

ARMOURCOAT®

SUSTAINABLE LUXURY FINISHES

TECHNICAL DOCUMENT

SCULPTURAL - FLUTES XL



CONTENTS

1. PRODUCT DESCRIPTION	3
1.1. MATERIALS AND COMPOSITION	3
1.2. PANEL DIMENSIONS AND WEIGHT	3
2. TEST DATA	4
2.1. FIRE TESTING	4
2.2. VOLATILE ORGANIC COMPOUND (VOC) TESTING	4
2.3. COMPRESSIVE STRENGTH	5
2.4. FLEXURAL STRENGTH	5
2.5. ENVIRONMENTAL PRODUCT DECLARATION (EPD)	6
2.6. HEALTH PRODUCT DECLARATION	6
2.7. LIVING BUILDING CHALLENGE (LBC)	6
3. SUITABLE SUBSTRATES	6
3.1. RECOMMENDATIONS	6
3.2. SUBSTRATE TOLERANCES	7
3.3. DESIGN CONSIDERATIONS	7
3.4. DIAGRAMS	8
4. SURFACE FINISHES	13
4.1. PANEL SPECIFIC DETAILS	13
4.2. LIGHTING	13
5. CARE AND MAINTENANCE	14
5.1. CLEANING SURFACE DIRT AND GRIME	14
5.2. DAMAGE AREAS	14
6. WARRANTY	14

TECHNICAL DOCUMENT

SCULPTURAL - FLUTES XL

1. PRODUCT DESCRIPTION

Flutes XL is an Armourcoat Sculptural design that has a soft, gentle flowing design with flat horizontal peaks.

Armourcoat Sculptural is a range of seamless sculptural wall surfaces made from a series of pre-cast panels that are bonded to the substrate. The panel joints are then filled and sanded, and a final decoration is applied to achieve a seamless sculpted surface. Armourcoat Sculptural designs are created by combining computer-aided design with traditional hand sculpting to create designs that fit together with total accuracy yet retain the essence of being hand crafted.

Properties

- Dramatic Seamless 3D wall designs
- Wide range of designs for interior use
- Bespoke designs available
- Up to 17% recycled content
- A1 fire Classification
- No measurable VOC contents
- No off gassing
- Environmental Product Declaration
- Health Product Declaration
- LBC Red List Compliant

1.1. MATERIALS AND COMPOSITION

Armourcoat Sculptural panels are mineral based, non-toxic, non-combustible and contain zero VOCs. The panels are extremely dense and hard with a smooth ceramic-like surface.

Once the panels are installed each design can be finished in a range of decorative surface finishes.

1.2. PANEL DIMENSIONS AND WEIGHT

The panel dimensions vary depending upon the design, but most designs are either 1800mm x 600mm (70-7/8" x 23-5/8") or 1200mm x 800mm (47-1/4" x 31-1/2"). The overall thickness of the panels may vary from 14mm – 25mm (1/2" – 1") depending upon the depth of the sculpting to the surface for the different designs. The panels vary in weight depending upon the actual design and the weight of the panels will vary from 11 – 20kg /m² (3 - 4.5lbs/ft²).

2. TEST DATA

Armourcoat Sculptural has been subjected to a wide range of Fire, VOC, durability, and other performance testing.

2.1. FIRE TESTING

2.1.1. European Fire Test Results

Independent tests were carried out in the UK for classification of reaction to fire performance in accordance with EN13501-1:2018.

REACTION TO FIRE CLASSIFICATION
A1/A1 _{fl}

2.1.2. American Fire Test Results

Test carried out in accordance with ASTM E84 - 14, Standard Test Method for Surface Burning Characteristics of Building Materials.

TEST TYPE	RESULT
Flame Spread Index	0
Smoke Development Index	0
Flame Spread Classification	A

2.2. VOLATILE ORGANIC COMPOUND (VOC) TESTING

2.2.1. VOC Content testing

A sample of Armourcoat Sculptural Components were tested by an accredited European laboratory (Eurofins) to ASTM D2369, Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.

Test Result

TEST METHOD	VOC (G/L)	VOC (LBS/GAL)	LIMIT OF DETECTION (G/L)
ASTM D2369- 2020	<1	<1	1

Evaluation of result

TEST METHOD	CONCLUSION	VERSION OR PROTOCOL
SCAQMD Rule 1113	Pass	February 2016
LEED v4.1 (VOC Content)	Pass	February 2021

2.2.2. VOC Emissions Testing

A sample of Armourcoat SCULPTURAL was tested by Eurofins to a wide range of emissions standards including EN 16516, ISO 16000-6, AgBB and French and Belgian VOC regulations.

Evaluation of results

REGULATION OR PROTOCOL	CONCLUSION	VERSION OF REGULATION OR PROTOCOL
French VOC Regulation	A+	Decree of March 2011 (DEVL1101903D) and Arrêté of April 2011 (DEVL1104875A) modified in February 2012 (DEVL1133129A)
French CMR Components	Pass	Regulation of April and May 2009 (DEVP0908633A and DEVP0910046A)
Italian CAM Edilizia	Pass	DM 23 giugno 2022 n. 256, GURI n. 183 del 6 agosto 2022
ABG/AgBB	Pass	Ausschuss zur gesundheitlichen Bewertung von Bauprodukten (June 2021)
Belgian Regulation	Pass	Royal decree of May 2014 (C-2014/24239)
Indoor Air Comfort Gold®	Pass	Indoor Air Comfort GOLD 8.0 of June 2022
BREEAM International	Exemplary Level	BREEAM International New Construction v6.0 (2021)
LEED v4.1 BETA	Pass	LEED v4.1 BETA for Building Design and Construction (February 2021)

2.2.3. Environments Building Certification

LEED ASTM D2369- 2020 V 4.1 certified as a 'Low emitting Materials

BREEAM International – Exemplary status for VOC Emissions

Full Certificates supplied on Request.

2.3. COMPRESSIVE STRENGTH

A test panel of Armourcoat Sculptural was tested for compressive strength to ASTM C109M: Test Method for Compressive Strength of Hydraulic Cement Mortars.

TEST	SCULPTURAL PANEL
ASTM C109M	=>33Mpa

2.4. FLEXURAL STRENGTH

A test panel of Armourcoat Sculptural was tested for flexural strength to ASTM C-348: Test Method for Flexural Strength of Hydraulic Cement Mortars.

TEST	SCULPTURAL PANEL
ASTM C-348	=>10Mpa

2.5. ENVIRONMENTAL PRODUCT DECLARATION (EPD)

In accordance with ISO 14025, ISO 21930 and EN 15804 - The International EPD® System.

Core environmental impact indicator EN 15804 +A2 PEF (All categories Cradle to grave).

Global Warming Potential (GWP) 0.082kg CO₂e

Full EPD can be downloaded from our website and is also published by EPD Hub & EPD International.

2.6. HEALTH PRODUCT DECLARATION

Armourcoat Sculptural does not contain any REACH materials that are listed as materials of very High Concern.

A full Health product declaration has been carried out for this product and is available here:

<https://hpdrepository.hpd-collaborative.org/Pages/Results.aspx#k=armourcoat>

2.7. LIVING BUILDING CHALLENGE (LBC)

Living Building Challenge (LBC) Red List Approved is a status indicating that a product is in compliance with the requirements of the LBC Challenge. Armourcoat Sculptural has met this challenge and contains no materials that appear on the LBC Red List - March 2022.

3. SUITABLE SUBSTRATES

Armourcoat Sculptural panels are non-combustible, however the substrate to which the panels are to be applied must be constructed in accordance with the minimum fire ratings that are required for the project.

In order to achieve an accurate installation that will not crack over time it is necessary to have a substrate that can be screwed or fixed directly into and that is inherently stable and unaffected by changes in temperature or humidity.

3.1. RECOMMENDATIONS

Armourcoat recommend that the substrate is constructed from one layer of 12mm plywood followed by a layer of 12.5mm foil backed plasterboard/drywall. The reason for using foil backed plasterboard is to ensure that the moisture for the bonding adhesive does not permeate into the plywood and cause it to expand or move. If foil backed plasterboard is unavailable, then apply a suitable moisture block primer to the plywood at least 24 hours prior to fixing a layer of standard plasterboard / drywall (GWB).

For the North American market exterior glass-mat cladding boards can be used as a replacement for the foil backed drywall board. USG Securock panels have been used successfully in the past. As for a suitable primer Zinsser 1-2-3 has been used as a moisture block for the plywood layer.

Other suitable substrates include two layers of Hardie Villaboard, Blueclad board or one layer of versapanel by Euroform followed by one layer of foil backed plasterboard.

Armourcoat Sculptural can be installed onto a double layer of plasterboard (not suitable for the North American market) but it is necessary to insert self-tapping aluminium drywall plugs into the wall for each screw. This process is time consuming and as a result the installation time and cost will be higher.

3.2. SUBSTRATE TOLERANCES

It is critical that the substrate to which the panels are to be applied is solid, flat and true without any sudden bumps or deviations. Bumps or flares in the wall will cause misalignment between the panels which may remain visible in the finished work.

For the North American market, a Level 3 drywall finish is required at a minimum prior to any panels being installed.

If the design is to run around an internal or external corner, it is vital that the corner is vertical otherwise it may be necessary to pack out one or both walls to ensure a straight and true corner.

Acceptable tolerance +/- 1mm in 600mm (+/- 1/32 in 24) & +/- 3mm in 1800mm (+/- 1/8 in 72).

3.3. DESIGN CONSIDERATIONS

Armourcoat Sculptural panels are only suitable for internal use or areas that are not exposed to the elements or large temperature fluctuations.

Armourcoat does not recommend any single, seamless sculptural wall exceeds 40m (400ft²) in surface area, with no linear run longer than 10m (30 ft), as with larger walls there is a risk of small hairline cracks developing between the panels due to slight substrate movement or thermal expansion and contraction. *(If asked to undertake larger expanses of wall it will be at client risk).*

3.3.1. Internal and External Corners

It is possible to create both internal and external corners with Armourcoat Sculptural designs. Please note however, that it is a time-consuming process that will add additional cost. You should be aware of this when specifying Armourcoat Sculptural walls in situations where there are multiple changes of surface plane within a small area.

It is not possible to run an Armourcoat Sculptural wall around an entire room and have the pattern joining up to itself again.

External corners are created by cutting and mitring the panel and then installing the panels around the corner. 2mm of the panel is lost in the cutting and mitring process but this is made up with the Armourcoat Bondplast filler. The nose of the corner is then hand shaped with a rasp file or sandpaper to create a pencil round that still reflects the sculptural shape of the corner.

Internal corners can also be created by mitring the panels. However, in mitring the panel, a section of the design is lost with the consequence that the sculpted lines of the surface will not align. It is therefore necessary to use two panels instead of one which can lead to significant panel wastage.

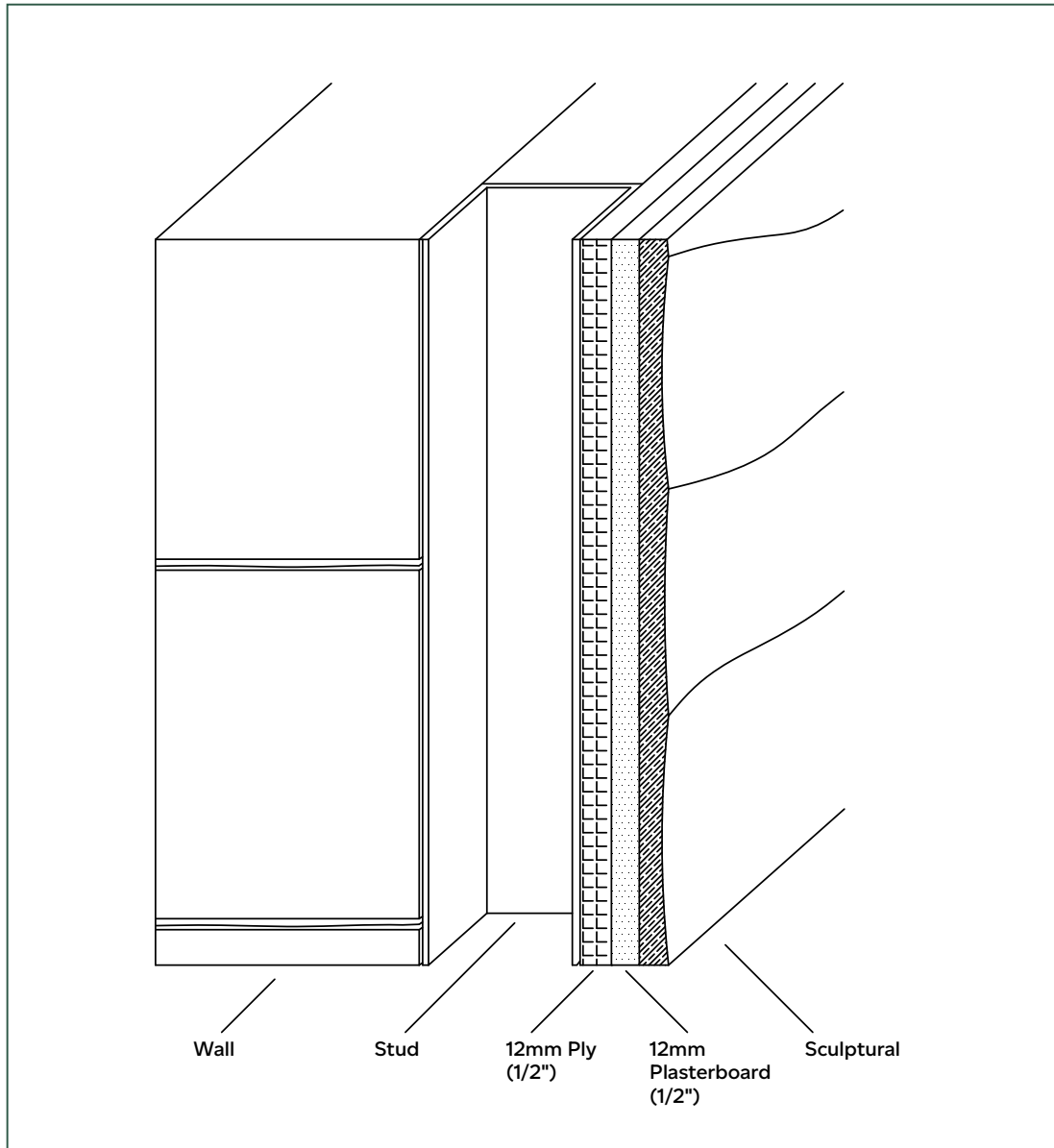
3.3.2. Curved Walls

Armourcoat Sculptural designs can be installed onto curved walls provided they are of a consistent radius. The minimum radius for curved walls is 2500mm (8 feet). All the panels are custom made for each project to the required radius and special packing crates are made to support the curved panels.

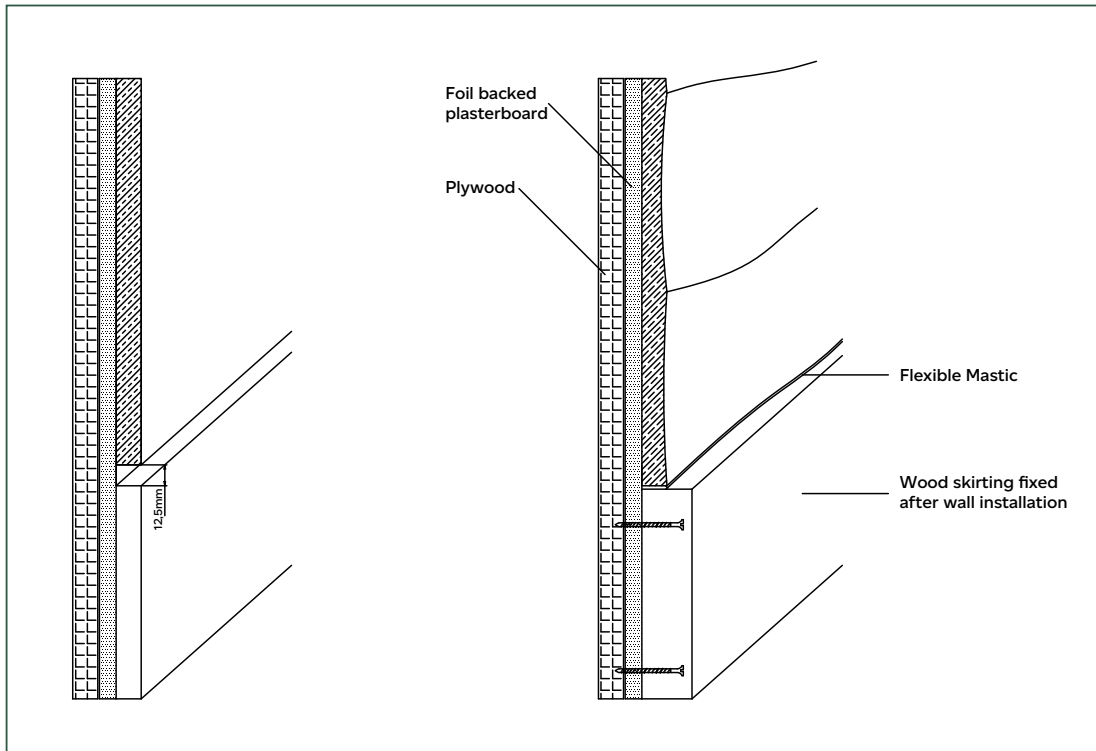
There are additional costs for the mould bases, additional casting time and the custom-made crates.

3.4. DIAGRAMS

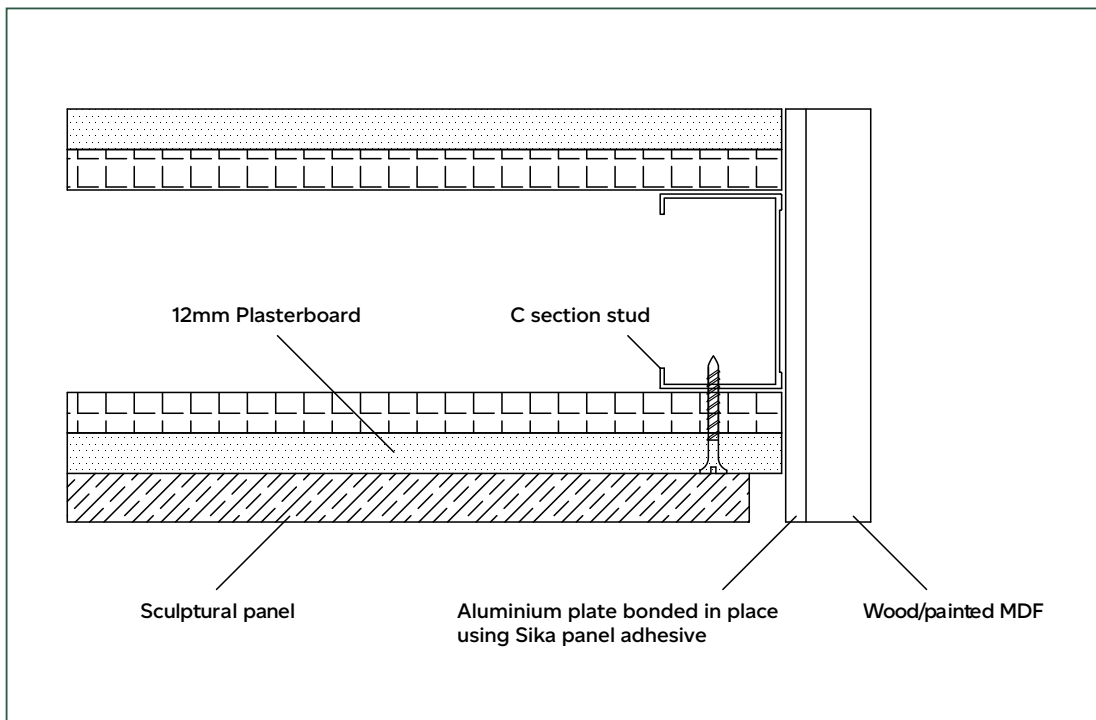
3.4.1. Substrate Build Detail



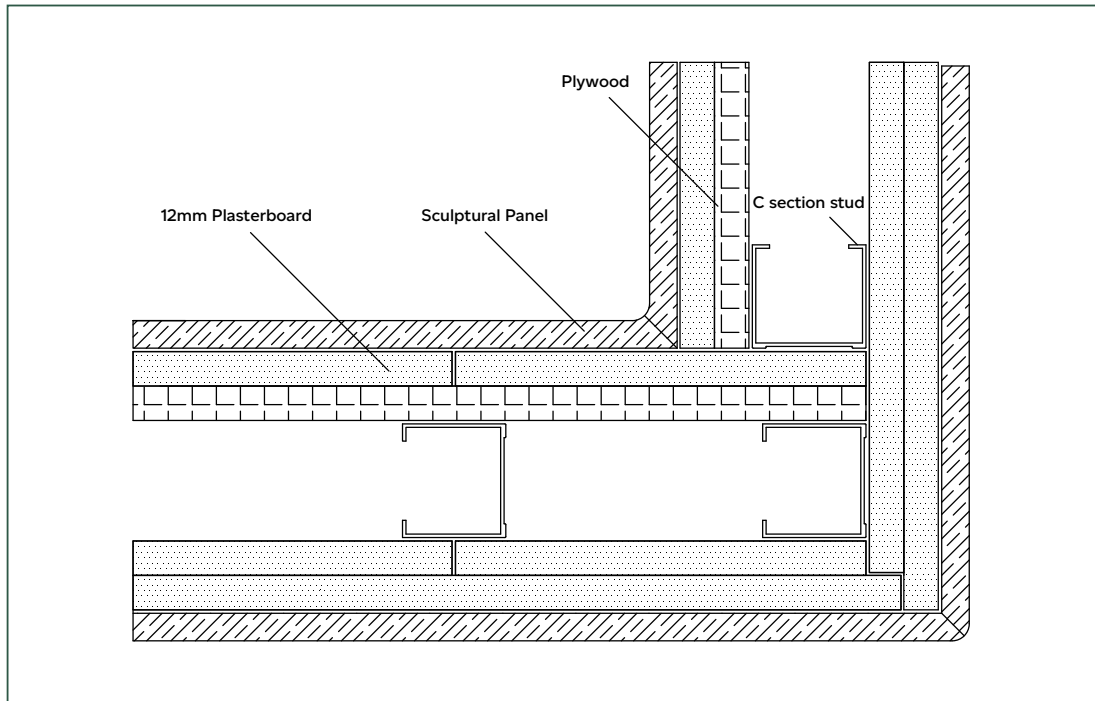
3.4.2. Shadow Gap Skirting (left) and Raised Skirting (right)



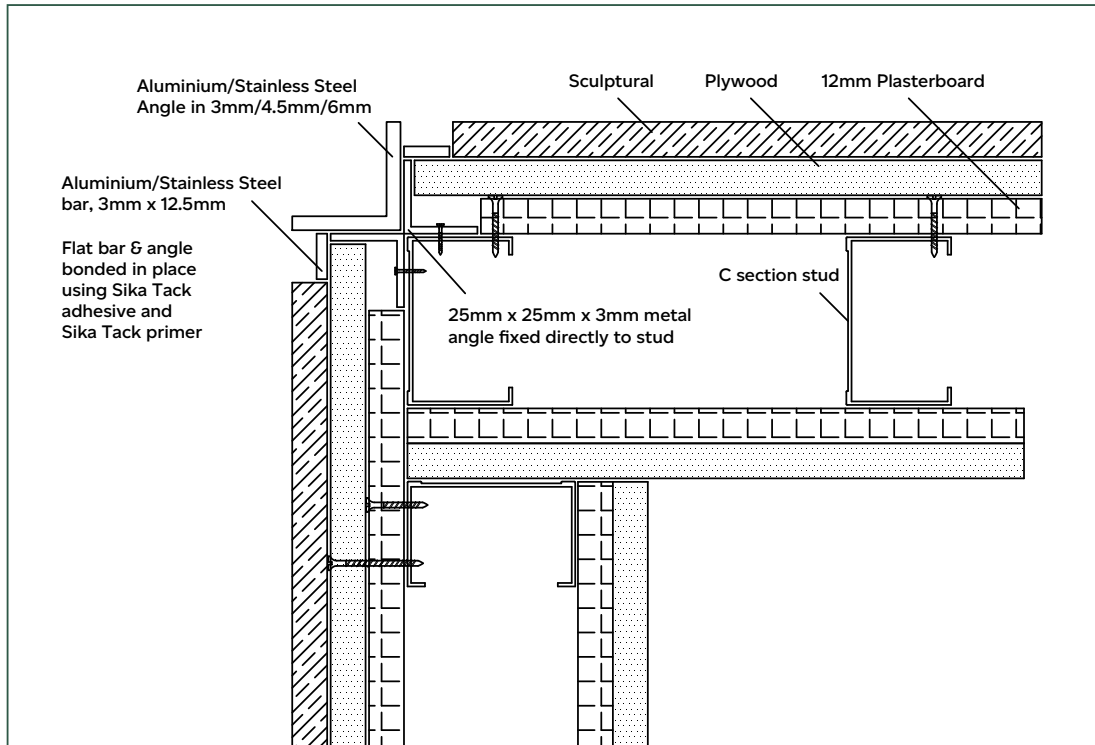
3.4.3. Detail for Endstop/Architrave/Door Frame/Metal Edge Frame



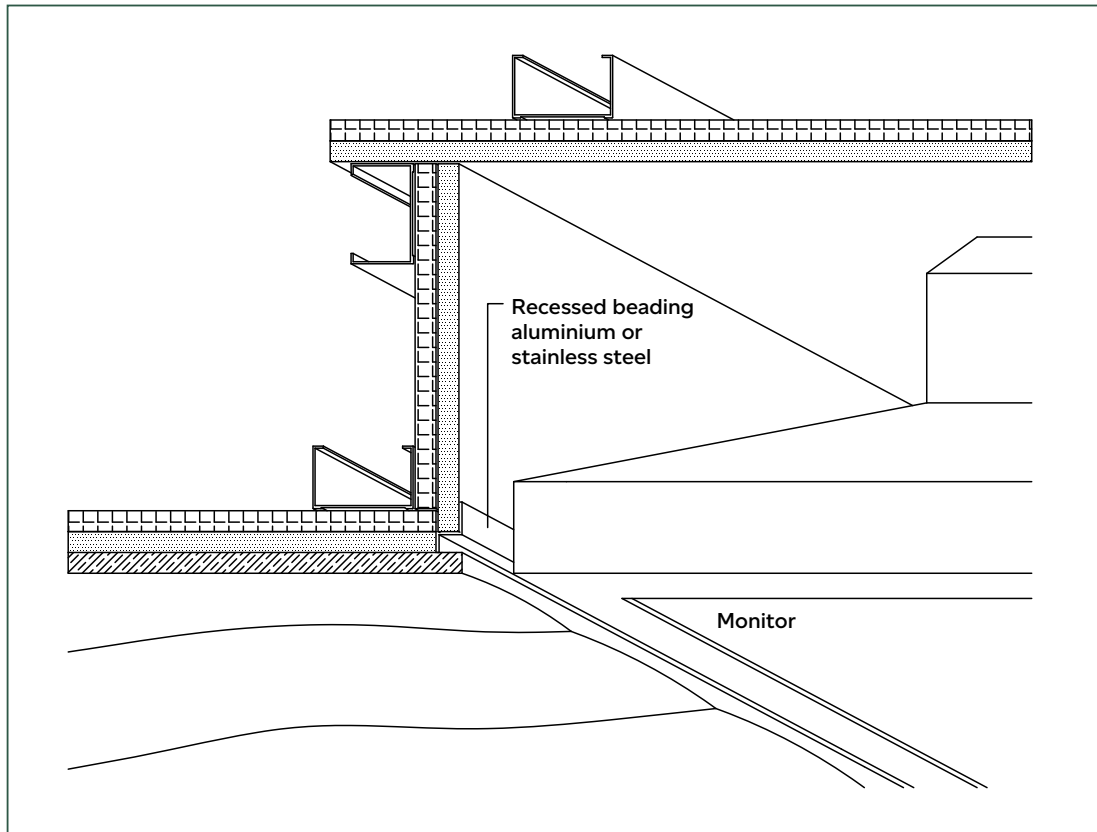
3.4.4. Internal and External Mitred Corner Detail, Double Layer Board



3.4.5. Protected Corner Detail (Angle beads supplied and installed by others)



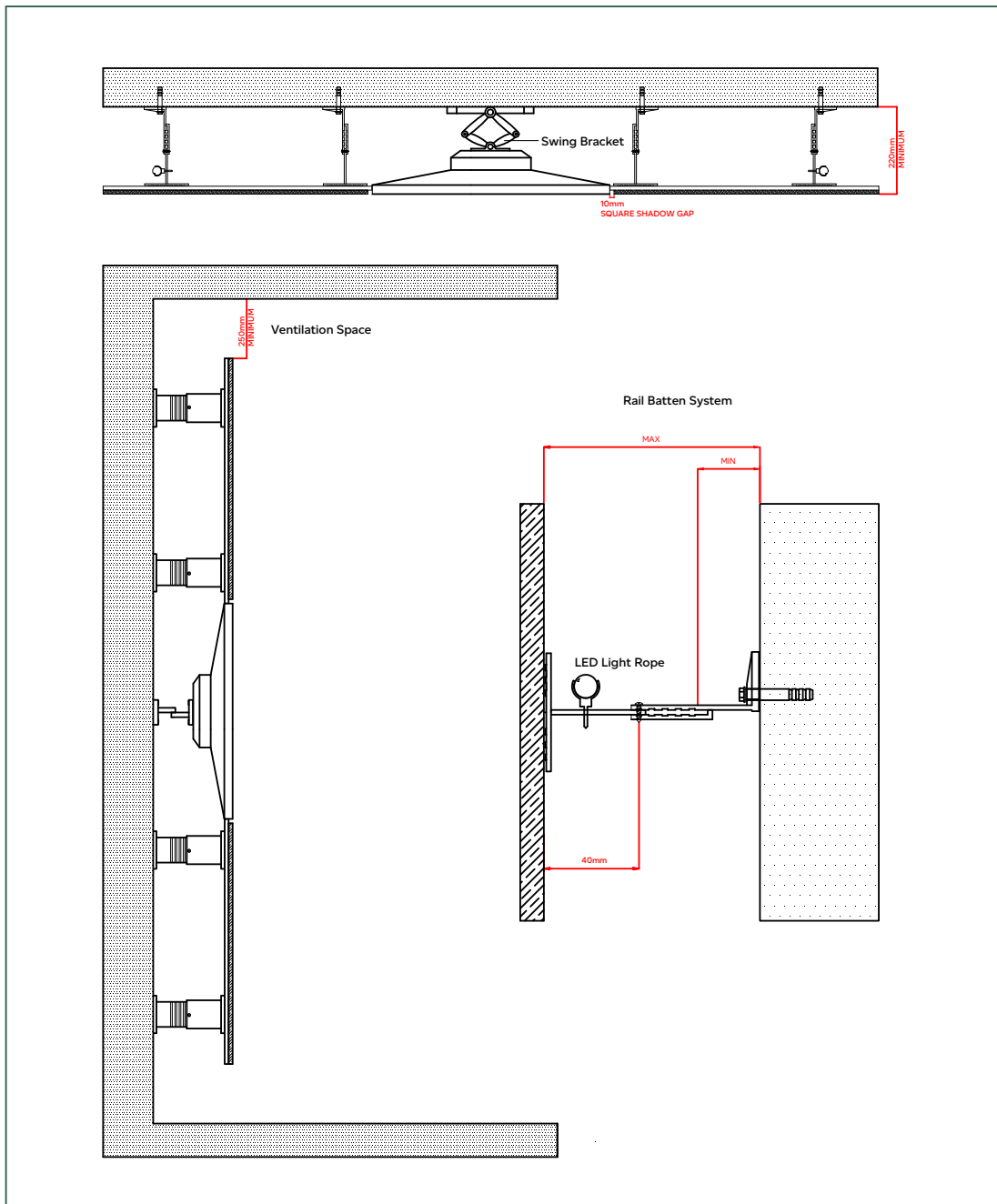
3.4.6. Plasma TV Detailing (beads supplied and installed by others)



3.4.7. Plasma TV Detailing for Floating Wall

The Eurofox batten system provides a support frame for the Armourcoat Sculptural wall and provides good ventilation to the back of the TV. The Eurofox Battens are clad with a single layer of 12mm Plywood or moisture resistant Medite MDF. The TV aperture is cut into the MDF using a CNC router to the exact dimensions +1mm for clearance.

The Plasma TV is fixed onto an extendible mounting bracket which enables it to be pulled out and demounted in the event of any technical problems with the TV. The precise cutting of the aperture ensures that when the TV is pushed in flush with the wall a consistent shadow gap is achieved all around.



4. SURFACE FINISHES

To achieve the best visual results Armourcoat recommend the use of light colours as the level of contrast between the illuminated and shaded areas is greatest. Using darker colours may reduce the dramatic effect created by the lighting. Armourcoat can offer a number of specialist finishes that can be applied to the surface. Some of the designs have certain finish limitations due to the form and shape of the surface. Finishes that can be offered include:

Spatulata - A superfine, high gloss finish with non-directional patterning from the trowel application. Please be aware that the surface finish will not be identical to normal Armourcoat Spatulata finish as it is being applied to a contoured surface with special tools. Please note that Spatulata is only suitable on certain designs.

Armuralia - A superfine, mid-sheen polished plaster with subtle linear burring and tonal variation. Please be aware that the surface finish will not be identical to normal Armourcoat Armuralia finish as it is being applied to a contoured surface with special tools.

Perlata - Decorative paint finish made from pearlescent mica which has a subtle sparkle or shimmer to the surface. This is spray applied and available in a wide range of colours.

Paint - The surface can be painted with matt or satin emulsion paint. Armourcoat recommend a spray application for best results.

Custom colours and special effects can be developed for bespoke work for all above finishes.

4.1. PANEL SPECIFIC DETAILS

SCULPTURAL DESIGN	DIMENSIONS (MM)	WEIGHT (KG/M ²)	FINISH: SPATULATA/ ARMURALIA	SPRAY: PERLATA OR PAINT	RECOMMENDED ORIENTATION
Flutes XL	1200x800x35(D)	21	Yes	Yes	Vertical

Armourcoat Adhesive adds approximately 2mm to Depth of the system and 2Kg/m² to the weight of the system. The table above does NOT take these into account.

4.2. LIGHTING

Achieving the correct lighting is critical to the success of Armourcoat Sculptural walls. To get the best results it is important to light the surface to achieve the optimum interplay between highlight and shadow.

The walls can either be down lit, up lit or even cross lit for any design that runs vertically. The angle of incidence for the light source to the face of the wall can vary depending upon the effect required, but as a guide we would recommend that the light strikes the wall surface at an angle of between 8-25 with 15-18 degrees being about the optimum. For a 3m (10) high wall you would set the halogen spots into the ceiling about 300-400mm (12-16) from the face of the wall. The light will be striking the wall at about 8-12 1m (34) from the floor, 12-15 at 1.5m (5) and 19-23 at 2m (68) up.

For even more dramatic effect it is possible to install LED colour change Luminaire lighting in combination with a programmable DMX control system. This makes it possible to wash the wall in almost any colour, have different colours fading in and out or any number of unique programmable coloured lighting effects.

5. CARE AND MAINTENANCE

Armourcoat Sculptural is a range of seamless sculptural wall surface designs. The panels are extremely dense and hard with a smooth ceramic-like surface. Once the panels are installed each design can be finished in a range of decorative surface finishes. Some of the designs have been modelled in such a way as to enable the application of Armourcoat polished plaster finishes whilst other designs are more suited to a sprayed finish.

5.1. CLEANING SURFACE DIRT AND GRIME

Please consult the Care & Maintenance for the chosen or specified finish (Paint or Perlata or Spatulata or Armuralia).

5.2. DAMAGE AREAS

Minor damage can be filled with a repair filler or Armourcoat Repair Pack. Fill the damaged area slightly proud of the surface and as the repair material hardens, scrape back any excess filler to leave the repair flush with the surface. Repeat this process a second time if necessary and then sand down smooth ready for re-decoration. For larger scale repairs please contact Armourcoat on the number below and arrange for us to do repair or: Ask us for your own maintenance and repair kit which is available for Selector Range finishes and includes tools, repair materials and instructions.

6. WARRANTY

10-year materials warranty for interior use.