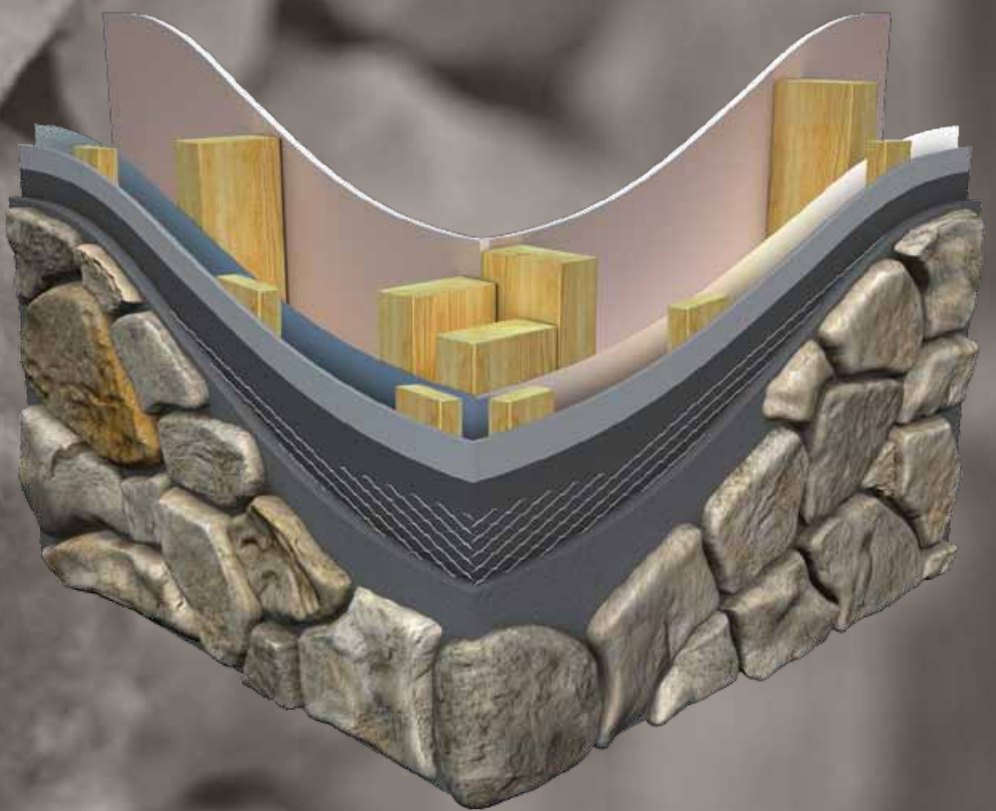


Cultured Stone[®]

N.Z. TECHNICAL INFORMATION **GUIDE**



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Introduction

Cultured Stone® Installation Guide can also be found at www.midlandbrick.co.nz

Building code requirements may vary from area to area. Check with local authorities for building code requirements in your area. Carefully read all information contained in the technical installation guide before proceeding with your Cultured Stone® cladding application. Observe safety precautions. Cultured Stone® products are covered by a 50-Year Warranty.

Please refer to the full Warranty available at the time of supply.

Important

NZ Brick & Stone accepts no responsibility or liability for the contents of the guide (including any printing or typographical errors) and recommends that all standards, specifications and recommendations be independently checked.

It is to be understood that the requirements and methods detailed in this guide are current at the time of printing. However, they may be modified or completely changed to suit improved techniques or new designs in the future.

Please note: This Australian brochure has been amended to suit the New Zealand market, where practical to do so.



Dressed Fieldstone in Chardonnay

Photographer: Matthew Mallett

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Estimating Stone Required

To determine the amount of Cultured Stone® cladding needed, measure the area to be covered. Measure the length times the height to arrive at the gross square meterage of flat stone needed. Subtract square meterage for windows, doors and other openings. Measure the linear metres of outside corners to determine the amount of corner pieces needed.

One linear metre of corner pieces covers approximately 0.25 square metres of flat area. Subtract the flat area covered by the linear metres of corner pieces from the square meterage of flat stone required.

Be sure to verify whether the texture chosen is sold based on coverage with a 12mm mortar joint or tight-fitted. Most texture coverages are listed for a 12mm joint, the exceptions being European Castle Stone, Pro-Fit® LedgeStone and Pro-Fit® Alpine LedgeStone. Refer to table below for standard allowances.

Tip:
It is recommended that you over-order by a small percentage on the total job to allow for cutting, trimming and to ensure that there is an adequate assortment of stone pieces left to complete the job to a high aesthetic standard. Refer to table below.

Table 1: Standard Allowances for Cutting, Trimming and Joint Width		
Profile	Standard Joint	Tight Fitted Joint
Country LedgeStone	5%	15%
Pro-Fit Alpine LedgeStone	5%	5%
Pro-Fit LedgeStone	5%	5%
Southern LedgeStone	5%	25%
Cobblefield	5%	15%
European Castle Stone	5%	5%
Dressed Fieldstone	5%	15%
Coral Stone	5%	10%
Cast Fit	5%	10%

How To Estimate Total Stone Required

Formula:
Total stone required =(wall area) - (window + door area) - (wall area covered by corners).

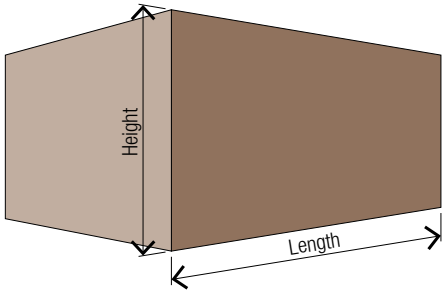
- Wall area = wall length x wall height.
 - Window + door area = (window length x window height) + (door length x door height)
- Note:**
Repeat for each window and door on facade to which Cultured Stone® is to be applied.
- Wall area covered by corners = lineal metres of corners x 0.25

Tip:
If you are installing a texture which states coverage is for 12mm mortar joint, in a tight fit application, increase stone by 10-22%

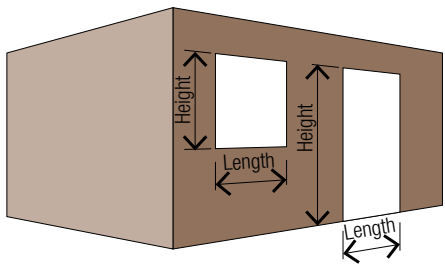
Note:
Cultured Stone® is sold in cartons containing 0.83 to 1.2 square metres of Flats and 2.44 lineal metres of Corners, depending on the selected profile.

Estimating Details

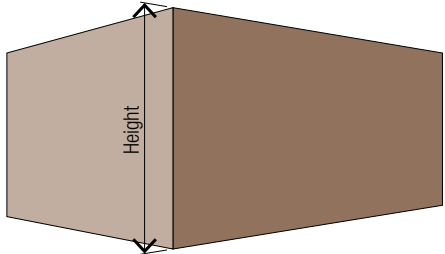
1. Wall Area



2. Window and Door Area



3. Corners Required



Materials and Tools Required

Mortar Components

- Primer mix as per page 10
- Standard mortar mix as per page 10
- Mortar colour: iron oxide colour (if desired)
- Water: potable water.

Water Resistive Barrier (WRB)

The barrier must meet the requirements of:

- NZS2295:2006 Pliable, Permeable Building Underlays.

Installation of the WRB should follow instructions provided by specific manufacturer.

Note:
The WRB must be used on all exterior applications. The WRB is not required for application over masonry or concrete.

Flashing

- To maintain the weather-resistance of the exterior wall on which stone products are installed, corrosion resistant flashing or weep screed and a means of drainage must be installed at all penetrations and terminations of the stone cladding. Flashing type and locations must be in accordance with the requirements of the applicable building code.
- For additional recommendations, refer to the following resources:
 - NZ Building Code – External Moisture E2
 - www.pbs.co.nz/VentCladStone.aspx
 - Architect, Designer, Engineer.

Expanded Metal Mesh

Self-furring expanded metal mesh

- Galvanised
- Profile “Raised” not “Flattened”
- 0.35mm Thickness
- 1.5mm Stand Width
- 13mm SWM (Short Way Measurement)
- 33mm LWM (Long Way Measurement).

Note:
Expanded metal mesh is directional. When installed, the mesh should be rough when running your hand down the wall, and smooth when running your hand up the wall.

Fasteners

- Timber: Galvanised clouts (40mm) or sufficient to penetrate studs by 25mm minimum.
- Timber: Corrosion-resistant, exterior grade wood screw or tek screw, of 40mm length or sufficient to penetrate studs by 25mm minimum.
- Metal: Corrosion-resistant, self-drilling, self-tapping tech screw or pancake head screw, suitable to obtain 10mm penetration beyond inside surface of metal (used for installing to metal surfaces such as metal studs).
- Ramset suredrive or equivalent.

Masonry Sealer

NZ Brick & Stone recommend SurfaPore C, water based breathable water repellent, or Silane-based breather-type sealer (if required). See “Sealers” in General Information section, page 15.

Tools

Choose the tools required for your installation:

- Safety glasses and other personal protective equipment
- Screw gun or hammer
- Hawk and trowel
- Diamond trowel
- Gauging trowel
- Masonry wet saw or grinder with carborundum or diamond blade
- Wide-mouth nippers or masonry axe
- Dust mask (refer to safety disclaimer regarding cutting page 9)
- Level
- Metal jointing tool (small tool) or kitchen butter knife
- Wood stick or bamboo chopstick
- Grout bag
- Whisk broom or stiff bristled nylon brush
- Cement mixer or mixing drill and paddle
- Wheelbarrow and hoe.

Typical Installations

Timber Frame (Refer Figure 10 & 11 - page 16)

In sequence:

- 1 Water Resistant Barrier (WRB).
- 2 VentClad System (Or similar – refer page 7).
- 3 Prime all surfaces with primer mix.
- 4 Expanded metal mesh.
- 5 Mortar/scratch coat/setting bed.
- 6 Cultured Stone® cladding.
- 7 Mortar joint.

Brick or Block Work (Refer Figure 17 & 18 - page 20)

In sequence:

- 1 Primer applied directly to untreated, unpainted masonry or concrete.
- 2 Mortar.
- 3 Cultured Stone® cladding.
- 4 Mortar joint.

Tilt or Pre-Cast Panel (Refer Figure 22 & 23 - page 23)

In sequence:

- 1 Acid etch to remove all release products.
- 2 Prime all surfaces with primer mix.
- 3 Expanded metal mesh.
- 4 Mortar.
- 5 Cultured Stone® cladding.
- 6 Mortar joint.

Plastered Finish (Refer Figure 19 & 20 - page 21) (Existing) Internal Brick or Block Work Wall

In sequence:

- 1 Prime all surfaces with primer mix.
- 2 Expanded metal mesh.
- 3 Mortar.
- 4 Cultured Stone® cladding.
- 5 Mortar joint.

Note:
If your application does not meet above typical installations, contact NZ Brick & Stone for specific advice.

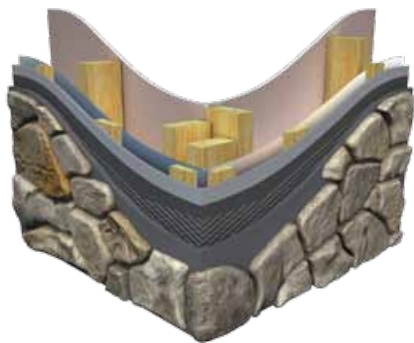


Figure 1: Cultured Stone® on Timber Frame & VentClad System



Figure 2: Cultured Stone® on Brick or Block Work



Figure 3: Cultured Stone® on Pre-Cast Panel

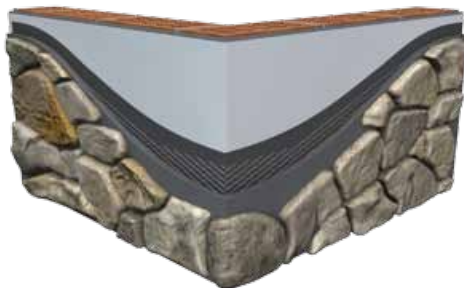


Figure 4: Cultured Stone® on Plastered Finish

Surface Preparation

Timber Frame with Ventilated Cavity

NZ Brick & Stone require the installation of Pacific Build Supply Ltd (PBS) VentClad batten system using 9mm Eterpan fibre cement sheets or a similar approved batten system such as BGC Stonesheet®.

- 1 Set 90 x 45 studs at either 400 or 600mm crs Noggs at 800mm crs.
- 2 Fix water resistive barrier to frame. Installation of the WRB should follow instructions provided by specific manufacturer, and depending on local building code requirements, barrier shall meet the requirements of:
 - NZS2295:2006 Pliable, Permeable Building Underlays.
- 3 Install PBS VentClad ventilated cavity system to their specification using 9mm Eterpan board or similar approved batten system. No joins should be made above the edges of windows or doors.
- 4 Prime all surfaces with primer mix.
- 5 Using 40mm galvanised clouts or screws, affix expanded metal mesh at 150mm centres vertically. All laps should be a minimum of 50mm vertically and 25mm horizontally. Corner wraps are to be continuous and should wrap a minimum of 400mm or 600mm around corners to suit stud spacings. Note: If a metal mesh is used, it should be rough when running your hand down the wall, and smooth when running your hand up the wall.

- 6 Trowel mortar over the face of the expanded metal, ensuring the entire area is covered. Mortar thickness required is 12-19mm. Allow mortar to dry before applying Cultured Stone® (refer Figure 10 - page 16).
- 7 Expansion joints should be incorporated every 4 metres.

Brick or Block Work

- 1 All surfaces are to be free of bond breaker, dust, loose aggregate, grease, paint or similar.
- 2 All surfaces are to be dry and of a sound stable structure.
- 3 Prime all surfaces with primer mix.
- 4 Caulk all expansion joints.
- 5 Expansion joints are to be left exposed. Do not apply Cultured Stone® over expansion joints or weep holes (refer Figure 12 page 17).

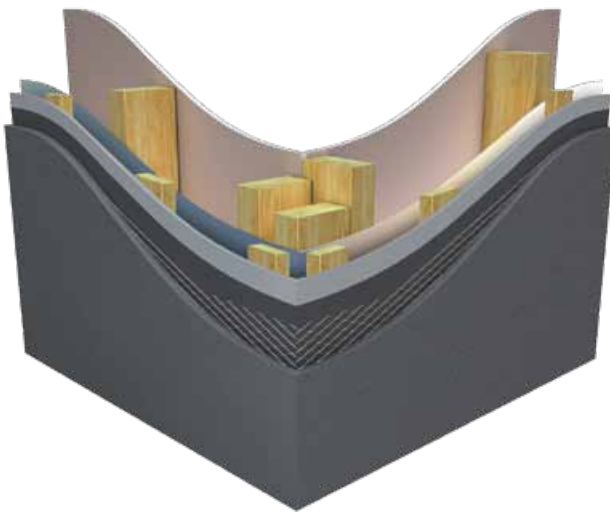


Figure 5: Cultured Stone® on Timber Frame and VentClad System or similar as above



Figure 6 : Cultured Stone® on Brick or Block Work

» Surface Preparation

Tilt or Pre-Cast Panel

- 1 Tilt Panel surfaces are to be free of bond breaker, dust, loose aggregate, grease, paint or similar.
- 2 All surfaces are to be dry and out of a stable structure.
- 3 Tilt up panel – **acid etch to remove all release products.**
- 4 Prime all surfaces with primer mix.
- 5 Affix expanded metal mesh at 150mm centres vertically and 400mm centres horizontally using 30mm Ramset ShureDrive Anchors (or similar equivalent). All laps should be a minimum of 50mm vertically and 25mm horizontally. Corner wraps are to be continuous, and should return around a corner a minimum 450mm. Note the correct side up in the form of the mesh; this is to aid in catching the mortar. When installed, the mesh should be rough when running your hand down the wall, and smooth when running your hand up the wall.
- 6 Trowel mortar over the face of the mesh ensuring the entire area is covered. Mortar thickness required is 12-19mm. Allow mortar to dry before applying Cultured Stone®.
- 7 Caulk all expansion joints.
- 8 Expansion joints are to be left exposed. Do not apply Cultured Stone® over expansion joints or weep holes (refer Figure 22 - page 23).

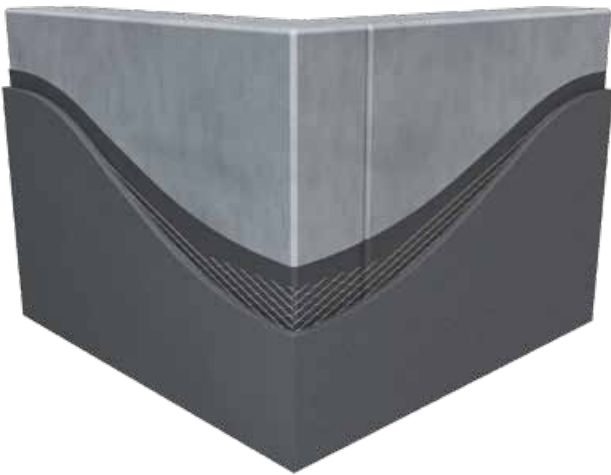


Figure 7: Cultured Stone® on Pre-Cast Panel

Plastered Finish

(Existing) Internal Brick or Block Work Wall

- 1 Set surface to be free of loose paint, dust, grease or similar.
- 2 Surface to be dry and of a stable structure.
- 3 Prime all surfaces with primer mix.
- 4 Affix expanded metal mesh, at 150mm centres vertically and 400mm centres horizontally using 30mm Ramset ShureDrive Anchors (or similar equivalent). All laps should be a minimum of 50mm vertically and 25mm horizontally. Corner wraps are to be continuous, and should return around a corner a minimum 600mm if possible. Note the correct side up in the form of the mesh; this is to aid in catching the mortar. When installed, the mesh should be rough when running your hand down the wall, and smooth when running your hand up the wall.
- 5 Trowel mortar over the face of the expanded metal, ensuring the entire area is covered. Mortar thickness required is 12-19mm. Allow mortar to dry before applying Cultured Stone® (refer Figure 20 - page 21).
- 6 Expansion joints should be incorporated every 4 metres.

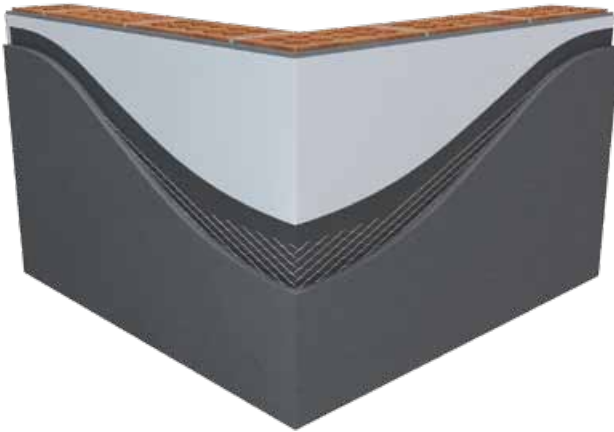


Figure 8: Cultured Stone® on Plastered Finish

Important Note:
It becomes the responsibility of the independent installer to ensure the structure upon which Cultured Stone® is being installed is structurally sound, and sufficient to sustain the weight of the Cultured Stone® product.
For weight calculations; allow 74kg per square metre including mortar, 9mm Eterpan sheet (refer page 7) and Cultured Stone®.

Water Resistive Barrier (WRB) Caution

When installing manufactured stone cladding in an exterior application requiring a WRB; The barrier must meet the requirements of:

- NZS2295:2006 Pliable, Permeable Building Underlays.

Installation of the WRB should follow instructions provided by specific manufacturer.

Note:
The WRB must be used on all exterior and interior mortar applications.
The WRB is not required for application over masonry or concrete.

Expanded Metal Mesh Preparation

The expanded metal mesh must continuously wrap a minimum of 450mm at outside and inside corners and fasten at a framing member. Lap expanded metal mesh a minimum of 50mm at vertical and 25mm at horizontal lap joints.

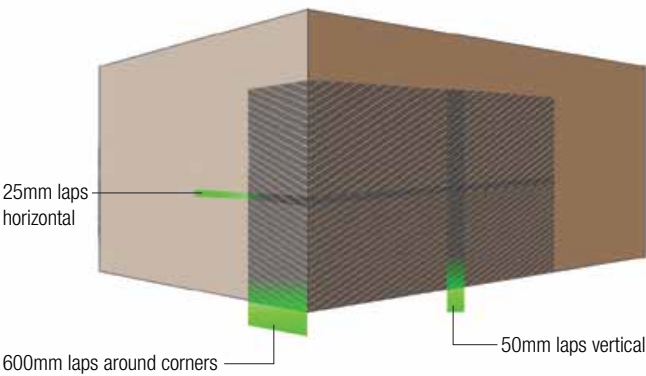


Figure 9: Correct Expanded Metal Mesh Layout

General Notes to Installer

Cultured Stone® contains Crystalline Silica. Dusts of this product may cause irritation of the nose, throat and respiratory tract. Avoid prolonged or repeated inhalation of dusts from this product. An appropriate dust mask should be selected and used in compliance with New Zealand standards when mechanically altering this product (eg, sawing, cutting, drilling or similar dust generating processes). Wear long-sleeved shirt, long pants, gloves and safety glasses with side shields when handling and installing material. Wash hands and face with soap and warm water immediately after handling this product.

Timber frame and steel frame applications should not exceed 9200mm in height.

When estimating quantities of 'bonding agents' required, allow 1 Litre per 1 square metre of wall area.

Accidental smears or mortar droppings should be removed using a whisk broom or stiff bristled nylon brush.

A wet brush or sponge should never be used.

When cleaning Cultured Stone® cladding, do not use acid or acid-based products, power-washing, sandblasting or wire brush cleaning.

When Cultured Stone® cladding is installed correctly, fibre cement sheet, expanded metal mesh or brickwork will not be visible.

Refer to Cultured Stone® installation video for visual guidance on application (www.midlandbrick.co.nz).

Primer and Mortar Mix

Primer

Primer Mix:

- 4 parts by volume, liquid ‘bonding agent’
- 2 parts water
- 1 part General Purpose Portland Cement.

Mixing Primer:

Mix ‘bonding agent’ and water, add cement and mix to a milky paste.

Applying Primer to Substrate

Apply primer mix to all substrates with a roller or brush as specified, to the wall face where Cultured Stone® will be installed.

Tip:
Typically allow one litre of bonding agent per square metre of wall area

Specialist Advice

NZ Brick & Stone recommend that advice be sort from companies that specialise in pre-bagged mortars, bonding agents and other appropriate additives in regards to the ‘Primer’ application and the ‘Mortar Mix’ for Cultured Stone.

Cemix Ltd www.cemix.co.nz
Dricon Ltd www.firth.co.nz/product-information/dricon

Mortar

Cultured Stone® Standard Mortar Mix:

- 2 parts* washed sand, (sand is to be low in clay content)
- 1 part* general purpose Portland cement
- 2 litres of ‘bonding agent’
- Add water to desired consistency
- Colour oxide (if desired), no greater than 8.3% of cement content. Note: This only applies to the mortar to be used on the back and between the Cultured Stone.

*Use a 9 litre bucket to measure one part

Tip:
If being installed over concrete, masonry or scratch coat substrate, the substrate surface area should also be dampened before applying mortar. Surfaces should appear damp but free of surface water.

Weather Conditions

Applications should be protected from temperatures below 5° Celsius as mortar will not cure properly under such conditions.

Do not use antifreeze compounds to lower the freezing point of mortar.

Mixing Mortar/Grout

Using Cultured Stone® standard mortar mix, mix to a firm, moist consistency. Mortar that is too dry and crumbly will not provide proper bond. Mortar that is too wet will be weak and untidy.

Mortar Colour

Mortar colour complements the colour of the stone being installed. Example: Use tan mortar with earth-tone stones. This will greatly enhance the appearance of the finished installation. Regular mortars can be coloured to complement your Cultured Stone® cladding using iron oxide pigments.

Applying Mortar to Prepared Surface Area

Using a hawk and trowel apply mortar 12mm to 19mm thick to prepared surface in order to achieve a smooth even bed upon which the stone can be applied. The surface may have a light combing to improve adhesion of the stones. Allow to dry for 24 hours before the stone is applied.

Application

Prepare Your Work Area

Tip:
Spread Cultured Stone® cladding out at the job site so you have a good variety of sizes, shapes and colours to choose from.

Plan for some variety and contrast in the overall design. Use small stones next to large ones, heavy-textured pieces next to smooth, thick stones next to thinner ones. Mixing Cultured Stone® cladding from different boxes during application will allow you to achieve a desirable balance of stones on your finished project.

Applying Cultured Stone® Cladding

See page 15 for additional instructions concerning Pro-Fit™ Ledge-stone, Pro-Fit™ Alpine Ledge-stone and European Castle Stone.

Starting Point

Apply mortar and stone cladding working from the bottom up, or from the top down.

Tip:
Working from the top down may help avoid splashing previously applied stone with dripping mortar. Ledge-stone types should be installed from the bottom up.

Joint Width

In order to obtain the most natural look, joints should be as narrow as possible. The average should not exceed 12mm in width. An attractive look can also be achieved by fitting stones tightly together if desired. If using tight fit/drystack method, it is important to make sure scratch coat/backing has been covered completely by the setting bed of mortar. This will conceal the scratch coat/backing and prevent pockets from forming behind stones that could trap water.

Setting the Stone Cladding

Using the specified mortar mix, coloured if desired, apply a further 10 - 20mm of mortar to the back of each stone and press it onto the prepared mortar bed. Apply pressure to the stone to ensure a good bond and complete coverage between the mortar bed and the back surface of the stone. The mortar will ooze out into the gaps between each stone effectively forming the mortar joint that is visible between each stone.

Tip:
When stone cladding is installed correctly, fibre cement sheet, expanded metal mesh or brickwork will not be visible.

The mortar setting bed shall be between 10mm minimum and 35mm maximum. Care must be taken to avoid smearing mortar on surface of the stone cladding.

Tip:
Accidental smears or mortar droppings should be removed using a whisk broom or stiff bristled nylon brush only after mortar has become crumbly.

Install Corner Pieces

If your application requires corner pieces, apply these first. Notice that the corner pieces have a long and a short leg. Alternate these in opposite directions.

Install Flat Pieces

After the corner pieces are in place, flat pieces are applied working toward the wall centre.

Keep Your Mortar Joints Consistent

Place the individual stones close together, creating uniform joints between them. Cut and trim stones as required to achieve consistent width in the mortar joints. Then trim and fit small pieces into any remaining voids. (refer ‘Cutting and Trimming - page 12)

» Application

Cutting and Trimming

Stones can be cut and shaped for fit using wide-mouth nippers, masonry axe, wet saw or angle grinder equipped with a dry cutting diamond or carborundum blade. Some broken stones may be found in the box. These also may be used in filling gaps and used for cuts.

Tip:
For best finished appearance, coat cut or broken edges with mortar. If possible, position cut edges up when they are above eye level or down when below eye level. Place finished edges at exposed areas. Place cut edges within courses.

Note:
Refer to page 38 - General Notes to Installer.

Level and Plumb Joint Lines

When applying Cobblefield™, European Castle Stone, Limestone, Rockface, Coral or Ledgestone, endeavour to maintain level and plumb joint lines. Also, long rectangular pieces will look most natural if applied horizontally.

Ledgestone Types

When applying Ledgestone types, keep joints as small as possible to maintain a natural look, and install from the bottom up. Strike joints deeply, being careful not to expose the back edge of stones or scratch coat/backing. See page 14 for additional instructions regarding Pro-Fit™ Ledgestone, Pro-Fit™ Alpine Ledgestone and European Castle Stone.

Note:
Refer to Cultured Stone® Installation video for further information (www.midlandbrick.co.nz).

Grouting and Finishing Joints

Grouting Joints

If additional mortar is required, use a grout bag to fill in joints. Care must be taken to avoid smearing mortar on surface of stone.

Tip:
Accidental smears or mortar droppings should be removed only after mortar has become crumbly using a whisk broom or stiff bristled nylon brush. Never use a wet brush or wire brush.

Finishing Joints

When the mortar joints have become firm or “thumb-print” dry (setting time will vary depending on wall surface and climatic conditions), they should be pointed up with a wood stick, bamboo chopstick (for tight joints) or metal jointing tool/kitchen butter knife. Rake out excess mortar, compact and seal edges around stones. Careful attention to proper and even jointing will result in a professional looking finish.

Cleaning Finished Job

At the end of the work day, or when mortar is sufficiently set up, the finished job should be broomed or brushed to remove loose mortar and to clean the face of the stone.

Tip:
A wet brush or sponge should never be used to treat the mortar joints as this will cause staining that will be difficult, or impossible, to remove. Do not use acid or acid-based products.

Note:
Refer to Cultured Stone® Installation video for further information (www.midlandbrick.co.nz)).

Surface Cleaning

Care must be taken to avoid smearing mortar on the surface of components. Accidental smears or mortar droppings should be removed with a whisk broom or dry bristle brush only after mortar has become crumbly.

Note:
Do not use a wet brush, sponge or a wire brush. Do not use acid or acid-based products, power-washing, sandblasting or wire-brush cleaning.

» Application

Sill Installations

Sills provide a transition piece between a stone wainscot (sill) and other exterior finishes and for water runoff. They can also be used as a windowsill. Install using galvanised metal support brackets with holding capacity minimum 25kg per lineal metre fastened with galvanised nails or screws penetrating studs 25mm at a minimum of 400mm centres.

Two brackets per sill is preferred if noggins are present. Use construction adhesive to bond stone at bracket locations. Caulk and flash as required at Watertable/Sill locations using an approved corrosion resistive flashing that extends to the surface of exterior wall finish and is installed to prevent water from re-entering the exterior wall envelope. Failure to properly caulk/flash as described in these installation directions may result in water damage to the structure (refer Figure 24 & 25 - page 24 and Figure 35 - page 30).

Note:
Refer to Cultured Stone® Installation video for further information (www.midlandbrick.co.nz).

Water Features

Similar to other stone cladding products, NZ Brick & Stone does not recommend using Cultured Stone® cladding for water feature applications. However, some applications may be suitable. Refer to your local representative.

Exterior Application Notes

Make sure that the application of Cultured Stone® cladding and the structure they are being applied to incorporate good building practices. Rigid, corrosion-resistant flashing shall be installed at all wall penetrations. Flashing type and locations shall be in accordance with the requirements of the applicable building code. On exterior applications, the incorrect installation or absence of flashing, gutters and downpipes may result in diversion of water run-off onto finished surface areas. Masonry and other building products subjected to these conditions may develop staining and, when combined with severe freeze-thaw conditions, may eventually cause damage. The application of Cultured Stone® cladding under these conditions is not recommended.

Installation Over Existing Cladding

Opportunities may be presented to re-clad a dwelling or building using Cultured Stone over an existing cladding material not addressed in this brochure. Discuss the possibility with your architect/designer and NZ Brick & Stone when considered necessary. Weathertightness and structural performance are the two main considerations.

Capping Off Exposed Top of Exterior Walls

To achieve a finished architectural look on horizontal or sloping top areas of exterior walls, piers, retaining walls or other surfaces, Cultured Stone® Capstones or a poured in-place concrete cap must be used to provide adequate run-off protection to the wall areas. Caps should extend approximately 25-50mm beyond the finished stone surface.

Cultured Stone® corner pieces, flat pieces, or hearthstones should not be used to cap walls.

Retaining Walls

All retaining walls must be waterproofed at the fill side. The wall construction should incorporate proper use of granular backfill and provisions for good drainage. A continuous longitudinal drain along the back of the wall set in drainage aggregate is recommended.

Chimney Cap

All chimney chases must be capped with a cap that extends 25-50mm beyond the finished stone surface to prevent water from entering the wall system. Chimney or chase construction should incorporate proper flashing.

Additional Instructions

Applicable for:

- Pro-Fit™ Ledgestone,
- Pro-Fit™ Alpine Ledgestone
- European Castle Stone

Fitting the Joints

Install Pro-Fit™ Ledgestone, Pro-Fit™ Alpine Ledgestone and European Castle Stone products with tight-fitted joints. Generally, components should be placed butting each other and aligned for level and plumb. When installing, the backs of all these components must be wet. They should be noticeably damp, but free from surface water. Mortar can be tinted to match the colour of the stone you are installing to help conceal the joint lines.

Starting Point

Pro-Fit™ Ledgestone, Pro-Fit™ Alpine Ledgestone and European Castle Stone are applied starting from the bottom and working up. Start each course level and continue horizontally completing each course before starting the next. European Castle Stone is done in a similar sequence to achieve a random ashlar pattern. If required, cut the appropriate size component to fit at the end or top of the finished area. Frequently check the installation for level and alignment.

Install Corner Pieces First

If your application requires corner pieces, start by installing a corner piece first, followed by the adjoining flat pieces. Notice that the corner pieces have a long and short leg. Alternate these in opposite directions.

Setting the Stone Cladding

Press each stone into the mortar setting bed firmly enough to squeeze some mortar out around the mortar groove at the back edge of component. Apply pressure to the component to ensure a good bond. Ensure complete coverage between the mortar bed and back surface of stone. Check for level and plumb.

Install Flat Pieces

After the first corner piece is in place, the adjoining flat pieces of each course or pattern are applied. Using a trowel, strike off the excess mortar around the edges of the component prior to placing the next component. This will allow the next adjacent component to fit tightly. Choose the correct length component to ensure that vertical joints do not line up.

Cutting and Trimming

Vertical or horizontal cuts can be made using wide-mouth nippers, masonry axe, wet saw or angle grinder equipped with a dry cutting diamond or carborundum blade.

Some broken stones may be found in the box. These also may be used in filling gaps and used for cuts. For best finished appearance, coat cut or broken edges with mortar. If possible, position cut edges up when they are above eye level or down when below eye level.

Place finished edges at exposed areas. Place cut edges within courses.

Note:
Refer to page 9- General Notes to Installer.

Finishing Joints

The design simplicity of Pro-Fit™ Ledgestone, Pro-Fit™ Alpine Ledgestone and European Castle Stone allows for easy installation of components and provides a finished, tight fit joint between the stones. This reduces the time required for cutting, grouting and jointing.

Surface Cleaning

Care must be taken to avoid smearing mortar on the surface of components. Accidental smears or mortar droppings should be removed with a whisk broom or dry bristle brush only after mortar has become crumbly.

Note:
Do not use a wet brush, sponge or a wire brush. Do not use acid or acid-based products, power-washing, sandblasting or wire-brush cleaning.

Internal Installations

As ‘weathertightness’ is not an issue when Cultured Stone is used as a finish with internal applications, the substrate fixing specification can be more relaxed. The important aspect being security of the Cultured Stone to the substrate.

General Information

Cleaning

Dirt may be removed by using a strong solution of granulated soap or detergent and water with a stiff bristle nylon brush.

Tip:
Do not use a wire brush as it will cause damage to the surface.

Rinse immediately with fresh water. For help with serious cleaning problems, contact NZ Brick & Stone.

Tip:
Do not attempt to clean using acid or acid containing products, power-washing, sandblasting or wire brush cleaning.

Salt and De-Icing Chemicals

Concrete and masonry are vulnerable to damage by salt, Cultured Stone® cladding is not warranted against damage incurred from salt or other chemicals used to remove snow or ice. Do not use de-icing chemicals on areas immediately adjacent to a Cultured Stone® cladding application.

Scuffing

Scuffing occurs on all natural stone. Occasionally some scuffing will occur on the surface of Cultured Stone® cladding. This can enhance the natural appearance of your Cultured Stone® cladding installation. Some scuff marks can be removed by cleaning as described above.

Efflorescence

Efflorescence is a water-soluble salt that is deposited on the surface of stucco, concrete, brick and other masonry products by the evaporation of water from the wall. On rare occasions efflorescence will occur on Cultured Stone® cladding. To remove efflorescence, allow the stone to dry thoroughly, then scrub vigorously with a stiff bristle nylon brush.

Note:
Do not use a wire brush.

Sealers

Sealers are not necessary on Cultured Stone® cladding. However, some customers use sealers to help prevent staining in applications prone to smoke, soot, dirt or water splashing. If you choose to use a sealer, make sure it is a silane-based, breathable sealer. Take note that sealers may darken the colour of the stone. Alternatively, SurfaPore C, a new water-based nanotechnology water repellent may be used; this product will not change the colour of the Cultured Stone. For information regarding actual performance or application of sealers, contact the manufacturer of the sealer directly.

Cultured Stone® Below Water Level

Cultured Stone® cladding is a lightweight concrete material and will not deteriorate from exposure to fresh liquid water.

Tip:
The use of Cultured Stone® cladding below water level, in which the water is chlorinated, treated with chemicals or dirty will likely cause discolouration as it would on any concrete, natural stone or other materials.

Pool chemicals which contain acid, such as muriatic acid, may cause damage to Cultured Stone® cladding. Cultured Stone® cladding, concrete and many natural stone materials are subject to potential damage from adverse freeze thaw conditions. For that reason, water should be drained below susceptible materials prior to freezing temperatures. Pressure and abrasion from constant fast flowing water may cause some surface deterioration as it would on other concrete materials. The surfaces of concrete and many other materials may be affected by exposure to extensive salt-water conditions. Cultured Stone® cladding should not be considered a waterproof material.

Building Code Requirements

The specification detailed in this brochure for the installation of Cultured Stone is applicable throughout New Zealand. Carefully read all Installation Instructions before proceeding with your Cultured Stone cladding application.

Cultured Stone® Warranty

For product Warranty information on Cultured Stone®, please refer to the full Warranty available at the time of supply.

Design Details

Note: Drawings not to scale

Lightweight Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

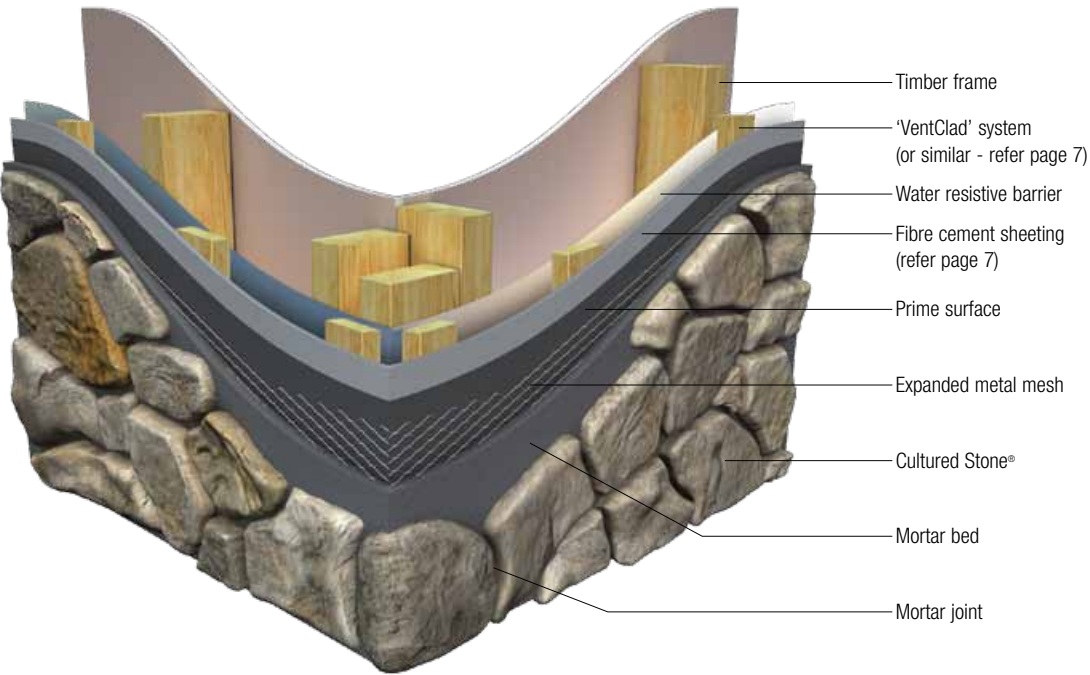


Figure 10: **Timber Frame - Fibre Cement Clad Typical Construction** (Dwg # CS-01.01)

Note: Lightweight substrate applications should not exceed 9200mm in height.

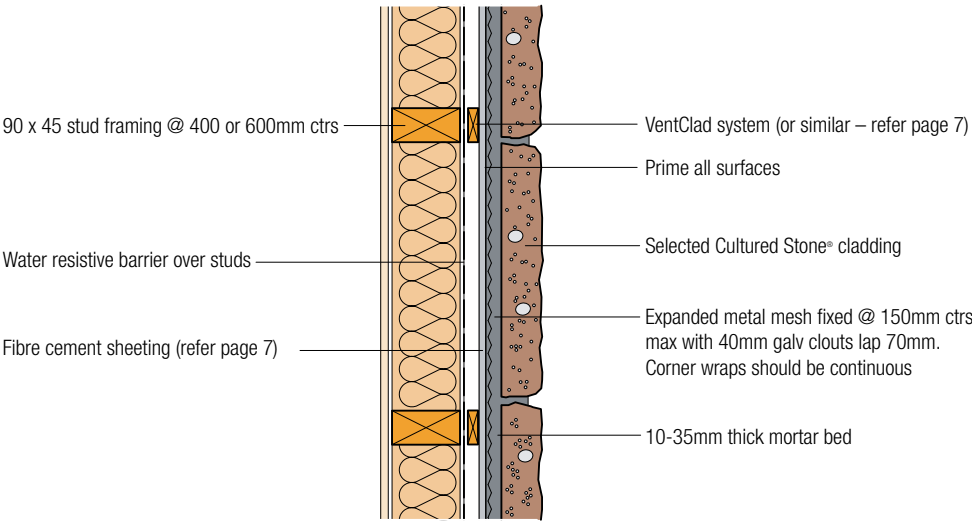


Figure 11: **Fibre Cement Clad - Plan** (Dwg # CS-03.01)

» Design Details

Lightweight Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

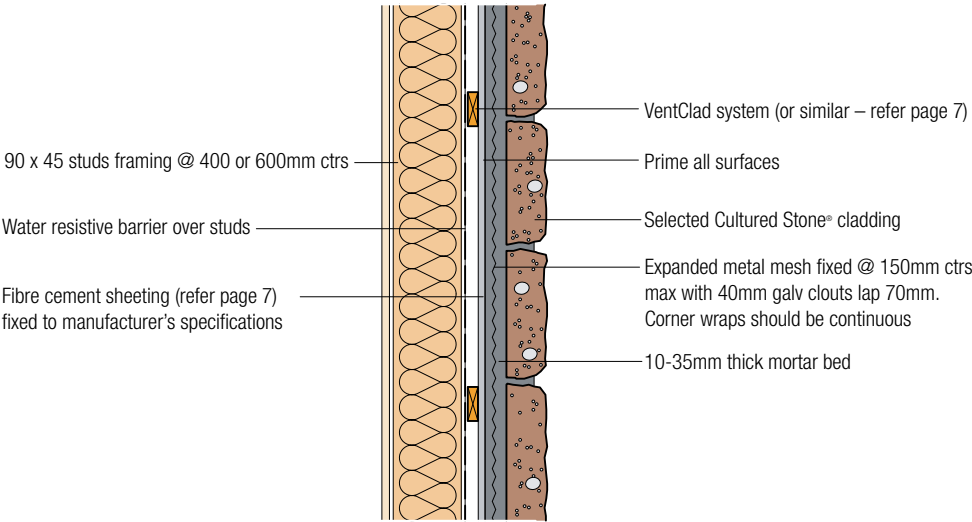


Figure 12: **Fibre Cement Clad - Section** (Dwg # CS-05.01)

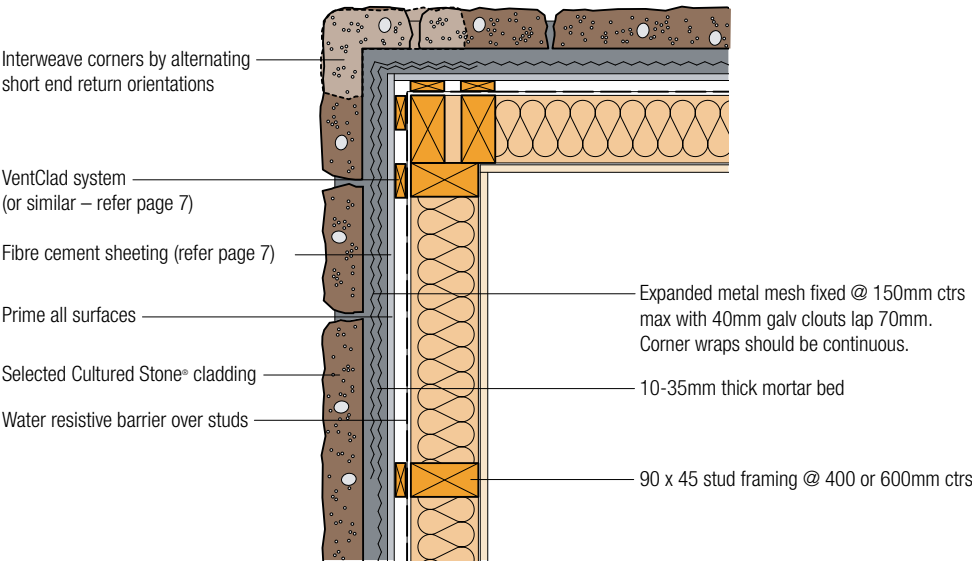


Figure 13: **Fibre Cement Clad Typical External Corner - Plan** (Dwg # CS-02.01)

» Design Details

Lightweight Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

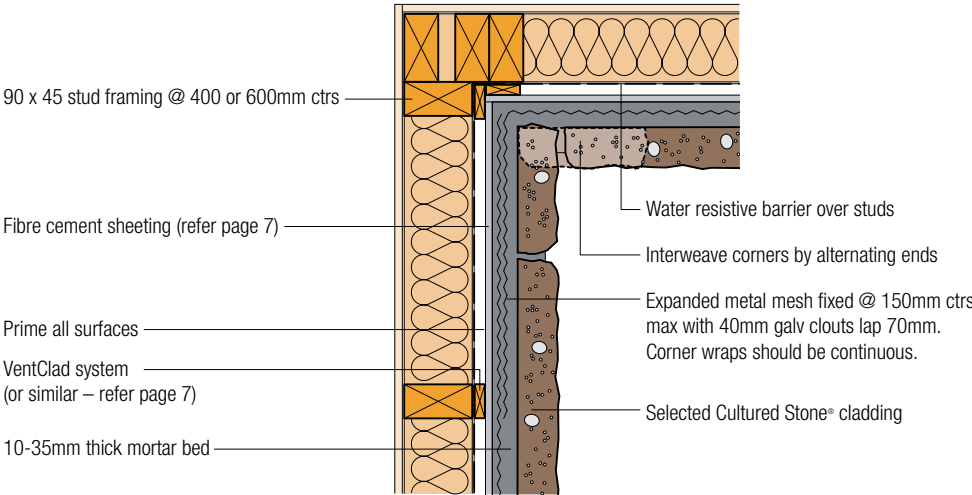


Figure 14: Fibre Cement Clad Typical Internal Corner - Plan (Dwg # CS-02.02)

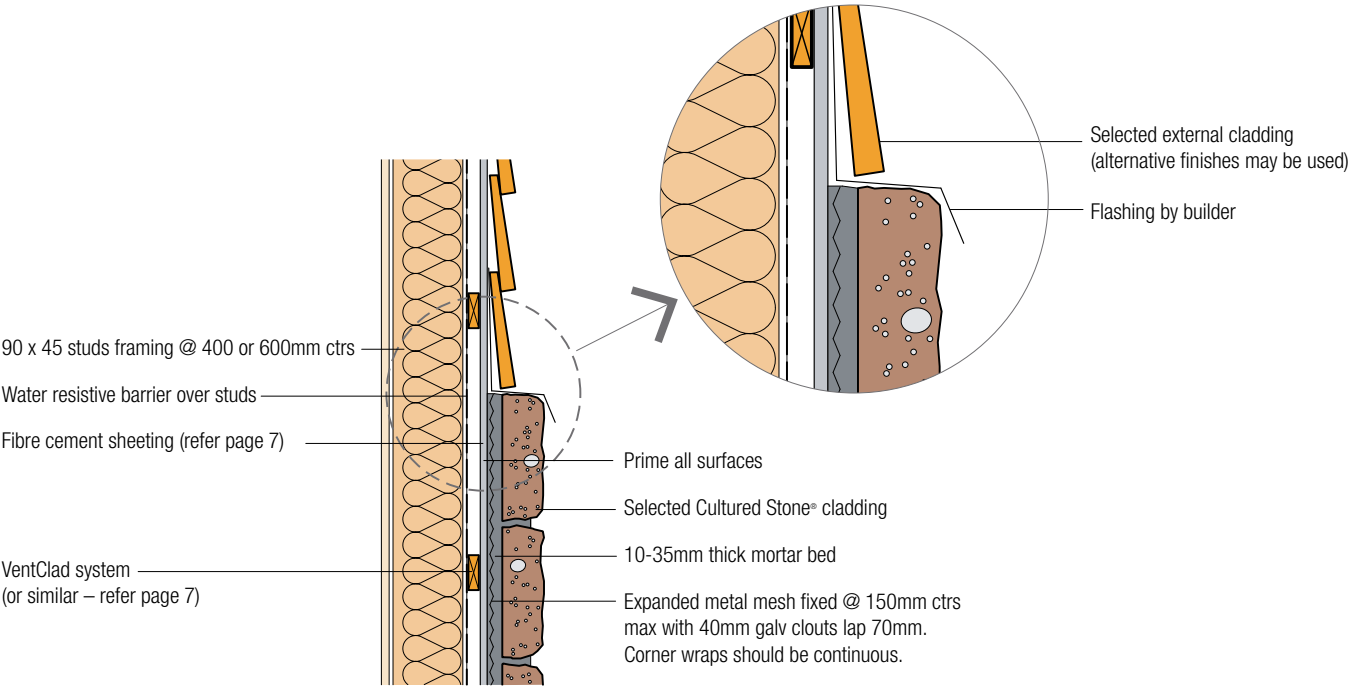
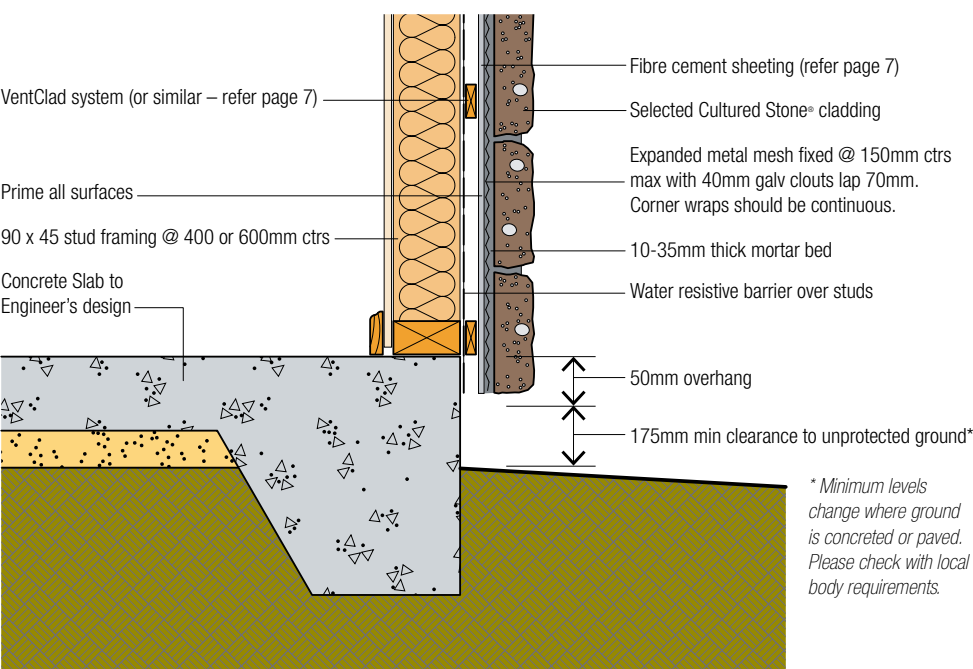


Figure 15: Typical Cladding Transition - Section (Dwg # CS-06.01)

» Design Details

Lightweight Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide



* Minimum levels change where ground is concreted or paved. Please check with local body requirements.

Figure 16: Fibre Cement Clad Base - Section (Dwg # CS-04.01)

» Design Details

Brick, Block and Concrete Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

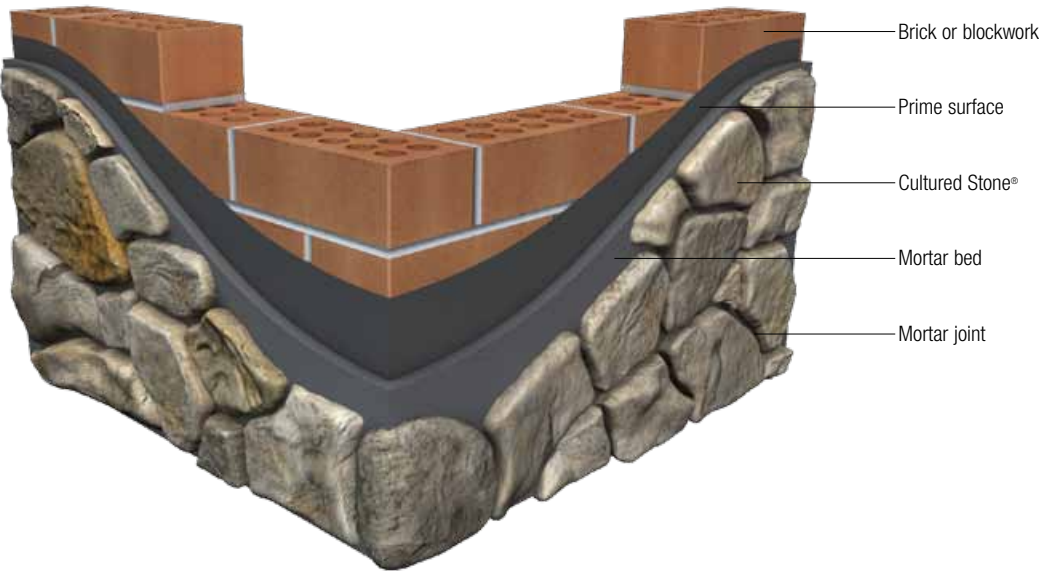


Figure 17: **Brick or Block Work Typical Construction** (Dwg # CS-01.02)

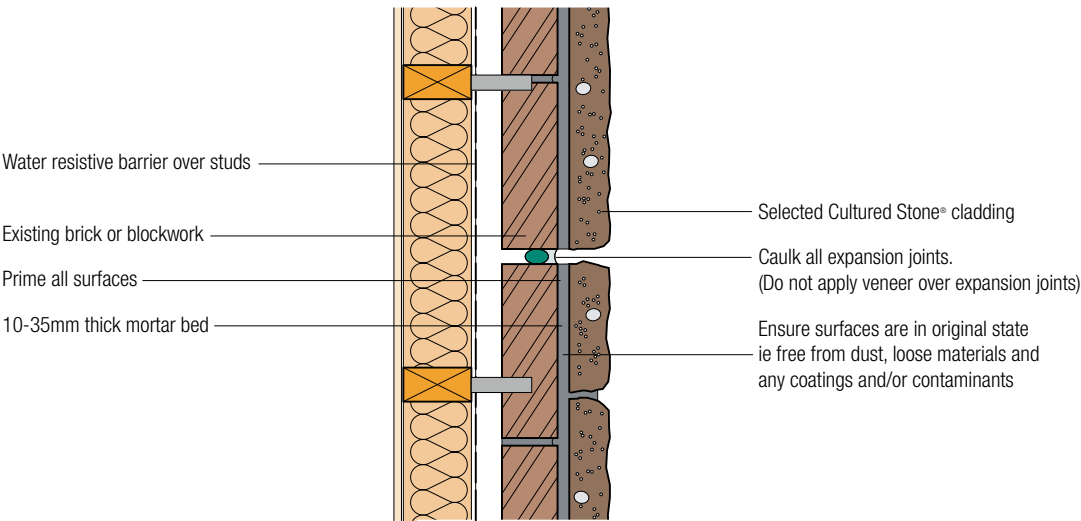


Figure 18: **Brick or Block Work Veneer - Plan** (Dwg # CS-03.02)

» Design Details

Brick, Block and Concrete Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

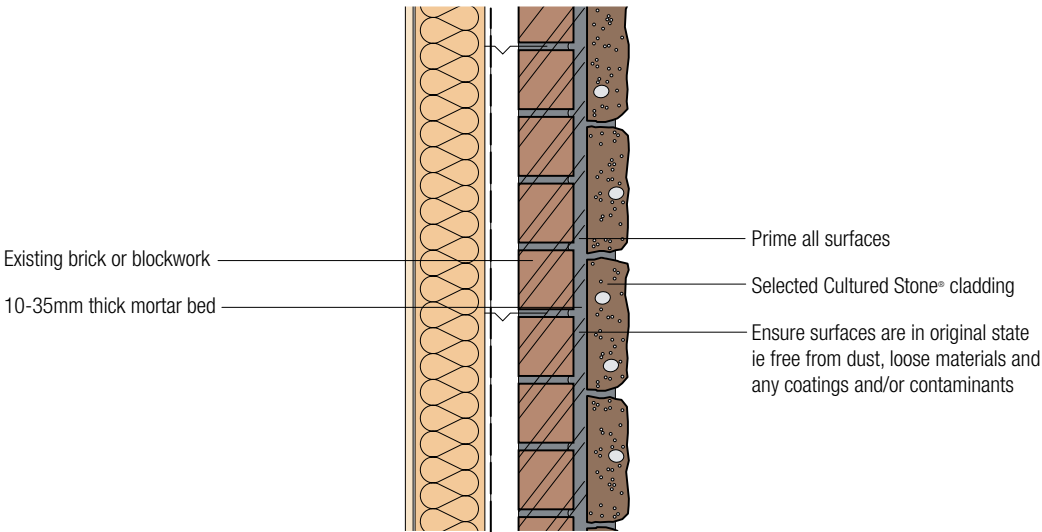


Figure 19: **Brick or Block Work Veneer - Section** (Dwg # CS-05.02)

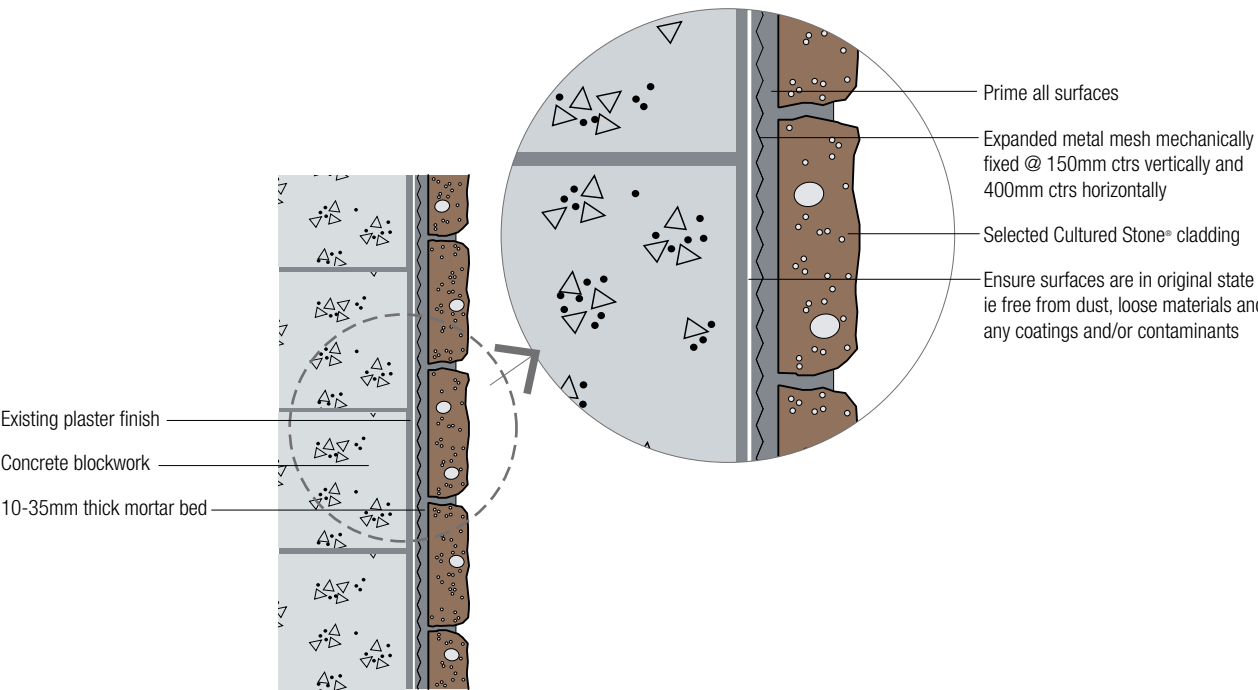


Figure 20: **Plastered Internal Masonry Wall - Section** (Dwg # CS-05.03)

» Design Details

Brick, Block and Concrete Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

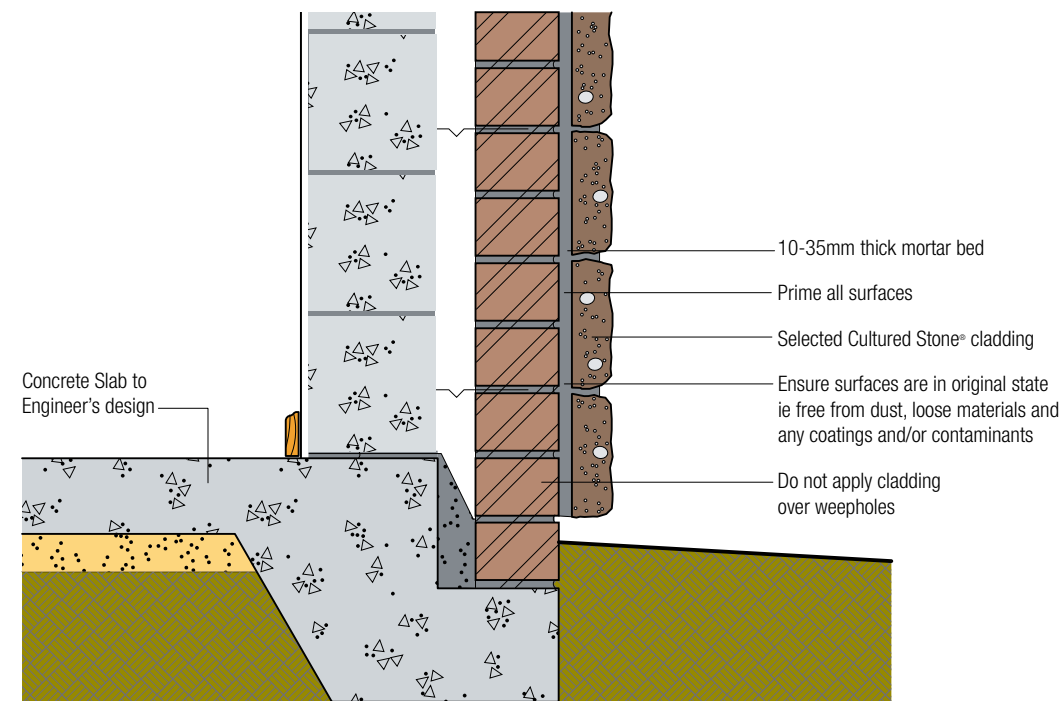


Figure 21: **Brick or Block Work Base - Section** (Dwg # CS-04.02)

» Design Details

Brick, Block and Concrete Substrates

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

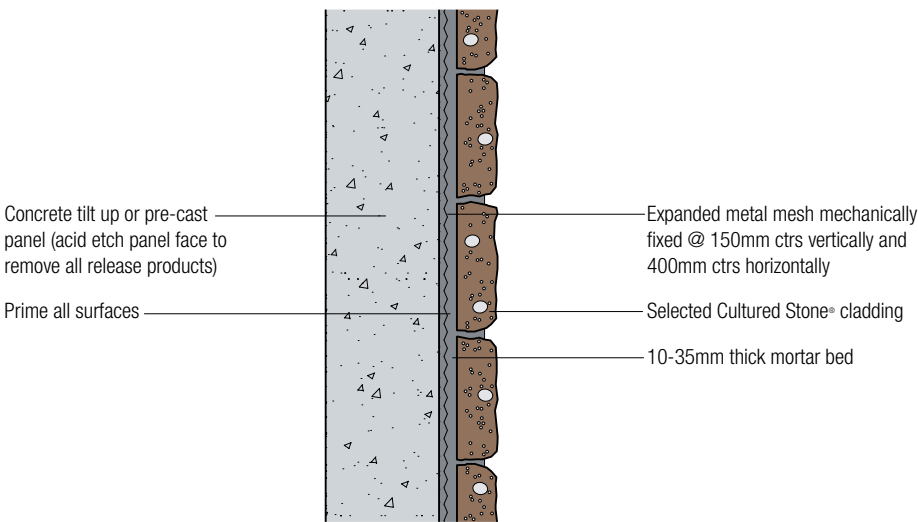


Figure 22: **Concrete Tilt Up or Precast Panel - Section** (Dwg # CS-05.04)

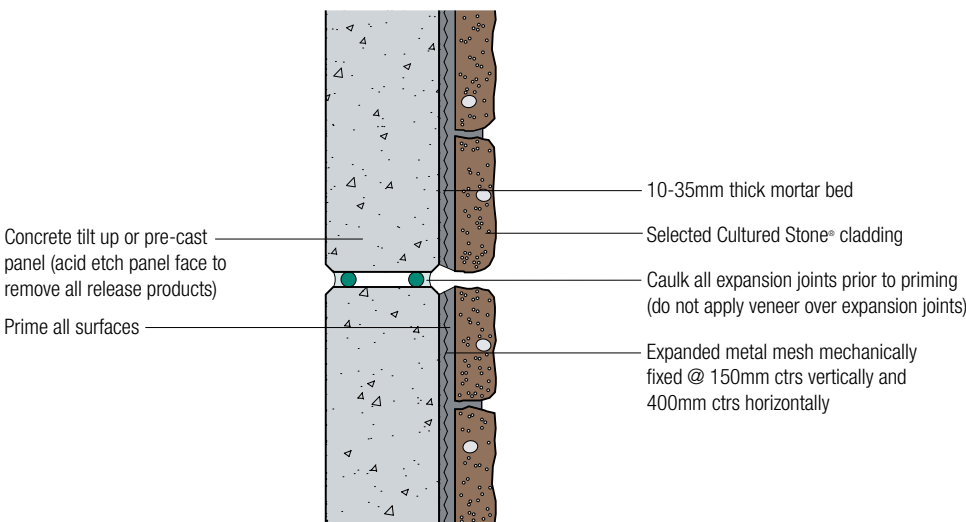


Figure 23: **Concrete Tilt Up or Precast Panel - Plan** (Dwg # CS-03.03)

» Design Details

Cladding Transitions and Window Junctions

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

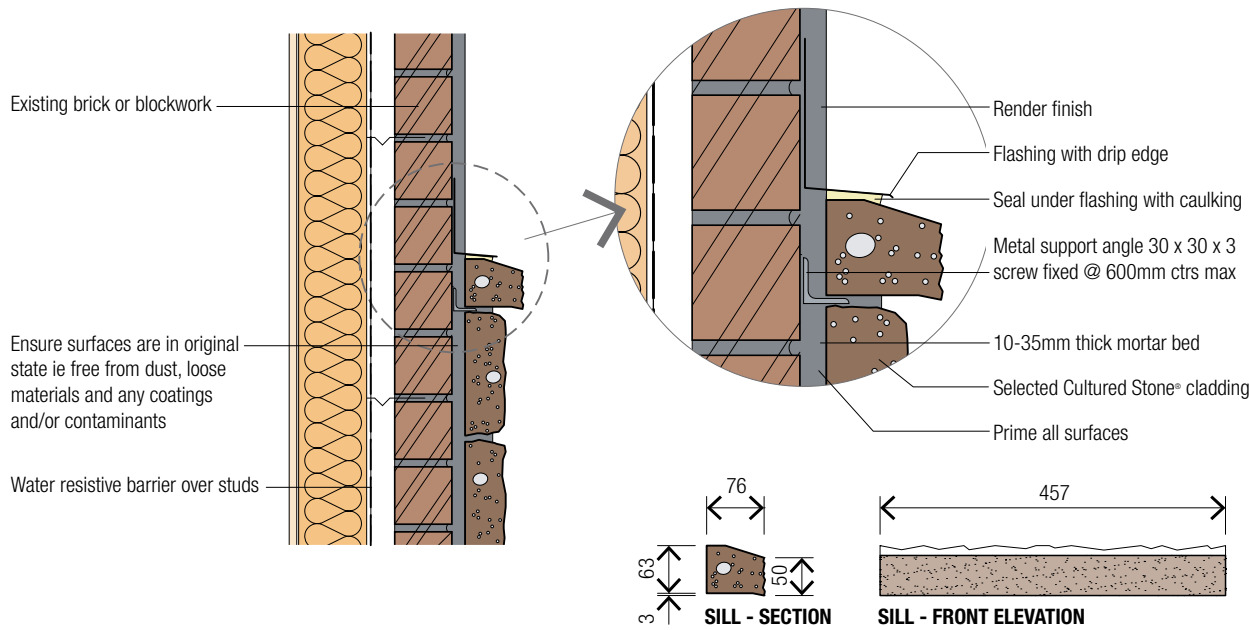


Figure 24: Sill Render Transition - Section (Dwg # CS-06.02)

Note: Lightweight substrate applications should not exceed 9200mm in height. All drawings to be read in conjunction with Cultured Stone Technical Information Guide

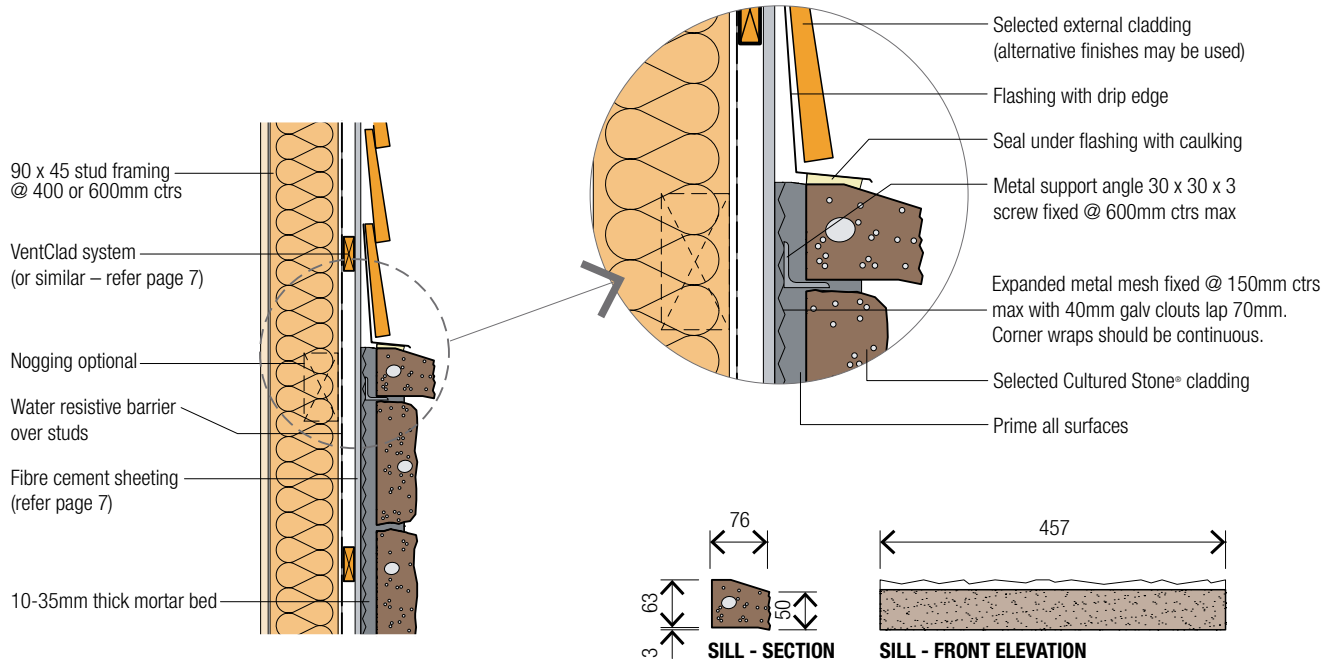


Figure 25: Sill Cladding Transition - Section (Dwg # CS-06.03)

» Design Details

Cladding Transitions and Window Junctions

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

Drawings are diagrammatic only, refer to window manufacturers specifications and details for the 'VentClad System' on www.pbs.co.nz/VentClad plus your architect's detailing.

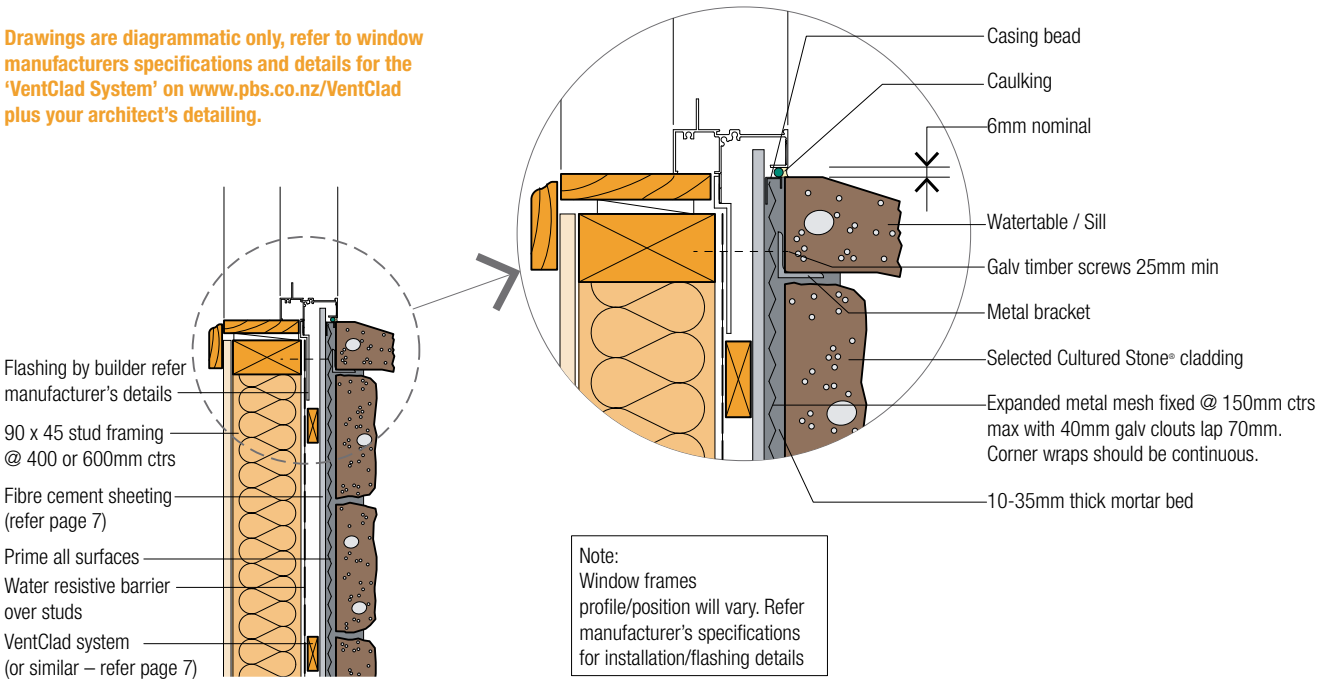


Figure 26: Sill at Window - Section (Dwg # CS-06.04)

Drawings are diagrammatic only, refer to window manufacturers specifications and details for the 'VentClad System' on www.pbs.co.nz/VentClad plus your architect's detailing.

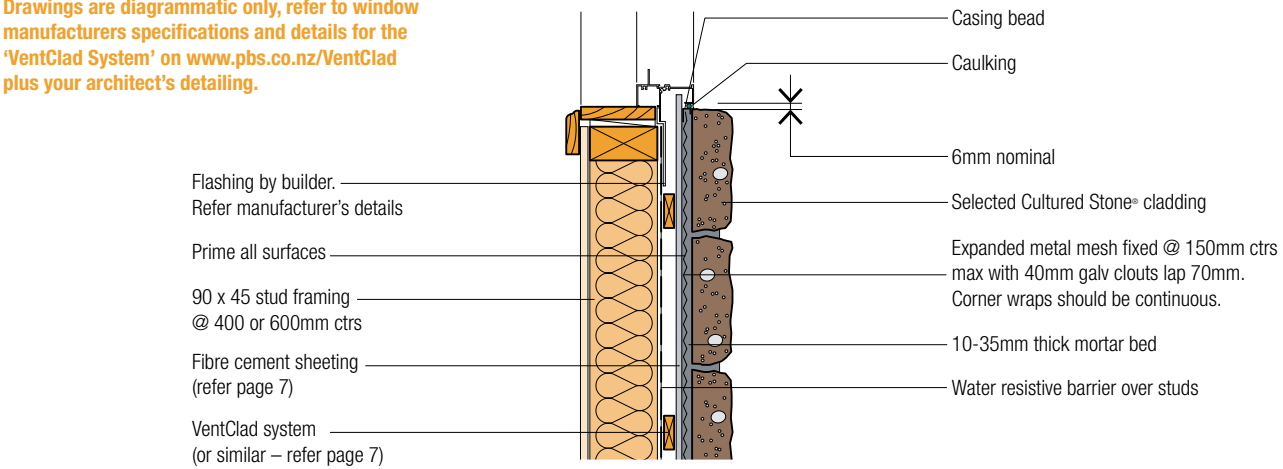


Figure 27: Typical Window Sill - Section (Dwg # CS-06.05)

» Design Details

Cladding Transitions and Window Junctions

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

Drawings are diagrammatic only, refer to window manufacturers specifications and details for the 'VentClad System' on www.pbs.co.nz/VentClad plus your architect's detailing.

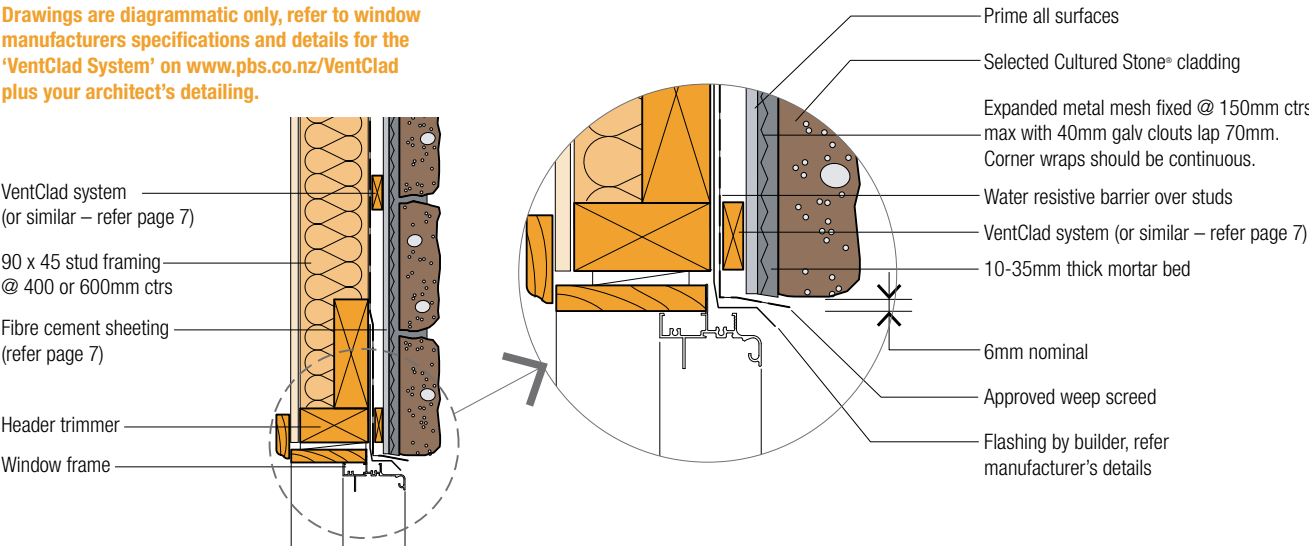


Figure 28: Typical Window Head - Section (Dwg # CS-07.01)

Drawings are diagrammatic only, refer to window manufacturers specifications and details for the 'VentClad System' on www.pbs.co.nz/VentClad plus your architect's detailing.

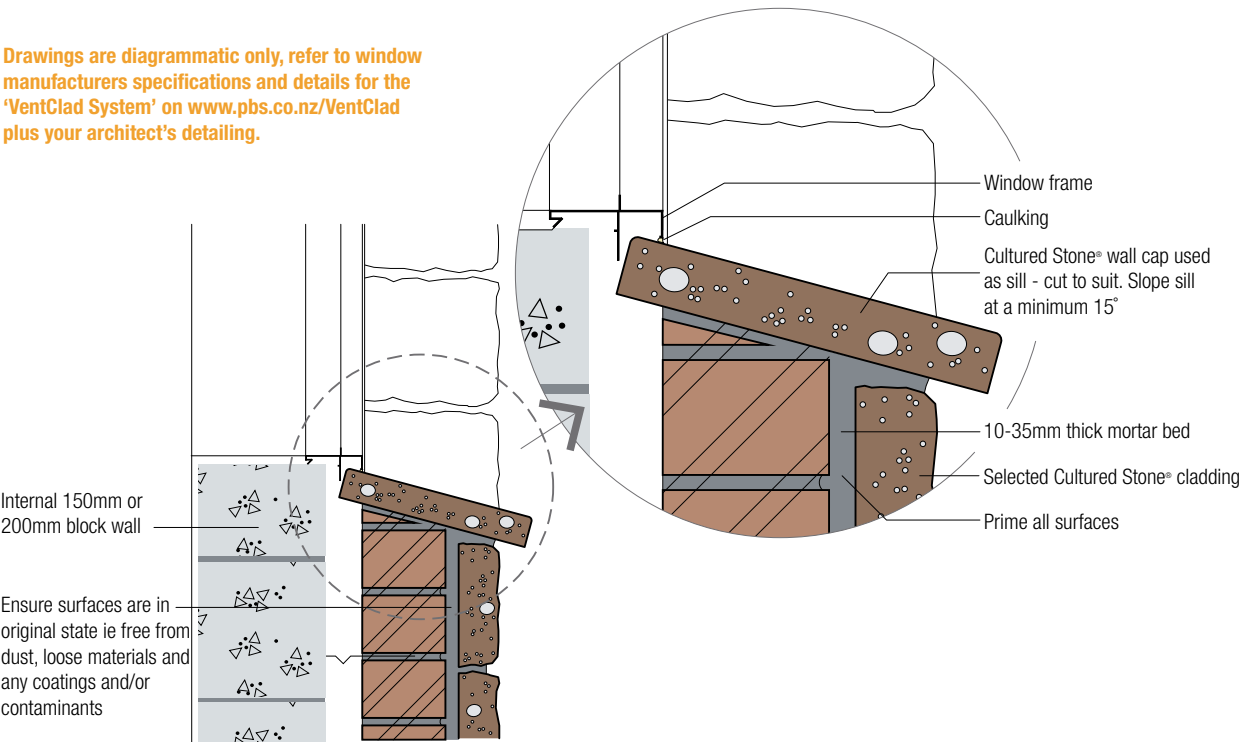


Figure 29: Sill at Window - Section (Dwg # CS-06.06)

» Design Details

Fascias and Eaves

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

Refer VentClad details and architect's drawings

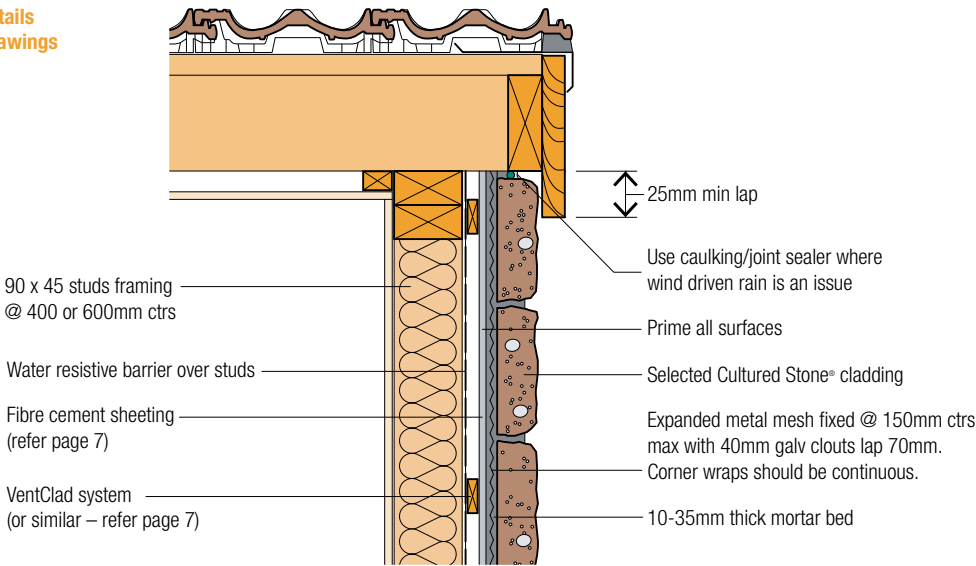


Figure 30: Typical Raking Fascia - Section (Dwg # CS-09.01)

Refer VentClad details and architect's drawings

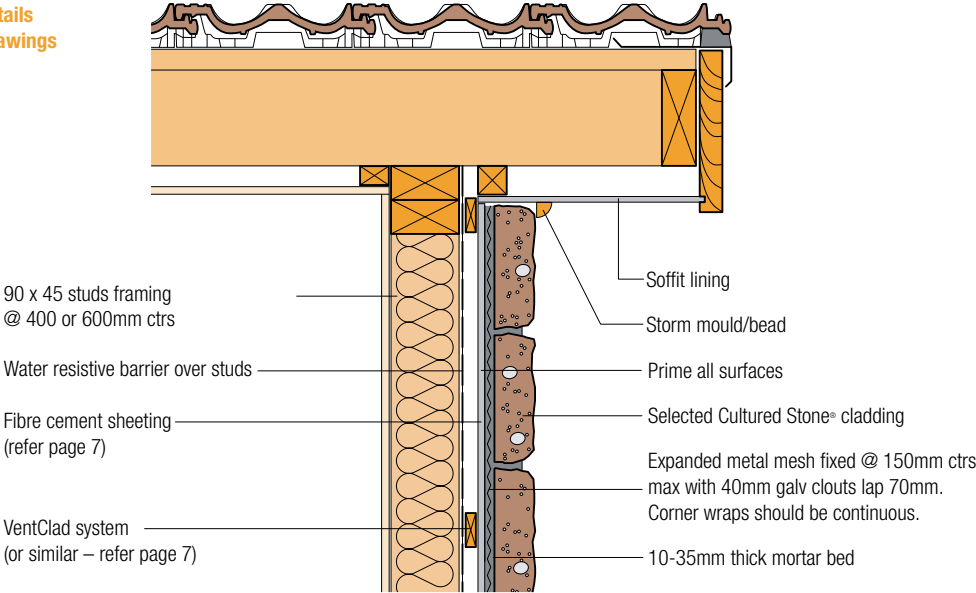


Figure 31: Typical Raking Eave - Section (Dwg # CS-09.02)

» Design Details

Fascias and Eaves

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

Refer VentClad details and architect's drawings

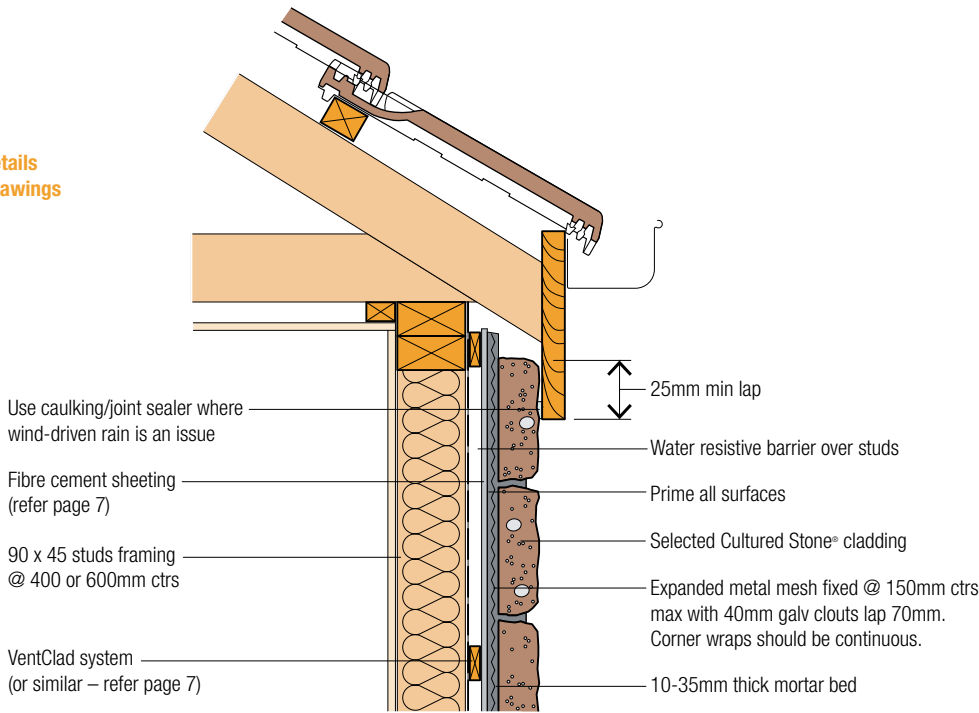


Figure 32: Typical Flush Fascia - Section (Dwg # CS-09.03)

Refer VentClad details and architect's drawings

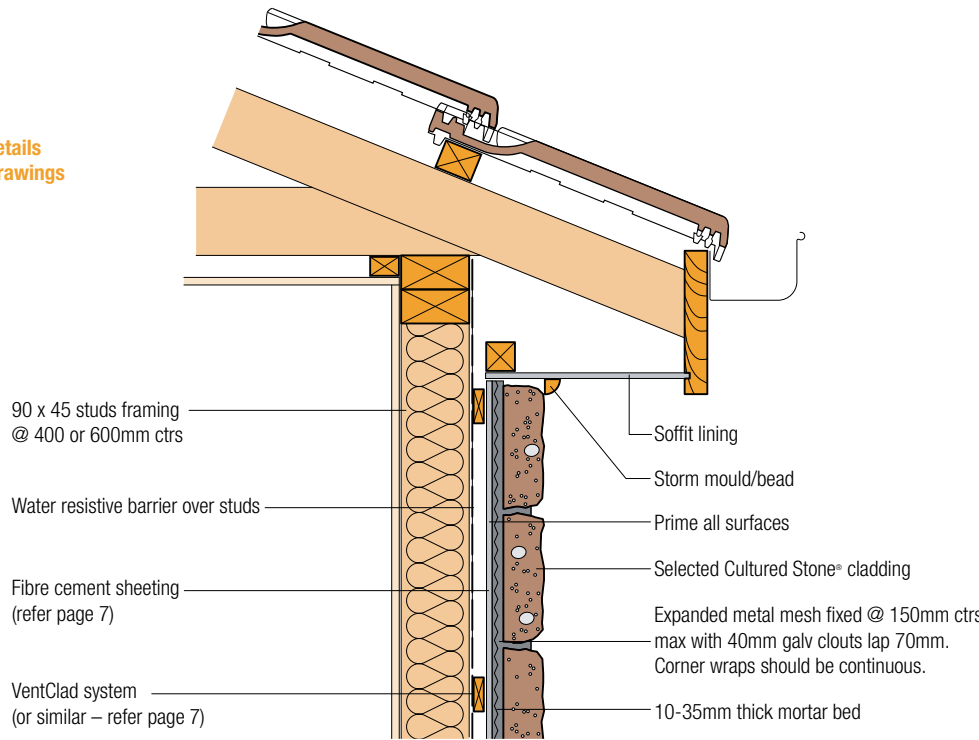


Figure 33: Typical Eave - Section (Dwg # CS-09.04)

» Design Details - Cappings

Cappings

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

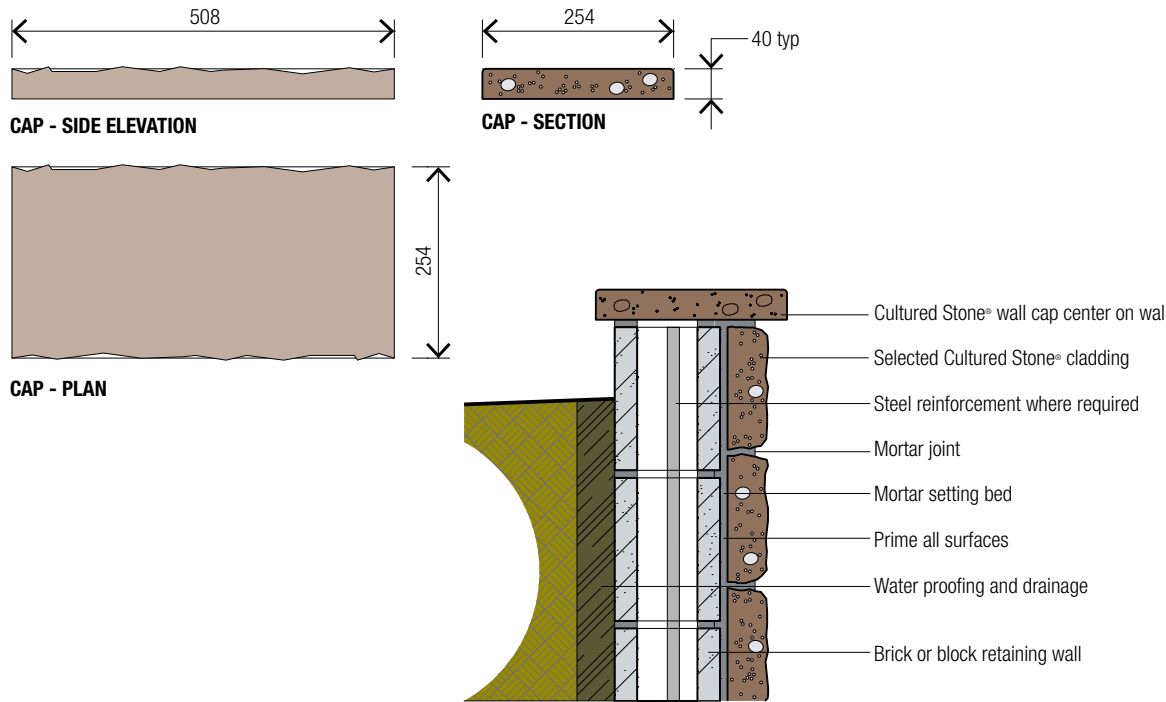


Figure 34: Retaining Wall - Section (Dwg # CS-10.01)

» Design Details

Cappings

Note: All drawings to be read in conjunction with Cultured Stone Technical Information Guide

Drawings are diagrammatic only, refer to architect's details

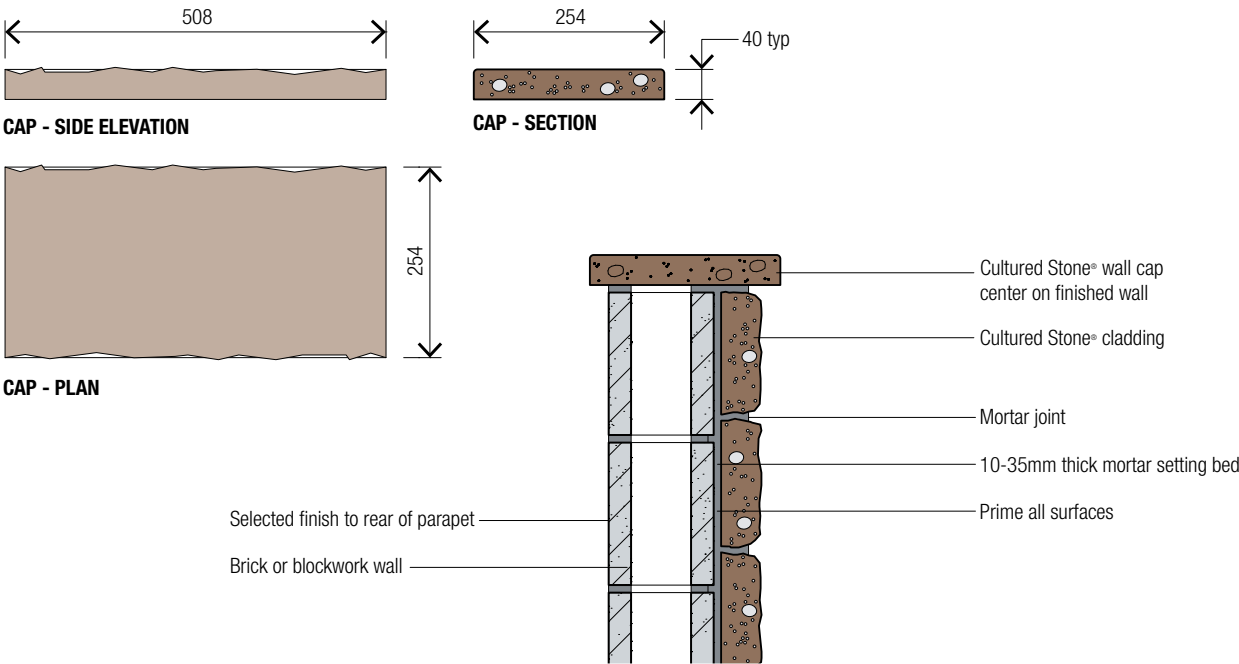


Figure 35: Brick or Block Work Parapet - Section (Dwg # CS-11.02)

Drawings are diagrammatic only, refer to architect's details

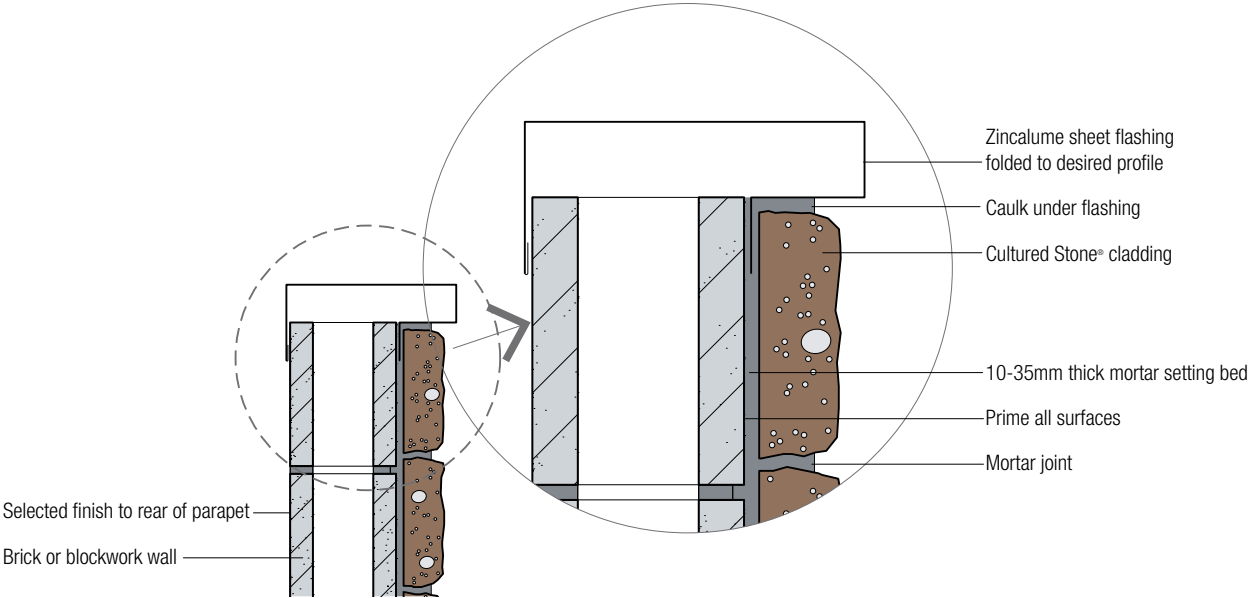


Figure 36: Brick or Block Work Parapet Flashing Capping - Section (Dwg # CS-11.03)

Test Results

Tests have been conducted in accordance with ASTM International, formerly known as the American Society for Testing and Materials (ASTM). Refer to www.iccsafe.org and www.astm.org for more information.

Cultured Stone® cladding is engineered to meet or exceed specifications for major code approvals in the United States of America (USA). Complete copies of these Cultured Stone® USA

building code evaluation reports, research reports, approvals and listings are available upon request. Results of tests conducted by independent testing agencies in the USA confirm that the Cultured Stone® cladding conforms to or exceeds the following test requirements as specified in the USA ICC Evaluation Service Acceptance Criteria 51 for Precast Stone Veneer:

Note:
Always check with local New Zealand building codes prior to installation.

Table 4: Test Results			
Materials			
Cement	May 17, 2006	Tested in the USA to ASTM C 150 or ACI 318 Section 3.2.1	
Sand	May 17, 2006	Tested in the USA to ASTM C 144 or C 33	
Aggregate	May 17, 2006	Tested in the USA to ASTM C 33 or C 330 (except gradation), C 331	
Testing			
Shear Bond Test (adhesion)	May 17, 2006	Tested in the USA in accordance with ASTM C 482	>345 kPa
Water Absorption	May 17, 2006	Tested in the USA in accordance with UBC 15-5	9%–22% depending on texture
Freeze/Thaw Characteristics	May 17, 2006	Testing procedures in the USA follow those outlined in ASTM C 67	<3% mass loss
Compressive Strength	May 17, 2006	Tested in the USA in accordance with ASTM C 39	>12.4 MPa @ 28 days
Unit Weight	May 17, 2006	Density is determined in accordance with USA code ASTM C 567	<73 kg/m²
Tensile Strength	May 17, 2006	Tested in the USA in accordance with ASTM C 190	Reported
Flexural Strength	May 17, 2006	Tested in the USA in accordance with ASTM C 348	Reported
Thermal Properties	May 17, 2006	Tested in the USA in accordance with ASTM C 177-71	R-value is .620 based on a 45mm thick sample. Average thickness may vary on different Cultured Stone® cladding products, and the R-value will vary accordingly.
Noncombustible	Dec 8, 2008	Tested in the USA and listed by Underwriters Laboratories, Inc.	Cultured Stone® brand products showed zero flame spread and zero smoke development.

Material safety data sheet (MSDS) is available on www.midlandbrick.co.nz



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