THE Natural Stone CO.

Natural Stone Cladding

Installation Guidelines

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INTRODUCTION

Natural stone cladding can be laid in a number of ways to both suit the type of stone and create a desired look.

Achieving a quality outcome that respects the stone, has visual and structural integrity and is pleasing to the customer requires careful planning and execution.

The following guidelines aim to highlight and discuss the key factors and considerations that underpin a successful natural stone cladding installation.

They are not exhaustive, and each project has its own unique design priorities and challenges. As always, we are more than happy to discuss installations directly, either over the phone or onsite where the project allows.

The Natural Stone Co. team.



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1. Installation tools and equipment

Below is a list of the recommended tools and equipment required for an efficient stone installation and a high-quality finish.

Chisels

- Pitching chisel is used for removing unwanted stone from the face or sides of a masonry block or piece of walling stone. Generally, it will have a tungsten carbide end allowing it to be sharpened as and when needed.
- Drafting chisel typically used for drafting flat edges to the tops of stones.
- Punching chisel is used for roughing out and removing bumps from the face or tops of stones.

Hammers

- Bell hammer or lump hammer generally weighing 2.5 Lbs or 1.2 Kg. Used with pitches, chisels and punches to dress stone to a required shape. The bell hammer's round head promotes better contact with the head of the chisel and has a more balanced feel.
- Tungsten dressing hammer weighing 2.5 pounds or 1.2 kg, this hammer has three tungsten edges and is best used for tidying up stones without having to use a hammer and pitch and can be sharpened as needed and suitable for both left and right-handed masons.
- Scutching hammer used for chipping off small pieces of unwanted stone and schist type stones with heavy graining.

Trowels

- Small gauging trowel used for buttering up the back of each stone and the walled surface.
- Pointing tool used for different types of mortared pointing and detailing of mortared joints.
- Pointing iron used for compacting mortar into the joints between stones.

Brushes

- Stiff brush for removing unwanted excess mortar around joints and to even out depth and flatten off joints to leave a consistent finish.
- Soft brush for smoothing out brush marks from stiff brushing and removing cement crumbs.
- Paint brushes for washing off stains left by mortar on stones.
- Sponge for washing off cement stains.

Power Tools

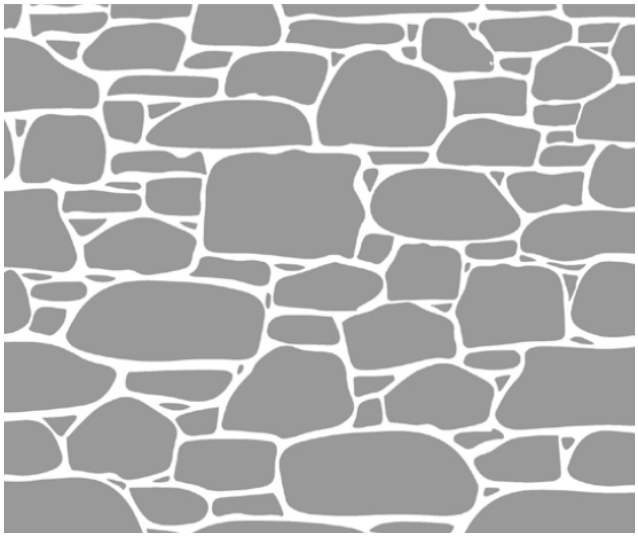
- Small and large grinders used for cutting and polishing stone.
- Wet saws are more efficient and safer than handheld grinders especially concerning dust.
- Paddle mixer for mixing mortars and adhesives.
- Dremel or similar multitool is a fine grinding tool used with diamond burrs suitable

2. Stonework Lay Styles

The following are technical notes related to the various lay styles. For notes more relevant to showing and/or discussing with customers, refer to the Natural Stone Cladding: Style and Finish Guide.

Random Rubble

Stones of varying shapes and sizes laid in a semi-layered way. Stone should be laid on its natural bed (longest edge) with the bed/edge not off the horizontal by more than 20mm.



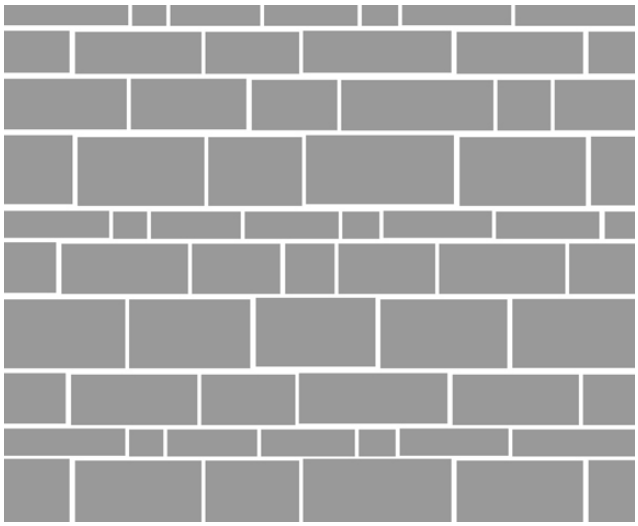
Suitable for: NZ Schist; NZ Limestone; NZ Volcanic Stone: Other Natural Stone

Random Ashler

Stone is cut or dressed into varying-sized rectangular or square shapes and laid in horizontal rows.

There is a degree of randomness to this lay-style with the stones being of differing heights and lengths, however individual stones are purposely selected to achieve an obvious linear-look. In some cases, the stone can be laid so that the top of each row is level.

The longest edge of the stone should ideally always form the bed.

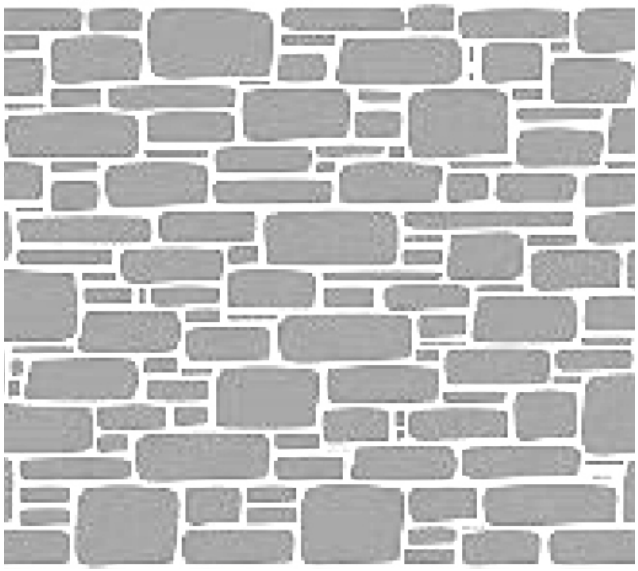


Suitable for: NZ Schist; NZ Limestone; NZ Volcanic Stone: Other Natural Stone

Square Random Rubble

Stones of varying sizes that are squared off on all edges using either a dressing hammer or a hammer and pitch.

The longest edge of the stone should ideally always form the bed.

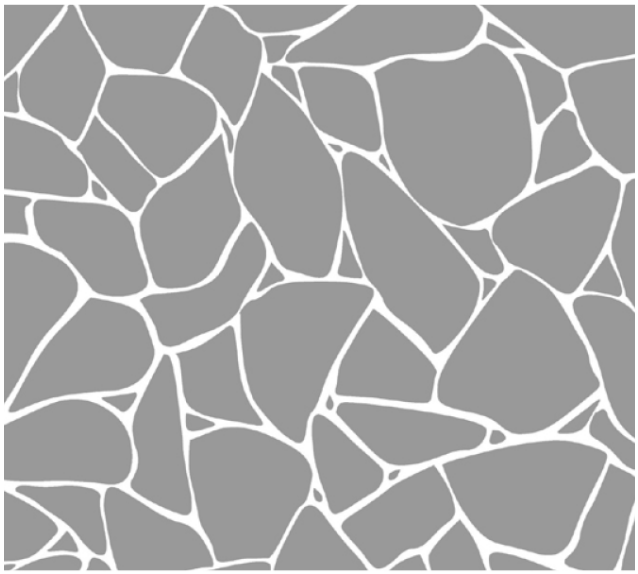


Suitable for: NZ Limestone; NZ Volcanic Stone; Other Natural Stone without foliation (not suited to schist)

Reticulated or Crazy Paving

Stones of irregular shapes and sizes laid in an asymmetrical manner.

As the thickness of the stone can vary, the lay style may need to accommodate this.



Suitable for: NZ Limestone; NZ Volcanic Stone; Other Natural Stone without foliation (not suited to schist) stone, sizes may vary.

3. Mortar Finishes

This relates to how much – if any – mortar is used between the individual pieces of stone and to what depth.

Dry Stack

Very commonly used and has no mortar visible, leaving a very tight joint giving a dry-stone effect with joint sizes ranging from approximately 2- 7mm. Requires a high level of dressing and shaping.

Pointed Joint

Created by firstly filling up the exposed joint and compacting the mortar into it. When the mortar has stiffened up it can then be raked back no deeper than 20mm, ensuring there is a minimum of 25mm of mortar in the joint. It is then brushed back from the face of the stone with a stiff brush. At the end of the day it is given a light brushing with a soft brush to remove any tool marks.

Joint size should be approximately 10–15mm wide.

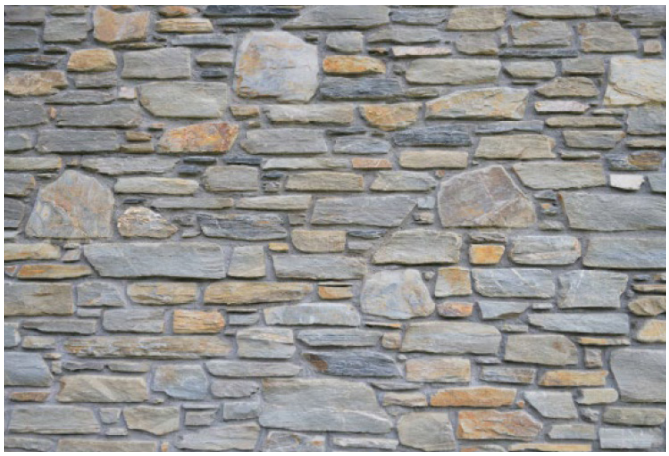
Bagged or Rendered

Based on the look of traditional stonework, a very wide joint or gap is filled with mortar to be either flush with or partially covering the stone's face. Creates a textured but even surface that exposes parts of the stone while also hinting at the underlying shape beneath.

Raked Joint

Where the mortar is 'raked' out of the joints while it is still wet to create a recess of a specific depth (up to 20mm). A Raked Joint creates a shadow effect that emphasizes the individual stones.

Heavily raked joints are not generally recommended for exterior use in wet or cold climates as the recessed shelf can trap water, leading to potential moisture damage or freeze-thaw issues over time. Deep raking can also make stonework harder to clean.



Flushed Joint

Where the pointing mortar is ‘brushed ‘flush with the face of the stones giving the joints a fuller look. Joints range from approximately 10-15mm or greater, depending on the look required.

4. Mortar Colour

The colour of pointing mortar plays a crucial role in the overall appearance of a stonework project. It can enhance the natural beauty of the stone, create visual harmony, or provide contrast for architectural emphasis — and should be considered carefully from the outset of the project.

As a general rule, a similar-coloured mortar creates a more continuous flow across the surface, while contrasting mortars tend to emphasise the individual stones and provide a break to the eye. Recessed (raked) mortar also highlights the individual stones.

A variety of coloured pointing mortars are available, and we recommend reviewing the range of colours available to achieve the overall appearance wanted. An example of various colour options can be seen in the image below.

Bespoke mortar can be created using local sands. The colour of the sands and size of the grains has a distinctive effect on the colour and texture of the mortar.

Premix colours tend to be more expensive but are more consistent in colour.

We recommend pointing a sample area or producing a sample board to confirm the desired look.

Jet Black

Cream

Premium White

Natural

Dark Brown

Charcoal

Antique White

Antique Cream

Light Brown

5. Visual Composition Of Stonework

Unlike solid stone masonry — where each stone must bear the weight of what sits above it — natural stone veneer cladding is adhered directly to the substrate, so there is no structural consideration for how the stones are arranged. The visual composition guidelines below are therefore about aesthetics: positioning the stones in a way that looks considered, balanced, and consistent with the character of traditional stonework.

How closely these principles are followed is ultimately a matter of the look the customer wants to achieve.

General Guidelines

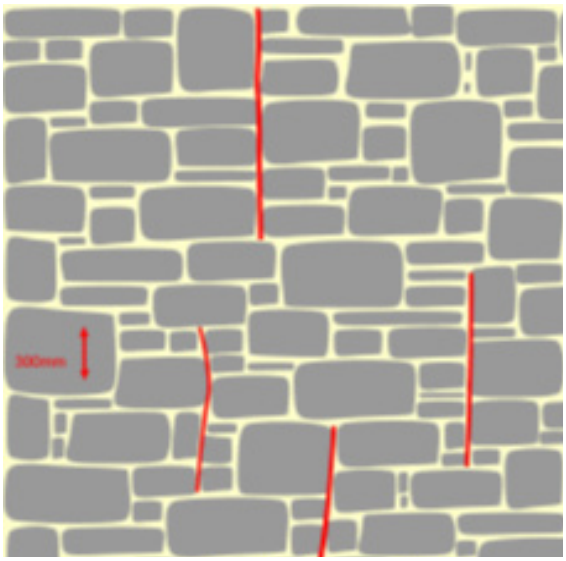
- Focus should be on the shape, sizes and colour of the stone, blending these elements to create a harmonious pattern.
- Stone will be a mixture of natural and split faces – these should be blended to achieve a balanced, consistent look with a varied mix of colour and texture.
- When using larger stones, make sure they are evenly spaced throughout the work to ensure a balanced look.
- Stepping back from the work from time to time is important to ensure that it matches the style required and is consistent throughout the entire installation. This is particularly necessary when more than one stone mason is involved, to guard against visible variations in individual lay styles.

Vertical Joints

Running vertical joints are not visually pleasing and can make the stonework appear structurally unsound.

In Coursed Ashler and Squared Random Rubble installations, it is recommended that vertical joints not exceed 300mm, and that each joint is crossed — stopped or broken by another stone — to ensure good bonding.

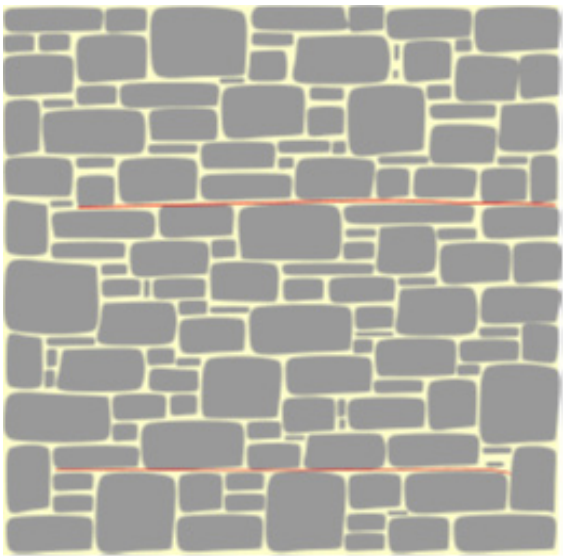
The image below illustrates vertical joints running more than 300mm.



Horizontal joints

Horizontal joints should be broken around 1200mm unless the work is coursed. Overly long horizontal joints draw the eye, detracting from the overall look of the installation.

The image below shows joints running almost the entire length of the panel. These joints should be broken to improve the appearance and structural integrity of the stonework.



Stone Shapes

In Coursed Ashler, Random Rubble and Square Random Rubble installations, it is recommended that the following stone shapes be avoided, as they catch the eye and stand out as being unusual.

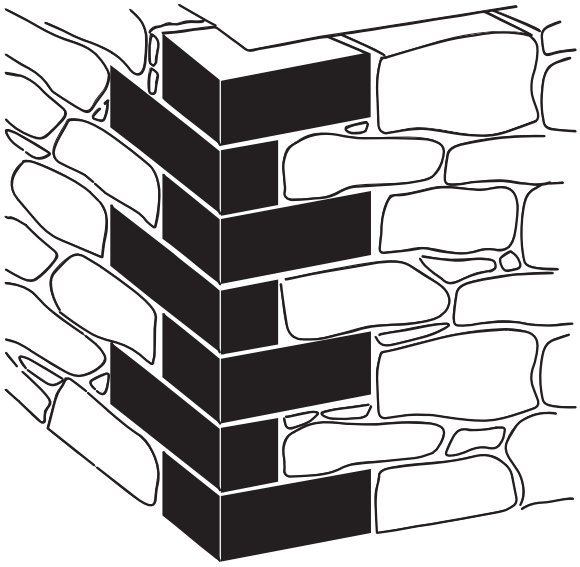
A. Soldier stone: - taller than it is wide. All stones should ideally be laid with the longest side as the bed/bottom edge.
B. Triangular stone: - triangular stones should not be any larger than approximately 100x100mm and always laid with the longest side as the bed/edge.
C. Boat-shaped stone: - should not be larger than approximately 100mm high and laid with the longest side as the bed/bottom edge.

Corners

Corners should be laid with alternating headers (short ends) and stretchers (long ends) as depicted below, to produce a look that is visually balanced and ties in with the overall installation.

With stone other than schist, corners will be a mix of one split/one natural face (the majority), two split faces or two natural faces. Make sure these are identified and blended throughout the length of the corner.

Some dressing of the corners will be required to straighten up the edges and achieve a tidy finish.

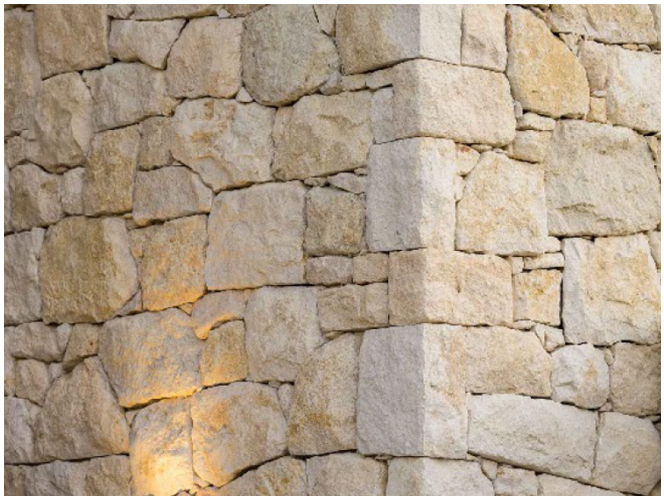


Random versus Dressed Corners

Random corners are laid with only minor shaping to achieve an acceptable vertical alignment between corner pieces, they do not have an Aris line. Dressed corners are shaped with an Aris line to produce a sharp, distinctive line down each corner.

All corners should be laid with a string line.

The decision on which style to use depends on the overall look that is desired as well as budget considerations. Random corners tend to be used for a non-linear, rustic look, while Dressed corners may be used for something more formal or where the customer is seeking an architectural finish. Dressed corners are more time-consuming to shape and install and are therefore a more expensive option.



6. Stone Detailing Options

Having certain details made from natural stone helps to complete the look of the installation, giving it a sense of permanence and the appearance of traditional stonework.

The following are brief technical notes related to the most common forms of natural stone detailing. For notes more relevant to showing and/or discussing with customers, please refer to the Natural Stone Cladding Style and Finishing Guide.

Capping

Capping is flat pieces of stone, custom cut to sit on the top of walls, pillars and parapets. Usually produced from the same stone as the cladding but can be different depending on the length and thickness of the capping required.

- Capping and parapets generally have a fall of up to 15 degrees.
- In a solid stone installation, the capping is dressed to a 15-degree angle.
- With 40mm veneer stone, corners are inclined to achieve the recommended 15 degrees. Alternatively, a flat capping piece may be laid at a 15-degree angle to achieve water run-off.
- Corners can sometimes be used for capping (processed at a different orientation to vertical corners).

Lintels

Lintels are a horizontal beam placed above openings like doors, windows, and fireplaces. Natural stone lintels create a seamless look with the surrounding cladding as well as being a subtle feature in their own right.

Depending on the type of stone and the dimensions of the opening, natural stone lintels can be one-piece, three-piece or multi-piece.

Lintels are either sawn cut on the bottom and sit on steel if not in one piece or the stone is weak OR the stone wraps around so it can be seen from the underside. This option is only available in certain stone types as it must be sourced in reasonable lengths.

1-piece Lintel

- The lintel should be bearing on top of the corners directly below it by a minimum of 100-150mm each side.
- The corner stone on each side of the opening should be of similar size and shape to the corresponding one on the opposite side, particularly the top two that sit directly beneath the lintel.

3-piece Lintel

- The lintel is in three parts, with the end stones bearing on top of the corners directly below by a minimum of 100-150mm each side.
- The corner stone on each side of the opening should be of similar size and shape to the corresponding one on the opposite side, particularly the top two that sit directly beneath the lintel.

Multi-piece Lintel

- The lintel is in multiple parts, with a centre stone and the same number of stones on either side - each similar in size and shape to the corresponding stone on the other side.
- The end stones should be bearing on top of the corners by a minimum of 100-150mm each side.
- The corner stone on each side of the opening should be of similar size and shape to the corresponding one on the opposite side, particularly the top two that sit directly beneath the lintel.

Sills

Natural stone sills come up to the bottom of the window frame. There are several options to consider, depending on the desired look and the type of stone (some options are not available in all stone types).

1-piece Sill

- Cornerstones should be sitting on the sill by 100-150mm.
- Not all stone types can be sourced at the required length.

3-piece Sill

- All pieces should ideally be of approximately equal size.
- Cornerstones should be sitting on the sill by 100-150mm.

Multi-piece Sill

- Start from the centre with a centre stone, then all stones should mirror each side.
- Cornerstones should be sitting on the sill by 100-150mm.

Light Switches and Walling Lights

We can custom-produce cut-out features for light switches and recessed wall lighting, creating a seamless architectural finish across a natural stone wall installation. Get in touch with us to discuss this option for your project.