

Metal Cladding Facade Package

Introductory notes and performance criteria for tendering sub-contractors



B17-1796 Broadway Two Hotel

Renfield Street, Glasgow

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FOREWORD

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This report should be read along with the drawings and documents by Consarc Design Group as listed overleaf.

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-	CS	MK	MK	05.06.19

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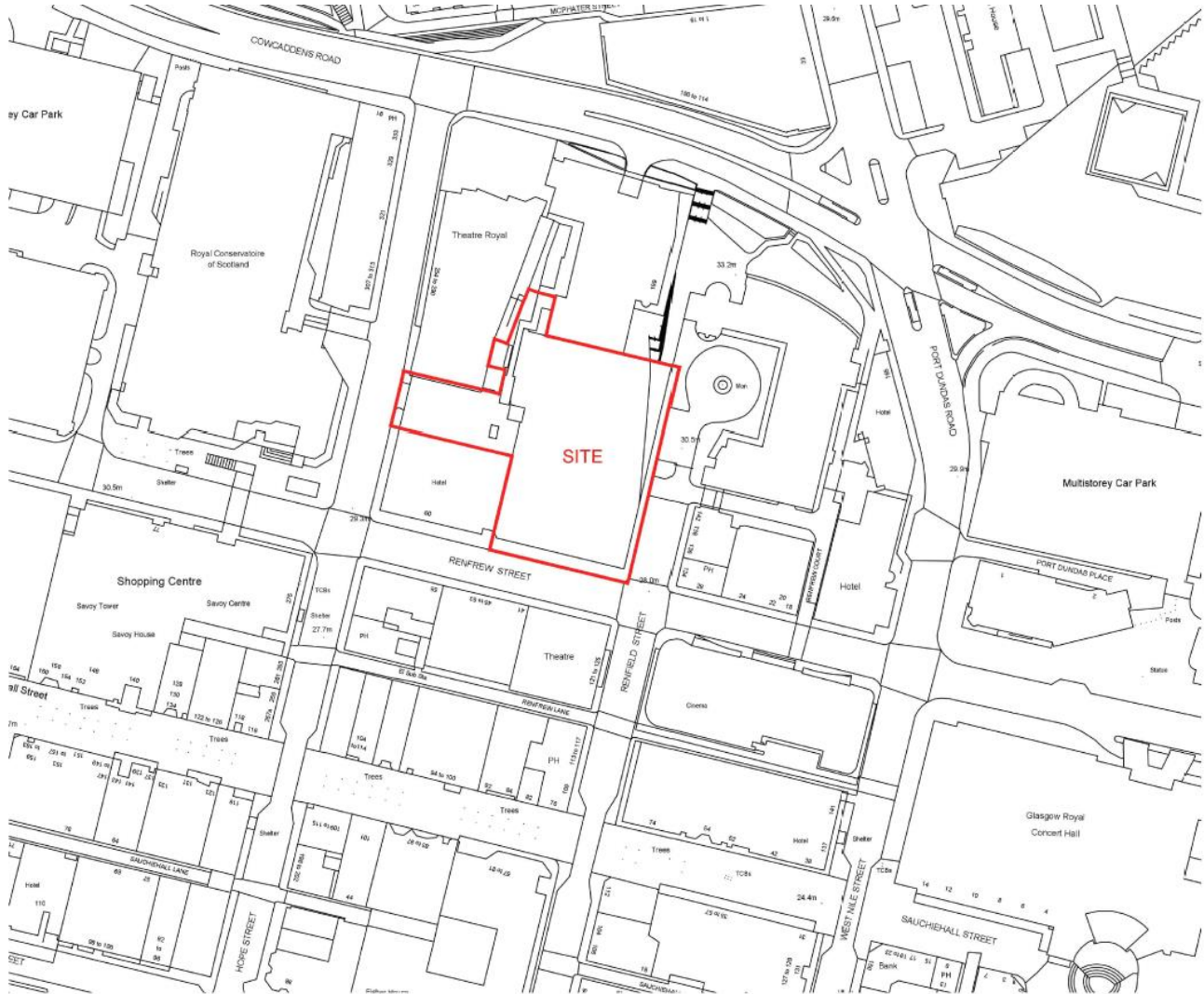
2.0 Drawings

3.0 Specification – Metal Cladding Façade

1.0 INTRODUCTION

The proposal is for a 300 bed, 12 storey hotel with roof level plant enclosure on Renfrew/Renfield Street, Glasgow.

Site Location Plan



2.0 DRAWINGS

This specification is to be read in conjunction with the following information:

Consarc Design Group Drawings:

DRAWING NO	DRAWING TITLE
GA-A-L100	Proposed Ground Floor Plan
GA-A-L101	Proposed First Floor Plan
GA-A-L102	Proposed Second Floor Plan
GA-A-L103	Proposed Third Floor Plan
GA-A-L104	Proposed Fourth Floor Plan
GA-A-L105	Proposed Fifth Floor Plan
GA-A-L106	Proposed First Floor Plan
GA-A-L110	Proposed Tenth Floor Plan
GA-A-L111	Proposed Eleventh Floor Plan
GA-A-L112	Proposed Twelfth Floor Plan
GA-A-L113	Proposed Thirteenth Floor Plan
GA-A-L701	Proposed Sample Panel
GA-A-L702	Façade Details
GA-A-L703	Façade Details
GA-A-L704	Façade Details
GA-A-L705	Façade Details
GA-A-L706	Façade Details
GA-A-L707	Façade Details
GA-A-L708	Façade Details
GA-A-L709	Façade Details
GA-A-L710	Façade Details
GA-A-L711	Façade Details
GA-A-L720	Renfrew Street Façade Detail Elevation
GA-A-L721	Renfield Street and West Courtyard Façade Detail Elevation
GA-A-L722	North Street Façade Detail Elevation
GA-A-L723	West Façade Detail Elevation
GA-A-L724	

And the following information provided by other design team consultants:

Adnitt Acoustics –

- Stage 3 Report

Caldwell Consulting –

- SBEM Model.

Jeremy Gardner Associates -

- Fire Report

Ian Black Consulting Drawings –

- Structural drawings illustrating locations of structure to fix façade finishes to so that the sub-contractor can allow for sufficient brackets/frame anchors to fix back to structural slabs/boots etc.
- Movement Report.

3.0 SPECIFICATION – METAL CLADDING FACADE

SCOPE OF WORK

The scope of work includes the design, supply fabrication and installation of Valcan Vitradual aluminium cladding system complete with all necessary sub-structures, anchors, hardware, insulation, fire barriers, membranes, EPDMs and fittings to provide a total installation, fully in conformity with the requirements and intent of the drawings and specification herein.

The cladding systems shall be installed complete with PPC aluminium copings, flashings etc. colour matched to cladding by an approved cladding specialist subcontractor in accordance with the manufacturer's recommendations, instructions, detailed specification and BBA agreements, Scottish Building Standards and British/European standards.

Facade sub-contractors shall demonstrate compliance with BS8414-1, BS8414-2 and BR135 for the complete cladding systems, and with Scottish Building Regulations. Any insulation products used in the system to achieve class A1 non-combustible rating when tested to EN 13501-1.

All PPC aluminium copings, cills and flashings are to be supplied under the aluminium cladding sub-contract package. Single ply coated metal copings to be provided by roofing subcontract package. Refer to detailed elevations and detailed sections for information on extent of copings, cills and flashings.

Façade sub-contractor to undertake a full detailed design process for all elevations including sub structure design, details, calculations etc including the submission of information to the design team in good time for approval prior to the procurement of any of the façade materials.

All fixing and joint details shall be designed to provide for the expected thermal movements and structural movements including deflection/long term creep in accordance with structural engineer's specification and movement report and UK Standards and Building Regulations. The system shall be designed to withstand the design wind load based on the relevant UK Standards and Building Regulations for the prevailing local weather conditions and submitted to the structural engineer for approval prior to any other design works being undertaken.

Façade sub-contractor to undertake a full and detailed survey of each façade prior to manufacture of any of the component parts of that façade.

Façade sub-contractor to allow for large size A3 samples for final colour selection and 1 large sample as shown on architects drawing GA-A-L701 Proposed Sample Panel.

Façade sub-contractors must participate in a series of façade workshops with other sub-contractors to ensure a fully co-ordinated whole façade. Façade sub-contractors must comment on other façade sub-contractors proposals where they have an impact on their proposals/ system.

Metal rainscreen cladding system to 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 document are to be read in conjunction with CWCT performance criteria.

DESIGN LIFE

Design life of metal rainscreen cladding system to be a minimum of 25 years.

FINISHES

Refer to dwg nos. noted in section 2.0 for extent of finishes

Valcan Vitradual 3mm thick solid aluminium with metallic PVDF finish in satin brown anodised look. System to be designed and installed by a specialist facade sub-contractor to meet building regulations and all relevant standards including but not limited to BS 8118-2, BS8200, DIN18516-1, BSEN13116, BR135 and BS8414-2.

With a gloss of 30% according to GARDNER Scale, the cladding surface taken individually shall not have any irregularities such as oil canning, waves, buckles and other imperfections when viewed at any position but not less than at an angle of 15 degrees to the true plane of the panel, with natural lighting of incident of not less than the same angle.

FACADE BUILD-UPS:

VALCAN VITRADUAL

Pre-coated metallic PVDF aluminium cassettes panels installed vertically
35mm air gap
A1 Non-combustible insulation to achieve a U-value of 0.18 W/m²K
Siderise compartment fire barriers and cavity barriers
Breathable membrane Class B1-S1, d0
12.5mm A1 non-combustible sheathing board
150mm A1 non-combustible insulation in Metsec studwork 150mm by others.
1000-gauge polythene vapour control layer
2no. layers of 15mm fireline plasterboard

Concealed Support System consisting of structural wall brackets manufactured from extruded aluminium with a hands free facility for fixing to the extruded carrier profile allowing adjustability in all planes, to required zone range (130mm-320mm). The carrier profile to have panel retention hooks, mechanically fixed using CNC production guidelines before delivery to site. The support framing must allow for calculated expansion and structural movement of the whole system vertically and horizontally as defined in the document.

Installer to ensure the locations of all SFS studs are clearly identified prior to installation of breather membrane as pin hole searching for a stud location will not be permitted. All fixings for secondary support brackets are only permitted into SFS studs and not only into the sheathing board unless previously agreed with the SFS / sheathing board sub-contractor. Responsibility remains with the metal cladding sub-contractor to ensure all fixings are correctly located.

Prior to installation of breather membrane metal cladding sub-contractor to ensure all joints in sheathing board have been filled by the relevant façade sub-contractor – when joints are unfilled these are to be pointed out to the main contractors for rectification prior to installation of the membrane.

Concealed support system materials to be extruded aluminium to BS1474 in 6063/T6 grade alloy. All cassette panels to be secret fixed to support system – metal cladding sub-contractor to ensure adequacy of secret fixed security screws, including fixing methodology, under all wind loading conditions ensuring resonance of panels does not compromise the integrity of the panel fixing.

Prior to installation of rainscreen cladding panels, metal rainscreen cladding subcontractor, in conjunction with the main contractor to set out very detailed reference lines and offset lines to determine the exact position and alignment of each and every metal panel.

INNER LEAF

Inner leaf is generally Metsec SFS Infill Walling system with 150mm wide channels by others.

WIND LOADING

No cladding element shall sustain permanent deformation or failure under loading equivalent 1.5 times the design wind pressure - full details to be confirmed by the façade sub-contractor. Deflection of any aluminium frame shall not exceed 1/150 of the clear span.

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

VALCAN VITRADUAL ALUMINIUM CLADDING SYSTEM

MATERIAL

Description

VITRADUAL by VALCAN LIMITED, consisting of:

- 3mm thick pre-coated aluminium panel

Thickness

Total Panel Thickness: 3mm

Finish

Satin Brown Anodised Look

Flashings/Cappings

Materials: Aluminium/Zinc coated steel – colour matched to cladding with Vitraflon – 700 Fluoropolymer.

EXECUTION

CONSTRUCTION GENERALLY

Substrates and Framing

Before fixing cladding, check and, if necessary, adjust the alignment of substrates and framing.

PREPARATION (CASSETTE METHOD)

- a) All cladding panels shall be factory fabricated and assembled to the highest standard of workmanship under experienced factory supervision and control.
- b) All panels shall be fabricated into cassettes complete with aluminium subframe.
- c) All seams of mitred joints of subframe shall be sealed with an approved sealant.
- d) The finished cassette panels shall be delivered to site complete with component markings for easy identification and assembly.

FIXING (CASSETTE METHOD)

- a) Fasteners including concealed screws, nuts, bolts and other items required for the connection of aluminium components shall be of non-magnetic stainless steel.
- b) Rivets used for fastening the VitraDual panels to the aluminium subframes shall be aluminium or galvanised steel as specified.
- c) All fixing anchors, brackets and similar attachments shall be of aluminium or galvanised steel as specified.

DRAINAGE

A complete drainage system is to be incorporated into the external facade system. All water collected by the drainage system is to be discharged at ground level in a controlled manner.

EXPANSION + CONTRACTION

The cladding shall be fabricated and erected so as to provide for all expansion and contraction of the components. Any temperature change due to climatic conditions shall not cause harmful buckling, opening of joints, undue stress on fastenings and anchors, noise of any kind or other defects.

INSTALLATION

- a) Component parts which are observed to be defective in any way, including warped, bowed, dented, abraded and broken members, must not be installed. Members or parts or parts which have been damaged during installation or thereafter before the time of practical completion shall be removed and replaced.
- b) No cutting, trimming, welding or brazing of components which could in any manner damage the finish, decrease the strength or result in visual imperfections or failure in performance shall be executed during installation. Components which require alteration shall be returned to the factory. If necessary, replace with new components.
- c) All components shall be installed level, true to line with uniform joints and reveals.
Maximum deviation for vertical member: 3mm maximum over 5.2m and 5mm maximum over 11.0m.

Maximum deviation for horizontal members: 3mm maximum over 8.5m.

- d) Anchorage of the cladding substructure to the building structure shall be by approved methods in strict accordance with the specification and approved shop and/or installation drawings.
Supporting brackets shall be so designed as to provide three-dimensional adjustments and accurate location of wall components.
- e) All joints between panels shall be set at widths as shown on the drawings with a tolerance of $\pm 2.0\text{mm}$. No two adjacent or perpendicular joints shall have a difference in width of more than 2.5mm. In addition, the tolerance between adjacent panels across any joint shall not exceed 1.5mm locally.
- f) The whole of the installation shall be in strict accordance with the manufacturer's instructions.

The proposed aluminium cladding shall be based on a rainscreen system and divided into individual panels as indicated on architectural design intent drawings.

Corner panels and reveals around façade openings are to be routered and folded from larger panels with no vertical joint on corners permitted.

Panels are always taken from the same production batch, e.g. only one batch should be used to clad a complete building elevation and installed in the direction shown by the arrows on the protective peel-off foil.

Façade sub-contractor to undertake a full detailed design process for all elevations including sub structure design, details, calculations etc. including the submission of information to the design team in good time for approval prior to the procurement of any of the façade materials.

All panels to be secret fixed with a 10mm joint between cladding panels horizontally and vertically. Insect mesh to be provided where required (at perimeters of installations).

All cladding panels shall be factory fabricated and assembled in compliance with the manufacturer's Data Sheets and to the best standard of workmanship under experienced factory supervision and control.

All panels shall be cut and routed using equipment and tools recommended and approved by the panel manufacturer.

Each panel shall be marked on the reverse side for easy identification of size and location. Finished panels shall be stored and transported to site in vertical position, face-to-face back-to-back, with adequate protection to prevent scratches and dents. The factory applied protective peel-off foil shall only be removed after the panels have been installed on site and shall remain in place until an entire façade has been fitted and checked / adjusted for horizontal and vertical alignment and signed off by the main contractor and recorded as such.

Any component parts which are observed to be defective in any way, including warped, bowed, dented, abraded and broken members must not be installed. Member or parts which have been damaged during installation or thereafter before the time of final acceptance shall be removed and replaced.

COMPLETION

WARRANTIES

General:

Name the Principal as warrantee. Register with manufacturers as necessary. Retain copies of paperwork delivered to site with components.

Commencement:

Commence warranty periods at practical completion or at acceptance of installation, if acceptance is not concurrent with practical completion.

Approval of Installer:

If installation is not by manufacturer, and product warranty is conditional on the manufacturer's approval of the installer, submit the manufacturer's written approval of the installing firm.

Insurance backed warranty term: Materials	Up to 20 years (By manufacturer)
Installation	10 years (By installer)

MAINTENANCE MANUAL

Contents:

Submit a maintenance manual containing technical specification of the cladding system setting out the manufacturer's recommendations on maintenance, to the Principal at Practical Completion. Include the names and addresses of suppliers, manufacturers and installers of each component.

CLEANING

Final Cleaning:

When installation is complete, remove extraneous matter and marks of the facade components in a manner which leaves the completed installation free of any streaking, spotting or non-uniform appearance.

Protection:

Protect as necessary and leave the finished work undamaged on completion.

FIRE BARRIERS

Refer to detailed elevations for extent of fire barriers and where each type is to be used. Fire barriers to be Siderise.

1. Compartment Fire Barrier (CFB) -120 minutes integrity / 120minute insulation fire barriers suitable for the facade system indicated to be located within the cavity void at all horizontal and vertical compartment wall abutments.
2. Cavity Barrier (CB) - 30 minute integrity / 15 minute insulation cavity barriers suitable for use with the facade system indicated to be provided in accordance with current Building Regulations to maximum limiting size of 20m in any direction and full perimeter of all openings.

All junctions in sheathing boards are to be treated with appropriate fire mastic and sealed/taped to prevent moisture ingress. All abutments of sheathing board, for example to slab edges, are to be sealed with intumescent mastic and sealed/taped to prevent moisture ingress.

All facade sub-contractors are to liaise together to ensure that fire barriers are continuous at junctions where there is a change in facade material.

CONDENSATION

The psychometric 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 as defined in BS 6229, table 6 for outdoor conditions and BS 6229, table 7 for indoor conditions.

AIR PERMEABILITY

Air permeability to be 5 m³/(h.m²) at 50 Pa maximum.

TESTING

The rainscreen cladding system shall have been tested by the Centre for Window and Cladding Technology who have developed “The Standard for Testing of Ventilated Rainscreen” and “Test Methods for Ventilated Rainscreen”

The following tests are required by these standards for the rainscreen cladding system –

- Dynamic water pressure test - weather tightness and water penetration
- Wind loading – Serviceability (positive and negative)
- Wind loading – Safety (load applied as serviceability test x 1.5 for safety factor)
- Wind resistance – Cyclic loading as test regime defined in “Standard for Walls with Ventilated Rainscreen” section 2.8.2 and BRE digest 346 part 7 (load applied as wind loading, serviceability test level)
- Soft body impact test.

Impact test - to CWCT ‘Standard for testing of ventilated rainscreen’, clause 3.12.1 and BS 8200. Wall category: All rainscreen cladding locations

U-VALUE

The proposed façade build-ups must achieve a minimum U-value of 0.18 W/m²K.

ALUMINIUM COPING, CILLS AND FLASHINGS

Refer to dwg nos. noted in section 2.0 for extent of finishes

Sub-contractor to allow for PPC aluminium coping, cills and flashing where indicated on architects drawings.

Sub-contractor design for PPC aluminium coping must include reinforcement as necessary to allow abseiling over the parapet for window cleaning and general façade maintenance. Copings to be sufficiently robust to take loads exerted by abseilers themselves but not by abseiling ropes which will cantilever on all parts of coping. Design calculations by sub-contractor's structural engineer to be provided for review.