

H92 Rainscreen cladding

Tendering

10 Information to be provided with tender

1. Submit the following cladding particulars
 - 1.1. Typical plan, section and elevation drawings at suitable scales.
 - 1.2. Typical detailed drawings at large scales, including all details representative of the cladding .
 - 1.3. Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including fire resistance certification for proposed cladding assembly .
 - 1.4. Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
 - 1.5. Proposals for connections to and support from the primary support structure.
 - 1.6. Proposals for primary support structure additional to that shown on preliminary design drawings.
 - 1.7. Schedule of builder's work, special provisions and special attendance by others.
 - 1.8. Examples of standard documentation from which project quality plan will be prepared.
 - 1.9. Preliminary fabrication and installation method statements and programme.
 - 1.10. Proposals for replacing damaged or failed products.
 - 1.11. Areas of non-compliance with specification.

Type(s) of rainscreen cladding

110A Rainscreen cladding

1. To Roof stair enclosure

Manufacturer:

Rockpanel Web: www.rockpanel.co.uk Tel: +44 (0)1656 863210

Product reference: Rockpanel Premium

Size: 1200 x 3050 mm

Thickness: 11 mm

Integrity & 120 minutes Insulation when tested to EN1364-1:1999- LPCB LPS1181 Grade EXT-A30 to EXT-A120 Approved, Certificate number 545b- LPCB LPS1208 Grade FR30 - FR120 Approved, Certificate number 545a

Primary support structure: Adjustable brackets fixed back to concrete wall. • Rainscreen cladding system: - Type: Drained and back ventilated . - Requirement: Include products, fixings and interfaces necessary to complete the fabrication and installation. Performance criteria to comply with Design/ Performance Requirements and Testingsubsections. Other panel requirements: Smooth flat facing finish . - Fixing system: Secret . - Fasteners: Austenitic stainless steel . Number and location of fasteners: As determined by clause 340 . - Joint type: Open baffled

2. Fire performance: As clause 470-
 - Combustibility: European fire class A2-s1,d0 or B-s2,d0 .
 - Panel external face: European fire class A2-s1,d0 or B-s2,d0 .
 - Panel internal face: European fire class A2-s1,d0 or B-s2,d0 .

3. Air gap: Not less than 38 mm .
 - Secondary support/ framing system: Vertical and horizontal proprietary carrier rail extrusions .
 - Material: Aluminium .
 - Fasteners: As determined by the manufacturer .Number and location: As determined by clause 340 .
 - Backing wall: concrete wall to Structural engineer's specification .
 - Thermal insulation: As clause 775 .
 - Breather membrane: As clause 785 .
 - Accessories:
 - Base support long laid continuously to locate bottom panel to manufacturer's recommendation
 - Rear Air Seal to air seal door opening to manufacturer's recommendation
 - Rear Air Seal applied continuously up the vertical steel support to manufacturer's recommendation
 - Mastec Strip to be used between the panel face and the proposed flashings to manufacturer's recommendation
 - Flashings, trims, drips, cappings to match/contrast to manufacturer's recommendation
 - Primary fasteners: Self drilling and tapping stainless steel screws
 - Number and location of fasteners: Minimum of three fasteners at each end of panel .
 - Incorporated components:
 - Matching copings, to manufacturer's recommendation
 - Drip profiles at lower edges, -Pre-made matching corner panels. .
 - Other requirements: Cladding: Complete detailed design of the cladding system and submit before commencement of fabrication.
 - Standard: To BS 5427-1

General requirements/preparatory work

210 Design

1. **Rainscreen cladding system and associated features:** Complete detailed design in accordance with this specification and the preliminary design drawings and submit before commencement of fabrication.
2. **Related works:** Coordinate in detailed design.

215 Design proposals

1. **Submission of alternative proposals:** Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

220 Specification

1. **Compliance standards:** The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
2. **Reference information:** For the duration of the Contract, keep available at the design office, workshop and on site copies of:
 - 2.1. The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - 2.2. Publications invoked by the CWCT 'Standard for systemised building envelopes'.

230 Information to be provided during detailed design

1. **Submit the following cladding particulars**
 - 1.1. A schedule of detailed drawings and dates for submission for comment.
 - 1.2. A schedule of loads that will be transmitted from the rainscreen cladding to the structure.
 - 1.3. Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.

- 1.4. A schedule of fabrication tolerances/ size tolerances.
- 1.5. A detailed testing programme in compliance with the Main Contract master programme.
- 1.6. A detailed fabrication and installation programme in compliance with the Main Contract master programme.
- 1.7. Proposals to support outstanding applications for Building Regulation consents or relaxations.

232 Quality plan

1. **Requirement:** Submit during detailed design.
2. **Content:** In accordance with BS EN ISO 9001 and including the following:
 - 2.1. Name of the quality manager.
 - 2.2. Quality assessment procedures.
 - 2.3. Inspection procedures to be adopted in checking the work.
 - 2.4. Stages at which check lists will be used and samples of the lists.
 - 2.5. List of work procedures on the correct use of materials or components, both off site and on site.
 - 2.6. List of product information with latest revisions.
 - 2.7. Subcontractors involved in the work.
 - 2.8. Subcontractors quality plans.
 - 2.9. Storage, handling, transport and protection procedures.
 - 2.10. Procedure for registering and reporting non compliances.
 - 2.11. Maintenance procedures and calibration records.
 - 2.12. Certification that completed work complies with specification.
 - 2.13. Check list register to ensure all items have been inspected and non-compliances discharged.

235 Information to be provided before commencement of testing or manufacture of rainscreen cladding system

1. **Submit the following cladding particulars**
 - 1.1. Detailed drawings to fully describe fabrication and installation.
 - 1.2. Detailed calculations to prove compliance with design/ performance requirements.
 - 1.3. Project specific fabrication, handling and installation method statements.
 - 1.4. Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the rainscreen cladding.
 - 1.5. Recommendations for spare parts for future repairs or replacements.
 - 1.6. Recommendations for safe dismantling and recycling or disposal of products.

240 Product samples

1. **General:** Before commencing detailed design, submit labelled samples of:

250 Samples of fixings

1. **General:** During detailed design, submit labelled samples of each type of fixing, together with manufacturers' recommended torque figures.

260 Fabrication samples

1. General: During detailed design, submit samples of: 600 x 600mm to include horizontal and vertical panel joint intersection, .
2. Obtain approval of appearance before proceeding.

Design/performance requirements

310 Cwct 'standard for systemised building envelopes'

1. General: Unless specified or agreed otherwise comply with:
 - 1.1. Part 2 - Loads, fixings and movement.
 - 1.2. Part 3 - Air, water and wind resistance.
 - 1.3. Part 4 - Operable components, additional elements and means of access.
 - 1.4. Part 5 - Thermal, moisture and acoustic performance.
 - 1.5. Part 6 - Fire performance.
 - 1.6. Part 7 - Robustness, durability, tolerances and workmanship.
2. Project performance requirements specified in this subsection: Read in conjunction with CWCT performance requirements.

340 Integrity

1. Requirement: The rainscreen cladding must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
2. Design wind pressure: Calculate in accordance with BS EN 1991-1-4 and National Annex.
3. Impact performance: To manufacturer's recommendations
 - 3.1. Safety impact requirements: To manufacturer's recommendations
 - 3.2. Serviceability impact requirements: To manufacturer's recommendations
 - 3.3. External impact exposure: In accordance with CWCT TN 75: To manufacturer's recommendations.
 - 3.4. Hard and soft body impact loads: To BS EN 14019: To manufacturer's recommendations.
4. Permanent imposed loads: To manufacturer's recommendations
5. Temporary imposed loads: To manufacturer's recommendations
6. Other design parameters: To manufacturer's recommendations

350 Deflection under wind load

1. Requirement: For listed components, at positive and negative applications of the design wind pressure, normal deflections are not to exceed: As manufacturer's recommendations.
2. Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5.4.2: Allowed

370 Appearance and fit

1. Requirement: Design rainscreen wall:
 - 1.1. To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - 1.2. To accommodate deviations in the primary support structure.

2. **Primary support structure:** Before commencing installation of rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - 2.1. **Give notice:** If the structure will not allow the required accuracy or security of erection.
 - 2.2. **Design tolerances:** To manufacturer's standard
3. **Rainscreen envelope zone tolerances**
 - 3.1. **Width:** +/- 10mm.
 - 3.1.1. **Critical reference location:** To external wall type X01
4. **Maximum permitted component and installation tolerances:** Panel tolerance ± 2 mm, installation tolerance ± 2 mm, overall = ± 4 mm

380 General movement

1. **Requirement:** Rainscreen cladding must accommodate anticipated building movements as follows: As detailed by the Structural Engineer .

425 Wind load serviceability and safety of rainscreen panels - cyclic wind loading

1. **Method of determination:** Test in accordance with CWCT 'Standard for systemised building envelopes', clause 8.14.6 to the regime given in Table 8.1

430 Thermal properties

1. **Method for calculating the thermal transmittance (U-value) of the rainscreen wall:** Weighted U-value.
2. **Average U-value of rainscreen wall:** 0.2
3. **Method for assessing thermal transmittance (U-value) of assemblies:** By calculation

440 Avoidance of condensation

1. **Requirement:** 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 insulation are:
 - 1.1. **Notional outdoor psychrometric conditions** as BS 6229, Table A1.
 - 1.2. **Notional indoor psychrometric conditions**
 - 1.2.1. **Temperature:** 20°C
 - 1.2.2. **Relative humidity:** 60%
 - 1.2.3. **Vapour pressure:** 0.93 kPa
2. **Winter interstitial condensate**
 - 2.1. **Calculated amount (maximum):** 0.35 kg/m².
 - 2.2. **Calculated annual net retention:** Nil.

450 Vapour control layer

1. **Interstitial condensation risk within rainscreen wall:** Determine using the method described in BS 5250 Annex D. If necessary, provide a suitable vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.

470 Fire performance of rainscreen cladding

1. **Standard:** In accordance with the CWCT 'Standard for systemised building envelopes', section 6 and TN 98.

2. **Combustibility:** Non-combustible, as defined in Building Regulations Approved Documents B2, paragraph 8 and Table A6 (England and Wales)
3. **Reaction to fire/ surface spread of flame**
 - 3.1. **External surfaces:** Class 0, as defined in Approved Document B1 and B2, Appendix A, paragraph 13 (England and Wales), and NI Technical Booklet E, section 3, clause 3.4
 - 3.2. **Internal (cavity) surfaces:** To BS EN 13501-1, Class B-s3, d2 or better
4. **Verification of fire performance:** In accordance with the CWCT 'Standard for systemised building envelopes', section 6 and TN98

480 Fire resistance of backing wall

1. **Minimum periods and criteria:** To BS 476-21, 60 min. integrity, 60 min. insulation

485 Internal reaction to fire/ surface spread of flame of backing wall

1. **Class:** To BS EN 13501-1, Class B-s3, d2 or better

490 Fire performance of cavity fire barriers

1. **Standard:** To BS EN 13501-2
2. **Requirement:** To resist the passage of flame and smoke for not less than 60 min. integrity, 60 min. insulation.

495 Durability

1. **Relevant agents or degradation mechanisms:** Rain, vehicular pollution
2. **Design life of the rainscreen cladding system:** Not less than 30 years
3. **Secondary components:** Submit details together with required maintenance regime, replacement periods and methods of replacement.

497 Lightning protection system

1. **Rainscreen components used as part of lightning protection system:** None

Testing

520 Project testing (site)

1. **Timing of testing:** At an agreed stage during preliminary installation on site arrange for testing of a section of rainscreen cladding in accordance with relevant clauses of this specification.
2. **Continuation of installation of general areas of rainscreen cladding:** Not until site test results and reports showing compliance with this specification have been submitted.

530 Testing authority

1. **Requirement:** Project testing must be carried out by a United Kingdom Accreditation Service (UKAS) approved independent laboratory.

665 Wind load fatigue test, small specimen

1. **Requirement:** To CWCT 'Standard for systemised building envelopes', 'Standard test methods for building envelopes' section 14.
 - 1.1. **Test sequence:**
 - 1.2. **Effective wind pressure:** As clause 360.

685 Site hose test

1. **Requirement:** To CWCT 'Standard for systemised building envelopes', 'Standard test methods for building envelopes' section 9.
 - 1.1. **Joints to be tested:** Representative section of cladding, junctions, eaves and cills

Products

710 Aluminium alloy framing sections

1. **Standards:** To BS EN 755 alloy EN AW-6063 and suitable for the specified finish.
2. **Structural members:** To comply with BS EN 1999-1-1, -3 and -4.

712 Aluminium alloy sheet

1. **Standards:** To BS EN 485, BS EN 515 and BS EN 573.
2. **Alloy, temper and thickness:** Suitable for the application and specified finish.

715 Carbon steel framing sections/ reinforcement

1. **Standards:** To the relevant parts of BS 7668, BS EN 10029, BS EN 10025 or BS EN 10210.
2. **Thickness:** Suitable for the application, and for galvanizing or other protective coating.

730 Mechanical fixings - material requirements

1. **Stainless steel:** To BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
2. **Carbon steel:** To BS 4190 and suitable for galvanizing or other protective coating.
3. **Aluminium:** To BS EN 755.

732 Adhesives

1. **General:** Not degradable by moisture or water vapour.

735 Fixings and fasteners

1. **Type and use:** Reviewed and approved by manufacturers. Submit confirmatory information on request.
2. **Dimensions:** Not less than recommended by their manufacturers.
3. **Adjustment capability:** Sufficient in three dimensions to accommodate primary support structure and rainscreen cladding fabrication/ installation tolerances.

760 Gaskets

1. **Material**
 - 1.1. Noncellular rubber to BS 4255-1.
 - 1.2. Cellular rubber to ASTM-C509-06.
2. **Durability:** Resistant to oxidation, ozone and UV degradation.

765 Weatherstripping of opening units

1. **Material:**
2. Noncellular rubber to BS 4255-1.
 - 2.1. Cellular rubber to ASTM-C509-06.
 - 2.2. Polypropylene woven pile, silicone treated.

3. **Installation:** Fixed in undercut grooves in framing sections using preformed corners with any joints in the length.

770 General sealants

1. **Selection:** In accordance with BS 6213 from:
 - 1.1. Silicone.
 - 1.2. One part polysulfide.
 - 1.3. Two part polysulfide.
 - 1.4. One or two part polyurethane.
2. **Classification and requirements:** To BS EN ISO 11600.
3. **Reaction to contact products and finishes:** Stable and compatible.

775 Thermal insulation

1. **Material:** Mineral wool to BS EN 13162
 - 1.1. **Properties:** Durable, rot and vermin proof and not degradable by moisture or water vapour.
2. **Recycled content:** Not applicable
3. **Fixing:** Attached to the outer face or supported within the backing wall so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the rainscreen cladding.

785 Breather membrane

1. **Standard:** To BS EN 13859-2.
2. **Material:** UV durable underlay to BS EN 13859-2
3. **Manufacturer:** Contractor's choice
 - 3.1. **Product reference:** Contractor's choice
4. **Continuity:** No breaks. Minimize joints.
 - 4.1. **Penetrations and abutments:** Attach to breather membrane with tape. Achieve full bond.
 - 4.2. **Laps:** Not less than 150 mm, bond with tape. Achieve full bond.
5. **Tape:** As recommended by breather membrane manufacturer.
6. **Repairs:** Lapped patch of breather membrane material secured with continuous band of tape on edges.
7. **Junctions at flashings, sills, gutters etc.** Overlap and allow free drainage to exterior.

Finishes

810 Protective coating of carbon steel framing sections/ reinforcement

1. **Treatment:** All surfaces to one of the following:
 - 1.1. Hot dip galvanized to BS EN ISO 1461.
 - 1.2. An appropriate equivalent coating to BS EN ISO 12944 and BS EN ISO 14713-1 and -2.

820 Protective coating of carbon steel mechanical fixings

1. **Treatment:** All surfaces to one of the following:
 - 1.1. Hot dip galvanized to BS EN ISO 1461.
 - 1.2. Sherardized to BS EN ISO 17668, class 30 coating thickness and passivated.

- 1.3. Zinc plated to BS EN ISO 2081, coating designation of FE//Zn//C for an iridescent (yellow passivate) chromate conversion coating or FE//Zn//D for an opaque (olive green) chromate conversion coating.

850 Polyvinylidene fluoride (PVDF) coating

1. **Standard:** To BS 4842 or AAMA 2604-17, subject to minimum coating thicknesses recommended by the manufacturer on all significant surfaces.
 - 1.1. **Applicator:**
 - 1.1.1. **Product reference:**
2. **Process:** Prepare base metals, prime, PVDF coat, test samples, protect components and repair damage in accordance with manufacturer's recommendations.
3. **Sequence:** Wherever possible, apply coatings after fabrication is complete.
 - 3.1. **Fabrication of prefinished lengths:** Submit proposals beforehand.
 - 3.2. **Uncoated edges:** Invisible in completed assemblies.

Fabrication and installation

910 Generally

1. **Electrolytic corrosion:** Take necessary measures to prevent.
2. **Identification of products:** Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the complete installation.

912 Metalwork

1. **Requirement:** As section Z11, unless specified otherwise in this section.

915 Timber treatment

1. **Requirement:** As section Z12, unless specified otherwise in this section.
2. **Exposed cut and drilled surfaces:** Treat with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

922 Fixings/ adhesives application

1. **Requirement:** As section Z20, unless specified otherwise in this section.

925 Sealant application

1. **Requirement:** As section Z22, unless specified otherwise in this section.

930 Assembly

1. **Location:** Carry out as much assembly as possible in the workshop.
2. **Joints:** Other than movement joints and designed open joints, must be rigidly secured, reinforced where necessary and fixed with hairline abutments.
3. **Displacement of components in assembled units:** Submit proposals for reassembly on site.

960 Preliminary rainscreen cladding installation

1. **Requirement:** Complete an area of cladding as set out below for inspection and approval of appearance.
2.

970 Rainscreen cladding installation

1. **Tightening mechanical fasteners:** To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
2. **Protective coverings:** Remove only where necessary to facilitate installation and from surfaces which will be inaccessible on completion.

980 Interfaces

1. **Installation:** Locate flashings, closers etc. correctly and neatly overlap cladding to form a weathertight junction.

985 Damage

1. **Repairs:** Do not repair cladding without approval.
 - 1.1. **Approval:** Will not be given where the proposed repair will impair performance or appearance.
2. **Record of repairs:** Prepare schedule or record on drawings for inclusion in the maintenance manual.

995 Maintenance

1. **Maintenance manual:** Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes', clause 7.6.1.
 - 1.1. **Materials certification and test reports to be included:** For all components used in the installation

Ω End of Section