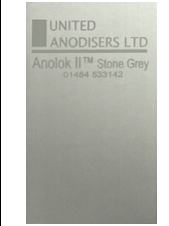


Residential - External Specification Schedule

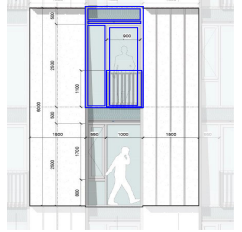
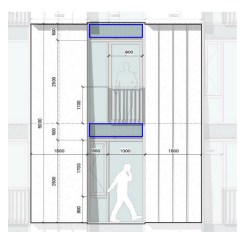
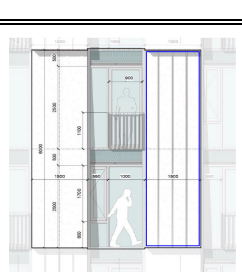
Jon Matthews Architects

Spec Tag	Description	Level	Elevation Reference	Location	Drawing Reference	Image	Manufacturer	Product Range / Code	Colour / Finish	Sample availability	Notes
EWS-209B	Anodised Aluminium Rainscreen Cassette Panels	Level 02 to Level 13		South Elevation (Irwell Block)	150_B2_04_2201		United Anodisers LTD	Anolok™ 541	Bronze	Yes	JMA to provide
EWS-209C	Anodised Aluminium Column Encasement and soffit to North Elevation Entrance	Level 00-01		North Elevation	150_B2_04_2201		United Anodisers LTD	Anolok™ II	Stone-Grey	Yes	JMA to provide
EWS-209C	Granite Upstand / Stall Riser	Level 00		East Elevation	150_B2_04_2200		Hardscape	Granite - Darton	Granite	Yes	JMA to provide
EWS-214A	Acid-Etched Precast Shingle	Level -01 to Level 13		North, South and West Elevation (Irwell Block)	150_B2_04_2201		Techcrete	DRS1174AE	Acid-Etched	Yes	JMA to provide

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Jon Matthews Architects

Project Number:	150 - Renaissance - Residential
Filing Code:	
Issue Date:	14.02.24
Revision:	B

Spec Tag	Description	Level	Elevation Reference	Location	Drawing Reference	Image	Manufacturer	Product Range / Code	Colour / Finish	Sample availability	Notes
EWS-202A	Unitised Curtain Wall Mullions/Transoms with Integrated Juliet balcony.	Level 02 to Level 26		EWS-203BB	150-JMA-B2-XX-DR-A-104202A_Bay Study - Sample Panel		United Anodisers LTD	Anolok™ II	Stone-Grey	Yes	JMA to provide
EWS-202A	Unitised Curtain Wall Glazing with Integrated Juliet balcony.	Lower Ground 02 to Level 27		Across all elevations	150-JMA-B2-XX-DR-A-104202A_Bay Study - Sample Panel		Schüco	AFUDC 80 or acceptable equivalent	Clear glass	No	To form part of Visual Mockup Unit. Date: Q4 2024
EWS-203B	Back painted glass with colour on Face 4 and Frit Pattern on Face 2	Lower Ground 02 to Level 27		Across all elevations	150-JMA-B2-XX-DR-A-104202A_Bay Study - Sample Panel		Schüco	AFUDC 80 or acceptable equivalent	Back Painted Glass with Frit Pattern	No	To form part of Visual Mockup Unit. Date: Q4 2024
EWS-203B	Polished precast shingle	Lower Ground 02 to Level 27		Across all elevations	150-JMA-B2-XX-DR-A-104202A_Bay Study - Sample Panel		Techrete	DRS1174P	Polished	Yes	JMA to provide

5.0 Facade Specification

6.8 PRECAST CONCRETE

- Refer to the Structural Engineer’s Specifications in the first instance and comply with the requirements of all formwork, fabrication and installation.
- The following chapters are noted for reference:
 - + REN-BGE-SPEC-S-E05 – Concrete – General,
 - + REN-BGE-SPEC-S-E10 – Concrete – Mixing, Casting, Curing,
 - + REN-BGE-SPEC-S-E20 – Concrete – Formwork,
 - + REN-BGE-SPEC-S-E30 – Concrete – Reinforcement,
 - + REN-BGE-SPEC-S-E40 – Concrete – Joints,
 - + REN-BGE-SPEC-S-E41 – Concrete – Worked Finishes,
 - + REN-BGE-SPEC-S-E42 – Concrete – Accessories Cast into In-situ Concrete.

6.8.1 General

- The complete detailed design of the panels may be covered by specifications provided by various parties such as the Architect, Structural Engineer and Services Engineer. Collaboration between these parties is required to provide a coordinated suite of specific cations that cover the full detailed design without duplication or conflict of information, while maintaining the project design responsibilities.
- Architectural Precast concrete shall be designed and installed in accordance with the requirements of the UK National Structural Concrete Specification, and in accordance with the requirements of BS-8297, BS-8110, BS-8200, and the recommendations of the CWCT ‘*Standard for systemised building envelopes*’ and of the British Precast Concrete Federation.
- Reconstituted stone shall comply with BS-1217.
- The components of the precast concrete panel, excluding elements such as windows and doors, which are installed into openings, shall be covered by a single source warranty. Therefore, approval shall be obtained from the manufacturer/supplier for all materials to be used.
- Interfaces with third-party systems, such as windows and doors that are installed into openings within the panel, shall be in accordance with the third-party system manufacturer’s recommendations and shall maintain the warranty of both the third-party system and the concrete panel system.
- The works shall accommodate all architectural and functional features indicated on the Architectural Drawings, whilst maintaining the specified performance.
- Dimensions indicated on the Architectural Drawings are nominal and indicative of the design intent. The Contractor shall maintain these dimensions and clearly state them on the Working Drawings. Any deviations to the indicated dimensions shall be stated with the Tender return.
- Include conduits and other components to suit services that interface with the panels.
- All metal components shall be corrosion protected in accordance with clause 3.17.
- The works shall be designed and installed as complete integrated systems, including all necessary reinforcement, support structure, bracketry, fixing rails and plates, angles, cleats, grouting, fixings and fastenings, rivets, clips, vapour control barriers, insulation, damp-proof membranes, breather and other membranes, intumescent fire stops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.
- The works shall accommodate interfacing systems in a manner acceptable to the manufacturer’s requirements.
- The Contractor shall liaise with the interfacing trade contractors regarding the design of the system and setting-out requirements and factor all components into any necessary calculations.
- Coordinate, with relevant trade contractors, for internal and external interfacing works, to enable their installations to interface with the loadbearing panel system as required to maintain performance requirements.

6.8.2 Single-Skin Panels (Non-loadbearing)

- Non-loadbearing insulated panel systems consisting of a single leaf of structural concrete (and reinforcement as appropriate).
- Panels may be long-spanning elements or individual piers and beam elements positioned in front of the structural columns and slab edges with loads transferred through the structure to the foundations, configured to dimensions as indicated on the Architectural Drawings.
- The concrete leaf shall be fixed to the primary structure in accordance with the Architectural Drawings. Preferred intent for support of panels shall be demonstrated to the project team for structural coordination.
- The exposed face of the inner leaf should be prepared to receive site-applied finishes indicated on the Architectural Drawings. The concrete shall support insulation fixed to the inner surface of the leaf.
- The thickness of the leaf shall be within the zones indicated on the Architectural Drawings.
- Concrete grade shall be confirmed by the tendering contractor and suit both performance and visual requirements.
- Integral insulation shall be of thickness and density to maintain performance requirements. Insulation type shall be compatible with the fabrication method of the sandwich panel.
- The outer leaf shall be fixed to the inner leaf in accordance with the system manufacturer’s recommendations.

6.8.3 Finishes

- The panels shall be through-coloured in a colour concrete and allows concrete to cure without trapping moisture. The location / arrangement of the various colours shall be indicated on the Architectural Drawings.
- Exposed faces of outer leaves shall have a cast texture formed by mould type. Patterns shall be formed within the external leaf of the panels by use of a formliner or acceptable equivalent. The location / arrangement of the various textures shall be indicated on the Architectural Drawings,
- Panel edge profiles shall be chamfered / square.

6.8.3.1 Joints

- Unless specified otherwise, joint widths and configurations shall be as recommended by the manufacturer/ supplier for acceptance by the Architect and shall maintain the performance requirements of the Architectural Specification.
- Locations shall be as indicated on the Architectural Drawings, or to the acceptance of the Architect.
- Joints shall align with interfacing systems. Gaps within joints shall be uniform, unless specified or indicated otherwise on the Architectural Drawings.
- Movement joints shall accommodate all specified movements whilst maintaining the overall system performance. Movement joints shall appear as similar to the standard joint as possible, to the acceptance of the Architect.
- Changes in direction shall be achieved using panels that are factory formed to suit the configurations. Preformed return ends shall be provided where possible. Corner angle covers and lapped joints with visible exposed insulation shall not be acceptable. Site cutting of panels shall not be permitted.
- Panel edge profiles shall be chamfered / square.
- Panel-to-panel joints; Joint locations and widths shall be as indicated on the Architectural Drawings.
- Joints shall be sealed in accordance with the panel manufacturer’s recommendations to achieve performance requirements and suit service conditions. Sealant colour shall be , selected from the manufacturer’s standard range.
- Joint profiles shall be flat recessed.

6.8.3.2 Structural Support

- Secondary support shall be configured as indicated on the Structural Engineer's drawings, fixed back to the primary structure by methods that maintain performance requirements and, where exposed, are acceptable to the Architect.
- Where the Sub-Contractor deems that secondary support is required in addition to that indicated on the Structural Engineer's drawings, the Contractor shall inform the Architect at Tender return and propose a suitable structural support system for acceptance.

6.8.3.3 Fixings

- Structural fixings connecting the panels to the primary structure shall be capable of accommodating panels, ancillary windows, connections and materials as well as combined loading.
- Fixings shall be concealed unless accepted otherwise by the Architect.
- Fixing directly to structure:
 - Provide and install all fixing devices, including bearing brackets and movement fixings and carry out all necessary preparation work such as drilling, plugging, screwing, bolting, cutting for anchor bolts or sockets to be cast-in, making good, including grouting-in of anchor bolts, and fixing whatsoever necessary.
 - All fixings shall be coordinated with the superstructure design.
 - Submit details of all fixings for review and acceptance by the Structural Engineer.
- Fixings shall provide 3-way adjustment of the panels to accommodate tolerances.
- Provide cast-in accessories, such as:
 - Lifting points, which shall be concealed on completion of the works or made good following installation of the panels.
 - Conduit to provide a concealed connection of electrical services installed on/in the panel.
 - Include for damp-proof courses/membranes at interfaces with the primary structure and other locations as required.
- Components for lightning protection and earth bonding shall be concealed, if required.

6.8.3.4 Cladding

- Unless specified or indicated otherwise on the Architectural Drawings, panels shall be secured to the support system using concealed methods.
- Determine the appropriate constituent materials and concrete mix proportions to achieve the visual and performance requirements of the Architectural Specification.
- The mix shall be suitable to achieve the required visual appearance for all visible faces of the installed works, for the full panel depth.
- Finished visible faces shall be uniform in colour, texture and appearance throughout the works.
- Surfaces shall be free from discolouration caused by contamination from release agent, grout leakage, rust staining or other sources.
- Exposed arrises shall have chamfered / square edges to a profile acceptable to the Architect.
- Cover spacers shall not be permitted on visible surfaces, unless agreed in advance with the Architect and the Structural Engineer.

6.8.3.5 Insulation

- Determine the type, thickness and density of insulation to achieve the performance requirements and to suit the service conditions.
- Insulation shall be bonded and/or mechanically fixed within panels of sandwich construction, as proposed by the Contractor.
- Exposed surfaces of insulation shall be sealed with an appropriate facing material and suitably taped at joints.
- The works shall include all necessary recesses/apertures to accommodate services and fittings.

6.8.4 Performance Requirements

6.8.4.1 Structural Performance

- The works shall be designed to comply with all prevailing relevant British Standards and Euro codes as appropriate.
- When calculating design loads, the worst combination shall be considered, taking account of the fact that the pressure coefficients at various locations may determine more than one design criterion.
- The works shall be capable of accommodating the following dead loads without any reduction in performance or appearance:
 - Component and final assembly dead loads.
 - Dead loads derived from any permanent fixtures or services attached to the works.
- The works shall be capable of accommodating the following live loads without any reduction in performance:
 - Loads arising from moving elements of the works, such as integrated opening panels, doors and vents.
 - All loads resulting from movements of the building structure and cladding support structure.
 - Applied loads acting on the surface of the works arising from maintenance and cleaning operations. The works shall sustain safely, without reduction in performance and without permanent deformation to any component, a static N load applied through a square of 100 mm sides.
 - Loads associated with normal maintenance and access traffic, in addition to any accidental loads imposed by persons falling against or onto the elements.
 - Increased weight due to unintended water absorption, snow and ice. Snow loads shall be in accordance with BS-EN-1991 Parts 1-3.
 - Known impact loads, or transferred impact loads, that occur during the service life, without deterioration in performance and without sustaining non-repairable damage.
 - Loads imposed by interfacing elements/works.

6.8.4.2 Wind Integrity / Air Pressure Loads

- Where available, refer to the supplementary Wind Report. Review the Report and identify if the following clauses are required, ensuring that there is no conflict or duplication of content.
- The works shall withstand, without permanent deformation, the effects of wind loads on the external elements, or internal areas subject to external wind pressure. Take into account the presence of openings.
- Wind pressure/load values shall be determined in accordance with the geographical location of the site, the topographical conditions and the type of building in accordance with BS EN 1991: Part 1-4.
- When assessing the wind pressure/load, account shall be taken of the shape of the building and its location in relation to the layout of any adjacent structures.
- Particular attention shall be paid to areas subject to increased pressures as defined by BS EN 1991: Part 1-4, such as eaves, canopies and external corners. Where it is believed that the geometry of the building will cause increased pressure due to vortex conditions, special care shall be taken to identify and design for any situation not clearly defined in BS EN 1991: Part 1-4.
- Take the necessary provisions to eliminate vibration, noise and fatigue caused by wind action and or vortex shedding of the façade elements.

6.8.4.3 Deflection

- Refer to the Structural Engineers' Movements and Tolerances Report.
- Deflections of non-loadbearing panels shall be in accordance with BS 8297.
- Deflections of loadbearing panels shall be in accordance with the deflection limits confirmed by the Structural Engineer.
- At both positive and negative applications of peak test pressure, the maximum allowable deflection of any element of the panel works, when carrying full design load, shall not exceed 3/1000 of its clear span in a direction normal to the plane of the element.

6.8.4.4 Thermal Movement

- Allow for thermal movements exerted due to climatic conditions.
- The works, including all necessary support structure, shall be designed to accommodate changes in dimension and shape of its components resulting from changes in service temperatures and from differential surface temperatures between inside and outside of the building without any reduction in the specified performance.
- The design shall cater for all temporary and permanent conditions. Due regard shall be made to the effects of the orientation of the building toward the sun.

6.8.4.5 Durability

- Generally, the performance or visual appearance of any element/component of the works shall not degrade during the design life of each element/component.
- Exposure to sunlight during the lifetime of the works shall not reduce the performance or visual appearance of any element/component of the works. Take into consideration expected solar performance under varying conditions of solar radiation and external/internal air velocity.
- The construction shall perform throughout the specified service life without failure resulting from defects in the design, materials or workmanship. Failure shall be defined as breakage, disengagement of components, deflection beyond stated values, reduction in performance or changes in appearance.
- The construction shall comply with Section 5 of Approved Document A of the Building Regulations, with regard to accidental damage/robustness.
- For Impact Resistance refer to clauses 4.5.1 and 10.2.

6.8.4.6 Weathering and Contamination.

- Rain, airborne pollutants and the wind shall not affect the performance of the building.
- Refer to Appearance Matters Series, No. 6. The Weathering of Concrete Buildings published by the British Cement Association.
- The building shall resist abrasion from agreed cleaning methods and maintenance systems without any noticeable change in appearance.

6.8.5 Environmental Performance

- In the first instance, Environmental Criteria shall be in accordance with clause 3.

6.8.5.1 Moisture Movement

- The works shall withstand movement without permanent deformation or any reduction in the specified performance due to:
 - Changes in the moisture content of its components, resulting from variations in the moisture content of the air.
 - Expansion caused by freezing of absorbed or retained moisture.
 - Control the flow of any water that may enter the system and direct the water to the outside such that no water remains internally and that there is no reduction in the specified performance of the works.

6.8.5.2 Acoustic Performance

- In the first instance, Environmental Criteria shall be in accordance with clause 3.5.

6.8.5.3 Fire Performance

- In the first instance, Environmental Criteria shall be in accordance with clause 3.15

6.7 GLAZING

6.7.1 General

- Glazing edges shall not come into direct contact with metal components or hard surfaces unless the systems are specifically designed for this purpose. Non-metallic separators, setting blocks and sealants shall be utilised in accordance with BS-6262-6.
- Glazing in 'critical locations' as per Building Regulations Approved Document K shall be required to be safety glass.
- Glazing more than 3m above ground or floor level that is vertical with unsupported edges or sloping 85° degrees from horizontal or more shall be laminated.
- Where glass is horizontal (less than 85° degrees from horizontal), it shall be 4-side supported laminated heat strengthened. The interlayer shall be a minimum of 1.52mm thick. Point supported glass shall be approved by the Client within the limitations of this Specification.
- Wherever glass performs the role of a barrier protecting a fall greater than 1m, it shall be laminated as indicated in BS-6180. A barrier is defined as any element intended to prevent people from falling or to stop people. For full height vision glazing in an area with a transom or stack joint height lower than 500mm above finished floor level comply with the requirements of BS-6262-3
- Window and panellised facade glazing shall be performed in the factory in accordance with the manufacturer's recommendations, relevant Standards, and the design criteria of this Specification.

6.7.2 Quality Control Program

- Submit a comprehensive ongoing manufacture and performance quality control program that shall include production methods and tests, and inspections of the following parameters:
 - Glass edge defects.
 - Cleaning procedures, rags, solvents, etc.
 - Silicone batch, 'use by' dates.
 - Cure rate of silicone.
 - Installation method of silicone.
 - Correct joint dimensions.
 - Air entrapment in cartridge.
 - Surface finish of aluminium.
 - Edge delamination in glass.
 -

6.7.3 Log Book

- A factory log book shall be kept and available for inspection by the Client recording the following information:
 - Date.
 - Number of panels manufactured and their intended location on the project.
 - Daily temperature and relative humidity inside and outside the factory.
 - Silicone product code and batch number.
 - Individual panel numbers glazed on that day.
 - Skin-over silicone test results.
 - Elastomeric silicone test results.
 - De-glaze results if applicable.
 - 'Hand pull' peel test results.
 - Factory Quality Inspector's report.

6.7.4 Panel Identification

- Each panel shall be individually numbered in such a way that the manufactured history can be traced via the factory log book.
- Mark the location of each individual panel on the elevation drawings and submit to the Client.

6.7.5 Supervision by Sealant Manufacturer

- Suitably trained personnel of the sealant manufacturer shall carry out the following supervisory requirements in the factory:
 - + Witness initial glazing operations for compliance with their recommendations, and to ensure correct application of their materials.
 - + Periodically inspect the factory in the presence of the Client to ensure that their standards are being maintained.
 - + Direct and be present to inspect the de-glazing of all panels to ensure correct installation of sealant.

6.7.6 Cold Bending

- Cold bending of glazing must allow the element or unit maintain their overall performance.

Simple, elegant design.