OCTOBER 2010

LIGHT COMMERCIAL & RESIDENTIAL STEEL FRAMED BUILDINGS

innova™
INNOVATIVE FACADE SYSTEMS

DURAGRID™
FACADE SYSTEMS

BGC Fibre Cement

AUSTRALIAN OWNED & MANUFACTURED
WWW.BGC.COM.AU/FIBRECEMENT

INTRODUCING INNOVA™

INNOVA™ IS A BRAND NEW RANGE OF FACADE AND FLOORING PRODUCTS WHICH WILL GIVE A NEW DIMENSION TO THE BGC PRODUCT RANGE. THE PRODUCTS WITHIN THE INNOVA™ RANGE HAVE BEEN DESIGNED TO INSPIRE YOU TO CREATE A NEW INNOVATIVE AND DYNAMIC FACADE OR FLOORING SYSTEM.

innova™
INNOVATIVE FACADE SYSTEMS

THE DURAGRID™ FACADE SYSTEM UTILISES BGC FIBRE CEMENT SHEETING, OFFERING THE IDEAL SOLUTION FOR CLADDING THE EXTERIOR OF LOW TO MEDIUM RISE HOMES. DURAGRID™ GIVES BUILDINGS A MODERN AND EXTREMELY DURABLE FINISH.

DURAGRID™ SHEETING HAS A SMOOTH, FLAT SURFACE AND SQUARE EDGE FINISH WHICH IS SUITABLE FOR EXPRESSED JOINTING AND PROVIDES A FACADE SUITABLE FOR A NUMBER OF FINISHES - FROM PAINTED TO TEXTURED COATINGS.

THE DURAGRID™ FACADE SYSTEM:

/ IS LIGHTWEIGHT
/ IS HIGHLY DURABLE
/ PANELS WILL NOT ROT, BURN OR CORRODE
/ PANELS ARE NOT AFFECTED BY TERMITES, AIR, STEAM, SALT OR SUNLIGHT
/ CAN BE EASILY DECORATED IN A NUMBER OF DESIGN FINISHES
/ QUICK AND SIMPLE TO INSTALL USING SCREW FIXING

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APPLICATIONS

Duragrid™ Facade System utilises BGC Fibre Cement panels and graded, primed timber or steel battens to form a strong and durable facade cladding system.

BGC Duragrid™ is ideally suited for versatile architectural applications in light commercial applications where high impact resistance is not required. If high impact resistance is required BGC recommend the use of the Duracom™ compressed fibre cement facade system.

Duragrid™ panels are designed for installation in a variety of patterns, including vertical, horizontal, and brick-bond.

BGC Duragrid™ panels are available in 9mm thickness and may be finished with site applied acrylic paint systems or a factory applied high quality polyurethane plain finish. These may need alternative fixing methods. Please contact your local BGC office for advice.

NOTE: The fitting of the Duragrid™ Facade System should only be attempted by a professional contractor. Your local BGC Fibre Cement office can provide you with a list of recommended Duragrid™ installers.

ADVANTAGES

/ Lightweight cladding system
/ Readily accepts many forms of decorative finish
/ Highly durable product
/ Dynamic architectural style
/ Face sealed for paint application

ENERGY EFFICIENCY CONSIDERATIONS

Energy efficiency requirements have been introduced into the Building Code of Australia (BCA) for both commercial and residential buildings. Thermal heat transfer into and out of the building envelope will effect the running cost of the building and careful consideration of thermal heat transfer needs to be addressed by the architects, engineers and building designers. Thermal bridging through steel framing will diminish the total R-Value; thermal conductance, of the wall. Thermal breaks are required for steel framed buildings. Thermal break tapes should have a minimum R-Value of 0.2.

PRODUCT INFORMATION

BGC Duragrid™ panels are an autoclaved, cellulose fibre reinforced silica/cement panel, specially formulated and prepared to meet the requirements for use in exterior applications. Duragrid™ panels have a smooth flat surface and a neat square edged finish, for enhanced expressed joint facades.

BGC Fibre Cement products are manufactured to the Australian / New Zealand Standard AS/NZS 2908.2-2000 Cellulose-Cement Products, Part 2: Flat sheets and Duragrid™ is classified as Type A-Category 2.

SHEET TOLERANCES

/ Width +0/-1mm
/ Length +0/-2mm
/ Thickness +10%/-0%
/ Diagonals difference (max) 2mm
/ Edge straightness deviation (max) 1mm

FIRE RESISTANCE

BGC Fibre Cement 9mm has been tested for and passed the Early Fire Hazard Property criteria in compliance with AS/NZS 1530.3 and AS/NZS 3837 and is deemed a Group 1 Material in accordance with the Building Code of Australia (BCA), Volume 1, Specification A2.4; Fire Hazard Properties. AS/NZS 1530.3; Early Fire Hazard Properties.

/ Ignition Index	0
/ Spread of Flame Index	0
/ Heat Evolved Index	0
/ Smoke Developed Index	0-1

DURABILITY

BGC Duragrid™ physical properties make it a very durable product.

/ Duragrid™ panels are immune to permanent water damage in both short and long-term exposure.
/ Duragrid™ panels will not rot or burn and are unaffected by termites, air, steam, salt and sunlight.
/ Duragrid™ panels are not adversely affected over a temperature range of 0°C to 95°C.

Vapour permeable sarking must be installed under the timber or steel batten in accordance with the AS/NZS 4200.2 – 'Pliable building membranes and underlays – Installation' and the sarking manufacturers' guidelines. The sarking should have the following properties:

/ Vapour barrier – low or medium
/ Water barrier – high

Vapour permeable sarking is used to prevent moisture ingress by acting as a drainage plane whilst enabling water vapour build up from inside the frame to escape.

THERMAL CONDUCTIVITY

Duragrid™ panels have relatively low thermal conductivity: R-value. At Equilibrium Moisture content the approximate R-Value of Duragrid™ is;- 0.55 W/m°C.

WEATHER RESISTANCE / FREEZE THAW

Duragrid™ Facade System conforms to the Building Code of Australia (BCA) requirements for exterior wall applications. Duragrid™ Facade System has been tested to AS/NZS 4284 Testing of Building Facades.

Duragrid™ subject to freeze/thaw conditions must be painted. Duragrid™ should not be used in situations where it will be in direct contact with snow or ice for prolonged periods.

PANEL SIZES AND MASS

Duragrid™ panels are available in the following sizes.

THICKNESS mm	MASS KG/M^2	WIDTH mm	LENGTH mm			
			1190	1790	2390	2990
9	11.7	590			x	
		890		x		
		1190	x			x

HANDLING AND STORAGE

BGC Duragrid™ must be stacked flat, up off the ground and supported on equally spaced (max 400mm) level gluts. Care should be taken to avoid damage to the ends, edges and surfaces.

Sheets must be kept dry. When stored outdoors it must be protected from the weather. Sheets must be dry prior to fixing, jointing or finishing.

COASTAL AREAS

The durability of galvanised nails and screws used for exterior cladding in coastal or similar corrosive environments, including very heavy industrial areas can be as low as 10 years.

For this reason BGC recommend the use of stainless steel fasteners within 1km of the coast or other large expanses of salt water.

ACCESSORIES AVAILABLE FROM BGC

DURABATTEN - STEEL	35 x 70 x 3000mm 19 x 70 x 3000mm	
HORIZONTAL BACKING STRIP	1190mm 2390mm 2990mm	
CAVITY VENT STRIP	uPVC 19 x 2700mm	
SEALANT / ADHESIVE	Sika 11FC or similar	
COUNTERSINKER	Countersinking Tool Tungsten Carbide	

FASTENERS

DURABATTEN TO FRAME

DURABATTEN TIMBER TO STEEL FRAME
Builders Class 3, 8 x 35mm Wingtek Self Embedding Head Screw, 8 x 40mm Wingtek Self Embedding Head Screw

DURABATTEN STEEL TO STEEL FRAME
Class 3 Hex Head Screw, 12-14 x 20mm

DURABATTEN TIMBER TO TIMBER FRAME
Class 3 Corrosion resistant Ring Shank Nail – 2.8 x 65mm

DURAGRID™ TO DURABATTEN

DURAGRID™ TO DURABATTEN STEEL
No.8 x 30mm Countersunk Self Drilling

DURAGRID™ DURABATTEN TIMBER
C25 304 Stainless Steel Brads

2.8 x 30mm Fibre Cement Nail

8 x 10 x 25mm Class 3 Countersunk Wood Screw

FASTENERS

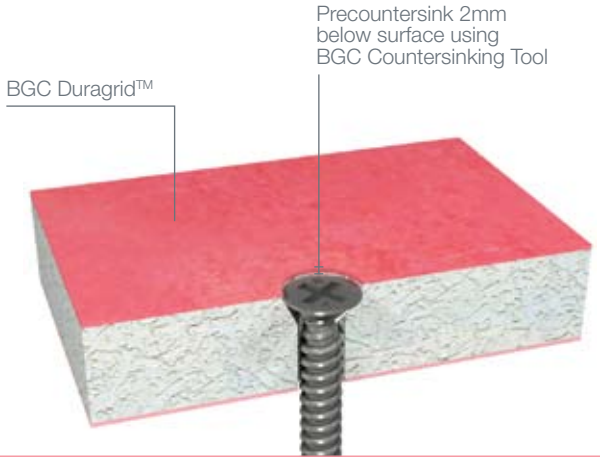
Select fasteners with suitable durability for the prevailing conditions. Please consult your supplier for:

/ Minimum requirements Class 3.
/ Stainless steel may be required in some applications.

All screw holes must be filled with an epoxy sealer such as Megapoxy P1, Hilti CA125 or Hilti CA273 and sanded flush to provide a flat surface for finish coating. When sanding, only sand the screw holes, not the entire sheet surface.

PRE COUNTERSINK

When using screws to fasten Duragrid™, pre countersinking is required so that the fastener is 2mm under the sheet surface for filling with Epoxy filler.



DESIGN CONSIDERATIONS

The designer should determine the wind pressure for the project and specify the layout, spacing and fixing of the Durabatten to the structure.

The deflection of the supporting structure should be limited span/250 for Serviceability Wind Load, or as limited by AS/NZS1170.

In areas where there is a probability of wind loading, care should be taken in the design detailing, especially around all openings, corners and other junctions, to ensure the weather resistance of the total system.

Before the Duragrid™ panels and the supporting substructure is installed and fixed, particular care should be taken that all flashing and waterproofing work is complete, including all vapour permeable building wraps and damp proof coursing.

CONTROL JOINTS

In many cases, control joints will not be required as typical expressed joints permit some differential movement of the Duragrid™ panels and the sub-framing.

It is recommended that the designer consider the need for control joints in the following cases:

/ At a change in the structural substrate; eg masonry to steel framing.
/ Where Duragrid™ crosses a building control joint.
/ Where there is likelihood of movement in the sub-framing.
/ Continuous lengths greater than 8 metres.

Structural movement vertical and horizontal control joints are required to match existing structural control joints and should pass through the facade.

GROUND CLEARANCE

Maintain a minimum 150mm clearance to earth or as required by local building regulations. See Foundation detail below.

GROUND CLEARANCE & FOUNDATION DETAIL

PANEL PREPARATION

For insitu paint finish applications, Duragrid™ panels are supplied sealed with a proprietary sealer applied during manufacture for durability.

Where it is necessary to cut sheets, cutting tools should have a dust extraction system.

Cut edges must be sealed with BGC Edge Sealer or an acrylic coating to eliminate moisture absorption.

A saw blade such as BGC Durablade with a poly crystalline diamond tip specifically designed to cut fibre cement sheets is recommended.

Ensure work area is well ventilated and wear an approved dust mask (AS/NZS1715 and AS/NZS1716) and safety glasses (AS/NZS1337).

BACKING STRIP INSTALLATION & SEALING

At the horizontal joints between the Duragrid™ panels, the Horizontal Backing Strip should be bonded to the back of the Duragrid™ panel to form a socket to which the Duragrid™ panels above are fixed over.

Set the backing strip 2mm from the edge of the Duragrid™ panel. Seal the cut edge with BGC Edge Sealer.

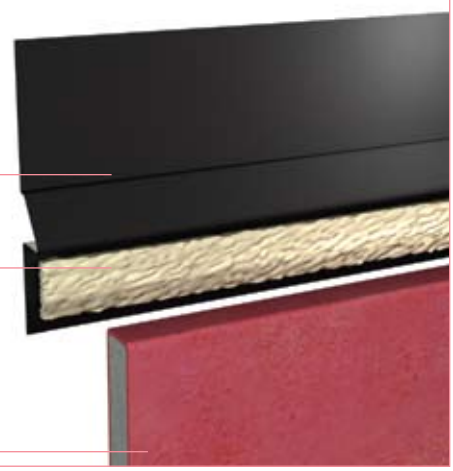
The backing strip can be fixed using:

/ SIKA 11FC. **Ensure that the sealant has cured fully before panel installation.**
/ 3M 12.7mm VHB4991 or 3M VHB4941 double sided tape. The contact surfaces to be cleaned with 3M HIPA 300 Adhesive cleaner.

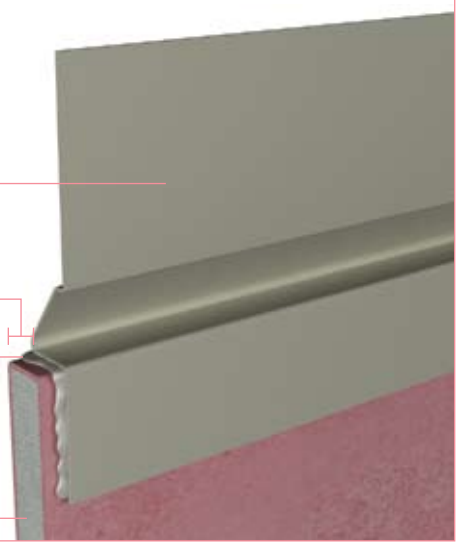
NOTE: SIKA 11FC is the preferred option for fixing the backing strip.

NOTE: Ensure the sealant fills the void in the back of the Horizontal Backing Strip to prevent moisture ingress.

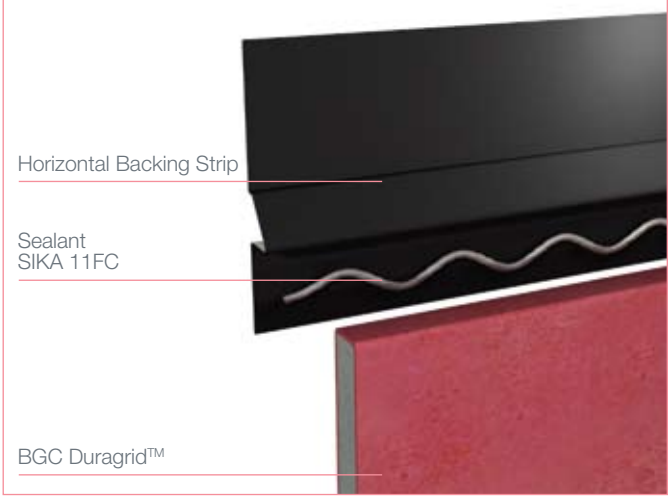
BACKING STRIP TAPE - FRONT VIEW



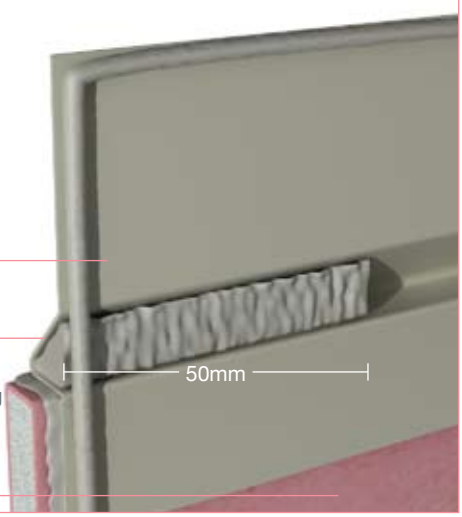
BACKING STRIP INSTALLATION - REAR VIEW



SEALANT (Preferred Option for Optimal Adhesion and Sealing) - FRONT VIEW



BACKING STRIP SEALANT - REAR VIEW



FASTENER SPACING - LIGHT COMMERCIAL

FIXING FIBRE CEMENT SHEET CLADDING TO STEEL BATTENS

Fix cladding to steel batten via a continuous 6mm bead of SIKAFLEX 11FC polyurethane sealant/adhesive to all contact surfaces and Nº 6 fibre zip screws (or equivalent, or better) along all support edges, refer to Duragrid™ design table for maximum fixing centres.

FIXING STEEL BATTENS TO STEEL WALL FRAMES

Steel battens to be 0.75mm BMT and grade 300 steel:

BATTEN SIZE:

N1-N3, C1: TH19x70x0.75 batten
C2-C3: TH35 x70x0.75 batten

Steel battens can only be installed OFF stud (batten fixed to noggin) due to the profile of the steel batten.

Maximum batten span, (i.e. noggin spacing), is to be as per Duragrid™ design tables.

Batten spans (i.e. noggin spacing) should be approximately equal (within 25%)

Fix steel batten to steel wall frames with:

N1-N3: (max 1.215kN pullout load)

Fix steel battens to noggins with: 2Nº 8-18 x 20mm tek screws.

C1-C2: (max 1.81kN pullout load)

Fix steel battens to noggins with: 2Nº 8-18 x 20mm tek screws.

Alternatively, steel battens may be fixed to timber wall frames by substituting 8- 18 x 20mm tek screws with 8-15 x 40mm screws.

FIXING STEEL NOGGINS TO STEEL STUDS

Where noggins support battens, noggins must be securely fixed to studs.

Noggins should not span more than 600mm.

Noggins to be fixed to studs via one of the following:
-Minimum 30mm weld each end, evenly spread over both sides of stud.
-2Nº 6 x 20 wafer head tek screws each end of noggin.
-2Nº Henrob rivets or equivalent each end of noggin.

NOTES

All calculations include full internal pressurization as per AS4055.
Stack bond (no overlap).
Deflection of battens limited to a maximum of span of 200mm.
All steel framed walls to be constructed to relevant standard.

BATTEN SPAN/WIND PRESSURE LOAD

AS4055 Wind Classification Non cyclonic	Stud & Durabatten spacing (mm)	TH19x70x0.75 Batten span (max)	TH35x70x0.75 Batten span (max)	Duragrid™ Fixing Centres
N1, N2, N3	600	900	900	200
N4, N5	450	n/a	n/a	200
N6	300	n/a	n/a	150
C1	450	900	900	200
C2	450	n/a	900	200
C3	450	n/a	800	200
C4	300	n/a	850	150

Contact your local BGC Fibre Cement office for further advice if required.

FRAMING

Ensure that the frame is square and work from a central datum line. The frame must be straight and true to provide a flush face to receive the panels.

BGC recommend a maximum tolerance of 3mm-4mm in any 3000mm length of frame. Duragrid™ will not straighten excessively warped or distorted frames and any warping may still be visible after Duragrid™ is applied. Warped framing will require remedial action.

FRAME STRAIGHTNESS

The steel Durabatten should be fixed off stud – Refer to Span Table. Off stud fixing is restricted to low wind areas and noggings are required at maximum 800mm centres – Refer to span tables in all instances.

The vertical expressed joins must coincide with the centre line of the Durabatten. Stud centres may have to be designed to facilitate express joins.

STEEL FRAME

Use of steel frame must be in accordance with AS4600 – Cold Formed Steel Structures and the framing manufacturers' specifications.

Framing members must have a Base Metal Thickness (BMT) between 0.55 to 1.6mm. The steel framing must have the appropriate level of durability required to prevent corrosion.

Stud framing members must be a minimum of 64 x 35mm.

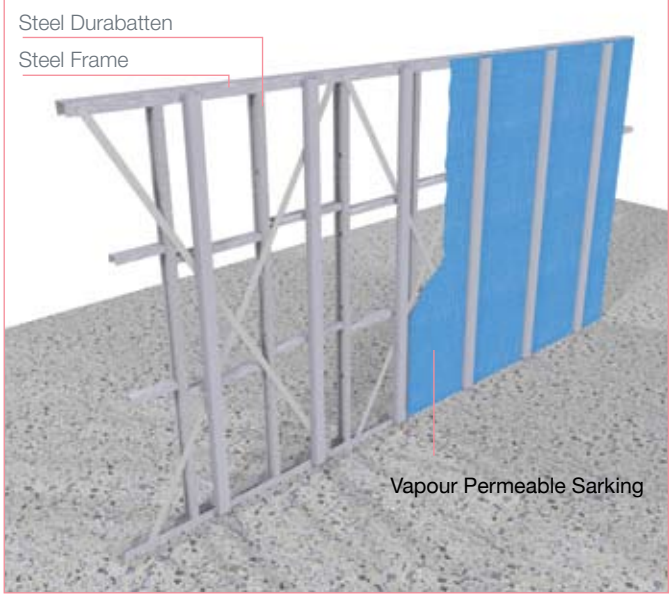
DURABATTEN INSTALLATION

STEEL DURABATTEN

Can only be fixed off stud. Refer to Span Table for stud/batten fastener spacings. Note: Off stud max span (noggin spacing) 800mm centres.

OFF STUD

Ensure noggin is fixed to framing as noted



BATTEN JOINING

BATTEN JOINING

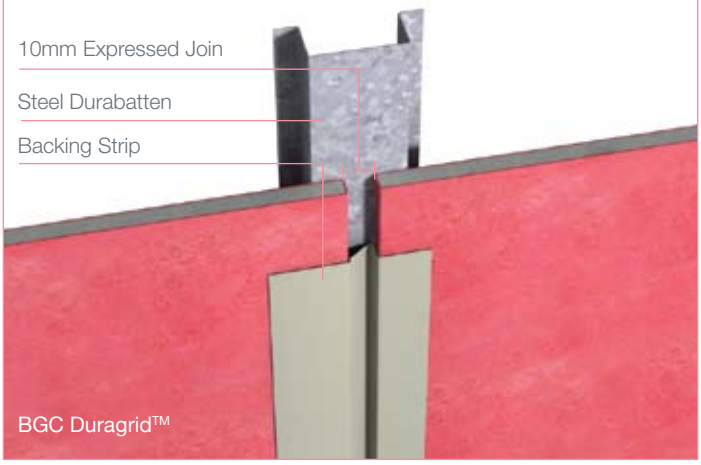
INSTALLATION DETAILS

The architectural intent and details of buildings vary from one designer to the next, and the variety of details would be impossible to catalogue.

The detail diagrams following are intended to assist the designer in achieving a high quality weather resistant facade.

The designer should not digress from the specification set out in this manual.

PANEL POSITION - FRONT VIEW



Use the backing strip as a temporary gauge to space the vertical joint of successive boards ensuring a uniform 10mm space between successive panels. Use the backing strip to space vertical panel joints.

INSTALLATION DETAILS

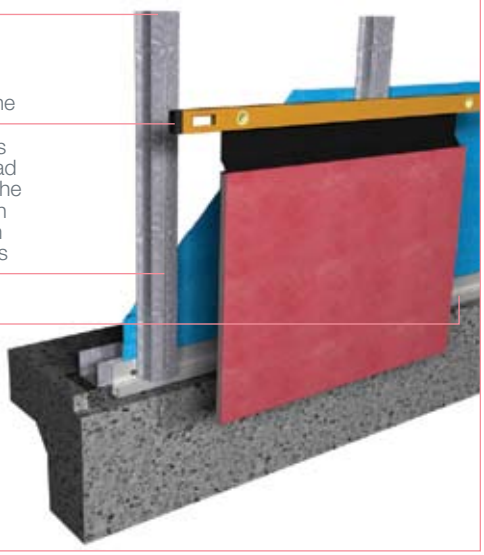
PANEL INSTALLATION

Durabatten Steel

Using a spirit level ensure panels are plumb and aligned with your datum line

Apply a continuous 6mm diameter bead of joint sealant to the Durabatten at each panel edge and on all contact surfaces

Datum line



TYPICAL SEALANT APPLICATION

Durabatten Steel

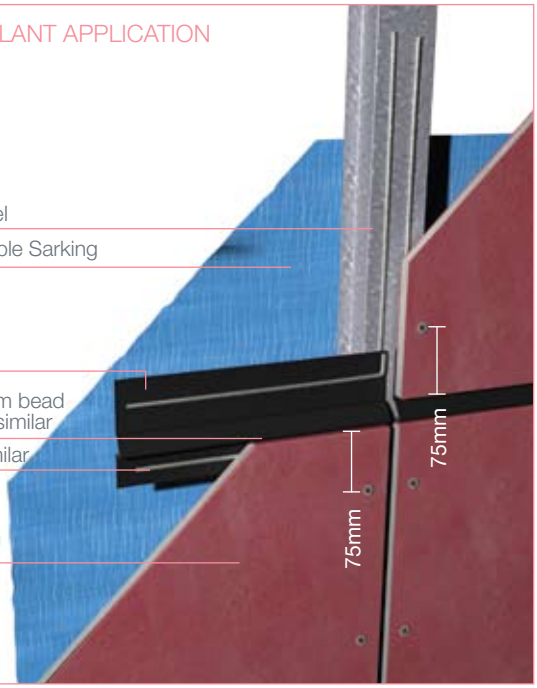
Vapour Permeable Sarking

Backing strip

Continuous 6mm bead of SIKA IIFC or similar

SIKA IIFC or similar

BGC Duragrid™



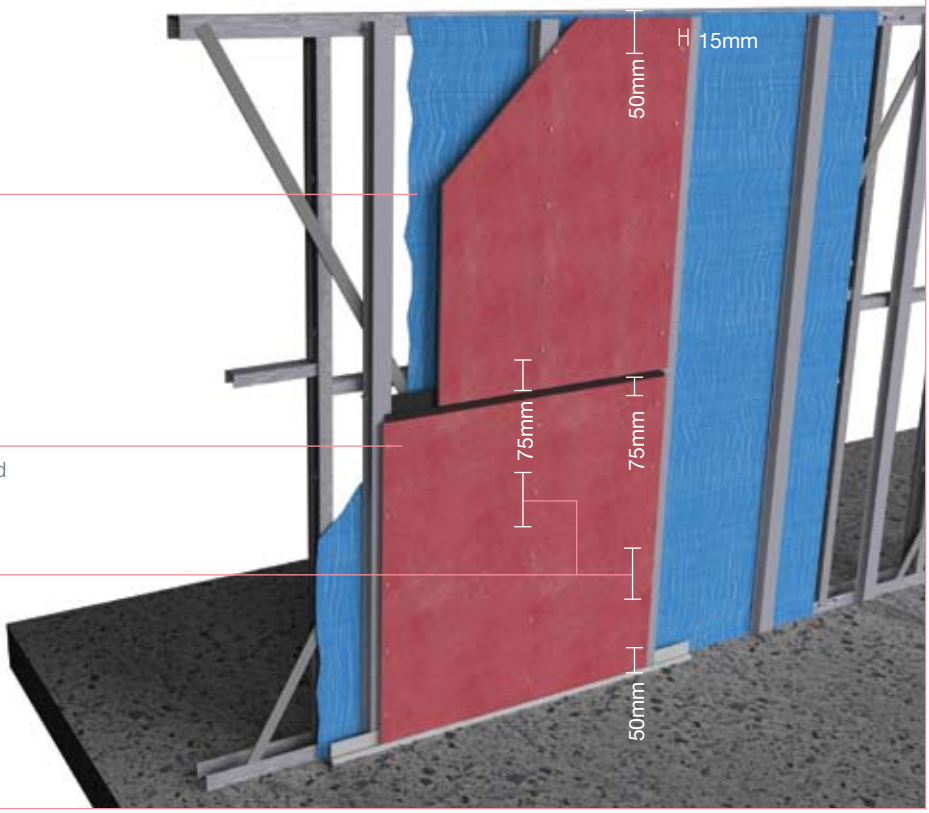
FASTENER SPACING

Vapour Permeable Sarking

BGC Duragrid™

Horizontal express joint with backing strip behind

Fastener spacing 200mm centres

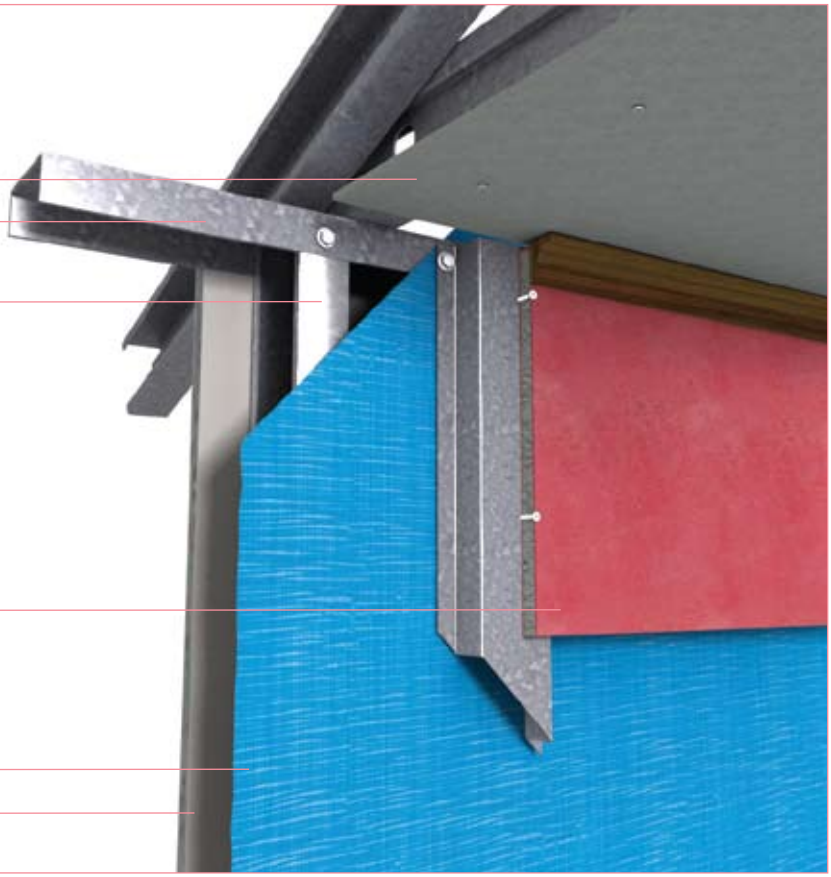


Duragrid™ panels are to be fixed with a continuous 6mm bead of SIKA 11FC or similar polyurethane sealant/adhesive to all contact surfaces with required fasteners at specific centres.

Duragrid™ panels should be sealed and fixed one panel at a time. Only apply sealant to the contact surfaces of the next panel to be fixed.

INSTALLATION DETAILS

SOFFIT DETAIL



BGC Durasheet™

Steel Frame

Steel Durabatten

BGC Duragrid™

Vapour Permeable Sarking

BGC Interior Liningboard

FOUNDATION DETAIL

BGC Interior Liningboard

Steel Durabatten

BGC Duragrid™

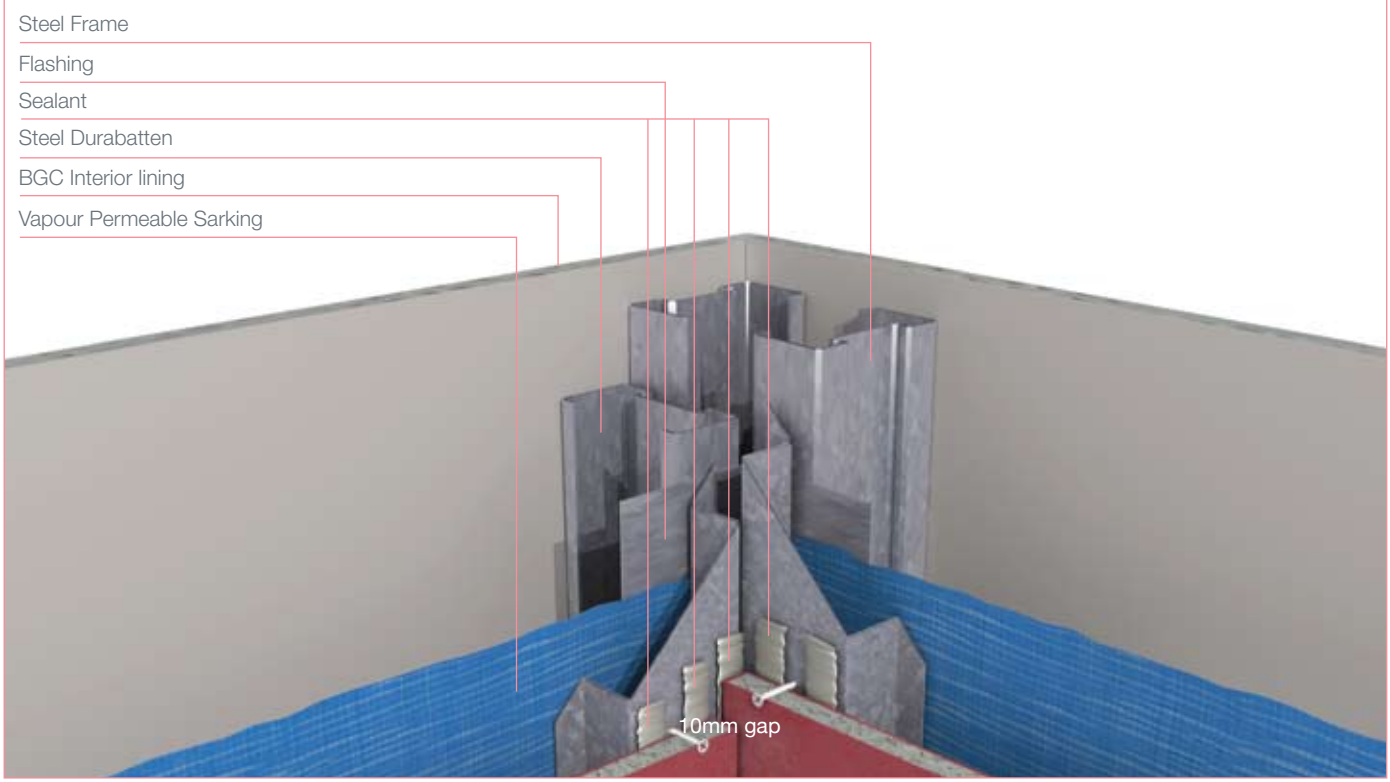
Ensure the Durabatten does not sit inside the cavity closer

uPVC Cavity Closer

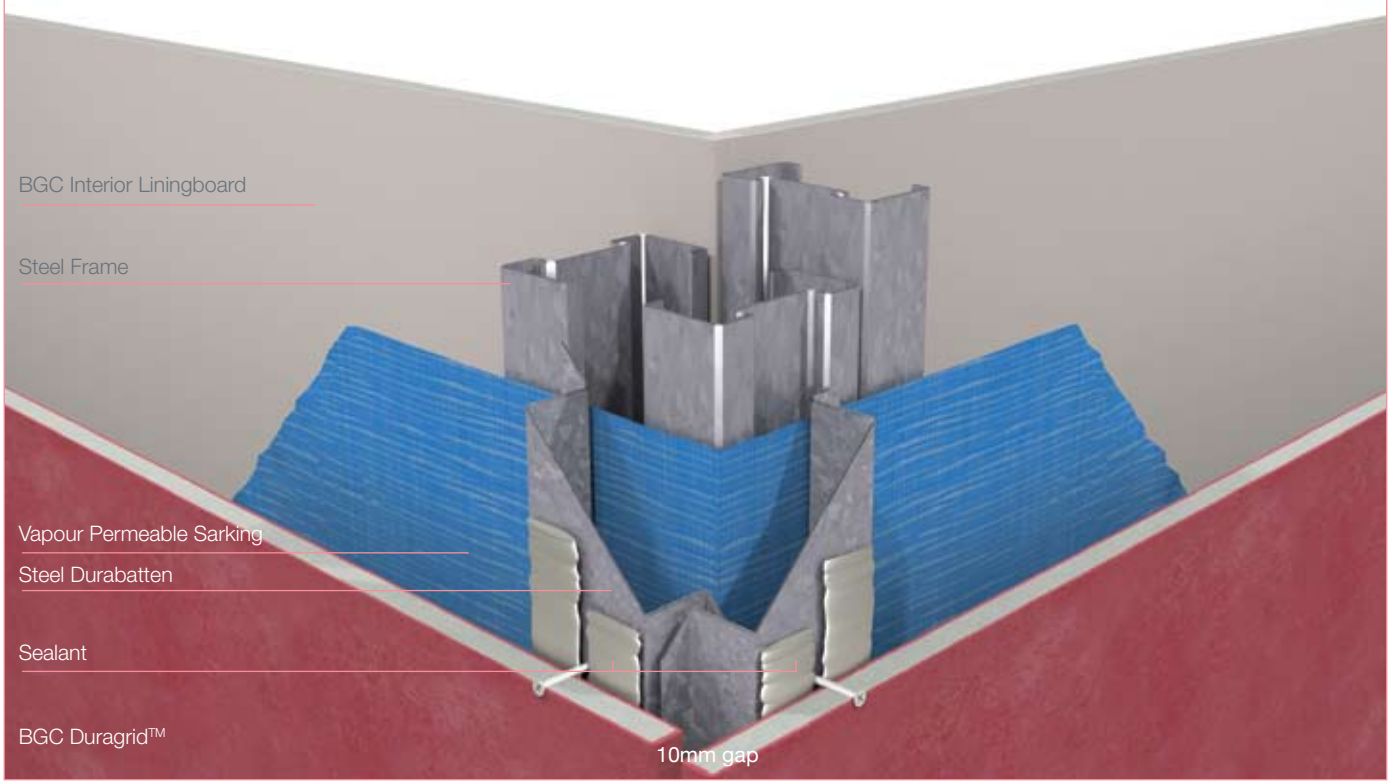
Damp Course

INSTALLATION DETAILS

INTERNAL CORNER DETAIL

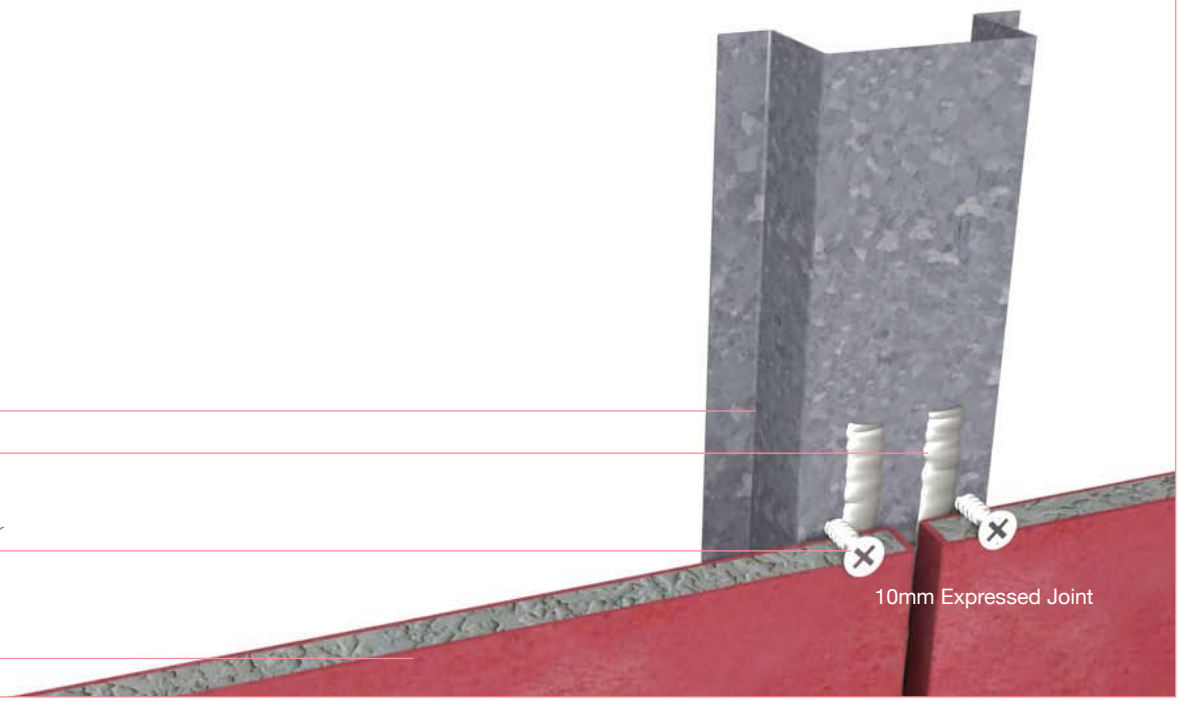


EXTERNAL CORNER DETAIL



INSTALLATION DETAILS

FASTENER POSITION



ENCLOSED BALUSTRADE/PARAPET WALL

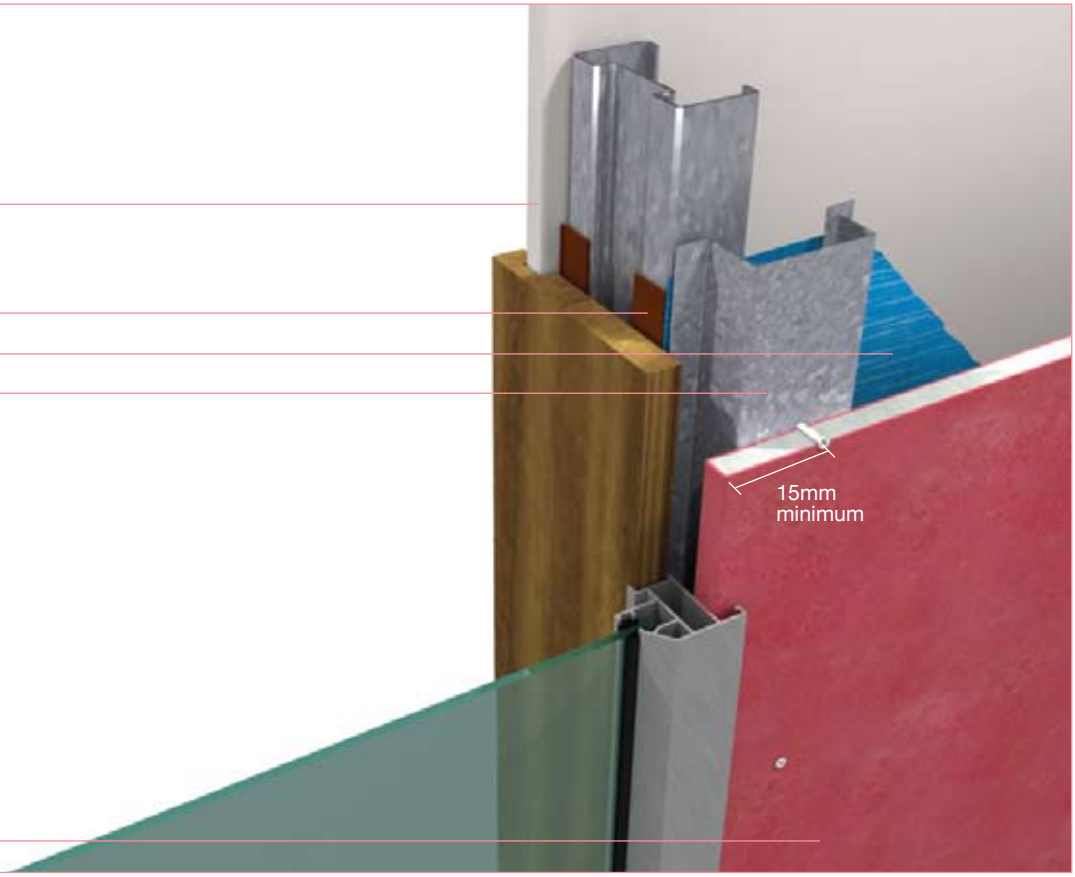
PENETRATIONS, WINDOW & DOOR OPENINGS

There are numerous varieties of penetrations, openings, and windows and door treatments available, and each weather proofing detail will be dependent on the material, style and manufacturer's specifications.

Adequate weather proofing of the opening application must be considered by the building designer, in conjunction with the penetration, window and door manufacturer.

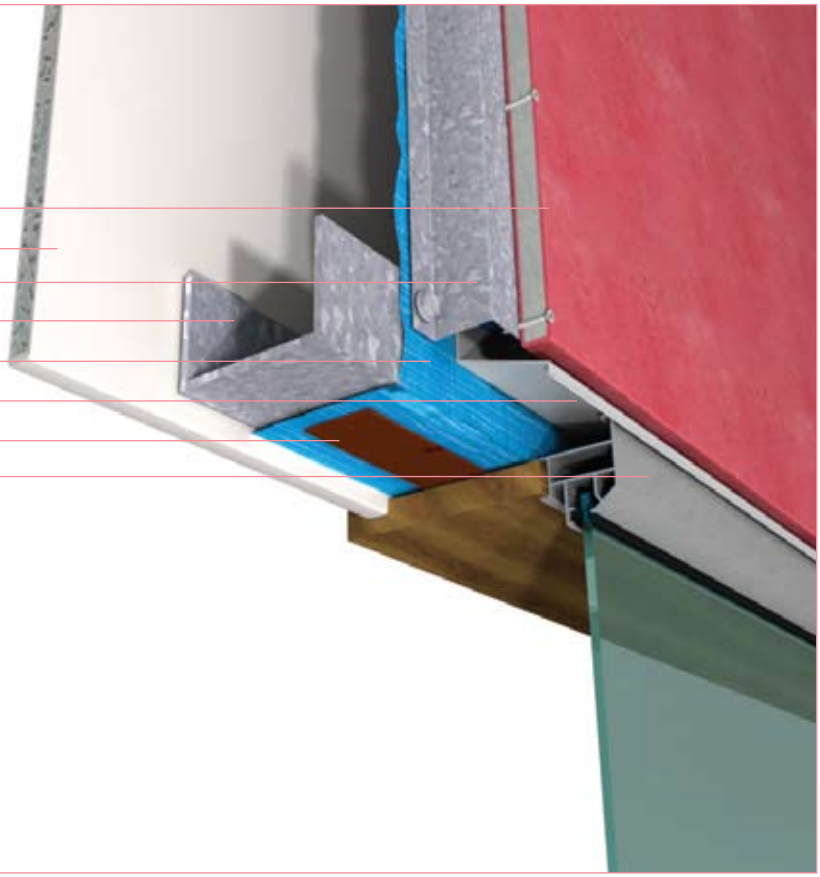
The following diagrams below are a guide only and the designer should consult with the appropriate manufacturers for the detail design to ensure adequate weather proofing.

WINDOW JAMB



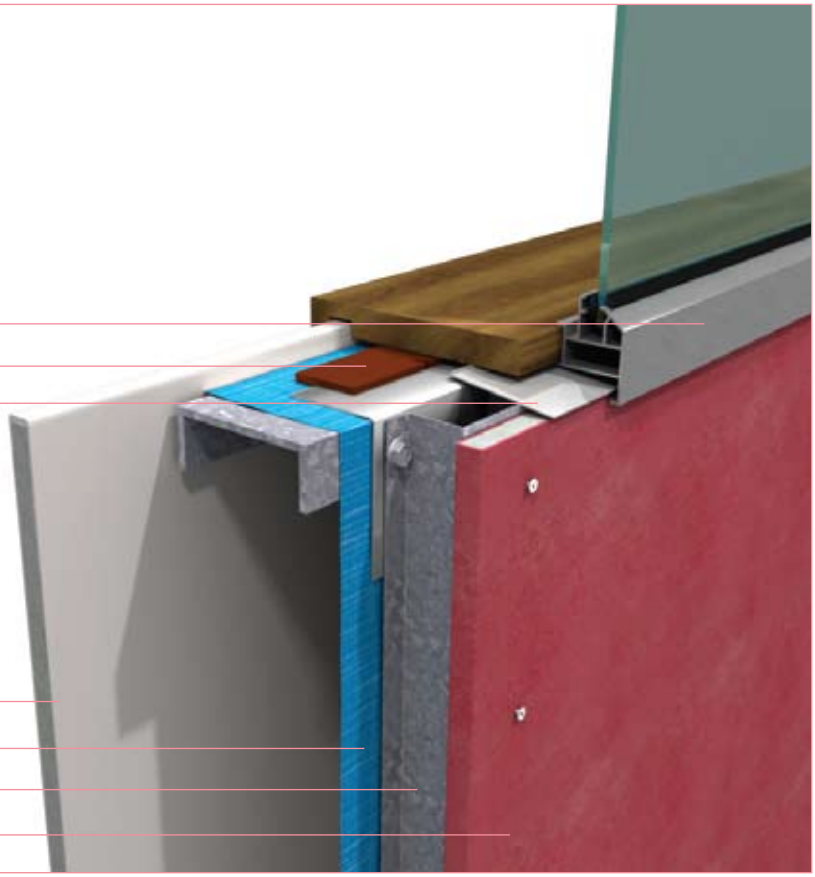
PENETRATIONS, WINDOW & DOOR OPENINGS

WINDOW HEAD



BGC Duragrid™
BGC Interior Liningboard
Steel Durabatten
Steel Frame
Vapour Permeable Sarking
Flashing
Packer (as required)
Aluminium window joinery

WINDOW SILL



Aluminium window joinery
Packer (as required)
Sill tray 5^0 min slope
BGC Interior Liningboard
Vapour Permeable Sarking
Steel Frame
BGC Duragrid™

THERMAL BREAKS

Thermal breaks are required for steel framed buildings, in walls enclosing habitable and or usable spaces. Careful consideration of thermal heat transfer and the position of thermal breaks need to be addressed by the architects, engineers and building designers.

Thermal breaks should be installed between the steel Durabatten sections and the Duragrid™ cladding.

Balustrades, parapets, and other non-enclosing wall elements may not require thermal bridging, except where the possibility of high thermal heat transfer exists through the steel CFS sections to the main structural steel element of the building.

MOISTURE MANAGEMENT

Designers, specifiers and builders have a duty of care to identify moisture-associated risks with any individual building design.

Wall construction design should consider both the interior and exterior environments of the building to effectively manage moisture. Special consideration should be given to buildings that are in extreme climates or at higher risk of wind driven rain.

In addition, all wall openings, penetrations, junctions, connections, window heads, sills and jambs must incorporate appropriate flashing for waterproofing. All other components, materials and installation methods used to manage moisture in walls should comply with the relevant standards of the Building Code of Australia (BCA).

WARRANTY

BGC warrants its products to be free from defects caused by faulty manufacture or materials. If any of its products are so defective the company will at its option, repair or replace them, supply equivalent replacement products or reimburse the purchase price.

This warranty shall not apply to any loss or consequential loss suffered through or resulting from defects caused by faulty manufacture or materials.

Fittings or accessories supplied by third parties are beyond the control of BGC and as such is not warranted by BGC.

NOTES

NOTES

CONTACT

TO CONTACT
YOUR NEAREST
BGC STOCKIST,
PLEASE CALL:

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BGC Fibre Cement

Quality System

Quality
Endorsed
Company

BGC FIBRE CEMENT IS A PROUD AUSTRALIAN OWNED MANUFACTURER OF FIBRE CEMENT PRODUCTS.

BGC HAS STATE-OF-THE-ART MANUFACTURING FACILITIES IN PERTH AND DISTRIBUTION CENTRES IN ALL STATES OF AUSTRALIA & IN NEW ZEALAND.

OUR DISTRIBUTION NETWORK ENSURES THAT OUR ENTIRE PRODUCT RANGE IS READILY AVAILABLE IN ALL STATES OF AUSTRALIA. BGC HAS A TEAM OF TECHNICAL SPECIALISTS WHO CAN ASSIST WITH ALL SPECIFICATION AND DESIGN INFORMATION. BGC PROVIDES BUILDERS, DEVELOPERS AND ARCHITECTS WITH A RANGE OF DESIGN ALTERNATIVES AND INNOVATIVE PRODUCTS.

BGC FIBRE CEMENT PRODUCTS AND APPLICATIONS DISTRIBUTED BY BGC ARE:

CERAMIC TILE UNDERLAY / A substrate for ceramic and slate floor tiles.

COMPRESSED SHEET / Used for domestic, commercial sheet for wet areas, flooring, partitions, exterior decking, fascia and facade cladding.

DURACOM™ / Compressed fibre cement facade system

DURALATTICE™ / Square or diamond patterned lattice, suitable for screens, pergolas and fences.

DURALINER™ / An interior lining board, this is the perfect substrate for tiles and is ideal for wet areas.

DURALUX™ / Interior lining board suitable for ceilings and soffits.

DURASHEET™ / Used for exterior applications. Durasheet™ is ideal for the cladding of gables and lining eaves, carports and verandahs. Can also be used for commercial soffits and exterior cladding on non impact areas.

DURAPLANK™ / Available in Smooth, Woodgrain and Rusticated finishes, Duraplank™ is ideal for exterior cladding of upper storey conversions or ground level extensions.

DURATEX™ / A base sheet used for textured coatings on exterior wall applications.

NULINE™ / Weatherboard cladding system.

SILHOUETTE™ / A fibre cement plank and uPVC feature strip exterior cladding system.

STONESHEET™ / Purpose designed substrate for stone tile facade.

VINYL CORK FLOOR COVERINGS / A substrate for vinyl floors.

SAFE WORKING PRACTICES / Please wear a P1 or P2 mask and safety goggles (approved to AS/NZW1337 standards) whilst cutting or installing Duragrid™. Duragrid™ sheets can be safely handled during unloading or stacking without the use of these precautions. CLEANING UP / Always wet down your work area when cutting Duragrid™, to ensure that dust is managed. Dispose of any vacuumed dust with care and using containment procedures.

AUSTRALIAN OWNED & MANUFACTURED
WWW.BGC.COM.AU/FIBRECEMENT

DESIGN
WWW.THESHAPEGROUP.COM.AU