

INSTALLATION GUIDE

ARMOURED STONE

The Mayan ArmouredStone is a patent pending, single-lap stone roofing system that significantly improves the performance of traditional stone roofing. The versatile ArmouredStone system can be used with many types of new and reclaimed stone.

Fitting instructions for the new stone application.

- Quick and easy to install
- Simplified system with less components
- Can be installed on roofs with as low as 17.5° pitch
- 43% less stone required
- Only 70kg / m² - no need for a structural roof
- Can be used in combination with plain tiles for a traditional reproduction
- An easy-to-use combination of 9 stone sizes creates the authentic appearance of the random and diminishing application
- Considerable cost savings in roof structure and installation time

Mayan ArmouredStone is a single lap stone slate system designed for installation on standard 25mm roofing battens in the open roofing method.

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Products Available in the System

Click for full product specification or see page 11.



Site Safety

In all cases ensure a safe working environment. Site health and safety measures must be properly adhered to.

- ☒ Personal protective equipment must always be worn.
- ☒ Consideration should always be given when using ArmouredStone where the wind conditions might lift the product into the air or destabilise the handler.
- ☒ The products must be properly handled and stored to avoid becoming a dangerous missile on site.

Storage

The ArmouredStone plate is lightweight and must be stored flat and out of direct sunlight. ArmouredStone must be secured to a stable area or platform in certain weather conditions to avoid it being blown into the air by strong winds. Natural stone slates are very heavy when palletised and must be stored on a level surface to avoid the pallets toppling over.

Accreditation



Building Research Establishment (BRE)
Wind driven rain test to PD CEN/TR 15601 2012 18th May 2021
Report number P120308-1000

Lap Distance

Roof pitch	Stone lap length
Over 25°	At least 100mm (4")
Between 17.5° and 25°	At least 125mm (5")



Stone Sizing and Batten Gauge

The system utilises 3 widths of stone in 3 lengths. 9 different sizes of stone can be ingeniously configured so that they are easily installed in the random and diminishing method.

ArmouredStone size	Plate size	Stone slate width	Stone slate length	Batten gauge (100mm lap)
ArmouredStone15	345mm 13.5"	300/450/600 12"/18"/24"	380mm 15"	255mm 10"
ArmouredStone17	395mm 15.5"	300/450/600 12"/18"/24"	430mm 17"	305mm 12"
ArmouredStone19	445mm 17.5"	300/450/600 12"/18"/24"	480mm 19"	355mm 14"

The batten gauge can be adjusted to ensure that the courses finish with the rafter (spar) length.

Longer sized stone slates (ArmouredStone19) are installed at the lower third of the roof with the 3 different widths randomly dispersed.

The slate lengths diminish in the mid-section by using the middle-sized stone slates (ArmouredStone 17) that are randomly dispersed.

The top third of the roof uses the shorter lengths (ArmouredStone15) and again the 3 different widths of stone slates are randomly dispersed across the roof.

The configuration of 1ft, 1½ ft and 2 ft widths allows the installer to easily avoid placing the vertical side abutments in line with the one below.



INSTALLATION OVERVIEW

Single lap stone slate system designed for installation on standard 25x50mm roofing battens in the open rafter roofing method.

Ensure

- The ArmouredStone plate is a waterproofing system therefore, all gaps and holes must be properly sealed using a polyurethane mastic or the ArmouredFlashing
- Ensure you meet the requirements for roof space ventilation and the roof is correctly ventilated
- Install in accordance with BS 5534
- Store all materials correctly
- Ensure safe working practice at all times

The vertical abutment join in the stone slates is not a critical weathering element with the ArmouredStone system, however, in order to maintain the traditional appearance of the installed roof we recommend that the vertical perpendicular abutment joins (perp joins) are offset by at least 100mm (4 inches) so that the roof is installed in the broken bond method.

Process Overview

1. Ensure the top of the fascia board will set the starter stone slates correctly.
2. Install the roofing ventilation products and eaves protector.
3. Install a roofing membrane over the rafters.
4. Set out the batten gauge in accordance with the stone available. You can use the online estimator or a batten plan to set the batten gauge.
5. Install the Mayan ridge/hip runner brackets and batten if required.
6. When using cement pointing at the roof edge (verge), the ArmouredStone should be positioned at least 50mm back from the edge to allow the cement to adhere to the stone, cement will not adhere to the ArmouredStone GRP plate.
7. Commence installation at the right-hand side of the roof.
8. Install the first ArmouredStone plate by simply hooking it over the roof batten. When installing the next Armoured stone plate, it should overlap the previously installed plate by 50mm as indicated by the preinstalled weld tape. Remove the weld tape cover paper and press the ArmouredStone plates together ensuring that the lap join is fully adhered.
9. Install the first course of the larger stone and fix to the battens by screwing through the mounting rail and ArmouredStone plate into the top side of the batten.
10. Install a varied selection of different width stone slates across the course. When approaching the end of the course select an arrangement of appropriate stone slates to ensure that the end stone slate is at least 18" wide (457mm).
11. The offcut of the ArmouredStone can be carried across and up to start the next course and eliminate waste.
12. Avoid vertical alignment of the stone abutment joins, offset by at least 100mm.
13. Continue to cover the whole roof to completion by gradually reducing (diminishing) the courses.
14. When using a block/hip end, screw a 100mm long RidgeFix screw (supplied) through the pre-drilled hole into the runner batten. Fix an additional 60mm long RidgeFix screw (supplied) through the pre-drilled hole in the connector and into the ridge runner batten.
15. Slide the next RealRidge over the last connector so that the retainer brackets are engaged under the RealRidge connector. Screw through the ridge connector using RidgeFix 60mm screw and continue along the ridge/hip.
16. At the end of the course or when installing a hip/ridge, the RealRidge hip/block end should be cut to size. Drill a second hole through the top of the cut RealRidge to twice fix in place, using 2 x Ridgefix 100mm screws. Install a lead saddle underneath the cut RealRidge at the junction of the hip/ridge.

The Mayan ArmouredStone roofing system must be installed in accordance with this installation guide using only high-quality Mayan Roofing Systems products, including self-adhesive ArmouredFlashing and all fixtures and fittings provided.



- The Mayan ArmouredStone system allows natural stone slates to be installed in the single lap format (in a similar way tiles are installed) therefore eaves cut or ridge (shorter) stone slates are not required. However, because the stone slates should be installed in the broken bond format (staggered vertical joints) the wider stone slates should be used at the verge and in the valley to avoid using stone slates narrower than 300mm. In all cases it is preferable to adjust the verge overhang (undercloak) to accommodate any difference between the natural stone widths (in increments of 150mm) and the building width so as to avoid a visible cut edge.
- The ArmouredStone plate should be at least 50mm in from the edge of the verge so that the cement pointing will adhere to the slates - it will not bond to the GRP.
- All of the stone slates at the peripheral of the roof (2 courses of exposed stone slates on the roof outer edges) should be fixed by screwing through the mounting rail and the ArmouredStone plate and into the top of the batten.

Roof Ventilation

- The roof ventilation requirements should be established prior to the commencement of works and the fascia height set accordingly. Guidance on roof ventilation should always be sought from the appropriate roof designer/architect.

Adjust the Fascia

- The top of the fascia board/vent should be adjusted so that the first course of stone slates is set at the same angle as the rest of the stone slates of the roof, prior to the installation of the eaves protection system (EPS or eaves tray). In any event the stone slates must not 'tip' forward. Depending on the roof pitch the fascia should be approximately 50mm above the rafter line. If roof ventilation is required, then the height of the ventilation strip should be taken off the height of the fascia.

Full Installation Instructions

Eaves

The top of the fascia or over fascia ventilator should be approximately 55mm (vertically) or 47mm perpendicular above the top of rafter line to ensure all stone slates sit at the same pitch.



Install an eaves protection system (EPS) or starter trim directly on top of the rafter so that it sits over the fascia directed into the gutter. Securely fix through the top section of the EPS to the rafters. Lengths of the EPS/ starter trim should be lap joined on top of a supporting rafter.

Best practice can be achieved by applying a double-sided tape along the lower edge of the EPS, as shown in the image.

Membrane

Unroll the roofing membrane over the rafters for the width of the roof. The membrane should be pulled into position and released prior to fixing so that the membrane is sufficiently draped across the rafters, allowing for a 10mm gap beneath the batten to ensure adequate water run off.

Position the lower edge along the line of the fascia and on top of the double-sided tape, remove the tape protection and stick the roofing membrane in place, the membrane should also be fixed to the rafters at the top edge.

When installing the valley, a runner strip of membrane should be first dressed up the line of the valley and lateral rolls of membrane dressed into the valley.



Valley runner battens should be installed equidistant on either side of the valley trough so that the valley outer flanges sit neatly on and between them. Remove the section of the fascia between the runner battens so that the valley can pass through the fascia and discharge into the guttering. Cut a 'V' into the end of the valley that follows the internal roof corner. Insert the valley trough between the runner battens and pin into position by fixing through the outer flange only and into the runner batten, the fixings should not go through the membrane.

Ridge Batten

If a vented ridge is required, then the membrane should be cut along the centre line of the hip so that an air gap of at least 10mm is created.

The ridge runner brackets should be fixed over the rafters or truss and the timber runner batten should be fitted into the brackets.

Hip runner battens should also be fitted to either side of the central batten to ensure that mitred battens and cut stone slates are securely double fixed. Cut stone slates can be re-drilled to ensure a double fixing.

With consideration to the dry ridge system, the top batten should be positioned a minimum of 40mm down from the very apex of the rafter/truss.



Batten Gauge

The ArmouredStone system is optimised so that each side of a roof has an approximate equal amount of each size of stone.

The installer should use skill and judgement when planning the roof and placing the stone slates to achieve the desirable random and diminishing appearance.

To assist in accurately setting out the batten gauge for these different sizes enter the roof data into our online quantity estimator at www.mayanroofingsystems.com/stone and let us do it for you.

In all cases, to ensure that the final course fits properly, the headlap can be adjusted by increasing or decreasing the batten gauge through several previous courses, to ensure a correct overall fit of the final course and achieve the desired overall appearance.

Installation of ArmouredStone

For ease of installation the lap is predetermined for working from right to left on the roof. The first ArmouredStone plate should be positioned 50mm back from the roof edge for cement pointing. If installing against a wall the ArmouredStone should be installed tightly up against the wall.

Hook the curved upper edge of the first sheet of ArmouredStone over the top of the first batten, do not fix through or damage the upper surface of the ArmouredStone plate. Any holes or damage in the plate must be repaired using a high-quality sealant or ArmouredFlashing.

The ArmouredStone must always be side lapped by at least 50mm. Ensure the lap is clean, dry and free from dust. Remove the protection tape from the self-adhesive side strip and press the side lap join firmly together to ensure a permanent seal. Continue across the full width of the roof. Cut the last piece to fit.

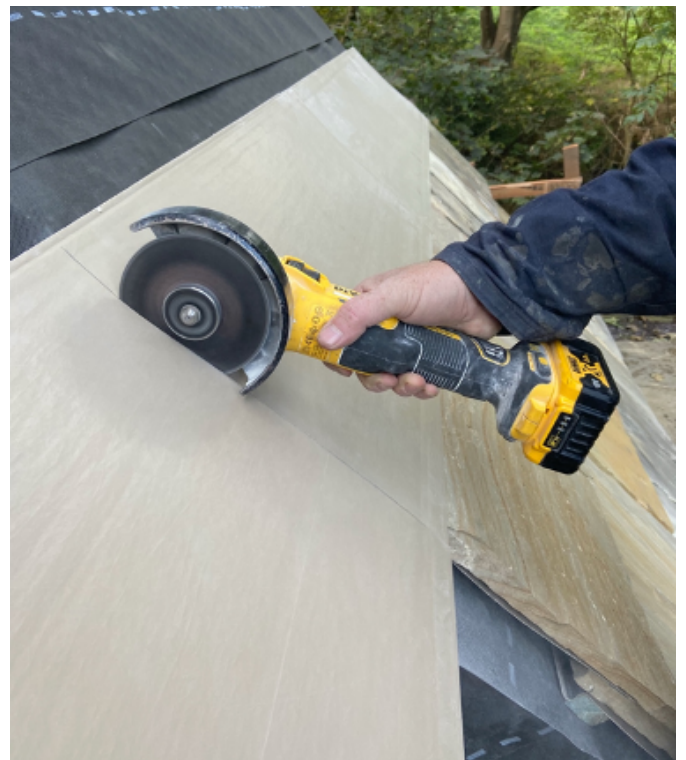


We recommend that the ArmouredStone plate should be cut with a fine abrasive cutting blade.

Continue across the full width of the roof, when you reach the verge cut the last piece 50mm back from the edge to allow for the cement pointing to adhere to the stone slates.

Offcuts at the end of a course can be carried to the start of the next course to eliminate waste.

Ensure that the lap tape is always used to seal the lap.



If the product is fitted against a wall or up-stand, then the ArmouredFlashing should be fitted onto the ArmouredStone and dressed up the wall. The flashing must be well adhered to all substrates and the surfaces should be clean, dry and free from dust before application. Flashing should be the full length, covering at least 100mm of ArmouredStone and rise up the wall by at least 100mm. A flat wheeled roller should be used to press the ArmouredFlashing into position and ensure good adhesion.

Installation of the Stone

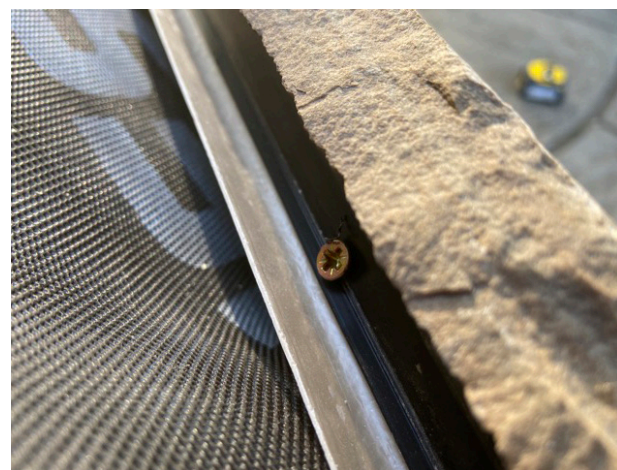
Cut stone slates less than 250mm wide should not be used on the roof. When cut stone slates are required the smaller 300mm stones should be 'shuffled' back along the line so that the larger stones are used for cuts at the verge edges and also into the valley.

When planning the installation of the roof it is possible to ensure that the roof is always within a 150mm overlap of the full width of the building (through the arrangement and use of the 600mm, 450mm and 300mm stones). In all cases the verge overhang should not be less than 25mm. Therefore, the verge overhang (or undercloak) can always be set at a distance no more than 75mm overhang per side. By using this method, it is possible to avoid laboursome and unsightly cut edges.

All stone slates installed at the peripheral two outer courses of the roof should be fixed in place by screwing through the mounting rail, through the curved edge of ArmouredStone and into the roofing batten, these include the first two courses, the last two courses and two verge stone slates.



Install the first stone slate by placing it on top of the ArmouredStone plate so that the mounting rail on the underside of the stone hooks over the top edge. The stone is eased down into position so that the two curves neatly engage. The first two courses of stone slates should also be fixed at the head by screwing through the mounting rail. Continue across the roof by randomly, but equally selecting one of the three different sized stone slates, try to avoid an obvious sequence as this will improve the overall appearance of the roof. The larger two stone slates must always be used to avoid small pieces at the end of the course on the verge and hip or into the valley.

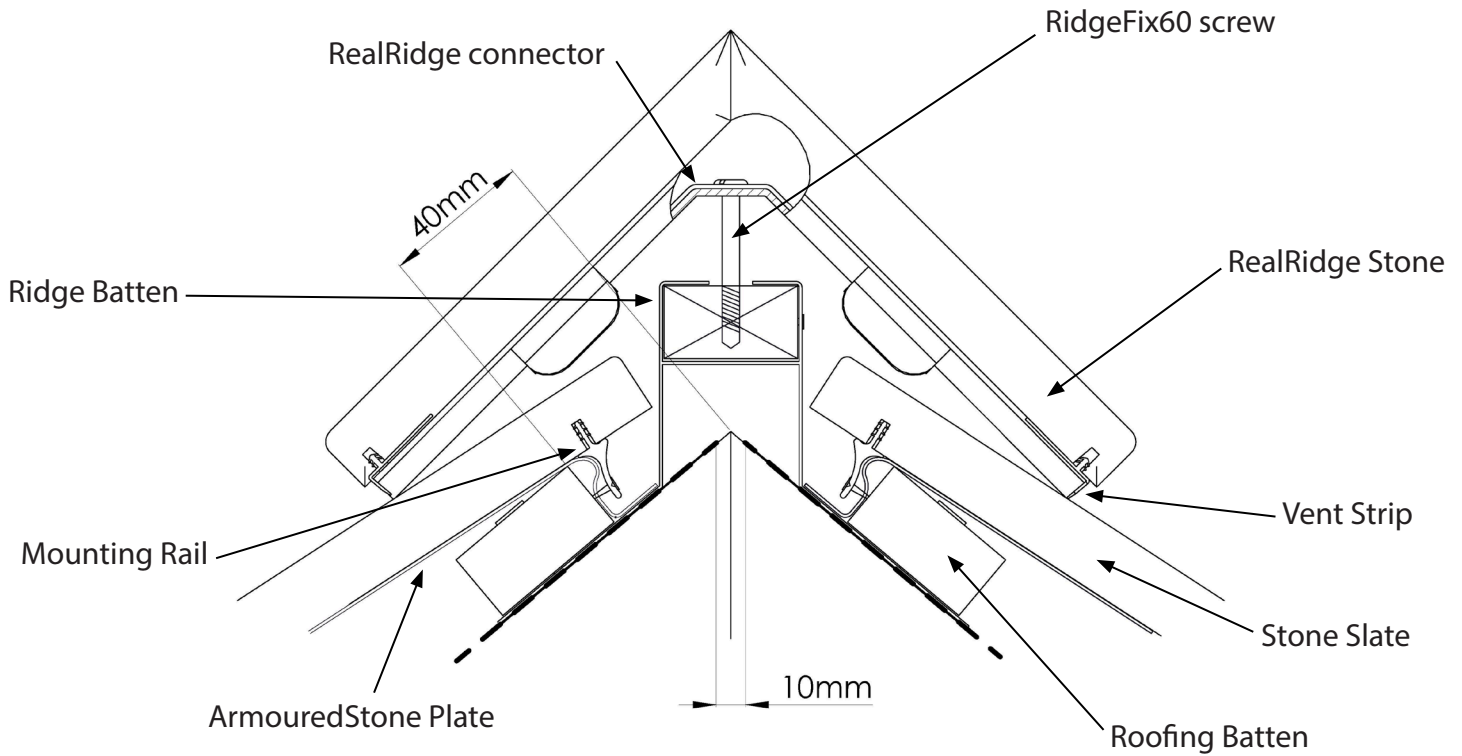


When installing the next course of stone slates, it is important to avoid the abutment join (perp join) from aligning with the perp join in the course below. This is easily done by selecting another sized stone slate.

This method should be continued up the roof and the whole roof should be fully covered with stone slates.



Installation of RealRidge Tiles



Starting from one side, the built in GRP RealRidge connector faces inward so that the next RealRidge connects onto it with the connector brackets engaged beneath the connector. When installing the first hip or ridge always ensure that the first ridge is fixed into position using 2 RidgeFix stainless steel screws with nitrile washers. Drill a 6mm dia hole 100mm in from the end straight down from the apex and fix with a 100mm long RidgeFix screw (supplied). Fix the second 60mm RidgeFix screw (supplied) through the ridge connector hole.



Install the next RealRidge by ensuring that the retaining clips are located under the RealRidge connector of the previous ridge tile. Screw each RealRidge into place through the connector and continue across the ridge. At the end of the course, cut to length and install so that the cut is located over the previous ridge connector. Using a masonry bit, drill a 6mm dia hole down through the top of the ridge 70mm in from the cut end, do not use the masonry setting on your drill, and screw the last ridge into place using the screws and washer. If the cut end RealRidge is smaller than 300mm then use a whole ridge tile at the end and place the cut ridge tile between the last two whole RealRidge tiles.



Product Specifications

Stone Slates- Available in 3 widths of stone in 3 lengths.

ArmouredStone high quality natural stone slates can be purchased in a large variety of colours, dyed and blended to suit your specific project, from TrueStone Roofing.

Sizes (width x length) :	300/450/600 x 480mm (12"/18"/24" x 19") 300/450/600 x 430mm (12"/18"/24" x 17") 300/450/600 x 380mm (12"/18"/24" x 15")
Thickness:	22mm
Weight with ArmouredStone	70 kg/m ² (average) for the full system

Mounting rail- Pre-applied to stone slates



Colour:	Dark grey
Lengths:	To match stone slates
Installation:	Factory applied.

ArmouredStone- UV stable GRP preformed sheeting



Colour:	Grey beige RAL 1019
Length:	1500mm
Hanging lengths available:	15" / 17" / 19"
Thickness:	1mm
Weight:	2kg /m ²
Finish:	Matt finish
Resistance:	Resistant to infestation and degradation
Fire rating:	SAB, Class 3 to BS476 parts 3 & 7

RealRidge Stone- Natural stone ridge and hip system



Colour:	Various - Natural stone
Size (width x length) :	200mm x 750mm
Thickness:	22mm
Weight:	19.8 kg (average)
Vent:	5mm continuous
Angles:	90° ; 105° ; 120° ; 135°

RealRidge Fixings (included with RealRidge) - RidgeFix screws

RidgeFix 60 / 100

RidgeFix 100 screw with nitrile washer	Stainless steel Pozi 4.5x100mm	1 per RealRidge
RidgeFix 60 screw with nitrile washer	Stainless steel Pozi 4.5x60mm	1 per RealRidge
Ridge runner bracket	Galvanised steel	1 per RealRidge

ArmouredFlashing- Aluminium sheet on self-adhesive butyl



Roll size:	250mm wide 6m long rolls
Thickness:	1.77mm

**The ArmouredStone system is
supplied by:**



www.truestoneroofing.com



Enquire directly to:

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New Mill Road,
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HD9 7AZ**

* This fitting guide is subject to continued improvement. Please ensure you follow the latest version, which can be found at mayanroofingsystems.com/stone

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