



COOP LIVE
L13 - LOUVRES

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COOP LIVE

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L13 LOUVRES	1
GENERAL	1
110 WORKS INCLUDED	1
111 TENDER SUBMITTALS	1
112 SAMPLES	1
113 MOCK-UPS, PROTOTYPES AND QUALITY BENCHMARKS	2
PRODUCTS	2
210 PERFORMANCE REQUIREMENTS	2
211 WALL SYSTEMS	4
212 DOORS	8
213 MATERIALS	8
214 SUPPORT STRUCTURE	10
215 FABRICATION	10
216 LIGHTNING PROTECTION AND EARTH BONDING	11
EXECUTION	11
310 INSTALLATION	11

L13 LOUVRES

GENERAL

110 WORKS INCLUDED

1. Scope of Works: This section of the Specification, when read in conjunction with the Design Drawings, provides particular requirements with respect to the following:
 - a. Louvred walls.
 - b. Louvred doors.
2. Particular Interfaces
 - a. Complete the Detailed Design of all interfaces with adjoining trades prior to commencement of manufacture.
 - b. Ensure that all interfaces are fully co-ordinated prior to commencement.
3. Related Documents and Sections: Examine the Design Drawings and the Contract Documents for requirements that directly affect or are affected by Work of this Section. Other Documents and Sections that directly relate to work of this Section include, but are not limited to:
 - a. The Preliminaries, general provisions of the Contract, including General and Supplementary Conditions, and Architectural General Requirements Specification Sections.
4. Design & Build Procurement Routes
 - a. Appoint a specialist sub-contractor to complete the Detailed Design maintaining at all times the intent portrayed on the Design Drawings whereby the Architect's role post-novation or during subsequent design stages shall be limited to checking compliance with quality, design and visual intent only.

111 TENDER SUBMITTALS

1. Tender Response
 - a. Provide tender submittals in accordance with the requirements of SUBMITTALS clauses of the A Section of the Specification.
 - b. Submit a design response with the Tender proposal, to include all profiles of typical conditions, with dimensions.
 - c. The Tender design response shall include:
 - 1). Samples where specified.
 - 2). List of Tests included.
 - 3). QA/ QC programme.
 - 4). List of proposed Working Drawings.
 - 5). Summary of deviations from the Specification.
 - 6). Outline technical specifications reflecting proposed materials/ systems, etc.
 - 7). A list of proposed suppliers and sub-contractors intended to be used.

112 SAMPLES

1. Pre-contract Samples: Sufficient samples of the following, including relevant trade literature and technical specifications, shall be provided in accordance with SUBMITTALS clauses of the A Section:
 - a. Samples of louvre blades
2. Post Contract Samples: In accordance with SUBMITTALS clauses of the A Section, post contract samples of the following shall be provided:
 - a. Samples of panellised louvres and framing mullions and transoms

113 MOCK-UPS, PROTOTYPES AND QUALITY BENCHMARKS

1. Mock-ups: Provide mock-ups in accordance with SUBMITTALS clauses of the A Section as follows:
 - a. Not required.
2. Prototypes: Provide prototypes in accordance with SUBMITTALS clauses of the A Section as follows:
 - a. Not required.
3. Benchmarks: The following quality benchmark shall be provided in accordance with SUBMITTALS clauses of the A Section:
 - a. The first fully installed and completed part of each type of the works.

PRODUCTS

210 PERFORMANCE REQUIREMENTS

1. Comply with the general performance of Section A of the Specification and the following specific performance requirements.
2. Structural
 - a. General: When calculating loads the worst combinations shall be considered, taking account of the fact that the pressure coefficients at various locations may determine more than one design criterion.
 - b. Dead Loads: The works shall be capable of accommodating the following dead loads without any reduction in performance:
 - 1). Self-weight of materials and components.
 - 2). Weight of attached or supported services and building maintenance equipment.
 - 3). The works shall withstand all movement of the structure under all design loads or combination of loads without damage or reduction in performance.
 - c. Live Loads: The works shall accommodate the following live loads without any reduction in performance:
 - 1). The works shall sustain safely, without reduction in performance and without permanent deformation to any component, a static 500N load applied horizontally through a square of 100mm sides.
 - 2). A horizontal line load applied to the works, due to the occupants, in accordance with BS 6180 and the relevant parts of BS EN 1991.

- 3). There shall be no fracture or permanent deformation of any part, nor any deterioration of the subsequent performance of the work resulting from live loads imposed.
 - d. Deflections: The allowable deflection of any element of the works, when carrying full design loads, shall not exceed 15mm or 1/ 175 of its clear span in a direction normal to the plane of that element, whichever is the lesser value.
 - e. Wind Loads
 - 1). Generally: The works shall be designed to withstand without permanent deformation, the effects of wind loads. The works shall not depart from fixings under the design wind loads.
 - 2). The structure in respect to wind loads shall be constructed in accordance with the recommendations of BRE Digests 406, in particular mindful of the variant consequences of subsequent partial and full blocking.
 - f. Inertial Loads: The works shall be capable of accommodating inertial loads arising due to the acceleration/ deceleration of moving sections including opening lights, doors and vents of the building or enclosure. Consult the Architect regarding the motion requirements for such elements.
3. Environmental
- a. Thermal Movement
 - 1). All components shall be designed to resist thermal movement resulting from the maximum and minimum surface temperatures occurring. The design shall cater for all temporary and permanent conditions envisaged for the works.
 - 2). The service temperature range for components of the works shall be taken as -25°C and +90°C.
 - b. Moisture Movement: The works shall withstand movement without permanent deformation or any reduction in the specified performance:
 - 1). Due to changes in the moisture content of their components, resulting from variations in the moisture content of the air.
 - 2). Due to the expansion of absorbed or retained moisture caused by freezing.
 - c. Atmospheric Conditions: All works shall be fully capable of resisting the prevailing atmospheric conditions.
 - d. Condensation
 - 1). Condensation shall not form, either on internal or external surfaces of framing members, blades or interstitially within the construction of infill/ blanking panels forming a part of the works, such that it may lead to damage or staining.
 - 2). Interstitial cavities within the construction, where condensation may occur, shall be adequately drained and ventilated to the outside, such that the formation of such condensation is not detrimental to the performance nor causes damage or staining of the works.
 - e. Capillarity: The Detailed Design, gaskets, seals, etc. shall take into account and eliminate any possibility of water migration to the inside of the building due to capillarity, to the satisfaction of the Architect.
 - f. Weather and Water Penetration Resistance

- 1). Water penetration classification shall be as follows in accordance with BS EN 13030:
 - a). Water Penetration shall be Class A for double/ triple bank systems.
 - b). Water Penetration shall be Class B for single bank systems.
 - 2). Sand penetration classification shall be in accordance with BS EN 13181.
 - 3). The works, including flashings and junctions with adjacent parts of the building, shall not admit water or sand into the internal parts of the building under all conditions with full allowance made for deflections and other movements.
- g. Local Factors
- 1). Visit the Site in order to become familiar with local requirements. Local microclimatic conditions shall be taken into account and grades of materials assessed as suitably durable for the location shall be selected.
 - 2). An assessment of microclimatic conditions shall be made with due allowance for any factors likely to have an adverse effect upon materials intended for the Contract. More appropriate materials shall be substituted if adverse effects are predicted.
4. Durability
- a. General: The performance criteria shall be satisfied for the full design life of the works, as stated in the Specification, provided always that the maintenance has been carried out as specified.
 - b. Impact and Abrasion Resistance
 - 1). The works shall resist abrasion from agreed cleaning methods and maintenance systems without any noticeable change in surface appearance.
 - 2). The extent of any damage determined through testing shall be recorded and, where possible, quantified. Samples shall be submitted to the Architect.
5. Demountability
- a. Elements of the works shall be individually and independently removable ensuring access for maintenance.
 - b. The removal of units shall not affect the performance or safety of any other part of these, or adjacent, works.
6. Sustainability
- a. Refer to Section A.600 series SUSTAINABILITY clause, determine and evaluate the applicability of the specified requirements including BREEAM Credit Requirements to the works specified in this Section of the Specification. Comply with all relevant requirements.

211 WALL SYSTEMS

1. Type EWS-701 External Metal Louvred Wall System
 - a. External grade architectural metal ventilation and weather defence louvred wall system.
 - b. Conformance: BS EN 13030 and LPS 1175.

- c. Specific Performance: Refer to the Facade Types Matrix.
 - d. Dimensions/ configuration: Refer to the Design Drawings.
 - e. Type: Permanent ventilation with increased weather protection and complete visual screening.
 - f. Support Framing: Concealed extruded aluminium perimeter and intermediate mullion profiles fixed to structure.
 - g. Blades:
 - 1). Horizontally orientated extruded aluminium louvre blades secured to framing in manner to convey continuous appearance.
 - 2). Profile: Z shaped profile blades in and triple bank configuration.
 - 3). Blades spaced at centres and sloped at angle to achieve visual intent and performance requirements. Refer to the Services Engineer's Documentation.
 - h. Finish: Polyester powder coated to 'super durable' Qualicoat level 2.
 - a). Axalta Coating Systems: Ref: SD300C4901120.
 - b). RAL 9011 colour in matt gloss content, matching EWS-301.
 - i. Louvres shall include discreet vermin/ insect exclusion mesh and bird perching/ nesting deterrent.
 - j. Where required or indicated, provide:
 - 1). Acoustic treatment: Discreet acoustic baffles to be provided to the rear of the louvre.
 - 2). Maintenance Access: Discreetly accessible maintenance sections to accommodate termination/penetration of adjacent pipework/ductwork.
 - k. Include all necessary accessories and ancillary items as required to maintain the performance and visual design intent of the system.
 - l. Indicative Product:
 - 1). Manufacturer: Kingfisher Louvre Systems, or acceptable equivalent.
 - 2). Reference: KW 100/100T Multiple Bank Louver (Z profile Triple Bank) with M1 mullion.
2. Type EWS-705 External Metal Louvred Wall System
- a. External grade architectural metal ventilation and weather defence louvred wall system.
 - b. Conformance: BS EN 13030 and LPS 1175.
 - c. Specific Performance: Refer to the Facade Types Matrix.
 - d. Dimensions/ configuration: Refer to the Design Drawings.
 - e. Type: Permanent ventilation with increased weather protection and complete visual screening.
 - f. Support Framing: Concealed extruded aluminium perimeter and intermediate mullion profiles fixed to structure.
 - g. Blades:

- 1). Horizontally orientated extruded aluminium louvre blades secured to framing in manner to convey continuous appearance.
 - 2). Profile: Z shaped profile blades in and triple bank configuration.
 - 3). Blades spaced at centres and sloped at angle to achieve visual intent and performance requirements. Refer to the Services Engineer's Documentation.
- h. Finish: Polyester powder coated to 'super durable' Qualicoat level 2.
- 1). Axalta Coating Systems: Ref: SD300C4901120.
 - 2). RAL 9011 colour in matt gloss content.
- i. Louvres shall include discreet vermin/ insect exclusion mesh and bird perching/ nesting deterrent.
- j. Where required or indicated, provide:
- 1). Acoustic treatment: Discreet acoustic baffles to be provided to the rear of the louvre.
 - 2). Maintenance Access: Discreetly accessible maintenance sections to accommodate termination/penetration of adjacent pipework/ductwork.
- k. Include all necessary accessories and ancillary items as required to maintain the performance and visual design intent of the system.
- l. Indicative Product:
- 1). Manufacturer: Kingfisher Louvre Systems, or acceptable equivalent.
 - 2). Reference: KW 100/100T Multiple Bank Louver (Z profile Triple Bank) with M1 mullion.
3. Type EWS-711 External Metal Louvred Wall System
- a. External grade architectural metal ventilation and weather defence louvred wall system.
 - b. Conformance: BS EN 13030 and LPS 1175.
 - c. Specific Performance: Refer to the Facade Types Matrix.
 - d. Dimensions/ configuration: Refer to the Design Drawings.
 - e. Type: Permanent ventilation with weather protection and visual screening.
 - f. Support Framing: Concealed extruded aluminium perimeter and intermediate mullion profiles fixed to structure.
 - g. Blades:
 - 1). Horizontally orientated extruded aluminium louvre blades secured to framing in manner to convey continuous appearance.
 - 2). Profile: Z shaped profile blades in and single bank configuration.
 - 3). Blades spaced at centres and sloped at angle to achieve visual intent and performance requirements. Refer to the Services Engineer's Documentation.
 - h. Finish: Polyester powder coated to 'super durable' Qualicoat level 2.

- 1). Grey colour with matt gloss content, to match adjacent façade precast concrete.
 - i. Louvres shall include discreet vermin/ insect exclusion mesh and bird perching/ nesting deterrent.
 - j. Where required or indicated, provide:
 - 1). Acoustic treatment: Discreet acoustic baffles to be provided to the rear of the louvre.
 - 2). Maintenance Access: Discreetly accessible maintenance sections to accommodate termination/penetration of adjacent pipework/ductwork.
 - k. Include all necessary accessories and ancillary items as required to maintain the performance and visual design intent of the system.
 - l. Indicative Product:
 - 1). Manufacturer: Kingfisher Louvre Systems, or acceptable equivalent.
 - 2). Reference: KW 100Z Single Bank Louver with M1 mullion.
4. Type EWS-715 External Metal Wall Louvre System
- a. External grade metal in-frame ventilation and weather defence wall louvre system, located within opening in EWS-301 Backing wall and behind rainscreen facing.
 - b. Conformance: BS EN 13030 and LPS 1175.
 - c. Specific Performance: Refer to the Facade Types Matrix.
 - d. Dimensions/ configuration: Refer to the Design Drawings.
 - e. Type: Miscellaneous intake/exhaust louvers for openings in rainscreen backing wall.
 - f. Support Framing: Concealed extruded aluminium perimeter and intermediate mullion profiles fixed to structure.
 - g. Blades:
 - 1). Horizontally orientated extruded aluminium louvre blades secured to framing.
 - 2). Profile: As required to achieve performance.
 - 3). Blades spaced at centres and sloped at angle to achieve visual intent and performance requirements. Refer to the Services Engineer's Documentation.
 - h. Finish: Polyester powder coated to 'super durable' Qualicoat level 2.
 - 1). Axalta Coating Systems: Ref: SD700C4900520.
 - 2). RAL 9005 colour in semi-gloss gloss content.
 - i. Louvres shall include discreet vermin/ insect exclusion mesh and bird perching/ nesting deterrent.
 - j. Where required or indicated, provide:
 - 1). Acoustic treatment: Discreet acoustic baffles to be provided to the rear of the louvre.

- 2). Maintenance Access: Discreetly accessible maintenance sections to accommodate termination/penetration of adjacent pipework/ductwork.
- k. Include all necessary accessories and ancillary items as required to maintain the performance and visual design intent of the system.
- l. Indicative Product:
 - 1). Manufacturer: To be confirmed.
 - 2). Reference: To be confirmed.

212 DOORS

- 1. Type DRS-275 Integrated External Metal Hinged Security Louvred Doorset
 - a. Proprietary external severe duty metal louvred doorset, integrated into EWS-711 Louvred wall system.
 - b. Conformance: BS EN 14351, BS 6375, BS EN 13030 and LPS 1175.
 - c. Specific Performance: Refer to the Facade Types Matrix.
 - d. Security Rating: SR2 (B3).
 - e. Type: Permanent ventilation with weather protection and visual screening.
 - f. Framing: Concealed extruded aluminium profiles fixed to framing of host louvred wall system.
 - g. Door Leaf:
 - 1). Door Leaf Frame: Concealed extruded aluminium profiles hinged to framing of host louvred wall system.
 - 2). Horizontally orientated extruded aluminium louvre blades secured to framing in manner to convey continuous appearance.
 - 3). Profile: Profile and bank configuration of blades to match those of host louvred wall system.
 - 4). Blades spaced at centres and sloped at angle to match those of host louvred wall system.
 - h. Finish: Match the host louvred wall system.
 - i. Louvres shall include discreet vermin/ insect exclusion mesh and bird perching/ nesting deterrent.
 - j. Ironmongery: Provide ironmongery to achieve desired security rating no less than SR2 (B3) and to the satisfaction of the Architect.
 - k. Include all necessary accessories and ancillary items as required to maintain the performance and visual design intent of the system.
 - l. Indicative Product:
 - 1). Manufacturer: Kingfisher Louvre Systems, or acceptable equivalent.
 - 2). Reference: KW Louver Doorsets.

213 MATERIALS

- 1. Stainless Steel

- a. Stainless steel shall be made of corrosion resistant nickel chromium steel to BS EN 10088, BS EN ISO 683: Part 3, BS EN ISO 683: Part 4, BS EN 10095 and BS EN 10250: Part 4, for solid bar and BS EN 10216: Part 5 for tube. Bead blasted finish to comply with grade 1.4401 to BS EN 10095, BS EN 10029, BS EN 10048, BS EN 10051 and BS EN ISO 9445.
 - b. Where site or shop welding is required, it shall be by the process known as manual inert gas tungsten-arc welding and it shall be carried out in accordance with a procedure to BS EN ISO 15614: Part 1 and by welders tested in accordance with BS EN ISO 9606: Part 1. Welds shall be continuous and of a material and technique suitable to the sections being assembled. Weld finish shall be smooth with all flux residues removed and no surface defects (i.e. undercut, porosity, deep ridges).
 - c. Stainless steel shall be in accordance with Section Z11.
2. Aluminium
- a. Aluminium shall be capable of withstanding atmospheric conditions as specified and authenticated test certificates from the manufacturer shall be provided to confirm compliance.
 - b. All extruded aluminium alloy members shall be fabricated from the appropriate grade of aluminium alloy complying with BS EN 754: Parts 3-5 and BS EN 755: Parts 1-9 unless otherwise specified.
 - c. Unless specified otherwise, aluminium sheeting shall be a minimum of 3mm thick and satisfy the requirements of BS EN 485: Parts 1-4, BS EN 515 and BS EN 573: Parts 1-3.
 - d. All aluminium fixing brackets and cleats shall be manufactured from the appropriate grade of alloy to the requirements of BS EN 515, BS EN 573: Part 3, and BS EN 755: Parts 1-9. If visible, they shall be finished to match the metal panels and framing members.
 - e. Aluminium sheets shall not suffer bowing, dimpling, oil canning, sagging, pillowing, rippling, warp, abrupt transitions or other visible deformation or irregularity.
 - f. Aluminium shall be separated from concrete by bitumen paint or similar methods, acceptable to the Architect.
 - g. Aluminium shall be in accordance with Section Z11.
3. Flashings/ Trims
- a. The thickness shall be 1.4mm minimum gauge.
 - b. Joints in flashings and trims shall be installed to fully accommodate thermal movement. Flashing joints generally shall comply with the Cladding Manufacturer's recommendations, and recommendations contained within the - "Profiled Sheet Metal Roof and Cladding, A Guide to Good Practice" 2nd Edition or as otherwise stated.
 - c. Flashings shall match the adjacent main system in colour and texture.
 - d. Flashings shall include all necessary anti-drumming insulation.
 - e. Electrical continuity shall be achieved between conductive parts. Provisions shall be made for lightning protection integration requirements.
4. Fixing Bolts, Anchors, Brackets, Screws, Rivets and Nuts
- a. Refer to Section Z20.
 - b. Stainless steel, grade A2 of BS EN ISO 3506: Parts 1 and 2 (grade 1.4301 for general use) or A4 of BS EN ISO 3506: Parts 1 and 2 (grade 1.4401 for severely corrosive climates).

- c. Mild steel in accordance with BS 4190, BS EN ISO 4016, BS EN ISO 4034, BS EN ISO 898 and BS EN ISO 898 and finished in accordance with the Design Drawings.
- d. Rivets, shear pins, etc., shall also be provided from aluminium alloy of appropriate grade complying with BS EN 754: Parts 3-5, BS EN 755: Parts 1-9, BS EN 573: Parts 3 and 4, BS EN 515 and BS EN 12020: Parts 1 and 2.
- e. The type, size and positioning of all bolts, anchors, brackets, screws, rivets and nuts shall be shown on the Working Drawings, together with full details of their installation technique and torque settings, where appropriate.

214 SUPPORT STRUCTURE

- 1. Supports: Provide a structural steel support structure, as necessary, having due regard for any requirements in excess of structural steel shown on the Structural Engineer's Design Drawings and also any requirements shown on the Design Drawings. The structural steelwork shall comply with the Structural Engineer's Steelwork Specification, including protective coatings and where applicable, Section G10 of the Specification.

215 FABRICATION

- 1. Tolerances for Manufacture
 - a. It shall be ensured that the design tolerances are adhered to.
 - b. The provisions intended to accommodate the construction tolerances of the surrounding elements shall be stated and shown on the Working Drawings. Any further information necessary shall be obtained from the Architect when completing the Working Drawings.
 - c. Specific tolerances to be adhered to:
 - 1). The accuracy required for the tolerances of the works shall be as set out below:
 - a). Level of horizontal members: +/-2mm from datum in any 1500mm, non-cumulative.
 - b). Plumb of vertical members: +/-2mm in the height.
 - d. A detailed list of tolerances to which the components shall be fabricated, within the requirements of the Specification and overall geometric requirements, shall be submitted with the Tender. All tolerances shall be submitted for review by the Architect. As a minimum the statement of tolerances shall include the following:
 - 1). Thickness.
 - 2). Out of plan.
 - 3). Straightness normal to plane.
 - 4). Longitudinal.
 - 5). Horizontal.
 - 6). Vertical.
 - 7). Diagonal.
 - 8). Eccentricity.

- e. All finished metal surfaces shall be flat and free from undulations and irregularities.
 - 1). Twist of frame: $\pm 1.5\text{mm}$ - there shall be no warping of frame.
 - 2). Line of frame: $\pm 2\text{mm}$ overall difference between adjacent standards not to exceed 2mm.

216 LIGHTNING PROTECTION AND EARTH BONDING

1. General

- a. Bonding to metal components shall be provided in accordance with BS EN 62305: Part 1, BS EN 62305: Part 2, BS EN 62305: Part 3 and BS EN 62305: Part 4 to ensure continuity between adjacent sections, both vertically and horizontally over the whole façade. Bonding between sections shall have a minimum cross section of 50mm^2 . Any bolts used for bonding shall be of a minimum size of M10.
- b. Bonding to structural steelwork shall be carried out at intervals at no greater than 10m horizontally and 20m vertically. The first level of bonding to the structural steelwork shall be at the highest floor level of each part of the building.
- c. Provide studs/ bolts for subsequent connection.
- d. All straps/ connections shall be concealed.
- e. No straps shall be fixed along copings.

EXECUTION

310 INSTALLATION

1. General Requirements

- a. The works shall be erected plumb (or at the angles prescribed) and true in proper alignment and relation to established lines and grids as shown on the Working Drawings. The erected system shall present true and accurate lines and flat planes. Deviations from lines, planes and verticality shall be limited to long wave formations of minimum 20mm length not exceeding 1000mm less rate of change and a maximum amplitude of 3mm. All the above shall be measured from a laser reference line.
- b. Joints between panels: The actual width of any joint shall not deviate from the nominal width by more than $\pm 2\text{mm}$ or 10% of the joint width whichever is the lesser. Any variation shall be equally distributed with no sudden changes. The misalignment between joints shall not exceed 2mm.
- c. Level: The works shall be within $\pm 2\text{mm}$ of the specified level. The cumulative slope between the same locations on any panel shall not exceed 1 in 1000.
- d. Plumbness: The works shall be erected such that no point on any panel is more than 3mm from its theoretical vertical/ diagonal plane. The cumulative slope between the same locations on any panel shall not exceed 1 in 1000. The vertical plane shall be within $\pm 2\text{mm}$ of the theoretical plane position.
- e. A method statement detailing proposals to achieve the specified tolerances shall be submitted with the Tender. This shall demonstrate a clear understanding of the construction programme, the effects of the building structure and construction method and the fabrication method of the panels.
- f. Sufficient analysis of the erection sequence shall be undertaken to ensure that the installation tolerances stated above shall be met to the satisfaction of the Architect.

- g. Dimensional Checking: Before work begins on Site the proposed method of dimensional setting-out and crosschecking with adjacent trades and elements to satisfy the accuracy requirements shall be submitted to the Architect. The checking of any setting-out or of any line or level by the Architect, or his representative, shall not in any way relieve the Contractor of his responsibility for the correctness thereof.
- h. Alternative Tolerances: Alternative tolerances to those specified may be permitted at the Architect's discretion, provided they are agreed in advance of manufacture of components.
- i. The Working Drawings shall provide for sufficient tolerance in manufacture of the works in order to accommodate manufacturing tolerances of interfacing elements.
- j. The tolerances stated herein shall be adhered to. No revisions to the tolerances to cater for inadequate control shall be permitted.
- k. Full details shall be submitted to the Architect for review of the proposed methods for achieving and constantly monitoring the fabrication tolerances during all stages of the work. Detailed records of the constant control and tolerances achieved shall be submitted to the Architect.
- l. The works, when installed, shall not be subject to warping or twisting and shall be strictly rigid, firm, free from vibration, knocking, rattles, squeaks and other noises when subject to the worst combination of environmental conditions and wind loads.
- m. All tolerances stated shall be measured and monitored at a mean temperature to be agreed with the Architect.
- n. No rainwater ponding shall be permitted on any element of the works.