

Section H (NBS)



Series 3 Curtain Wall

Composite Curtain Walling (Aluminium/Timber)

Project :-

For :-

SENIOR
HYBRID
SYSTEMS

H11 CURTAIN WALLING

To be read with Preliminaries/ General conditions.

TENDERING**010 INFORMATION TO BE PROVIDED WITH TENDER**

- Submit the following curtain walling particulars:
 - Typical plan, section and elevation drawings at suitable scales.
 - Typical detailed drawings at large scales, including all junctions and interfaces with finishes .
 - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including all opening and fixed lights..
 - Certification, reports and calculations demonstrating compliance with specification of proposed curtain walling.
 - Proposals for connections to and support from the building structure and building components.
 - Proposals for amendments to primary supporting structure and for secondary supporting structure additional to that shown on preliminary design drawings.
 - Schedule of builder's work, special provisions and special attendance by others.
 - Examples of standard documentation from which project quality plan will be prepared.
 - Preliminary fabrication and installation method statements and programme.
 - Schedule of products and finishes with a design life expectancy less than that specified in clause 440, with proposals for frequencies and methods of replacement.
 - Proposals for replacing damaged or failed products.
 - Areas of non-compliance with the specification.

TYPES OF CURTAIN WALLING**110 CURTAIN WALLING**

- Supporting structure: Steel
- Curtain walling system: Curtain walling system: Hybrid Aluminium Timber Composite Curtain Wall System
 - Manufacturer: Senior Architectural Systems Ltd
Product reference: Hybrid zone drained pressure equalised dry glaze 50 mm Curtain Wall- incorporating engineered laminated timber beam structural elements.
 - Type: Stick System with thermal isolator behind co extruded hardened pvc pressure plate
- Internal framing member: ref :-Hybrid Curtain Wall section reference HT50080;50120;50160;50220;50300; subject to project specific structural calculations.
- Material: Extruded Aluminium Alloy 6063 T6 to BS EN 755 Pt 9 2001 glass carrier plus purpose engineered Spruce laminated timber GlulamBeam, certified to MPA Stuttgart DIN 1052 with Class GL24h,(structural); melamine glue and stability Class BS 18, weather proof and heat proof, with a moisture content of 12% +/- 2%. Only lamellaes in principle without faults (like knots and flaws) are laminated. Finger joints in outer layers at approximately 500mm plus centres. PEFC /04-32-0042 Certified

- Finish: Matt Lacquered finish on spruce – 150 – 300 micron wet film thickness
- The size of mullions and transoms are to be determined through calculation of wind load, span between fixing centres and mullion centres, to each ensure that the resulting size minimises the deflection for each to those required under the CWCT Standard; for each individual screen.

All in conformance to the CWCT Standard for Systemised Building Envelopes Part 3

Air permeability 600 pa A4 Classification

Water tightness 600 pa R7

Wind Resistance 2400 pa

And DD ENV 13050 Watertightness – Dynamic (Fan) Test.

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- External cover cap: Ref :- SCW 002 & SCW 055
 - Material: Extruded Aluminium Alloy 6063 T6 to BS EN 755 Pt 9 2001.
 - Finish: _Matt Polyester Powder Coat to BS 6496 1984
 - Colour/ texture: _to be confirmed by architect_(RAL Ref :-) from Standard Colour Range.
- Minimum film thickness: 40 microns
- Glazing: to be suit specific requirements of project
- Inner pane:
- Outer pane:
- Centre pane U value to be:
- Where glazing occurs in the front of building structure/floors, Look a Like units can be provided as required; the cost & specification is still to be agreed.
- Accessories:
- Incorporated components: co extruded plastic pressure plate, fixed to transoms at a maximum of 25mm from ends & at a maximum of 150 centres.
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- Other requirements: fixing brackets to be designed to suit individual project requirements, but will need to incorporate jointing arrangements to ensure that the structural integrity of each mullion is maintained, when they have to be joined together to accommodate high spans.
- Flashings : to be 2.0 mm aluminium pressings, in standard lengths, not exceeding 3000 mm.
- Finish : as above

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- Manufacturer: see section L10 for window insert details.
- Product reference:
- Material:
- Finish:
 - Colour/ texture:
 - Minimum film thickness:
- Fixing:
- Other requirements:

GENERAL REQUIREMENTS/ PREPARATORY WORK

210 DESIGN

- Curtain walling and associated features: Complete the detailed design. Submit before commencement of fabrication.
- Related works: Coordinate in the detailed design.

215 DESIGN PROPOSALS

- Alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

220 SPECIFICATION

- Compliance standard: Senior Aluminium Systems technical manual,
- Reference information: For the duration of the contract, keep a copy of the technical manual at the design office, workshop and on site.

230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN STAGE

- Submit the following curtain walling particulars:
 - A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from the curtain walling to the structure.
 - Proposed fixing anchor details relevant to structural design and construction.
 - A detailed testing programme in compliance with the Main Contract master programme.
 - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
 - A quality plan in compliance with CWCT 'Guide to good practice for facades', Section 6.
 - Proposals to support outstanding applications for Building Regulation consents or relaxations.

235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF FABRICATION OF CURTAIN WALLING

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

250 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of: Curtain walling section.

260 SAMPLES OF FIXINGS

- General: During detailed design, submit labelled samples of each type of fixing anchor, including casting-in restraints and shims, together with manufacturers' recommended torque figures.

DESIGN/ PERFORMANCE REQUIREMENTS

305 STANDARD FOR CURTAIN WALLING'

- General: Comply with Section 2 of S.A.S Technical manual - Performance Criteria unless specified or agreed otherwise.
- Project performance requirements specified in this subsection: Read in conjunction with S.A.S Technical manual performance criteria.

311 INTEGRITY

- Requirement: The curtain walling must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
- Design wind pressure to BS 6399-2.

320 DEFLECTION UNDER DEAD LOADS

- Requirement: Framing members parallel to the curtain walling plane must not:
 - Reduce glass bite to less than 75% of design dimension.
 - Reduce edge clearance to less than 3 mm between members and immediately adjacent glazing units, panel/ facing units or other fixed units.
 - Reduce clearance to less than 2 mm between members and movable components such as doors and windows.

330 GENERAL MOVEMENT

- Requirement: Curtain walling must accommodate anticipated building movements as follows: to Structural Engineers requirements.

340 AIR PERMEABILITY

- Requirement: SD Commercial doors have been designed for use in high traffic areas and due to the nature of this type of door, although the air permeability will be reduced through the application of double wool piles to both the cross rails and stiles; no performance figures are available for this item.

350 WATER PENETRATION

- Requirement: as in clause 340, water penetration is minimised through the use of double wool piles and a drained threshold ref SD501; no performance figures are available for this item.

370 THERMAL PROPERTIES

- Requirement: Doors designed for heavy usage/high traffic, these specifications take priority when assessing conformity with ADL2, this may mean poorer U values, but where practical this should be offset by better performance elsewhere in the building.

380 SOLAR AND LIGHT CONTROL

- Glass panes/ units in curtain walling: Must have:
 - Total solar energy transmission of normal incident solar radiation (maximum): see Spectrophotometrics in L
 - Total light transmission (minimum): see Spectrophotometrics in L

385 THERMAL STRESS IN GLAZING

- Glass panes/ units: Must have adequate resistance to thermal stress generated by orientation, shading, solar control and construction.

425 INTERNAL SURFACE SPREAD OF FLAME OF CURTAIN WALLING

- Standard: To BS 476-7.
- Class O.

430 FIRE STOPPING

- Locations: At junctions of curtain walling with compartment walls and floors.
- Materials and methods of fixing: To ensure fire resistance not less than that specified for compartment walls and floors.

435 OPENING LIGHTS

440 DESIGN LIFE OF CURTAIN WALLING

- Duration (minimum): 40 years
- Maintenance: Submit a schedule for maintenance and for replacement of secondary components.

450 SAFETY

- Finished surfaces of curtain walling: Accessible internal and external areas must not:
 - Have irregularities capable of inflicting personal injury.
 - Release irritant or staining substances.

TESTING

515 PROJECT TESTING (LABORATORY)

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- Test results and reports: Before commencement of curtain walling fabrication and installation, submit proof of compliance with this specification.

PRODUCTS

710 ALUMINIUM ALLOY FRAMING SECTIONS

- Standard: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.
- Alloy, temper and thickness: Suitable for the application and specified finish.
- Structural members: To BS 8118-2.

712 ALUMINIUM ALLOY SHEET

- Standards: To relevant parts of BS EN 485, BS EN 515 and BS EN 573.
- Alloy, temper and thickness: Suitable for the application and specified finish.

715 MILD STEEL FRAMING SECTIONS/ REINFORCEMENT

- Standards: To relevant parts of BS 7668, BS EN 10029, BS EN 10113, BS EN 10137, BS EN 10155 and BS EN 10210.
- Thickness: Suitable for the application, and for galvanizing or other protective coating.

730 MECHANICAL FIXINGS

- Stainless steel: To BS EN ISO 3506-1 and - 2, grade A2 generally, grade A4 when used in severely corrosive environments.
- Mild steel: To BS 4190 and suitable for galvanizing or other protective coating.
- Aluminium brackets, rivets and shear pins: To relevant parts of BS EN 755.

732 ADHESIVES

- General: Not degradable by moisture or water vapour.

735 FIXING ANCHORS

- Dimensions: Not less than recommended by their manufacturers.
- Adjustment capability: Sufficient in three dimensions to accommodate building structure and curtain walling fabrication/ installation tolerances.

737 GLASS GENERALLY

- Standards: To BS 952 and relevant parts of:
 - BS EN 572 for basic soda lime silicate glass.
 - BS EN 1096 for coated glass.
 - BS EN 1748 for borosilicate glass.
 - BS EN 1863 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate glass.
 - BS EN ISO 12543 for laminated glass.
- Glass quality: Clean and free from obvious scratches, bubbles, cracks, rippings, dimples and other defects.
- Glass edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

739 DIMENSIONAL TOLERANCES ON GLASS IN ALL CASES

- Measurement of tolerances: Before any thermal toughening/ heat strengthening.
- Pane dimensions less than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.0 mm.
 - For 8 to 12 mm thick glass: ± 1.5 mm.
 - For 15 mm and thicker glass: ± 2.5 mm.
- Pane dimensions more than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.5 mm.
 - For 8 to 12 mm thick glass: ± 2.0 mm.
 - For 15 mm and thicker glass: ± 3.0 mm.
- Pane squareness: Not more than 4 mm difference in diagonal measurements.

741 DISTORTIONAL TOLERANCES ON GLASS IN ALL CASES

- Measurement of tolerances: After any thermal toughening/ heat strengthening.
- Maximum bow: 0.2% of pane dimension.
- Maximum roller wave:
 - For 3 to 5 mm thick glass: 0.5 mm.
 - For 6 to 10 mm thick glass: 0.3 mm.
 - For 12 mm and thicker glass: 0.15 mm.
- Maximum edge dip:
 - For 3 to 5 mm thick glass: 0.8 mm.
 - For 6 to 10 mm thick glass: 0.5 mm.
 - For 12 mm and thicker glass: 0.25 mm.

742 HEAT SOAKING OF THERMALLY TOUGHENED GLASS

- Requirement: To minimize the incidence of glass failure due to nickel sulphide inclusions in the following locations: High level windows.
- Heat soaking regime: To achieve a mean glass temperature of $290 \pm 10^\circ\text{C}$ for not less than manufacturers recommendations.

750 INFILL PANELS/ FACINGS

- Tolerances:
 - Deviation in size (maximum): ± 1 mm.
 - Deviation in flatness from plane per 2 m length (maximum): ± 1 mm.
- Rigidity: Adequate to comply with design/ performance requirements.

765 WEATHERSTRIPPING OF OPENING UNITS

- Material:
 - Noncellular rubber to BS 4255-1.
 - .
 - Polypropylene woven pile, silicone treated.
- Attachment: Fixed in undercut grooves in framing sections using preformed corners, with any joints in the length.

770 GENERAL SEALANTS

- Selection: In accordance with BS 6213 from:
 - Silicone to BS 5889.
 - One part polysulphide to BS 5215.
 - Two part polysulphide to BS 4254.
 - One or two part polyurethane.

772 CURTAIN WALLING JOINT ASSEMBLY SEALANTS

- Material: Silicone to BS 5889, type A or B, neutral curing where in contact with or close proximity to other products that may be adversely affected by acetoxy curing.
- Manufacturer/Product reference: To approval

780 THERMAL INSULATION

- Material: Mineral fibre matt
 - Properties: Durable, rot and vermin proof and not degradable by moisture or water vapour.
- Fixing: Attached to or supported within the curtain walling so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the curtain walling.

785 VAPOUR CONTROL LAYER

- Acceptable materials:
 - Aluminium alloy: As clause 712.
 - Mild steel: As clause 717, galvanized or protective coated.
 - Stainless steel: As clause 720.
 - Reinforced membranes: Foil, plastics or rubbers, protected both sides by rigid facings/ linings.
- Location: Warm side of thermal insulation.
- Integrity: Continuous, free from gaps and sealed at joints.

FINISHES

- 810 PROTECTIVE COATING OF MILD STEEL FRAMING SECTIONS/ REINFORCEMENT
- Treatment: One of the following to all surfaces:
 - Hot dip galvanized to BS EN ISO 1461.
 - An appropriate equivalent coating to BS 5493, □BS EN ISO 12944 or BS EN ISO 14713.
- 820 PROTECTIVE COATING OF MILD STEEL MECHANICAL FIXINGS
- Treatment: One of the following to all surfaces:
 - Hot dip galvanized to BS EN ISO 1461.
 - Sherardized to BS 4921, class 1 coating thickness and passivated.
 - Zinc plated to BS EN 12329, coating designation Fe//Zn//C for an iridescent (yellow passivate) chromate conversion coating or Fe//Zn//D for an opaque (olive green) chromate conversion coating.
- 830 POWDER COATING
- Requirement: As section Z31.

FABRICATION AND INSTALLATION

- 910 GENERALLY
- Electrolytic corrosion: Prevent. Submit proposed methods.
 - Fixings: Concealed unless indicated on detailed drawings. Where exposed they must match material and finish of the products fixed.
 - Fabrication: Machine cut and drill products in the workshop wherever possible.
 - Identification of products: Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the completed installation.
- 912 METALWORK
- Requirement: As section Z11, unless specified otherwise in this section.
- 915 GLAZING
- Requirement: As section L40, unless specified otherwise in this section.
 - Directional patterned/ wired glass: Generally fix parallel to surround and align adjacent panes where seen together at close quarters.
- 917 FIXINGS/ ADHESIVES APPLICATION
- Requirement: As section Z20, unless specified otherwise in this section.
- 920 SEALANT APPLICATION
- Requirement: As section Z22, unless specified otherwise in this section.
- 930 ASSEMBLY
- General: Carry out as much assembly as possible in the workshop.

- Joints (other than movement joints): Rigidly secured, reinforced where necessary and fixed with hairline abutments.
- Displacement of components in assembled units: Submit proposals for reassembly on site.

950 SUITABILITY OF SUPPORTING STRUCTURE

- Pre-installation survey: Submit report if required accuracy or security of curtain walling installation cannot be achieved.

955 FIXING ANCHOR INSTALLATION

- Site drilling or cutting into structure: Submit proposals for positions other than shown on detailed drawings.
- Concrete supporting structure:
 - Cast-in inserts: Provide detailed locational information. Protect cavities in inserts from entry of concrete.
 - Edge fixing distances: Not less than recommended by fixing anchor manufacturers.
 - Corrective fabrication: Minimize. Where necessary, submit proposals.

965 PRELIMINARY CURTAIN WALLING INSTALLATION

- Requirement: Complete an area for inspection and approval of appearance as follows: ___to be agreed.

970 CURTAIN WALLING INSTALLATION

- Securing to fixing anchors: Through holes formed during fabrication only.
- Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
- Protective coverings: Remove only where necessary to facilitate installation and from surfaces that will be inaccessible on completion.

975 WELDING

- In situ welding: _____ .

980 INTERFACES

- Flashings, closers, etc: Locate and form correctly to provide weathertight junctions with the curtain walling.

982 IRONMONGERY

- Assembly and fixing: Accurately, using fasteners with matching finish supplied by ironmongery manufacturer.
- Completion: Check, adjust and lubricate as necessary to ensure correct functioning.