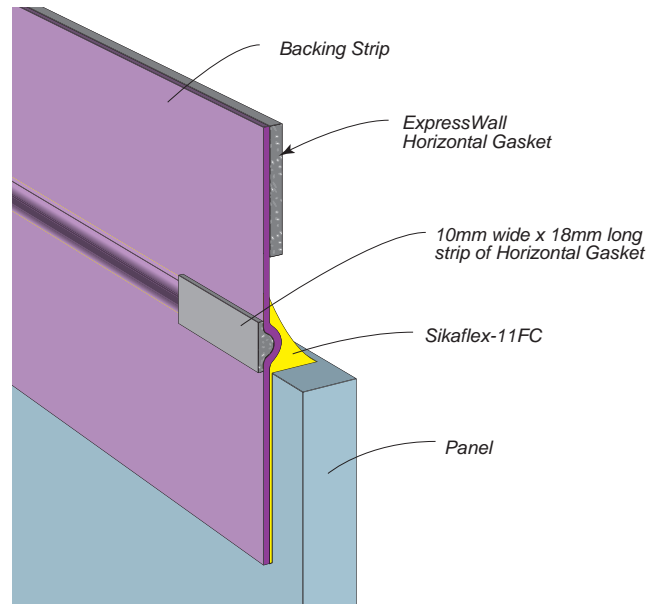
**FIG 22: Horizontal Gasket Installation**



## SEALING ENDS OF BACKING STRIP

To seal the groove in the backing strip at the ends, apply a small section of gasket to the rear of the backing strip. This will be forced into the recess and seal the end of the strip. Alternatively use Sikaflex-11FC to fill the groove.

**FIG 23: Sealing Ends of Backing Strip**





## PANEL INSTALLATION

Panels must be in a dry condition when fixed. If panels become wet after installation, allow to dry before covering screw heads.

Panels must only be fixed using Cemintel ExpressWall™ Screws. BareStone™ panels must only be fixed using Exposed Head Screws.

Installing panels is a three step process:

1. Install Vertical Gaskets to ExpressWall™ Top Hats.
2. Screw fix Panel to top hats.
3. Cover fastener heads (when using countersunk head screws).

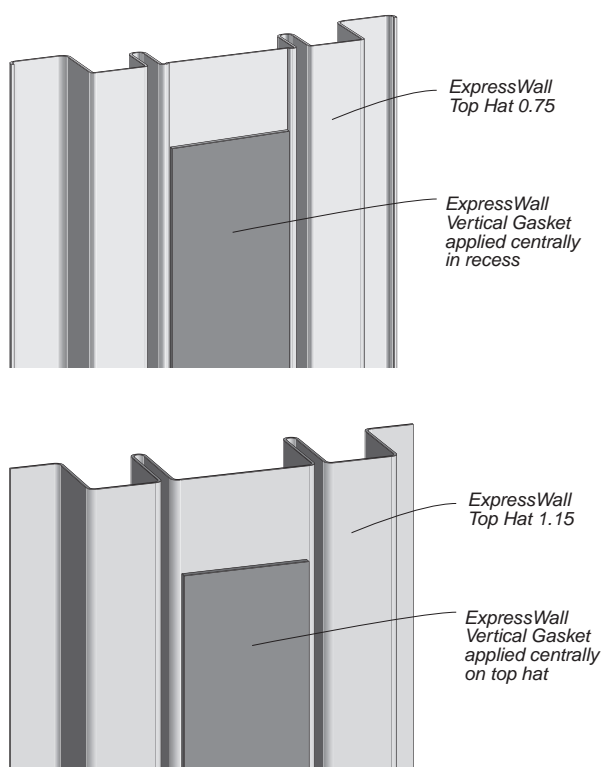
CSR recommends the use of torque control screw guns.

If it is necessary to remove and replace a panel, avoid reusing screw holes in the top hats by adjusting fixing locations in the panel.

### INSTALLING VERTICAL GASKET

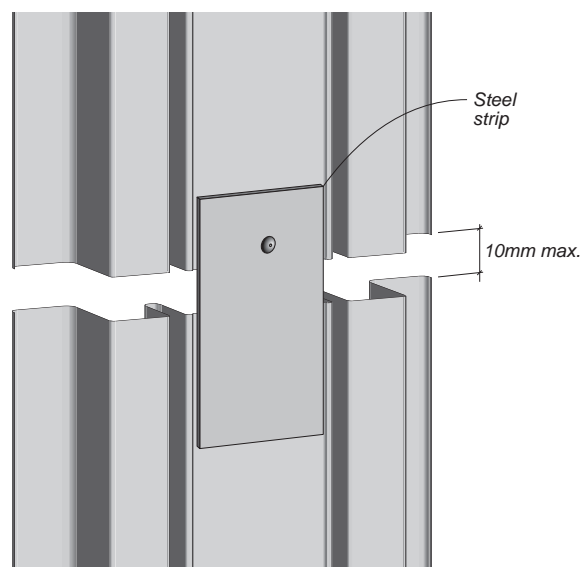
Inst all vertical gasket to central section of the ExpressWall™ Top Hat for the full extent of panels. Be careful not to stretch the gasket when installing. When joining gasket, cut ends cleanly and push together before adhering.

**FIG 24: Vertical Gasket Installation**



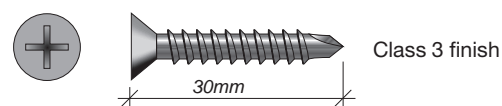
When top hat is discontinuous, butt ends together tightly and continue gasket over the joint. If a gap is present, install a steel strip to support the gasket.

**FIG 25: Gasket Support at Discontinuous Joint (0.75 Top Hat shown)**

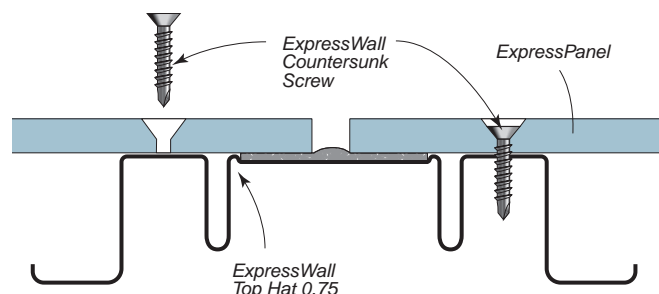


### FIXING PANELS USING COUNTERSUNK HEAD FASTENERS

Drive the countersunk head screw into the top hat using an electric screw gun. CSR recommends the use of a screw gun with torque control to prevent overdriving of screws.



**FIG 26: Fixing with Countersunk Screws to Top Hat 0.75**

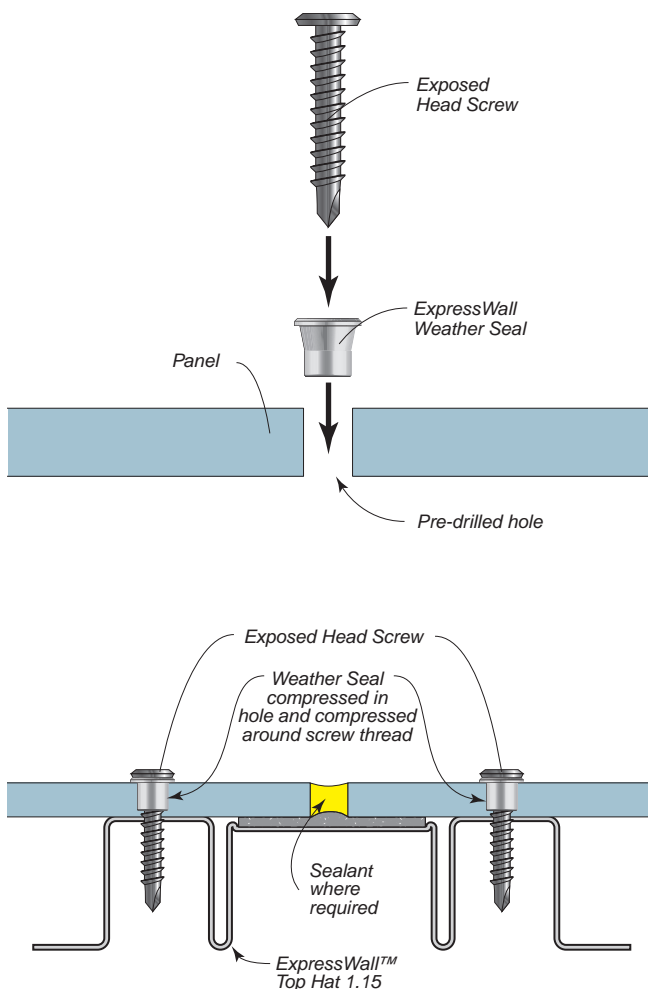


## PANEL FIXING USING EXPOSED HEAD FASTENERS

Install the ExpressWall™ Weather Seal into the pre-drilled hole in the panel. Drive the exposed head screw through the weather seal and into the top hat using an electric screw gun. CSR recommends the use of a screw gun with torque control to prevent overdriving of screws.

Exposed head screws can only be used with 1.15 BMT top hats as screws can strip in the lighter gauge.

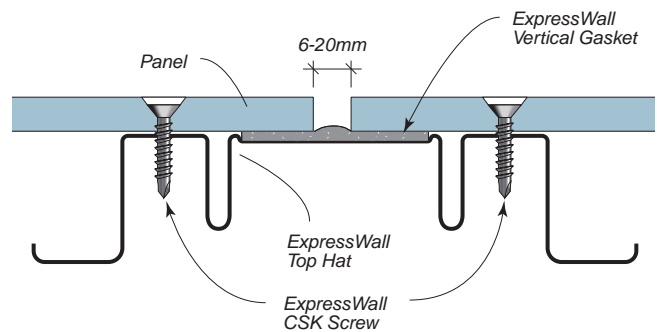
**FIG 27: Fixing with Exposed Head Screws**



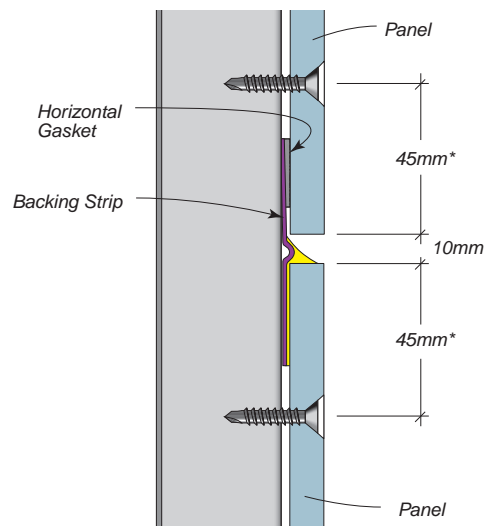
## JOINTS

Panels are generally installed with a nominal 10mm width, horizontal and vertical expressed joints between adjacent panels. Joints up to 20mm nominal width can be formed, provided additional care is taken during installation to ensure that panel edges cover the joint gaskets by a minimum of 10mm.

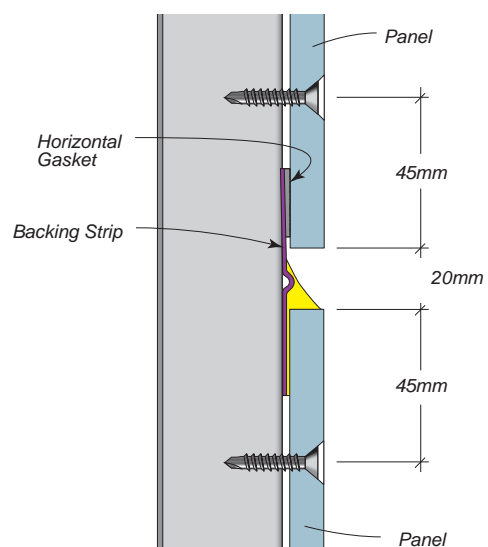
**FIG 28: Vertical Joint Detail**



**FIG 29: 10mm Horizontal Joint Detail**



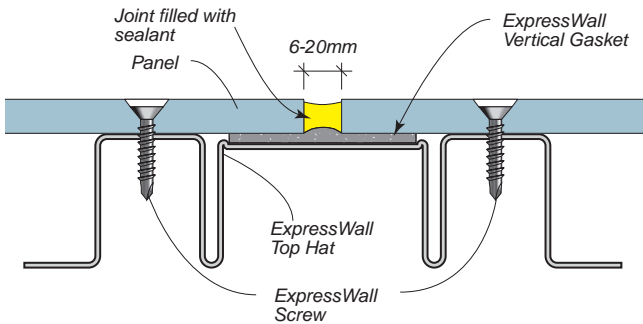
**FIG 30: 20mm Horizontal Joint Detail**



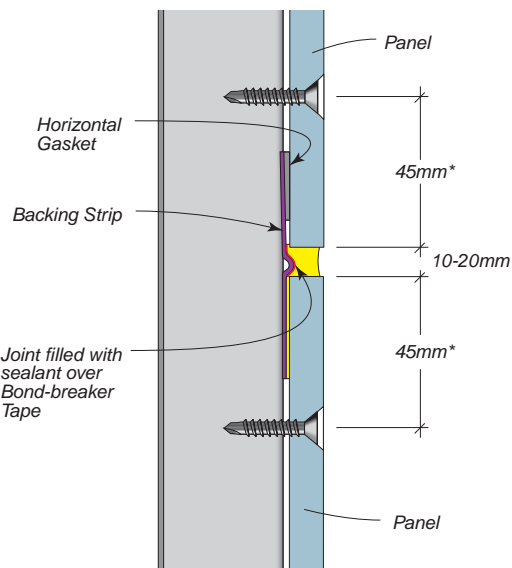
Minimum distance of fastener to sheet edge of 35mm.

For ExpressWall™ systems subjected to design wind pressure in excess of 4.0kPa, or in certain corrosive environments as detailed in 'Corrosivity Categories' section, all horizontal and vertical joints must be filled with recommended joint sealant. Sealant is also required where pre-painted panels are used. Sealant must be installed in accordance with the manufacturer's instructions.

**FIG 31: Sealed Vertical Joint Detail**



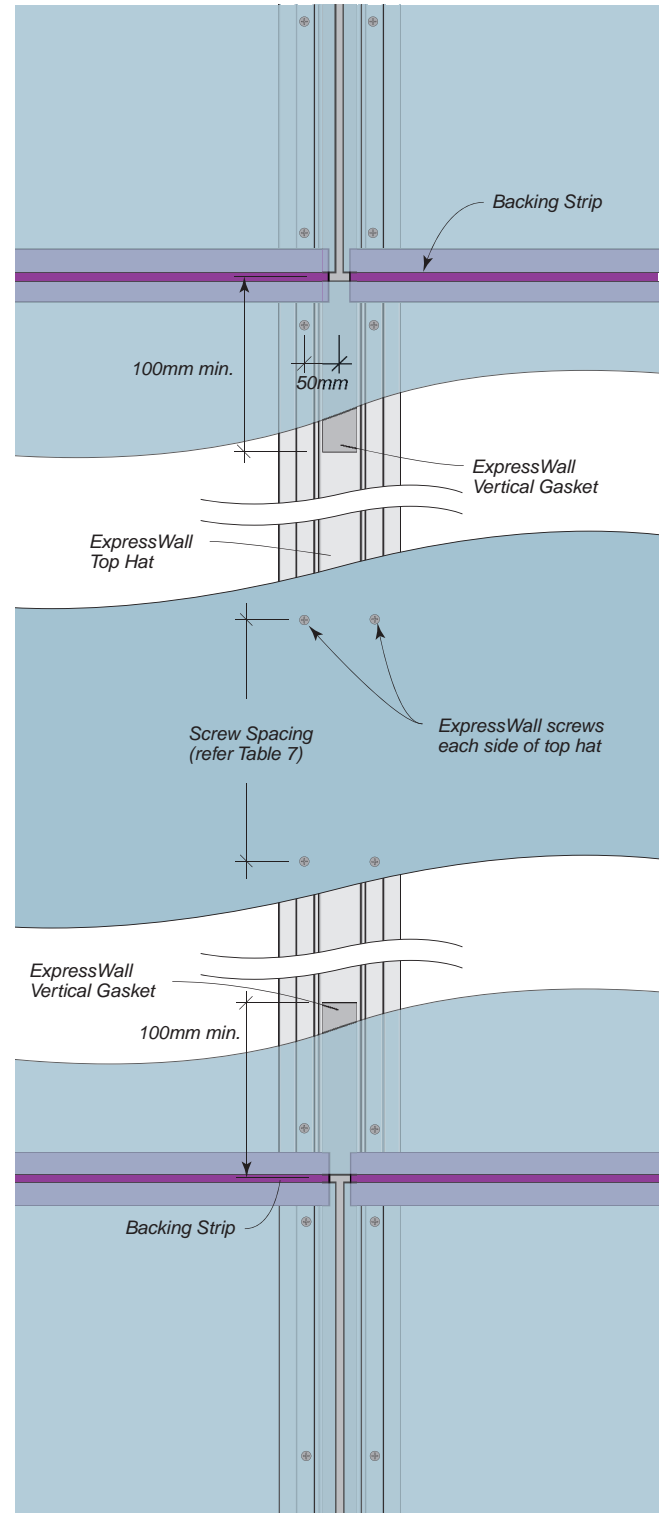
**FIG 32: Sealed Horizontal Joint Detail**



\* Minimum distance of fastener to sheet edge of 35mm.

At the beginning and end of a vertical joint, such as with sheets installed in a half-bond pattern, continue the vertical gasket past the horizontal joint by 100mm minimum. Refer to following detail.

**FIG 33: Vertical Gasket and Fixing Detail for Half-bond Panel Layout**



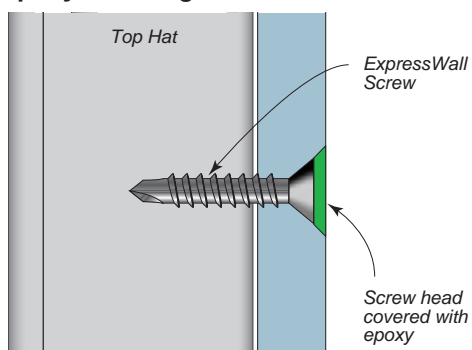
## SCREW HEAD COVERING FOR COUNTERSUNK SCREWS

All countersunk screw heads must be covered with epoxy compound and flush finished with the ExpressPanel™ face.

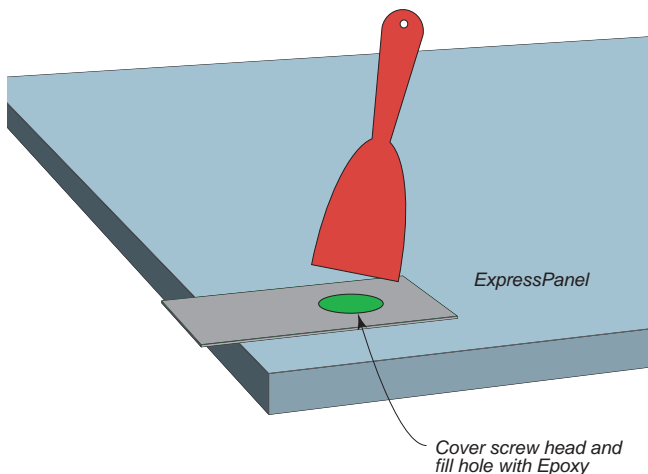
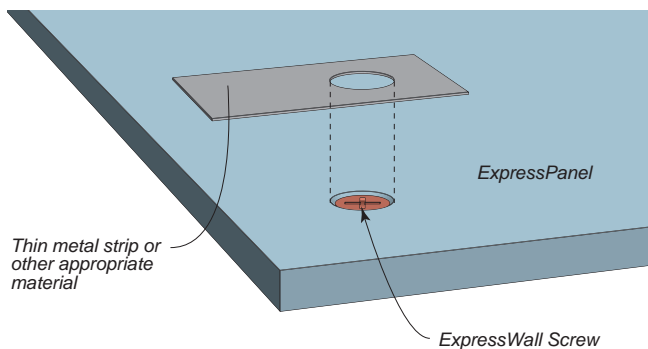
Epoxy shall be installed in the following manner:

- Mix epoxy accurately in accordance with the packaging/manufacturer's instructions.
- Immediately use mixed epoxy.
- Avoid over filling holes, and level off before epoxy fully cures.
- A thin layer of Cemintel™ External Joint Compound may be used to achieve a flush finish.

**FIG 34: Epoxy Covering of Screw Heads**



**HINT:** One way of applying epoxy is through a 20mm hole in thin metal sheet (0.6mm or less) or other suitable material. This will minimise spill-over and allow for some shrink back of the epoxy without having to repeat the application.



## CURVED FAÇADES

Cemintel ExpressPanel™ and BareStone™ panels can be curved to a minimum radius of 10m. The framing must be set out to a true curve to enhance appearance and avoid over-stressing the sheet and fixings. Maximum top hat spacings are to be in accordance with the following table, or closer if required for wind loads.

**TABLE 8: Curved Wall Framing and Façade Panel**

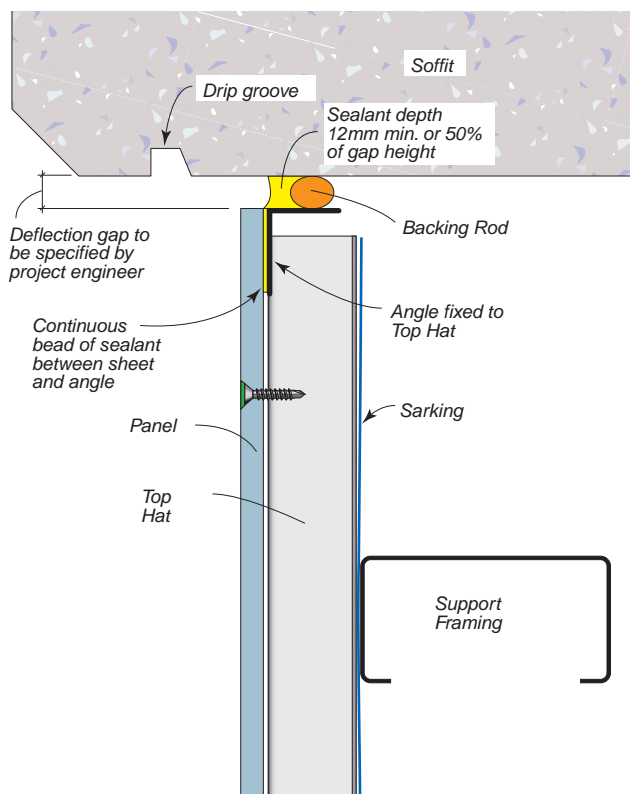
Curve Radii (m)	Maximum Top Hat Spacing (mm)	
	Panel Width 900mm	Panel Width 1200mm or Greater
10m-15m	300*	400*
>15m	450	600

\* Provide 2 additional fixings per metre to each top hat.

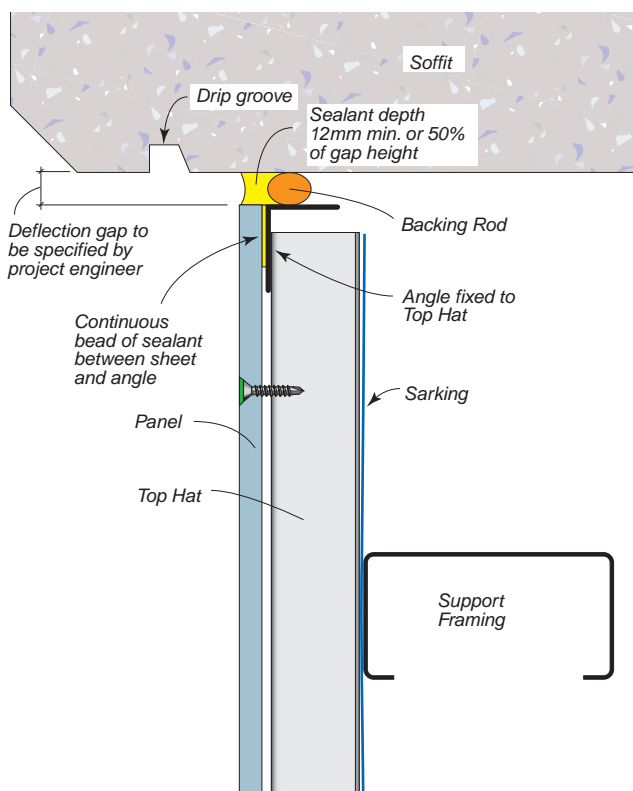


# CONSTRUCTION DETAILS

**FIG 35: Deflection Head with Exposed Joint**



**FIG 36: Deflection Head with Filled Joint**



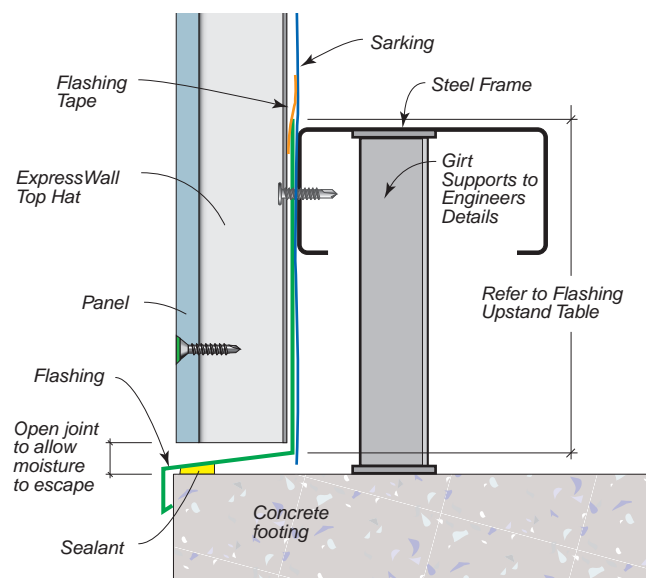
## WALL FLASHINGS

In general, flashings shall be designed and installed in accordance with SAA – HB39 1997 – Installation Code for Metal Roofing and Wall Cladding. Stop ends shall be incorporated with all flashings. All flashings are supplied by others.

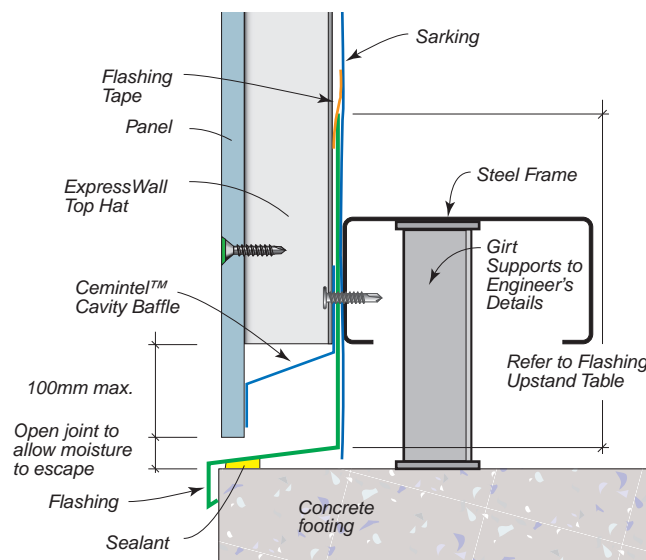
**TABLE 9: Flashing Upstand**

Ultimate Design Wind Pressure (kPa)	Flashing Upstand Minimum (mm)
2.5	150
3.5	200
4.0	250
5.0	300
6.0	350
7.0	400

**FIG 37: Base Detail for Inline Slab**



**FIG 38: Base Detail Corrosivity Category D – Inline Slab**



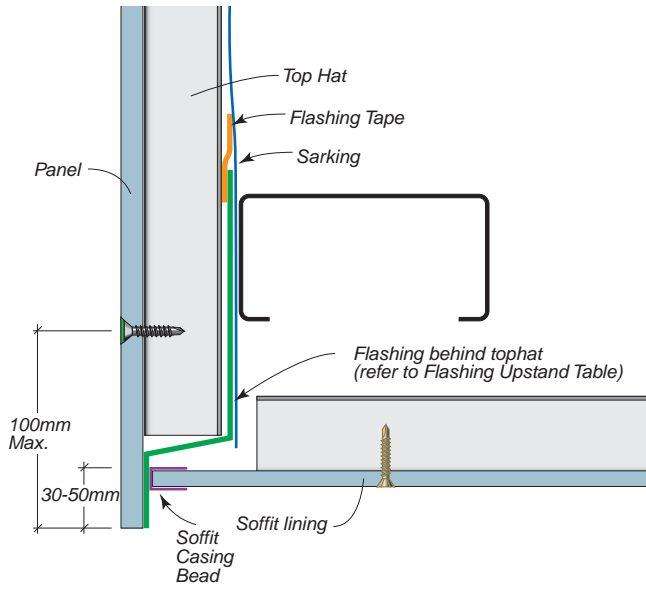
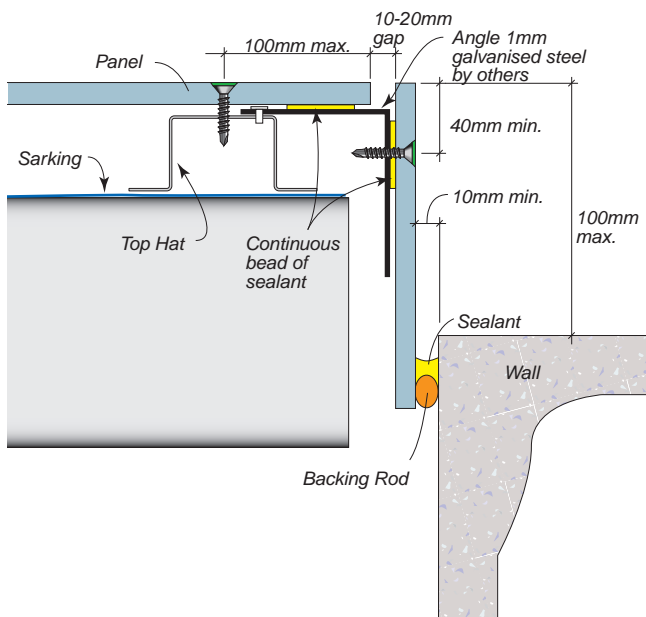
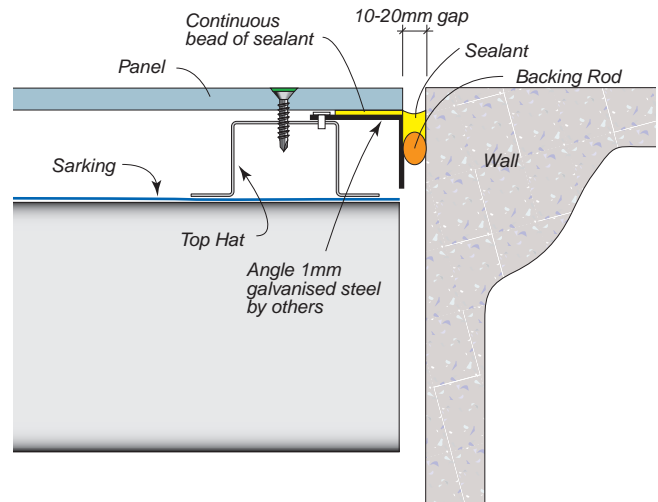
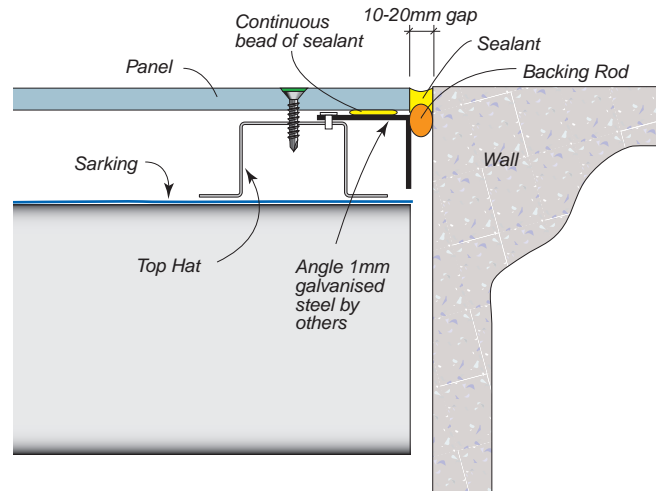
**FIG 39: Framed Soffit Detail**

**FIG 40: Abutment Detail – Option 1**

**FIG 41: Abutment Detail – Option 2**

**FIG 42: Abutment Detail – Option 3**


FIG 43: Internal Corner Detail

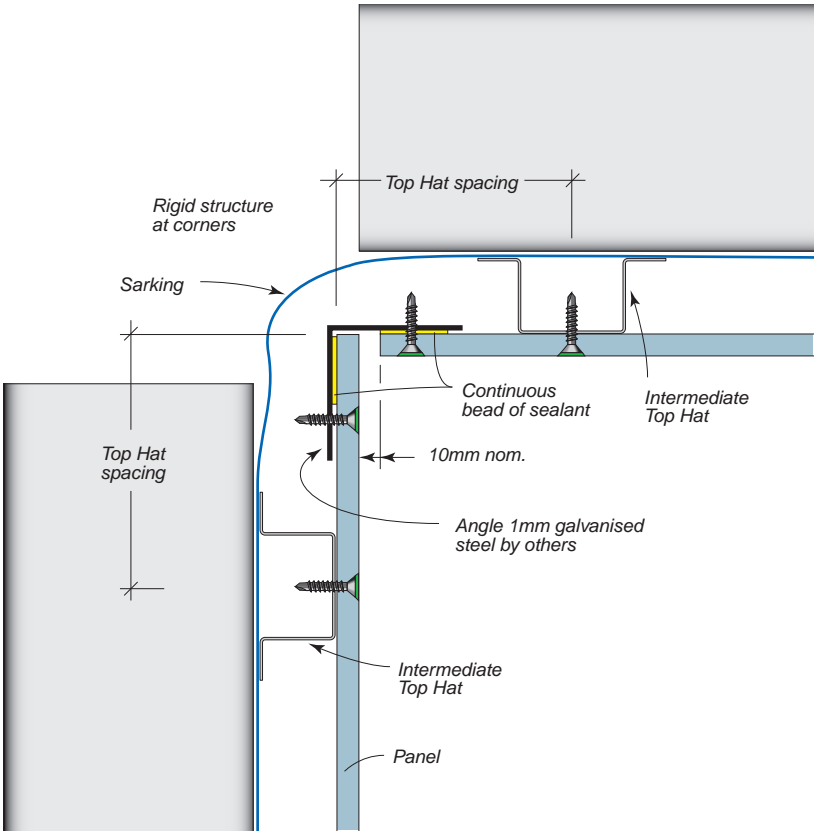
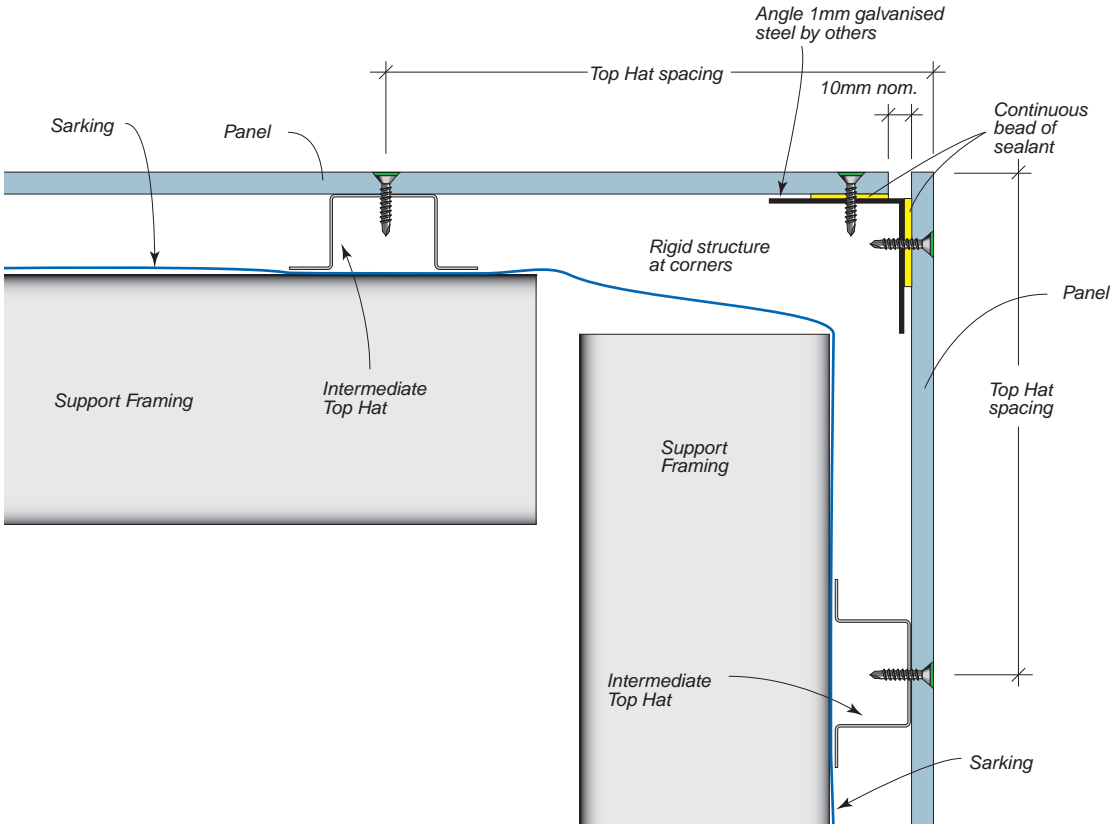
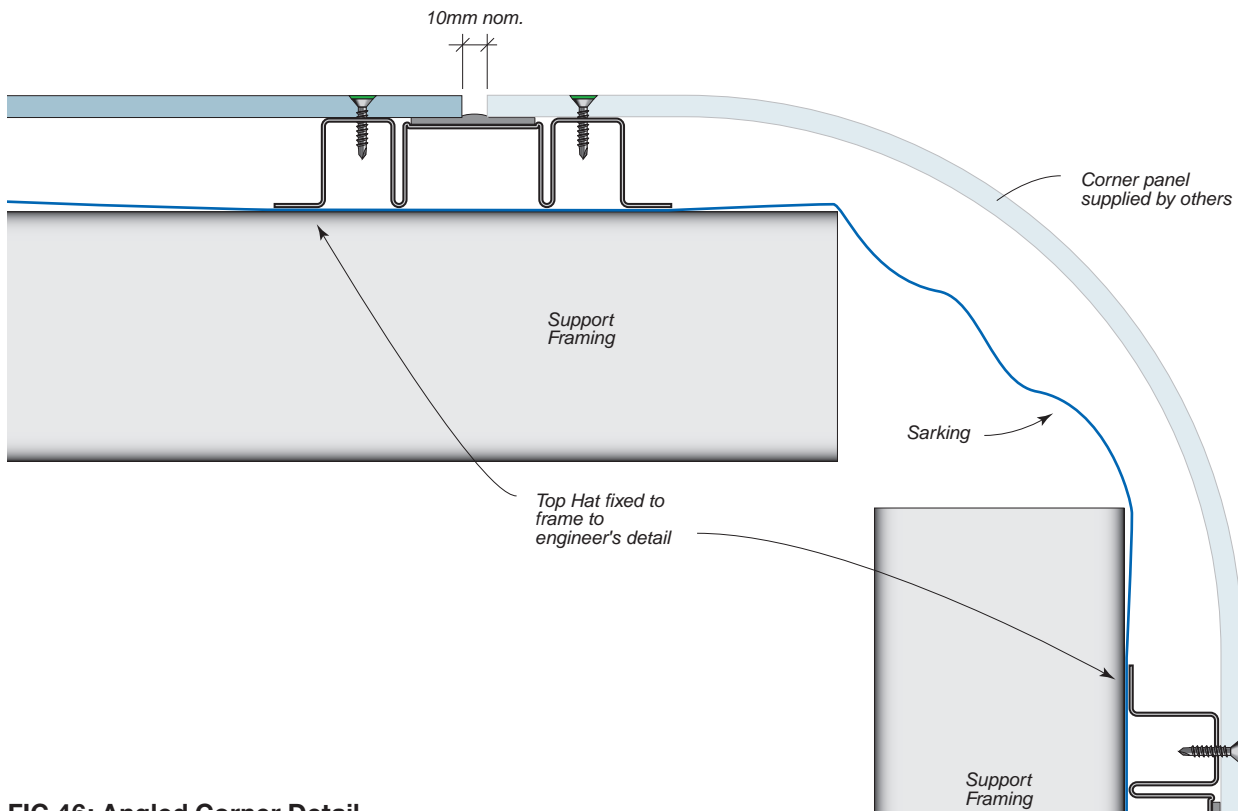
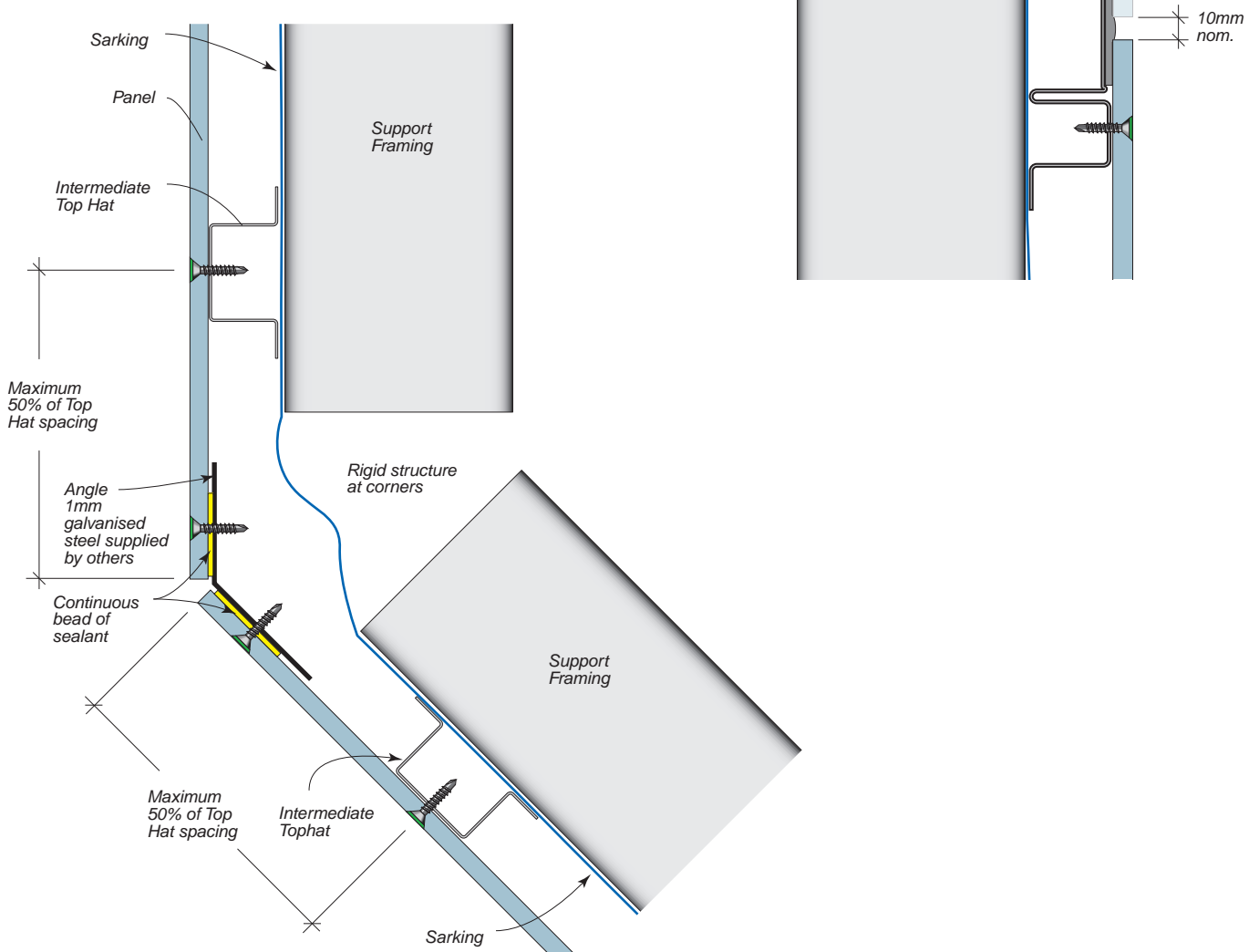
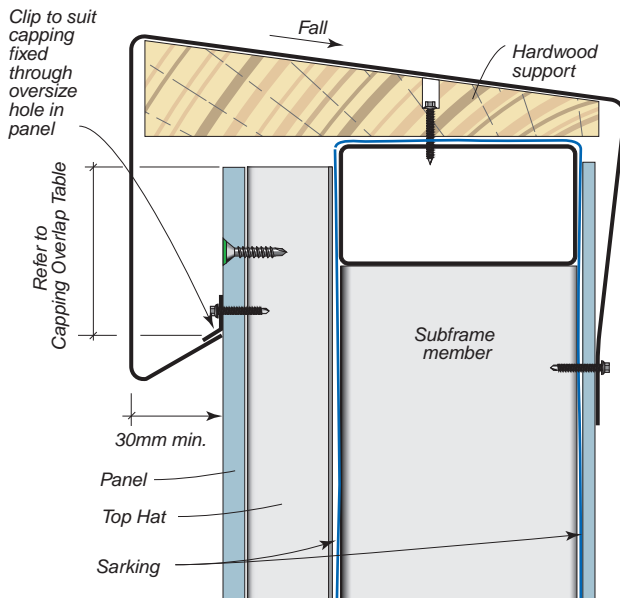
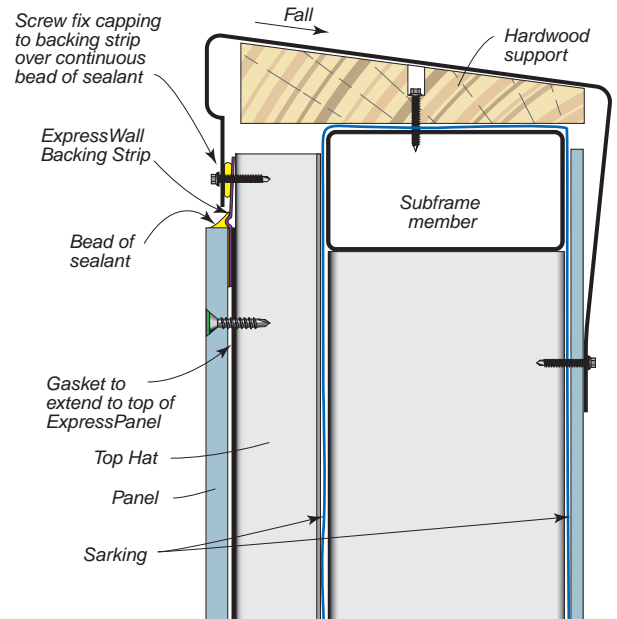


FIG 44: External Corner Detail



**FIG 45: Curved Corner Detail****FIG 46: Angled Corner Detail**

**FIG 47: Capping Detail – Option 1****FIG 48: Capping Detail – Option 2**

Parapet capping shall be designed and fastened in accordance with SAA – HB39 1997 – Installation Code for Metal Roofing and Wall Cladding. Stop ends shall be incorporated to all flashings.

**TABLE 10: Capping Overlap**

Ultimate Design Wind Pressure (kPa)	Minimum Capping Overlap (mm)
1.5	50
3.5	100
5.0	150
7.0	200

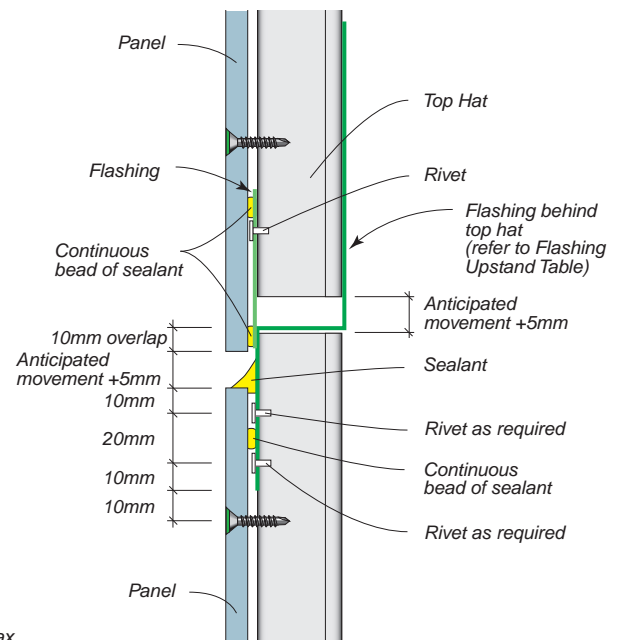
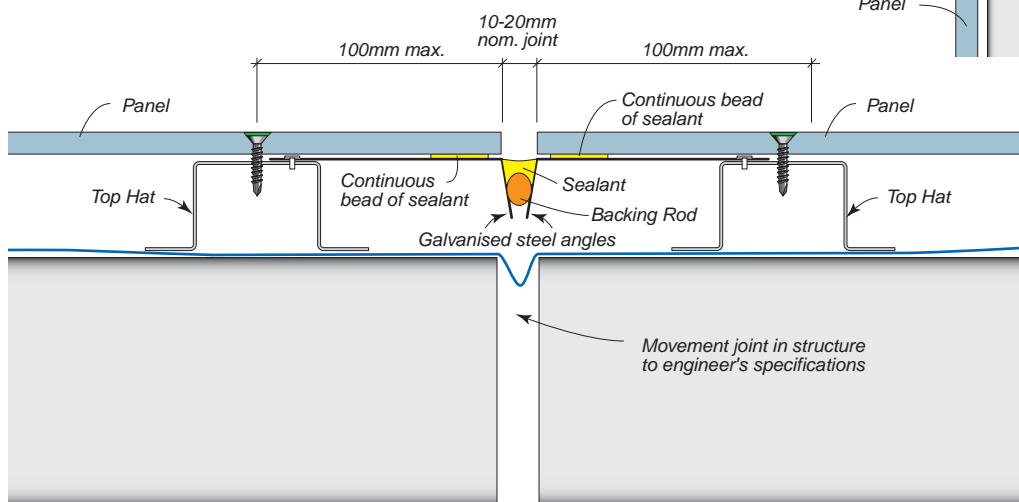
**FIG 49: Horizontal Control Joint****FIG 50: Vertical Control Joint**

FIG 51: Window Head Detail

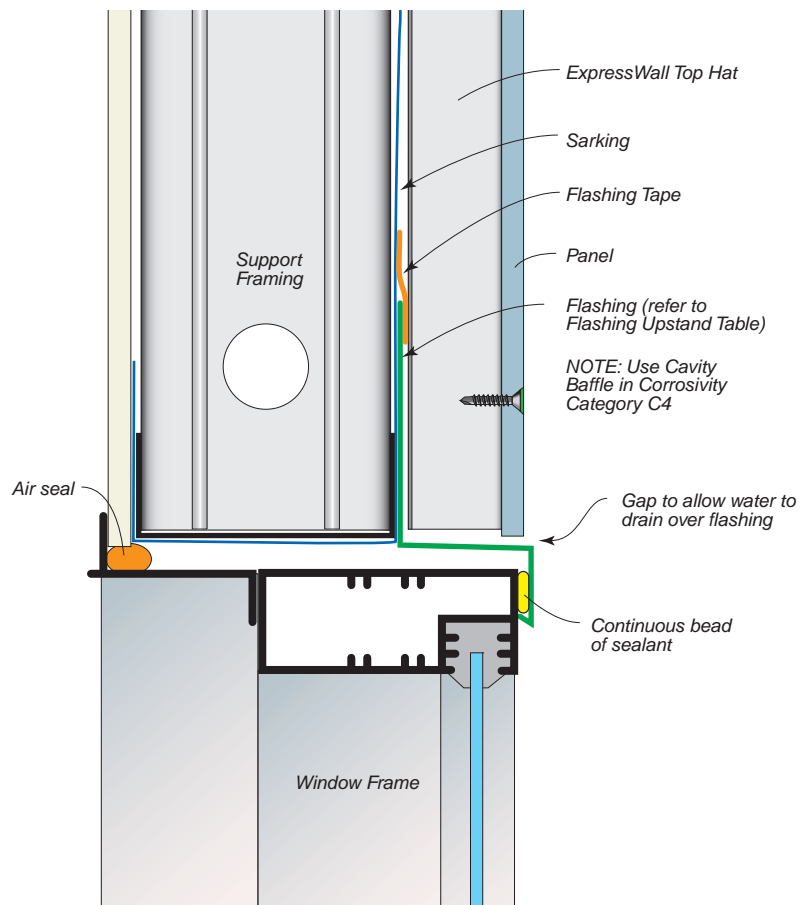


FIG 52: Window Sill Detail

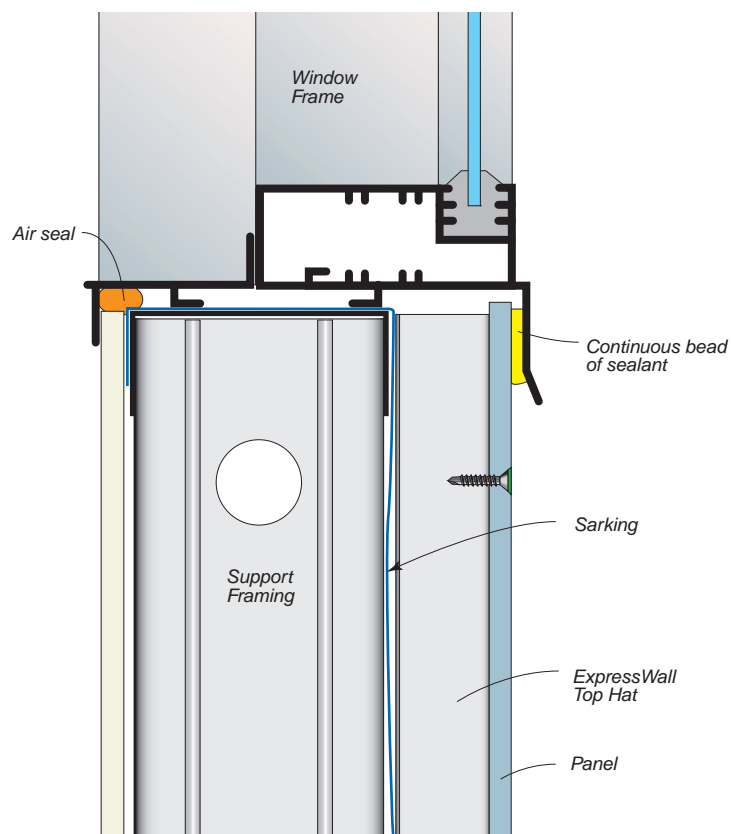




FIG 53: Window Jamb Detail  
Option 1

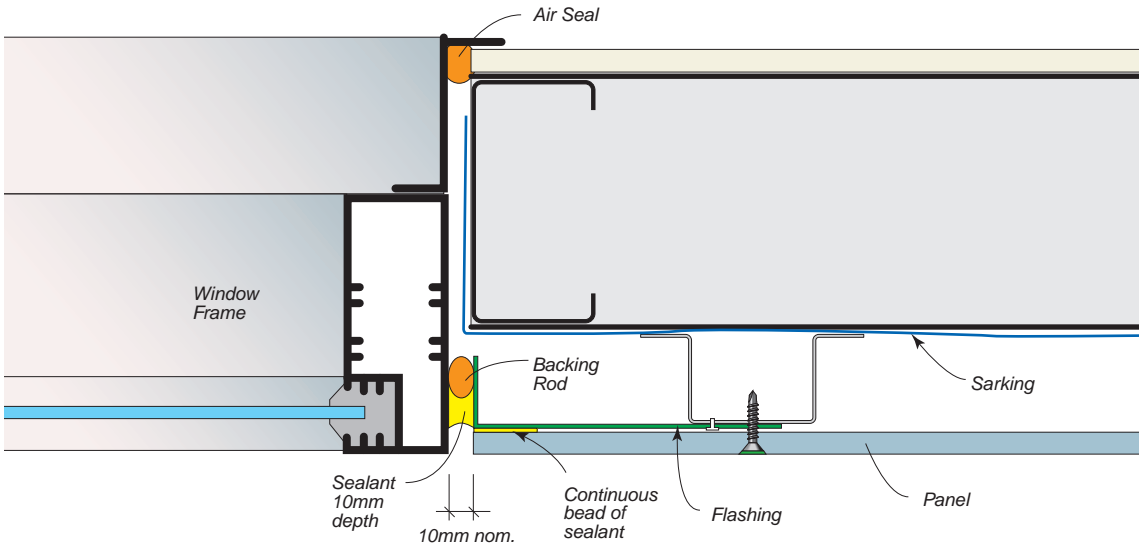


FIG 54: Window Jamb Detail  
Option 2

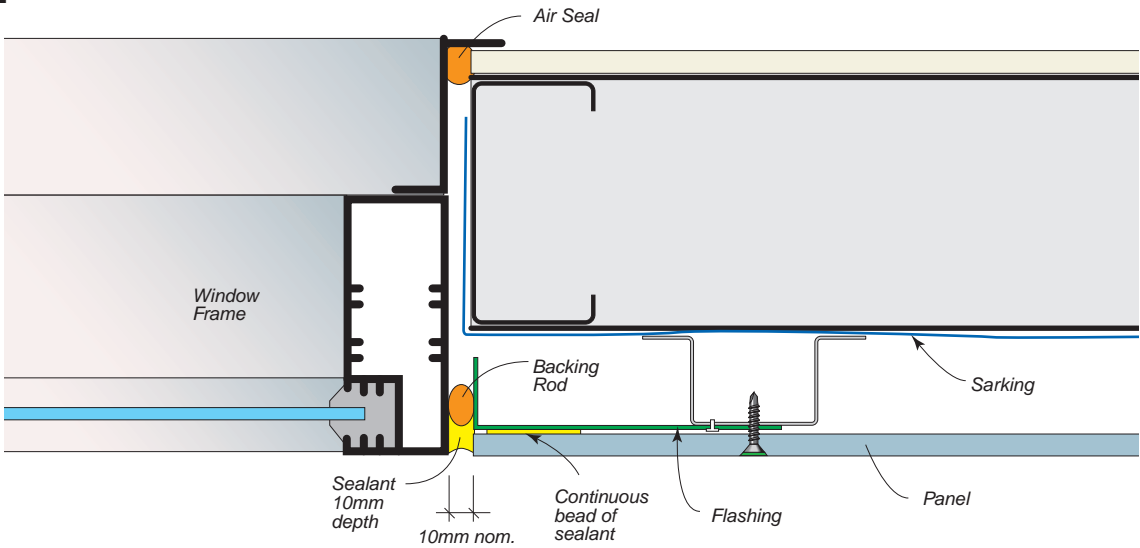
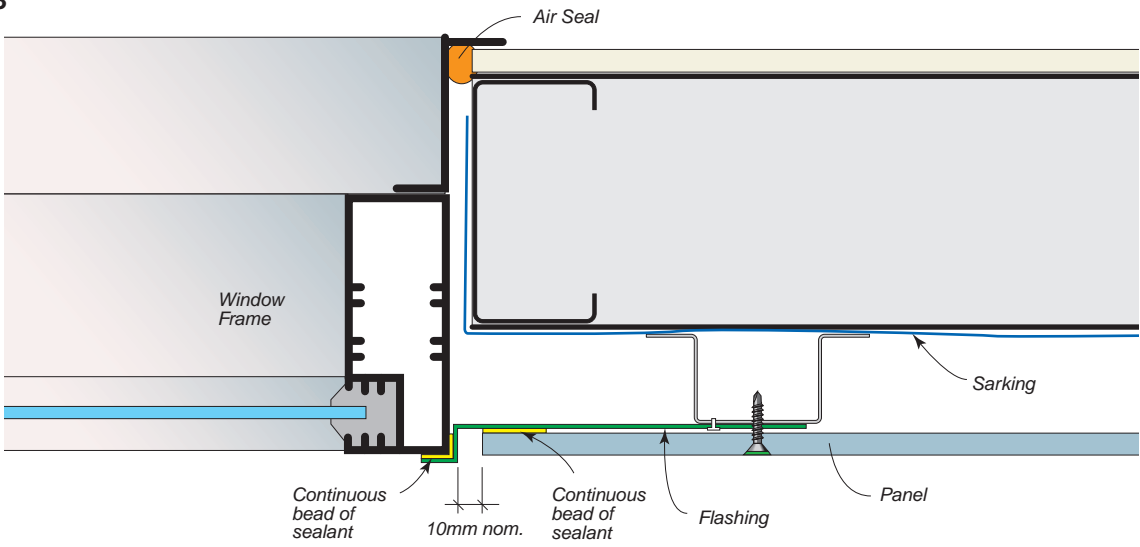


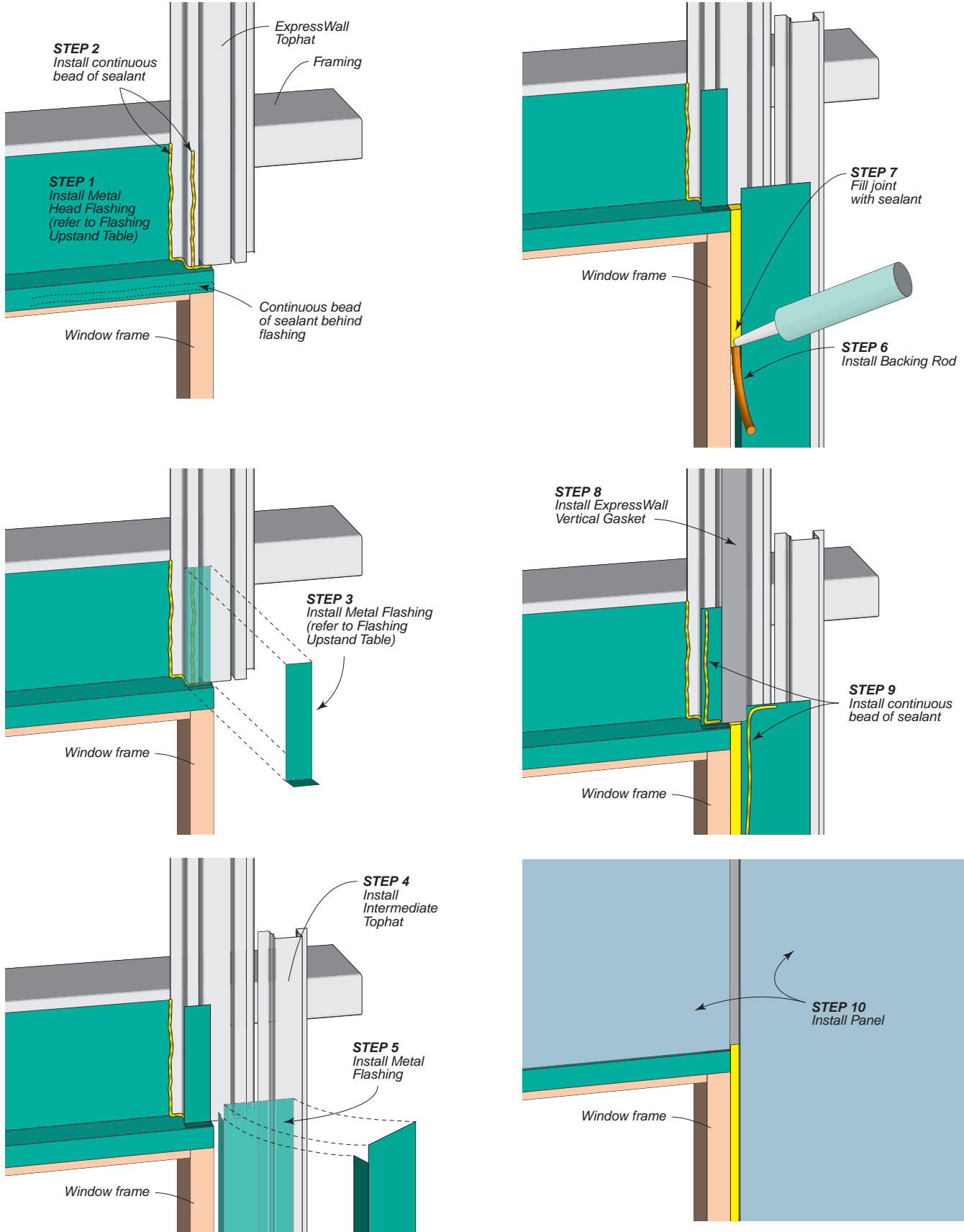
FIG 55: Window Jamb Detail  
Option 3



## WINDOW FLASHING PROCEDURE

The installation of window flashings will depend on the chosen windows and framing methods. The following details show a typical installation procedure.

**FIG 56: Typical Window Flashing Procedure**



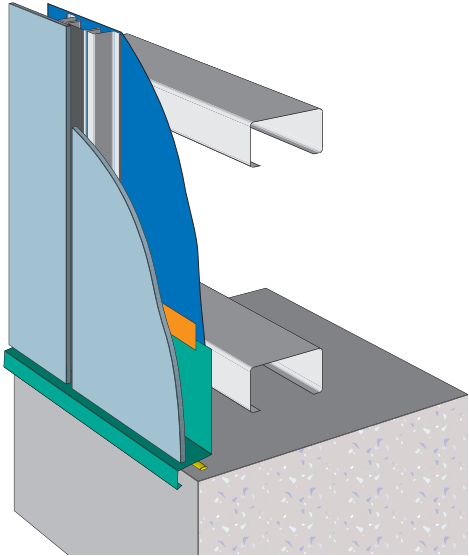
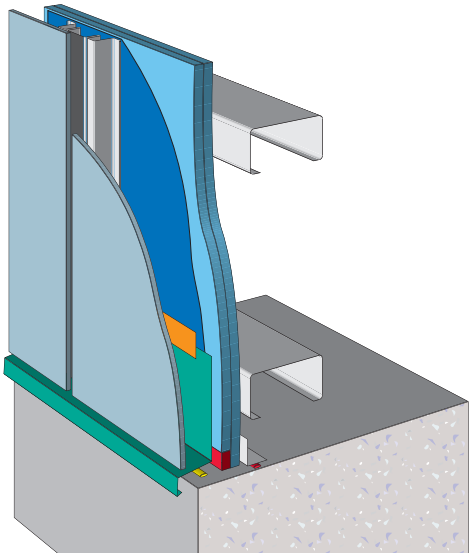
# FIRE RATED WALL SYSTEMS

Cemintel ExpressWall™ can be used with a variety of CSR Gyprock and Fibre Cement fire rated wall systems.

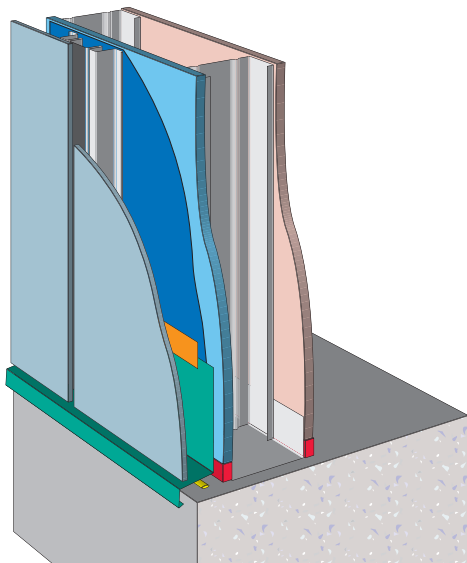
These can provide a fire rating from one or both sides of the wall depending upon the internal lining materials chosen.

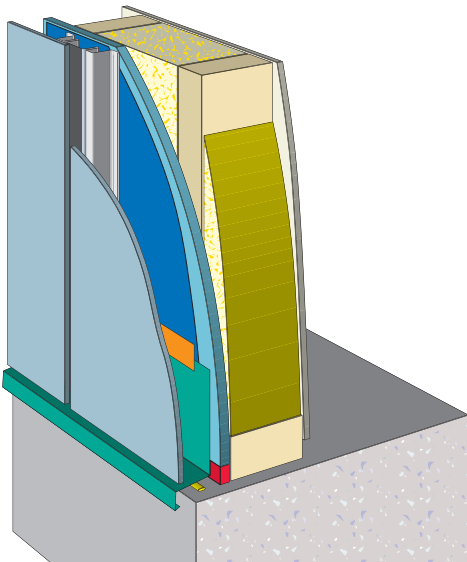
Refer to the system tables for detailed information.

For detailed information on fixing fire rated linings, refer to the CSR Gyprock Fire & Acoustic Design Guide, N°GYP500.

<b>FRL</b> - / - / -	<b>CSR 933</b>		<b>R<sub>w</sub> 25</b>
	<p><i>External Side of Wall Framing</i></p> <ul style="list-style-type: none"> <li>• 1 layer Cemintel ExpressPanel™ or BareStone™ panels fixed to Cemintel ExpressWall™ top hat framing system.</li> <li>• Wall wrap/sarking.</li> </ul> <p><i>Internal Side of Wall Framing</i></p> <ul style="list-style-type: none"> <li>• Nil.</li> </ul>		
	WALL WIDTH (excluding wall frame) mm		
<b>FRL</b> <b>60/60/60</b> <b>from</b> <b>outside of</b> <b>the wall</b> <b>only</b>  Report/Opinion FAR 2357	<b>CSR 934</b>		<b>R<sub>w</sub> 38</b>
	<p><i>External Side of Wall Framing</i></p> <ul style="list-style-type: none"> <li>• 1 layer Cemintel ExpressPanel™ or BareStone™ panels fixed to Cemintel ExpressWall™ top hat framing system.</li> <li>• Wall wrap/sarking.</li> <li>• 2 layers x 16mm Gyprock Fyrchek MR plasterboard fixed to framing spaced at 600mm maximum centres.</li> </ul> <p><i>Internal Side of Wall Framing</i></p> <ul style="list-style-type: none"> <li>• Nil.</li> </ul>		
	WALL WIDTH (excluding wall frame) mm		

Note: For additional fire and acoustic systems, please refer to the CSR Gyprock Fire & Acoustic Design Guide, N°GYP500

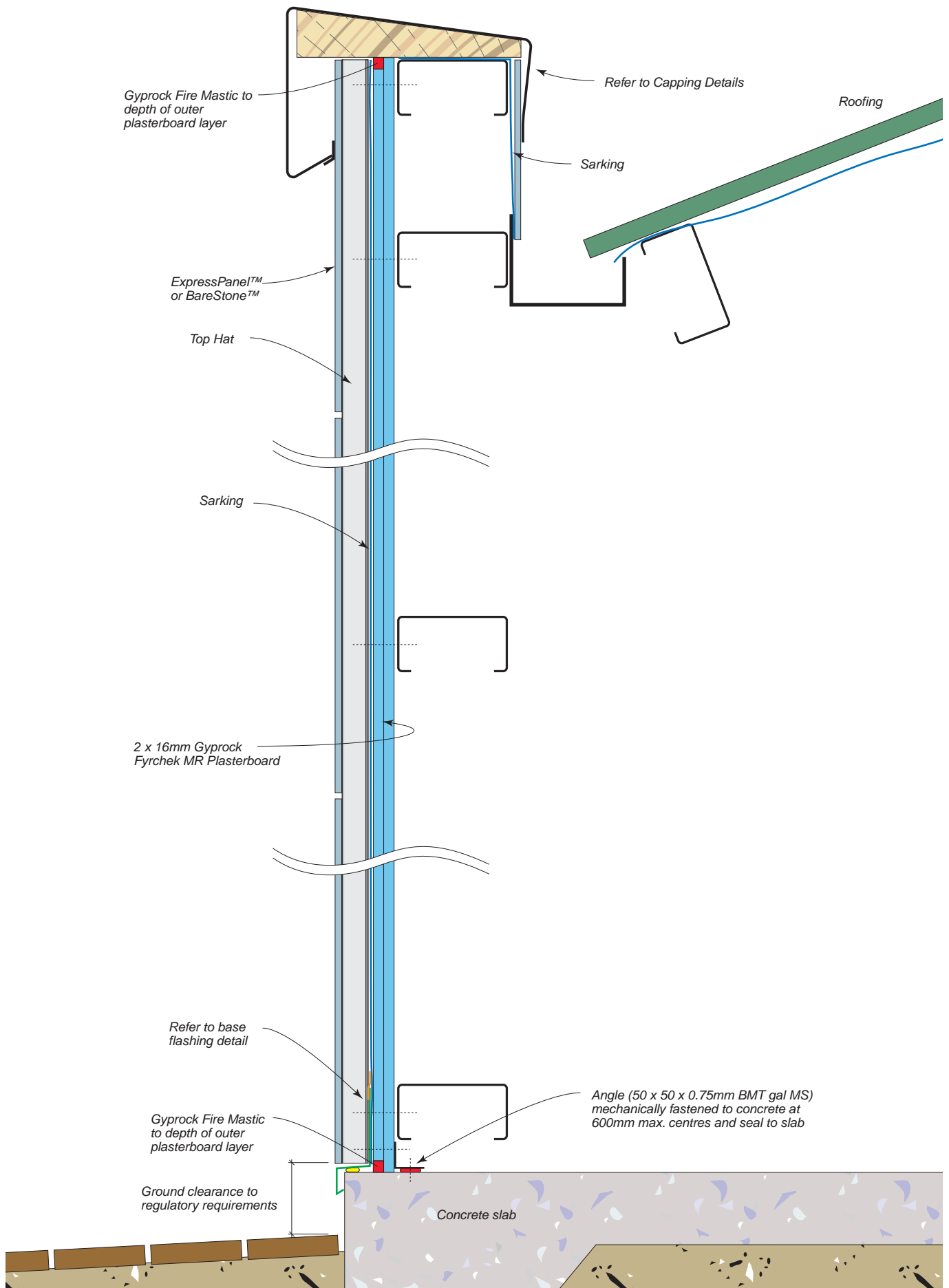
<div>FRL 60/60/60 from outside of the wall only</div> <div>Report/Opinion FAR 2357</div>	CSR 935			<div>R<sub>w</sub> 41 – 48</div>
	<i>External Side of Wall Framing</i> <ul style="list-style-type: none"><li>• 1 layer Cemintel ExpressPanel™ or BareStone™ panels fixed to Cemintel ExpressWall™ top hat framing system.</li><li>• Wall wrap/sarking.</li><li>• 1 layer x 16mm Gyprock Fyrchek MR plasterboard fixed to framing.</li><li>• Steel stud framing as required.</li></ul>			
	<i>Internal Side of Wall Framing</i> <ul style="list-style-type: none"><li>• 1 layer x 16mm Gyprock Fyrchek plasterboard fixed to framing.</li></ul>			
	CAVITY INFILL			
	(a) Nil		92	150
	(b) R1.5 Bradford Gold Batts		46	48
	(c) ASB4/TSB4 Polyester Batts		46	48
	WALL WIDTH mm		168	226
			STUD DEPTH	
			R <sub>w</sub>	

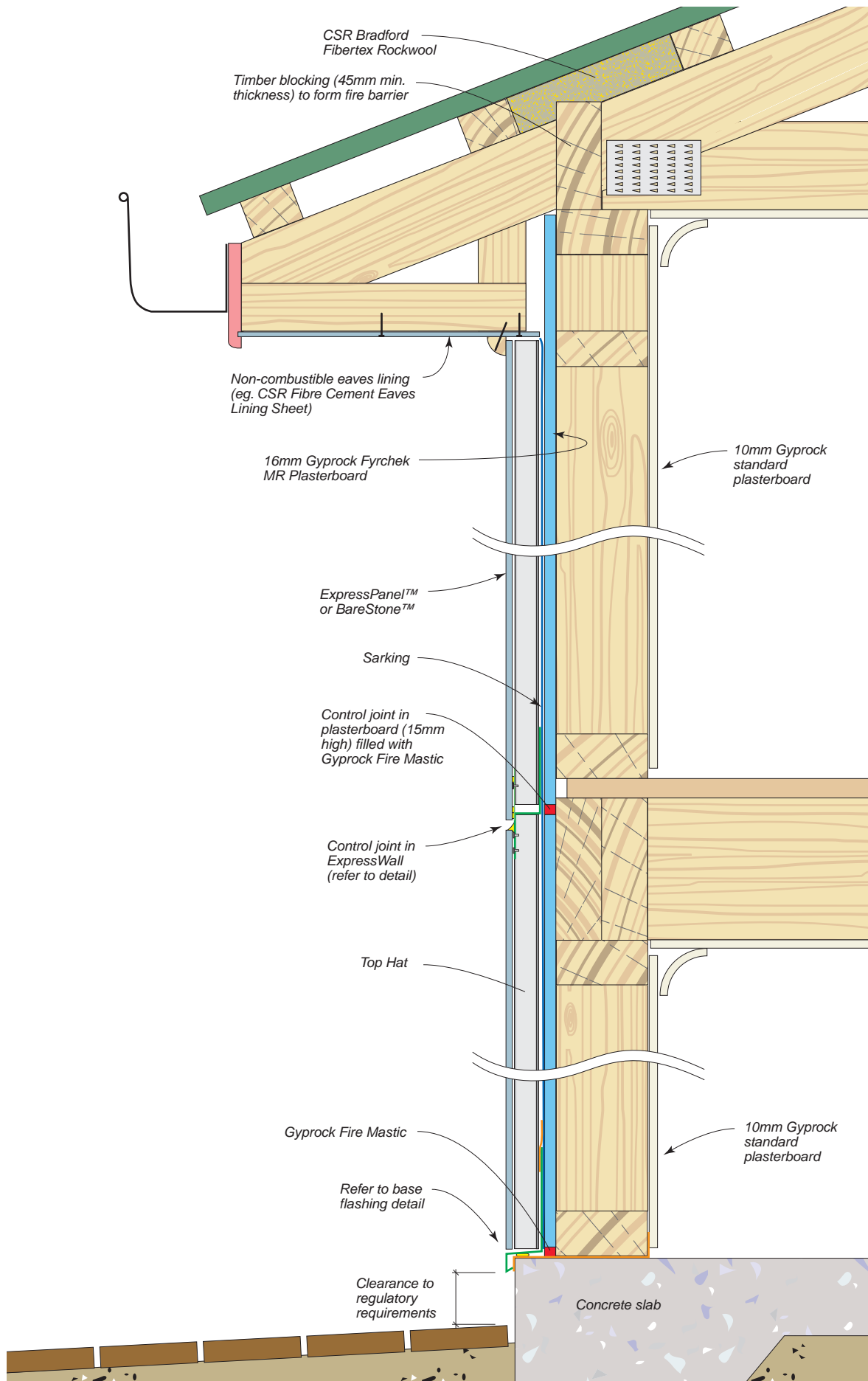
<div>FRL 60/60/60* from outside of the wall only</div> <div>Report/Opinion FAR 2303</div>	CSR 905			<div>R<sub>w</sub> 41 – 46</div>
	<i>External Side of Wall Framing</i> <ul style="list-style-type: none"><li>• 1 layer Cemintel ExpressPanel™ or BareStone™ panels fixed to Cemintel ExpressWall™ top hat framing system.</li><li>• Wall wrap/sarking.</li><li>• 1 layer x 16mm Gyprock Fyrchek MR plasterboard fixed to framing.</li><li>• Timber stud framing as required.</li></ul>			
	<i>Internal Side of Wall Framing</i> <ul style="list-style-type: none"><li>• 1 layer x 10mm Gyprock standard plasterboard fixed to framing.</li></ul>			
	CAVITY INFILL			
	(a) Nil		90	
	(b) R1.5 Bradford Gold Batts		41	
	(c) ASB4/TSB4 Polyester Batts		46	
	WALL WIDTH mm		45	160
			STUD DEPTH	
			R <sub>w</sub>	

Note: \*Load Limits Apply.

For additional fire and acoustic systems, please refer to the CSR Gyprock Fire & Acoustic Design Guide, N°GYP500.

**FIG 57: Typical ExpressWall™ Fire Rated Installation. (FRL 60/60/60 from outside only)**



**FIG 58: Typical ExpressWall™ Fire Rated Installation (FRL 60/60/60 from outside only).**



# ARCHITECTURAL SPECIFICATION

## SCOPE

The contractor shall furnish all materials, labour and equipment for the installation of the Cemintel ExpressWall™ System where indicated on the drawings and/or as specified.

The ExpressWall™ system shall be installed in accordance with CSR guide N°FC126 Cemintel ExpressWall™.

## CLADDING MATERIALS

Cladding material shall be Cemintel ExpressPanel™ or CeminSeal BareStone™ Panel as manufactured by CSR.

ExpressPanel™ shall be 9mm compressed cellulose reinforced sheet manufactured in accordance with AS/ NZS 2908.2. Back face is sealed with VC-9, a UV cured high build clear sealer applied to a thickness of 35-40µm. Front face of panels is undercoated with VC-7, a UV cured high build white sealer applied to a thickness of 35- 40µm. Final coat is VP-200 white Intercoat primer with a thickness of 5-10µm to front face and edges.

CeminSeal BareStone™ Panel shall be 9mm compressed cellulose reinforced sheet, incorporating waterblock technology, manufactured in accordance with AS/NZS 2908.2.

## EXPRESSWALL™ STEEL FRAMING

Cemintel ExpressWall™ steel framing system shall be Cemintel ExpressWall™ Top Hat of..... BMT as supplied by CSR, and Intermediate Top Hat as manufactured by Rondo Building Services Pty Ltd. Framing shall be installed in accordance with CSR installation guide N°FC126 Cemintel ExpressWall™.

## WALL WRAP/SARKING

Wall wrap/sarking material shall be \*Bradford ..... (or product of equivalent or better performance) in accordance with CSR installation guide N°FC126 Cemintel ExpressWall™.

## CAVITY INFILL INSULATION

Cavity infill shall be \*Bradford ..... (or product of equivalent or better performance).

## FLASHINGS

Flashings not supplied by CSR shall be designed and installed in accordance with SAA-HB39, 1997, Installation Code for Metal Roofing and Wall Cladding. Flashing to be colour matched to the panels.

## FIXINGS

Screws for fixing ExpressPanel™ to top hats shall be ExpressWall Countersunk Head Screws, Class 3 finish as supplied by CSR. All counter sunk head screws in the ExpressPanel™, shall be covered with \*..... epoxy, and sanded flush with the panel surface.

OR

Screws for fixing ExpressPanel™/BareStone™ Panel to top hats shall be ExpressWall Exposed Head Screws, \*Class 3 finish or 302 grade stainless steel in accordance with CSR installation guide N°FC126 Cemintel ExpressWall™. ExpressWall™ Weather Seal shall be used with all exposed head screws. \*Exposed head screws shall be colour matched to the panels.

## ACCESSORIES

Tapes, gaskets, sealants, backing strips and the like shall be as detailed in CSR guide N°FC126 Cemintel ExpressWall™.

## COATINGS

ExpressPanel™/BareStone™ Panels shall be coated with \*....., colour \*....., which shall be installed to the manufacturer's recommendations.

## FIRE RATED WALL SYSTEM

The contractor shall supply and install wall system \*N° CSR ..... in accordance with CSR Gyprock Fire & Acoustic Design Guide, N°GYP500. The wall shall have a Fire Resistance Level \*FRL...../...../..... in accordance with the requirements of AS1530.4. Installation shall also be carried out to the level specified for an acoustic performance of \*Rw..... using cavity infill of \*Bradford .....

## FRAMING, FIXING & JOINTS.

All ExpressWall™ framing, fixing and joints shall be designed and installed to comply with the requirements for an Ultimate Design Wind Pressure of \*.....kPa minimum.

Note: \*Insert or select appropriate product/information.

# MATERIAL PROPERTIES

## FIRE RESISTANCE

Under the Building Code of Australia, Clause C1.12(d), Cemintel™ fibre cement is deemed to be non-combustible. When tested in accordance with AS1530.3, the Early Fire Hazard Indices are as follows:

### ExpressPanel™ & BareStone™ Manufacturing Tolerances

Length	+0 to -2mm.
Width	+0 to -2mm.
Thickness	+10% to -0%.
Diagonals Difference (max)	2mm
Edge Straightness deviation (max)	1mm

## Physical Properties

Property	Cemintel™ Compressed Sheet	
	at EMC*	Saturated
Thickness	1700	1900
Flexural Strength (characteristic)		
Parallel to sheet length		
- ultimate (MPa) 25 20	25	20
- yield (MPa) 20 13	20	13
Parallel to sheet width		
- ultimate (MPa) 20 16	20	16
- yield (MPa)	17	12
Modulus of Elasticity (GPa)	10	9
Thermal Expansion Coefficient	10 x 10 <sup>-6</sup> /K° (est. average)	
Moisture Movement		
- from EMC* to saturated	- 700 Microstrains (expansion)	
- from 30 to 90% RH (to ASTM C1185)	- 500 Microstrains (expansion)	

Note: \* EMC (Equilibrium Moisture Content) is at nominally 23°C and 50% Relative Humidity environment conditions.

## FIRE RESISTANCE

Under the Building Code of Australia, Clause C1.12(d), Cemintel™ fibre cement is deemed to be non-combustible. When tested in accordance with AS1530.3, the Early Fire Hazard Indices are as follows:

## SYSTEM TESTING

The Cemintel ExpressWall™ System has been designed and tested by CSR Gyprock & Fibre Cement Research & Development. The ExpressWall™ System has passed testing to the following parts of AS/NZS4284-1995 Testing of Building Facades.

- Structural Test.
- Water Penetration by Static Pressure.
- Water Penetration by Cyclic Pressure.
- Proof Test.

The system has been tested to AS4040.3-1992 Methods of testing roof and wall cladding, Method 3 : Resistance to wind pressure for cyclonic regions.



## HANDLING & STORAGE

All Cemintel ExpressPanel™ and BareStone™ panels must be stacked flat, clear of the ground, and supported on a level platform.

Care must be taken to avoid damage to edges, ends and surfaces.

Material must be kept dry, preferably by being stored inside the building. Protect from contaminants such as silicone spray.

Where it is necessary to store panels outside, they must be protected from the weather.

Panels must be dry prior to fixing and finishing.



## PANEL CUTTING & SAFETY

### POWER SAW

When it is necessary to use power tools for cutting panels, CSR recommends using the Hitachi Fibre Cement Power Saw Blade. This blade is specifically designed for use with fibre cement and produces a superior cut compared to conventional blades.

It is ideal for use with the Hitachi C7YA dustless circular saw and other 185mm circular saws fitted with vacuum extraction systems.



Hitachi C7YA Dustless Circular Saw with Dust Extraction System.

Hitachi Fibre Cement Power Saw Blade.

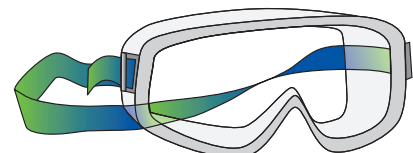
### DRILLING

Countersunk holes in Cemintel ExpressPanel™ shall be drilled and countersunk with the recommended countersinking tool. All general purpose drilling of panels shall be done with a masonry drill bit.

Note: In all cases DO NOT use hammer action when drilling.

### SAFETY

When cutting panels using power tools, always ensure the work area is well ventilated. An approved dust mask (AS1715 and AS1716) and safety glasses (AS1337) must be worn. CSR recommends that hearing protection be worn.





# cemintel™

CREATE AND CONSTRUCT



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## EXPRESSWALL



FC:126

### HEALTH & SAFETY WARNING

Fibre Cement products contain crystalline silica. Repeated inhalation of fibre cement dust may cause lung scarring (silicosis) or cancer. Do not breathe the dust. When cutting sheets, use the methods recommended in this brochure to minimise dust generation. If power tools are used, wear an approved dust mask (respirator). These precautions are not necessary when stacking, unloading or handling fibre cement products.

For further information and for a Material Safety Data Sheet, phone **1800 807 668**.

### WARRANTY

CSR Building Products Limited ("CSR") warrants its Cemintel ExpressPanel™ and BareStone™ panels ("Product") to remain free of defects in material and manufacture for **10 years** from date of purchase.

In the event of any failure of the Product caused by the direct result of a defect in the material or manufacture of the Product, CSR will at its option replace or repair, supply an equivalent product, or pay for doing one of these.

This warranty does not apply where the Product has been used in any manner not in accordance with the manufacturer's instructions, nor the reuse of the Product after its initial installation. This includes installation and maintenance in accordance with this technical manual. CSR recommends that only those products, components and systems recommended by it be used and the project must be designed and constructed in strict compliance with all relevant provisions of the current Building Code of Australia, regulations and standards. All other products, including coating systems, applied to or used in conjunction with the Product must be applied or installed and maintained in accordance with the relevant manufacturer's instructions and good trade practice. CSR will need to be satisfied that any defect in its Product is attributable to material or manufacture defect (and not another cause) before this warranty applies.

Notification of a warranty claim must be made to CSR prior to any return or attempted repair of the Product. Failure to allow CSR to examine an alleged faulty Product in situ may result in the voiding of this warranty.

CSR will not be liable for any claims, defects or damages arising from or in any way attributable to poor design or detailing, poor workmanship, movement of materials to which the Product is attached and/or, incorrect design of the structure settlement or structural movement, high levels of pollution, acts of God including, but not limited to, floods, cyclones, earthquakes or other

severe weather or unusual climatic conditions, performance of paint/coatings applied to the Product or normal wear and tear.

This warranty does not cover and CSR is not liable for any natural variation between BareStone™ Panels that occurs as part of the manufacturing process or any variation in colour against any sample material, displays and/or printed illustrations.

The builder/installer must ensure the BareStone™ Panels meet aesthetic requirements before installation. Subject to the terms of this warranty, after installation of BareStone™ Panels, CSR is not liable for claims arising from aesthetic variations if such variations were, or would upon reasonable inspection have been, apparent prior to installation.

Other than as expressly set out in this warranty, and the guarantees that cannot be excluded under The Australian Consumer Law (Schedule 2 of the Competition and Consumer Act 2010 (Cth)) (and any other law), CSR excludes all other warranties and guarantees with regard to the Product including all guarantees and warranties that may apply at law.

To the extent that it is able to do so, CSR excludes all liability for loss and damage (including consequential loss) in connection with the Product. This exclusion does not apply where the Product is sold to a consumer and is a good of a kind ordinarily acquired for personal, domestic or household use or consumption.

The following statement is provided where the Product is supplied to a buyer who is a "consumer" under the Australian Consumer Law: *Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.* The benefits of this warranty are in addition to other rights or remedies of the consumer under law in relation to the goods or services to which the warranty relates.

Notification of a warranty claim must be made to CSR prior to any return of the Product. Failure to allow CSR to examine an alleged faulty Product in-situ may result in the voiding of this warranty.

To make a claim under this warranty, you must contact CSR on **1300 CEMINTEL**, or write to one of our state offices by visiting **www.cemintel.com.au/contact-us**. All expense of claiming the warranty will be borne by the person making the claim. CSR may require documentation supporting the claim to be provided.

Cemintel™, ExpressWall™, ExpressPanel™, BareStone™ & CeminSeal™ are trademarks of CSR Limited.

### CONTACT DETAILS

OCTOBER 2014

#### CSR Cemintel™ Sales Support

Tel: 13 17 44  
Fax: 1800 646 364

#### CSR designLINK™ Technical Support Service

Tel: 1800 621 117

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376 Victoria Street,  
Wetherill Park NSW 2164

#### Queensland

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Coopers Plains QLD 4108

#### Victoria

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Yarraville VIC 3013

#### South Australia

Lot 100 Sharp Court,  
Mawson Lakes SA 5095

#### Western Australia

19 Sheffield Road,  
Welshpool WA 6106

#### Tasmania

11 Farley St,  
Derwent Park, TAS 7009

#### Northern Territory

Cnr Stuart Hwy & Angliss St,  
Berrimah NT 0828