MARCH 2013

innova™
INNOVATIVE FACADE SYSTEMS

DURAGROOVE™
FACADE SYSTEM

BRANZ Appraised
Appraisal No. 799 [2013]

BRANZ Appraised
Appraisal No. 798 [2013]

BGC Fibre Cement

AUSTRALIAN OWNED & MANUFACTURED
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MARCH 2013

INTRODUCING INNOVA™

INNOVA™ IS A RANGE OF INTERIOR LINING, EXTERIOR FACADE AND FLOORING PRODUCTS WHICH GIVE A NEW DIMENSION TO THE BGC PRODUCT RANGE. THE PRODUCTS WITHIN THE INNOVA™ RANGE HAVE BEEN DESIGNED TO INSPIRE YOU TO CREATE INNOVATIVE AND DYNAMIC DESIGNS WITHIN YOUR BUILDING OR RENOVATION PROJECT.

innova™
INNOVATIVE FACADE SYSTEMS

DURAGROOVE™ CLADDING IS A VERTICALLY GROOVED PANEL WHICH PROVIDES A MODERN LOOK FOR EXTERIOR OR INTERIOR INSTALLATION. AVAILABLE IN DIFFERENT PROFILES AND SPACING WIDTHS, DURAGROOVE™ GIVES YOU THE CHOICE AND FLEXIBILITY TO USE THE PRODUCT THAT BEST FITS YOUR PROJECT.

DURAGROOVE™ HAS A SHIPLAP JOIN WHICH MAKES IT A SIMPLE AND QUICK PRODUCT TO INSTALL, AND CAN BE USED IN SINGLE STOREY AND MEDIUM HEIGHT INSTALLATIONS.

DURAGROOVE™ FACADE SYSTEM

/ VERTICALLY GROOVED FOR A CONTEMPORARY ALTERNATIVE TO THE TRADITIONAL WEATHERBOARD LOOK

/ IS LIGHTWEIGHT AND DURABLE

/ PANELS ARE ACRYLIC SEALED WHICH AIDS PAINT APPLICATION

/ QUICK TO INSTALL BECAUSE IT ELIMINATES THE NEED FOR TAPED AND FILLED JOINTS

/ PANELS ARE NOT AFFECTED BY INSECTS, AIR, STEAM, SALT OR SUNLIGHT

/ BRANZ APPRIASED

/ AVAILABLE IN 3 PROFILES:

DURAGROOVE™ SMOOTH – WIDE (150MM)

DURAGROOVE™ SMOOTH – NARROW (100MM)

DURAGROOVE™ WOODGRAIN – WIDE (150MM)

CONTENTS

APPLICATIONS

Duragroove™ is a strong and durable cladding which has distinctive vertical grooves and is suitable for finishing with a textured paint, creating a rendered look.

Duragroove™ is suitable for low to medium rise buildings and can be used on both timber and steel framed buildings. It is also ideal for renovations and alterations to existing dwellings. In smaller areas it provides a distinctive looking feature wall and can be used either in interior or exterior applications.

ADVANTAGES

/ A choice of groove widths and finishes available
/ Has a shiplap join to ease installation
/ Is lightweight and durable
/ Quick to install because it eliminates the need for taped and filled joints
/ Panels are not affected by insects, air, steam, salt or sunlight

ENERGY EFFICIENCY CONSIDERATIONS

Energy Efficiency requirements for both residential and commercial buildings are a requirement under clause H1 of the New Zealand Building Code (NZBC). Thermal heat transfer into and out of the building envelope will affect 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 resistance), of the wall. Thermal breaks are required for steel framed buildings and should be installed between the steel framing and the Duragroove™ panels. Thermal breaks should have a minimum R-Value of 0.2. Guidance on insulation requirements can be found in the latest edition of BRANZ publication –'House Insulation Guide'.

PRODUCT INFORMATION

Duragroove™ panels are manufactured from Portland cement, finely ground silica, cellulose fibres and water. Panels are cured in a high-pressure steam autoclave to create a durable, dimensionally stable product.

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

EXTERNAL FIRE SPREAD

Duragroove™ without an applied surface finish has a peak heat release rate of 9.5 kW/m2 and a total heat release of 3.0 MJ/m2. Refer to the relevant NZBC Acceptable Solution C/AS1 - C/AS7 to determine the suitability of the Nuline™ Plus system for use on each building risk group. For ratings for Nuline™ Plus with an applied finish, please refer to the manufacturer/ supplier of the finish system.

OUTBREAK OF FIRE

When Duragroove™ is finished with a paint coating of not more than 1.0 mm in thickness, clearance separations from chimneys and flues are not required. However when used in conjunction with, or attached to, heat sensitive material, the heat sensitive material must be separated from chimneys and flues in accordance with the requirements of Part 7 of NZBC Acceptable Solutions C/AS1 - C/AS6 or NZBC Verification Method C/VM1.

FIRE RATING

A 30/30/30 FRR can be achieved with the use of BGC Durabarrier – see the BGC Durabarrier brochure for details. For other fire ratings please contact BGC Fibre Cement (NZ).

DURABILITY

Duragroove™ physical properties make it a very durable product.

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

ARCHITECTURAL DETAILS

Full architectural details are available from BGC Fibre Cement, www.bgc.com.au/fibrecement or on Productspec and full specification is available on Smartspec.

DESIGN CONSIDERATIONS

The designer should determine the wind pressures for the project and design accordingly. Duragroove™ can be situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5kps.

The timber structure should be designed to NZS3604. Alternatively the building can be to a specific design using NZS3603 and AS/NZS1170, and the framing must be of at least equivalent stiffness to the framing provisions of NZS3604.

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

Before Duragroove™ is installed, particular care should be taken to ensure that all flashings and waterproofing work is complete, including all wall underlay or BGC Durabarrier. If Duragroove is installed onto an unlined wall ie gable end or garage walls then a rigid sheathing/air barrier must be installed – ie BGC Durabarrier.

For Construction within the scope of E2/AS1, it is a requirement to have a horizontal flashing joint at the floor joist level between storeys and for construction greater than two storeys or 7 metres, an inter-storey flashing bridging the drained cavity must be installed.


NARROW


WIDE


WOODGRAIN

WEATHER RESISTANCE / FREEZE THAW

The Duragroove™ facade system has been successfully tested for weather resistance as per NZBC Verification Method E2/VM1.

Duragroove™ should not be used in situations where it will be in direct contact with snow and ice for prolonged periods.

STRUCTURAL BRACING

Duragroove™ is not recommended for structural bracing.

Bracing can be achieved with the addition of Durabarrier as a rigid sheathing/air barrier or using Duraliner™ or Plasterboard as interior linings.

PANEL SIZES AND MASS - TABLE 1

THICKNESS mm	FINISH	MASS KG/M^2	WIDTH mm	LENGTH mm		
				2450	2750	3000
9	Smooth Narrow	12.5	1200	X	X	X
	Smooth Wide		1200	X	X	X
	Woodgrain		1200	X	X	X

Duragroove™ Smooth Narrow
100mm between grooves. 4.5mm width of groove
Duragroove™ Smooth Wide
150mm between grooves. 4.5mm width of groove
Duragroove™ Woodgrain
150mm between grooves. 4.5mm width of groove

SHEET TOLERANCES

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

HANDLING AND STORAGE

Duragroove™ 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.

EXTRA CARE MUST BE TAKEN AT THE SHEET EDGES TO PREVENT CRACKING OF THE SHIPLAP JOIN.

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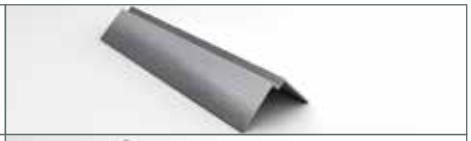
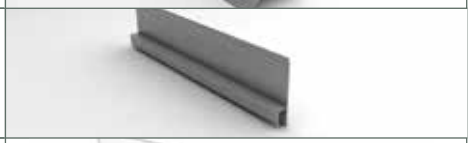
ACCESSORIES AVAILABLE FROM BGC

ALUMINIUM INTERNAL CORNER	3000mm	
ALUMINIUM EXTERNAL CORNER	2450mm, 2750mm or 3000mm	
ALUMINIUM HORIZONTAL FLASHING	3000mm	
CAVITY VENT STRIP	19mm x 2700mm	
BGC EDGE SEALER		

ACCESSORIES SUPPLIED BY BUILDING MERCHANT

CAVITY TIMBER BATTEN H3.1	20 x 50mm	
SEALANT / ADHESIVE	Bostik Seal ‘n’ Flex FC	
SEALANT	Bostik Safetech Safe Seal or any BRANZ Appraised paintable sealant	

FASTENERS

BATTEN TO FRAMING

65 x 2.87mm RounDrive Ring Shank Nail

60 x 2.8mm Jolt Head Galvanised Nail

DIRECT FIXED DURAGROOVE™

40 x 2.8mm Fibre Cement Nail – Galvanised or Stainless Steel

ND 50 Stainless Steel Brad Nails

CAVITY FIXED DURAGROOVE™

C25 304 Stainless Steel Brads

30 x 2.8mm Fibre Cement Nail Galvanised or Stainless Steel

25mm x 10g class 4 or Stainless Steel Countersunk Wood Screws

Refer to BGC Technical Specification – Steel Framing - for fixings when using Steel Framing.

Fixings must comply with the minimum durability requirements of NZBC.

CONSTRUCTION DETAILS

FRAMING

Duragroove™ panels can be installed vertically to both timber and lightweight steel frames.

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.

Duragroove™ will not straighten excessively warped or distorted frames and any warping may still be visible after Duragroove™ is applied. Warped framing will require remedial action.

TIMBER FRAMES

Timber wall framing behind Duragroove™ must be treated and have moisture contents as required by NZBC Acceptable Solution B2/AS1.

Timber framing must comply with all current NZ Standards and any specific engineering design specifications.

Duragroove™ requires a minimum framing width of 45mm. Studs spacing must not be greater than 600mm centres, Nog/dwang spacing must not be greater than 800mm centres.

Timber framing must have a maximum moisture content of 20% at the time of installation of Durabarrier or wall underlay.

CONSTRUCTION DETAILS

CAVITY CONSTRUCTION

Duragroove™ can be used as a wall cladding system in all NZS3604:2011 wind zones and situated in specific design wind pressures up to a maximum design differential ultimate limit state (ULS) of 2.5kPa.

CAVITY BATTEN

Cavity battens must be 50 x 20mm H3.1 and must be installed on to the studs.

The cavity battens must be structurally fixed with 65 x 2.87mm RounDrive Ring Shank Nails or 60 x 2.8mm Jolt Head Galvanised Nails. They must be fixed at maximum 300mm centres.

Where studs are greater than 450mm centres and a wall underlay is used, a wall underlay support must be installed over the underlay at maximum 300mm centres horizontally. The vertical sheet joints must coincide with the centre line of the cavity battens. Stud centres may have to be designed to coincide with the sheet joints.

FIXING DURAGROOVE™ TO BATTENS

Fixings	Fixing Centres	From Sheet Edge
C25 304 Stainless Steel Brad	150mm	18mm
30 x 2.8mm Fibre Cement Nail	200mm	18mm
25mm x 10g Countersunk Wood Screw	200mm	18mm

All fixing types must be used in conjunction with Bostik Seal ‘n’ Flex FC.

Duragroove™ must be fixed to the cavity batten with a continuous 6mm bead of Bostik Seal ‘n’ Flex FC to all contact surfaces. The intermediate batten must have 2x6mm beads of Seal ‘n’Flex FC. A 4mm bead must be applied to the ship lap joint prior to the installation of the next sheet. **Note:** Bostik Seal ‘n’ Flex FC must only be applied just prior to the installation of the Duragroove™ sheets as it is a fast cure adhesive.

Duragroove™ sheets and cavity battens must be dry and free from dust prior to the application of Bostik Seal ‘n’ Flex FC. The adhesive must not be applied in temperatures below 5°.

DIRECT FIXED CONSTRUCTION

Duragroove™ can be used as a direct fixed wall cladding system in NZS3604:2011 wind zones up to and including Very High and with a risk score of 0-6.

Where studs are greater than 450mm centres and a wall underlay is used, a wall underlay support must be installed over the underlay at maximum 300mm centres horizontally. The vertical sheet joints must coincide with the centre line of the cavity battens. Stud centres may have to be designed to coincide with the sheet joints.

FIXING DURAGROOVE™ TO FRAMING

Duragroove™ can be fixed with the following fixings in the specified wind zones:

Fixings	Fixing Centres	Wind Zone
40 x 2.8 Fibre Cement Nail	200mm	Up to Very High Wind Zone
ND50 Stainless Steel Brad Nail	150mm	Low Wind Zone
	100mm	Medium Wind Zone
	75mm	High Wind Zone

All fixings 18mm from sheet edge. Fixing at specified centres to all framing.

Position the underlap sheet on every stud 3mm past the centre of the stud to ensure the fasteners fixed to the edge of the sheet have adequate distance into the stud.

Apply a continuous 4mm bead of Bostik Seal ‘n’ Flex FC to the edge of the shiplap joint and install the next sheet.

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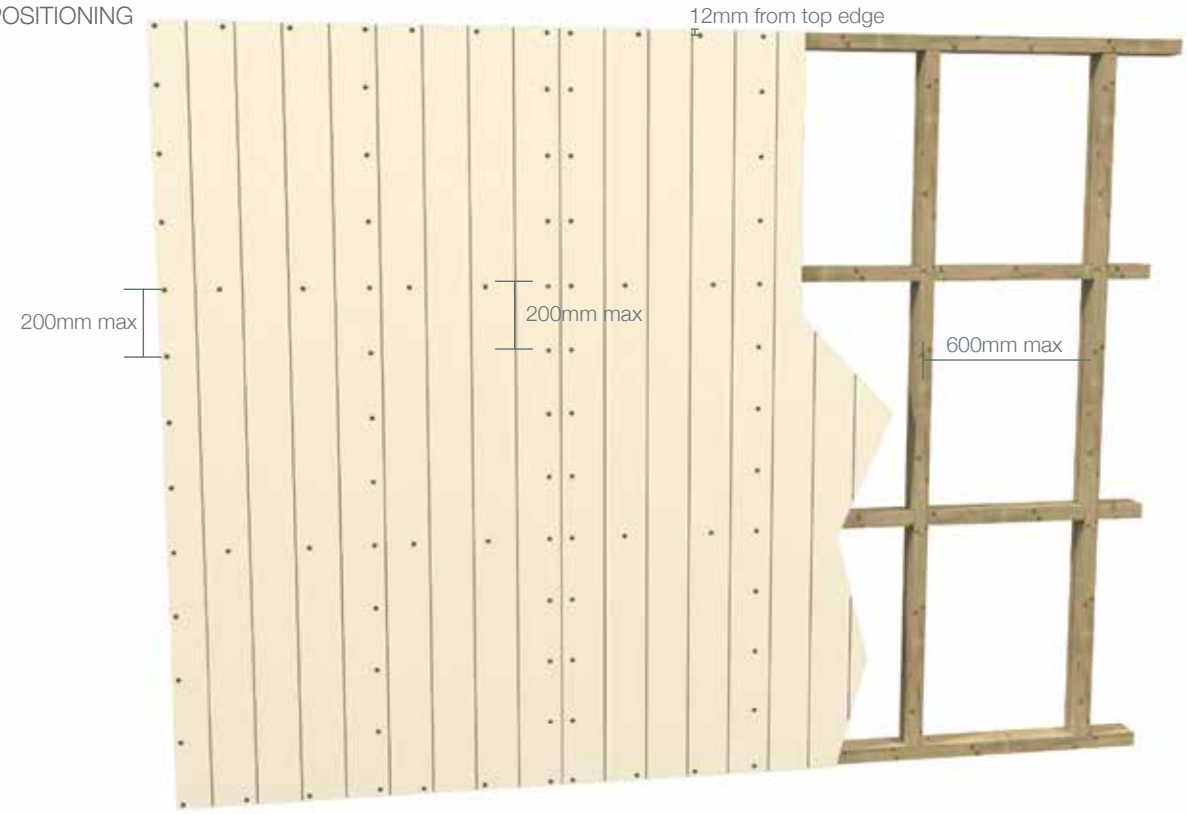
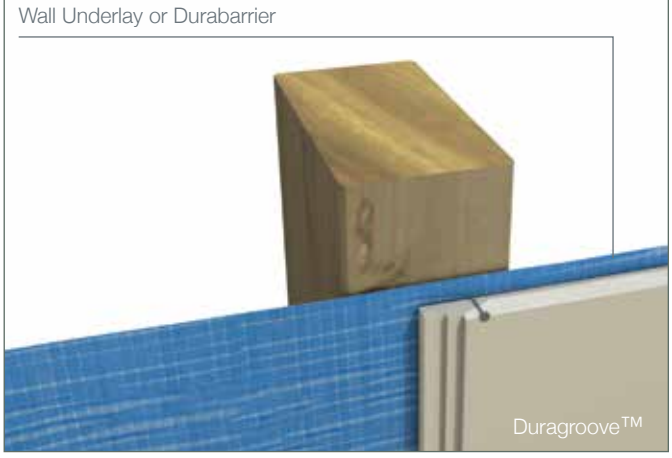
DIRECT FIXED INSTALLATION DETAILS

FIGURE 1
FASTENER POSITIONING



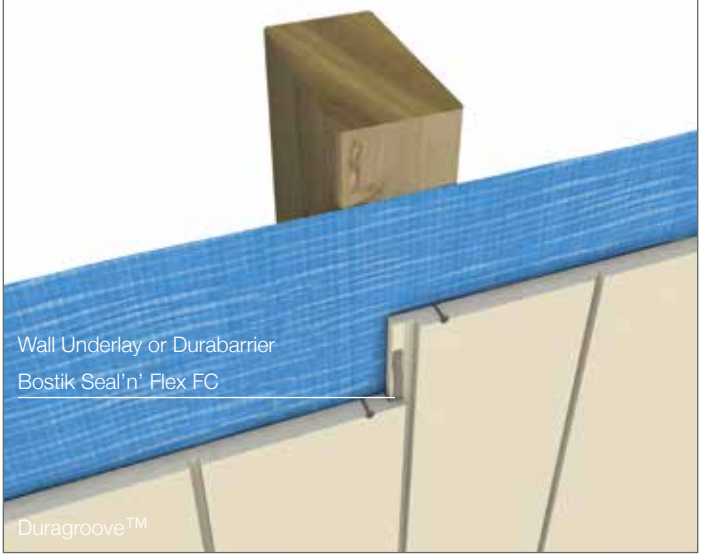
Refer to page 9 for fixings and fixing centres for the Wind Zone.

FIGURE 2
SHEET EDGE POSITION



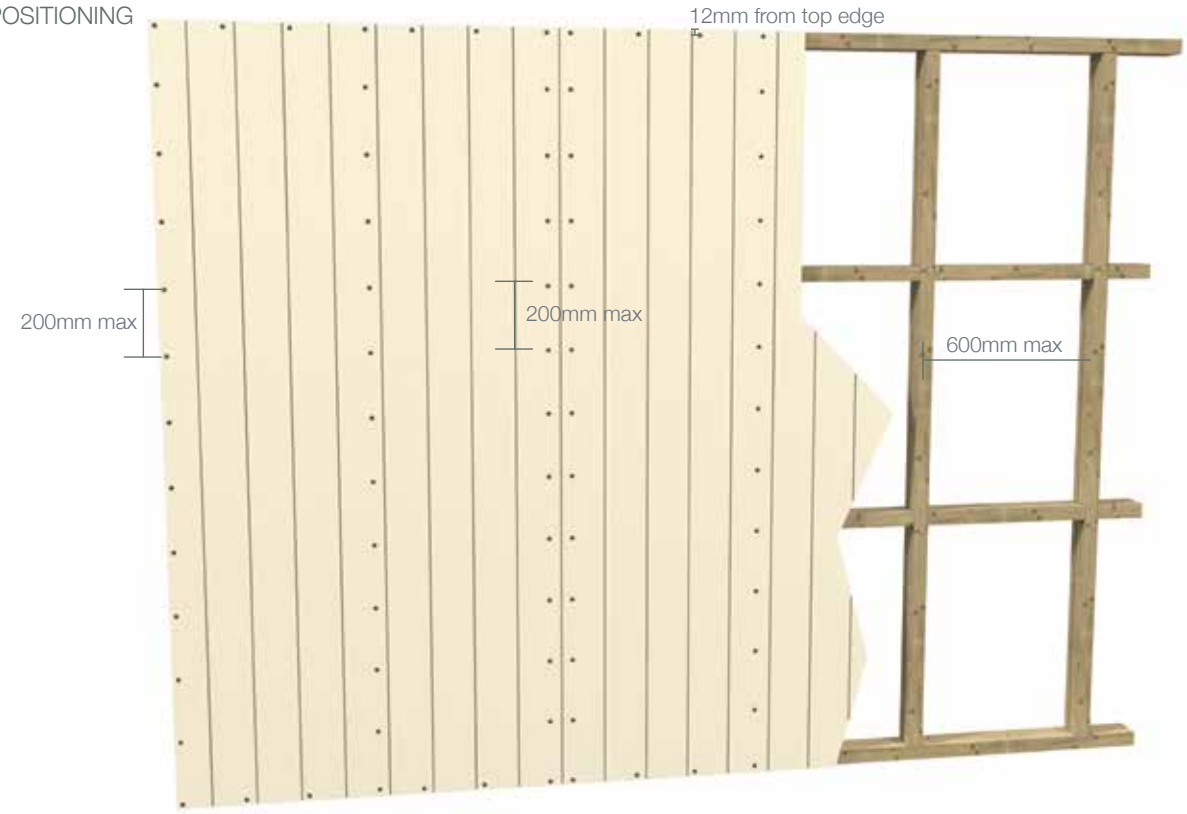
Position the underlap sheet on every stud 3mm past the centre of the stud to ensure the fasteners fixed at the edge of the sheet have adequate distance into the stud.

FIGURE 3
FIBRE CEMENT NAIL/BRAD FIXING – DIRECT FIX



CAVITY INSTALLATION DETAILS

FIGURE 4
FASTENER POSITIONING



Duragroove™ panels should be installed vertically with all sheet edges fully supported. The centre joints must coincide with the centre lines of the framing member and all sheets should be installed in one direction.

As detailed on p8, there are several different fasteners that can be used to fix Duragroove™ panels.

FIGURE 5
FIBRE CEMENT NAIL/BRAD/SCREW FIXING – CAVITY FIX

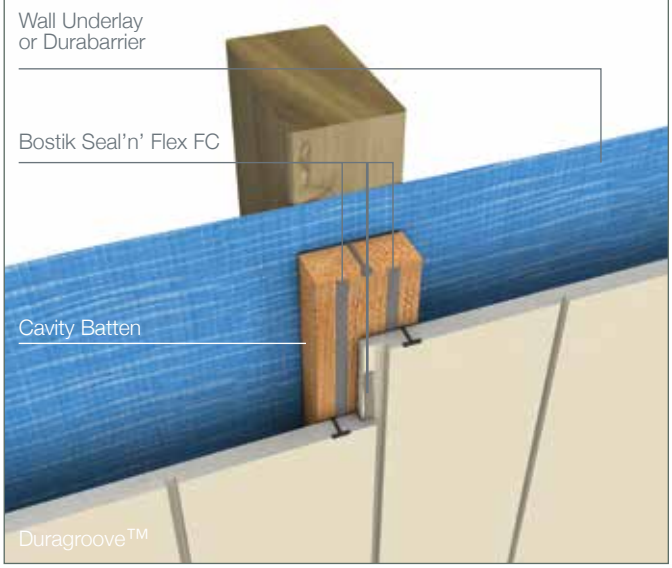


FIGURE 6
COUNTERSUNK SCREW – LIGHTWEIGHT STEEL FRAME

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INSTALLATION DETAILS

To fix the first sheet, set in place ensuring the required edge distances are maintained.

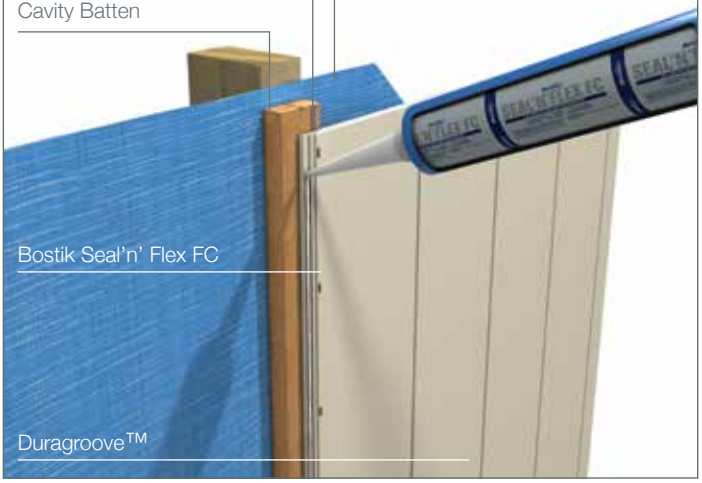
FIGURE 7
FIX FIRST SHEET

FIGURE 8
FIX NEXT SHEET

Once both sheets are fixed, check the joint for gaps and fill with additional sealant if required.

Apply a continuous 4mm bead of sealant to the edge of the shiplap join.

FIGURE 9
APPLY SEALANT



INSTALLATION DETAILS

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

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

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

FIGURE 10
SLAB EDGE DETAIL

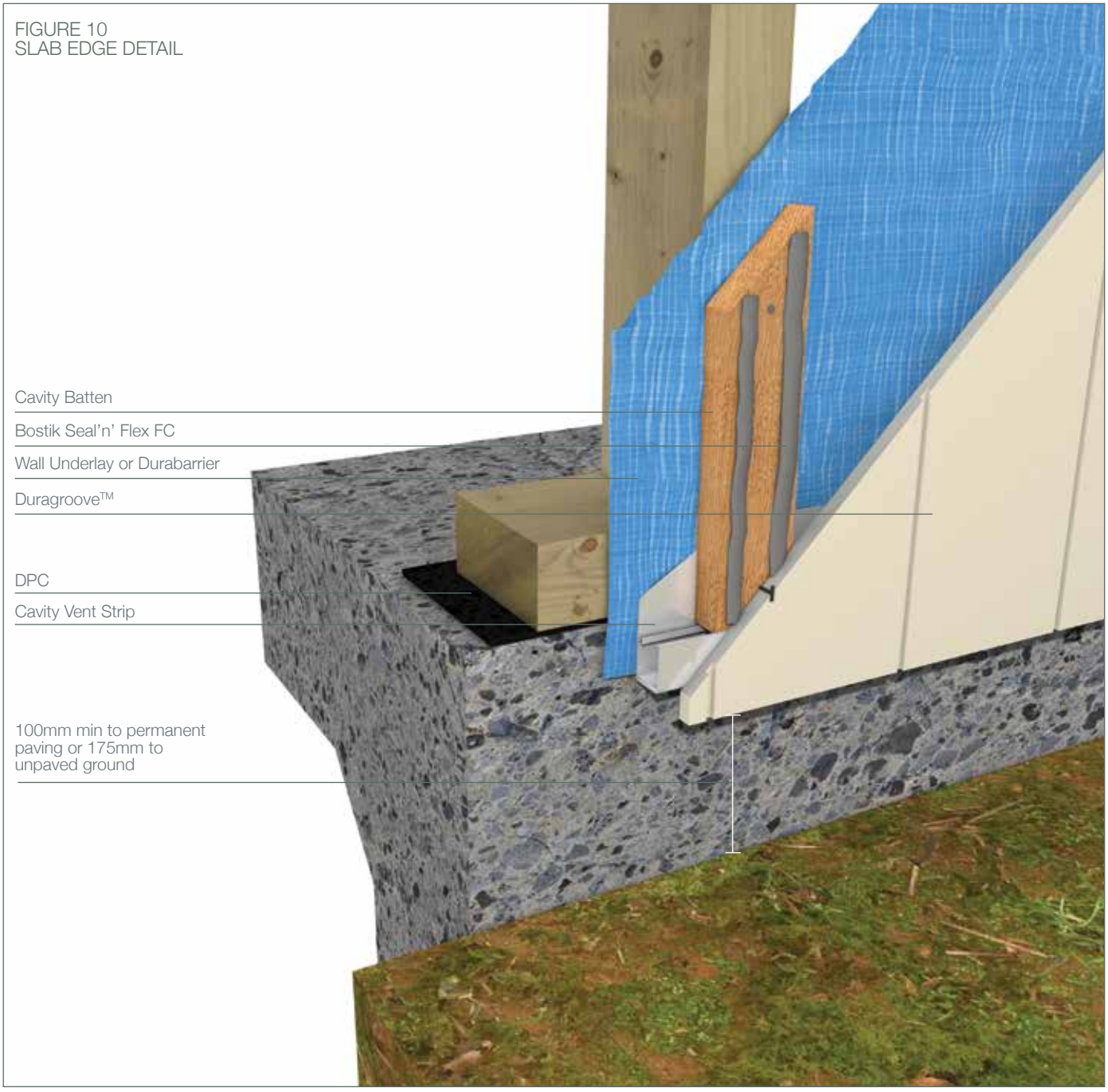


FIGURE 11
EXTERNAL CORNER – ALUMINIUM PROFILE

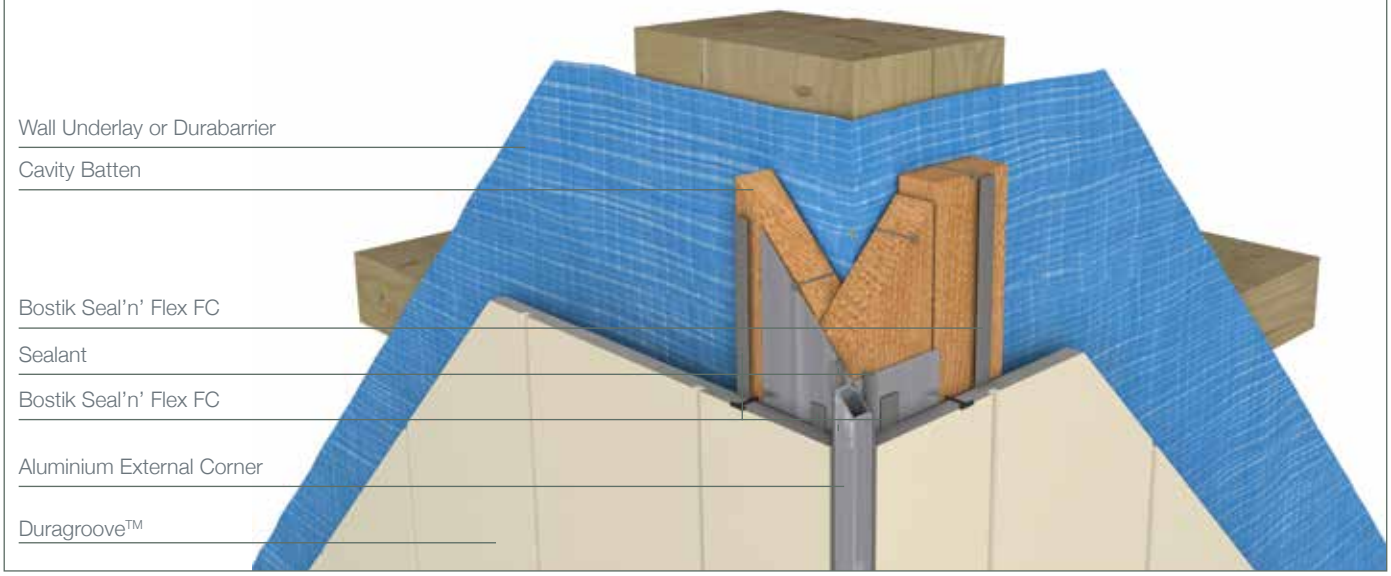


FIGURE 12
INTERNAL CORNER – SEALANT OPTION

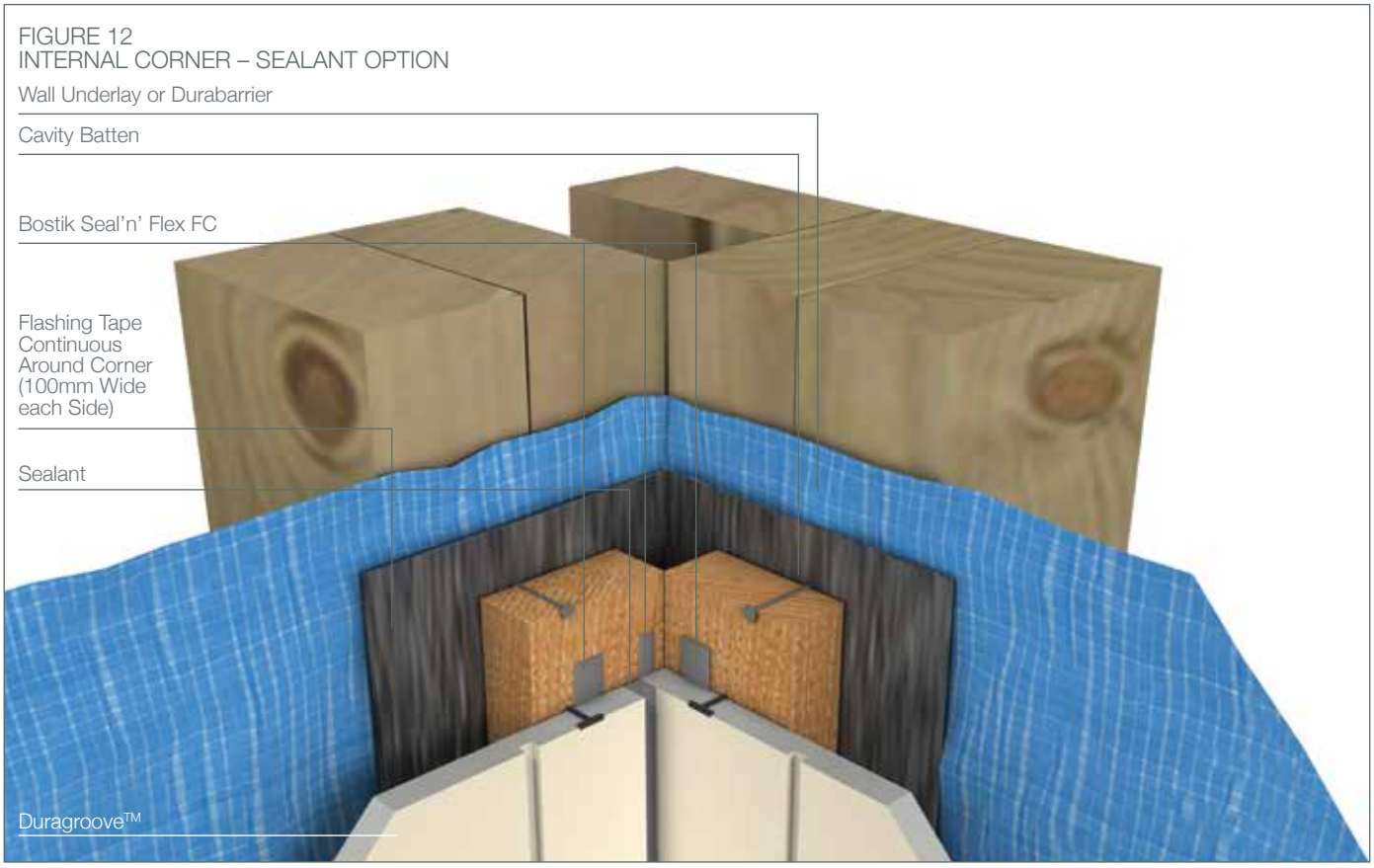


FIGURE 13
INTERNAL CORNER – ALUMINIUM PROFILE

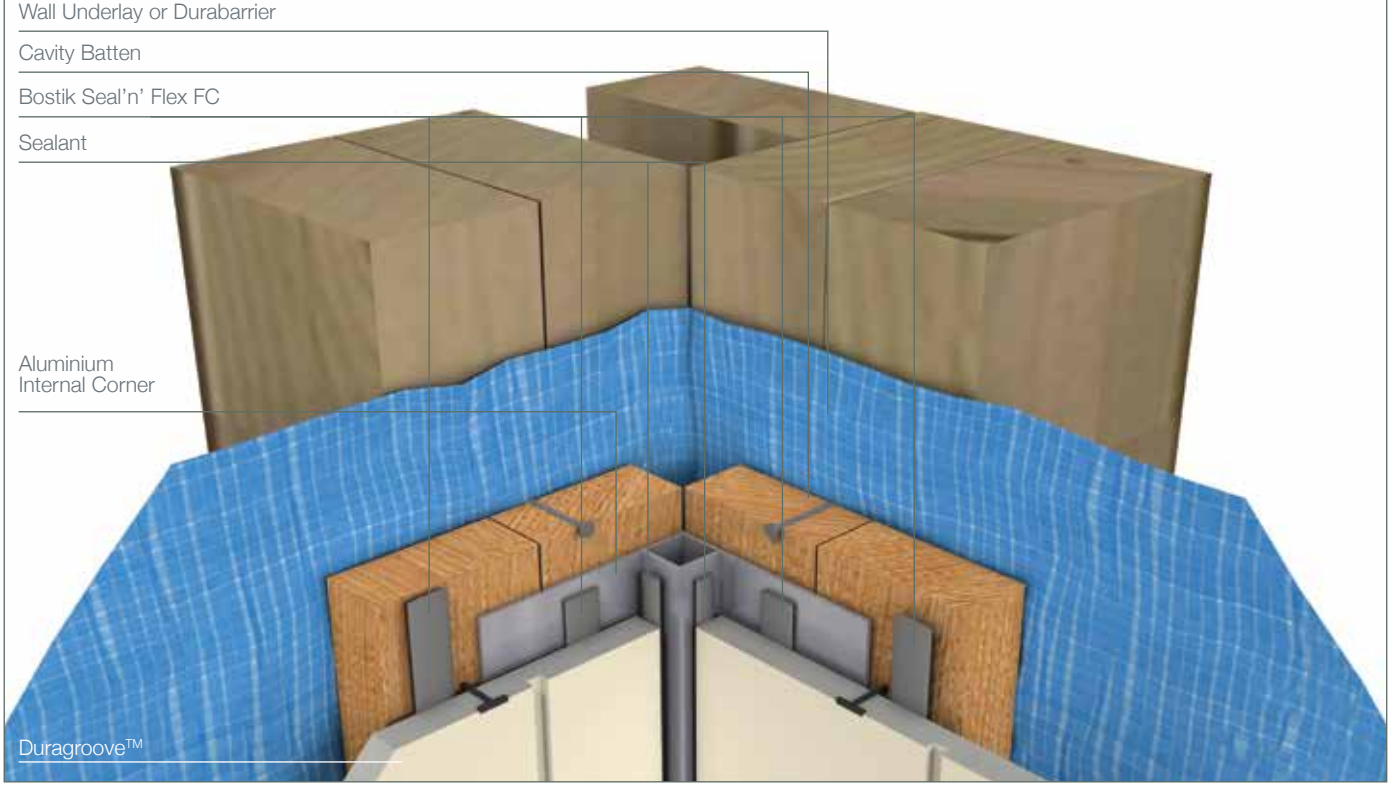


FIGURE 14
WINDOW HEAD

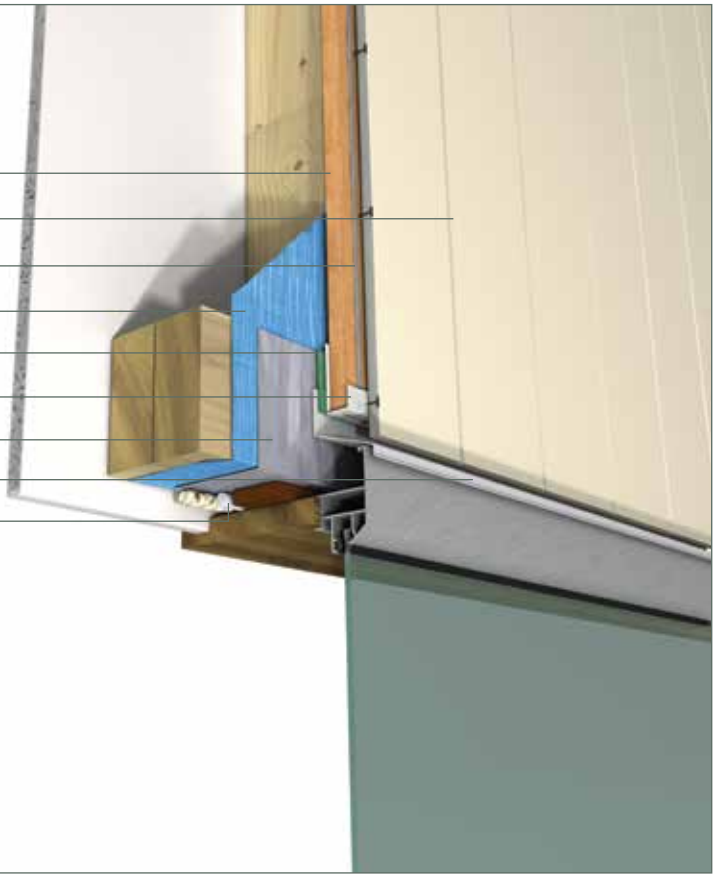


FIGURE 15
WINDOW SILL

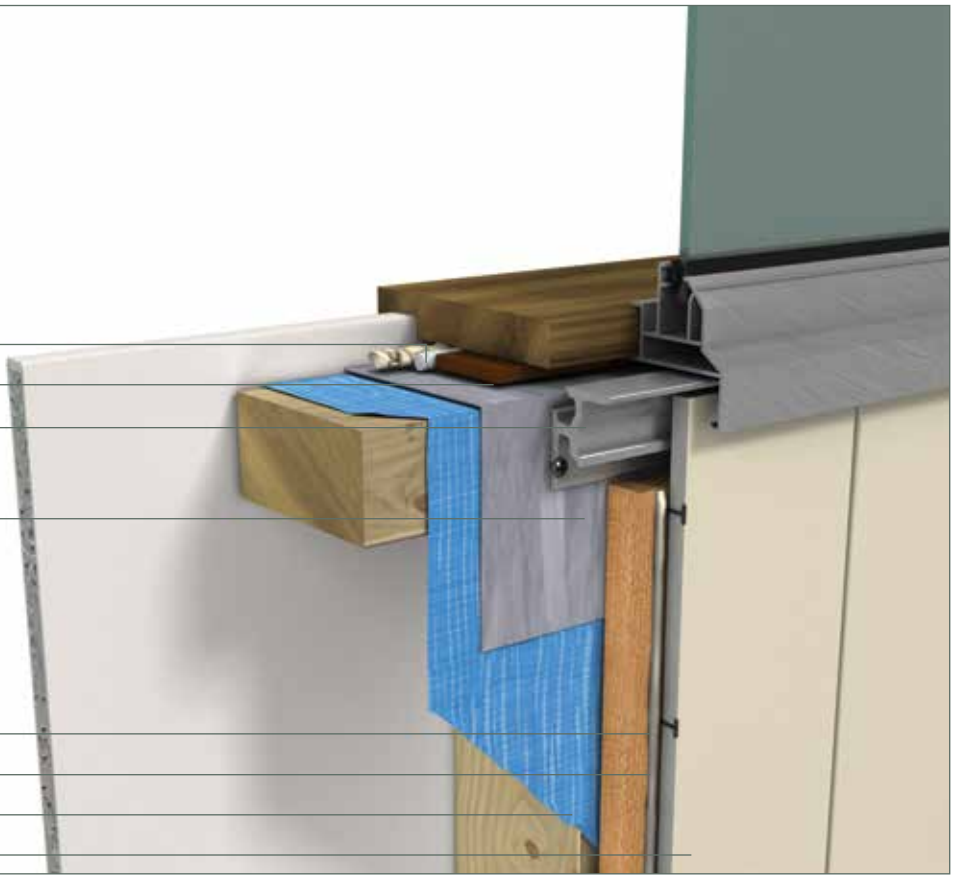


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FIGURE 16
WINDOW JAMB

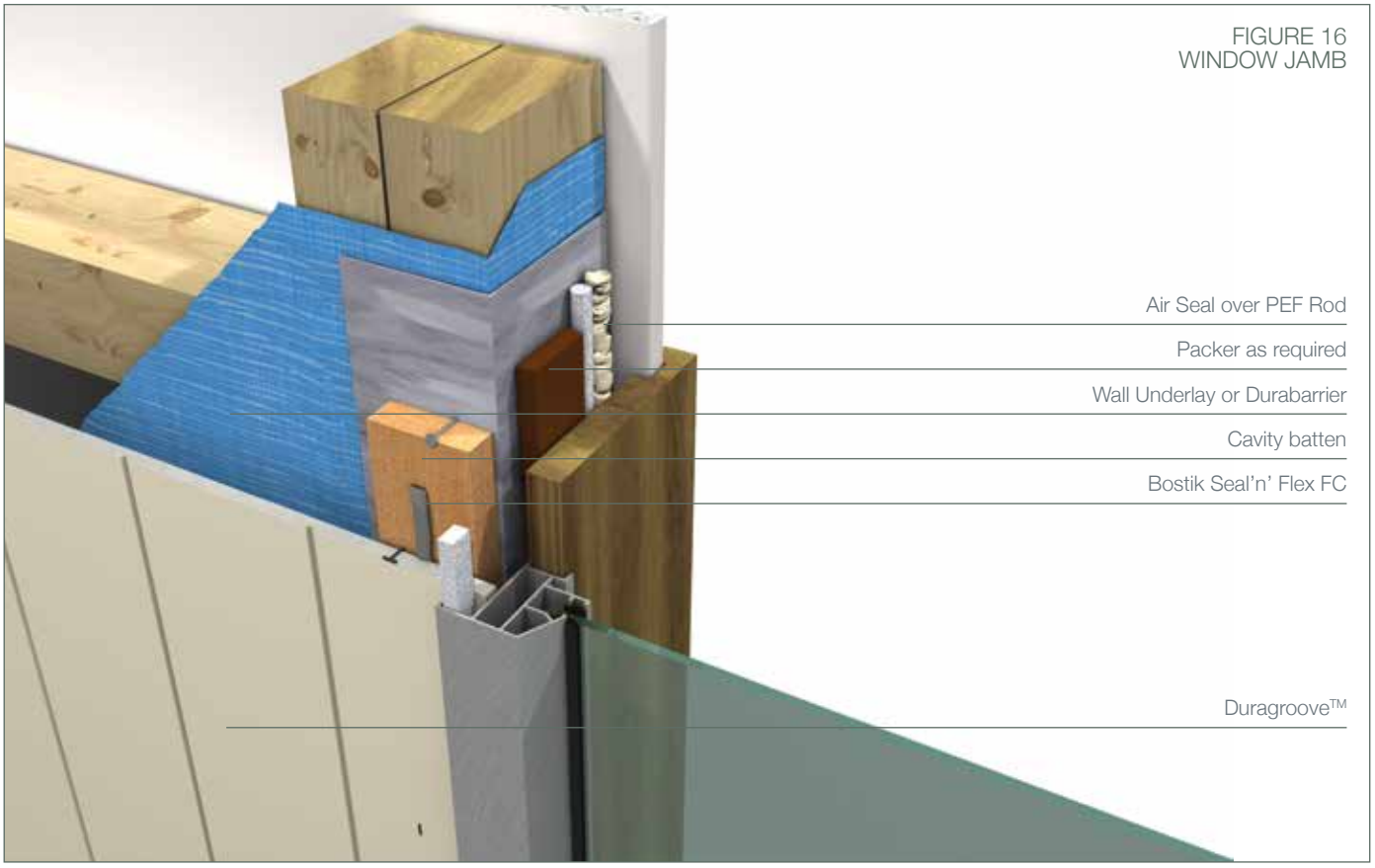

FIGURE 17
UPPER FLOOR JUNCTION

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 New Zealand Building Code.

FINISHING

Painting of Duragroove™ is required to meet the durability and the external moisture management of the NZBC and BGC Warranty.

Duragroove™ must be painted within 90 days of installation.

Duragroove™ panels must be clean, dust free and dry before painting.

If the BGC Aluminium corner and horizontal flashings have been used, Duragroove™ can be painted a dark colour.

For brad and screw installed panels, the brad head must be flush with the sheet surface and skimmed with a suitable exterior 2 part builder's filler. The skimmed area should be spot primed.

BGC recommended that Duragroove™ is coated with a quality undercoat and minimum of two coats of high build acrylic paint. Refer to the paint manufacturer's recommendations for specific details.

MAINTENANCE

Building owners are responsible for the maintenance of Duragroove™ facade systems. The maintenance requirements should be determined by the specifier based on the location and exposure of the building.

It is recommended that

- / Regular cleaning at least annually of the paint finish with water and a mild detergent
- / Do not water blast
- / Inspect regularly and repair if required
- / Check ground clearances
- / Follow paint manufacturer's recommendations on recoating

WARRANTY

BGC Fibre Cement (NZ) warrants its products to be free from defects caused by defective materials or workmanship (manufacturer) for a period of 15 years from the date of purchase, subject to the conditions set out below. Further, BGC Fibre Cement (NZ) warrants its products to be resistant from rotting, fire and cracking so long as the installation is carried out in accordance with BGC Fibre Cement literature available at the time of purchase.

i) This warranty is non transferable.
ii) The product must be installed and maintained in accordance with the relevant BGC Fibre Cement (NZ) literature current and available at the time of purchase. All additional products including accessories, jointing systems and coatings used in conjunction with the BGC Fibre Cement product(s) must be applied or installed according to the appropriate manufacturer's instructions.
iii) BGC Fibre Cement (NZ) is not liable for any breach of warranty unless the claimant provides proof of purchase and a claim is submitted in writing within 30 days of the defect becoming evident. If the defect is detected prior to installation, the claim must be submitted before installation occurs.
iv) If BGC Fibre Cement (NZ) products are found to be defective, BGC Fibre Cement will at its option, repair or replace the product, supply equivalent replacement products or reimburse the purchase price of the product.
v) BGC Fibre Cement (NZ) shall not be liable for any damage or losses (direct or indirect) including property damage or personal injury, economic loss or loss of profits, consequential loss arising in contract or negligence or howsoever arising.

BGC Fibre Cement (NZ) shall not be liable for any claims, damages or defects arising from or attributed to poor workmanship, poor design or detailing, settlement or structural movement or movement of materials to which the product is attached, incorrect design of the structure, acts of God, including but not limited to floods, cyclones, earthquakes or severe weather or unusual climate conditions, performance of coatings or paints applied to the product, normal wear and tear, growth of mould, mildew, fungi, bacteria or any other organism on the products surface (exposed or unexposed).

vi) The project must be designed and constructed in accordance with all relevant requirements of the current New Zealand Building Code regulations and standards.
vii) If satisfying a claim under this warranty which involves recoating or painting of BGC Fibre Cement (NZ) products, there may be slight colour differences between the replacement product and the original products due to the effect weathering and variations in materials over time.
viii) All warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extend allowed by the law.

DISCLAIMER
The successful performance of the relevant product depends on a number of factors outside the control of BGC Fibre Cement (NZ). As such, BGC Fibre Cement (NZ) shall not be liable for the recommendations made in its literature and the performance of the products/systems including its suitability for any purpose or ability to comply with the relevant conditions set out in the New Zealand Building Code. It is the responsibility of the building designer to ensure that the details and recommendations provided in the relevant BGC Fibre Cement (NZ) installation guide are suitable for the intended project and that specific design is conducted where appropriate.

The instructions and recommendations in BGC Fibre Cement (NZ) literature are based on good building practice, but are in no way an exhaustive statement of all relevant information and are subject to conditions above. BGC Fibre Cement has tested the performance of its products when installed in accordance with the products technical specification, in accordance with the standards required by the New Zealand Building Code. Those test results demonstrate the products compliance with the performance criteria set out by the New Zealand Building Code.

CONTACT

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

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 SUCH AS:

DURASHEET™ / Fibre cement sheet for exterior applications.

DURATEX™ / Fibre cement sheets for applied finish systems.

DURABACKER™ / Fibre cement sheet for high build plaster coatings.

DURABARRIER / A rigid sheathing/air barrier for all types of timber framed construction.

DURAPLANK™ / Woodgrain and smooth fibre cement plank for exterior applications.

DURAGRID™ / A lightweight facade giving a modern and durable finish.

DURAGROOVE™ / A vertically grooved cladding.

DURASCAPE™ / A base sheet with a 5mm shiplap join.

DURALINER™ / Interior lining suitable as a substrate for tiles and is ideal for wet areas.

NULINE™PLUS / Weatherboard cladding system.

STONESHEET™ / Fibre cement stone slip substrate.

SAFE WORKING PRACTICES - PLEASE WEAR A P1 OR P2 MASK AND SAFETY GOGGLES (APPROVED TO AS/NZW1337 STANDARDS) WHILST CUTTING OR INSTALLING DURAGROOVE™. DURAGROOVE™ CAN BE SAFELY HANDLED DURING UNLOADING OR STACKING WITHOUT THE USE OF THESE PRECAUTIONS.

CLEANING UP - ALWAYS WET DOWN YOUR WORK AREA WHEN CUTTING DURAGROOVE™, TO ENSURE THAT DUST IS MANAGED. DISPOSE OF ANY VACUUMED DUST WITH CARE AND USING CONTAINMENT PROCEDURES.

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DESIGN
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