



Natural Stone A Buyer's Guide



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Natural Stone - A Buyer's Guide

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Cumbrian Stone Ltd was founded in 2006 in order to provide a high quality manufacturing service to the natural stone industry. Since its incorporation, the company has steadily grown each year and is now recognised as one of the leading natural stone suppliers within the UK. Our natural stone products can be seen on many high profile projects worldwide, and we pride ourselves on the service that we offer to each and every customer we work with.

Who Are Cumbrian Stone



At Cumbrian Stone we like to think that we're more than just a manufacturer. Our team gets involved in a whole host of different aspects of construction and natural stone, including design, testing, training and technical guidance. We believe that this is what gives our team the expertise to help our customers throughout their entire project, whilst also giving us a real insight into how our natural stone is enhancing buildings across the UK.

Our customers say that one of the key things that makes Cumbrian Stone stand out from the crowd is the personal and professional service that we offer on every project we supply. No matter if it's your first time working with our team, or whether you've been working with Cumbrian Stone for years, we take the time to get to know you and your project so that we can make sure we deliver the best possible service from start to finish.

Looking to Get More Personal?

Then why not pay us a visit? We are based on Gilwilly Industrial Estate in Penrith and are easily accessible from junction 40 of the M6. Unlike most quarries there's no need to bring your wellies and we always encourage our customers to call in and meet our team.

At Cumbrian Stone we appreciate that it can be difficult to envisage how your project will look and feel from photographs and glossy brochures, which is why we have invested in a state of the art showroom where you can see a selection of our finished products ranging from walling stone and window surrounds through to bespoke carved features. Across from our showroom we have our manufacturing facilities. This is where our team slab, cut and carve each and every stone that has been ordered by our customers before they are quality checked and carefully packed and prepared for delivery direct to site by our trusted network of hauliers.

Of course, if you don't have the time to pay us a visit or it's a bit too far to travel we won't hold that against you either! Our team works with customers all over the UK and we're only a phone call away if you'd like to talk through your next project.



Cumbrian Stone

Montal Place
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What is Natural Stone?



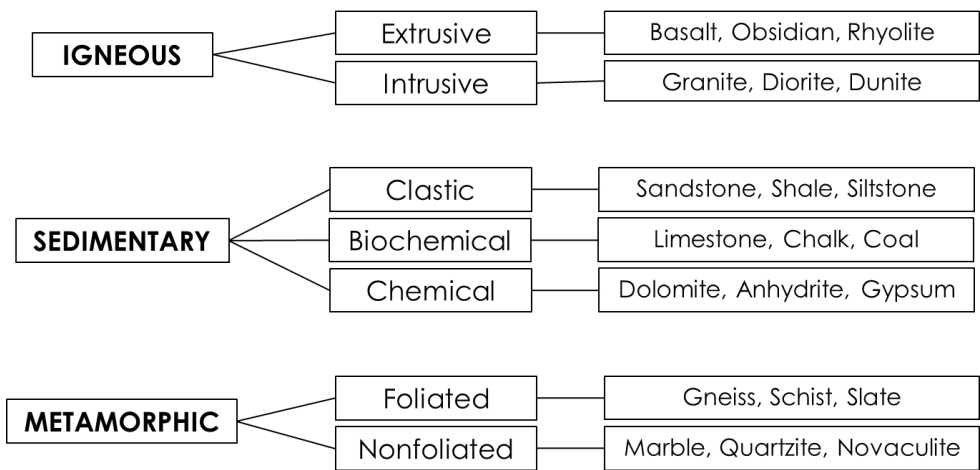
Natural stone is a versatile material that has been used in the construction of buildings for thousands of years. One of the oldest stone chapels still in use in the UK dates back to around 663AD, highlighting the durability of natural stone as a building material. This is also clear from our history, with natural stone being found on our castles, churches and cathedrals, as well as on other prominent buildings in cities across the UK.

At Cumbrian Stone we believe that it is important for our customers to understand natural stone and the process of how it has been formed over millions of years. Unlike a man-made product, natural stone can contain a variety of different minerals and aggregates depending on when and where it ahs formed, which manifest themselves in the wide variations we see in the materials we work with.



The Classifications of Natural Stone

There are three main classifications of natural stone, and these are defined by the conditions of how the stone was formed. These classifications can then be further broken down into different sub-categories based on the properties of each stone. These categories can be summarised as follows:



Igneous Stones – Formed through the cooling and solidifying of magma/lava. The structure of the stone varies depending on how quickly the cooling process happens. Stone cooled quickly has a tighter grain (Extrusive) whereas stone cooled slowly has a coarse grain (Intrusive).

Sedimentary Stones – Formed due to the compaction and cementation of minerals over time. Generally sedimentary stones fall under three main categories; Clastic, Biochemical and Chemical. Most limestones are Biochemical sedimentary stones as they are formed from the calcareous skeletons of organisms, and sandstones are composed of other rock particles that have been cemented together by silicate minerals.

Metamorphic Stones – Formed due to exposure to extreme conditions. These stones start as either igneous or sedimentary before being subjected to temperatures over 150 to 200 Degrees Celsius and pressure levels over 1,500 Bar (Over 21,500 lbs per square inch). This heat and pressure can cause significant chemical and physical change within the original stone, resulting in the change in classification to Metamorphic.

So why is knowing how your chosen natural stone is formed important?

At Cumbrian Stone, we believe that by understanding the formation of natural stone, this helps us to understand the limitations of natural stone as a building material. In turn this allows us to ensure that we design any natural stone components to accommodate these limitations and prevent unexpected problems once a project is underway.

When working with natural stone as part of our production process, the primary limitations and considerations that we usually need to take into account are:

- Any bedding planes and maximum available bed heights.
- Natural flaws and unexpected clay pockets and voids within the stone beds.
- Correct orientation of each unit depending on the finished component required.
- Consistency between different stone blocks.
- Unexpected minerals within the stone composition.
- The minimum and maximum suitable length, width and height of each unit.
- How each stone will weather and alter over time depending on its final location and use.

Each of these limitations influences how we design our natural stone components, and can sometimes mean that some stones aren't suitable for a project at all. A good stone supplier should be able to explain the limitations of the natural stones that they offer and should always take the above into account when supplying your project.

So why choose natural stone?

As a building material, natural stone does far more than just stand the test of time. The wide range of colours and grains available from different quarries has resulted in natural stone becoming a desirable product to use as its appearance can enhance a building, improving its overall appeal and increasing the property value to prospective buyers.

This is why more and more housebuilders are choosing to select locally sourced natural stone when undertaking a development. This can range from the inclusion of architectural features and window surrounds through to cladding using traditional walling and smooth ashlar panels depending on the desired appearance.

At Cumbrian Stone, each stone requested by our customers is cut to order. This provides an element of flexibility and adaptability that is often not available when using other building products, making natural stone ideal for extending an existing building where the original sizes may not quite fit with standard sizes that other modern or mass produced products are sold at.

The composition of many of our natural stones also makes them ideal for carving, allowing the inclusion of bespoke details including date stones and plaques through to gargoyles and sculptures depending on our customers' requirements. This, combined with the natural variations found within natural stone ensures that every building is unique, further adding to the value and desirability of any property.



Typical Sandstone Variations



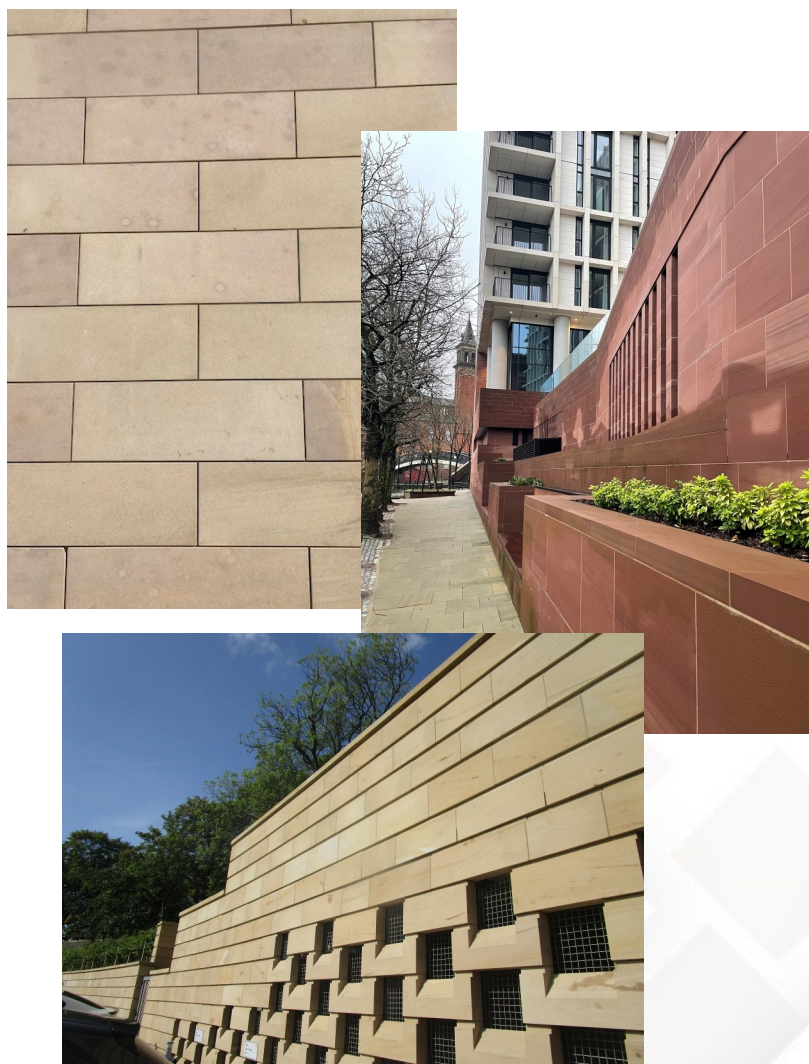
There are still a large number of active sandstone quarries in the UK, each producing dimensional block for processing by natural stone manufacturers like us.

The properties of each sandstone differ from quarry to quarry thanks to the nature of how the stone is formed. The most clearly noticeable of these variations is the colour of the stone units each quarry produces, however through closer visual inspection and petrographic analysis it is possible to determine the most likely quarry of origin and the closest active match.

Due to the versatility of the sandstones traditionally used across the UK it would be impossible for a manufacturer to process every stone available whilst remaining commercially viable. This is why Cumbrian Stone have selected a range of locally sourced natural stones that we believe provide a suitable match for a broad range of requirements. This range is always being updated, and you can always find an up to date list of the natural stones we have available on our website or by speaking to our team.



Primary Sandstone Bed Locations in the UK



Typical Limestone Variations



Limestone is a common sedimentary rock that can be found in various parts of the UK. It is composed mainly of calcium carbonate and is formed from the accumulation of the remains of ancient organisms. There are several variations of limestone in the UK, each with its unique characteristics, such as colour, texture, and durability.

One of the primary uses of limestone in the UK is within the construction industry. Limestone has been used in building for centuries due to its durability and aesthetic appeal. It is used for a variety of purposes, such as flooring, cladding, and as a decorative stone. It is also used as a raw material in cement production, as an agricultural soil conditioner, and in the production of lime.

British limestones are regularly used in many iconic buildings throughout the country, including many listed churches, cathedrals, and castles. Limestone is also used for sculptures and monuments. Despite its many uses, limestone can also be vulnerable to erosion and weathering. Careful management of limestone quarries is essential to ensure the long-term sustainability of this valuable natural resource.



Primary Limestone Bed Locations in the UK



Typical Slate Variations



Slate is a fine-grained metamorphic rock that is commonly found in the UK. It is formed from the compression of sedimentary rock, such as shale or mudstone, and is characterized by its distinct layered structure. Slate is a durable and hard-wearing material that has been utilised on buildings across the UK for centuries. There are several variations of slate that can be found throughout the UK, each with its unique characteristics.

One of the most well-known slate variations in the UK is Welsh slate, quarried in North Wales. It is renowned for its high quality and has been used in some of the most famous buildings in the country, such as Buckingham Palace and St. Paul's Cathedral. Welsh slate is known for its dark blue-grey colour and durability, making it an ideal material for cladding and both internal and external features.



Primary Slate Bed Locations in the UK

Typical Granite and Marble Variations

Granite and marble are two popular types of natural stone that are quarried in a limited number of locations in the UK. Granite is a coarse-grained igneous rock that is composed of quartz, feldspar, and mica, while marble is a metamorphic rock that is formed from limestone. Both types of rock are valued for their durability and aesthetic appeal and have been used in construction and decoration for centuries.

There are several variations of granite and marble that can be found throughout the UK, each with its unique characteristics. Granite variations can range in colour from pink to grey to black and can have different textures, such as a fine-grained or coarse-grained appearance. Marble variations can also have different colours, ranging from white to pink to green, and can have varying levels of veining and texture. Both types of these stones have been used in a variety of applications, such as building construction, sculpture, and interior decoration thanks to their incredibly durable and hard wearing nature.



Primary Granite Bed Locations in the UK

Imported Natural Stones



The UK imports a wide variety of natural stone from around the world to supplement its indigenous stone resources. These imported stones include marble, granite, limestone, sandstone, and slate. The decision to import natural stone is usually driven by factors such as cost, availability, and aesthetic appeal.

Compared to indigenous stones, imported stones can offer a greater variety of colours, patterns, and textures. This can be particularly attractive for architectural projects that require specific design features. For example, Italian marble is renowned for its unique colours and veining patterns, which can add a striking visual element to a building's interior. Similarly, granite from Brazil or India can offer a range of colours and textures that may not be available in the UK.

However, there are also advantages to using indigenous stones. Firstly, they are generally more readily available and easier to source locally, which can reduce costs associated with transportation and logistics. Additionally, using indigenous stones can help to support local industries and promote sustainable development. It can also help to create a sense of regional identity, as different areas of the UK have their unique geological and architectural heritage.

Overall, the decision to use imported or indigenous stone will depend on a range of factors, including the specific project requirements, budget, and availability of materials. The UK's diverse range of natural stone resources, both indigenous and imported, provide architects and builders with an abundance of options for creating visually stunning and durable structures.



Man-Made Stone Products



Man-made stone products, such as quartz and engineered stone, have become increasingly popular in the UK in recent years. These products are made from a combination of natural stone aggregates and resins, which are moulded and shaped into slabs or tiles. They offer a range of benefits, including a consistent appearance, durability, and resistance to scratches and stains. Additionally, man-made stone products are often less porous than natural stone, making them easier to clean and maintain.

Porcelain is another popular alternative to natural stone in the UK. Porcelain tiles are made from a mixture of clays and other natural materials, which are fired at high temperatures to produce a hard, dense material. Porcelain tiles can offer a range of colours, patterns, and textures, and are often used in high-traffic areas, such as commercial buildings or outdoor spaces.

Compared to natural stone, man-made stone products and porcelain offer several advantages. Firstly, they can provide a more uniform appearance, which can be particularly attractive for large-scale projects. They are also often more resistant to scratches, stains, and fading, which can make them a practical choice for high-traffic areas. Additionally, they are often easier to maintain and clean than natural stone, which can help to reduce ongoing maintenance costs.

However, natural stone still has several advantages over man-made products and porcelain. Natural stone offers a unique beauty that is difficult to replicate with man-made products, thanks to its natural variations in colour, texture, and pattern. Additionally, natural stone is a more sustainable and environmentally friendly material, as it is a naturally occurring resource that can be quarried and used without causing significant harm to the environment.

Overall, the decision to use man-made stone products, porcelain, or natural stone will depend on a range of factors, including the specific project requirements, budget, and personal preferences. The UK's abundant resources of natural stone, as well as the availability of man-made and porcelain products, provide architects and builders with a wide range of options for creating beautiful and durable structures.



Common Features in Natural Stone



As natural stone is formed naturally over millions of years, we can often find variations within the stone blocks that have been caused by changes in the minerals and environment of the formation over the years. These can include easily spotted features such as changes in colour or texture, through to less obvious features such as changes in the density or porosity of the stone. Some of the most common, visual features that can be found in naturally formed stone blocks are:

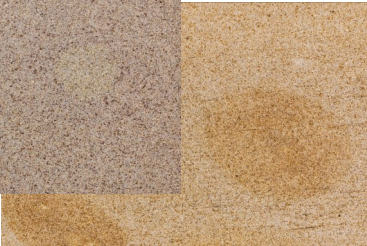
Stripes, Linear Markings and Swirls

These markings are usually caused by the presence of minerals such as metal oxides or coal seams within the stone beds. The extent of these swirls can vary from stone to stone, with some stones being more prone to containing this type of variation than others.



Colour Variation and Dark/Light Shading

As the mineral content within natural stone changes between seams, there can often be variations in the base colour of the stone. This can also manifest itself in different coloured spots or swirls throughout the stone.



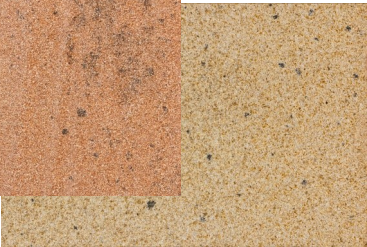
Clay Pockets/Small Clays

Many natural stones contain small pockets of clay that has become trapped within the stone beds during the formation of the stone. These can be visible on the stone surface, and depending on their size and proximity to the surface the clay may wash away to leave a small hole on the stone's surface.



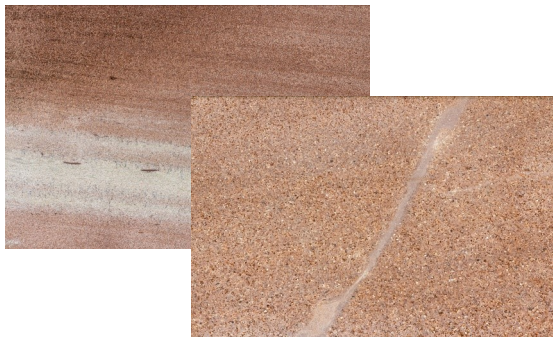
Black Flecks/Markings and Spots

These flecks or spots are usually a result of coal or other dark coloured minerals within the stone beds. Their frequency can vary significantly between stones depending on the location of the quarry that the block is sourced from.



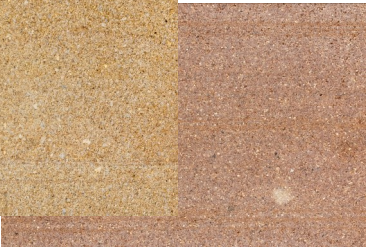
White Spars and "Glass Beds"

These markings are usually linear in nature, and have been formed due to a break in the stone during the formation process that has then been re-bonded over millions of years. The energy and heat generated from the original break results in a visible change in consistency along the line of the break.



Visible Grit and Larger Aggregates

Depending on the mineral composition of your natural stone, it is not uncommon to find larger particles of aggregates visible within the face of the stone.



Natural Stone Applications

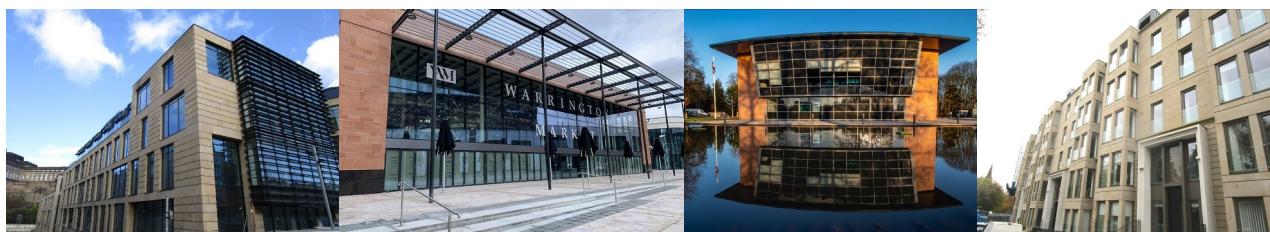


Natural stone is often used for a wide variety of different projects, each of which has its own key requirements for selecting the correct stone and stone supplier. At Cumbrian Stone, we split these projects into five core categories so that we can focus on what our customers find the most important for their project. These core categories are:

Domestic New Build and Residential Extensions



Commercial New Build Developments



Landscaping and Public Realm Works



Restoration and Conservation Projects



Memorials, Fire Surrounds, Counter Tops and Bespoke Feature Carvings



Natural Stone Applications - Domestic New Build



The natural stone on a domestic new build development is usually carried out using traditional building methods, although the introduction of thin cladding/panel systems on private residential projects can be an option depending on the size and design of the building. Each method of construction has its own merits and drawbacks which should be carefully considered at the design stage of a project; especially as this can have a significant impact on cost, programme and overall suitability of the proposed materials.



When designing a domestic new build project there are normally three primary considerations when it comes to natural stone selection. These are:

- Aesthetics – The selected stone has to look as good as possible, be in keeping with the surrounding area and fit with any other materials being used on the project.
- Cost – The selected stone must be within budget. This can be controlled through the design of the components and the amount of stone used.
- Planning Requirements / Constraints – The selected material must meet with any requirements or constraints indicated in the planning permission. This can include requirements due to the project being within a conservation area.

Case Study - Private Dwelling, Altrincham



Project Location: Hale Barns, Altrincham

Natural Stone Used: Longridge Sandstone

This project was a private, residential development where Cumbrian Stone assisted the architect and stone installers with the design and supply of finished Longridge sandstone units. The project utilised large, profiled feature stones at the window and door surrounds to give a stunning façade. The finished property has a traditional arts and crafts appearance with numerous carved features throughout the design.





Services Provided by Cumbrian Stone

Masonry Unit Design, Supply of Finished Stone Units

Volume Supplied

45 Tons / 18m3

Natural Stone Applications - Commercial New Build



The natural stone on a commercial new build development usually falls under one of two different styles of construction; traditional builds or thin cladding systems. Each method of construction has its own merits and drawbacks which should be carefully considered at the design stage of a project; especially as this can have a significant impact on cost, programme and overall suitability of the proposed materials. It is especially important to establish the suitability of the selected natural stone for the proposed system of installation, as not all stones are suitable for every style of building, and this can be a costly mistake to rectify.



When designing a commercial new build project the key considerations are usually the same as on a domestic residential project. These are:

- Aesthetics – The selected stone has to look as good as possible, be in keeping with the surrounding area and fit with any other materials being used on the project.
- Cost – The selected stone must be within budget. This can be controlled through the design of the components and the amount of stone used.
- Planning Requirements / Constraints – The selected material must meet with any requirements or constraints indicated in the planning permission. This can include requirements due to the project being within a conservation area.

Natural Stone Applications - Landscaping



Landscaping projects can range from stone paving and kerbs through to bespoke planters, feature walls and ornate features. When looking at a landscaping project it is often important to pay close consideration to the properties of the proposed stone as these can have a significant impact on the suitability and lifespan of the stone.

The protection of natural stone landscaping features should also be taken into account when designing a scheme. From sealing the stone against liquid penetration through to anti-graffiti coatings and cleaning options there are several options available that can help to increase the lifespan of a project. However, it is important to research these thoroughly before specifying them as some products can cause significant, unexpected problems when used on natural stone.



These projects are still driven by the same requirements as most newbuild developments, however there are also two additional key considerations that can override these:

- Durability – The selected stone must be resistant to wear and weathering, especially in high traffic areas. Consideration should also be given to the proximity to roads and walkways likely to be gritted in winter, as salts can significantly increase the deterioration of some stones.
- Testing/Fit for Purpose – The selected stone must also meet certain standards before being used as paving in a public area. For example slip resistance tests need to be carried out to ensure that once finished, the newly landscaped area will not become hazardous.

Case Study - The Fraternity, Carlisle Cathedral



Project Location: Carlisle Cathedral, Carlisle, Cumbria

Natural Stone Used: Locharbriggs Sandstone and Longridge Sandstone

The Fraternity at Carlisle Cathedral is a landmark project designed to provide additional, useable space for the cathedral whilst also retaining the charm and ambiance of the original cathedral grounds. New, gothic inspired Locharbriggs sandstone arches form the newly built pavilion, complimented with Longridge paving externally. This award winning project has gained national recognition thanks to its stunning design and the skilled craftsmanship of those involved.





Services Provided by Cumbrian Stone

Technical Advice and Initial Design Consultation,
Masonry Unit Design, Supply of Finished Stone Units

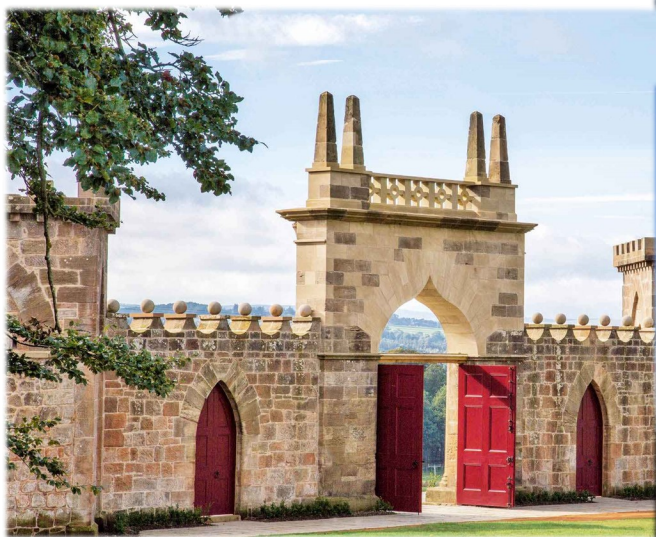
Volume Supplied

175 Tons / 70m³

Natural Stone Applications - Restoration



The restoration of historic properties and listed buildings can prove to be a welcome challenge to natural stone manufacturers. These projects allow our craftsmen to showcase their abilities, producing bespoke and ornate units to replicate damaged or deteriorated stones that aren't commonly found on new build projects. Stones on a restoration project can either be supplied as finished units, or as sawn blocks ready for carving on site by the mason carrying out the installation.



When selecting stone for a conservation or restoration project the process for selecting the correct stone tends to be a longer, more in depth process. Whilst aesthetics, cost and durability are still factors to consider, often the most important consideration is not visible to the naked eye:

- Petrographic Analysis – On many conservation and restoration projects it is key to ensure that any new stone introduced to a building is as close a geological match to the original stone as possible. A petrographic analysis involves looking at the composition of the original stone and determining the minerals within it. This analysis can then be compared to stones from active quarries all over the UK to find the closest possible match. Ideally this would always be the original quarry, however if this is no longer active then a close alternative may be the only option.

Natural Stone Applications - Memorials and Carving



Memorial stones and bespoke features such as fire surrounds are often more intricate than our standard work, and our masons always enjoy the challenge of producing something a little out of the ordinary. By utilising a combination of CNC technology and traditional hand carving there's not much we can't do with natural stone (within reason of course)...



When looking at a bespoke carved feature, fire surround or memorial stone, aesthetics are of the upmost importance. There is also one final consideration that a good mason will tell you is just as important:

- Texture and Grain Quality – In order to produce a detailed carved piece, the texture and grain of the stone needs to be consistent and of a high quality. Many manufacturers refer to stones of this nature as “memorial grade”. In contrast, inconsistent stones can pose a real problem for masons as thanks to the varying grain the stone becomes much harder to carve accurately.

Case Study - Brougham Bridge Emergency Repair



Project Location: Brougham Bridge, Penrith, Cumbria

Natural Stone Used: Lazonby Sandstone

Damaged due to flooding in 2015, a large portion of the original masonry to Brougham Bridge was washed away. This left the original structure unstable and unsafe for use until the masonry could be made safe and rebuilt. Working closely with the main contractor, we supplied approximately 30 tons of new, dressed Lazonby sandstone, tooled and shaped to replicate the original design. The bridge was successfully reopened in 2017 following the successful restoration.





Services Provided by Cumbrian Stone

Supply of Finished Stone Units

Volume Supplied

30 Tons / 12m³

Frequently Used Terminology



When ordering and building with natural stone it is often helpful to understand some of the more technical terminology that can be used to describe your stone. Some of the more frequent terms you may come across and their meanings are as follows:

Ashlar

Ashlar is the term used to describe smooth stone blocks used for building stone walls.

Bed/Bedding Plane

The bed or bedding plane is the direction that the natural layers within a sedimentary stone block run. This is normally horizontally although in arches they can be cut vertically for additional strength. If a stone is incorrectly bedded it will deteriorate faster than a correctly bedded stone.

Bullnose

A bullnose is a half round detail sometimes used to finish the exposed edge of a stone.

Chamfer

A chamfer is a small angle cut along the edge of a stone. This is normally included for aesthetic purposes.

Cill

A cill is the bottom stone of a window surround. It normally provides run-off for any water that hits the surround.

Cladding

Cladding is a general term used to describe a wall covering.

Coping

A coping is a decorative stone that is fitted to the top of a wall. It can also provide run-off for water depending on how it is cut and laid.

Corbel

A corbel is a supporting stone that normally sits below another feature and provides structural support.

Cornice

A cornice is a decorative band of stone usually found at the top of a building. They usually project over the face of the wall and can offer some protection from running water to the building below depending on their design.

Cutting Schedule

A cutting schedule is the list of sizes that a mason or sawyer works to when manufacturing your stone. It includes all the information required to manufacture your stone.

Daylight Size

The daylight size is the actual opening size of a door or window. This is normally given as a width and a height.

Drip

A drip is a small groove cut into the underside of a stone that prevents water from running along the underside of the stone. Water instead gathers at the drip and drops from the underside of the stone. This is commonly found on window cills and copings.

External Return

An external return is a term used to describe any component that needs to be designed to go around an outer corner of a building.

Gable

A gable is the triangular section of an external wall that is formed at the end of a ridged roof.

Hoodmould

A hoodmould is a decorative band that projects out of a wall over a window or door opening. It prevents water from running down the wall and into the opening by acting as a drip.

Internal Return

An internal return is a term used to describe any component that needs to be designed to go around an internal corner of a building.

Jamb/Rybat

A jamb or rybat is a side stone in a window or door surround.

Keystone

A keystone is the centre stone in a stone arch.

Kneeler

A kneeler stone is a supporting stone that is normally incorporated at the junction between a gable and external corner. It can be used to provide support to the roof or coping stones depending on the building design.

Lintel/Head

A lintel or head is the supporting stone that spans over the top of a window or door opening.

Mitre

A mitre is a 45-degree cut to the end of a stone. When two mitred stones are placed together they form a 90-degree (right angle) corner.

Mullion

A mullion is a vertical stone that is sometimes used to separate individual windows in a single window surround.

Natural Variation

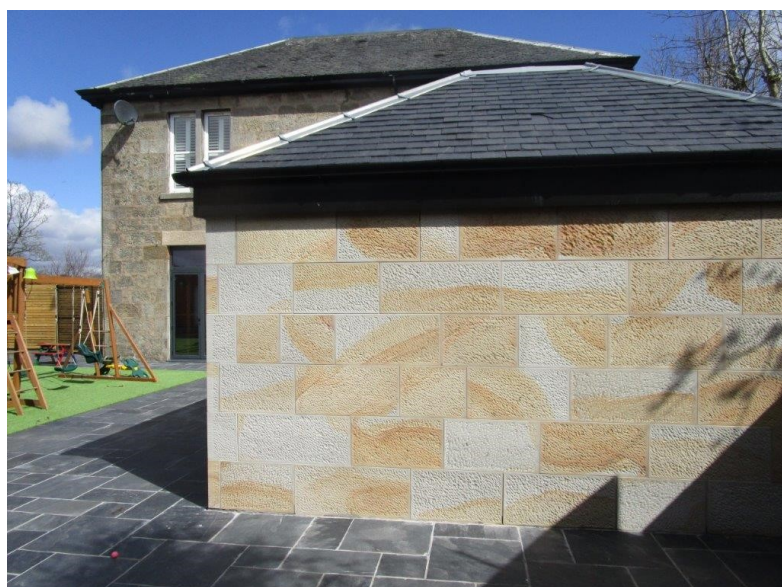
Natural variation refers to the different features that can be expected within a stone. They are caused by the way that the stone has been formed, and can include lines, swirls, spots and changes in shade or texture.



An Ashlar Façade with a Feature Cornice and Band Course



Large Sandstone Copings to a Harbour Wall



A Varied Sandstone Ashlar Extension to a Private Residential Dwelling

Frequently Used Terminology



Nosing

A nosing is the exposed vertical front edge of a stone.

Overhang

An overhang is the distance a stone projects from the wall line.

Plinth

A plinth course is a decorative band of stone usually found at the base of a wall at ground level.

Profile

Profile is the term for the detail of the shape to be cut out of a stone. It normally refers to long runs of a single shape.

Quoin

A quoin is a stone used to form the external corners of a building.

Radius

A radius is a measurement used to calculate the size of any curved stones.

Rebate

A rebate is a check or cut taken out of the back of a stone to allow concealed fixings. This is common in the back of stone lintels where a steel beam is included behind the stone lintel for additional support.

Reveal

A reveal is a return edge of a stone that will still be visible once the stone is built.

Rubble

Irregular, small pieces of stone used for walling. Often supplied in large bags.

Rustication

A visible linear notch/cut-out in the face of the stone next to the joint.



A Pitched Walling Porch with Smooth Quoin Stones



A Radiused Bay Window with Central Mullions



An Ashlar Extension with Profiled Window Surround Stones and a Profiled Kneeler Stone below the Gable Copings

Splay

A splay is a term for an angled cut to a square stone.

Springer

A springer is the first stone in an arch. This stone provides support to the remaining arch stones.

Stools

A stool is a square end of a window cill, lintel or threshold that is built into the masonry either side of the opening.

String Course

A string course is a decorative band of stone that runs around a building. It is normally found between floor levels and has masonry built above and below it.

Surround

A surround is a term for a number of stone components that are used to frame an opening. This term is commonly used in reference to doorways, windows and fireplaces.

Threshold

A threshold is the bottom stone of a door opening.

Transom

A transom is a horizontal stone that is sometimes used to separate individual windows in a single window surround.

Voussoir

A voussoir is an angled stone component that is used to form an arch. They sit between the springer and keystone.

Weathered/Weathering

Weathering is the term for cutting an angle to the top face of a stone in order to provide water run-off.



An Ashlar Façade with a Feature Profiled String Course



A Red Sandstone Bay Window with Angled Mullions



A Splayed and Profiled Pillar Cap With a Bullnosed Collar Detail and V-Cut Lettering

Measuring Natural Stone Correctly



The first step in producing natural stone units is also one of the most important as this usually impacts on the overall success of a project. The correct design and detailing of each component is key to ensuring a project runs smoothly from start to finish.

It is important to note that when working with natural stone it is very rare for a manufacturer to carry stock or standard sizes, especially if they offer a range of multiple stone options, and on more complex projects the stone manufacturer will require completed designs well in advance of stone being required in order to allow for sourcing the block and carrying out the cutting and carving of each component ready for delivery.

We would always recommend checking with your stone supplier at the early stages of a project in order to establish their current lead times for new orders, as these can vary between a couple of weeks up to several months depending on their current order book, availability of raw materials and order complexity.

When designing natural stone, accuracy is key. Just like any other bespoke product, once manufactured it can be difficult to alter the dimensions to suit any changes. As a general rule we always say that a stone can be cut down, but not added to (it is surprising how many people will ask for their stones to be made 100mm longer after they have been delivered)!

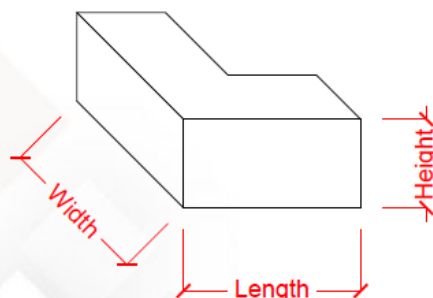
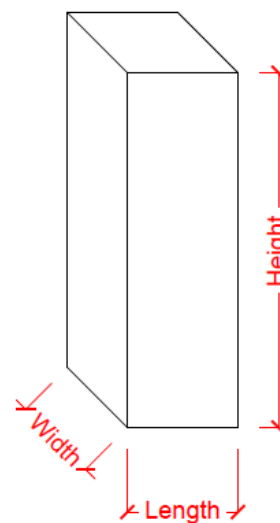
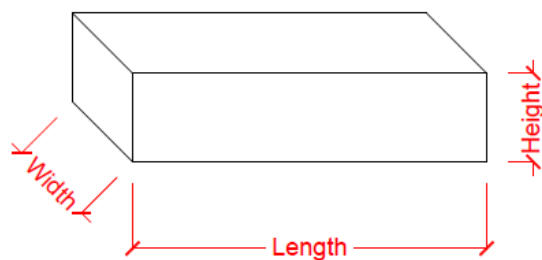
Mismeasurements and inaccuracy can be a costly mistake, and whilst a good manufacturer will always work with you to try and rectify any issues it is always preferable to avoid the problem in the first place.

We would always recommend the production of a detailed stone component schedule and production drawings, as this is the most effective way to ensure that everything is correct from the onset.

When ordering natural stone, it is important to make sure that the sizes provided are accurate and presented in the correct sequence in order to avoid mistakes in the manufacturing process. To enable us to begin cutting your stone correctly we need three key sizes in the order

LENGTH x DEPTH/WIDTH x HEIGHT

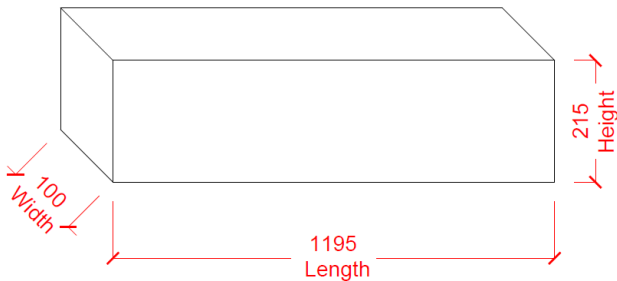
This allows us to ensure that the stone is cut with the natural beds/layers in the stone running the correct way for the stone component being produced.



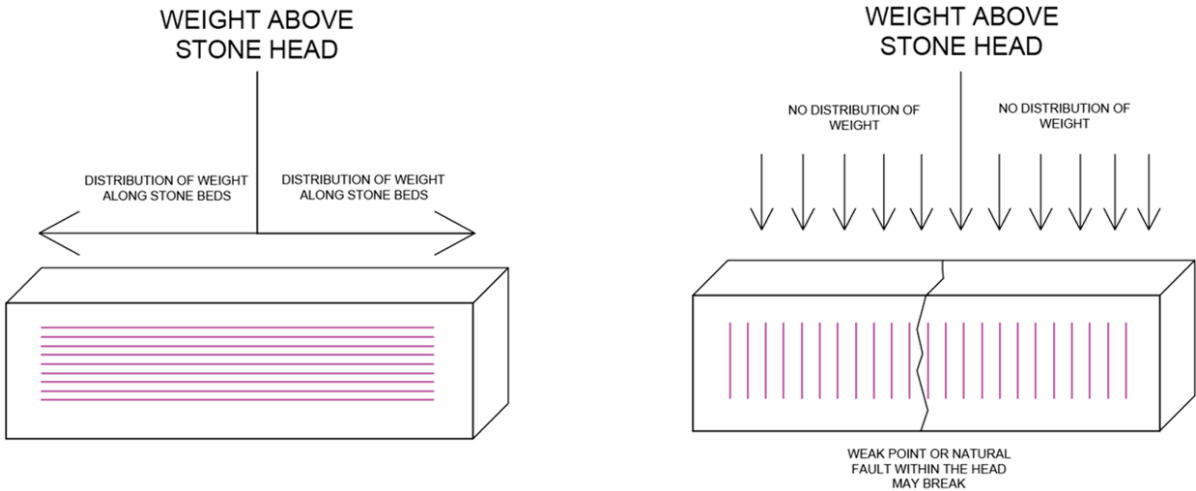
Once you have measured the length, width and height of the stone you require you can start to create a cutting schedule. Your cutting schedule will be used to produce the details that your stone will be manufactured from, and this should always be presented as follows:

STONE REFERENCE	NUMBER REQUIRED	LENGTH (MM)	WIDTH/DEPTH(MM)	HEIGHT (MM)
Window Head	3	1195	100	215

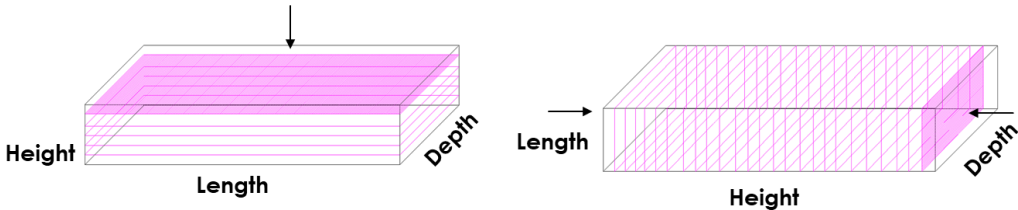
This schedule would produce a stone as follows:



Based on the order of the sizes provided, this stone would be cut so that any natural beds in this stone would run horizontally from left to right. As this stone is to be used as a window head it will be supporting weight above it, so this is the strongest option. If the bed joints ran vertically then this could cause the head to break when pressure is applied as follows:



These natural beds are found in all sedimentary stones. They are created as a result of the way that the stone is formed and are unavoidable when working with sedimentary natural stones. As a general rule, stone beds should run horizontally through natural stone units as this provides the most strength. It also significantly increases the lifespan of the stone units, as the compression from any load above the stone can assist in keeping the unit intact. The main exception to this rule is in the construction of arches, as the compression comes from either side of the stone unit rather than above. In this case we would cut the stone as edge bedded to suit the arch construction.



Measuring Natural Stone Correctly

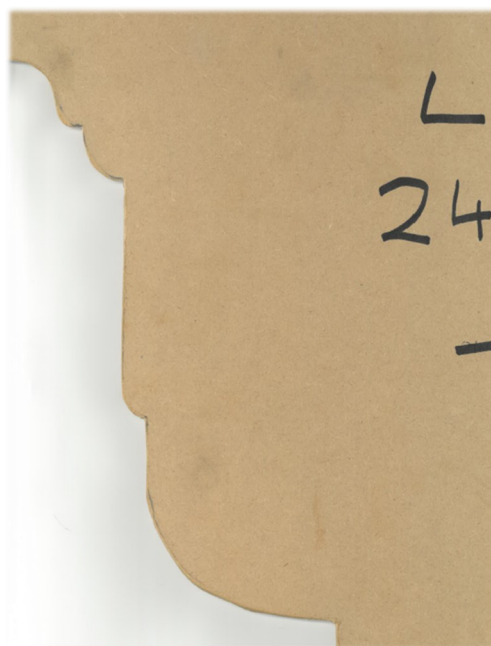


The most common issue caused by incorrect bedding arises when a sedimentary stone is “face bedded”. This means that the natural beds run in parallel with the face of the stone unit. When bedded this way the stone unit is prone to delaminate. This is caused through the natural deterioration of the stone due to the lack of compression, and is significantly accelerated by freeze thaw and general exposure to the elements.



Once you have established the size of stone you require and have taken the three key measurements that allow your sawn block to be produced, you need to provide details of any dressing required to finish the required stone. The sizes and details you need to provide will vary depending on the stone components you require. The products section of this guide gives detailed guidance on the sizes required for specific components, however as a general rule the more detail you can provide the better. CAD is the preferred option for this thanks to the accuracy and detail that can be produced, however sketches and photographs can also be used provided they show the accurate details and sizes required.

If it is not possible to produce this level of detail then the next best option is to provide accurate, full sized templates for each stone required. This is commonplace on restoration projects where replacement stones must match existing profiles and details on the building. It is rare that these details follow true radiuses and straight lines, meaning accurate CAD detailing is either too difficult or not possible.



Once the templates have been produced they can be passed to the stonemason who will be producing the stone. They can then transfer the profiles and details taken onto the plain, sawn block and recreate these as accurately as possible.

If you are able to provide drawings and accurate sizes then your chosen supplier should be able to return a fixed price quotation that clearly details each component they have allowed for.

If the full details aren't available it is still worth speaking to the supplier to see how they can assist with providing a budget price or guidance for your project. Most suppliers are also happy to assist with the design element of a project when required, and working alongside a stone supplier in the early stages of a project can often help to avoid costly mistakes further into the project.

If a full design for the stone element of a project is required your natural stone supplier should be able to provide you with a fixed cost for this; it is always worth bearing in mind that the majority of stone suppliers quote on the basis that all production details are to be freely provided by the designer; if a design is required then this should be requested as early on in the process as possible as this can often help keep the overall cost down.

Selecting the Correct Stone

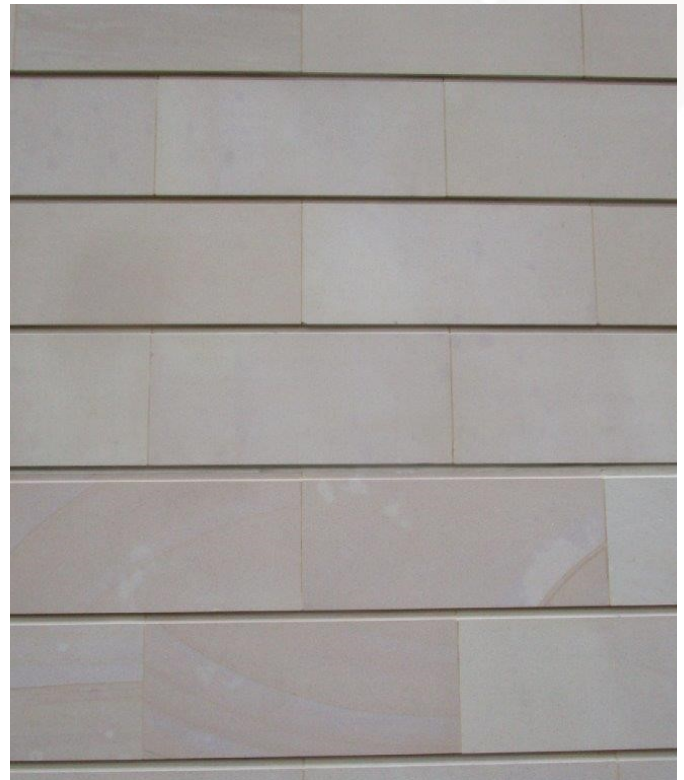


Selecting the stone for your project can be a difficult decision, and at Cumbrian Stone we believe that it is very important to make sure that everybody involved in a project knows exactly what to expect when the completed stone is delivered to site. After all, the perfect stone choice on paper is not always what the customer wants. This is why we have invested heavily in our natural stone showroom and sample displays at our premises, and would always encourage our customers to call in and see their chosen stone before placing an order.

On larger projects or where the appearance of the stone is of critical importance, we would always recommend investing in a sample panel of the selected stone before the main order is placed. This sample panel should include the common range of variations that can be expected across the project, and can be used to make a final assessment on whether the selected stone is the best choice for the project in question. This also provides a final opportunity for discussion around the variations within the stone prior to the bulk of the stone being cut and large costs incurred.

Once a sample range/panel has been agreed, this then gives your stone supplier a clear scope to work within. This also allows the site team to monitor the quality of the finished units being supplied in order to ensure that they are within the agreed range of variations.

In our experience, the sample panels we provide regularly raise questions as to the level of variation and natural features within our stones, and on occasion we have recommended a change in the specified stone once feedback from the customer is available. It is always worth bearing in mind that as our natural stones are all cut to order it is not normally possible to return items for a refund once produced, and that ultimately it is your responsibility to ensure that the material you are ordering meets your expectations. A good stone supplier should always be open and honest with you about the variations you can expect on your project from the start.



When selecting your natural stone, it is also important to account for the environmental conditions of the location your stone will be fitted. This includes simple things such as weather conditions including driving wind and rain that will leave the stone looking darker when wet, proximity to trees and vegetation that may cause biological growth on the face of the stone, potential for contamination with other substances such as chemicals, grease or oil that will stain the stone, and exposure to higher than normal salt levels on coastal sites or even adjacent public highways that can accelerate the erosion of the stone face. As a general rule, we would always suggest that if you are unsure about how any condition may alter the appearance and/or lifespan of your natural stone then ask your stone supplier before placing an order.

The Natural Stone Production Process



Quarrying Natural Stone Block

The quarrying process involves the extraction of unprocessed stone blocks from the quarry face. This is normally achieved through the use of one of three different methods as follows:

Feather and Wedge – This is a traditional method of extracting stone blocks without the use of explosives. The top of the stone bed is exposed and holes are periodically drilled down into the stone face. A steel wedge is then inserted into each hole in between two thin steel strips known as feathers. Each wedge is then struck simultaneously with a hammer in order to create cracks along the line of the wedges. Finally bars are inserted into the cracks in order to lever the blocks out from the quarry face.

Channelling – This process involves the mechanical cutting of a long, thin strip into the top bed of the quarry; this strip can be up to 3 metres deep depending on the size of block required. Horizontal holes are then drilled into the front face of the quarry face in order to meet the channel at its base, before the individual blocks are then prised free of the quarry face.

Blasting – This is the most common method used when quarrying natural stone as it is the most cost effective and economical for removing large quantities of stone for processing. Holes are drilled into the top bed of the quarry face before being partially filled with a calculated amount of explosive. The quantity of explosive used is enough to create fractures in the stone without shattering the block. Once these explosive charges have been detonated the loose block can then be pulled away from the quarry face.



Primary Sawing

Once the stone block has been quarried it is stored ready for delivery to manufacturers. At Cumbrian Stone we bring in new block on a daily basis, with each weighing between 5 and 15 tons. The first stage of manufacture is always Primary Sawing. This process involves the cutting of the quarried natural stone blocks into slabs. This is also known as “sawn two sides” as only two faces of the stone are cut at this stage.

The cut slabs are then checked for suitability before being allocated to different projects based on the quality of the exposed stone. Stone slabs containing a large number of flaws or cracks are allocated to walling production, while higher quality slabs are allocated to bespoke masonry components.



Secondary Sawing

The next process for bespoke masonry units is Secondary Sawing. This is carried out using one of the smaller saws, where the stone slabs are cut to the finished sizes shown on the cutting schedule. This is known as “sawn 6 sides” as all six faces of the stone are sawn at this stage.

Once these blocks have been cut they are again checked for any newly exposed faults before being passed on to the next stage of production.



The Natural Stone Production Process



Profile Sawing and CNC Machining

Once the stone blocks have been cut to the finished size (sawn 6 sides), they are ready to carve into the finished profile of the stone. There are three options available to carry out this work, and the most suitable of these is determined by the detail and finished profile of the stone.

The first of these options is to profile the stone using a profile saw. These saws will cut a straight linear run of most profiles into the face of the stone, making this method ideal for string and cornice courses. This is also the fastest and often the cheapest method of finishing detailed stone units.



The second option available is to finish the stones using a CNC 5-Axis Saw. These saws are fully automated, and cut to a pre-set programme using a variety of blades and tools. This allows for cutting more intricate details and for working on more than one face of the stone at a time.

In order to generate a programme for the CNC Saws a 3D model of the finished stone needs to be created using CAD or similar software. Toolpaths are then added in by the programmer in order to instruct the CNC machine on how to carry out the carving work. This process is ideal for detailed units where there is a lot of repetition or multiple identical units that are too complex for cutting using a Profile Saw.



Masonry and Hand Carving

The third and final option available is to finish the stones using traditional hand carving techniques. This method allows for full flexibility in how the stone is dressed, with the masons utilising a selection of tools ranging from small cutting discs to tungsten tipped chisels depending on the finish they are looking to achieve.

The use of power tools in hand carving has made some elements of hand carving faster than it would normally have been, however generally the techniques and skills used by our masons are the same as those that would have been used historically.



Walling Production

It surprises a lot of people to know that all of our walling is hand dressed in order to ensure the best possible quality. This method ensures accurate course heights, square arises and a natural, pitched face to each and every stone we produce.

The walling process starts with long slabs at set heights being split using a guillotine. Each stone is normally split to give a 100mm bed depth, and as standard we produce our pitched walling at heights of 65mm, 140mm and 215mm as this ensures correct coursing with 10mm joints. The face of each stone is then hand pitched before being palletted for distribution.



The Natural Stone Production Process



Packaging and Delivery

One process that is often overlooked in the manufacturing process is the packaging and delivery of the finished goods. At Cumbrian Stone we always ensure that each stone is fully protected before being shrink wrapped and labelled for transport. This helps to minimise the risk of any damage in transit or whilst in storage awaiting installation on site.

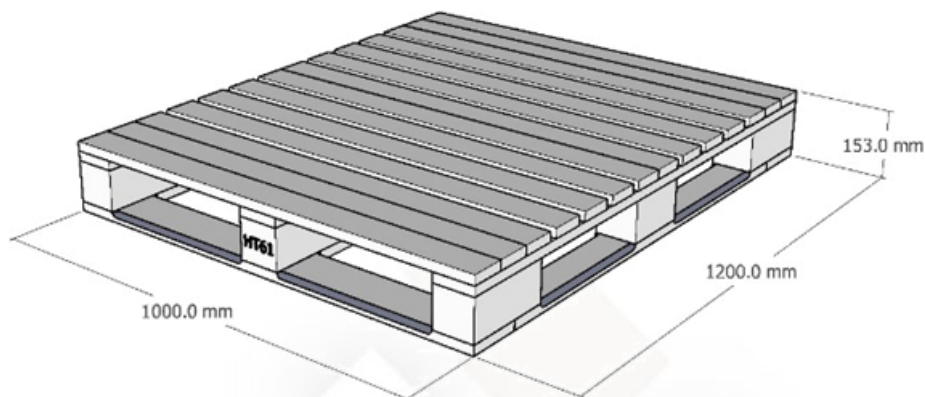
At Cumbrian Stone we work with a number of trusted hauliers who regularly deliver our stone all over the UK. All of the drivers we work with understand how to best handle and secure our products during transit to ensure that the risk of damage is minimised.



Delivery Options Available

Customer Collection

If you are collecting your order from us, the main thing to consider is whether your vehicle is big enough to take your order, both in terms of size and weight. Normally, we pack all of our orders onto standard, full sized pallets that can weigh up to 1000kg depending on what you have ordered. The weight of your full order is shown on your quotation.



If you need to unpack your pallet in order to fit your stone into your vehicle we can assist with this, however we are unable to accept any liability for damage to your order caused through trying to load it into an unsuitable vehicle.

Pallet Courier with Tail Lift Offload

Deliveries made using a pallet courier with a tail lift offload are normally sent as a “next-day service”. This means that your order will be collected from us the day before it is due to be delivered and will arrive with you on the designated delivery day between 8.00am and 5.00pm. Please note that we are unable to guarantee an exact delivery time on the day of delivery, as this will depend on the driver’s planned route for that day.



Articulated Flatbed with No Offload

Deliveries made using an artic flatbed are normally sent as a “same-day service”. This means that your order will be collected from us on the day it is due to be delivered and will arrive with you on the same day between 8.00am and 5.00pm. Please note that we are unable to guarantee an exact delivery time on the day of delivery, however we can give you an indication of when to expect your delivery based around what time the driver arrives with us for loading. This vehicle requires offloading using a telehandler or forklift, and it is assumed that you have one available on your project to unload the vehicle once it arrives.



Delivery Options Available



Hiab with Offload

Deliveries made using a Hiab are normally sent as a “same-day service”. This means that your order will be collected from us on the day it is due to be delivered and will arrive with you on the same day between 8.00am and 5.00pm. Please note that we are unable to guarantee an exact delivery time on the day of delivery, however we can give you an indication of when to expect your delivery based around what time the driver arrives with us for loading.



Small Rigid Wagon with No Offload

Deliveries made using a small rigid wagon are normally sent as a “same-day service”. This means that your order will be collected from us on the day it is due to be delivered and will arrive with you on the same day between 8.00am and 5.00pm. Please note that we are unable to guarantee an exact delivery time on the day of delivery, however we can give you an indication of when to expect your delivery based around what time the driver arrives with us for loading. This vehicle requires offloading using a telehandler or forklift, and we have assumed that you have one available on your project to unload the vehicle once it arrives.



Arranging Your Own Haulier

Some customers prefer to organise their own third-party haulier to collect their order rather than collect the stone themselves or ask Cumbrian Stone to arrange delivery. If you would prefer to arrange your own haulier, all that we ask is that you let us know who will be collecting your order and when they are planning on arriving with us so that we can make sure everything is ready to go without any holdups when they arrive.

How Long Will My Order Take?



All of our natural stone products are made to order, and it is rare for a natural stone manufacturer to carry stock sizes or products for sale to customers. Due to this, it is always important to remember to work out the stone components you require and place these on order as early in the construction process as possible. Any quotation from a natural stone supplier should inform you of the anticipated lead time for your order to help you plan ahead.

Once your order has been placed and the details of your requirements confirmed your quoted lead time will commence. Depending on the size and complexity of your order this can be anywhere from a week or two up to several months, so we would always strongly recommend that you speak with your natural stone supplier as early as possible to confirm their anticipated lead time on new orders of a similar size to your own. Average lead times for natural stone orders tend to range between six and twelve weeks, however this can be dependent on several factors including the stone selected, the production capacity we have available and the size of the stone components required.

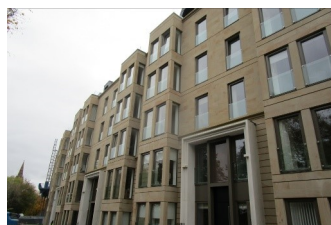


Our Range of Stone Products



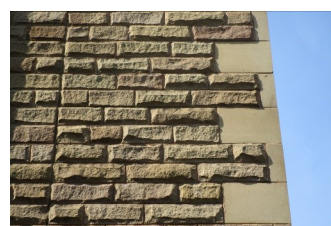
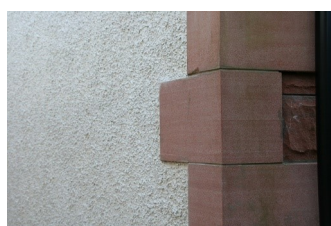
At Cumbrian Stone we regularly make all kinds of natural stone components for our customers. The following section includes some of the more popular designs we are asked for on a frequent basis.

External Cladding



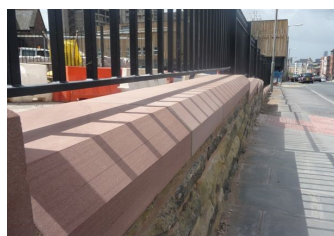
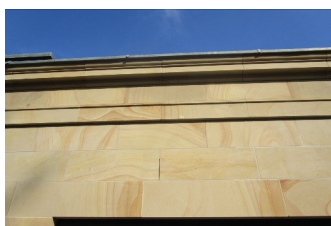
Window/Door Surrounds

Feature Quoins and Corner Stones



Plinth and Base Courses

Feature Band and String Courses



Coping Stones and Wall Tops

Pillar Caps and Chimney Caps





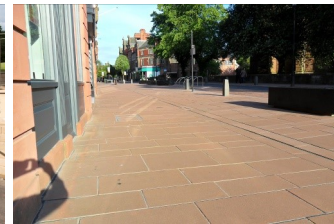
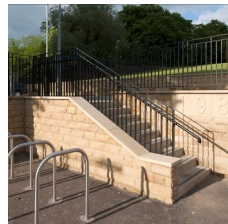
Stone Balls and Ball Finials

Feature Stones



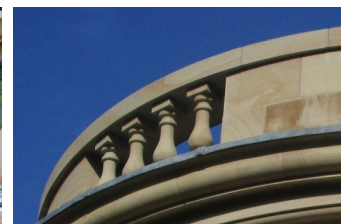
Gable Copings, Apex
Stones and Ridges

Paving, Steps and
Staircases



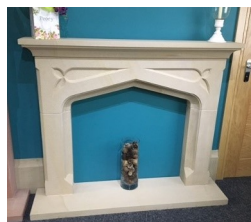
Columns, Feature Porches
and Porticos

Balustrade

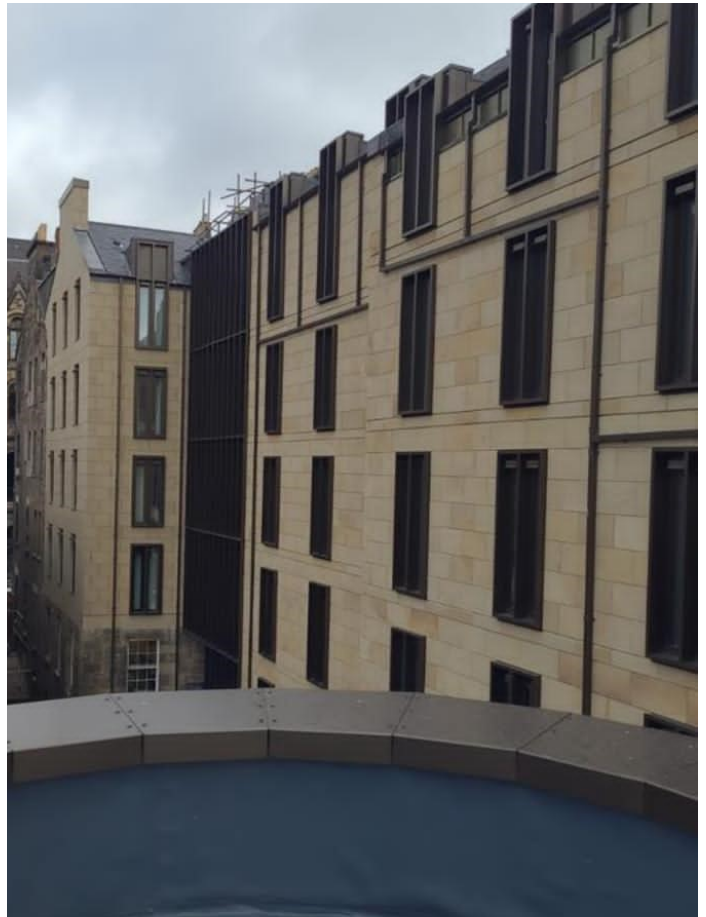


Bespoke Arches

Counter Tops, Hearths
and Fire Surrounds



External Cladding



Cladding - Smooth Ashlar



Traditional smooth ashlar is a popular choice with both residential and commercial developments, showcasing the natural variations within each stone to provide a stunning façade that is sure to impress.

The standard finish for all of our ashlar is a smooth, rubbed face. We are also able to add a hand or machine tooled finish to the surface of the stone in order to change the finished appearance should you require this.



Common Component Sizes

100mm Bed Depth

Length (mm)	Bed Depth (mm)	Height (mm)
RL	100	140
RL	100	215
RL	100	290
440	100	140
440	100	215
440	100	290

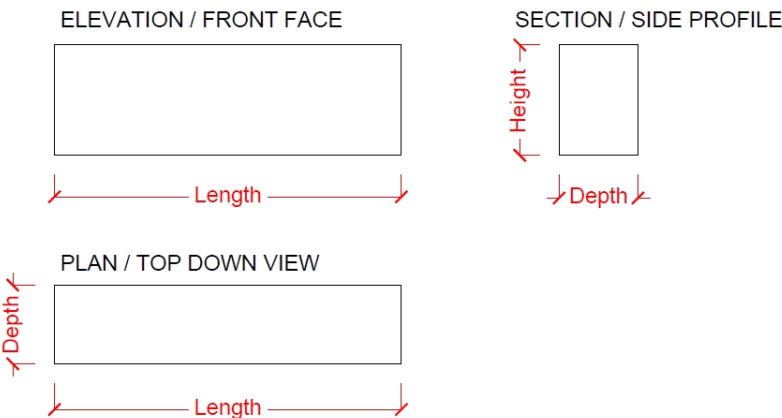
150mm Bed Depth

Length (mm)	Bed Depth (mm)	Height (mm)
RL	150	140
RL	150	215
RL	150	290
440	150	140
440	150	215
440	150	290

*RL = Random Lengths from 500mm to 1000mm

Bespoke sizing also available on request.

Component Drawings



The most cost effective way to purchase smooth ashlar is in Random Lengths with a smooth/hand rubbed finish, as this keeps the amount of waste from the cutting process to a minimum.

Common Ashlar Surface Finishes



Smooth/Hand Rubbed



Sandblasted



Machine Dressed

Cladding - Pitched Walling



Pitched faced walling is the most popular of our walling options. It offers a significant cost saving against ashlar walling and is normally supplied at a 100mm bed depth with course heights of 65mm, 140mm and 215mm for ease of building. These course heights can be built with 10mm joints to form a semi-coursed appearance that is popular in modern sandstone construction. Pitched faced walling is supplied in random lengths with four sawn sides, a pitched front face and a split back face.



Common Component Sizes

100mm Bed Depth

Length (mm)	Bed Depth (mm)	Height (mm)
RL	100	65
RL	100	140
RL	100	215

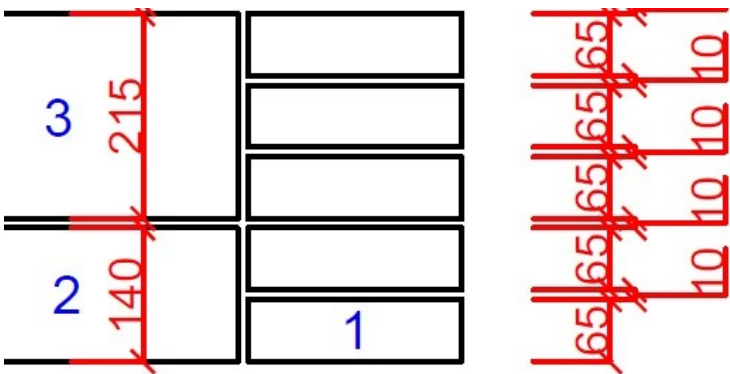
150mm Bed Depth

Length (mm)	Bed Depth (mm)	Height (mm)
RL	150	65
RL	150	140
RL	150	215

*RL = Random Lengths from 250mm to 500mm

Bespoke sizing also available on request.

Coursing Layout with 10mm Joints



Our 100mm bed pitched walling is usually supplied on pallets of 6m² for and weighs around 250KG per square metre.

It is always advisable to allow for some wastage when building with pitched walling; we recommend allowing for between 5% and 10% depending on the complexity of your project.

Cladding - Tumbled Walling



Tumbled walling is produced using the same methods as pitched walling stone, however before being packed ready for dispatch the stone is put through a large tumbler to distress the edges of the stone units and provide a less uniform appearance. This style of walling is popular on builds where the stonework is to blend in with older properties rather than stand out as new, and is an affordable alternative to tooled ashlar.



Common Component Sizes

100mm Bed Depth

Length (mm)	Bed Depth (mm)	Height (mm)
RL	100	65
RL	100	140
RL	100	215

150mm Bed Depth

Length (mm)	Bed Depth (mm)	Height (mm)
RL	150	65
RL	150	140
RL	150	215

**RL = Random Lengths from 150mm to 500mm*

Bespoke sizing also available on request.

Tumbled walling gives a more distressed appearance, and can be slightly slower to build than our standard pitched walling due to the edges of each stone being less uniform.

It is always advisable to allow for some wastage when building with pitched walling; we recommend allowing for between 5% and 10% depending on the complexity of your project.



Cladding - Bagged Rubble Walling



Our rubble/bagged sandstone walling is supplied per bag, with each bag yielding approximately 3-3.5m². This walling is unscreened and has a varying bed depth of between 100 and 200mm at random lengths and heights, which produces a random rubble style of wall once built.

Bagged sandstone walling offers the most traditional appearance and is normally the most cost effective option when purchasing walling stone, however it does take longer to build and there is often more waste when compared to the pitched faced walling and this should be taken into account when calculating costs. Bagged and Rubble walling can also be more difficult to build, and often requires a different skill set compared to building with either coursed walling or ashlar.



Cladding - Thin Cladding Systems



Modern cladding systems comprise of a thin sandstone panel that is fixed into place on a metal frame in order to create the external walls on a building. This style of system is more common in high rise buildings and those with a large external wall area to cover where traditional methods are likely to be expensive and time consuming.

When working with a cladding system it is important to consult with a structural engineer who will be able to advise you as to the tolerances and loads exerted on the stone. Cumbrian Stone can supply the sandstone panels however we do not supply the cladding frame system and this should be purchased from a specialist supplier who can advise on the stone design required for their system.

Please note that not all stones are suitable for this style of cladding due to the natural beds and properties of the stone.



Common Component Sizes

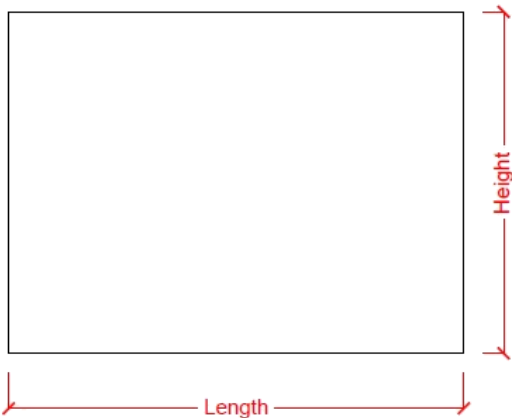
Length (mm)	Bed Depth (mm)	Height (mm)
300	40	300
600	40	300
900	40	300
300	40	450
600	40	450
900	40	450

Bespoke sizing also available on request.

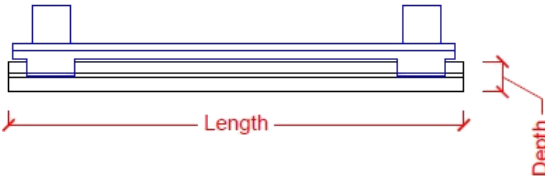
Thin stone cladding systems are designed for a speedy installation and normally you would expect that the sandstone panels would mostly be the same size with the exception of any special units required at more complex areas of the building. Larger panels also tend to be preferred as they again speed up the installation time, however this can prove to be an issue if the panel weight becomes too much to handle safely on site.

Component Drawings

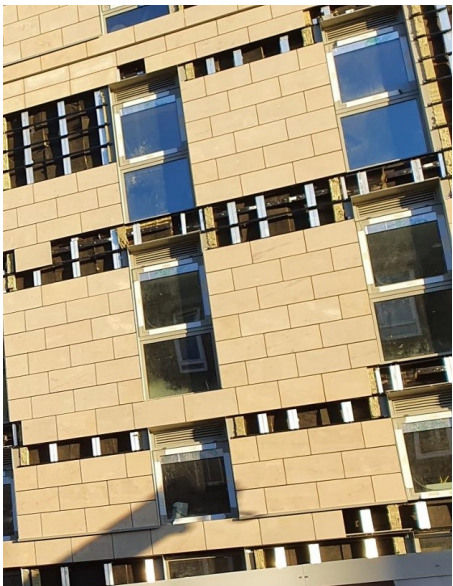
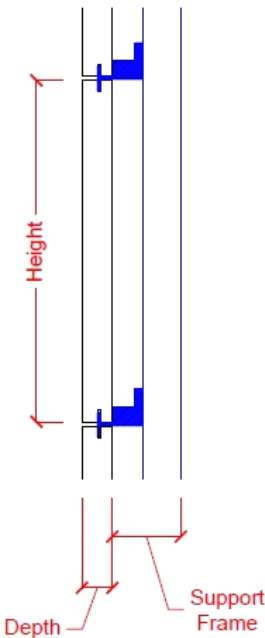
ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE



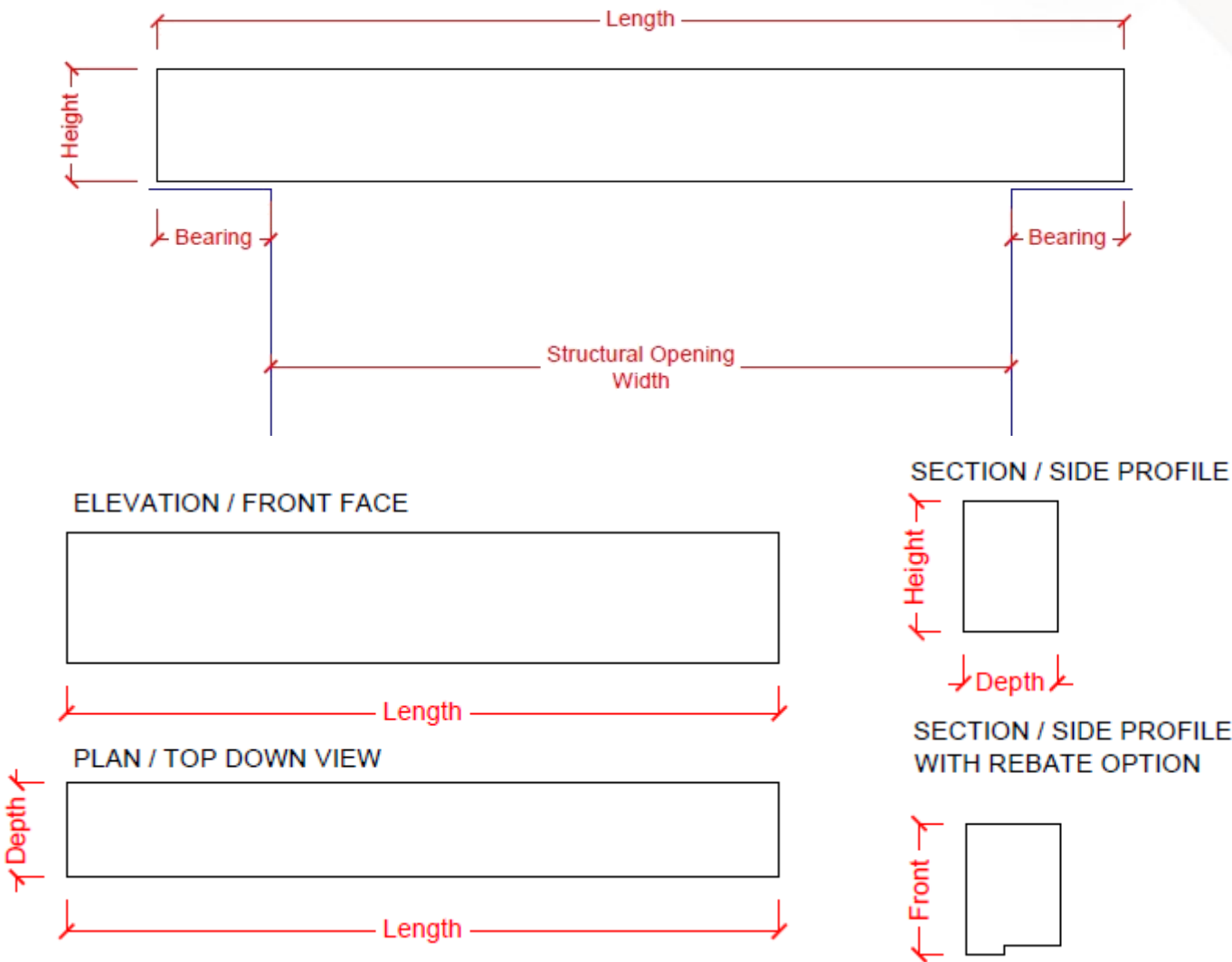
Window and Door Surrounds



Heads/Lintels - Plain/Square Section



Component Drawings

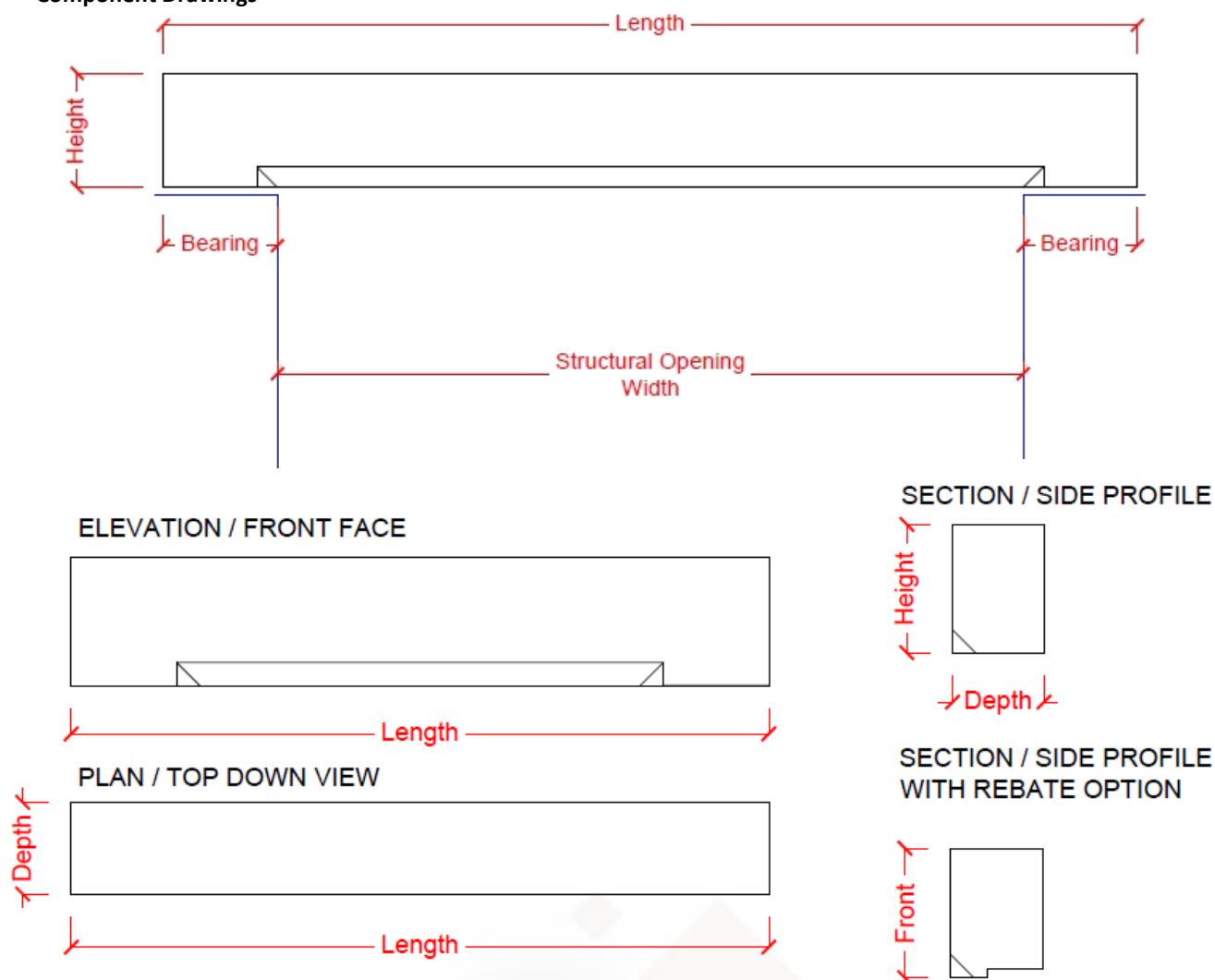


Natural stone lintels can not be used for structural purposes at openings. It is possible for us to add in a rebate/cut-out to the back underside of a lintel so that this can conceal a supporting steel.

Heads/Lintels - Chamfered with Return Chamfer



Component Drawings



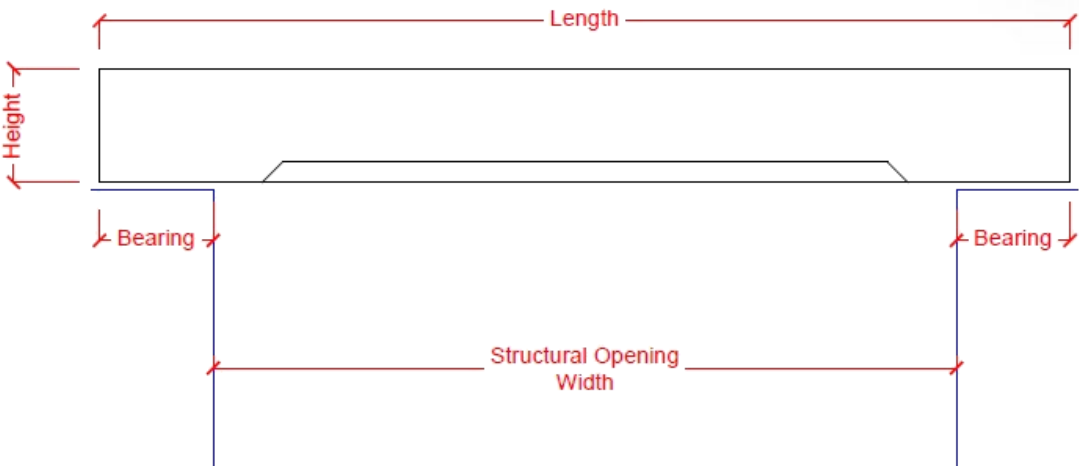
A mullion window option is also available in this style, with the most popular options being two and three light windows.

Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

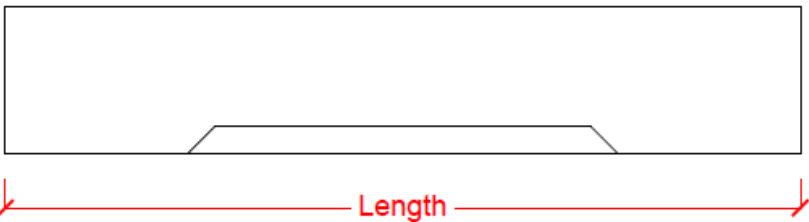
Heads/Lintels - Stop Chamfered



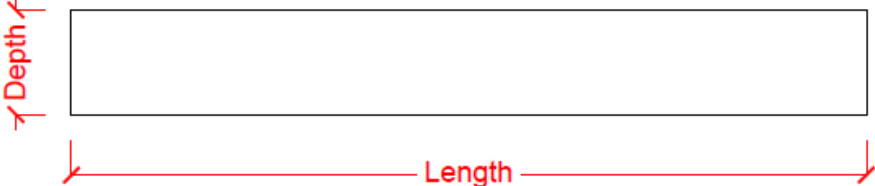
Component Drawings



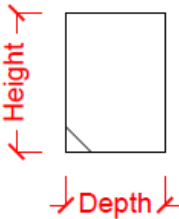
ELEVATION / FRONT FACE



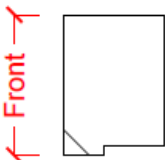
PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE



SECTION / SIDE PROFILE WITH REBATE OPTION



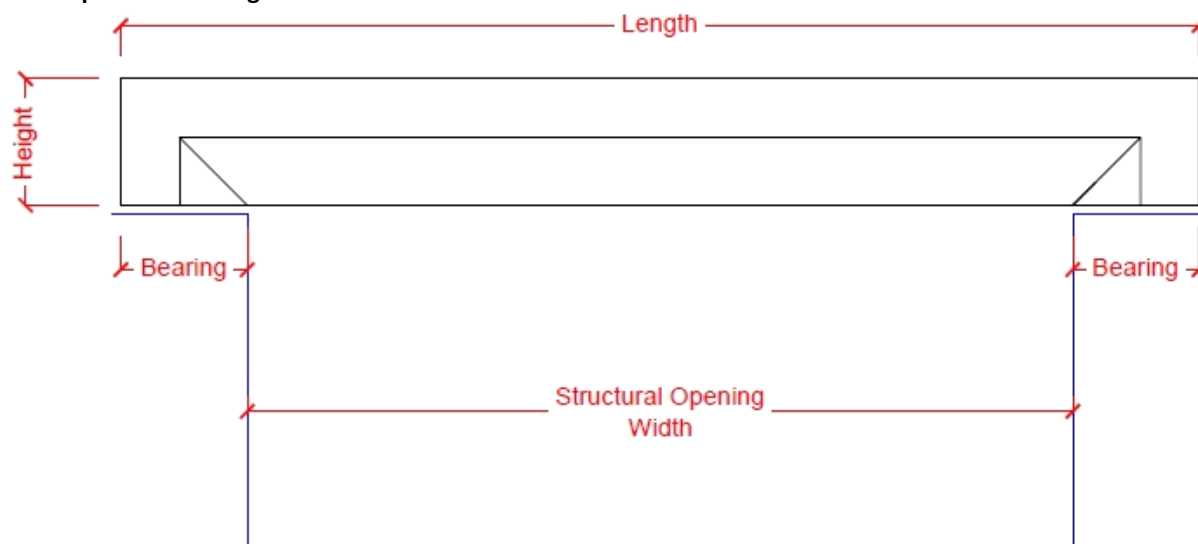
A mullion window option is also available in this style, with the most popular options being two and three light windows.

A stop chamfer is a popular detail where natural stone jambs are not being used at the window reveals, or where a little more flexibility in the installation of the stone is preferred.

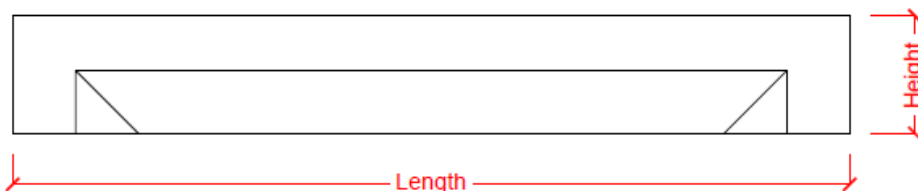
Heads/Lintels - Splayed with Return to Jambs



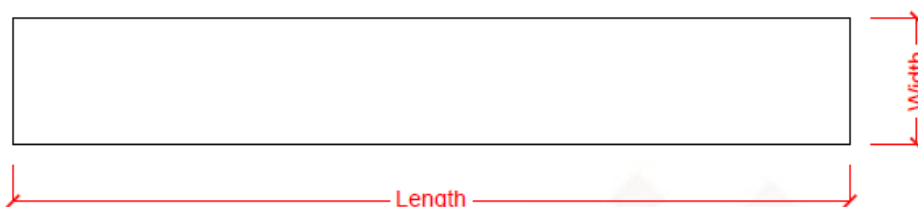
Component Drawings



ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE

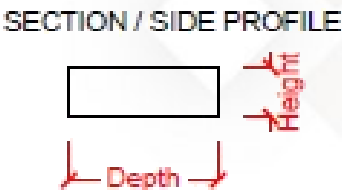
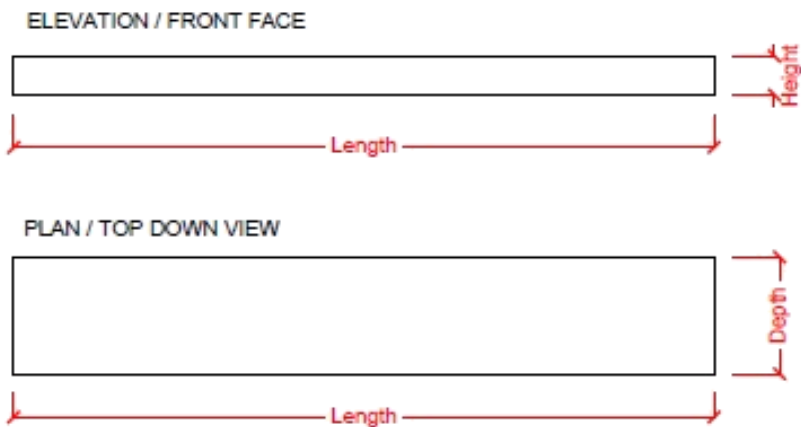
A mullion window option is also available in this style, with the most popular options being two and three light windows.

Our standard splay detail is 65mm x 65mm, however as all of our natural stone components are made to order this is flexible.

Cills/Thresholds - Square Slip



Component Drawings

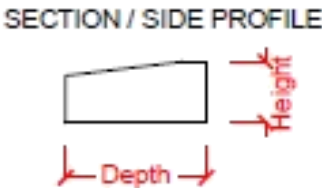
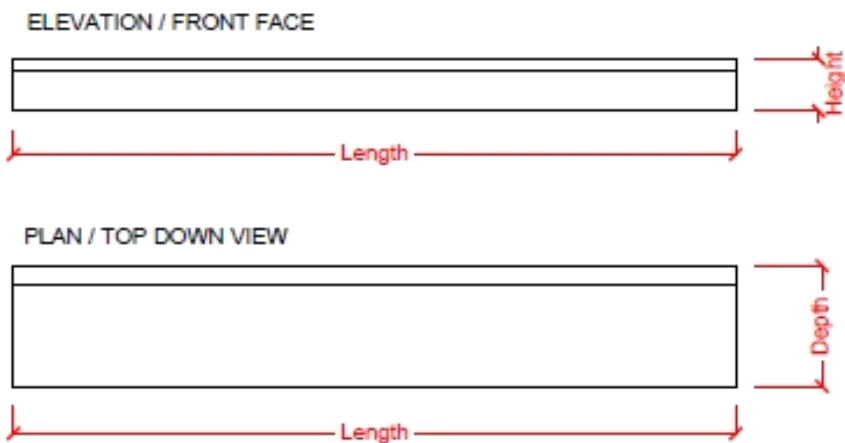


Slip cills are a cost effective option thanks to the simplicity of their design, and can sometimes be added in at later stages of the build where time is an issue.

Cills/Thresholds - Weathered Slip



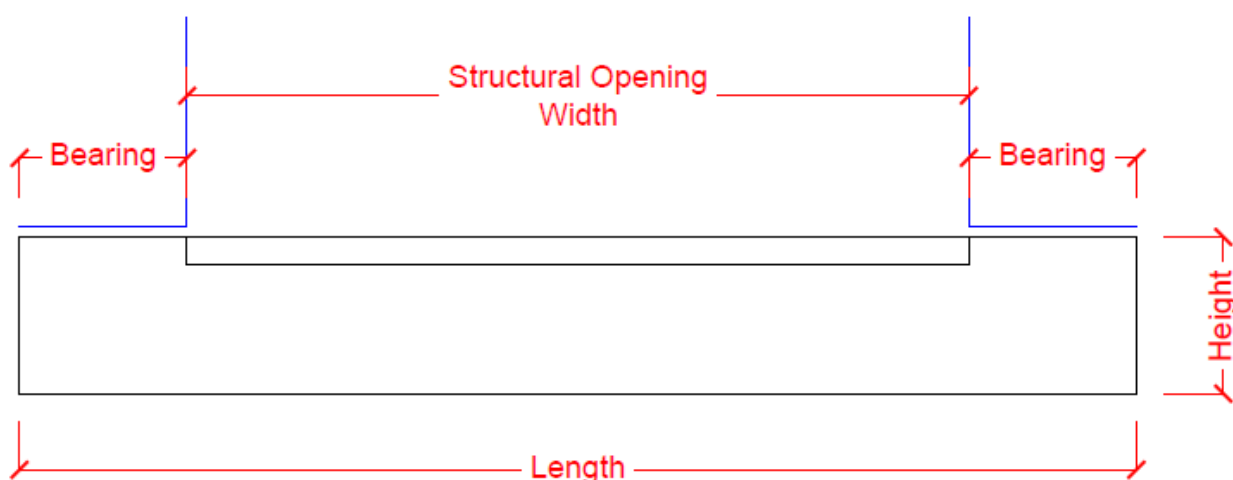
Component Drawings



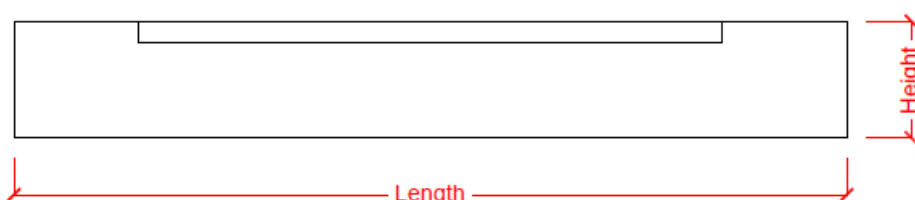
Cills/Thresholds - Square Stooled



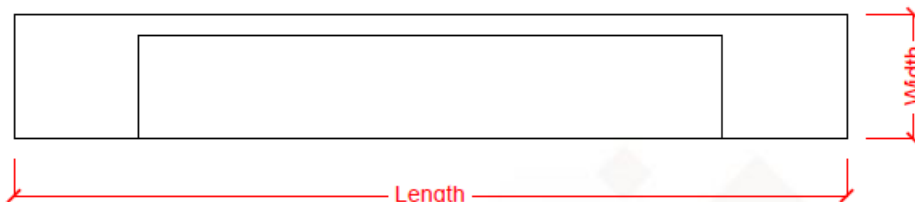
Component Drawings



ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE

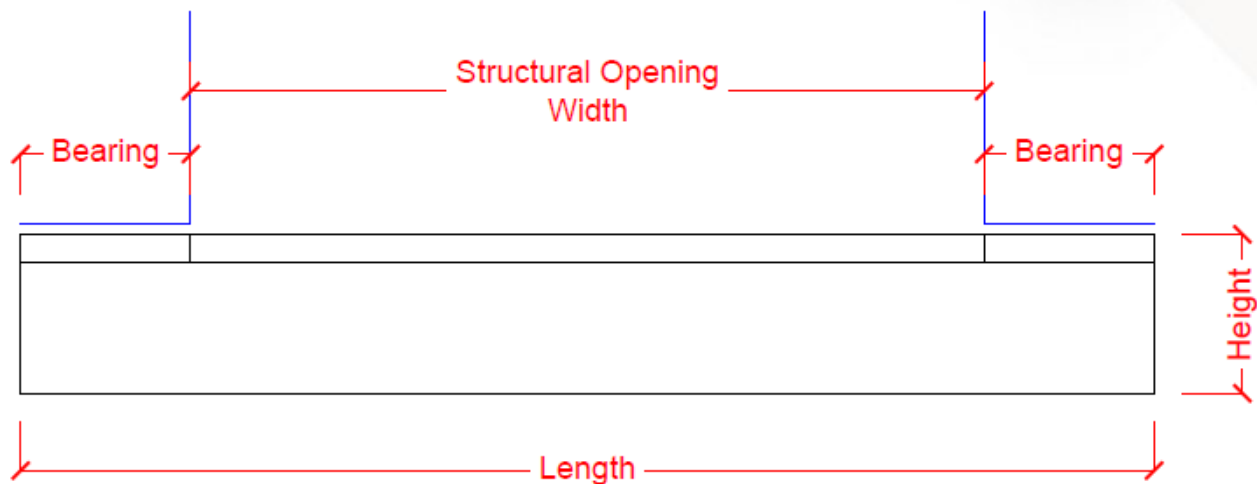
A mullion window option is also available in this style, with the most popular options being two and three light windows.

Our standard weathering to our stooped cills is 25mm deep with a 25mm flat left at the rear of the cill, however as all of our natural stone components are made to order this is flexible.

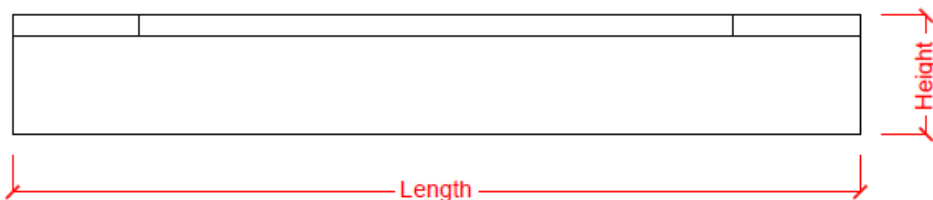
Cills/Thresholds - Square Set Back Stooled



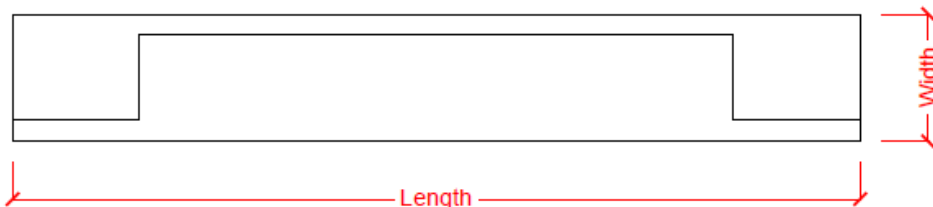
Component Drawings



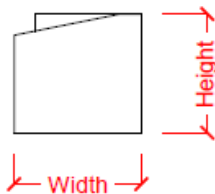
ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE



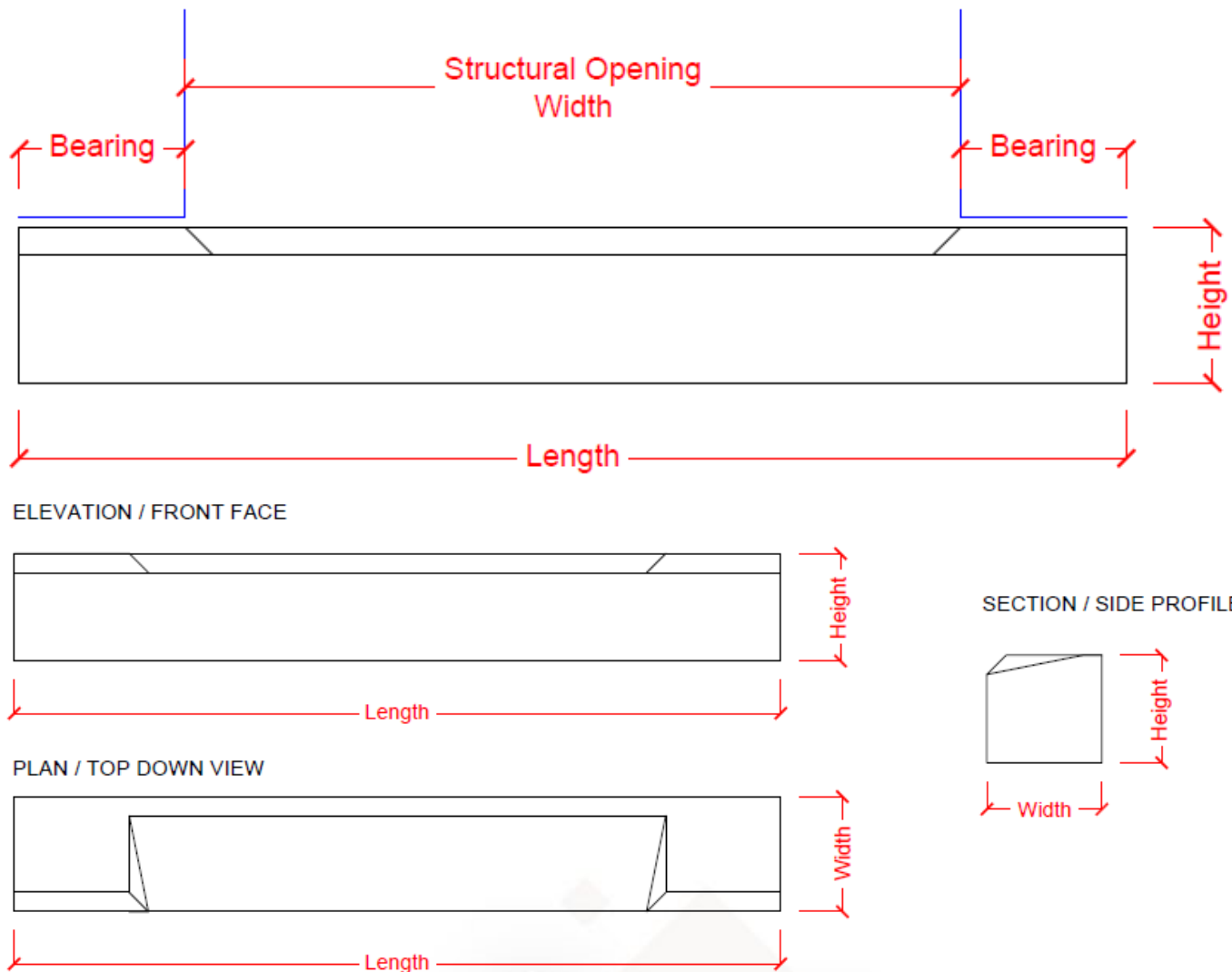
A mullion window option is also available in this style, with the most popular options being two and three light windows.

Set back stooped cills are used where the nosing of the cill is required to project slightly further from the building façade whilst still allowing the stoolings to stop at the wall line.

Cills/Thresholds - Chamfered Stools



Component Drawings



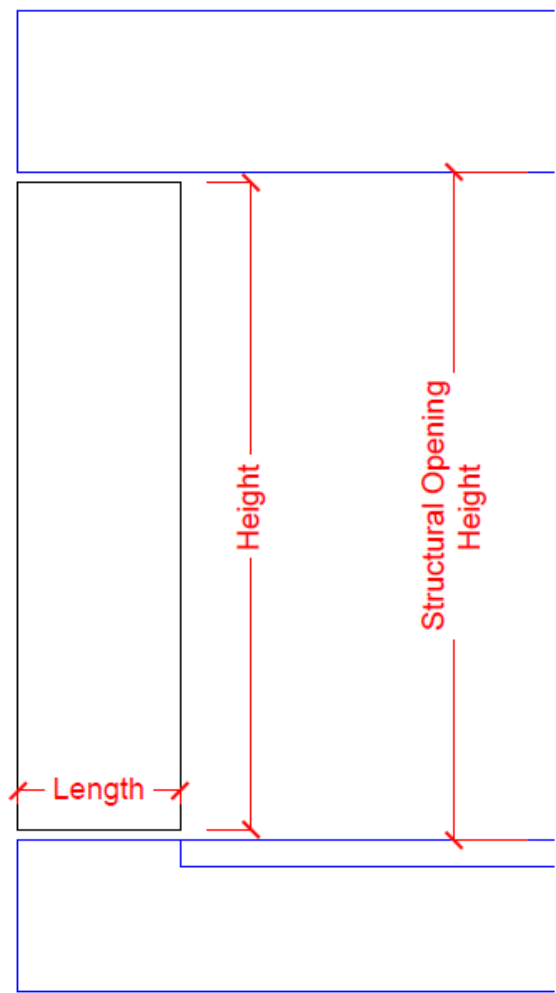
A mullion window option is also available in this style, with the most popular options being two and three light windows.

Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

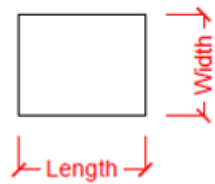
Jamb Stones - Plain Jamb



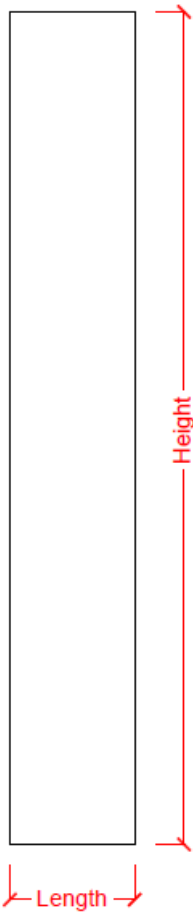
Component Drawings



PLAN / TOP DOWN VIEW



ELEVATION / FRONT FACE



SECTION / SIDE PROFILE

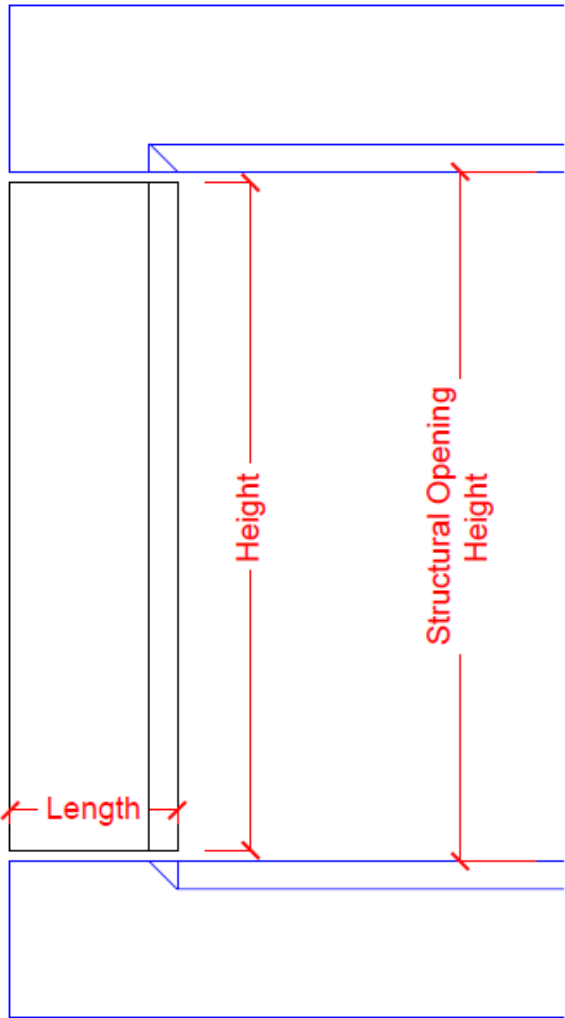


A plain jamb is a commonly used component used to frame in a door or window surround, giving definition to the surround as well as a clean edge for the builders to work up to.

Jamb Stones - Chamfered Jamb



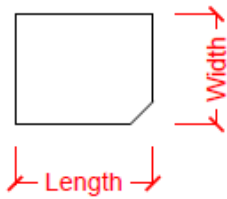
Component Drawings



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

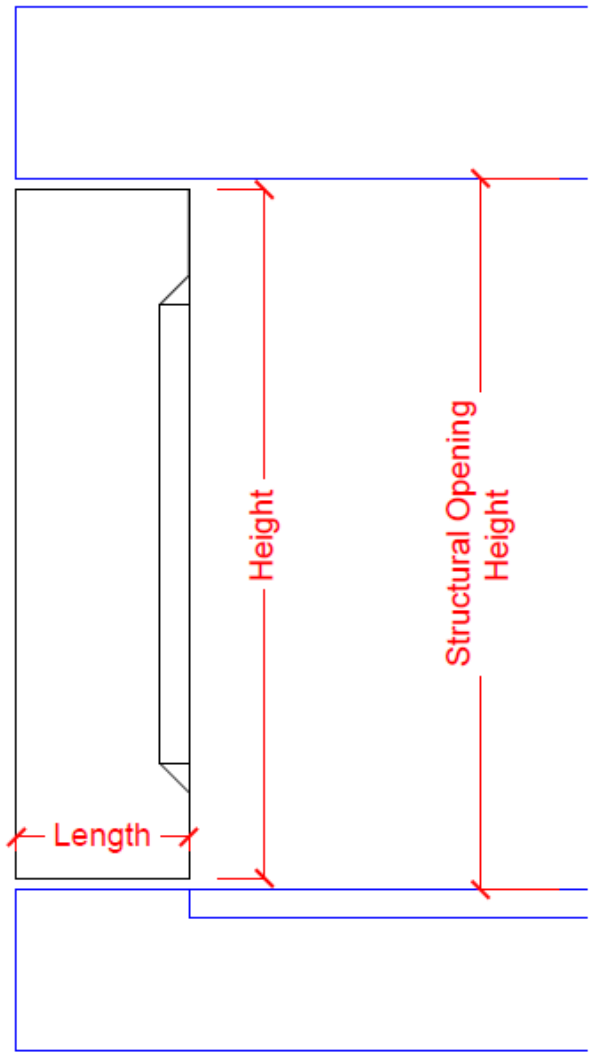


Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

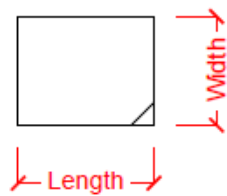
Jamb Stones - Stop Chamfered Jamb



Component Drawings

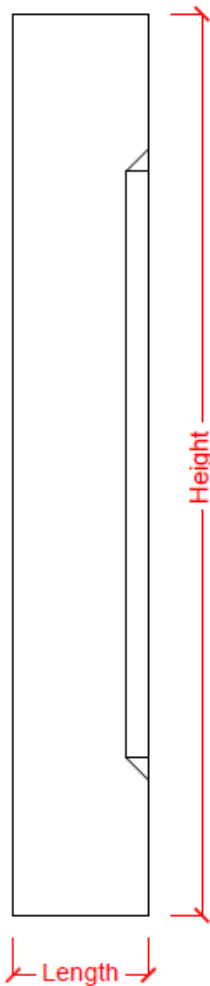


PLAN / TOP DOWN VIEW



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

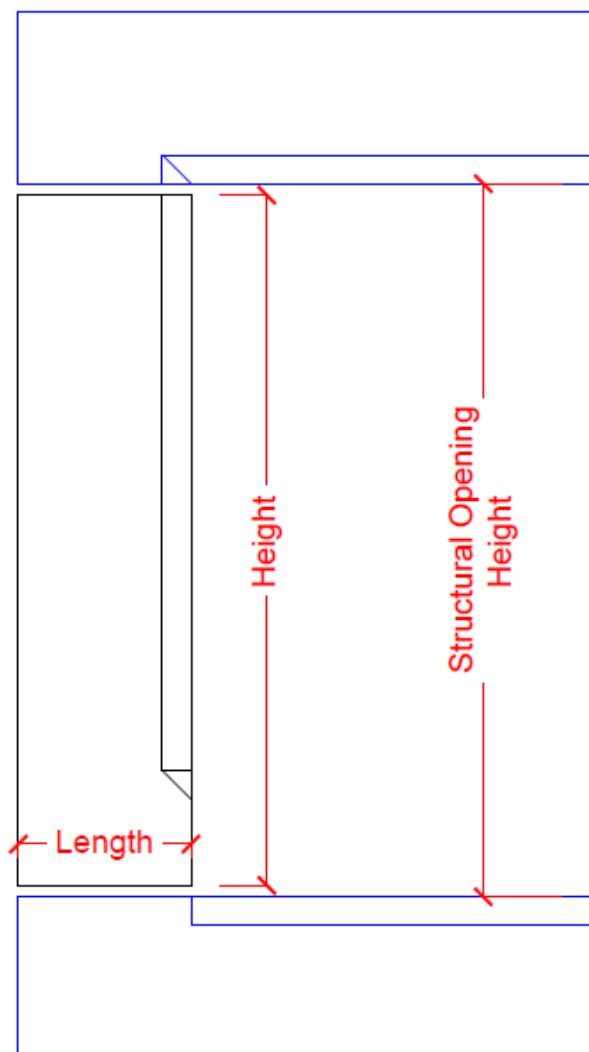


A stop chamfer is a popular detail where some detailing to the stone is desired whilst more flexibility in the installation of the stone is preferred as the units do not need to exactly align with adjacent stones.

Jamb Stones - Part Stop Chamfered Jamb



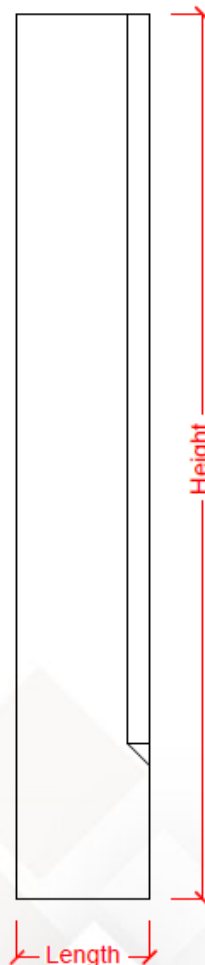
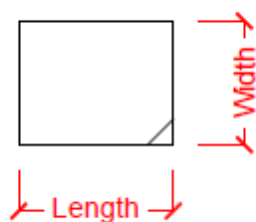
Component Drawings



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

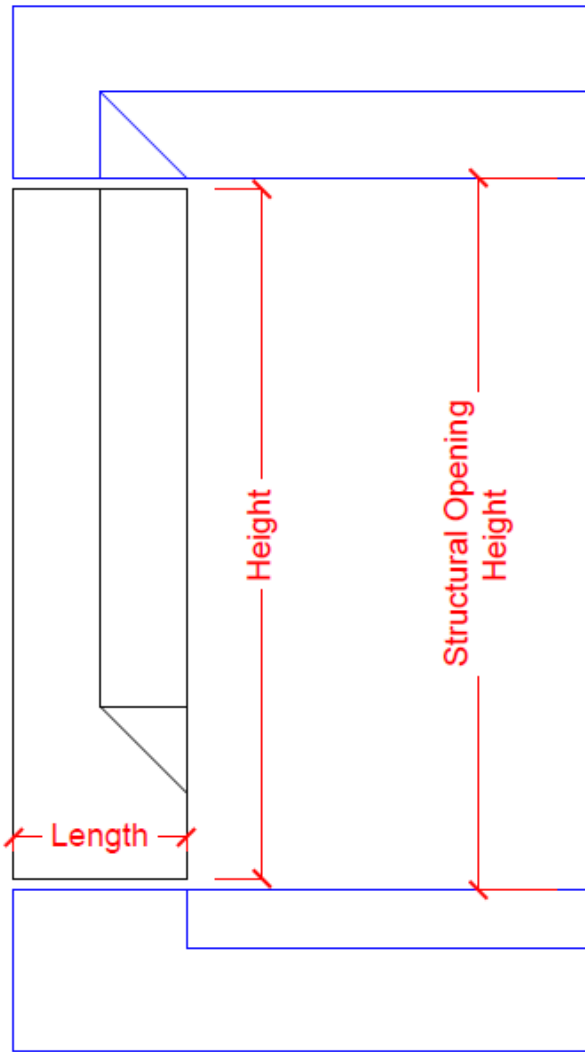


Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

Jamb Stones - Part Splayed Jamb



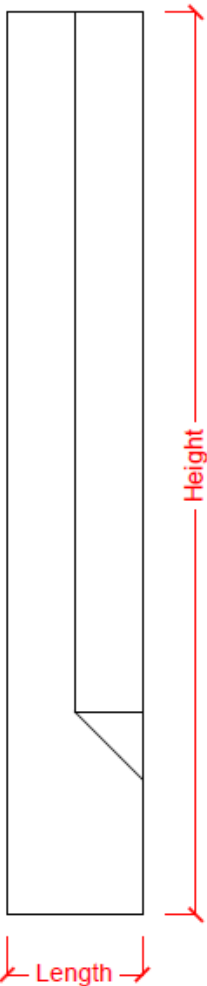
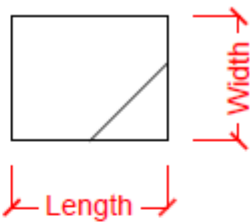
Component Drawings



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

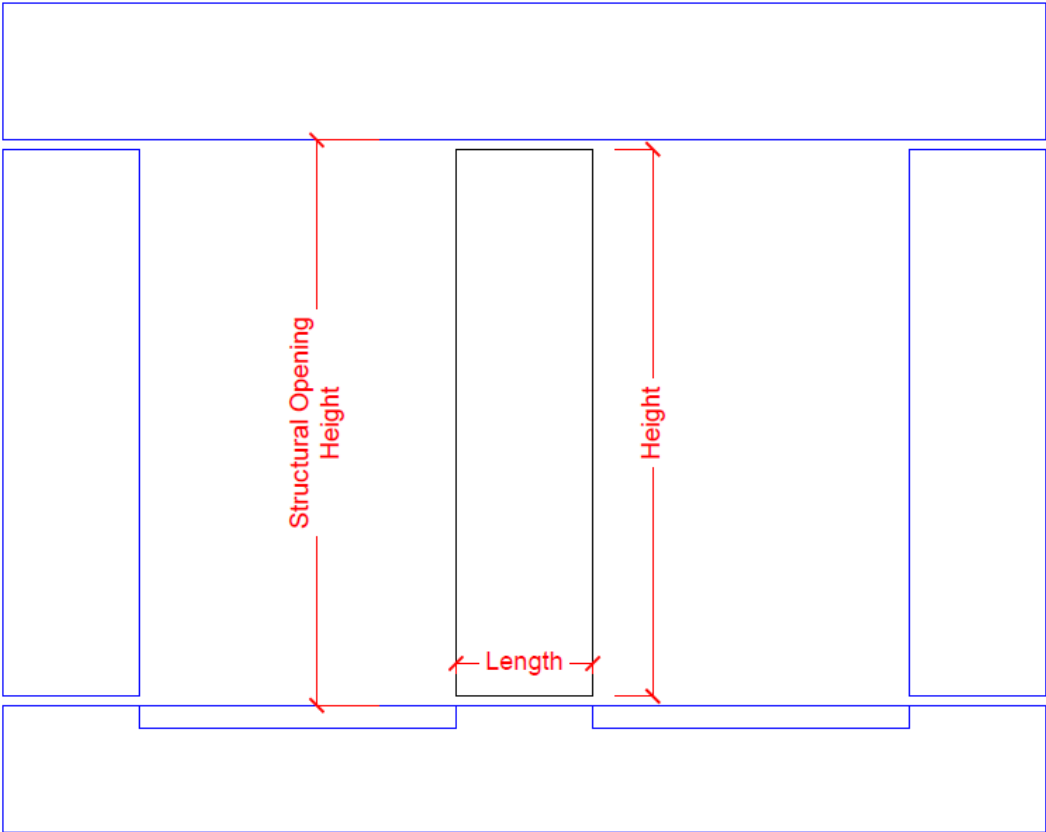


Our standard splay detail is 65mm x 65mm, however as all of our natural stone components are made to order this is flexible.

Mullion Windows - Plain Mullion



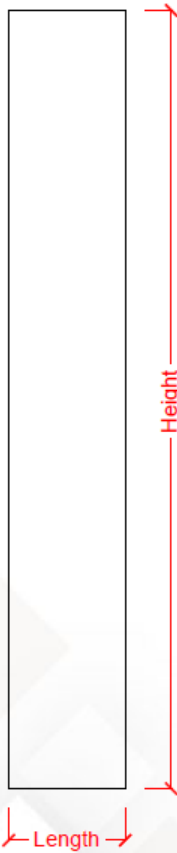
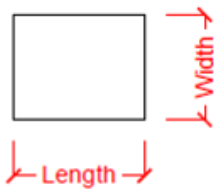
Component Drawings



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

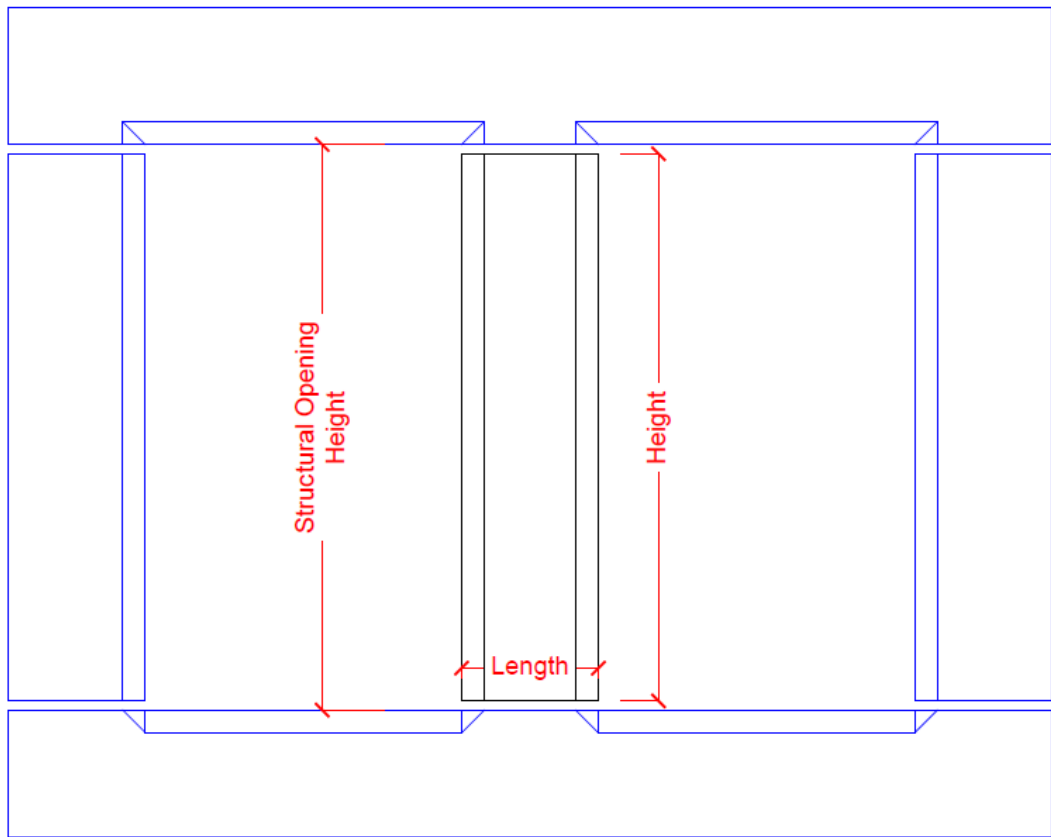


A mullion is sometimes used in larger window surrounds to divide the window into multiple openings instead of having one large window.

Mullion Windows - Chamfered Mullion

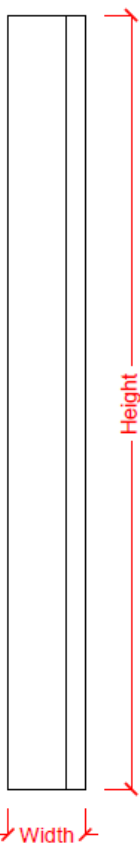
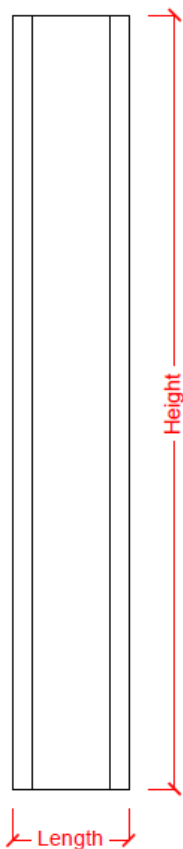


Component Drawings

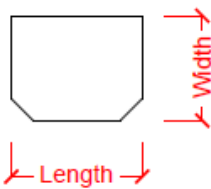


ELEVATION / FRONT FACE

SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW

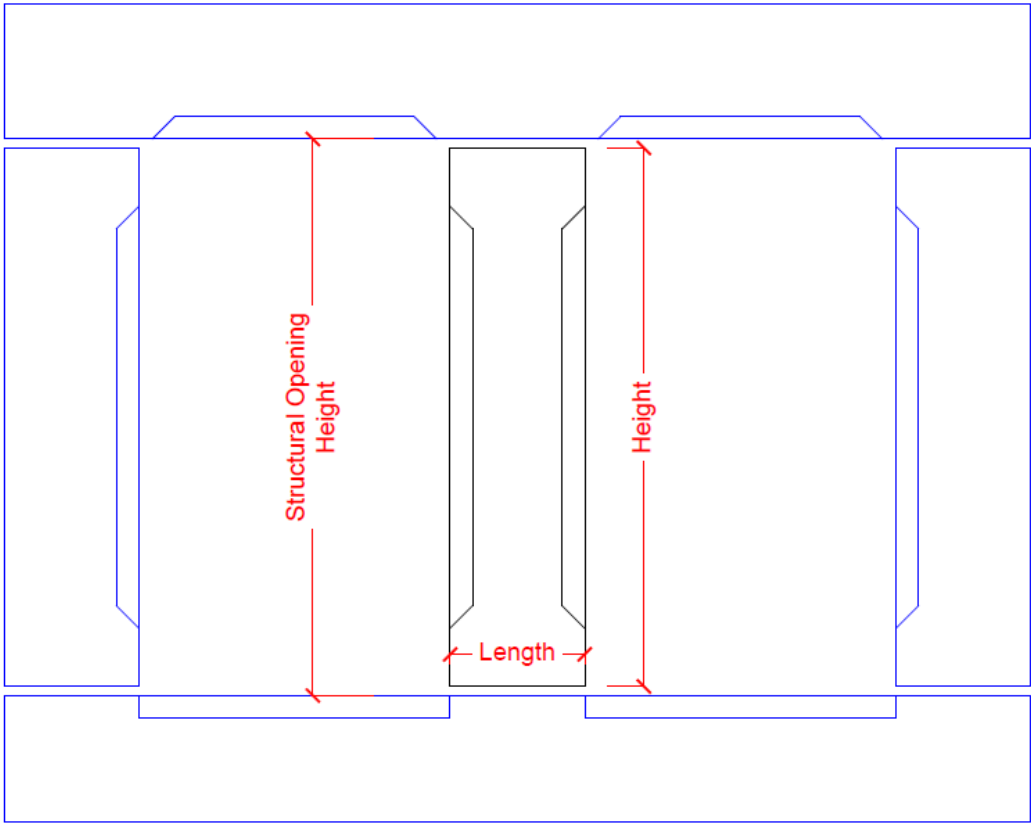


Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

Mullion Windows - Stop Chamfered Mullion



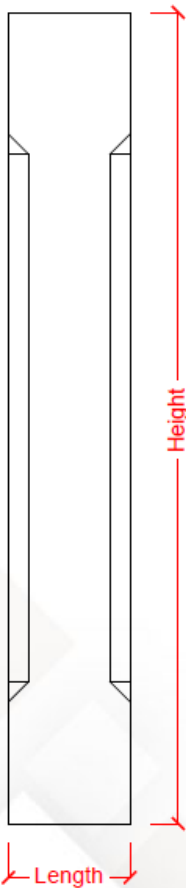
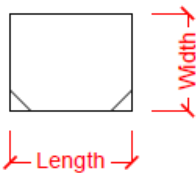
Component Drawings



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

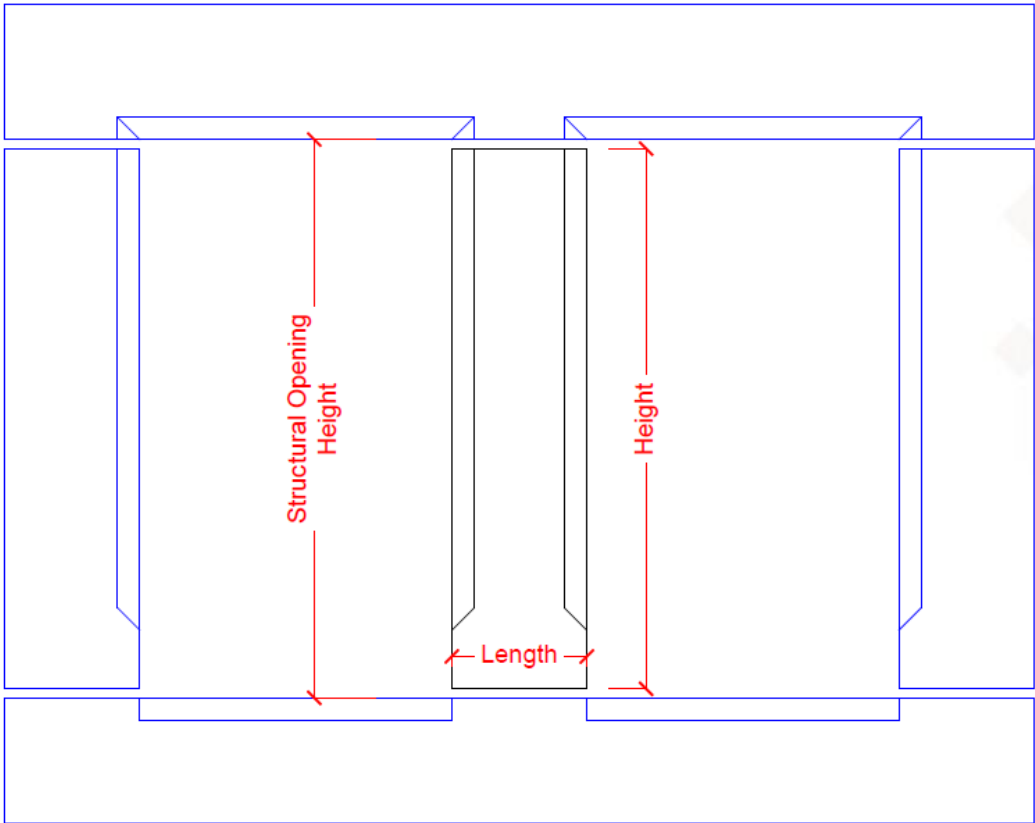


A stop chamfer is a popular detail where some detailing to the stone is desired whilst more flexibility in the installation of the stone is preferred as the units do not need to exactly align with adjacent stones.

Mullion Windows - Part Stop Chamfered Mullion



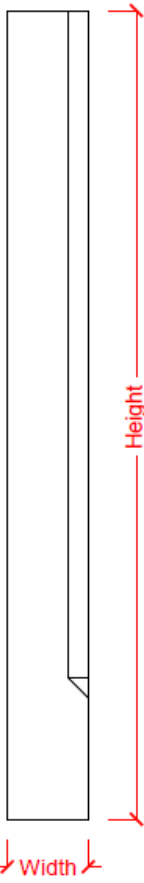
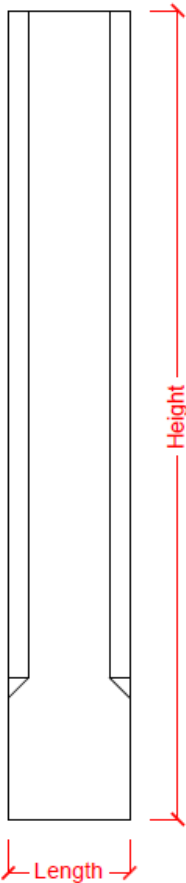
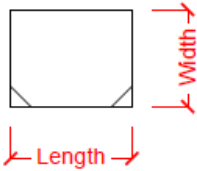
Component Drawings



ELEVATION / FRONT FACE

SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

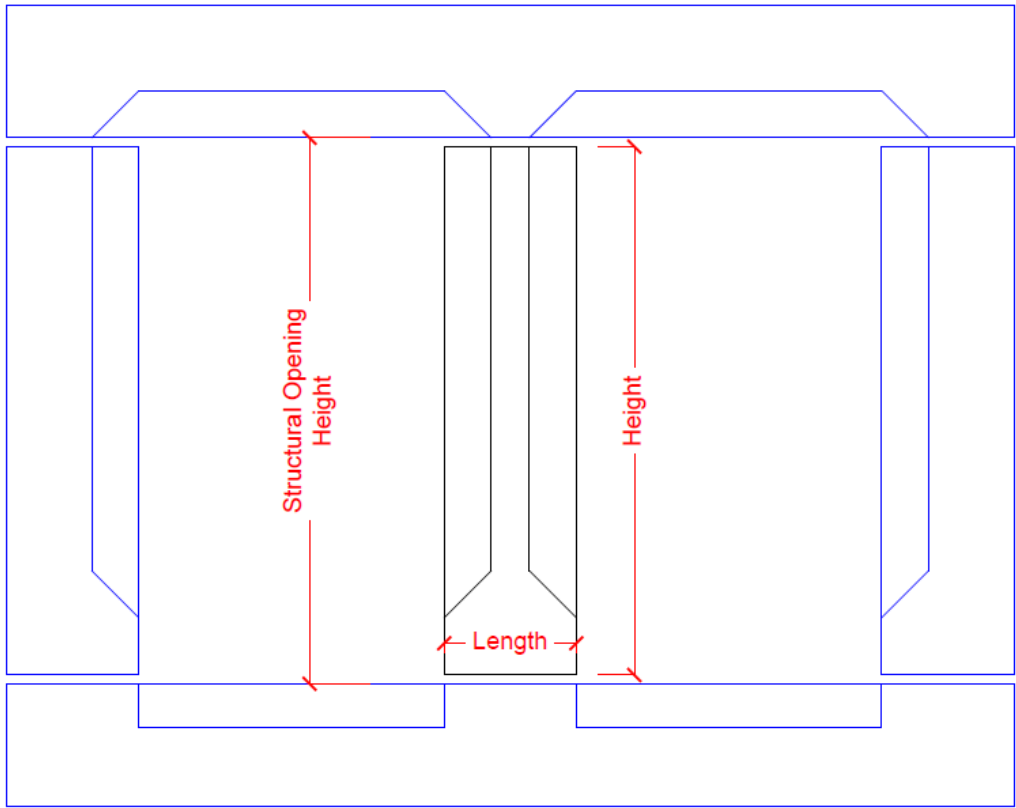


Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

Mullion Windows - Part Splayed Mullion



Component Drawings

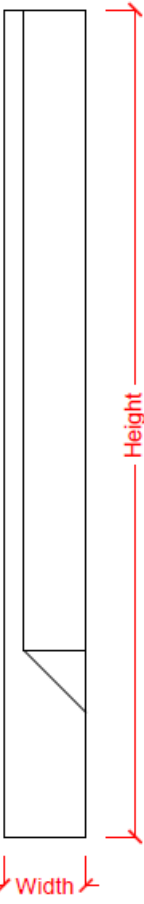
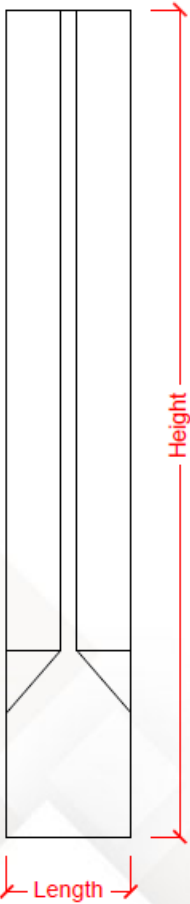
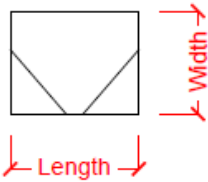


ELEVATION / FRONT FACE



SECTION / SIDE PROFILE

PLAN / TOP DOWN VIEW

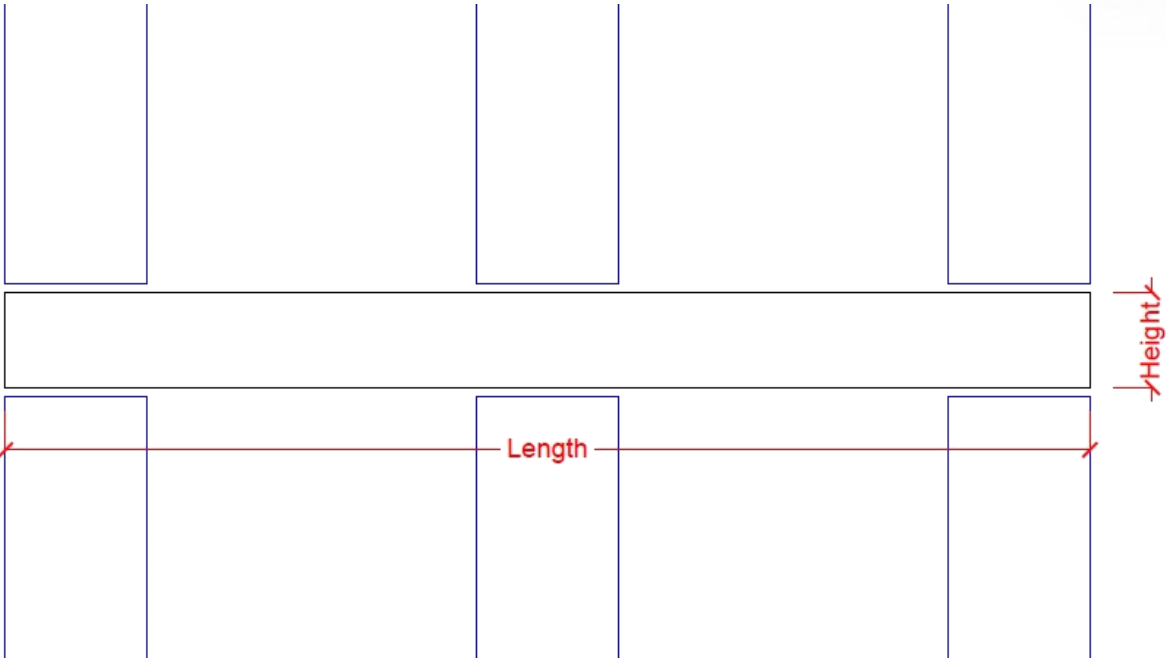


Our standard splay detail is 65mm x 65mm, however as all of our natural stone components are made to order this is flexible.

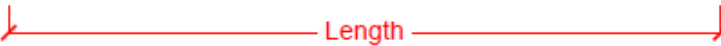
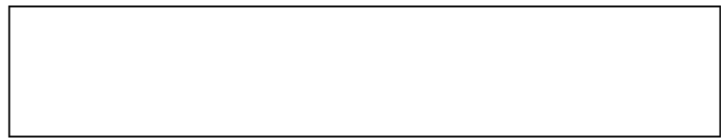
Transom Windows - Plain Transom



Component Drawings



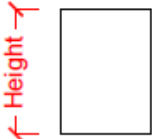
ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE

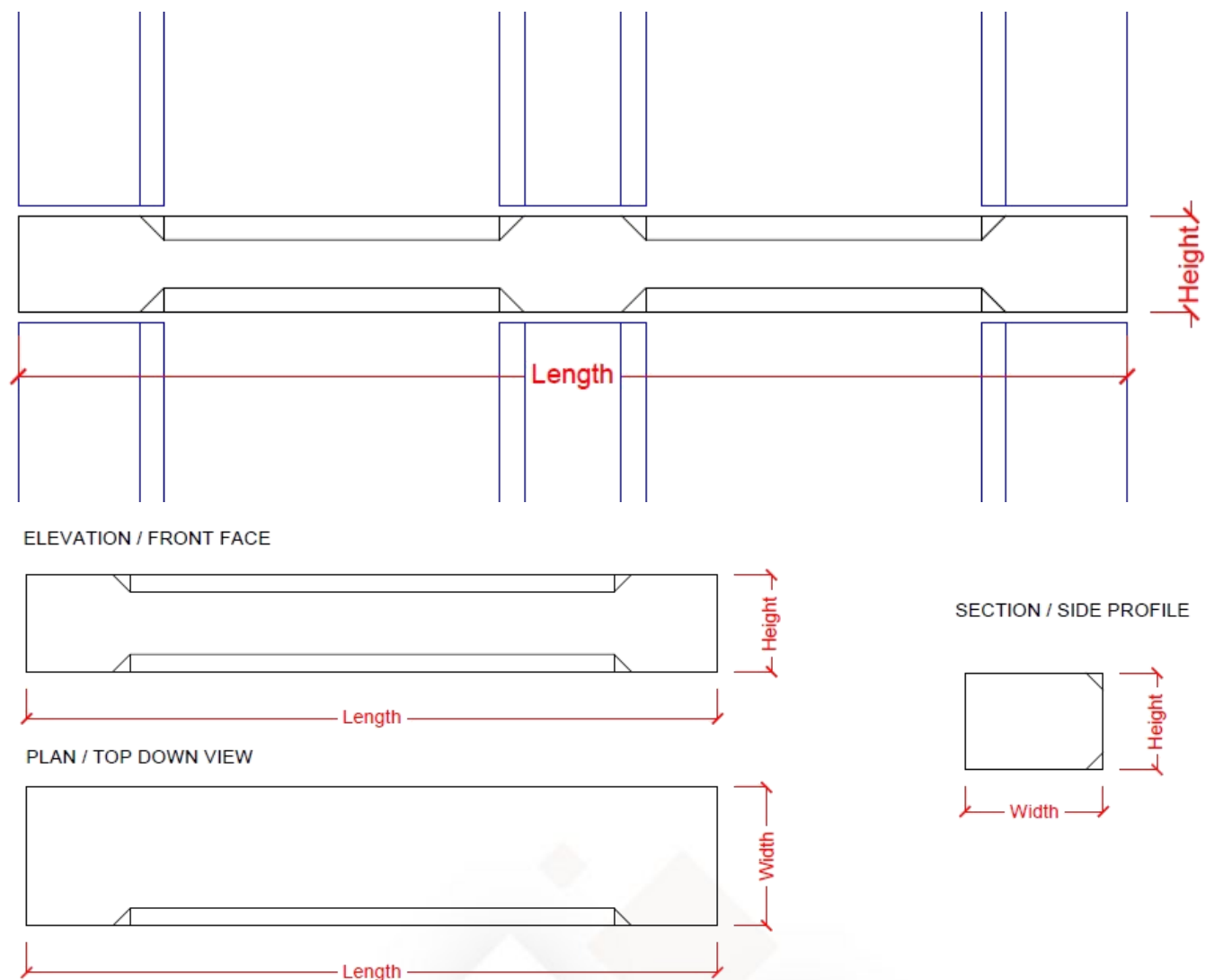


A transom runs horizontally through an opening leaving space above and below the stone, and is often used as a way to split taller windows into individual openings.

Transom Windows - Chamfered/Stooled Transom

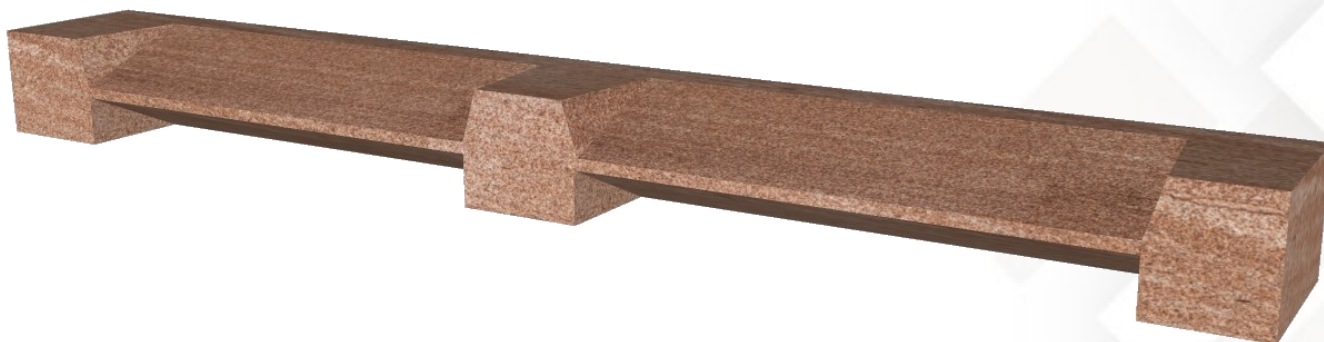


Component Drawings

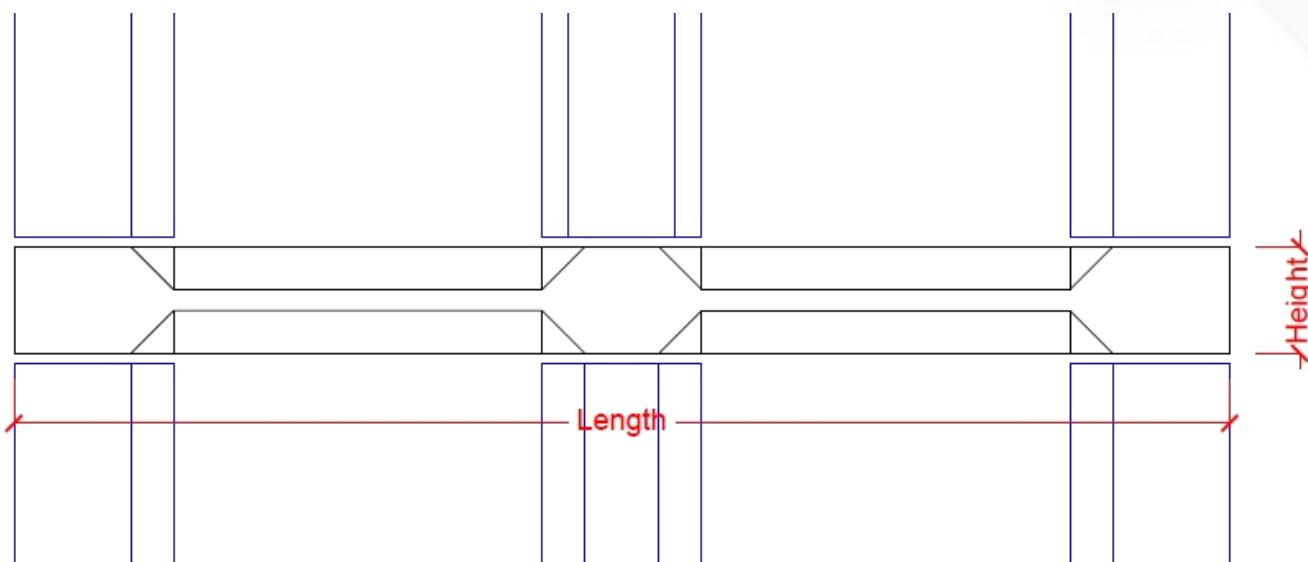


Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

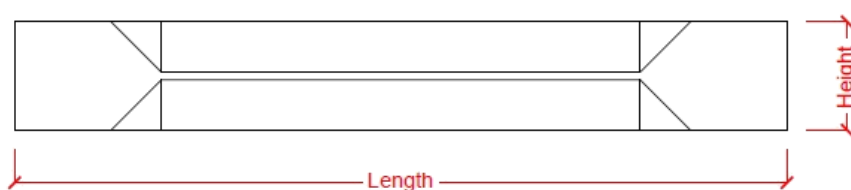
Transom Windows - Splayed/Stooled Transom



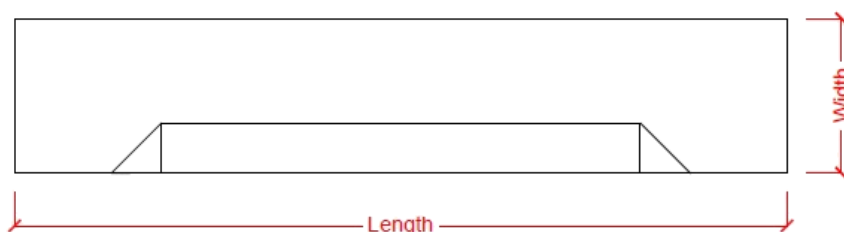
Component Drawings



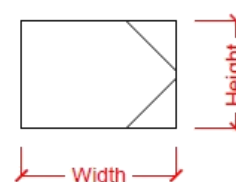
ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE

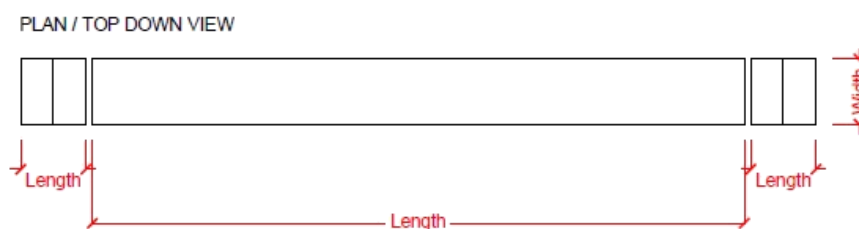
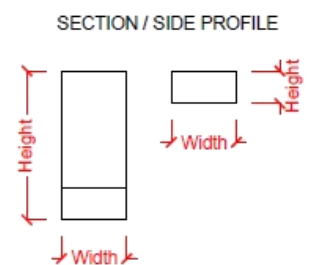
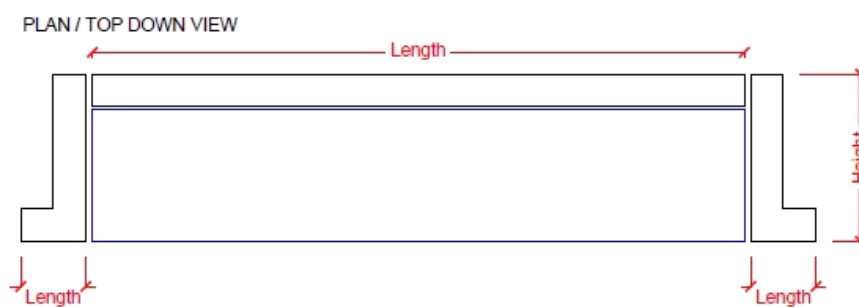


Our standard splay detail is 65mm x 65mm, however as all of our natural stone components are made to order this is flexible.

Hoodmoulds - Plain Hoodmould



Component Drawings



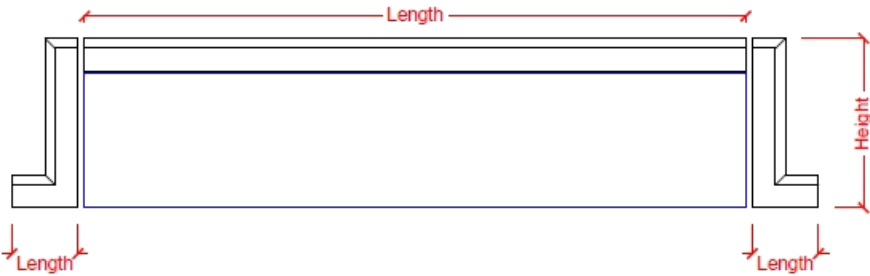
A hoodmold is a great way to add additional volume and detail to a window surround without incurring large cost implications on the stone units required. These are often found on the main elevation of a property to emphasize the stone surrounds further.

Hoodmoulds - Chamfered Hoodmould

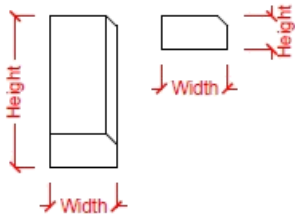


Component Drawings

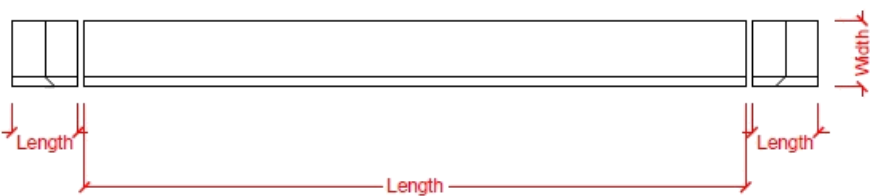
PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW



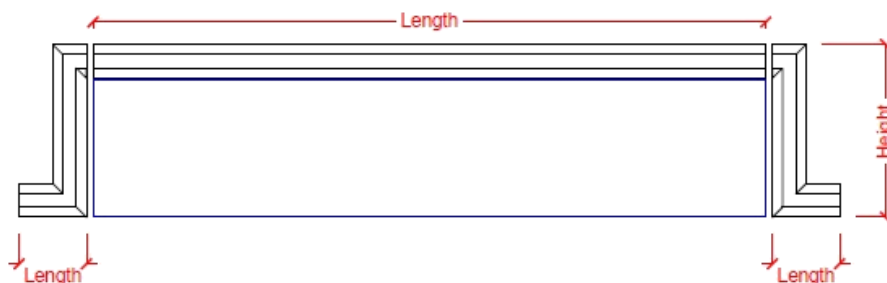
Our standard chamfer detail is 25mm x 25mm, however as all of our natural stone components are made to order this is flexible.

Hoodmoulds - Twice Chamfered Hoodmould

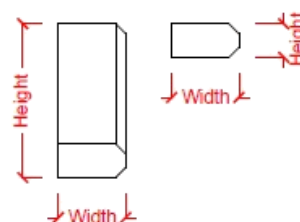


Component Drawings

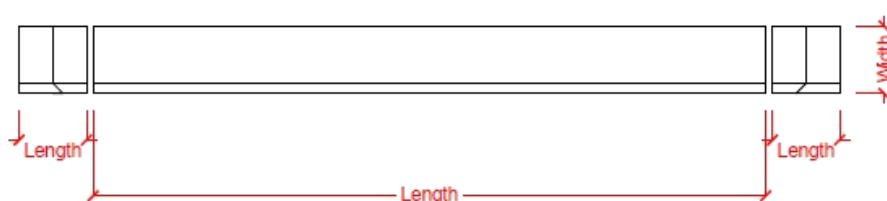
PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW



A double chamfer detail generally sees two smaller chamfers used to give the look of a more detailed profile without incurring large additional costs.

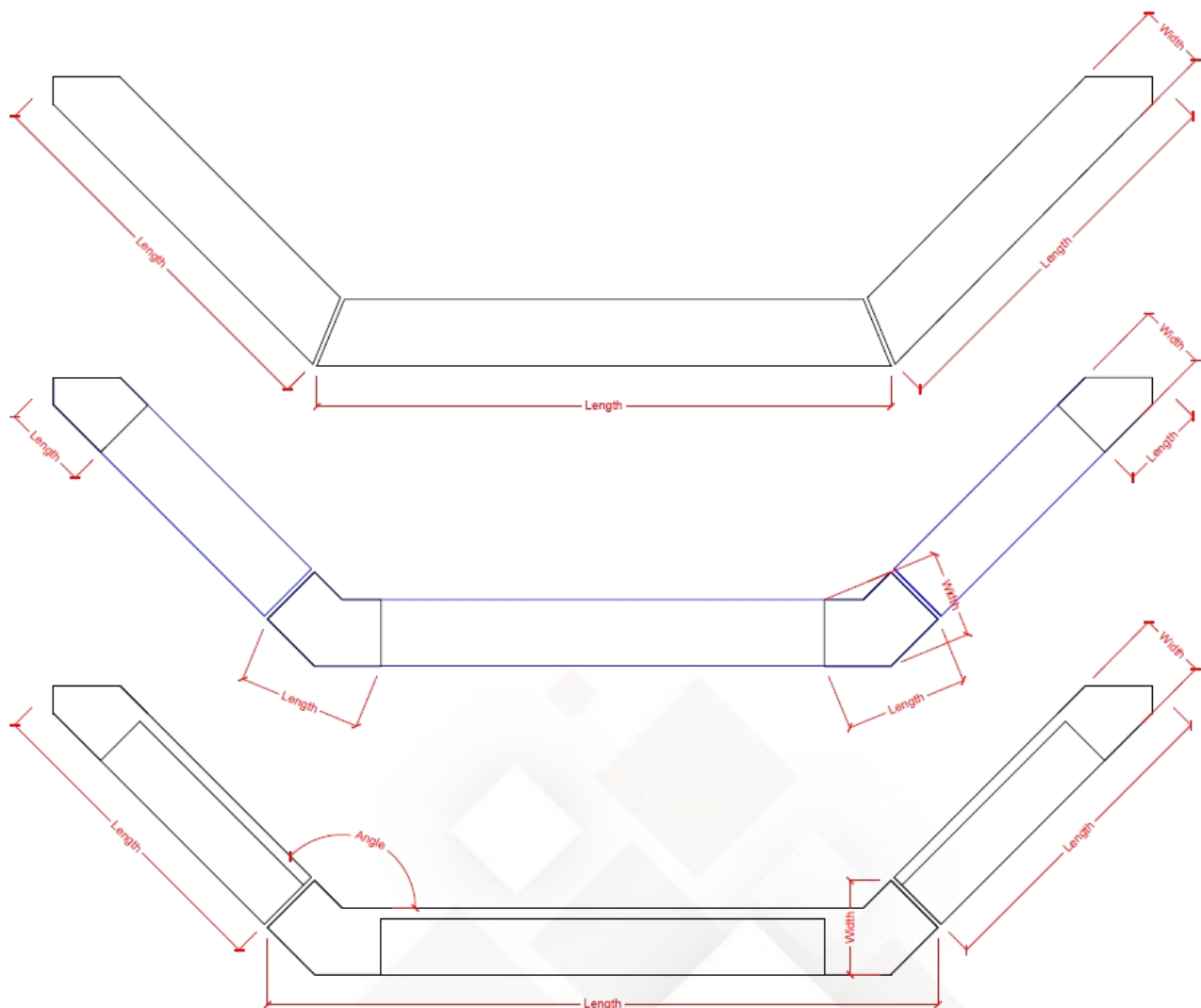
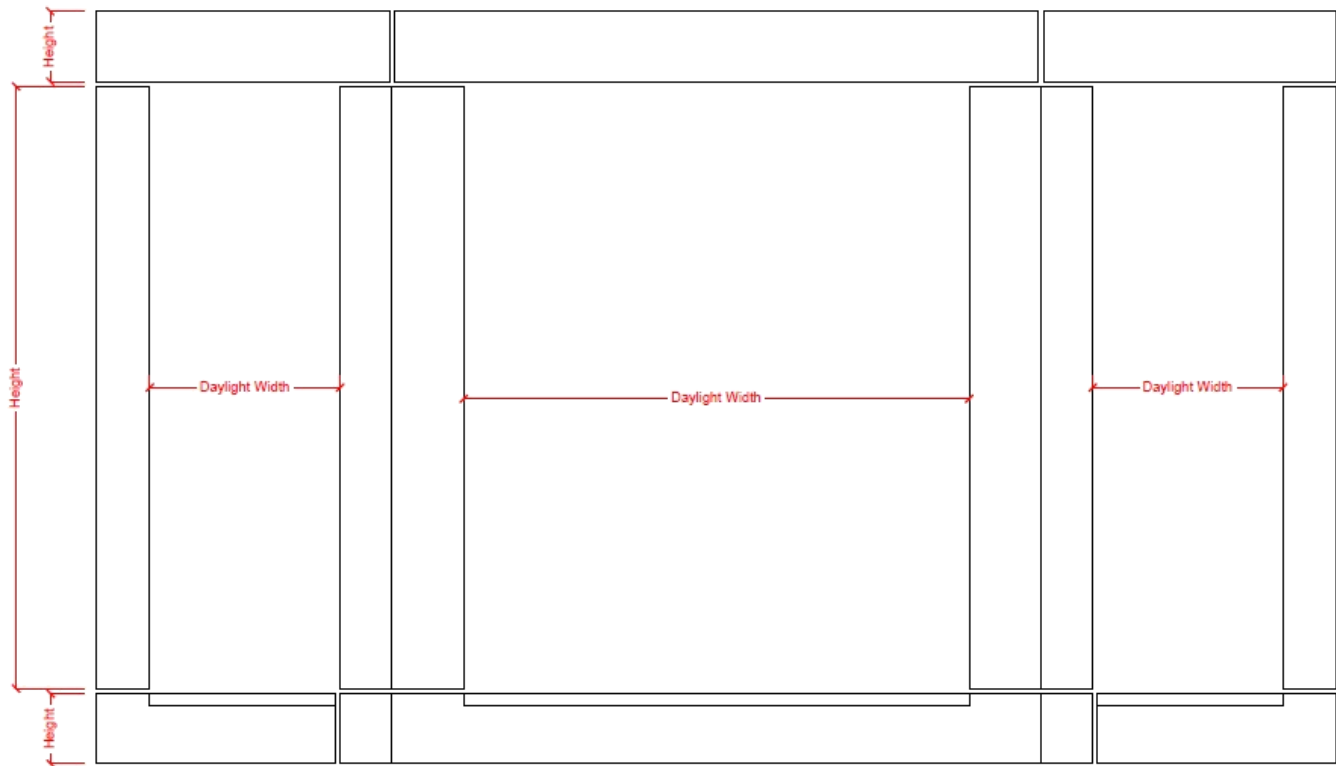
Bay Windows



45 Degree Bay Window Options



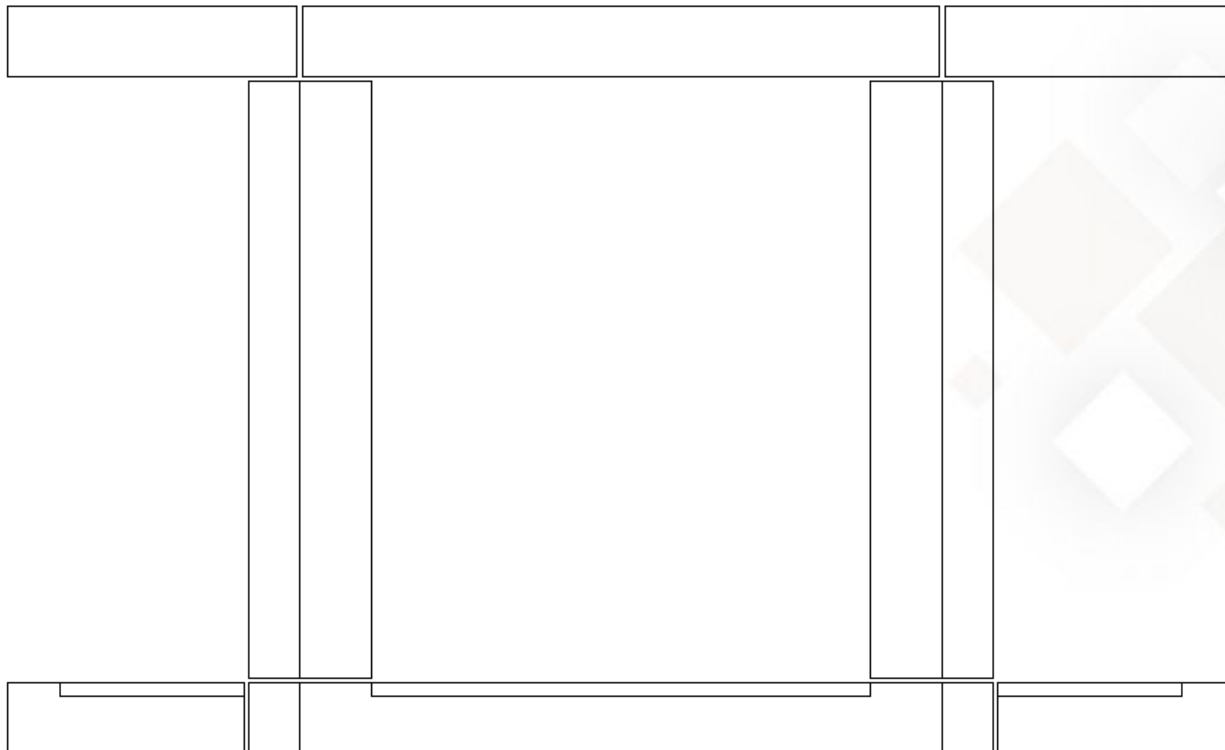
ELEVATION



45 Degree Bay Window Options



ELEVATION



Bay windows are available in styles to match most of our window and door surround styles, and as every stone we make is cut to order we can adjust the sizes and design to meet your requirements. The most important things to keep in mind when installing a bay window are:

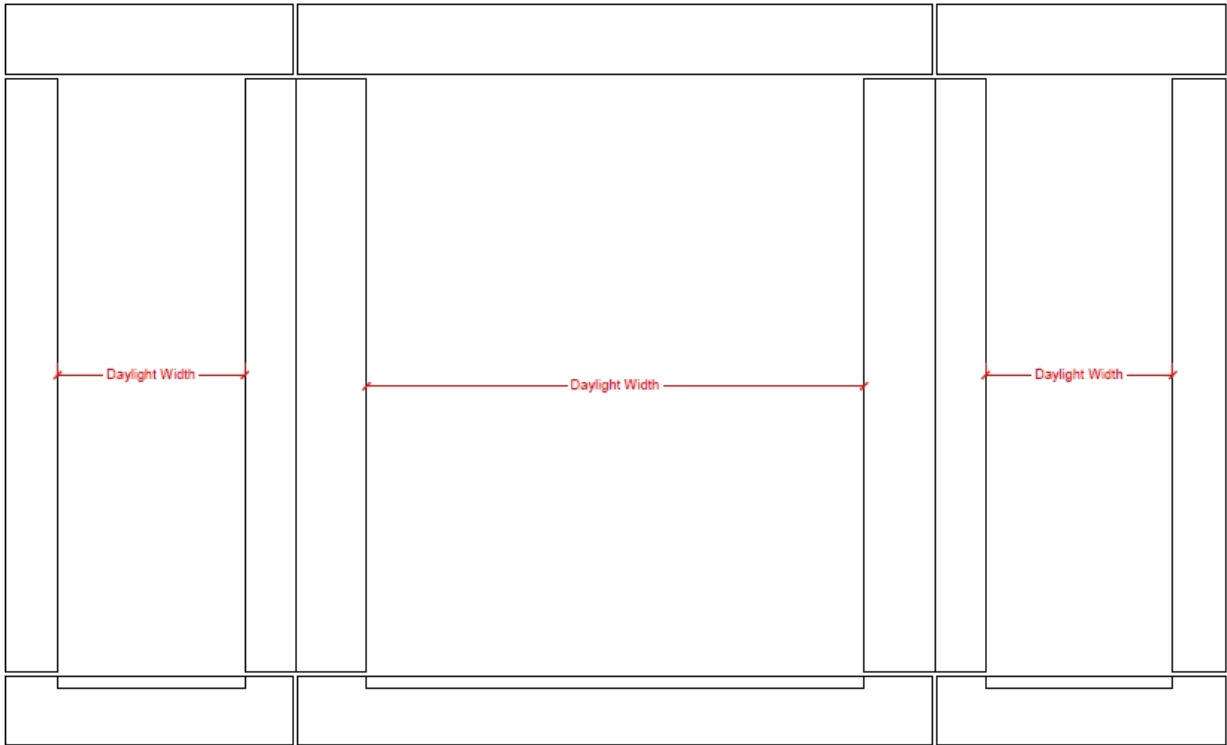
- **What angle would I like my bay window at?**
Most bay windows that we produce are cut at a 135 degree/ 45 degree angle, however it is possible to have a steeper or shallower angle if you would prefer. It is important to decide this early on in the design process as this will have an effect on the setting out of your foundations and any steelwork being installed.
- **How will the windows be installed?**
Are the windows to sit in between the jamb stones, or do they sit behind the jambs to give a deeper reveal at each opening?
- **How will the stone lintel and roof structure above the bay be supported?**
Sandstone is classed as self-supporting but not load bearing, so most bay windows do require steel supports to carry the lintel course and roof structure over the bay window. It is often best to design this at the early stages as this allows for the stone to be designed around the steel, making for an easier and better looking installation on site.



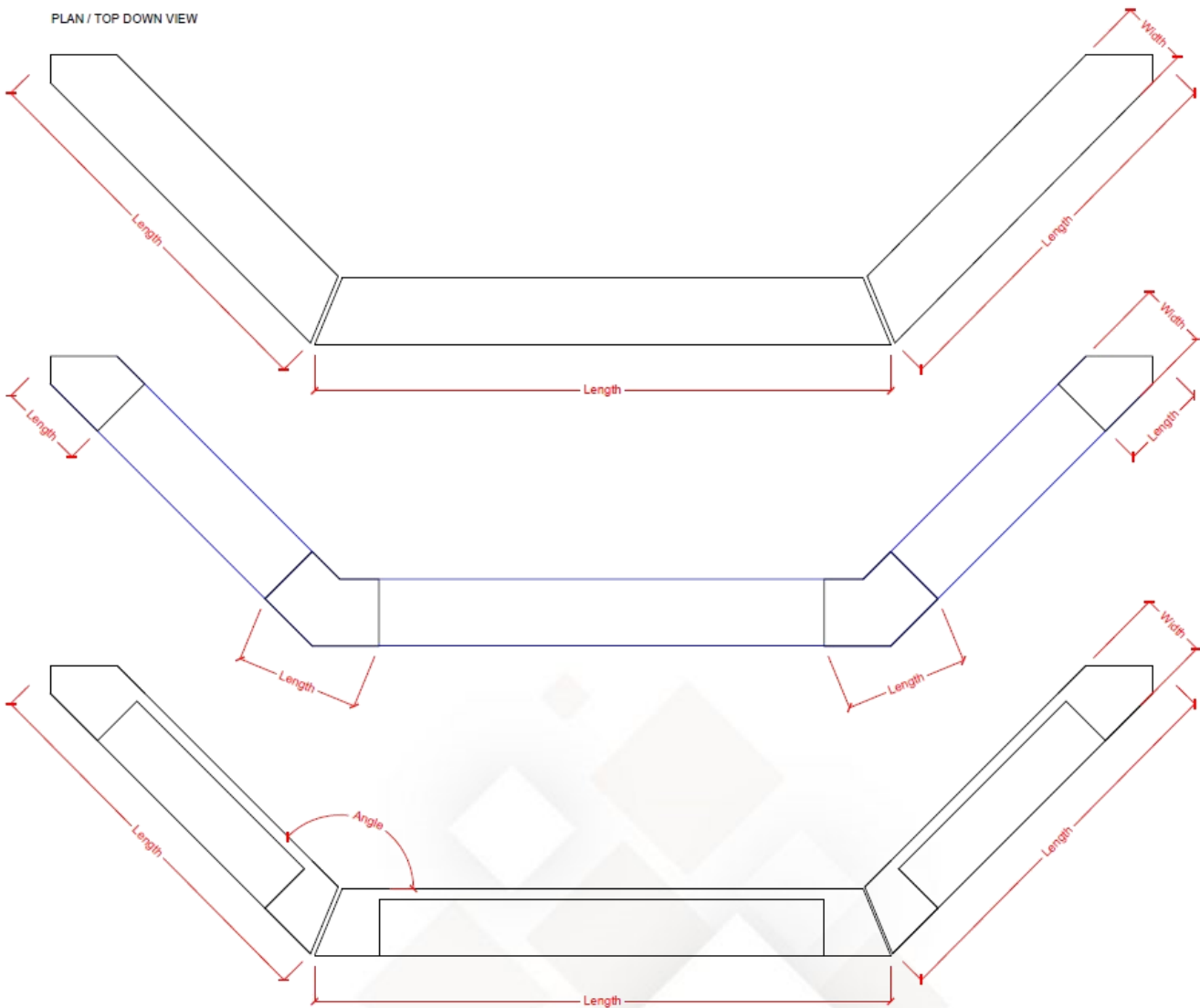
45 Degree Bay Window Options



ELEVATION



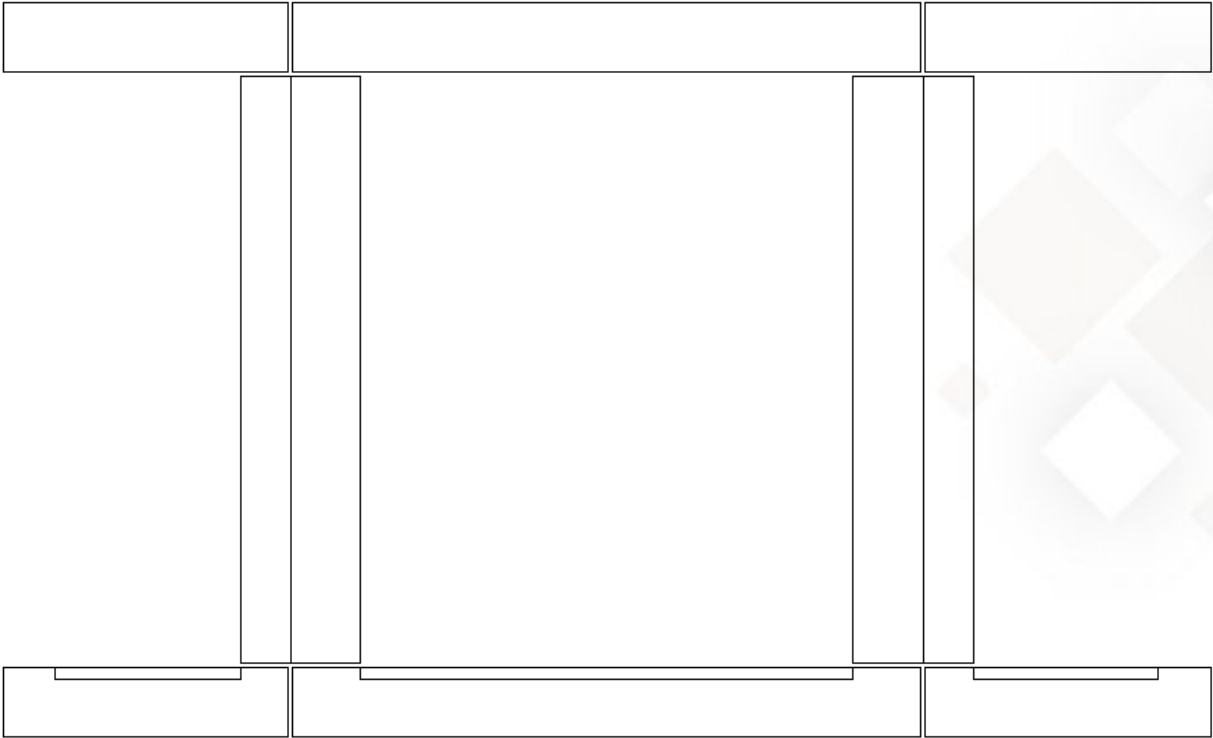
PLAN / TOP DOWN VIEW



45 Degree Bay Window Options



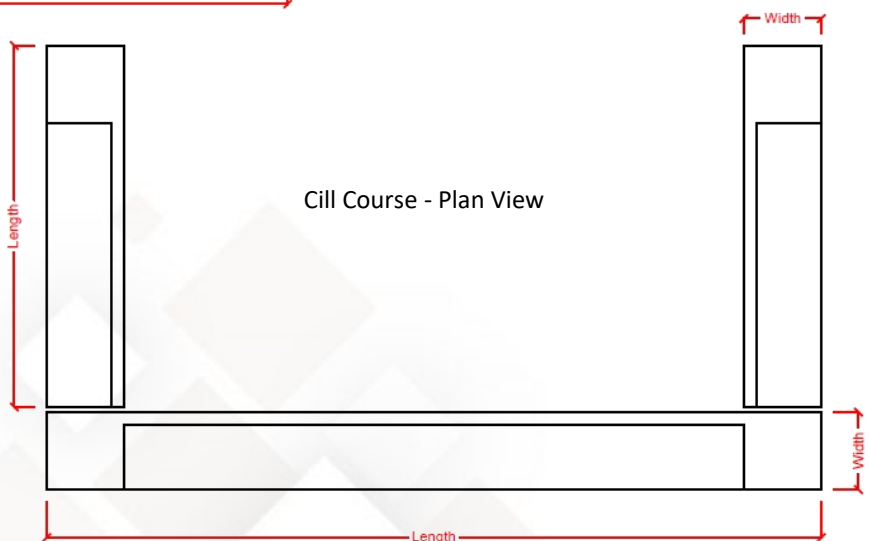
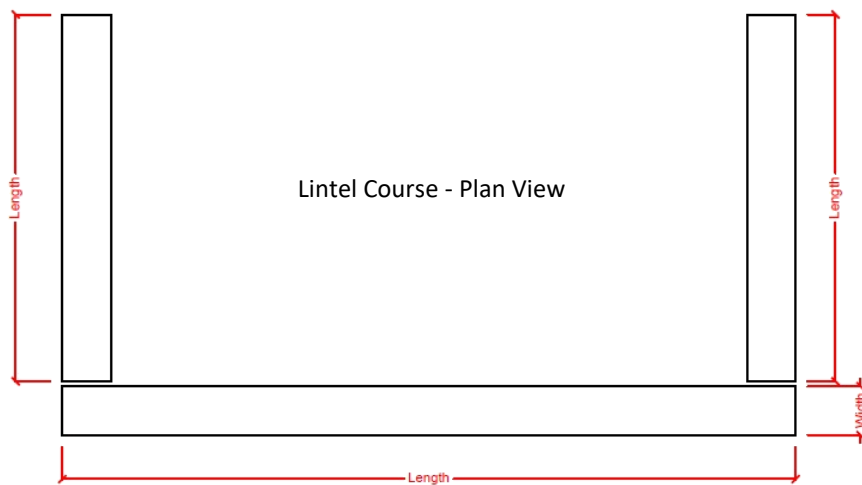
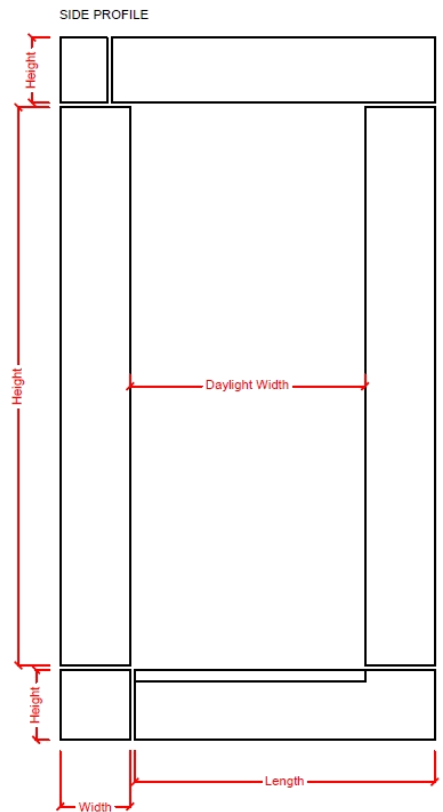
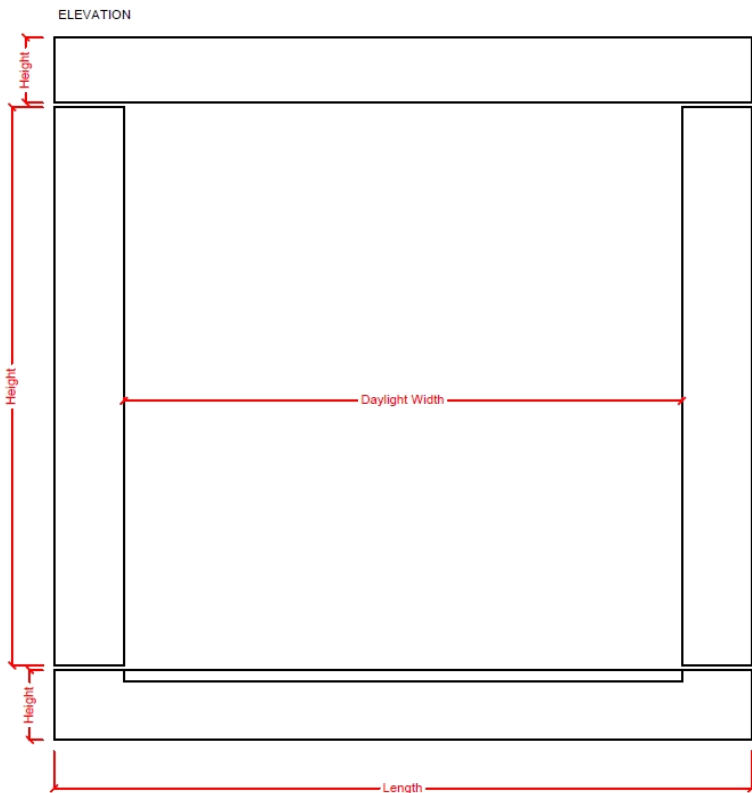
ELEVATION



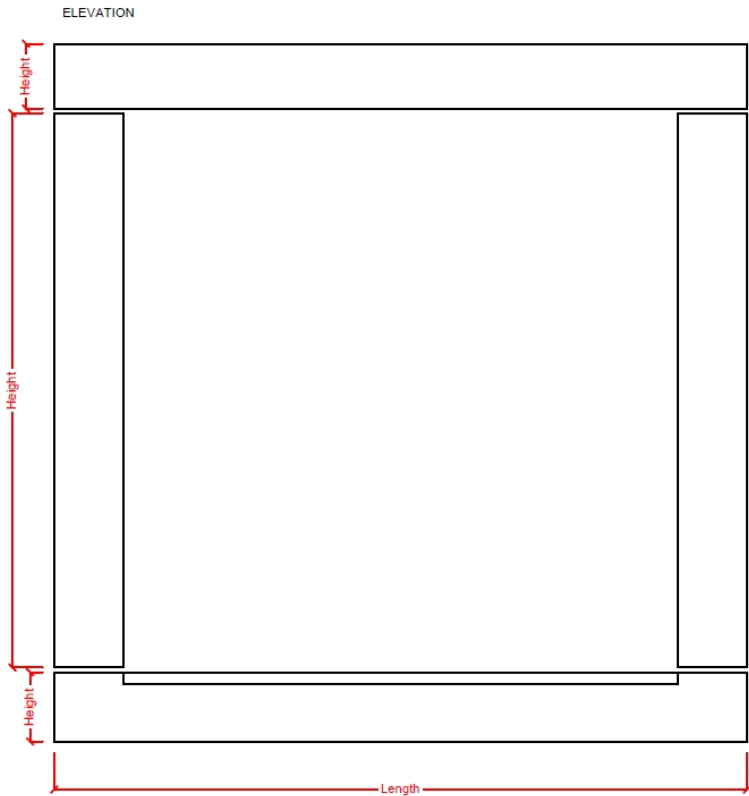
It is possible to customise your bay window design, and depending on the overall style of property you are building we can cut and carve a wide range of profiles and details into the stone units to meet your requirements. Many of our customers provide photos of styles that they would like to replicate on their own property, and our designers can work with you to achieve the finished look that you desire.



Square Bay Window Options



Square Bay Window Options



Feature Quoins and Corner Stones



Square Quoins and L-Shaped Quoins

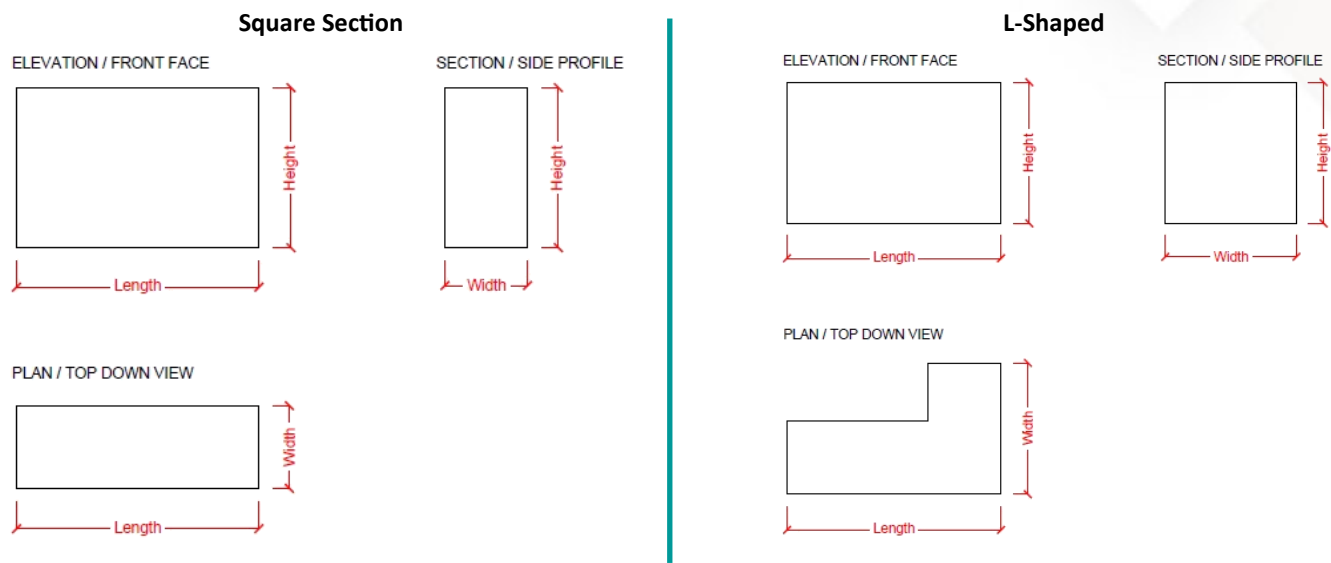


Our corner stones/quoins are available in several finishing options, including smooth, chamfered, rock faced and sandblasted. Aside from the surface finish, you can also request that your quoins are either “square section” or “L-shaped” depending on the finished appearance you are looking for.

As a general rule, square cut, smooth quoins are the most cost effective option as these units require the least amount of cutting and dressing work, whereas L-shaped quoins are a bit more costly however offer a more substantial corner stone which some customers prefer.

It is also possible to add a tooled finish to your quoins. This is most common on restoration projects where the new stone is required to match the originals.

Component Drawings



Common Quoin Surface Finishes



Smooth/Hand Rubbed



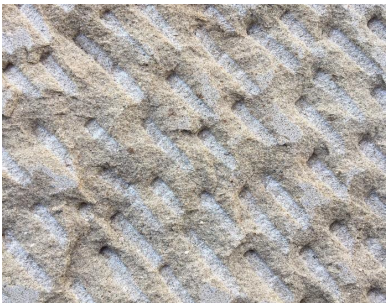
Sandblasted



Machine Dressed



Rock Faced



Stugged



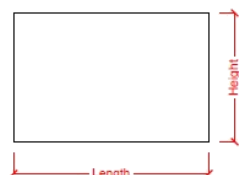
Sparrow Pecked

Quoin Styles

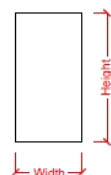


Plain Quoins

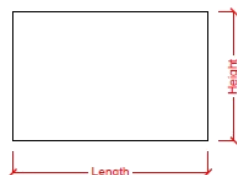
ELEVATION / FRONT FACE



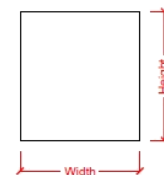
SECTION / SIDE PROFILE



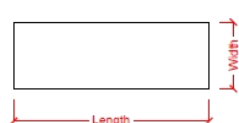
ELEVATION / FRONT FACE



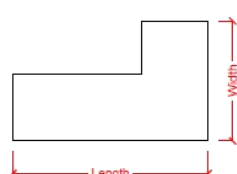
SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW

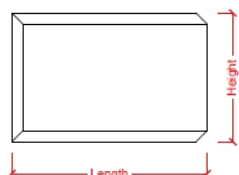


PLAN / TOP DOWN VIEW

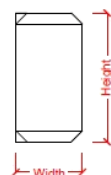


Chamfered Quoins

ELEVATION / FRONT FACE



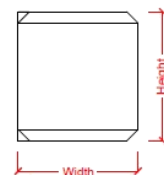
SECTION / SIDE PROFILE



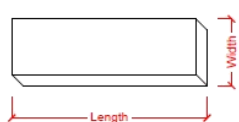
ELEVATION / FRONT FACE



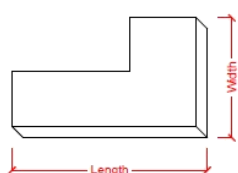
SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW

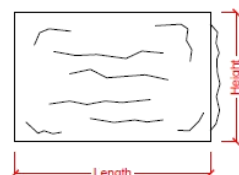


PLAN / TOP DOWN VIEW



Rock Faced Quoins

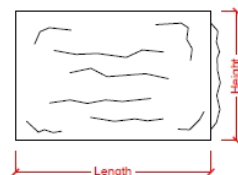
ELEVATION / FRONT FACE



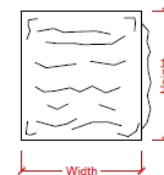
SECTION / SIDE PROFILE



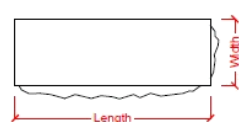
ELEVATION / FRONT FACE



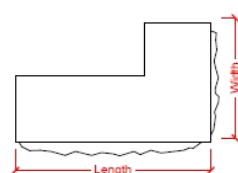
SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW

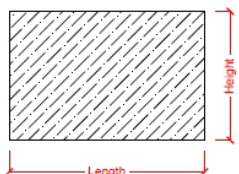


PLAN / TOP DOWN VIEW

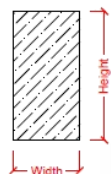


Tooled Quoins

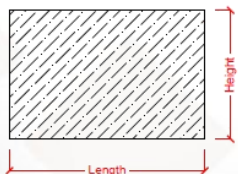
ELEVATION / FRONT FACE



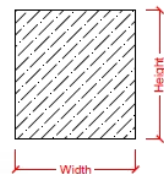
SECTION / SIDE PROFILE



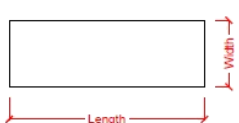
ELEVATION / FRONT FACE



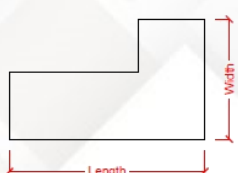
SECTION / SIDE PROFILE



PLAN / TOP DOWN VIEW



PLAN / TOP DOWN VIEW



Plinth and Base Courses



Plinth Course Options and Styles

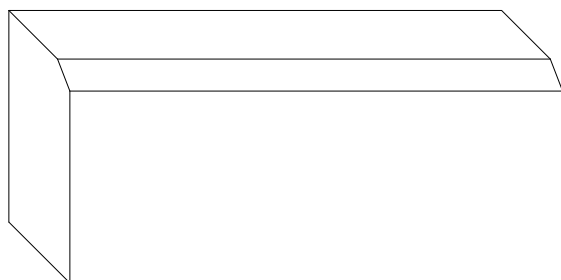


A natural stone plinth is often used to provide an ideal base for construction of the external walls of a property, and is often used to create a visual change/feature at ground level. This is especially useful when working with a façade finishing material such as cement or lime render, as a stone plinth gives a clean line to work to whilst also protecting the bottom edge from damage.

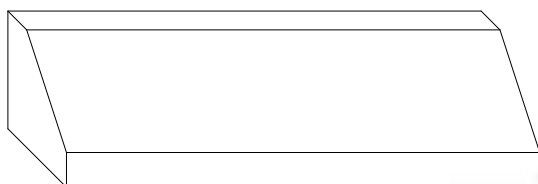
Generally, natural stone plinths are finished with either a rubbed or sandblasted surface, and often include a small chamfer or profile to the top edge to highlight the stone as a feature whilst also helping to shed water from the exposed top edge.



A square section plinth is the most cost effective option as once cut this does not require any further masonry or profiling work. This style works well on modern and contemporary builds as it delivers clean lines and sharp edges that suit a modern aesthetic.



A chamfered plinth gives a softer top edge and is an ideal option where the plinth projects slightly further from the building than the rest of the masonry. This is an especially popular option on rendered properties as it offers an eye-catching feature at ground level.



A splayed plinth features a deeper profile than a the chamfered option, and is popular where the property features a higher level of detail in other masonry elements such as string courses and within the window surrounds.

Plinth Course - Corner Options



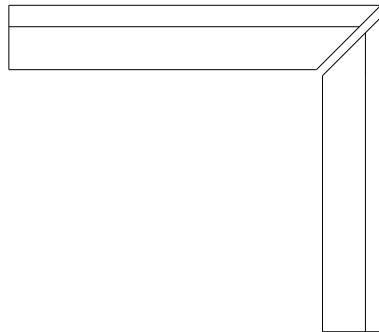
PLAN / TOP DOWN VIEW

EXTERNAL RETURNS

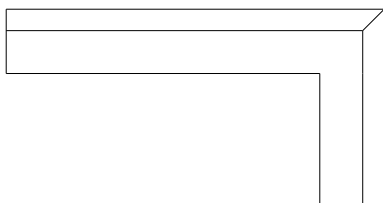
Butt Joint Return



Mitered Joint Return



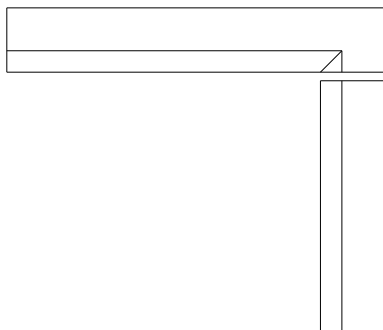
L-Shaped Return



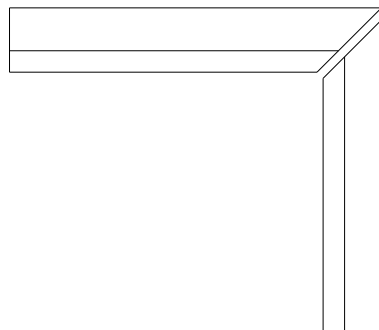
PLAN / TOP DOWN VIEW

INTERNAL RETURNS

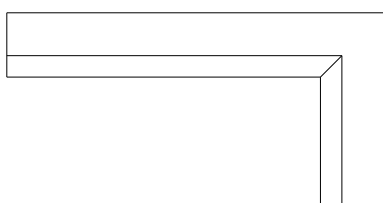
Butt Joint Return



Mitered Joint Return

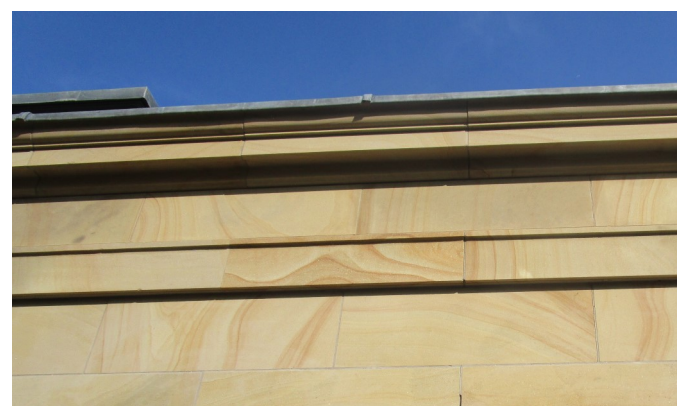


L-Shaped Return



A mitered joint corner is the most cost effective method for forming both internal and external corners as these can be cut on site, however ideally a butt joint or L-shaped return should be used where possible as these give a neater finish at the corner and are less prone to chipping and breaking over time.

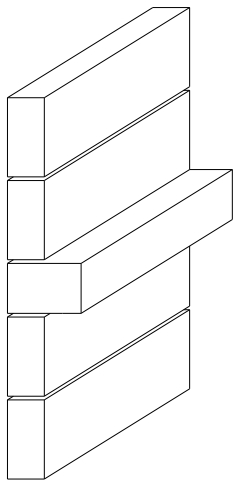
Feature Band and String Courses



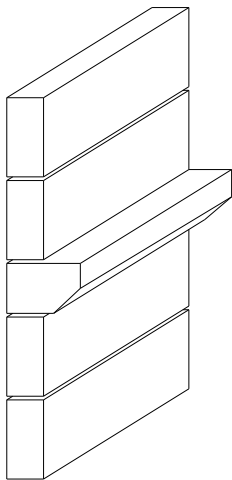
Popular Band and String Course Profiles



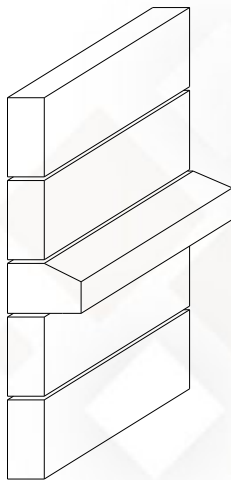
Square Section



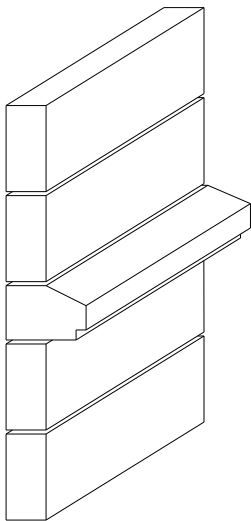
Chamfered Section



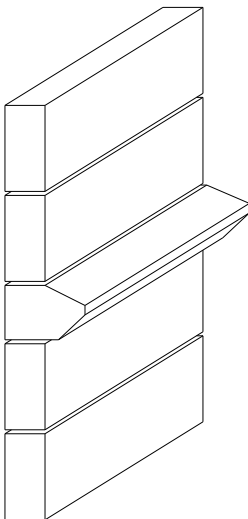
Weathered Section



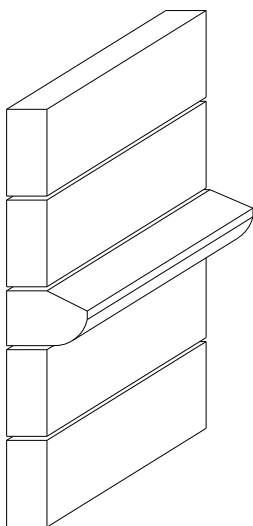
Weathered and Rebated Section



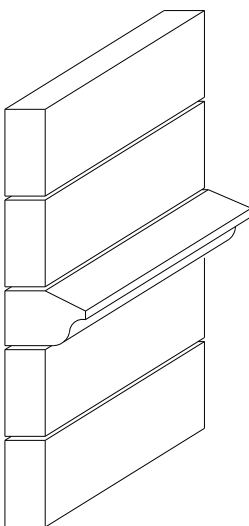
Weathered and Chamfered Section



Curved Section



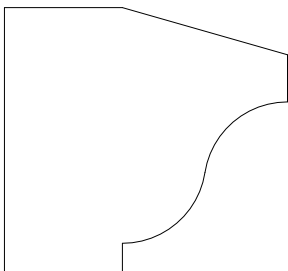
Ogee Section



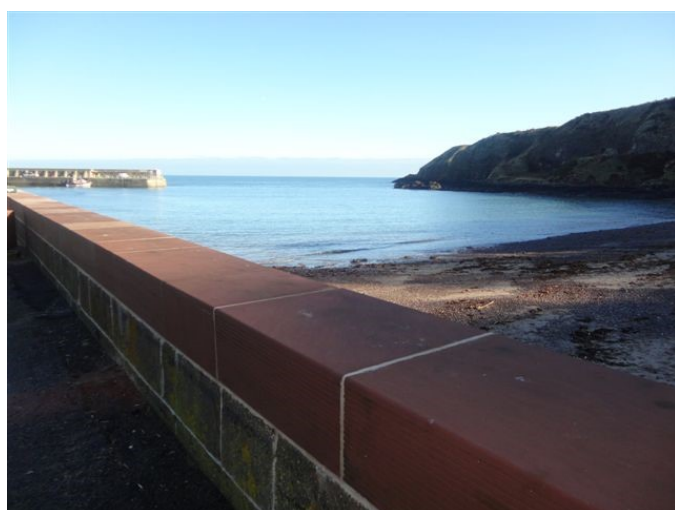
All of our string and band courses are made to order, meaning that we can produce a wide variety of different profiles to suit the finished appearance that you are looking to achieve.

If you require something a bit more detailed or ornate then just let us know and our team will be happy to talk through the options available.

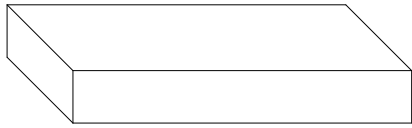
Our **Ogee Section** string course is the most popular detail we supply. This detail gives an eye-catching feature whilst remaining relatively cost effective compared to more complex profiles.



Coping Stones and Wall Tops



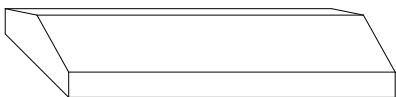
Common Coping Stone Profiles



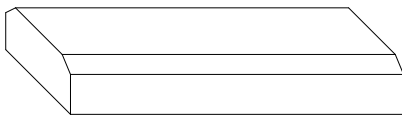
A flat coping is the simplest and most affordable option for finishing a wall top. These stones can be cut with a drip to the underside, and are available in thicknesses from 40mm upwards.



A once weathered coping is designed to help shed water off the top of a wall in one direction, and is a popular option where water is being directed away from a property or towards a hidden gutter on a flat roof.



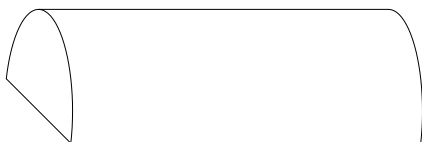
A twice weathered coping is a popular option when a wall will be seen from both sides. These are a common feature on perimeter walls where a little more detail is preferred.



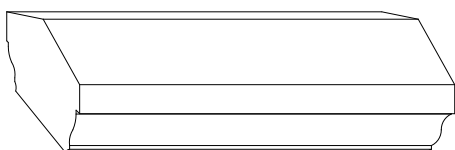
A twice chamfered coping is a more cost effective alternative to the twice weathered coping, and is another popular option on perimeter walls. These copings are especially popular where railings or fence panels are to be fitted on top of the stones as they provide a flat, uniform surface to fix these into.



A barrel top coping is designed to help shed water from the wall top whilst maintaining softer, curved edges to the top of the stone. This is a more cost effective take on the half round coping option.



A half round/semi-circular coping is a popular option for traditional walling, and these are often seen in shorter lengths with either a smooth or rock faced finish. This style of coping provides a substantial looking cap to the wall thanks to the height of the units.

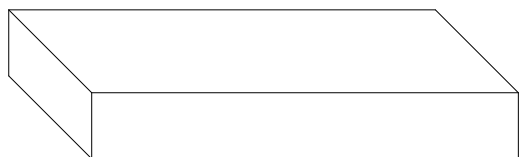


An ogee profiled and weathered coping is our preferred option where a more ornate detail is desired. These copings provide an eye-catching feature and are a great way to compliment other profiled masonry details on a property.

Pillar Caps and Chimney Caps

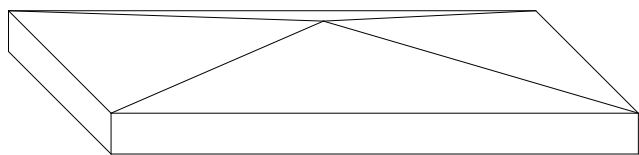
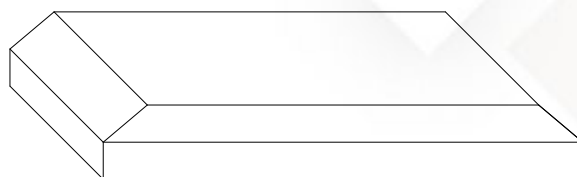


Popular Pillar Cap Designs



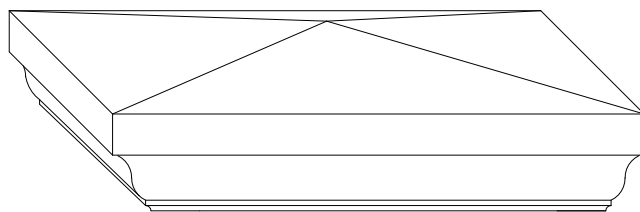
A flat pillar cap is the simplest and most affordable option, and provides an ideal base for any additional features such as ball finials or lighting to the top of the pillar. These stones can be cut with a drip to the underside, and are available in thicknesses from 40mm upwards.

Adding a chamfer to your pillar cap is a great way to soften the sharp top edges of the stone without requiring a large amount of masonry dressing, and is a popular and cost effective option for low level pillars where the pillar top is visible.

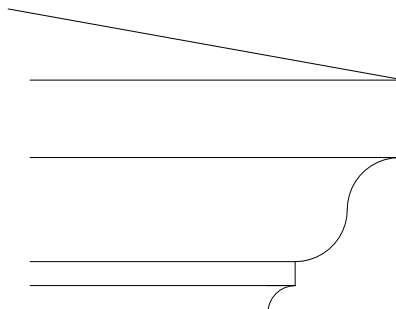


A splayed pillar cap is the ideal option for pillars where a little more depth is required. This design prevents any standing water on top of the pillar, and is often seen as a more traditional style of pillar cap.

An ogee profiled and splayed pillar cap is our most popular option for main entrance gates and where something a little more detailed is preferred. These are ideal for complementing other masonry dressings on a property, and are often used on larger pillars where a smaller cap would not suit the design.



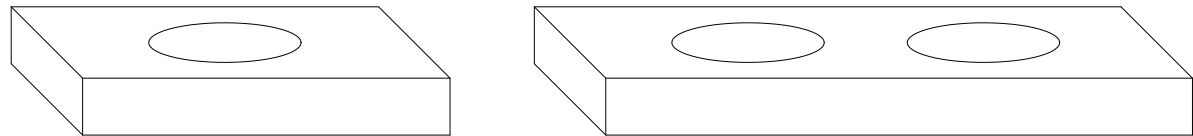
All of our pillar caps are cut and carved to order, so if you are looking for something a bit more ornate or bespoke just let us know and we will be happy to talk through your options. A lot of our customers provide us with photos and sketches showing the style of pillar cap they would like to achieve, and our team can work with you to achieve this.



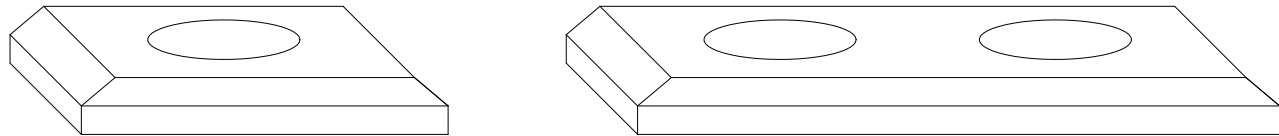
Popular Chimney Cap Designs



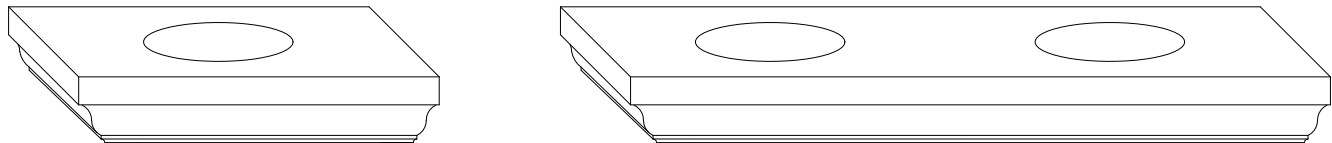
A flat chimney cap is the most common style that we produce, and is ideal for finishing a chimney in a way that compliments other natural stone features on a property. These caps are all cut to order, and can be provided pre-cored or recessed for the installation of chimney pots depending on your proposed flue system.



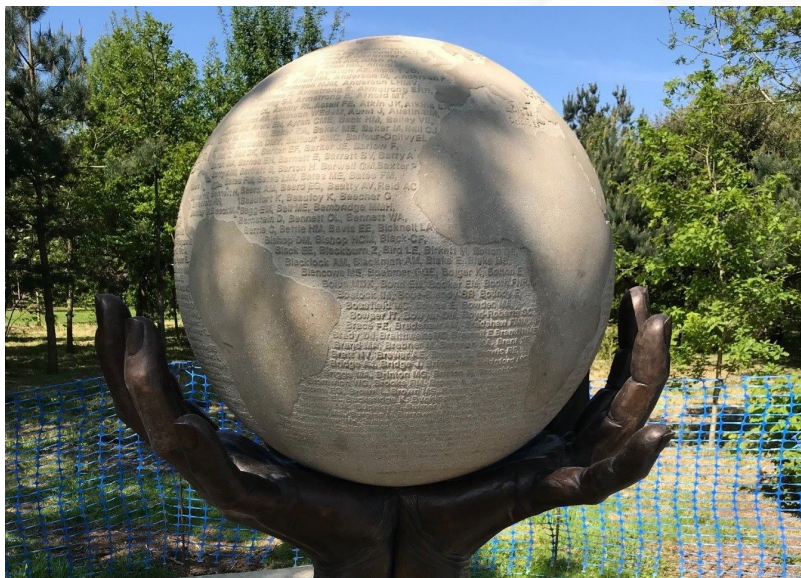
A chamfered chimney cap adds a little more detail, and assists with water runoff at the edges of the cap; this is especially useful once the chimney haunching has been added around the new chimney pots as helps prevent water sitting on the exposed ledge. These caps are all cut to order, and can be provided pre-cored or recessed for the installation of chimney pots depending on your proposed flue system.



Our ogee profiled chimney caps are our most popular option for larger, feature chimneys. The profiled element of the cap helps to compliment other masonry dressings on the property, and is often used in conjunction with feature stone bands or collars around the chimney stack

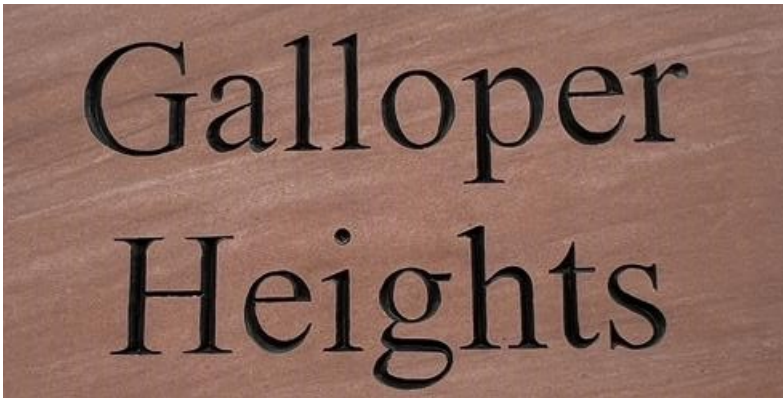


Stone Balls and Finials



We often produce bespoke stone balls and carved finials both by hand and using our CNC 5-Axis saws, and our team are always happy to talk through what we can and can't achieve in your chosen stone.

Feature Stones, Lettering and Memorials



Date Stones and Name Plaques



Our masons regularly produce bespoke date and name stones that are used as the finishing touch on a property. These can be wall mounted, or incorporated into other elements of the project such as gate posts or within an ashlar panel.

We generally recommend a minimum letter height of 40mm for lettering work, however this does depend on where your stone will be fitted. Many of our date stones have lettering at a height of between 75mm and 100mm high in order to ensure that this is visible from a distance.

Once your plaque or date stone has been lettered, we can also offer the option for painting each letter or leaving these as cut by our stonemasons. This is down to personal preference, however generally painted lettering is more visible from a distance whereas unpainted lettering is more of a subtle finish.

Times New Roman

Arial

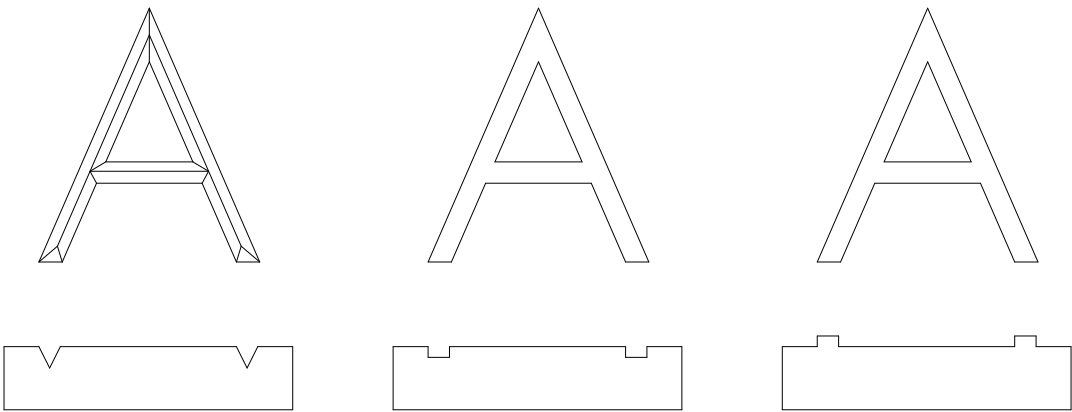
Calibri

COPPERPLATE GOTHIC

Lucida Calligraphy

We are able to cut and carve most fonts provided that the detail required allows us to cut into the stone with sufficient depth to make your lettering visible. Our most popular fonts for the plaques and name stones we produce are Times New Roman and Arial, however if you’ve seen something a little different that you would prefer just let us know and we will be happy to talk through what we can and cannot produce for you.

Aside from choosing a font, there are three main styles of lettering that we are able to offer. These are V-Cut, Square Cut and Raised Lettering. V-Cut lettering is the most cost effective and popular of these styles, and allows for a greater flexibility in the font and size of each letter. Raised lettering works best on larger feature panels, and is regularly seen as part of feature walls and larger decorative signage.

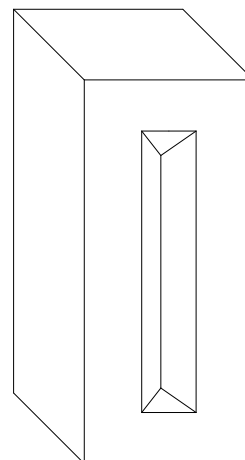


Arrow-Slit Gable Features



An arrow-slit window or inset gable feature is a great way to break up large areas of masonry or render, and these features are often used at the centre of a gable on a property where there is no requirement for a window or other stone feature. These are seen as a more traditional design, and are based on the narrow vertical windows often found on castles and forts where defensive archers would fend off potential attackers.

Many property developers like to use gable features to put their own stamp on a property, and our skilled stonemasons are able to carve logos and emblems as part of a gable feature in order to make your property stand out from the crowd.

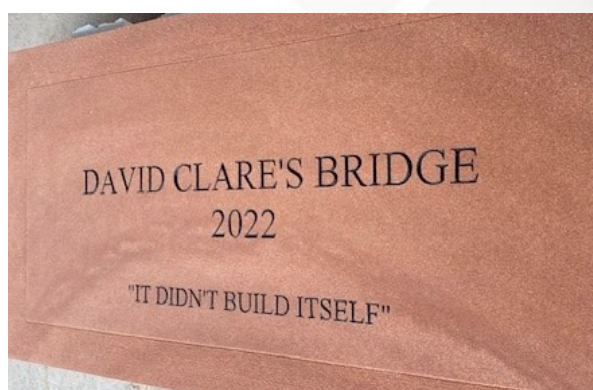


Memorial Stones



Natural stone is one of the most popular materials when choosing a memorial, and we pride ourselves on using locally sourced stone for all of our memorials. We believe that this is especially important where there are close ties with Cumbria and the Lake District, and many of our customers want to be sure that their memorial reflects this.

As all of our stones are cut to order, we are able to accommodate most sizes and styles of memorial stone. However we do recommend that, if your memorial is to be placed in a public cemetery or churchyard, that you double check what is and isn't acceptable before making any final decisions; many churches and cemeteries have strict policies around what is and isn't allowed, and this does vary between locations.

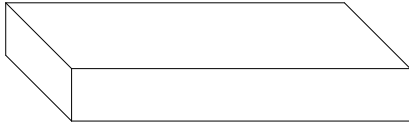


As we don't install memorials ourselves, we would always recommend speaking with a registered memorial mason to ensure that your memorial is correctly fitted. There are specific regulations and requirements for installing memorials in a public setting, and these must be adhered to in order to ensure that your memorial remains safe and secure once in place.

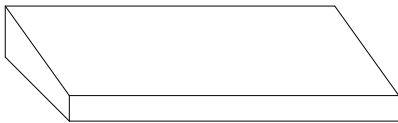
Gable Copings, Apex Stones and Ridges



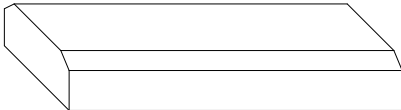
Gable Copings



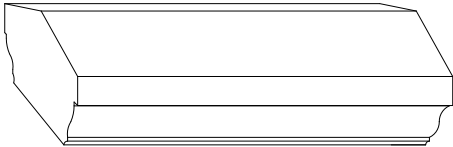
A flat coping is the simplest and most affordable option for gable coping. These stones can be cut with a drip to the underside, and are available in thicknesses from 40mm upwards.



A once weathered coping is designed to help shed water off the top of a wall in one direction, and is a popular option where water is being directed away from a property back onto the roof to drain into the gutters.



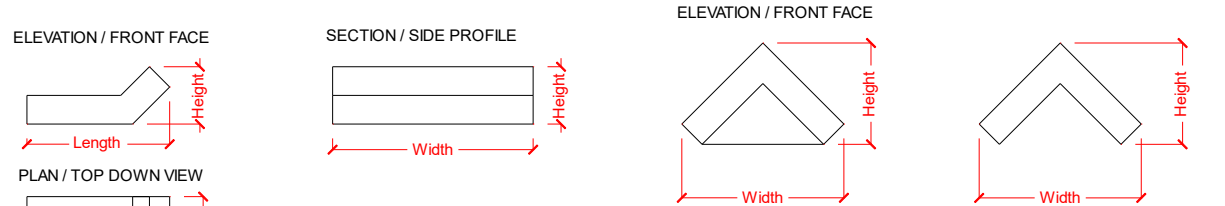
A twice chamfered coping is an effective option where a little more detail is required, and is another popular option for gable copings. Where a more substantial/larger stone is desired.



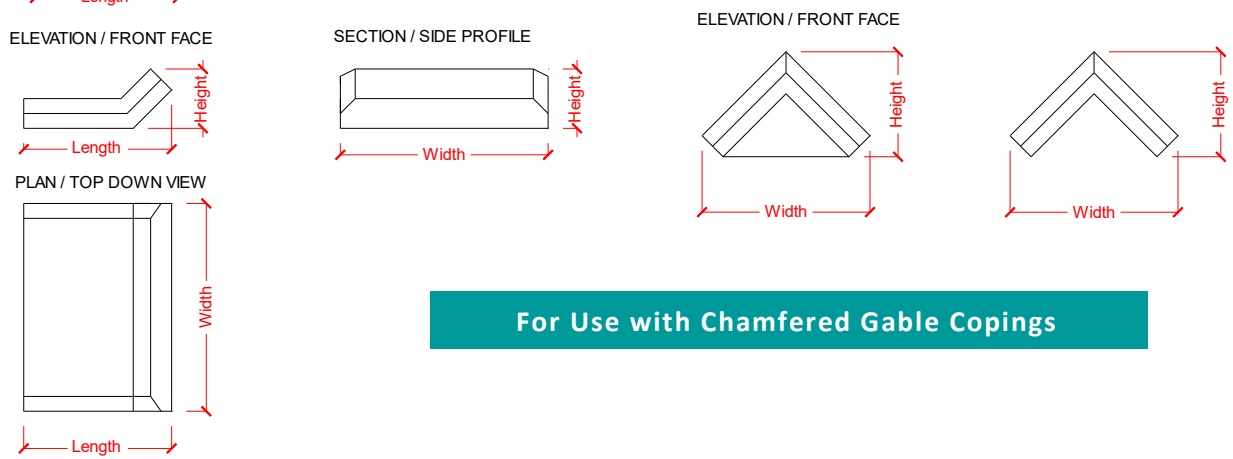
An ogee profiled and weathered coping is our preferred option where a more ornate detail is desired. These copings provide an eye-catching feature and are a great way to compliment other profiled masonry details on a property. The profile can be included on one or both sides of the stone depending on whether the back is visible.



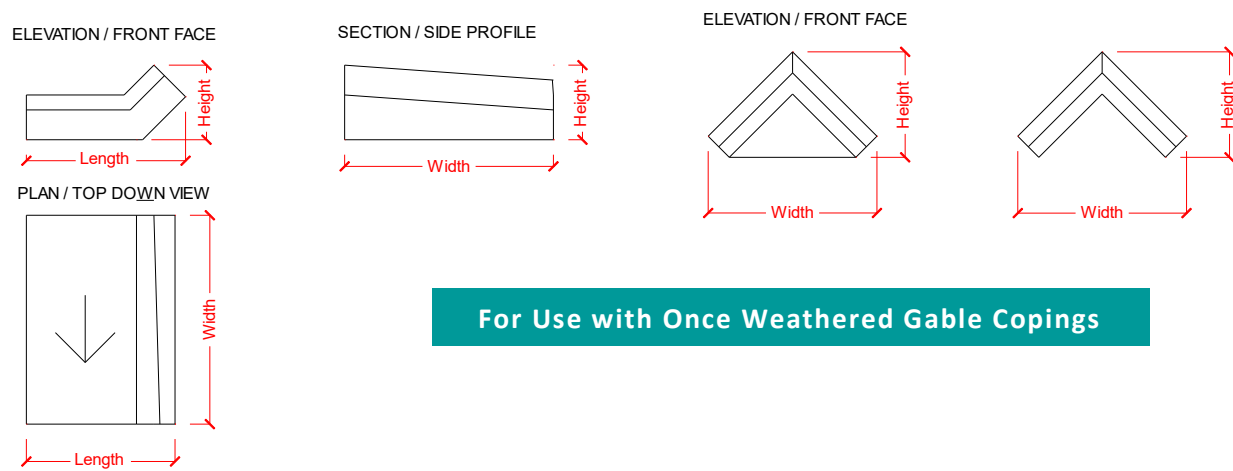
Gable Kneelers and Apex Stones



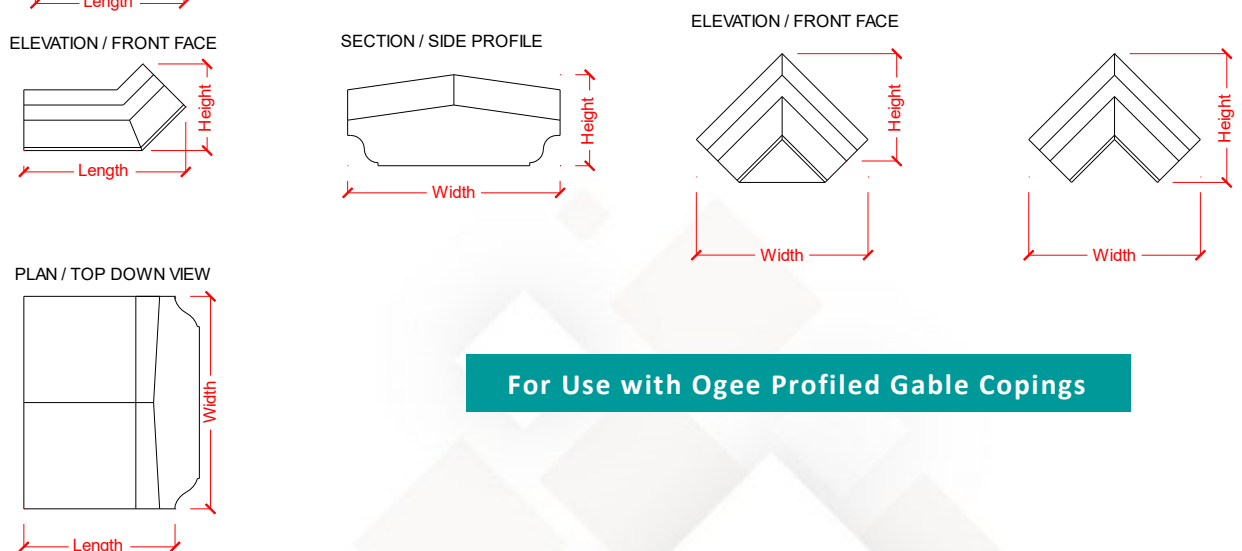
For Use with Flat Gable Copings



For Use with Chamfered Gable Copings



For Use with Once Weathered Gable Copings



For Use with Ogee Profiled Gable Copings

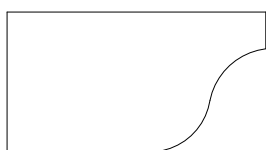
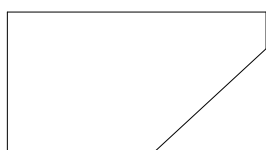
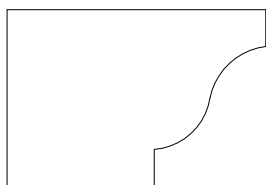
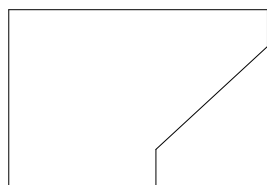
Ridge Stones and Corbels



Natural stone ridge tiles are a traditional alternative to concrete and clay ridges, and are often found on older stone buildings and barn conversions. We are able to cut our natural stone ridge tiles at angles and lengths to suit, and find that these are most popular on restoration projects and listed buildings where the material selection has to match the original materials used.



In order to manufacture new natural stone ridge tiles we need to know the pitch/angle of the roof, along with the length of the ridge tile and the projection of each side down each side of the roof. Ideally if a template of the original stone can be provided this allows for the most accurate replication during manufacture.

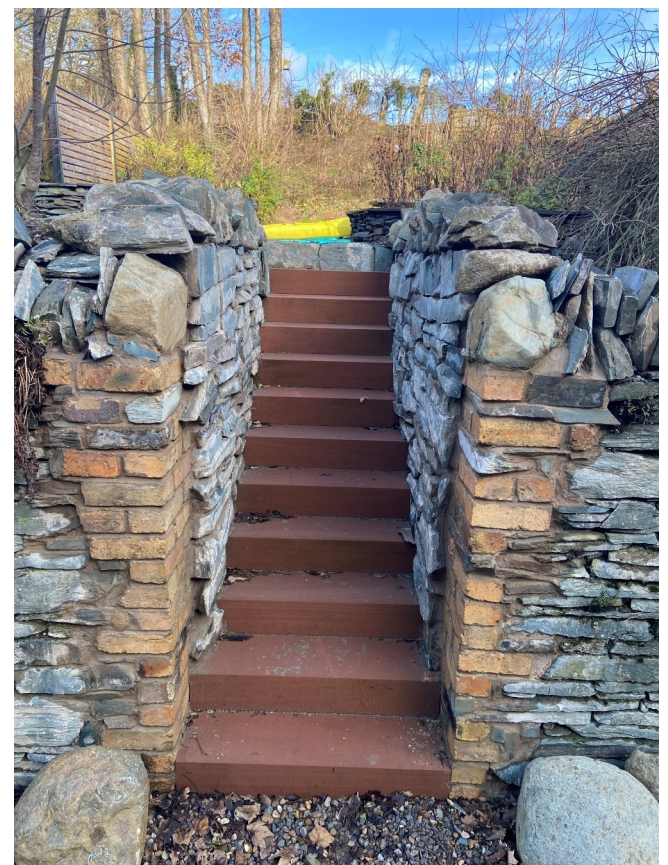
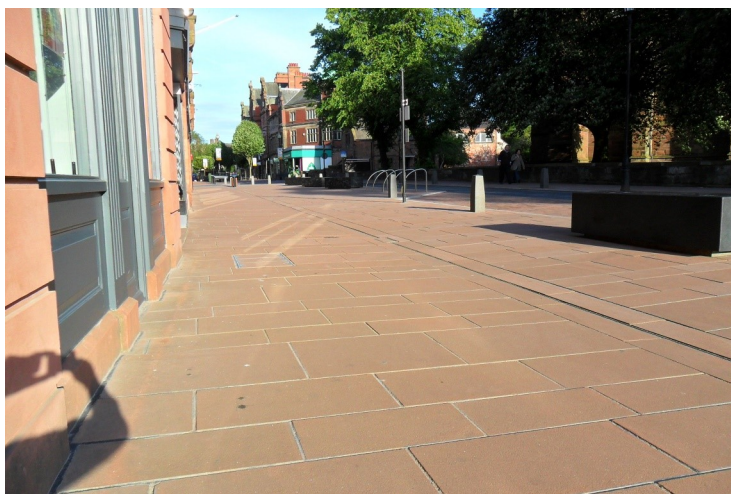


Stone corbels are often added to the bottom of a gable peak in order to provide a projecting feature at roof level. These can be situated below a kneeler stone, or independently depending on your property design, and we are able to cut and carve these in a wide range of different profiles depending on your requirements.

Quite often, the profile used is designed to replicate similar details from elsewhere on the building. For example, many customers like to have the same detail of corbel on a single story porch and at roof height to show continuity of design across the building.



Paving, Steps and Staircases



Paving and Flooring Options



Natural stone paving is a popular and hard wearing product found all over the UK, and thanks to the durability of natural stone is often used as part of large public realm landscaping projects in our towns and cities. At Cumbrian Stone we work with a number of natural stones that are suitable for paving, however we do also advise that not every natural stone should be used for this purpose.

We tend to recommend that our harder and more durable stones should be used wherever possible, as some stones are too soft, don't meet the required slip resistance properties or are generally more prone to wearing and erosion when laid in a busy area. Our team are always happy to talk through the options available, and can help point you in the right direction when selecting a suitable paving material for your project.

As a general rule, natural stone paving is cut to order. This has its advantages, as it means that you aren't tied to set sizes or patterns when designing your floor or patio. This helps to minimise waste and ensures a correct fit with minimal cutting required once the stone arrives with you.

There are also a selection of stock paving options available in some materials, however these generally come in set sizes to suit bulk manufacture, meaning that they are more readily available however may require a bit more work to alter and install to suit your project.

Common Paving Surface Finishes

Our natural stone paving comes with two main finishing options, smooth or sandblasted.

Whilst both options are suitable for paving, we usually recommend that paving and flooring being laid in an area with high foot traffic, or an area where the paving is more likely to become wet and more slippery, a sandblasted finish would be the preferred option. This is because the slightly rougher texture provides additional grip underfoot when compared to the smooth/hand rubbed option.

Alternatively, where a paving/flooring is to be laid in an area more prone to spillages or dirt, a hand rubbed finish is often the better choice as this is more easily cleaned due to the tighter surface grain of the stone slabs.



Smooth/Hand Rubbed



Sandblasted

Cobbles and Setts



Natural stone cobbles and setts have been used for centuries in the United Kingdom to create beautiful and durable pavements, driveways, and walkways. These small, irregularly shaped stones are typically made of granite, sandstone, or limestone, and are known for their durability and natural beauty. In the UK, many of the oldest and most historic streets are paved with natural stone cobbles, and they continue to be a popular choice for both commercial and residential projects today. While they require some maintenance to keep them looking their best, natural stone cobbles are a long-lasting and sustainable choice for those who value traditional craftsmanship and classic style.

Generally, natural stone setts and cobbles come in uniform sizes of 100 x 100mm, 150 x 100mm, 150 x 150mm and 300 x 150mm, however depending on your stone choice it may be possible to produce your cobbles to bespoke sizes to suit your project.



Porcelain Paving and Tiles



Porcelain paving is a man-made paving that is becoming increasingly popular due to its durability, low maintenance requirements, and aesthetic appeal. Porcelain is a type of ceramic that is fired at a higher temperature than traditional ceramic tiles, making it more durable and resistant to the elements. Porcelain paving is available in a wide range of colours, textures, and finishes, which allows for a variety of design options to suit different preferences and styles.

One of the primary advantages of porcelain paving is its durability. Porcelain is highly resistant to scratches, abrasion, and impact, making it ideal for high-traffic areas. It is also resistant to moisture, which makes it an excellent choice for outdoor areas that are exposed to rain, snow, or humidity. In addition, porcelain paving is easy to clean and maintain, and it does not require sealing or special cleaning products. These features make porcelain paving a cost-effective choice in the long run, as it requires minimal upkeep and is less likely to require replacement than other types of outdoor flooring.



Most porcelain paving is supplied at a thickness of 20mm, and as these units are man-made rather than cut to order they tend to be supplied in set sizes of 600 x 600mm and 900 x 600mm. Narrower plank style paving is also available in some styles at 1200 x 300mm, however availability does vary so it is always worth checking before starting your project design.



Steps and Staircases

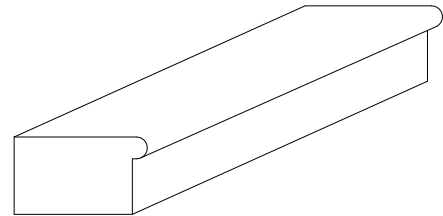
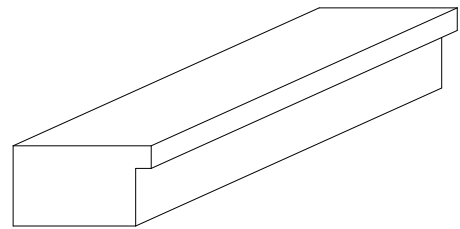
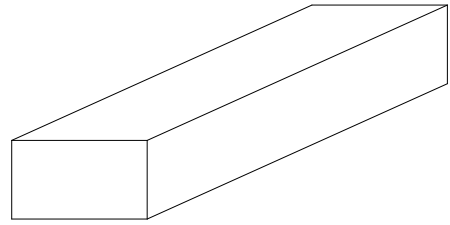


Solid Step Options

Our solid steps units are a popular option for both internal and external staircases, and are often used in conjunction with our paving and feature porticos as part of a wider project.

Whilst all of our steps are cut to order meaning that we can accommodate most designs and profiles, we normally produce steps in five main styles. These are square section, pencil rounded, quarter rounded, square rebated and bullnosed steps.

Depending on your project, these steps may need to be cut to specific sizes to meet building regulations. This is because there are minimum and maximum limits for the rise of each step and the tread available to ensure these are safe for use. Your architect should be able to advise on the current regulations for steps and staircases to help ensure your design is suitable.

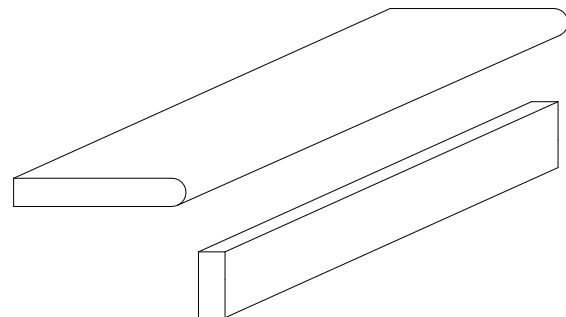
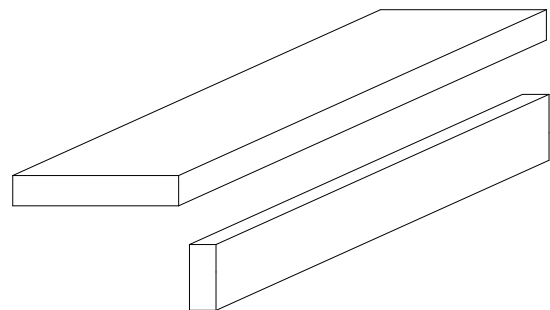


Separate Treads and Risers

On many projects, the bulk of the staircase is formed using cheaper building materials such as brick or concrete, meaning that the steps may only require cladding with stone in order to give the look of a solid stone staircase.

On these projects, we can produce individual treads and risers at a thickness of 50mm or more to suit your staircase, and these can then be overlaid and fixed in place to complete your project.

This option is more cost effective than purchasing solid step units, however the thinner stones do mean that we may need to make longer units in multiple sections in order to ensure that these do not break during production, transport and installation.



Columns, Feature Porches and Porticos



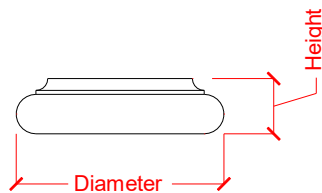
Columns and Pillars



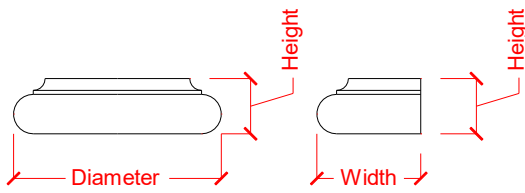
Portico columns and the associated carved masonry details come in a wide variety of styles and sizes, and most of the porticos we produce are bespoke designs made to match the wider aesthetic of a property. As all of our stones are cut and carved to order, we are able to accommodate most details and designs within our production process, and can work with you to find the style that best meets your requirements.

These examples show the most popular portico details that we use as a starting point for our designs, each of which is fully customisable.

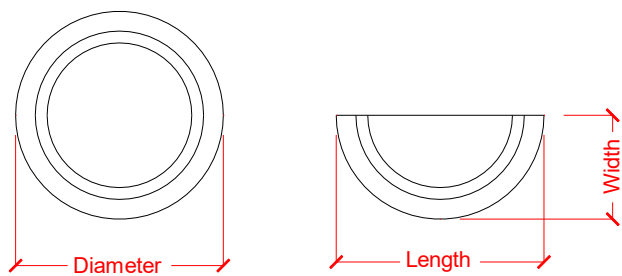
ELEVATION / FRONT FACE



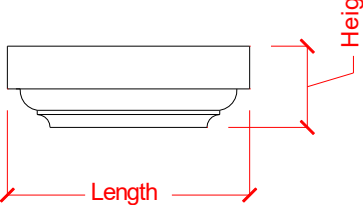
SECTION / SIDE PROFILE



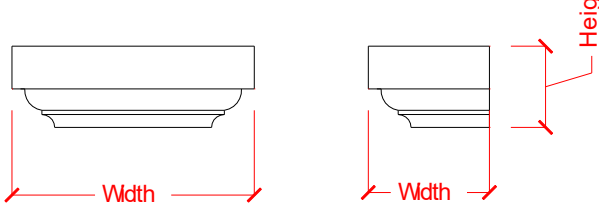
PLAN / TOP DOWN VIEW



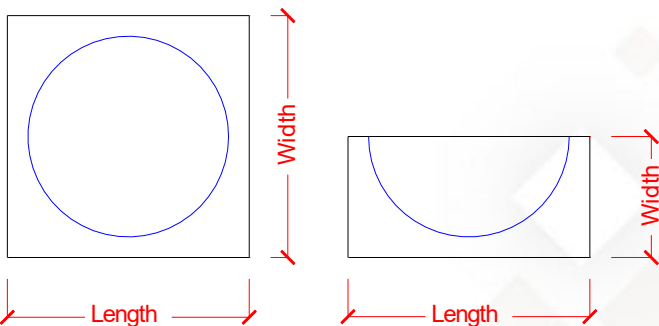
ELEVATION / FRONT FACE



SECTION / SIDE PROFILE



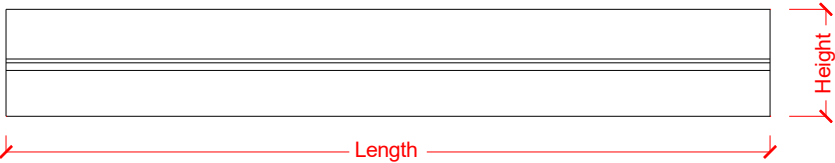
PLAN / TOP DOWN VIEW



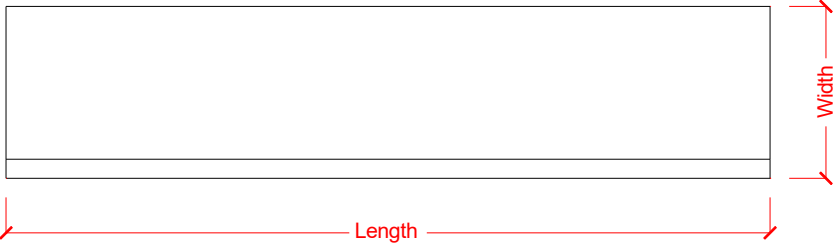
Popular Canopy/ Pediment Example



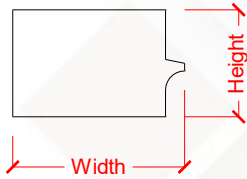
ELEVATION / FRONT FACE



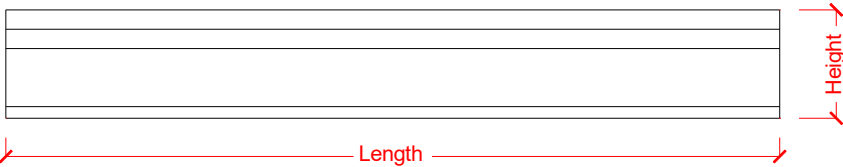
PLAN / TOP DOWN VIEW



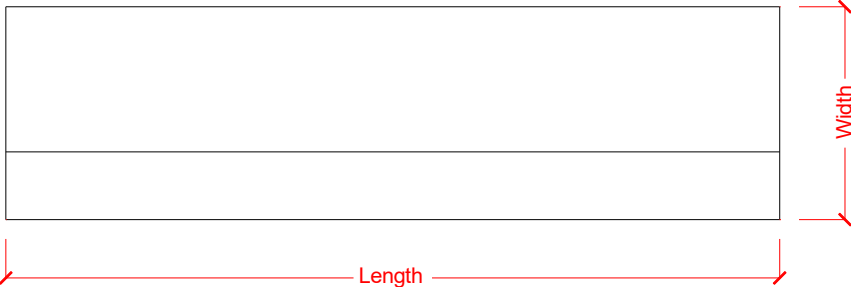
SECTION / SIDE PROFILE



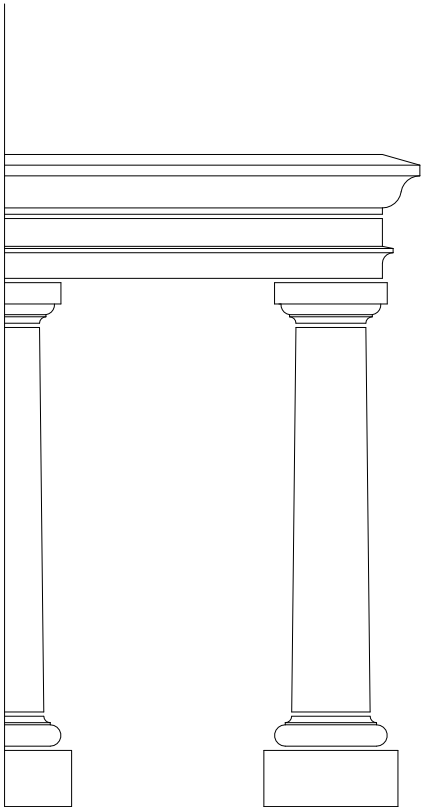
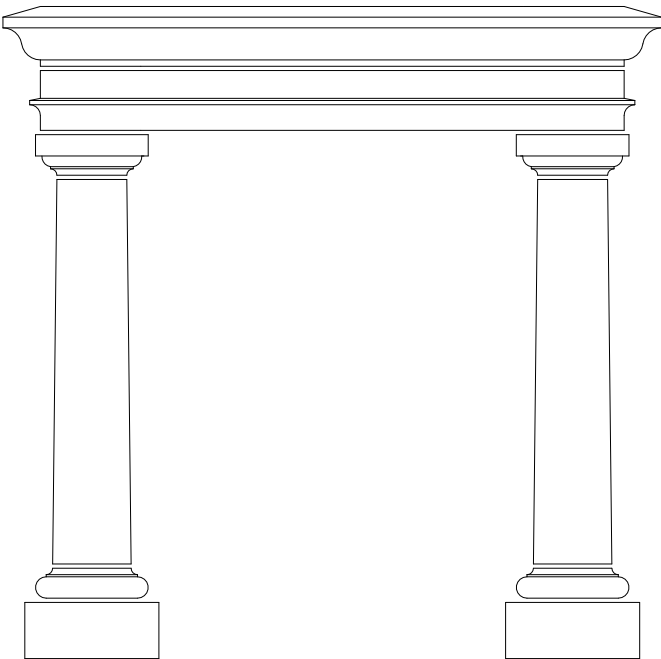
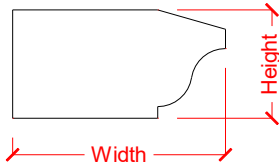
ELEVATION / FRONT FACE



PLAN / TOP DOWN VIEW



SECTION / SIDE PROFILE



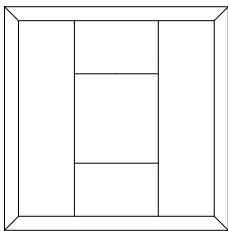
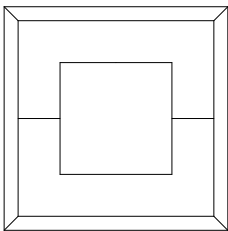
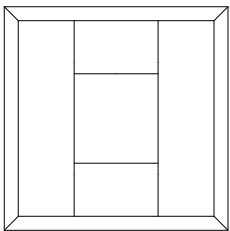
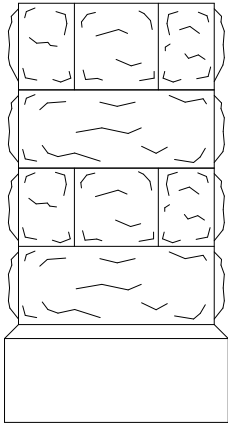
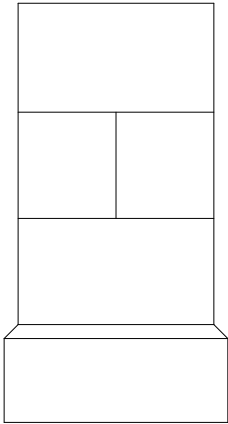
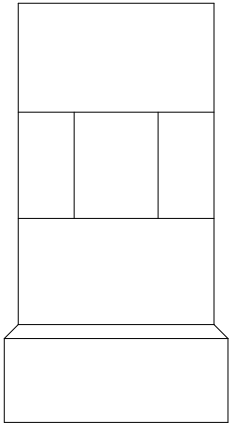
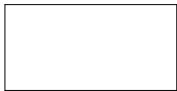
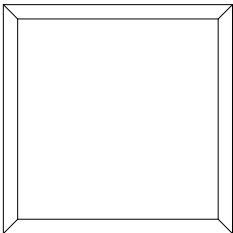
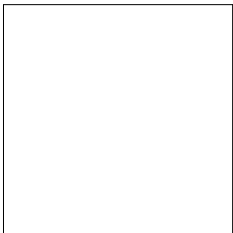
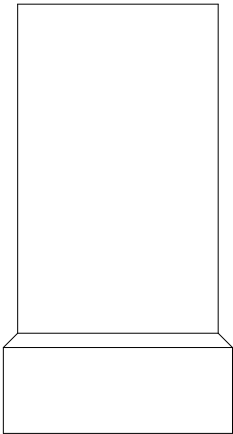
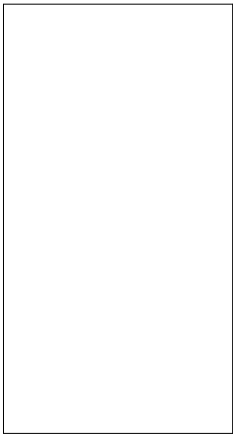
Gateposts and Entrance Pillars



Popular Gatepost/Entrance Pillar Designs



Gateposts come in a wide variety of styles and sizes, ranging from square or tapered monolith blocks to large ornate pillars designed to compliment other masonry elements on a property. The below examples show some of the more popular styles of gatepost we produce.



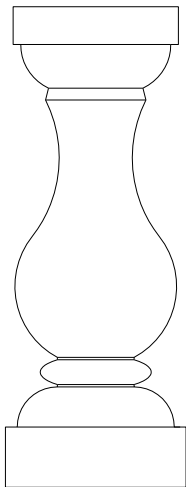
Balustrade



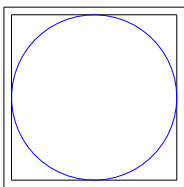
Popular Baluster Profiles



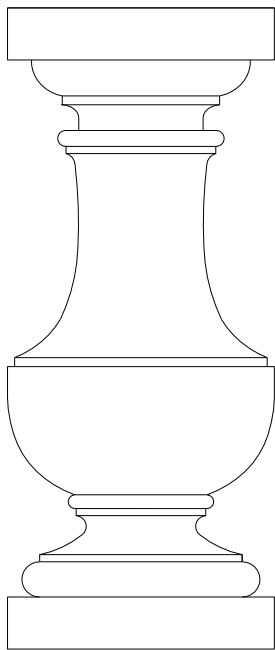
ELEVATION / FRONT FACE



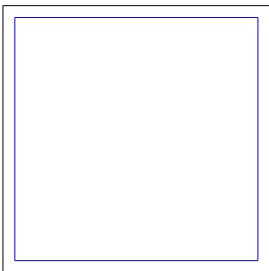
PLAN / TOP DOWN VIEW



ELEVATION / FRONT FACE

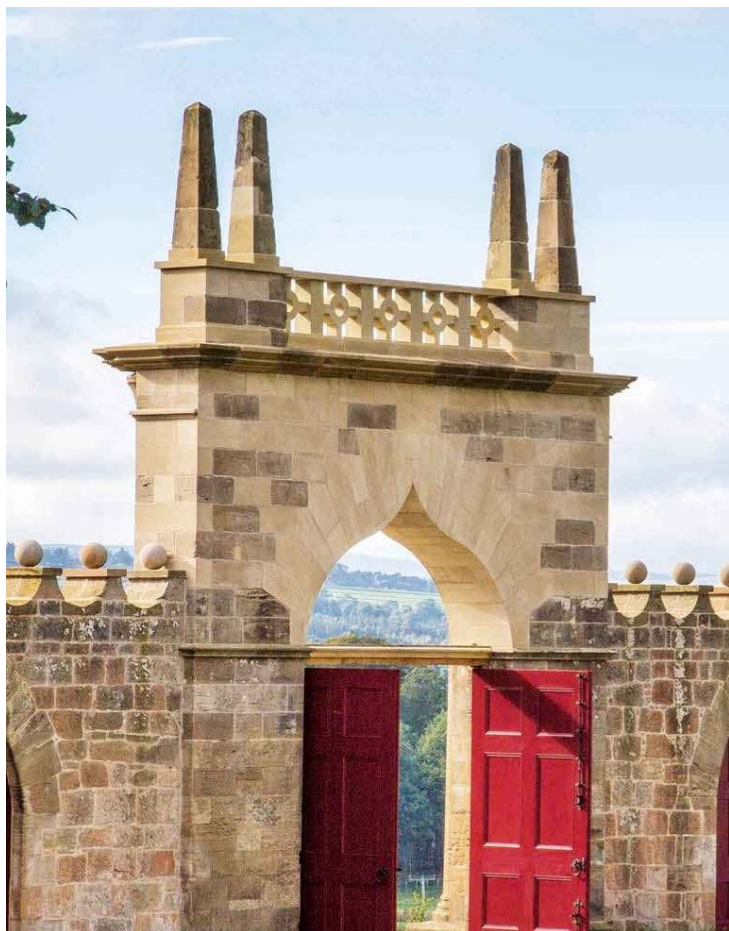


PLAN / TOP DOWN VIEW



There are two main options when cutting and dressing natural stone balusters. These can either be circular/turned on a lathe to give a round profile with a square top and base, or can be cut on a profile saw to give a square baluster. As all of our baluster stones are made to order, we are able to alter each design to fit the aesthetic that you require, and we often take templates from existing balusters in order to replicate the original details as part of our specialist repair and restoration works.

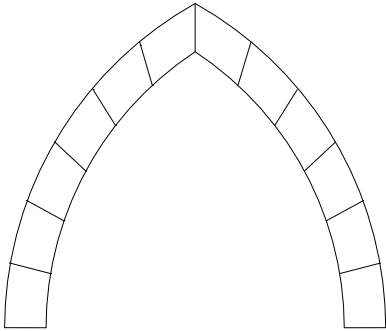
Bespoke Arches



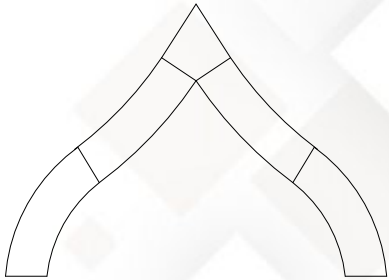
Popular Arch Styles



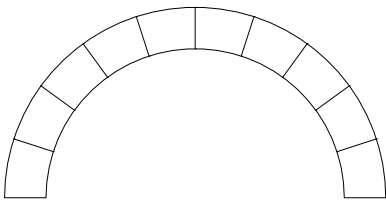
Lancet



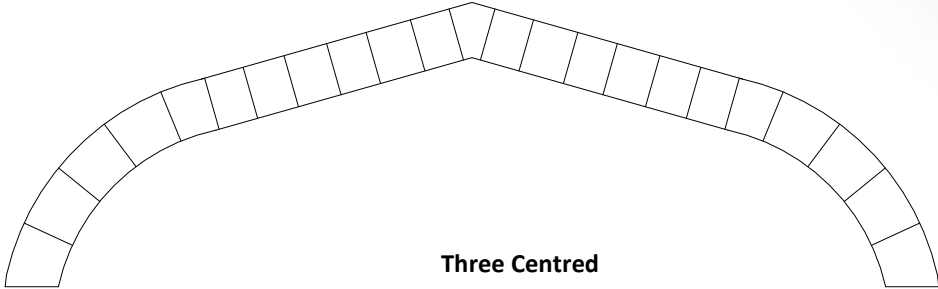
Ogee



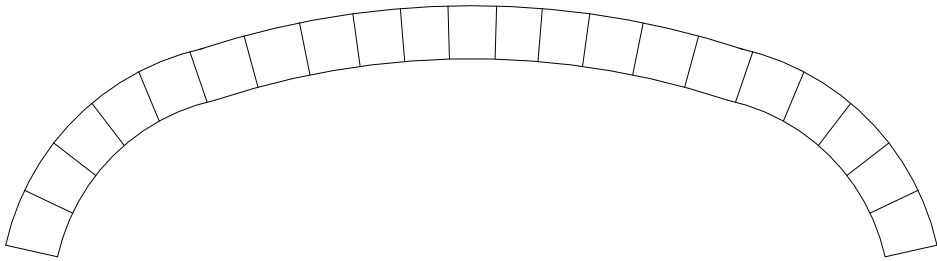
Semi-Circular



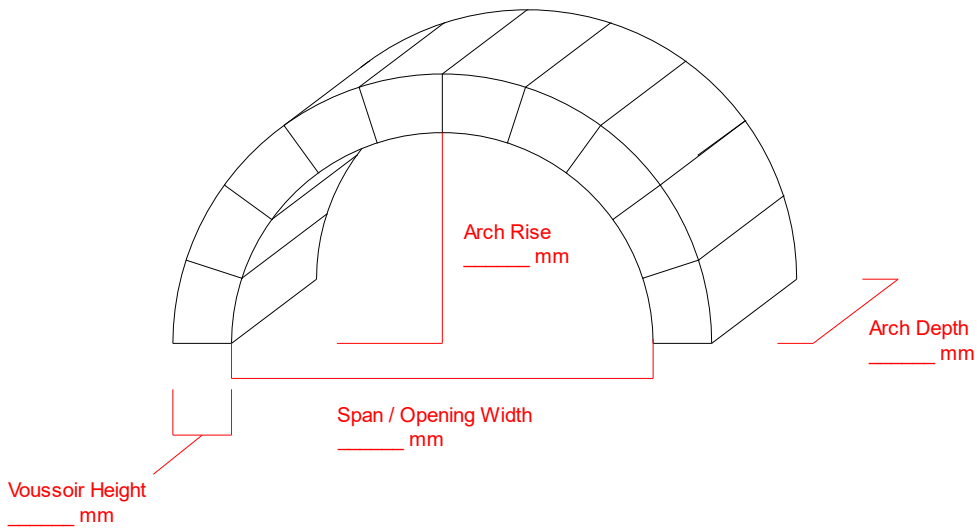
Tudor



Three Centred



In order to cut your new natural stone arch, we first need to draw out each of the stone components in order to ensure that these fit together correctly. To begin the design process, along with the style of arch you are looking to create we also need to know the overall span of the arch (how big the opening beneath the arch is), the rise of the arch (how high the arched opening is from top to bottom), the height of the visible stone face you would like to see (voussoir height) and the overall depth of the stone from front to back (arch depth).



Bespoke Fire Surrounds and Hearth Stones

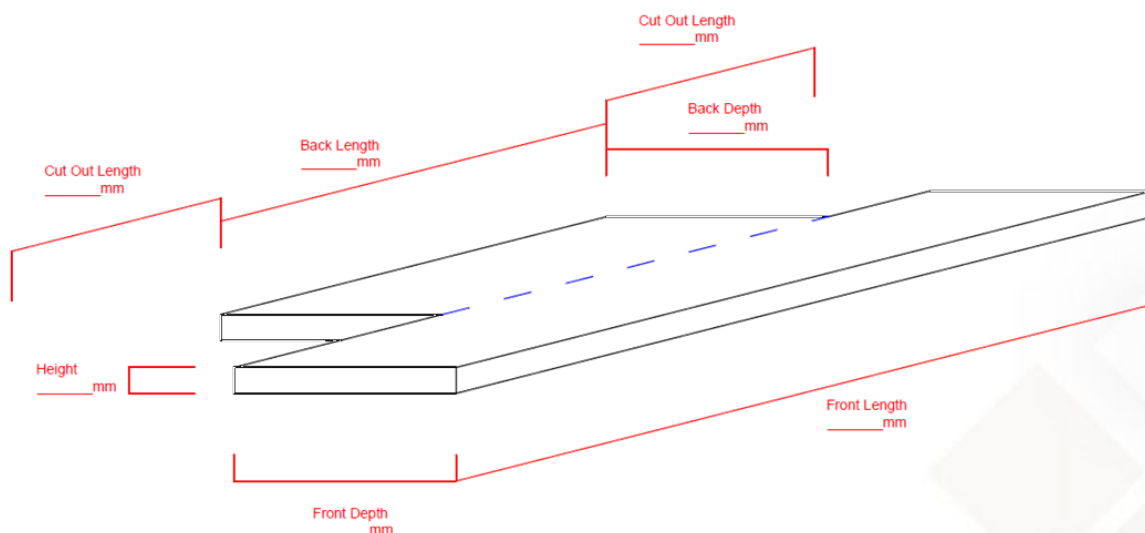


A hand carved, natural stone fire surround can be a stunning showpiece in almost any setting, and at Cumbrian Stone our team of skilled masons are able to produce almost any style and design in our range of natural stones. Our team will work closely with you to agree the best material and final design of your new surround, and whilst we don't install ourselves we are able to offer helpful tips and advice to make sure everything goes to plan.

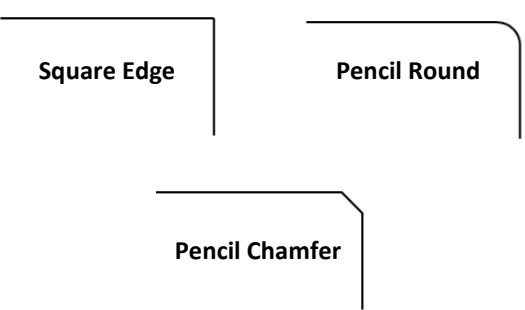
Not sure where to start? Then why not take a look at some of our most popular designs for inspiration.



A natural stone hearth is a great way to compliment your fire surround. If you are looking for a bespoke size/shape hearth or a stand-alone hearth to suit an existing fire surround in your property we are able to make these to order in any of our natural stones.



There are a number of options when it comes to selecting a finish for your natural stone hearth. The first of these options is the finish to the exposed edges of the hearth; this can be left square, rounded or chamfered depending on your preference.



All of our fire surrounds are cut and carved to order, meaning that we are able to adapt any design to fit with the sizes and style you require to suit your room. If you've seen a design elsewhere that you would like us to replicate in one of our stones then feel free to send us a picture and our team will be happy to assist.

Made to Measure Counter Tops and Worktops

Whilst the majority of our natural stones aren't suitable for counter tops and worktops, there are several options in slate and granite that prove popular across the UK. Slate and granite worktops are seen as a luxury option when compared to cheaper man-made products, and as each unit is cut to order from large stone slabs these can be manufactured to suit the exact sizes and details required.



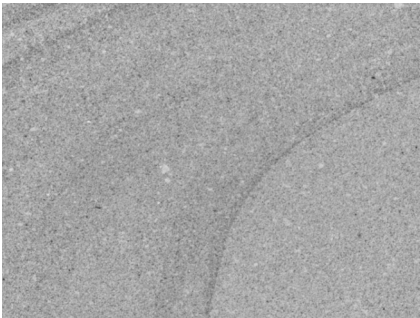
Surface Finishes and Tooling



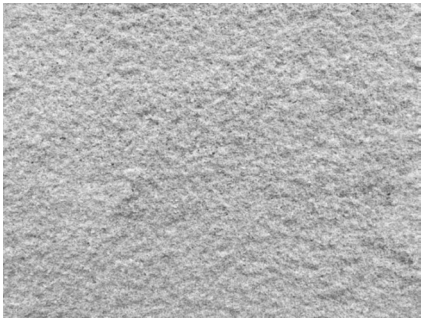
Aside from our walling stones, all of our finished stone products are supplied with a smooth, rubbed finish as standard. This removes any saw marks from the stone and leaves a flat, smooth or honed surface. Depending on the style you are looking to achieve and the area of stone to be covered, other surface finishes can be applied to natural stone units at an additional charge.

A selection of the most popular surface finishes available are as follows:

Mainstream Surface Finishes - Available on Most Projects



Honed/Rubbed



Sandblasted



Rock Faced

Machine Textured Surface Finishes - Available on Most Projects



Etched/Light Surface Tooling



Machine Dressed

Specialist Surface Finishes - Available in Small, Limited Quantities Only



Stugged



Hand Dressed



Broached



Punched



Sparrow Pecked

Selecting a Building Contractor



At Cumbrian Stone we supply our high-quality sandstone products to projects across the UK to be installed by our customers or their builders. Cumbrian Stone do not offer a fixing service for our stone, however we do have some guidance you can use if you are looking for a builder to fit your new sandstone products.

Always select a building contractor who has experience in working with natural stone

Natural stone is a popular building material for projects of all styles and sizes, however building with natural stone is something that not every builder is used to. We would always recommend speaking with your preferred builder and asking to see examples of their work with natural stone so that you can be confident in their ability before they start work.

Ask around for recommendations

In the construction industry one of the best marketing tools is word of mouth. We find that if one of our customers has had a builder come and do a great job then they are always happy to recommend them to others.

Get a quotation before appointing a builder

Once you think you have selected your preferred building contractor ask them for a quotation to carry out the work on your property. This will let you know how much your project is going to cost before you commit, helping to avoid any nasty surprises once work commences. Always be sure to double check if everything is included in your builder's price and ask if they foresee any additional costs that may arise before they begin.

Keep in regular contact with your builder as work progresses

Speaking with your builder on a regular basis throughout your project will ensure that you are aware of everything that is required, including any unexpected problems your builder may be facing. This will allow you to help solve any issues before they lead to delays or additional costs that may be avoidable. A good example of this is making sure your builder has enough materials to finish the job, as if you are supplying the materials and the builder runs out unexpectedly they may charge for any down time waiting for additional materials to be delivered.

If you are unhappy with your builder's work, let them know

In the unfortunate circumstance where you are unhappy with your builder's work, always let them know as soon as possible. This will give you the opportunity to talk through any problems and issues, hopefully allowing you to resolve any problems before too much damage is done. A good builder will always be happy to talk through any concerns you may have, and it is important to always remember that you are the one paying for the work once it is complete.

Don't hesitate to ask for advice

If you are uncertain of anything on your project then don't hesitate to ask a professional for advice. Any good supplier or contractor should be happy to point you in the right direction to make sure your project gets off to the best possible start, or for further peace of mind you can speak to an architect or structural engineer who you can then appoint to act on your behalf. It is often worth investing in a strong team at the start of a project to ensure that everything runs without any problems and you aren't left with any issues or unexpected costs once work is completed.

Building with Natural Stone



Many of our customers build their natural stone products themselves. This can be a great way to save money, however it is important to make sure that you will be happy with the end result. We have put together the following guidance for building with natural stone which may assist you with your project:

Joint Sizes

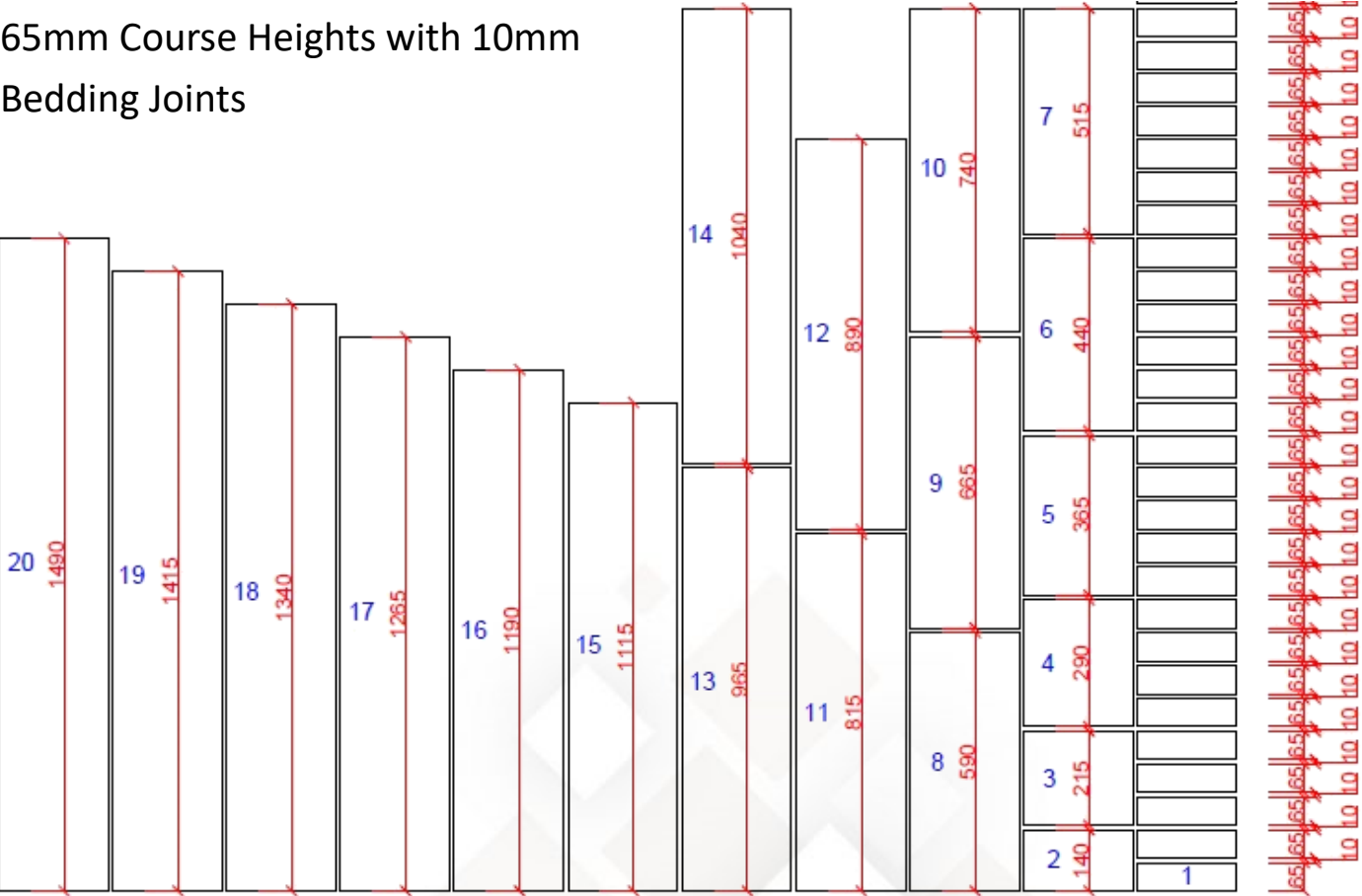
It is important to know the mortar joint sizes that you are working to before you order your stone, and you should be aware of this when building work begins. Most builders and bricklayers work to a 10mm wide joint between stone units (our pitched faced walling is designed to work with a 10mm joint as standard), however narrower joints are also a popular option when building with natural stone. If you let Cumbrian Stone know the joint size you are working to when you order we can design your stone units to suit the joint size you require.

Be Aware of Unit Weights

By nature, natural stone is a heavy, dense material. Always be conscious of the weight of any stone you are fitting and follow a safe procedure for handling stone units at all times. The use of lifting aids can minimise the risks posed by manual handling and we would always recommend their use if you are unsure whether a stone can be safely handled.

As an approximate guide, we work on the basis that sandstone and limestone weighs between 2,000kg and 2,500kg per m3, so the unit weight can be calculated by multiplying the length, width and height of the stone in metres by the higher figure of 2,500. For example. A stone at 440mm x 100mm x 215mm would calculate as 0.440 x 0.100 x 0.215 x 2500 = 23.65kg. Slate and granite are generally a lot heavier again at up to 3,200 kg per m3.

65mm Course Heights with 10mm Bedding Joints



The Weather

The weather is an important factor when building with natural stone. As many stones are porous they can draw water out from the mortar during dry conditions or hold excess water during wet conditions. This can lead to cracked joints due to drying out or failed mortar due to too much moisture. We recommend covering newly built stonework and controlling the mortar curing time by regularly dampening the wall in dry conditions or keeping the rain off the stone in wet conditions.



Mortar Staining and Paint Splashes

As natural stone is generally a porous material, any mortar or paint splashes on the seen face of new stone units can be drawn into the stone. This makes them incredibly difficult to remove once they have dried, and we would always recommend cleaning any splashes or spills from the face of the stone immediately to minimise the risk of staining. If possible, we would always advise that you protect your new stone components against spills and splashes during construction work (in the same way you would protect a new carpet, new windows and finished worktops).

Many builders will leave these splashes and try to remove them at the end of a project using brick acid or stone cleaner; this isn't ideal as these products can damage the stone face and don't always remove the staining as intended.



Handle With Care

We always recommend that you handle your stone units with care. Just like any building material, stone can be damaged if knocked or dropped, and chipped edges can spoil the look of a finished project. At Cumbrian Stone we always protect our finished stone units with additional packaging to minimise the chance of damage, and we would recommend that the same is done to protect built stone units once finished.

We often speak to customers who have fitted their stone perfectly only for it to be damaged by other construction work happening around the building site due to lack of protection.

Although natural stone can be repaired using colour matched mortars and resins, the finished result is never as good as it would have been if the stone was not damaged in the first place.



Building with Natural Stone



Mortar Use

The majority of builders use a cement-based mortar for building their natural stone, although it is also possible to use a lime-based mortar if a breathable joint is required. Research the type of mortar you want to use on your project and make sure that it is the best choice for the work you are carrying out before work commences as it is difficult to dismantle and remove mortar once the stone is built. It is also important to keep mortar off the seen face of the stone as this can stain and is difficult to remove.

Cement Mortar VS Lime Mortar

Natural stone is often built with both cement mortar and lime mortars and whilst both can be used for most purposes, the best choice for your project depends on several factors including the overall wall construction (cavity or solid wall), environmental conditions (especially damp or wet areas), and the materials being used.

Cement Mortar

Cement mortar mixes are typically made with Portland cement and fine grain sands that are typically readily available from most builders merchants. Cement based mortars are quick setting, inexpensive and very strong, and working with cement mortar is a lot less labour intensive than working with lime mortar.

Cement mortars are:

- Non-Breathable
- Non-Flexible
- Non-Porous

Lime Mortar

Lime mortar comes in many forms, and there isn't a one-size fits all option when working with lime. The sand used in the mortar mix also depends on the type of project and the material being built, and generally lime mortar requires a lot more attention and care than cement based alternatives. This makes using lime mortar a more expensive option.

Lime mortars are:

- Breathable
- Flexible/Self Repairing
- Porous/Breathable



Red Sandstone with a Cement Mortar Construction



Buff Sandstone With a Lime Mortar Construction

Working with Cement Mortar

Cement mortars are generally produced using a Portland cement and fine grained sand, mixed to a suitable ratio for the intended purpose. Along with sand and cement, many builders also add in a plasticiser or other additives to give a little more flexibility to the mortar before it sets. The addition of a plasticiser can also make the mortar set stronger and be more frost resistant.

Common cement mortar ratios are as follows:

1 part cement / 4 parts sand - general building/masonry

1 part cement / 3 parts sand - repointing and repairs, retaining walls and paving

When working with cement mortar it is important to ensure that the mortar is not stronger than the material being built, as this can accelerate the deterioration of the masonry over time. If you aren't 100% confident in mixing your own mortar it is possible to buy a ready-mix mortar to suit your project, however this does cost more than mixing your own.

Working with Lime Mortar

There are 2 basic types of lime for use in lime mortars:

Non-hydraulic limes- also known as lime putty, have a very slow setting process taking several weeks to gain a basic working strength. These are wet products whose setting is dependent on air, not water. The lime reacts with carbon dioxide in the atmosphere to produce a hardened calcium carbonate. It can be stored for years in an airtight container or underwater thereby preventing the reaction with carbon dioxide.

Hydraulic limes – are dry powders that react and set with water. They therefore must be stored in a dry environment to prevent setting before use due to reaction with atmospheric moisture. Natural hydraulic limes (NHL), are classified in three ascending numerical grades of compressive strength at 28 days and 91 days, expressed in N/mm², as:

NHL 2 - suitable for internal applications, and in areas where conservation is the primary concern (soft/deteriorating stone and brickwork)

NHL 3.5 - suitable for general building with moderately permeable masonry materials. The most common selection when working with hydraulic lime.

NHL 5 - stronger and faster setting. More suitable for dense, durable or impermeable materials with severe exposure to weather or water.

When choosing a lime mortar, it is important to remember that the strongest mortar isn't always the best choice. Softer mortars are more accommodating to movement and thermal expansion, and due to higher breathability softer lime mixes protect the masonry from erosion over time. When selecting a lime mortar it is important to strike a balance between the hardness of the mortar and the benefits of using a softer lime mortar to ensure you select the best option for your project.

Protecting, Sealing and Cleaning Natural Stone



Protecting and Cleaning Natural Stone

Natural stone is a natural product that will age and weather over time. This can change the appearance of your stone, and the environment the stone is located in can have a significant impact on how the stone ages. For example, external areas with a large number of trees and plants can cause algae and lichen to grow on the face of the stone causing a green appearance, whereas areas adjacent busy roads may be discoloured by carbon deposits causing the stone to darken. This is a natural process that cannot be prevented, however it can be slowed through the application of chemicals and regular cleaning.

Many customers are happy to let their stone age naturally without intervention, however if you do wish to clean your natural stone then Cumbrian Stone would recommend the use of a low-pressure cleaning system to remove any surface deposits without damaging the face of the stone.

If you do choose to apply chemicals to your stone to aid in the cleaning and maintenance of the units, we would always recommend that they should be trialled in an inconspicuous area prior to any extensive application. The most common chemicals used to clean natural stone are biocides as these kill algae and lichen spores and slow the appearance of the green discolouration in damp areas. More aggressive chemicals such as brick acids should only be used as a last resort, and only after testing to ensure there are no unwanted side effects.

When using chemicals on natural stone it is always important to follow the manufacturer's instructions. Always pay special attention to the disposal of chemicals applied to your building and remember that any chemicals applied are likely to be washed off the wall and onto the surrounding areas so be sure to protect these if required.



Algae and lichen being removed from a stone building using a low-pressure steam based system.



A sandstone pillar cap before and after cleaning. A chemical was applied to the stone to remove the black discolouration that had started to appear.

Sealing Natural Stone

It is possible to protect natural stones by using a stone sealer to treat the exposed surface of the stone. This will provide limited protection against liquid spills and ingress from driving rain if applied correctly, however it is important to be aware that sealing stone does not usually offer complete protection against marking and stains.

There are a number of different stone sealers available for treating natural stone, and whilst we would not expect any stone sealers to have an adverse effect on our stones, Cumbrian Stone would always recommend that any sealers are tested on a small inconspicuous area of the stone to make sure they don't react unexpectedly.

Stone sealers for use on natural stone can be divided into three different categories:

Non-Breathable Sealers

A non-breathable sealer will seal the treated surface of the stone against liquid penetration. Any moisture within the stone will also be unable to escape through the treated face of the stone. These sealers are ideal for fire surrounds and internal stone features.

Breathable Sealers

A breathable sealer will seal the treated surface of the stone against liquid penetration. Any moisture within the stone will be able to evaporate through the face of the stone making these sealers ideal for new build construction where there is a risk of water penetration into the cavity which may need to escape through the external walls.

Wet-Look Sealers

Wet-look sealers perform the same job as a standard sealer, however they also give the stone a darker appearance which makes the stone look wet all of the time. Structurally there are no advantages to a wet-look sealer over a standard sealer, however a wet look may be more aesthetically pleasing depending on your project.

It is not always necessary to seal your natural stone, and the majority of stone buildings are left untreated to age and weather naturally. If you do decide to apply a stone sealer we would always recommend following the sealer manufacturer's guidance for the application of their product.



Water applied to a natural stone tile treated with a non-breathable sealer on the right compared to an untreated sandstone tile on the left.

Repairing Natural Stone



Unfortunately it is inevitable that natural stone components get damaged, either during construction work or through general wear and tear over time. Depending on the nature of this damage there are different options for repairing natural stone to keep your property looking its best.

Colour Matched Mortar and Resin Repairs

Ideal for small surface repairs, chips and cosmetic damage, a colour matched mortar repair consists of dressing the stone surface back to a solid base, then applying a colour matched, lime based mortar or resin repair compound to rebuild the profile or face of the original stone. The compound for these repairs can be supplied as a pre-made stock colour, or alternatively you can have a sample of your stone analysed and an accurate match produced for your project. Mortar repairs tend to have a lifespan of between 5 and 10 years depending on their location and exposure to the elements.



Pins and Structural Repairs

For larger cracks and damage that may impact the structural integrity of the stone, structural pins or bars can be drilled and inserted into the stone in order to provide additional support prior to a mortar repair being carried out. These repairs are common in the restoration sector, however we would always advise that the source of the material failure is identified and addressed rather than relying on a repair to prevent further deterioration of the stone components.



Indent Repairs

An indent repair involves cutting out the damaged section of stone and inserting a new piece that has been cut and dressed to match the original stone unit. This is a common technique used in repair and restoration where parts of the original stone are still in good condition and the replacement of the whole unit cannot be justified.



Stone Replacement

The last option for repairing damaged natural stone is to remove and replace the damaged unit with a new stone. This involves the careful propping /supporting of any surrounding masonry, and may require sections of the wall to be dismantled and rebuilt to allow the original stone to be replaced. Whilst often the most expensive option, replacing the stone with new often offers the best value for money over the lifespan of the repair.



For all stone repair options, Cumbrian Stone would always advise that you consult a professional prior to carrying out any work. If you have any concerns around the structural integrity of your property, or are planning to undertake repair work of a structural nature, you should always consult a structural engineer to ensure that adequate supports are in place before any work is carried out.

Building Regulations and British Standards



Just like other masonry products such as brick and block, there are several building regulations that apply to natural stone in the UK. These are put in place to ensure the safety, durability, and energy efficiency of buildings, and are updated on a regular basis as methods and technologies change within the construction industry. At the time of writing some of the most important regulations that apply to the natural stone element of a build are:

- Building Regulations Approved Document A: Structure: This document provides guidance on the structural design of buildings and specifies the minimum thickness and support requirements for natural stone walls.
- Building Regulations Approved Document B: Fire Safety: This document specifies the fire safety standards that natural stone must meet, including its fire resistance and spread of flame properties.
- Building Regulations Approved Document C: Site Preparation and Resistance to Contaminants and Moisture: This document provides guidance on the moisture resistance and damp-proofing requirements for natural stone buildings.
- Building Regulations Approved Document E: Resistance to the Passage of Sound: This document specifies the sound insulation requirements for natural stone buildings to ensure a comfortable living environment.
- Building Regulations Approved Document 7: Material and Workmanship: This document specifies the standards for any materials and skills used on a project.
- Planning and Listed Building Regulations: These regulations apply to natural stone buildings that have historical or architectural significance and require any alterations or renovations to be carried out in a manner that preserves their unique features and character.

Compliance with these building regulations is essential to ensure that new buildings are durable, energy-efficient, and meet the required standards for their intended use. A full list of up to date building regulations, along with historic versions and further guidance is available from the UK Government website. It is important to stress that ultimately it is the property owner's responsibility to ensure that their building meets the current standards, so if you or your builder is unsure about the current regulations then we would always recommend consulting with an architect, building surveyor or structural engineer in order to ensure that your project meets the minimum requirements set out in these documents.



In addition to the current building regulations, there are also many British Standards that apply to natural stone. These are designed to ensure that minimum standards are met for the quality of goods and services for products made and/or sold in the UK. Published and maintained by the BSI Group, there are thousands of different standards covering everything from aerospace innovation to sustainability and net zero.

At the time of writing, some of the key standards that apply to natural stone manufacture in the UK are:

- BS EN 1467:2022 - TC: Natural Stone. Rough Blocks. Requirements
- BS EN 1468:2022 - TC: Natural Stone. Rough Slabs. Requirements.
- BS EN 12372:2022 - TC: Natural Stone Test Methods. Determination of Flexural Strength Under Concentrated Load.
- BS EN 13373:2020-TC: Natural Stone Test Methods. Determination of Geometric Characteristics on Units.
- BS EN 12407:2019: Natural Stone Test Methods. Petrographic Examination.
- BS EN 1469:2015 - TC: Natural Stone Products. Slabs for Cladding. Requirements.
- BS EN 12058:2015 - TC: Natural Stone Products. Slabs for Floors and Stairs. Requirements.
- BS EN 12059:2008+A1:2011: Natural Stone Products. Dimensional Stone Work. Requirements.
- BS 8298-4:2020: Design and Installation of Natural Stone Cladding and Lining - Stone Cladding on Rainscreen Support Systems. Code of Practice.
- BS EN 1341:2012: Slabs of Natural Stone for External Paving. Requirements and Test Methods.

These standards ensure that natural stone used in construction projects meets certain quality and performance criteria, and help to ensure the safety and durability of buildings. The above list is not an exhaustive list, and it is worth noting that these standards are being reviewed and amended on a regular basis; in total there are around one hundred active British Standards and Codes of Practice that specifically relate testing, manufacturing and using natural stone.

Further information about current British Standards are available from BSI Group, and individual standards can be purchased via their website if required.

At Cumbrian Stone we regularly test all of our sandstones to ensure that our products exceed these minimum standards required when recommending their use on a project. We often work closely with architects, designers and engineers to help overcome challenges and deliver the best possible solutions for our customers on every project we work on, and are happy to talk through what is and is not achievable in natural stone in order to assist with your early design processes.

Stone Testing and Quality Assurance

Why Test Natural Stone

Just like any other building material, natural stone has to meet specific requirements in order to be safely used as a building material. We're always conscious that if a natural stone doesn't have the required strength or density for its intended use this could result in a dangerous and costly failure of the finished stone unit in the future.

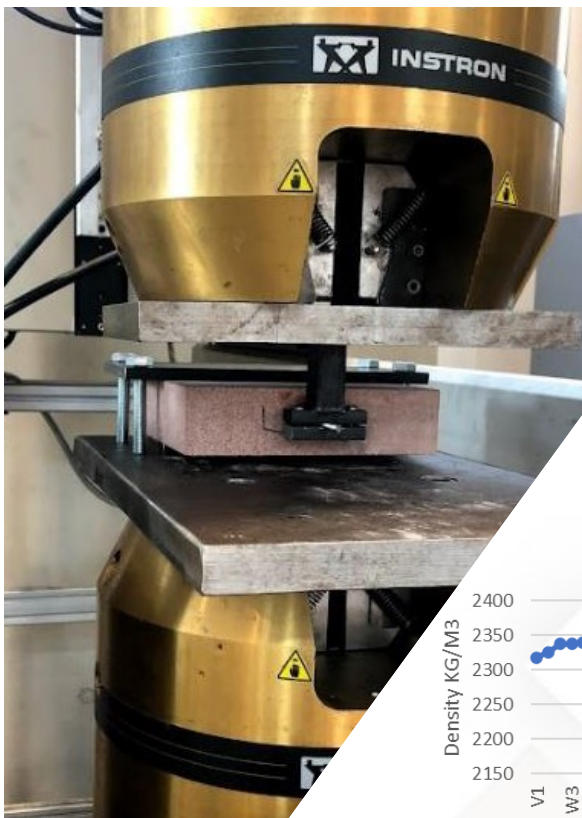
In order to help ensure that all of our natural stones meet the required minimum standards for the components we produce, we send samples to be tested by an independent laboratory on a regular basis. The results we receive back from these tests give us a clear snapshot of the quarry properties at the time of testing and give us a benchmark to monitor our stones against.

How Frequently Should Natural Stone be Tested

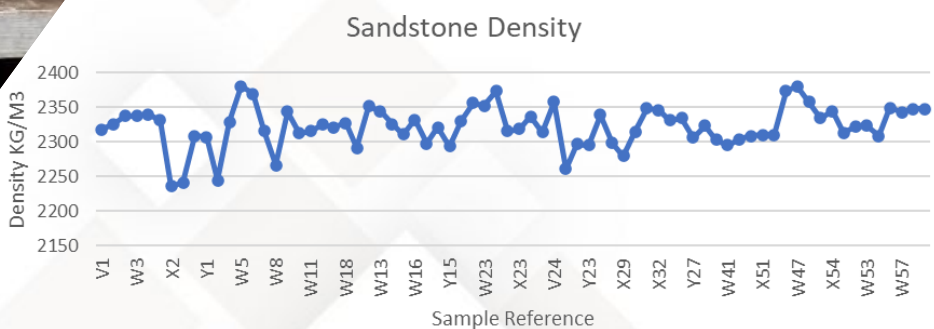
The minimum frequency of natural stone testing depends on the final use of the finished stone, and this usually ranges from 2 years to as long as 10 years between tests.

However at Cumbrian Stone we appreciate that due to it being a natural product, natural stone can vary significantly as we move through the quarry. This means that a snapshot from even a few months ago may not be representative of the stone being produced by manufacturers.

In order to give our customers the confidence we believe they should have in our product we test our natural stones on a weekly basis, selecting random samples from each of our saws and running each of these through a series of in house tests that go above and beyond the legal minimum requirements. This allows us to monitor any changes and ensure that any discrepancies or stones of concern are removed from our production process before they reach our customers, ensuring that we are providing the highest possible quality material on every order we process.



To ensure that our testing results are easy and clear for our customers to understand we also record the results of each sample on a line graph, clearly showing the performance of each stone over time and highlighting any unusual results for further investigation by our team. As all of our stones are naturally occurring materials, we do expect to see some variation between samples, however should a stone fall outside of our acceptable tolerances for variation we first review the results to identify any possible issues that this could cause before taking any appropriate actions deemed necessary to guarantee the quality and suitability of our products.



What Testing is Required for Natural Stone

The type of testing depends on the proposed final use of each stone, meaning that a wide range of testing needs to be carried out to ensure that we can provide the required technical data for each product we produce. The following is an outline of some of the more common testing methods we utilise at Cumbrian Stone when monitoring the quality and performance of our products.

Density

The testing of the density of a stone is used to determine the weight of the stone. This is usually recorded as kg per m3. The simplest way to determine this is based on the volume of the unit; this can be very quickly calculated provided the stone unit is a uniform shape such as a cube.

The most commonly used method for recording this data is by calculating the apparent density. This involves weighing the stone, then immersing the stone in water and weighing the unit again whilst still immersed. This allows the calculation to take any voids within the stone into account when providing test results.

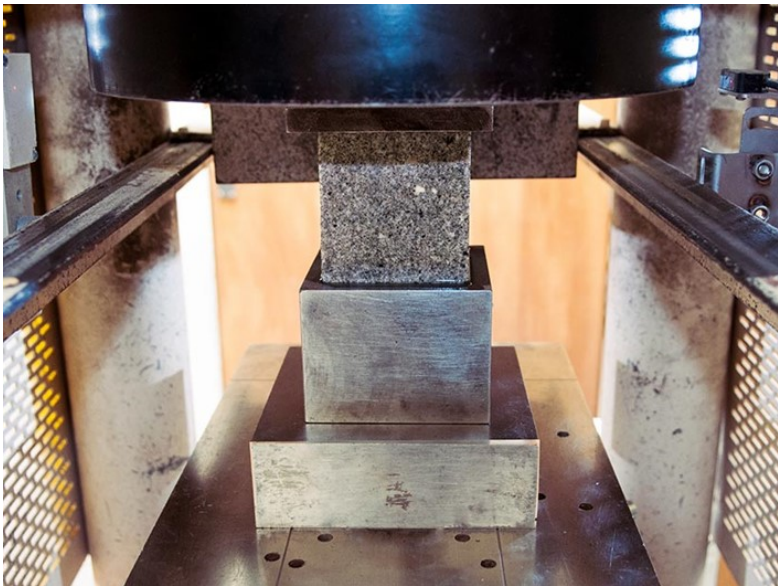
Some common material densities are:

Oak	500 – 900 kg/m3
Lightweight Concrete Blocks	650 – 1500 kg/m3
Dense Concrete Blocks	1800 – 2100 kg/m3
Common Brick	1900 – 2100 kg/m3
Sandstone	2100 – 2500 kg/m3
Steel	7750 – 8050 kg/m3



Compressive Strength

The compressive strength of a material indicates the resistance to crushing and compression. This is usually recorded in Megapascals (MPA). One Megapascal is the equivalent to 1,000 Kilonewtons/m2, or pressure of 145 lbs per square inch. These results are recorded by crushing blocks of the material using a pneumatic press and recording the pressure at which the material fails.



Some common material compressive strength ratings are:

Oak (Parallel to Grain)	40 – 55 MPA
Concrete Products	20 – 50 MPA
Common Brick	7 – 14 MPA
Sandstone (Parallel to Grain)	20 – 120 MPA**
Steel	250 MPA

** It is worth noting that the MPA for sandstone is significantly varied due to the wide range of variation in the material between different quarries. This is one of the main reasons that not every sandstone is suitable for every project or proposed use.

Stone Testing and Quality Assurance



Water Absorption

Water absorption testing is used to determine how much water a material will absorb under certain conditions, and is expressed as a percentage of the weight of the water absorbed compared to the weight of the unit being tested.

For example; a dry stone weighs 50kg. This stone is then submerged in water for 24 hours. The stone is reweighed following submersion and has a new weight of 55kg due to the water it has absorbed.

The Absorption Value for this stone would be calculated as follows:

$$(\text{Saturated Weight} - \text{Dry Weight}) / \text{Dry Weight} \times 100 = \text{Water Absorption \%}$$

$$(55\text{kg} - 50\text{kg}) / 50\text{kg} \times 100 = 10\%$$

Some common material water absorption percentages are:

Concrete	2-3%
Common Brick	8-20%
Sandstone	4-15%



Porosity

The porosity of a material determines the expected level of void space within a unit expressed as a percentage of the total volume. This is often tested by using a water displacement method in order to determine the size of the voids throughout the material.

The volume of water displaced is subtracted from the apparent volume of the tested material in order to give the volume of voids within the material; this is then expressed as a percentage of the apparent volume of the material.

Some common material porosity levels are:

Concrete Block	15-25 %
Common Brick	15-40 %
Sandstone	8-25 %



Frost Resistance

The frost resistance or durability against freeze thaw of a material is tested through the exposure of the material to a cycle of between 30 and 50 freeze thaw cycles in order to determine whether this has an adverse effect on the integrity of the material.

These results are expressed as either a Pass or Fail; if the material shows signs of damage and breakage due to the freeze thaw cycle it will be deemed to have failed and if no damage or deterioration is apparent then it will be deemed to have passed.



Flexural Strength

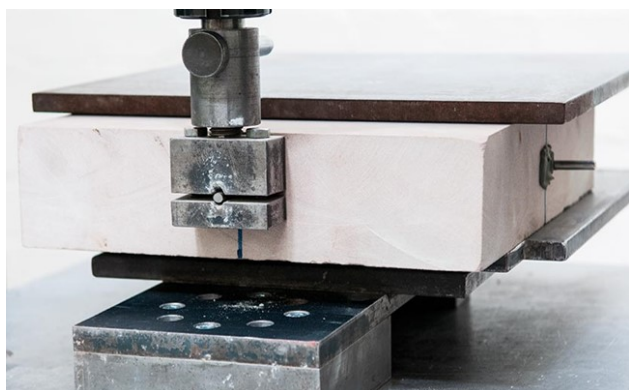
The flexural strength of a material is determined through the application of pressure at three or four points in order to determine the pressure required to reach the deformation or breaking point of the material. This is usually expressed as Megapascals (MPA).

The thickness of the material being tested and the span being covered can have a significant impact on these results; as standard the span must be at least three times the material thickness.

These results are recorded by applying pressure to a sample of material until it breaks or deforms and recording the point at which this occurs.

Some common material flexural strength ratings are:

Oak (Parallel to Grain)	40 – 55 MPA
Concrete Products	5 – 20 MPA
Common Brick	7 – 15 MPA
Sandstone (Parallel to Grain)	3– 15 MPA



Breaking Load at Dowel Hole

The breaking load at a dowel or fixing hole is determined by inserting the fixing into a pre formed hole in the material being tested before applying a concentrated load onto the fixing in order to determine at which point the material will fail. This is usually recorded in Kilonewtons. One Kilonewton is approximately 225 lbs or 102 kg.

The point at which the material fails is recorded in order to give the expected performance of the fixing.

Slip Resistance

The slip resistance of a flooring material is determined using a pendulum with a rubber heel in order to produce a controlled sweep across the material that simulates a person slipping. These results are recorded as a Pendulum Test Value (PTV) and are rated as follows:

Greater than 36 PTV = Low Risk

(Over 1 in 100,000 Chance of Slip)

25 to 34 PTV = Medium Risk

(Between 1 in 200 Chance and

1 in 100,000 Chance of Slip)

1 to 24 PTV = High Risk

(Less than 1 in 200 Chance of Slip)

Some common material PTV values are:

Concrete	50-70PTV (Dry) / 11-50 PTV (Wet)
Sandstone	30-120PTV (Dry) / 25-90PTV (Wet)
Granite (Polished)	90-120PTV (Dry) / 5-15PTV (Wet)



Case Study—Park Quadrant Residences, Glasgow



Project Location: Kelvingrove Park, Glasgow

Natural Stone Used: Longridge Sandstone

Part of the original Charles Wilson Park Area masterplan, Park Quadrant Residences presents a unique proposition to own part of 'The Missing Piece of Glasgow's History', where old school grandeur meets contemporary luxury living set upon the crest of Glasgow's Premier Address.

Designed as a carefully curated collection of timelessly classic yet contemporary apartments, duplexes and penthouses combining bold, modern designs with a graceful sensitivity to the area's celebrated 19th Century architecture and landscaping.





Services Provided by Cumbrian Stone

Supply of Finished Stone Units

Volume Supplied

800 Tons / 320m³

Case Study—Donaldson's College, Edinburgh



Project Location: West Coates, Edinburgh

Natural Stone Used: Scotch Buff Sandstone

Located within the iconic Donaldson's estate, on the western boundary of the UNESCO World Heritage Site, The Crescent at Donaldson's College is perfectly placed to offer a city sanctuary. Close to the picturesque Water of Leith walkway, yet just minutes from Haymarket train and tram station, and under 6 miles from Edinburgh Airport, these award winning apartments offer the ultimate in modern design, whilst ensuring unrivalled views across Edinburgh.





Services Provided by Cumbrian Stone

Supply of Finished Stone Units

Volume Supplied

445 Tons / 178m³



Natural Stone - A Buyer's Guide

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