



UNITY A2 SF (SECRET FIX) ALUMINIUM RAINSCREEN - Materials & Workmanship

09 November 2020

H92 RAINSCREEN CLADDING

To be read with Preliminaries/General conditions.

(Help to complete individual sections is given in Guidance Notes to H92)

TYPE(S) OF RAINSCREEN CLADDING

Unity A2 SF (by Metalline Architectural Fabrications) Secrete Fix Cassette cladding system comprising 3mm thick aluminium panels carried by an aluminium support structure. The system is fixed to an inner leaf structural wall and other components such as insulant, membranes, breakers, etc are incorporated. The system is drained and back-ventilated.

Complete rainscreen wall design to take licence of all structural, thermal, acoustic, and air-tightness requirements to ensure compliance with current Building Regulations.

Approved, trained, and certified design/installation contractors to install the system and components.

120 RAINSCREEN CLADDING (insert location or identification)

- Drawing reference(s): (insert)
- Primary support structure: (insert brief description of supporting background wall eg – block, concrete, stud wall, etc)
- Rainscreen cladding system: **Unity A2 SF Aluminium Cladding**
 Manufacturer and reference: **Metalline Architectural Fabrications, Hollies Park Road, Cannock, Staffordshire. WS11 1DB**
 Tel: **01543 456 930**
 E-mail: **unity@metalline.co.uk**
 Type: Drained and back-ventilated
- Rainscreen panel: **Unity A2 SF (Secret Fix Cassette)** Aluminium panel stiffened as necessary to meet performance criteria for deflection under wind load as clause 350.
- Material: **Aluminium**
- Thickness: **3mm**
- Finish: **Polyester Powder Coated (A2-s1, d0 Classification to EN 13501-1)**
- Colour: (insert)
- Joint type: Open
- Joint width: 10-20mm standard
- Air gap: (minimum 25mm)
- Support system: Aluminium support system comprising extruded vertical support rails with adjustable wall attachment brackets to zone range (insert-insert)mm
 Material: Extruded aluminium to BS1474 in 6063/T6 grade alloy.
 Fasteners: Panels fixed to support rails through material face – rivet fix min 15mm from panel edge.
 Number and location of fasteners: As fabricators structural design
- Backing wall: As clause 130
- Breather membrane: As section 785
- Thermal insulation: As clause 775.
- Accessories: (Define)

- Other requirements: (Insert any panel properties not included above or in referenced drawings)

130 Internal wall: (By others)

130A (Use for major accessory items eg – fascias, louvres, etc)

- Drawing references:
- Manufacturer:
- Material:
- Finish/colour:
- Fixing:
- Other requirements:

GENERAL REQUIREMENTS/PREPARATORY WORK

210 DESIGN

- Complete the detailed design of the rainscreen cladding and associated features shown on the preliminary design drawings to meet the requirements of this specification
- Co-ordinate detailed design with that for all related works.

215 DESIGN PROPOSALS: The preliminary design drawings indicate design intent but do not preclude submission with tender of reasonable alternative proposals for consideration.

220 SPECIFICATION:

- Comply with the latest edition of the Centre for Window and Cladding Technology 'Standard for walls with ventilated rainscreen' and 'Standard for testing of ventilated rainscreen' unless specified otherwise in this section.
- Keep a copy of the CWCT 'Standard for walls with ventilated rainscreen' and 'Standard for testing of ventilated rainscreen' together with other CWCT publications invoked by these documents, at the design office, workshop and on site, readily accessible for reference at all times during the course of the works.

225 INFORMATION TO BE PROVIDED WITH TENDER: Submit to the CA the following rainscreen cladding particulars:

- Typical plan, section and elevation drawings at suitable scales.
- Typical detailed drawings at large scales, including (insert any specific details which should be clarified at tender stage)
- Technical information and certification demonstrating compliance with the specification of proposed incorporated products and finishes, including (insert product/finish types generically specified)
- Certification, reports and calculations demonstrating compliance with the specification of the proposed rainscreen cladding.
- Proposals for connections to and support from the primary support structure.
- Proposals for any primary support structure additional to that shown on preliminary design drawings.
- Schedule of builder's work, special provisions and special attendance by others.
- Examples of standard documentation from which the project quality plan will be prepared.
- Preliminary fabrication and installation method statements and programme.
- Proposals for replacing damaged or failed products.
- Areas of non-compliance with the specification.

- 230 INFORMATION TO BE PROVIDED AFTER ACCEPTANCE OF TENDER: Submit to the CA within (insert) weeks of appointment the following rainscreen cladding particulars:
- A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from the rainscreen cladding to the structure.
 - Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.
 - A schedule of all fabrication tolerances/size tolerances.
 - A detailed testing programme in compliance with the main contract master programme (this may not be required)
 - A detailed fabrication and installation programme in compliance with the main contract master programme.
 - A quality plan in compliance with the CWCT 'Guide to good practice for facades', Section 6.
 - Proposals to support any outstanding applications for Building Regulation consents or relaxations.
- 235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF RAINSCREEN CLADDING WORK: Submit to the CA before testing or fabrication the following rainscreen cladding particulars:
- Detailed drawings to fully describe fabrication and installation.
 - Detailed calculations to prove compliance with all design/performance requirements.
 - Project specific fabrication, handling and installation method statements.
 - Certification for all incorporated components manufactured by others confirming their suitability for all locations in the rainscreen cladding.
 - Recommendations for spare parts for future repairs or replacements.
 - Recommendations for safe dismantling and recycling or disposal of all products.
- 240 PRODUCT SAMPLES: Before commencing detailed design provide the CA with identified samples of:
(usually panel and finish samples)
Obtain approval of appearance before proceeding.
- 250 SAMPLES OF FIXINGS: At an agreed stage during detailed design work provide the CA with identified samples of each type of fixing, together with manufacturers' recommended torque figures
- 260 FABRICATION SAMPLES: At an agreed stage during detailed design work provide the CA with samples of:
(usually small system samples – not full mock-up)
Obtain approval of appearance before proceeding
- 270 MOCK-UP: (if required) At an agreed stage during detailed design work construct in an approved location a mock-up of:
(insert size and details)
Purpose(s) of mock-up:
(usually to validate details)
Arrange for inspection to be carried out jointly with the CA. Obtain approval of appearance before proceeding. Retain mock-up in undisturbed condition until completion of rainscreen cladding installation.

DESIGN/PERFORMANCE REQUIREMENTS**310 GENERALLY:**

- Comply with CWCT as 'Standard for walls with ventilated rainscreen', Section 2 - performance criteria unless specified or agreed otherwise.
- Project performance requirements specified in this sub-section are to be read in conjunction with CWCT performance criteria.

330 INTEGRITY OF VENTILATED RAINSCREEN CLAD WALLS: Determine size(s) and thickness of panels, the size(s), number and spacing of fixings, configuration and location of secondary support systems and incorporation of other accessories and fittings to ensure the cladding system, primary support structure and other elements forming the rainscreen wall will resist all factored dead, imposed and design live loads, and accommodate all deflections and movements without damage.

- Calculate wind loads on rainscreen walls appropriate to location, exposure, height, building shape, and size in accordance with BS 6399-2 standard method, taking full account of existing and known future adjacent structures.

Basic wind speed (V_b): _____ m/s.

Altitude factor (S_a): _____

Direction factor (S_d): _____

Seasonal factor (S_s): 1.

Probability factor (S_p): 1.

Terrain and building factor (S_b): _____

External and internal size effect factors (C_a): 1.

External pressure coefficients (C_{pe}): As determined from BS 6399-2, clauses 2.4 and 2.5.

Internal pressure coefficients (C_{pi}): As determined from BS 6399-2, clause 2.6.

Dominant opening: _____

- Impact load(s) in accordance with BS 8200:

Location and category _____

- Temporary imposed loads: _____

(Use this clause where the parameters determining wind loads are critical)

350 DEFLECTION UNDER WIND LOAD: At positive and negative applications of the design wind pressure the maximum normal deflection for the listed components must not exceed:

Individual rainscreen panels – $L/90$ of the span measured between the points of attachment of the panel – this being defined as the perimeter folded edges of the panel. The panel face (or pan) can deflect to a calculated safe dimension based upon the mechanical properties of the material.

Framing members – $L/200$ of the span of the member measured between points of attachment to the building, or 20mm, whichever is the lesser.

370 APPEARANCE AND FIT:

- Design rainscreen wall:
 - To ensure position and alignment of all parts and features as shown on the referenced drawings listed in type(s) of rainscreen cladding clause(s).
 - To accommodate deviations in the primary support structure.
- Maximum permitted component and installation tolerances:
 1. Permitted deviation of overall panel width +2.0mm -2.0mm
 2. Permitted deviation in panel length

For panels up to 2400mm	+2.0mm	-2.0mm
For panels over 2400mm	+3.0mm	-3.0mm
 3. Maximum permitted deviation in length

- of two opposite sides of panel +2.0mm -2.0mm
4. Squareness of panels:
When the longest of two adjacent sides of the panel is taken as the base line, the deviation of the shorter side measured from a perpendicular to the baseline at any point along the baseline not to exceed +2.0mm -2.0mm
5. Flatness:
Deviation under a 1.0m straight edge placed anywhere on a flat surface not to exceed 3.0mm
6. Alignment of joints between adjacent panels: deviation of panel corner from protected lines of edges of adjacent panels not to exceed 2.0mm
7. Alignment of faces to adjacent panels:
Deviation of panel edge under a 1.0m straight edge placed across adjacent panel not to exceed 1.0mm
- 380 GENERAL MOVEMENT: The rainscreen cladding must accommodate anticipated building movements as follows: **(To be inserted by Client's Engineer)**
- 390 AIR PERMEABILITY GENERALLY: The average air leakage rate through the listed wall(s) at a differential pressure of 50 pascals must not exceed :
(typically 10m³/hr/m²)
- 430 THERMAL PROPERTIES:
- Method for calculating the thermal transmittance (U-value) of the rainscreen wall:
 - Average U-value of rainscreen wall: _____ W/m²K.
- 440 CONDENSATION: The psychrometric conditions under which condensation must not form within or on the interior surface of the rainscreen wall or any surface of the wall that is on the warm side of any insulation are:
- Outdoor notional psychrometric conditions as BS 6229, table 6:
- | | Winter | Summer |
|-------------------|-----------|-----------|
| Temperature | -5°C | 18°C |
| Relative humidity | 90% | 65% |
| Vapour pressure | 0.361 kPa | 1.341 kPa |
| Duration | 60 days | 60 days |
- Indoor notional psychrometric conditions:
Temperature: _____ °C
Relative humidity: _____ %
Vapour pressure: _____ kPa.
(Data available in BS 6229, table 7)
 - Calculated amount of winter interstitial condensate must not exceed _____ kg/m².
Calculated annual net retention must not exceed 5% of winter condensate.
(0.5kg/m² for non-fibrous and closed cell insulants, 0.35kg/m² for fibrous insulants)
- 450 VAPOUR CONTROL LAYER: Determine the interstitial condensation risk of the rainscreen wall using the method described in BS 5250 appendix D. If necessary,

provide a suitable vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.

- 460 SOUND TRANSMITTANCE BETWEEN INTERIOR AND EXTERIOR OF RAINSCREEN CLAD WALL: Minimum sound reduction indices (R) to BS EN ISO 140-3:

One third octave band centre frequency (Hz)	R(dB)
_____	_____

- 465 SOUND TRANSMITTANCE BETWEEN ADJOINING FLOORS ABUTTING RAINSCREEN CLAD WALL: Minimum sound reduction indices (R) to BS EN ISO 140-3:

One third octave band centre frequency (Hz)	R(dB)
_____	_____

- 470 SOUND TRANSMITTANCE BETWEEN ADJOINING ROOMS ABUTTING RAINSCREEN CLAD WALL: Minimum sound reduction indices (R) to BS EN ISO 140-3:

One third octave band centre frequency (Hz)	R(dB)
_____	_____

- 480 FIRE RESISTANCE OF BACKING WALL: To BS 476- 21 and not less than _____

- 485 INTERNAL SURFACE SPREAD OF FLAME OF BACKING WALL: To BS 476-7, Class _____

- 490 CAVITY FIRE BARRIERS: To BS 476-20 and must resist the passage of flame and smoke for not less than _____

PRODUCTS (Delete sections not required)

- 710 ALUMINIUM ALLOY FRAMING SECTIONS:
- To BS 1474, alloy 6063 and suitable for the specified finish.
 - Structural members to comply with BS 8118.
- 712 ALUMINIUM ALLOY SHEET: To BS EN 485, BS EN 515 and BS EN 573 in an alloy, temper and thickness suitable for the application and specified finish.
- 730 MECHANICAL FIXINGS:
- Stainless steel to BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments, or
 - Mild steel to BS 4190 and suitable for galvanizing or other protective coating, or
 - Aluminium complying with BS 1474 and BS EN 755.
- 735 FIXINGS AND FASTENERS must be:
- Of dimensions not less than recommended by their manufacturers.
 - Capable of adequate three dimensional adjustment to accommodate primary support structure and rainscreen cladding fabrication/installation tolerances.
- 776 THERMAL INSULATION:
- Material: (Insert choice of material)
 - Manufacturer and reference: (Insert)
 - Thickness: (Insert ____mm). (Exact thickness determined by thermal analysis of complete wall build up).
 - Keep dry during installation.
 - Installation method: (Insert)
- 785 BREATHER MEMBRANE:
- Material: (Insert choice of material)
 - Manufacturer and reference: (Insert)

FINISHES

- 830 Pre-coat/coil coated aluminium:
- coil-coating resulting in a minimum 25 micron thickness in accordance with the "Standards of the European Coil Coaters Association".

FABRICATION AND INSTALLATION

- 910 GENERALLY:
- Fabricate and install rainscreen cladding in accordance with this specification and the final detailed drawings.
 - Fabricators and installers must employ competent rainscreen cladding operatives. Records of their experience are to be provided to the CA on request.
 - Select and align all products to ensure uniformity of appearance.
 - Joints must only occur at positions indicated on final detailed drawings.
 - Isolate dissimilar metals to prevent electrolytic corrosion.
 - Machine cut and drill all products in the workshop wherever possible.
 - Mark or tag all products to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the complete installation.
- 912 METALWORK: As section Z11, unless specified otherwise in this section.

- 922 FIXINGS/ADHESIVES APPLICATION: As section Z20, unless specified otherwise in this section.
- 925 SEALANT APPLICATION: As section Z22, unless specified otherwise in this section.
- 930 ASSEMBLY:
- Carry out as much assembly as possible in the workshop.
 - Joints, other than movement joints and designed open joints, must be rigidly secured, reinforced where necessary and fixed with hairline abutments.
 - Take precautions to prevent displacement of components in assembled units. Obtain approval for any reassembly on site.
- 935 INSPECTION:
- All fabrications and assembled units must be carefully inspected for match with approved samples and for compliance with this specification and the final detailed drawings before dispatch to site.
 - Give adequate notice of inspection arrangements to enable the CA and/or other affected parties to be present.
- 940 PROTECTION:
- All fabrications and assembled units must be protected against damage, corrosion and disfigurement during handling, installation and subsequent site operations.
 - Protective coverings must be applied before dispatch to site and must not be detrimental to rainscreen cladding products, finishes or installation procedures.
- 945 HANDLING AND STORAGE:
- Do not deliver to site any rainscreen cladding products and units which cannot be installed immediately or unloaded into a suitable well protected storage area.
 - Store products and units on level bearers clear of the ground and separate with resilient spacers.
- 950 SUITABILITY OF STRUCTURE:
- Not less than (**insert**) weeks before commencement of rainscreen cladding installation carry out a geometric survey of the supporting structure, checking line, level and fixing points. Report immediately to the CA if structure will not allow the required accuracy or security of erection.
 - Coordinate geometric survey for rainscreen cladding with any other survey(s) for adjacent cladding.
 - Set out erection datum points, lines and levels for a complete elevation at a time unless otherwise agreed with the CA.
- 960 PRELIMINARY RAINSCREEN CLADDING INSTALLATION: Complete a preliminary area of rainscreen cladding as set out below for inspection and approval of appearance by the CA.
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- 970 RAINSCREEN CLADDING INSTALLATION:
- Set out straight, parallel and truly aligned.
 - Tighten all mechanical fixings to manufacturer's recommended torque figures. Do not overtighten fixings intended to permit differential movement.

- Remove protective coverings only where necessary to facilitate installation and from surfaces which will be inaccessible on completion.
- 975 IN SITU WELDING is not permitted.
- 977 IN SITU WELDING is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.
- 980 INTERFACES: Ensure that flashings, closers, etc. (specified in another section) are located correctly and neatly overlap the rainscreen cladding to form a weather-tight junction.
- 985 DAMAGE:
- Do not repair rainscreen cladding without approval. Such approval will not be given where products and units are badly damaged or where the proposed repair will impair performance or appearance.
 - Repairs may require additional site testing at the discretion of the CA.
 - Schedule repairs or record on drawings for inclusion in the maintenance manual.
- 990 CLEANING: At practical completion or when otherwise agreed with the CA, remove any protective coverings and thoroughly clean rainscreen cladding areas. Cleaning agents for the purpose must be approved by the rainscreen cladding manufacturer and incorporated products manufacturers.
- 995 MAINTENANCE: Prepare a maintenance manual in accordance with CWCT 'Guide to good practice for facades', Section 10. Unless otherwise instructed or agreed the manual must be completed and handed over to the CA at practical completion.