L10 WINDOWS/ROOFLIGHTS/SCREENS/LOUVRES

To be read with Preliminaries/General conditions and Sections AA31 and AA90.
Items in this section to Contractor's Design as shown.

PRELIMINARY INFORMATION/REQUIREMENTS

110 EVIDENCE OF PERFORMANCE: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.

115 TIMBER PROCUREMENT:
- All timber used in permanent and temporary works and timber for wood based products, (including formwork, shuttering, hoardings and other site installations), shall originate from sustainable well-managed forests and/ or plantations and be legally sourced, in line with the UK Government Timber Procurement Policy (http://www.cpet.org.uk).
- Procurement generally to be in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES - www.cites.org). Timber should not be on the CITES endangered list (or in the case of Appendix III of the CITES list, it has not been sourced from the country seeking to protect this species as listed in Appendix III).
- For all wood products provide signed documentary evidence/certification (which has been or can be independently verified) to confirm source from managed forests and the entire chain of custody from origin to final supply, from at least one of the following authorities:-
  - FSC (Forestry Stewardship Council: www.fsc-uk.org)
  - PEFC (Programme for the Endorsement of Forest Certification: www.pefc.org/).

121 SITE DIMENSIONS must be taken and recorded on shop drawings before starting to make all the relevant components.

GENERAL REQUIREMENTS/PREPARATORY WORK

160 DESIGN:
- Complete the detailed design of the window and rooflight installations, and associated features shown on the General Arrangement drawings to meet the requirements of this specification.
- Coordinate detailed design with that for all related works.

161 DESIGN PROPOSALS: The Architect's drawings indicate design intent but do not preclude submission with tender of reasonable alternative proposals for consideration.

162 INFORMATION TO BE PROVIDED WITH TENDER: Submit to the CA the following window and rooflight particulars:
- Typical plan, section and elevation drawings at suitable scales.
- Typical detailed drawings at large scales, including sliding screens, opening lights, louvre systems and insulated panels.
- Technical information and certification demonstrating compliance with the specification of proposed incorporated products and finishes.
- Certification, reports and calculations demonstrating compliance with the specification of the proposed window, louvre, door and rooflight installations, including structural loads and thermal breakage checks (for glass panes and units). Reports and calculations must be based on approved laboratory testing or computer modelling.
- Proposals for connections to and support from the building structure and building components.
- Proposals for any amendments to primary supporting structure and for any secondary supporting structure additional to that shown on the Structural Engineers drawings.
- Schedule of builder's work, special provisions and special attendance by others.
- Examples of standard documentation from which the 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 L10/284, with proposals for frequencies and methods of replacement.
- Proposals for replacing damaged or failed products.

- Areas of non-compliance with the specification.

163 INFORMATION TO BE PROVIDED AFTER ACCEPTANCE OF TENDER: Submit to the CA within a period following appointment to be determined by Main Contract master programme, (no more than 4 weeks) the following window and rooflight installations particulars:
- A schedule of detailed drawings and dates for submission for comment.
- 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.
- Proposals to support any outstanding applications for Building Regulation consents.

164 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF WINDOW AND ROOFLIGHT INSTALLATIONS WORK: Submit to the CA before testing or fabrication the following window and rooflight particulars:
- Detailed drawings to fully describe fabrication and installation.
- Detailed calculations to prove compliance with all design/performance requirements. These are to be submitted for Building Control approval also.
- Project specific fabrication, handling and installation method statements.
- Certification for all incorporated components manufactured by others confirming their suitability for all locations in the installation.
- Recommendations for spare parts for future repairs or replacements.
- Recommendations for safe dismantling and recycling or disposal of all products.

165 PRODUCT SAMPLES:
- Requirement: Before commencing detailed design provide the CA with identified samples of:
  - L10/320A: Frame section (frame and opening light).
  - L10/320A: Handle.
  - L10/320A: Hinge.
  - L10/320B: Actuators
  - L10/340: Frame section.
  - L10/553: Frame section.
  - L10/560: Frame profile.
  - L10/660: 'Bronze' fins and linings to windows
  - L10/662: 'Bronze' cill profile to windows

  Obtain approval of appearance before proceeding.

166 SAMPLES OF FIXINGS: At an agreed stage during detailed design work provide the CA with identified samples of each type of fixing cramp, anchors, etc., including casting-in restraints and shims, together with manufacturers' recommended torque figures.

167 FABRICATION SAMPLES:
- Requirement: At an agreed stage during detailed design work provide the CA with samples of:
  - 400 x 400 mm sample of window L10/320A including corner showing specified glazing within opening light.

  Obtain approval of appearance before proceeding.

168 SAMPLES OF GLASS:
- At an agreed stage during detailed design work provide the Architect with 300 x 300 mm samples of fabricated double glazed units to the required thickness (calculated as L10/675 or 675A) which comply with the performance requirements for glass of this Specification, particularly L10/683. These should show the the glass types proposed or a range of glass types for selection.
- Obtain approval of appearance before proceeding.

195 MANIFESTATION TO GLASS SCREENS:
- Location: Critical locations of transparent glazing with which people are likely to come into contact, particularly full-height glazing at the same level.
- Design: Lincoln's Inn coat-of-arms motif (TBC), 50 mm high, as drawing 597-__.
- Spacing: Two horizontal bands centred at 875 mm and 1575 mm above FFL.
- Technique to be confirmed from the following options:

1. Acid etched / sandblasted (Translucent).
2. Screen-printed ceramic frit (Opaque).
3. Post-applied film (permanent): 3M United Kingdom plc
   http://solutions.3m.co.uk
   Type 1 - Translucent: *Scotchcal 7725SE-314 - Dusted Crystal*
   Type 2 - Opaque: *Scotchcal Graphic Film 100*

- Colour:
  - Translucent: Clear.
  - Opaque: TBC.
- Other requirements:
  1. Manifestation bands in adjacent glazing panels and door leaves to be accurately aligned, except at stepped changes of internal floor levels.
  2. Manifestation to be applied to inner face of external glazing.

COMPONENTS

200 EXISTING METAL WINDOWS (OPENING CASEMENTS AND FIXED LIGHTS) - REFURBISH:
- Drawing reference: Window Schedule 597-___ and drawings 597-___.
- Scope:
  - Existing windows within designated areas.
  - Full extent to be confirmed.
- Repair windows as follows:-
  1. Remove damaged glass, lead strips, glazing putty and the like; clear from site. Replace with new glass, lead strips and glazing putty, generally to match existing historic glass.
  2. Windows which have been previously altered from original state (eg by insertion of extract vents) to be restored to original condition to match existing.
  3. Remove damaged ironmongery; clear from site. Replace with ironmongery to match existing.
  4. Stiff or jammed moving parts (hinges, handles, etc); lubricate to operate smoothly or replace to match.
  5. Repair painted coatings to metal frames by removing paint to expose bare steel. Clean off rust, prepare, prime and paint as M60/123A.
  6. Ease/adjust to open smoothly and re-finish paint system.
  7. Cut out existing external perimeter mastic to window frames. Prepare background, prime and re-point with sealant as L10/810. Full extent to be confirmed.

320A 'BRONZE' FRAMED WINDOWS (OUTWARD OPENING - SIDE-HUNG) - SINGLE CASEMENT:
Include in Contractor's Design Portion for Framed Windows and Glass Doors:

Rev C4
- Drawing reference(s): 597-**15220**
- Manufacturer and reference: Secco Sistemi spa
  http://www.seccosistemi.it
  UK Supplier: Venturi UK (0800 9800660)
  http://www.venturi.co.uk
  OS2 Brass - Outward Opening
- Installer: Installation to be by a subcontractor currently approved by the manufacturer
- Window type: Outward opening side-hung casement.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc) with thermal break (polyamide / polyurethane).
  - Standard: BS EN 1652.
- Profiles:
  - Frame:
    Jamb: 47 mm face width x 65 mm depth (section *P.2885*).
    Head: 47 mm face width x 65 mm depth (section *P.2885*).
    Cill: 47 mm face width x 65 mm depth (section *P.2885*).
  - Opening light:
    Jamb: 47 mm face width x 65 mm depth (section *P.2862*).
    Head: 47 mm face width x 65 mm depth (section *P.2862*).
    Cill: 47 mm face width x 65 mm depth (section *P.2862*).
  - Bead: 19 x 17 mm straight square (section *P.2607*).
- Finish: Pre-patinated - *Dark*.
- Glazing: Insulating glass units, as L10/692.
  Glass thicknesses: To be determined by Contractor by calculation to satisfy L10/675.

- For Tender allow for dimensions given below.

Inner pane: Laminated (PVB) clear float glass as L10/687B.
Allow for 8.0 mm (4 + 4 mm).
Air space: 15 mm.
Outer pane: Heat soak tested toughened clear float glass as L10/687A; solar coating on Face 2.
Allow for 6.0 mm.

- Glazing system: Gaskets as L10/694, with standard internal 'bronze' glazing beads.
- Performance:
  - Thermal transmission (U-value): 1.6 W/m^{2}K or better.
  - Light/energy performance of glazing units: As L10/683.
  - Weathertightness: As L10/680.
  - Acoustic: R_wC_{tr} 32 dB as Acoustic Report.
    - Flanking sound transmission: As Acoustic Report.

Rev C1 **- Lateral loads as (NA) BS EN 1991-1-1, Table NA.8: Generally (C3): 0.74 kN/m at 800mm above FFL.**

- Fixing: As L10/780.
- Ancillary products:
  - Cill profile as L10/662.

Rev C6

- Ironmongery (opening light):
  1. Hinges: Discreetly recessed into window frame system.
  2. Handle: Secco *OS2 Vitruvio* ~~*Small - Cut Round* 12ø x 116 mm~~ ***Oval – 80x30mm*** to match frame finish.
  3. High security espagnolette locking system.
  4. Restrictor stay.
- Secondary steelwork support: As L10/670.
- Other requirements:
  1. Construction of joints as L10/678
  2. Double EPDM damp proof membranes to perimeter construction as L10/705.
- Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors with the construction of facing brickwork (F10/110), ashlar stonework (F21/__),stone cladding (H51/__) to ensure a fully weathertight and airtight construction of the interfaces

320B 'BRONZE' FRAMED WINDOWS (OUTWARD OPENING - TOP-HUNG) - SINGLE CASEMENT:
Include in Contractor's Design Portion for Framed Windows and Glass Doors:

Rev C4

- Drawing reference(s): 597-**15220**
- Manufacturer and reference: Secco Sistemi spa
  http://www.seccosistemi.it
  UK Supplier: Venturi UK (0800 9800660)
  http://www.venturi.co.uk
  OS2 Brass - Outward Opening
- Installer: Installation to be by a subcontractor currently approved by the manufacturer
- Window type: Outward opening top-hung casement.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc) with thermal break (polyamide / polyurethane).
  - Standard: BS EN 1652.
- Profiles:
  - Frame:
    Jamb: 47 mm face width x 65 mm depth (section *P.2885*).
    Head: 47 mm face width x 65 mm depth (section *P.2885*).
    Cill: 47 mm face width x 65 mm depth (section *P.2885*).
  - Opening light:
    Jamb: 47 mm face width x 65 mm depth (section *P.2862*).
    Head: 47 mm face width x 65 mm depth (section *P.2862*).
    Cill: 47 mm face width x 65 mm depth (section *P.2862*).
  - Bead: 19 x 17 mm straight square (section *P.2607*).
- Finish: Pre-patinated - Dark.
- Glazing: Insulating glass units, as L10/692.
  Glass thicknesses: To be determined by Contractor by calculation to satisfy L10/675.
  - For Tender allow for dimensions given below.

  Inner pane: Laminated (PVB) clear float glass as L10/687B.
  Allow for 8.0 mm (4 + 4 mm).

Air space: 15 mm.
Outer pane: Heat soak tested toughened clear float glass as L10/687A; solar coating on Face 2.
Allow for 6.0 mm.

- Glazing system: Gaskets as L10A/520, with standard internal bronze' glazing beads.
- Performance:
  - Thermal transmission (U-value): 1.6 W/m^{2}K or better.
  - Light/energy performance of glazing units: As L10/683.
  - Weathertightness: As L10/680.
  - Acoustic: R_wC_{tr} 32 dB as Acoustic Report.
    - Flanking sound transmission: As Acoustic Report.

Rev C1
  - **Lateral loads as (NA) BS EN 1991-1-1, Table NA.8: Generally (C3): 0.74 kN/m at 800mm above FFL.**

- Fixing: As L10/780.
- Ancillary products:
  - Cill profile as L10/662.
- Ironmongery (opening light):
  1. Hinges: Discreetly recessed into window frame system.
  2. Actuator: Good quality unobtrusive chain-drive actuator with electric motor, including remote switch operation, to suit window system; submit proposals.
- Secondary steelwork support: As L10/670.
- Other requirements:
  1. Construction of joints as L10/678
  2. Double EPDM damp proof membranes to perimeter construction as L10/705.
- Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors with the construction of facing brickwork (F10/110), ashlar stonework (F21/__),stone cladding (H51/__) to ensure a fully weathertight and airtight construction of the interfaces

320C 'BRONZE' FRAMED WINDOWS (OUTWARD OPENING - SIDE-HUNG) - DOUBLE CASEMENT:
Include in Contractor's Design Portion for Framed Windows and Glass Doors:

Rev C4
-Drawing reference(s): 597-**15220**
-Manufacturer and reference: Secco Sistemi spa
http://www.seccosistemi.it
UK Supplier: Venturi UK (0800 9800660)
http://www.venturi.co.uk
OS2 Brass - Outward Opening

- Installer: Installation to be by a subcontractor currently approved by the manufacturer
- Window type: Outward opening side-hung casement.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc) with thermal break (polyamide / polyurethane).
  - Standard: BS EN 1652.
- Profiles:
  - Frame:
    Jamb: 47 mm face width x 65 mm depth (section *P.2885*).
    Mullion: **96** mm face width x 65 mm depth (section *P.2885* x 2No. back-to-back with thermal break core).
    Head: 47 mm face width x 65 mm depth (section *P.2885*).
    Cill: 47 mm face width x 65 mm depth (section *P.2885*).
  - Opening lights:
    Jamb: 47 mm face width x 65 mm depth (section *P.2862*).
    Head: 47 mm face width x 65 mm depth (section *P.2862*).
    Cill: 47 mm face width x 65 mm depth (section *P.2862*).
  - Bead: 19 x 17 mm straight square (section *P.2607*).
- Finish: Pre-patinated - *Dark*.
- Glazing: Insulating glass units, gas filled, as L10/692.
  Glass thicknesses: To be determined by Contractor by calculation to satisfy L10/675.
  - For Tender allow for dimensions given below.
  Inner pane: Laminated (PVB) clear float glass as L10/687B.
  Allow for 8.0 mm (4 + 4 mm).
  Air space: 15 mm.
  Outer pane: Heat soak tested toughened clear float glass as L10/687A; solar coating on Face 2.
  Allow for 6.0 mm.

- Glazing system: Gaskets as L10/694, with standard internal 'bronze' glazing beads.
- Performance:
  - Thermal transmission (U-value): 1.6 W/m^{2}K or better.
  - Light/energy performance of glazing units: As L10A/515.
  - Weathertightness: As L10/680.
  - Acoustic: R_wC_{tr} 32 dB as Acoustic Report.
    - Flanking sound transmission: As Acoustic Report.

Rev C1
  - **Lateral loads as (NA) BS EN 1991-1-1, Table NA.8: Generally (C3): 0.74 kN/m at 800mm above FFL.**

- Fixing: As L10/780.
- Ancillary products:
  - Cill profile as L10/662.
  - Fin(s) and linings to jambs and head as L10/660.

Rev C6
- Ironmongery (opening light):
  1. Hinges: Discreetly recessed into window frame system.
  2. Handle: Secco *OS2 Vitruvio* ~~*Small - Cut Round* 12ø x 116 mm~~ ***Oval – 80x30mm*** to match frame finish.
  3. High security espagnolette locking system.
  4. Restrictor stay.
- Secondary steelwork support: As L10/670.
- Other requirements:
  1. Construction of joints as L10/678
  2. Double EPDM damp proof membranes to perimeter construction as L10/705.
- Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors with the construction of facing brickwork (F10/110), ashlar stonework (F21/__),stone cladding (H51/__) to ensure a fully weathertight and airtight construction of the interfaces.

320D 'BRONZE' FRAMED WINDOWS (FIXED AND OUTWARD OPENING - SIDE-HUNG) - MULTIPLE ARRANGEMENT:

Include in Contractor's Design Portion for Framed Windows and Glass Doors:

Rev C4
- Drawing reference(s): 597-**15220**
- Manufacturer and reference: Secco Sistemi spa
  http://www.seccosistemi.it
  UK Supplier: Venturi UK (0800 9800660)
  http://www.venturi.co.uk
  OS2 Brass - Fixed + Outward Opening
- Installer: Installation to be by a subcontractor currently approved by the manufacturer
- Window type: Fixed glazing and outward opening side-hung casements.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc) with thermal break (polyamide / polyurethane).
  - Standard: BS EN 1652.
- Profiles:
  - Frame:
    - -Jamb: 47 mm face width x 65 mm depth (section *P.2885*).
    - -Head: 47 mm face width x 65 mm depth (section *P.2885*).
    - -Cill: 47 mm face width x 65 mm depth (section *P.2885*).
    - -Mullion **frame**:

Rev C4

Opening **to fixed**: **32** mm face width x 65 mm depth (section *P.28**63*** ~~*+ P.2855 back-to-back with thermal break core)*~~.
Fixed **to fixed**: 66 mm face width x 65 mm depth (section *P.2892)*.

-Transom frame:

Opening to fixed: **32 mm face width x 65 mm depth (section *P.2863*).**
Fixed to fixed: 66 mm face width x 65 mm depth (section *P.2892).*

  - Opening lights:
    - -Jamb: 47 mm face width x 65 mm depth (section *P.2862*).
    - -Head: 47 mm face width x 65 mm depth (section *P.2862*).
    - -Cill: 47 mm face width x 65 mm depth (section *P.2862*).
  - Bead: 19 x 17 mm straight square (section *P.2607*).
- Finish: Pre-patinated - *Dark*.
- Glazing: Insulating glass units, gas filled, as L10/692.
  Glass thicknesses: To be determined by Contractor by calculation to satisfy L10/675.

- For Tender allow for dimensions given below.

Inner pane: Laminated (PVB) clear float glass as L10/687B.
Allow for 8.0 mm (4 + 4 mm).
Air space: 15 mm.
Outer pane: Heat soak tested toughened clear float glass as L10/687A; solar coating on Face 2.
Allow for 6.0 mm.

- Glazing system: Gaskets as L10/694, with standard internal 'bronze' glazing beads.
- Performance:
  - Thermal transmission (U-value): 1.6 W/m^{2}K or better.
  - Light/energy performance of glazing units: As L10A/515.
  - Weathertightness: As L10/680.
  - Acoustic: R_wC_{tr} 32 dB as Acoustic Report.
    - Flanking sound transmission: As Acoustic Report.

Rev C1
  - **Lateral loads as (NA) BS EN 1991-1-1, Table NA.8: Generally (C3): 0.74 kN/m at 800mm above FFL.**

- Fixing: As L10/780.
- Ancillary products:
  - Cill profile as L10/662.
  - Fin(s) and linings to jambs and head as L10/660.

Rev C6
- Ironmongery (opening light):
  1. Hinges: Discreetly recessed into window frame system.
  2. Handle: Secco *OS2 Vitruvio* ~~*Small - Cut Round 12ø x 116 mm*~~ ***Oval – 80x30mm*** to match frame finish.
  3. High security espagnolette locking system.
  4. Restrictor stay.
  5. Actuator: Good quality unobtrusive chain-drive actuator with electric motor, including remote switch operation, to high-level windows, to suit window system; submit proposals.
- Secondary steelwork support: As L10/670.
- Other requirements:
  1. Construction of joints as L10/678
  2. Double EPDM damp proof membranes to perimeter construction as L10/705.
- Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors with the construction of facing brickwork (F10/110), ashlar stonework (F21/__),stone cladding (H51/__) to ensure a fully weathertight and airtight construction of the interfaces.

320E 'BRONZE' FRAMED WINDOWS (FIXED) - MULTIPLE ARRANGEMENT:
Include in Contractor's Design Portion for Framed Windows and Glass Doors:

Rev C4
- Drawing reference(s): 597-**15220**
- Manufacturer and reference: Secco Sistemi spa
  http://www.seccosistemi.it
  UK Supplier: Venturi UK (0800 9800660)
  http://www.venturi.co.uk
  OS2 Brass - Fixed
- Installer: Installation to be by a subcontractor currently approved by the manufacturer
- Window type: Fixed glazing.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc) with thermal break (polyamide / polyurethane).
  - Standard: BS EN 1652.
- Profiles:
  - Frame:
    Jamb: 66 mm face width x 72 mm depth (section *P.2895*).
    Mullion: 66 mm face width x 72 mm depth (section *P.2892)*.
    Transoms: 66 mm face width x 72 mm depth (section *P.2892)*.
    Head: 66 mm face width x 72 mm depth (section *P.2895*).
    Cill: 66 mm face width x 72 mm depth (section *P.2895*).
  - Bead: 19 x 17 mm straight square (section *P.2607*).
- Finish: Pre-patinated - *Dark*.
- Glazing: Insulating glass units, gas filled, as L10/692.
  Glass thicknesses: To be determined by Contractor by calculation to satisfy L10/675.
  - For Tender allow for dimensions given below.

Inner pane: Laminated (PVB) clear float glass as L10/687B.

Allow for 8.0 mm (4 + 4 mm).
Air space: 15 mm.
Outer pane: Heat soak tested toughened clear float glass as L10/687A; solar coating on Face 2. Allow for 6.0 mm.

- Glazing system: Gaskets as L10/694, with standard internal 'bronze' glazing beads.
- Performance:
  - Thermal transmission (U-value): 1.6 W/m^{2}K or better.
  - Light/energy performance of glazing units: As L10A/515.
  - Weathertightness: As L10/680.
  - Acoustic: R_wC_{tr} 32 dB as Acoustic Report.
    - Flanking sound transmission: As Acoustic Report.

Rev C1
  - **Lateral loads as (NA) BS EN 1991-1-1, Table NA.8: Generally (C3): 0.74 kN/m at 800mm above FFL.**

- Fixing: As L10/780.
- Ancillary products:
  - Cill profile as L10/662.
  - Fin(s) and linings to jambs and head as L10/660.

Rev C4
- ~~Ironmongery (opening light):~~
  1. ~~Hinges: Discreetly recessed into window frame system.~~
  2. ~~Handle: Secco *OS2 Vitruvio Small - Cut Round* 12ø x 116 mm to match frame finish.~~
  3. ~~High security espagnolette locking system.~~
  4. ~~Restrictor stay.~~
- Secondary steelwork support: As L10/670.
- Other requirements:
  1. Construction of joints as L10/678
  2. Double EPDM damp proof membranes to perimeter construction as L10/705.
- Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors with the construction of facing brickwork (F10/110), ashlar stonework (F21/__),stone cladding (H51/__) to ensure a fully weathertight and airtight construction of the interfaces.

REV C5 340 ARROWSLIT WINDOW TO ~~SOUTH TERRACE~~ **SOUTHERN ENTRANCE**:
Include in Contractor's Designed Portion for Windows and Doors

- Drawing reference: 597-**15101**.
- Type: Narrow vertical slit single glazed window in existing / reconstructed stone ashlar wall, to match 3No. existing arrow slits in same wall further west.
- Size: 100(w) x 550(h) mm (nominal).
- Manufacturer: Glazing specialist experienced in historic restoration and new work.
  Basis of design: Fabco Sanctuary Ltd (01903 718808)
  http://www.fabcosanctuary.com
- Frame:
  - High tensile manganese brass alloy (bronze) angle 4.0 mm thick, mitred and welded, with welded fixing lugs.
  - Finish: Dark bronze.
- Fixings: Stainless steel.
- Glass: Laminated glass as L10/687.
  - Thickness: 8.76 mm.
- Glazing method: Sealant fronted as L40/210.
- Cill: Dressed stone to match existing arrowslit openings.
- Other requirements:
  - Construction of joints as L10/678
  - EPDM damp proof membrane to perimeter construction as L10/705.
- Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors with the construction/reconstruction of ashlar stonework to ensure a fully weathertight and airtight construction of the interfaces.

REV C1 341 **EXISTING ARROWSLIT WINDOWS TO SOUTH TERRACE - ET.W.G.01 & ET.W.G.02:**
Include in Contractor's Designed Portion for Windows and Doors

- **Drawing reference: 597-15112, 14010 - 14012.**
- **Type: Narrow vertical slit single glazed window in existing stone ashlar wall.**
- **Size: 173(w) x 520(h) mm (nominal).**

- **Manufacturer: Glazing specialist experienced in historic restoration and new work.**
- **Frame:**
  - **Oak to match wall lining K13/115**
- **Fixings: Stainless steel.**
- **Glass: Laminated glass as L10/687.**
  - **Thickness: 8.76 mm.**
- **Glazing method: Sealant fronted as L40/210.**
- **Cill:**
- **External: as existing**
- **Internal: timber veneer wall lining as K13/115.**
- **Other requirements:**
  - **Construction of joints as L10/678**
  - **EPDM damp proof membrane to perimeter construction as L10/705.**
- **Design, detail and installation of windows to be fully co-ordinated between the relevant Trade Subcontractors to ensure a fully weathertight construction of the interfaces.**

Rev C4 460 FRAMED OPENING ROOFLIGHT TO READING ROOM (LIBRARY EXTENSION):
Include in Contractor's Designed Portion for Windows and Doors

- Drawing reference(s): 597-**15206** and Schedule 597-51003.
  Manufacturer and reference: Glazing Vision Ltd (0333 8000 881)
  http://www.glazingvision.co.uk
  ~~*Skyglide - Standard Flat Sliding Rooflight*~~
  VisionVent Solo Electric Rooflight
- Type: Square double glazed opening rooflight for flat / shallow pitched roof condition.

Rev C6
- Dimensions: ~~1700x1700 (nominal)~~ **1600 x 1600mm (external kerb dimensions).**
- Glazing details: Insulating glass units as L10/692. Glass thickness calculated as L10/675.
  - Outer pane: Heat soaked toughened clear float safety glass as L10/687A, with clear low-emissivity/ solar-control coating to face 2.
    - Allow for 10 mm thick.

Rev C6
- ~~Edge fritting: Wide border of solid colour opaque ceramic frit to Face 2 to perimeters to fully conceal top of internal plasterboard linings viewed from outside (through Library second floor windows). Colour: Black.~~
  - Air space: 12 mm (nominal).
  - Inner pane: Laminated clear float safety glass as L10/687B.
    - Allow for 13.5 mm thick.
- Light/energy performance of glazing units: As L10/683.
- Thermal performance (U-value): As L10/682.
- Gaskets: as rooflight manufacturer's recommendations.
- Frame: Aluminium.
  Finish: Polyester powder coated as section Z31.

Rev C6
Colour: ~~Non-standard RAL colour TBC~~ **RAL 7037**.

- Kerb: Treated softwood framing (G20/210) and plywood sheathing (K11/115), to be 150 mm above roof finish (allow for build-up of insulation). Upstand to lead roof finish and cover flashings as section H71.
- Perimeter joints as L10/678.
- Operation: Electric; ~~concealed stainless steel rack-and-pinion sliding system~~. **Motor driven scissor linkage mechanism with encoder feedback**
  - Controls: Key switch (TBC).
- Rain sensor: Required; location to be confirmed.
- Other requirements:
  1. Security locking.
  2. Burglar/tamper mechanism.
  3. Interface with security system (vibration sensors).
  ~~4. Interface with BMS, fire alarm system as required.~~
  5. Interface with Horizontal Roller Blind as N10/240A
- Design, detail and installation of rooflights to be fully co-ordinated between the relevant Trade Subcontractors with design, detail and installation of the lead sheet roofing system as section H71, to ensure a fully weathertight and airtight construction of the interface.

Rev C5 553 INTERNAL ACOUSTIC / FIRE-RATED GLASS SCREEN TO LECTURE THEATRE - **R_w** ~~41~~ **37 dB / EI** ~~60~~ **30**:

Include in Contractor's Designed Portion for Windows and Doors:

- Drawing reference: 597-**15115**
- Location: Between Lecture Theatre and Advocacy Room 5 at Basement.
- Type: Fire rated and acoustic rated glass screen.
- Performance:
  - Fire resistance: ~~60~~ **30** minutes (integrity + insulation) **to BS 476 – 22: EI30 (30 minutes Integrity & Insulation)**
  - Acoustic: R_w ~~41~~ **38** dB **to BS EN ISO 10140 - 2 and ISO 717-1.**
- Dimensions overall (nominal): Refer to drawings.
  - Panel height overall: As drawings.
  - Panel width: As drawings.
- Site dimensions: Required.
- Supporting structure: ~~Blockwork.~~ **Reinforced Concrete Wall**
- Glazing system: Fire resisting **Aluminium extruded track sections** ~~fixed steel frame.~~

Rev C5 **Manufacturer and reference:** ~~KMS Forster (0114 2346619)~~
~~http://www.asdarchitectural.com~~
~~*Forster Fuego Light - EI 60*~~
Optima Systems, Daniel Fuller – 07493 569591
- **UK Supplier:** Optima Contracting Limited
- http://optimasystems.com/
- Technishield Single Glazed Partition System

- Material and finish: ~~Mild steel, galvanised~~ **Aluminium extruded track sections** and polyester powder coated to non standard RAL colour (TBC).
- Glass:
  - Single pane: Clear multi-laminated glass (intumescent) as L10/687D.

Rev C5 - Thickness: ~~25 mm (nominal).~~**15mm Optima 30/30 Fire Glas**

- Glazing system:

Top frame:	**400002-01 - 94mm deep x 54mm wide (±25mm deflection – external)**
Bottom frame:	**400003-03 - 25mm deep x 25mm wide with clip-on bead**
Abutment frame:	**400004-02 - 25mm deep x 25mm wide**

-

~~1. Steel glazing beads.~~
~~2. Fire-resistant setting blocks.~~
~~3. Fire-resistant ceramic-fibre tape.~~
~~4. Fire-rated silicone seal to edge of tape (Dow Corning *Firestop 700*)..~~
~~5. Fire resistant grounds/ packs (Promat *Monolux*).~~

- Fire test certification: Required.
- Acoustic test certification: Required.
- Special requirements:
  - Frame recessed flush with adjacent finishes.
- Design, detail and installation of glazing system to be fully co-ordinated between the relevant Trade Subcontractors with the design, detail and installation all adjacent work packages to ensure fully resolved construction of the interfaces.

555 INTERNAL FRAMELESS GLASS SCREENS - NO ACOUSTIC / NO FIRE RATING (GREAT HALL ~~**AND LIBRARY AREAS**~~):

Include in Contractor's Designed Portion for Windows and Doors

Rev C4 - **Drawing Reference(s): 597-14017, and Schedule 597-51004**

- Supporting structure: Existing masonry and ~~timber framing~~ **metal stud framing**.

Rev C4 - Structural glass system: Shuffle glazing to concealed continuous edge ~~channels/double angle channels~~ **timber frame and beading**, with structural silicone.

~~- Material: High tensile manganese brass alloy (bronze) (4 mm).~~
~~- Finish: Dark bronze colour to exposed edges.~~

- Assembly fixings: Stainless steel fixings to suit support structure. All fixings to be concealed.
- Glass: Clear float toughened safety-glass to BS 6206 – Class A..
  - Thickness: 10mm (nominal).
- Glazing method:
- - Material: One part, low modulus silicone to BS EN ISO 11600, type F.
- - Manufacturer and reference: Dow Corning
- www.dowcorning.com

- *Dow Corning 791 Silicone Sealant*
- - Colour: Black (TBC).
- Glass to glass jointing (where shown): Sealant.
  Nominal joint width: 4mm.
- Components:

Rev C4 ~~**1. Recessed continuous perimeter manganese bronze channels, combined with double angle 'clamps', same side fixing, mitred at corners. 3 mm minimum bronze thickness.**~~
~~**2. Gaskets/sealant to suit; colour - Black.**~~

- Other requirements:
  - Frame hidden by finishes to cill, jamb and head. Edges visible only.
- Manifestation: As L10/195.

Rev C5 ~~560 INTERNAL GLAZED ACOUSTIC SCREEN SYSTEM - (DOUBLE GLAZED) - **R_w 45 dB**:~~
~~**Include in Contractor's Designed Portion for Windows and Doors:**~~
~~Drawing reference: 597-___.~~
~~Performance:~~
~~- Sound insulation: Rw 45 dB.~~
~~- Loads: Horizontal line load at 1100 mm - 0.74 kN/m.~~
~~Horizontal uniformly distributed load to full height - 1.0 kN/m².~~
~~Manufacturer and reference: Strahle Raum-Systeme GmbH~~
~~http://www.straehle.de~~
~~UK Supplier: Savile Row Projects Ltd (020 3701 8008)~~
~~http://www.savilerowprojects.com~~
~~*System 3500 - Fully Glazed Wall*~~
~~Screen height: Refer to schedule / drawings.~~
~~Wall thickness: 100 mm.~~
~~Supporting structure: Raised access floor; provide additional support within floor cavity as necessary.~~
~~Materials:~~
~~- Glass (double glazed): Twin panes of 12 mm clear float laminated safety-glass to BS EN 12600, Class 1(B)1 or toughened safety glass to BS EN 12600, Class 1(C)1 (both types equivalent to BS 6206, Class A).~~
~~- Glass-to-glass joints: *Strahle 3500 Dry Joint System*.~~
~~- Top frame: *Strahle 3500 Head Channel* (with deflection allowance).~~
~~- Bottom frame: *Strahle 3500 Floor Channel*.~~
~~- Abutment frame: *Strahle 3500 Abutment.*~~
~~- Frame material and finish: Aluminium, polyester powder coated to non-standard RAL colour (TBC).~~
~~Manifestation: As L10/195.~~
~~Survey: Take site dimensions prior to cutting of glass.~~
~~Special requirements:~~
~~- Units to include Strahle internal blackout blinds to Advocacy Training Room as drawings.~~
~~Other requirements:~~
~~1. Include secondary steelwork, not shown on Structural Engineer's drawings, required to support the system to the primary structure.~~
~~2. Acoustic barrier to same performance trto extend above screen to slab~~
~~2. Design, detail and installation of glass screen to be fully co-ordinated between the relevant Trade Subcontractors with detail and installation of raised access floor, drylining finishes and floor finishes to ensure a fully resolved construction of the interfaces.~~
~~Drawings: Submit; obtain approval before proceeding.~~

Rev C5 **560A** INTERNAL GLAZED ACOUSTIC SCREEN SYSTEM TO EAST TERRACE LOWER BASEMENT ADVOCACY ROOMS - (DOUBLE GLAZED) - **R_w 45 dB**:
Include in Contractor's Designed Portion for Windows and Doors:

- Drawing reference: 597-14109.
- Performance:
  - Sound insulation: Rw 45 dB.
  - Loads: Horizontal line load at 1100 mm - 0.36 kN/m.
    Horizontal uniformly distributed load to full height - To manufacturer's requirements.

Manufacturer and reference: Optima Systems, Daniel Fuller – 07493 569591

- **UK Supplier:** Optima Contracting Limited

http://optimasystems.com/
Optima Revolution 54 Double Glazed Partition System

- Screen height: Refer to schedule / drawings.
  - Wall thickness: 54mm
  - Supporting structure: Raised access floor; provide additional support within floor cavity as necessary.
  - Materials:
    - Glass (double glazed): 12.8mm laminate glass + 12.8mm acoustic laminate glass - Lab Tested – see Performance Certificate 054071
    - Glass-to-glass joints: 054030-01 - NebulaTM in-line joint
    - Top frame: 054002-01 - 90mm deep (±25mm deflection – internal)
    - Bottom frame: 054008-01 - 25mm deep
    - Abutment frame: 054011-01 - 25mm deep with clip-on beads
      054025-01 - Tapeable glazing bar to 122mm generic drywall
      054027-01 - Tapeable glazing bar to 100mm generic drywall
    - Frame material and finish: Aluminium, polyester powder coated to non-standard RAL colour (TBC).
  - Manifestation: As L10/195.
  - Survey: Take site dimensions prior to cutting of glass.
  - Special requirements:
    - Units to include internal blinds to Advocacy Training Room as N10/241A
  - Other requirements:
    1. Include secondary steelwork, not shown on Structural Engineer's drawings, required to support the system to the primary structure.
    2. Acoustic barrier to same performance to extend above screen to slab
    2. Design, detail and installation of glass screen to be fully co-ordinated between the relevant Trade Subcontractors with detail and installation of raised access floor, drylining finishes and floor finishes to ensure a fully resolved construction of the interfaces.
  - Drawings: Submit; obtain approval before proceeding.

Rev C5 **560B** INTERNAL GLAZED ACOUSTIC SCREEN SYSTEM TO EAST TERRACE ADVOCACY ROOM LIGHTWELL - (DOUBLE GLAZED) - **R_w 48 dB**:
Include in Contractor's Designed Portion for Windows and Doors:

- Drawing reference: 597-14108.
- Performance:
  - Sound insulation: Rw 48 dB.
  - Loads: Horizontal line load at 1100 mm - 0.36 kN/m.
    Horizontal uniformly distributed load to full height - To manufacturer's requirements.

Manufacturer and reference: Optima Systems, Daniel Fuller – 07493 569591
- **UK Supplier:** Optima Contracting Limited
http://optimasystems.com/
Optima Revolution 100 Double Glazed Partition System

- Screen height: Refer to schedule / drawings.
  - Wall thickness: 100mm
  - Supporting structure: Raised access floor; provide additional support within floor cavity as necessary.
  - Materials:
    - Glass (double glazed): 12.8mm acoustic laminate glass + 12.8mm acoustic laminate glass Lab Tested – see Performance Certificate 100050
    - Glass-to-glass joints: 100029-01 - Nebula dry butt-joint
    - Top frame: 100004-01 - 90mm deep (±25mm deflection – internal) for up to 12.8mm glass on both faces
    - Bottom frame: 100008-01 - 25mm deep for up to 12.8mm glass on both faces
    - Abutment frame: 100011-01 - 25mm deep with clip-on bead for up to 12.8mm glass on both faces
    - Frame material and finish: Aluminium, polyester powder coated to non-standard RAL colour (TBC).
  - Manifestation: As L10/195.
  - Survey: Take site dimensions prior to cutting of glass.
  - Other requirements:

1. Include secondary steelwork, not shown on Structural Engineer's drawings, required to support the system to the primary structure.
2. Acoustic barrier to same performance to extend above screen to slab
2. Design, detail and installation of glass screen to be fully co-ordinated between the relevant Trade Subcontractors with detail and installation of raised access floor, drylining finishes and floor finishes to ensure a fully resolved construction of the interfaces.

- Drawings: Submit; obtain approval before proceeding.

Rev C5 560C INTERNAL GLAZED ACOUSTIC SCREEN SYSTEM TO EAST TERRACE UPPER BASEMENT ADVOCACY ROOM- (DOUBLE GLAZED) - **R_w 48 dB**:
Include in Contractor's Designed Portion for Windows and Doors:

- Drawing reference: 597-14108.
- Performance:
  - Sound insulation: Rw 48 dB.
  - Loads: Horizontal line load at 1100 mm - 1.5 kN/m.
    Horizontal uniformly distributed load to full height - 1.5 kN/m².
- **Manufacturer and reference:** Optima Systems, Daniel Fuller – 07493 569591
  UK Supplier: Optima Contracting Limited
  http://optimasystems.com/
  Optima Revolution 100 Bespoke Double Glazed Partition System
- Screen height: Refer to schedule / drawings.
- Wall thickness: Refer to drawings
- Supporting structure: Raised access floor; provide additional support within floor cavity as necessary.
- Materials:
  - Glass (double glazed): 21.5mm acoustic laminate glass + 12.8mm acoustic laminate glass Lab Tested – see Performance Certificate 100050
  - Glass-to-glass joints: 054030-01 - NebulaTM in-line joint
  - Top frame: To manufacturer's details
  - Bottom frame: To manufacturer's details
  - Abutment frame: To manufacturer's details
  - Frame material and finish: Aluminium, polyester powder coated to non-standard RAL colour (TBC).
- Manifestation: As L10/195.
- Survey: Take site dimensions prior to cutting of glass.
- Special requirements:
  - Units to include internal blinds to Advocacy Training Room as N10/241A
- Other requirements:
  1. Include secondary steelwork, not shown on Structural Engineer's drawings, required to support the system to the primary structure.
  2. Acoustic barrier to same performance to extend above screen to slab
  2. Design, detail and installation of glass screen to be fully co-ordinated between the relevant Trade Subcontractors with detail and installation of raised access floor, drylining finishes and floor finishes to ensure a fully resolved construction of the interfaces.
- Drawings: Submit; obtain approval before proceeding.

Rev C5 562 INTERNAL GLAZED ACOUSTIC SCREEN SYSTEM **TO EAST TERRACE (LECTURE THEATRE) AND LIBRARY EXTENSION** - (SINGLE GLAZED) - **R_w ~~41~~ 38 dB**:
Include in Contractor's Designed Portion for Windows and Doors:

- Drawing reference: 597-15115, 597-14216-14217.
- Performance:
  - Sound insulation: Rw 41 dB.
  - Loads: Horizontal line load at 1100 mm - ~~0.74 kN/m~~ **0.36kN/m.**
    Horizontal uniformly distributed load to full height - ~~1.0 kN/m².~~ **To manufacturer's requirements.**

Rev C5 - **Manufacturer and reference:**
~~Strahle Raum-Systeme GmbH~~
~~http://www.straehle.de~~
~~UK Supplier: Savile Row Projects Ltd (020 3701 8008)~~
~~http://www.savilerowprojects.com~~

~~*System 3400 - Fully-Glazed Wall*~~
Optima Systems, Daniel Fuller – 07493 569591
- **UK Supplier:** Optima Contracting Limited
http://optimasystems.com/
Optima 117 PLUS Single Glazed Partition System

- Screen height: Refer to schedule / drawings.
- Wall thickness: 22-50 mm (allow for 35 mm)
- Supporting structure: Raised access floor; provide additional support within floor cavity as necessary.
- Materials:

Rev C5 - Glass (single glazed): 12.8mm acoustic laminate glass - Lab Tested – see Performance Certificate 117136. ~~10-24 mm clear float laminated safety-glass to BS EN 12600, Class 1(B)1 or toughened safety glass to BS EN 12600, Class 1(C)1 (both types equivalent to BS 6206, Class A). Allow for 15 mm.~~
  - Glass-to-glass joints: ~~*Strahle 3400 Dry Joint System*.~~ **117119-01 - Nebula dry butt-joint**
  - Top frame: ~~*Strahle 3400 Head Channel* (with deflection allowance).~~ **117102-01 - 90mm deep (±25mm deflection – internal)**
  - Bottom frame: ~~*Strahle 3400 Floor Channel*.~~ **117106-02 - 25mm deep x 25mm wide with clip-on bead**
  - Abutment frame: ~~*Strahle 3400 Abutment*.~~ **117108-02 - 25mm deep x 25mm wide**
    117117-01 - Tapeable glazing bar to 100mm generic drywall
    117117-02 - Tapeable glazing bar to 122mm generic dry
  - Frame material and finish: Aluminium, polyester powder coated to non-standard RAL colour (TBC).
- Manifestation: As L10/195.
- Other requirements:
  - Internal privacy blinds ~~as N10/~~ **refer to schedule.**
- Survey: Take site dimensions prior to cutting of glass.
- Secondary steelwork: Include secondary steelwork, not shown on Structural Engineer's drawings, required to support the system to the primary structure.
- Design, detail and installation of glass screen to be fully co-ordinated between the relevant Trade Subcontractors with detail and installation of raised access floor, drylining finishes and floor finishes to ensure a fully resolved construction of the interfaces.
- Drawings: Submit; obtain approval before proceeding.

Rev C1 **564 INTERNAL GLAZED ACOUSTIC SCREEN SYSTEM AT HIGH LEVEL TO ESTATES MANAGEMENT OFFICE - (SINGLE GLAZED) - R_w 38 dB:**
Include in Contractor's Designed Portion for Windows and Doors:
- **Drawing reference: 597-15205.**
- **Performance:**
  - **Sound insulation: Rw 38 dB.**
  - **Loads: Horizontal line load at 1100 mm ~~- 0.74 kN/m.~~ 0.36kN/m.**
    Horizontal uniformly distributed load to full height - ~~1.0 kN/m².~~ To manufacturer's requirements.

Rev C5 **- Manufacturer and reference:** ~~Strahle Raum-Systeme GmbH~~
~~http://www.straehle.de~~
~~UK Supplier: Savile Row Projects Ltd (020 3701 8008)~~
~~http://www.savilerowprojects.com~~
~~*System 3400 - Fully-Glazed Wall*~~
Optima Systems, Daniel Fuller – 07493 569591
- **UK Supplier: Optima Contracting Limited**
http://optimasystems.com/
Optima 117 PLUS Single Glazed Partition System

- **Screen height: Refer to schedule / drawings.**
- **Wall thickness: 22-50 mm (allow for 35 mm)**
- **Supporting structure: Acoustic plasterboard partition below.**
- **Materials:**
  - **Glass (single glazed):** 12.8mm acoustic laminate glass - Lab Tested – see Performance Certificate 117136. ~~10-24 mm clear float laminated safety-glass to BS EN 12600, Class 1(B)1 or~~

~~toughened safety glass to BS EN 12600, Class 1(C)1 (both types equivalent to BS 6206, Class A). Allow for 15 mm.~~

Rev C4 **- Glass-to-glass joints to interface with glazed rooflight: ~~Strahle 3400 Dry Joint System~~ *Silicone Joint to allow deflection of rooflight*.**

Rev C5 - **Bottom frame:** ~~*Strahle 3400 Floor Channel.*~~117106-02 - 25mm deep x 25mm wide with clip-on bead
- **Abutment frame:** ~~*Strahle 3400 Abutment.*~~ 117108-02 - 25mm deep x 25mm wide
117117-01 - Tapeable glazing bar to 100mm generic drywall
117117-02 - Tapeable glazing bar to 122mm generic dry
- **Frame material and finish: Aluminium, polyester powder coated to non-standard RAL colour (TBC).**

- **Survey: Take site dimensions prior to cutting of glass.**
- **Secondary steelwork: Include secondary steelwork, not shown on Structural Engineer's drawings, required to support the system to the primary structure.**
- **Design, detail and installation of glass screen to be fully co-ordinated between the relevant Trade Subcontractors with detail and installation of drylining finishes and glazed rooflight ensure a fully resolved construction of the interfaces.**
- **Drawings: Submit; obtain approval before proceeding.**

Rev C9 **565 INTERNAL TRIANGULAR GLAZING AT HIGH LEVEL TO CENTRAL VESTIBULE:**
Drawing reference: 597-14465.
- **Supporting structure: Existing timber framing above ceiling. Suitability of existing supporting structure to be assessed following removal of existing glass.**
- **Surround/Beads: Existing timber surround/beads to be reused. Glazing to be supported on all sides. Suitability of existing surround/beads to be assessed following removal of existing glass.**
- **Materials:**
  - **Glass (single glazed): 8.4mm laminate glass with 0.38mm PVB interlayer as L10/687B.**
  - **Tape: Pre-formed butyl strip.**
  - **Bead bedding sealant: To BS EN ISO 11600.**
  - **Method of bedding/sealnt to be agreed following removal of existing glass.**
  - **Pre-applied film: 3M United Kingdom plc**
    http://solutions.3m.co.uk
    Scotchcal 3M Envision Diffuser Film 3735-60
- **Survey: Take site dimensions prior to cutting of glass.**

649 OPERABLE LOUVRE VENTILATORS TO SKYLIGHT UPSTANDS **(LOUVRES LE-LV-G01, G02, G03, G04, G05, G06)**:

Rev C8
- Drawing reference: 597-12200 – 12204, **597-13207, 597-13208, 597-13216** and Louvre Schedule 597-51005
- Type: Single blade operable louvre
- Size: As drawings **/ schedule**
  - Manufacturer and reference: Gilberts Ltd (01253 766911)
    www.gilbertsblackpool.com
    Mistrale 75

  Blades: Single bank of aluminium blades with thermal damper behind
  Sizes: As drawings and schedule.
- Material and finish: Aluminium; polyester powder coated to non-standard RAL colour. **Refer to Schedule 597-51005**
- Operation: Electric.
  - Blade operator: Mechanism housed in perimeter frame.
- Controls:
  - Key switch ~~(TBC).~~
  ~~- Interface with BMS, fire-alarm, security systems (TBC).~~
- Performance:
  - Air and water tightness, structural stability and wind loading in accordance with BS EN 12207 and BS EN 12208.
  - Provide independent test evidence.
- Other requirements:
  - Security blade channels to prevent removal of blades.

Rev C8 ~~- Fixings concealed and inaccessible.~~
Rev C8 ~~- Continuous run louvres~~ **58mm externally mounted louvre**
Rev C1 **- Linear grille to internal face of louvre - Waterloo Plasterline Linear Grille.**
Rev C4 **- Grille Type: APG**
- Size: Refer to Drawings: 597-41241, 41245
- Finish: White

Rev C3 650 STEEL LOUVRE-WALL SYSTEM TO EXISTING PLANT ROOMS (WESTERN SERVICE YARD **LOUVRES GH-LV-G01 & G02**):

Rev C7 - ~~NOTE: This specification applies if existing louvres cannot be adapted to suit new plant room configuration.~~
- Drawing reference: 597-**15000B and Louvre Schedule 597-51005**.
- Type: multi-paneled louvre-wall units with doors.
- Background support: Existing masonry.
- Louvre system:
Manufacturer and reference: Colt International Ltd. (023 9245 1111)
www.coltgroup.com
Rev C7 ~~*3*~~ ***2****UL/SH (Shallow Section) Universal Louvre System (Steel).*
Material: Light gauge zinc coated mild steel.
- Finish as delivered: Polyester powder coated to non-standard RAL colour (TBC) as section Z31.
Blade pitch: 50 mm at 45º.
Number of banks: ~~3~~ **2** (~~Triple~~ **Double** Bank).
- Door: Outward opening doors L10/651 integrated into louvre wall system.
- Accessories/other requirements:
1. Side frame, top frame and cill to suit shallow section louvre (triple bank). Narrow flange exposed to front external face (20 mm nominal).
2. Bespoke aluminium cill flashing (ppc) factory welded to frame, with 10mm nominal drip to front edge, and 10mm projection, as drawing 501/___. Open ends closed with welded infill plate. Butted joints with concealed back-strap to lengths over 3.0m (nominal).
3. Mullions (concealed) at 1250mm max centres.
4. Stainless steel insect/bird-mesh to back of open louvres (duct terminations and plant room/plenum ventilation). Area of open louvre as Services Engineer's requirements.
5. Blanking panels and spigots to rear of louvres to suit duct connections as Building Services Engineers requirements.
6. Flashings and trims as necessary to junction with roof terraces J42/110A and J42/110B.
7. Front louvre blades clipped to mullions (not screwed or rivetted), to allow movement.
8. The louvre-wall to appear as one continuous plane.
Rev C4 ~~9. EPDM damp proof course to perimeter construction as L10/705~~.
9. Sealant to perimeter joints as L10/810.
- Fixing: Self-drilled, self-tapping bolt fixing through adjustable fixing cleat angles located at the back of the unit bolted to steel framing system or primary structural frame. All as manufacturer's recommendations.
- Secondary steelwork: As L10/670.
- Weather resistance of louvres: As L10/674.
- Drawings: Submit for Architect's examination and comment.

Rev C3 651 STEEL LOUVRED DOORS WITHIN LOUVRE WALL SYSTEM (WESTERN SERVICE YARD **LOUVRES GH-LV-G01 & G02**):

Rev C7 - ~~NOTE: This specification applies if existing louvres cannot be adapted to suit new plant room configuration.~~
- Type: Outward opening, single and double leaves as required.
- Drawing reference: 597-**15000** and Louvre Schedule 597-**51005**.
- Manufacturer and reference: Colt International Ltd. (023 9245 1111)
www.coltgroup.com
Rev C7 ~~*1*~~ ***2****UL/SH Universal Louvre System (Steel).*
Material: Light gauge zinc coated mild steel.
- Finish as delivered: Polyester powder coated to non-standard RAL colour (TBC).
Blade pitch: 50 mm at 45º.
Number of banks: ~~Single~~ **Double** with blanking plate.
- Special features:
1. Louvre door integrated into louvre wall system L10/650.

2. Blanking plate behind louvre blades to whole of door area.
3. Recessed lock plate to suit euro-profile cylinder and rim lock as Ironmongery Schedule.
4. Recessed pull handle and hinges.
5. Stainless steel bolts to top and bottom of fixed leaf of double doors as Ironmongery schedule.
6. Astragal weather strip to edge of inside face of fixed leaf of double doors.
7. 6 mm Durbar pattern stainless steel threshold plate across top of upstand with drip to front edge.

- Finish as delivered: Polyester powder coated to non-standard RAL colour (TBC).
- Fixing: Self-drilled, self-tapping bolt fixing through adjustable fixing cleat angles located at the back of the unit to manufacturers recommendations. Length and number of cleats to suit wall construction as shown on drawings.
- Other requirements:
  1. Louvre blades in door to align with louvre blades in fixed louvre wall system.
  2. Joints to louvre wall system to be minimum width.
- Drawings: Submit for Architect's examination and comment.
- Secondary steelwork: As L10/670.

Rev C1 652 STEEL LOUVRES / LOUVRE-WALL SYSTEM TO GENERAL PLANT AREAS **(LOUVRES ET-LV-B01, ET-LV-B02, ~~B03,~~ GH-LV-G03, GH-LV-G04 & GH-LV-G04a, GH-LV-G09):**

- Type: multi-paneled louvre-wall units with doors.
- **Rev C1** Drawing reference(s): **597-15006, 15007, 15108, 15110, 15209, 597-17060, 597-12102, 597-12101 & External Louvre Schedule 597-51005.**
- Background support: Existing masonry **and/ or timber framing**
- Louvre system:

Manufacturer and reference: Colt International Ltd. (023 9245 1111)
www.coltgroup.com
2UL/SH (Shallow Section) Universal Louvre System (Steel).

Material: Light gauge zinc coated mild steel.
- Finish as delivered: Polyester powder coated to non-standard RAL colour (TBC) as section Z31.

Blade pitch: 50 mm at 45º.
Number of banks: 2 (Double Bank).

- Accessories/other requirements:

Rev C2 1. Side frame, top frame and cill to suit shallow section louvre (**~~triple bank~~double bank**). Narrow
Rev C2 flange exposed to front external face (20 mm nominal), **mitred external corners**.
2. Bespoke aluminium cill flashing (ppc) factory welded to frame, with 10mm nominal drip to front
Rev C1 edge, and 10mm projection, as drawing 597-**15006**. Open ends closed with welded infill plate.
3. Butted joints with concealed back-strap to lengths over 3.0m (nominal).
4. Mullions (concealed) at 1250mm max centres.
5. Stainless steel insect/bird-mesh to back of open louvres (duct terminations and plant room/plenum ventilation). Area of open louvre as Services Engineer's requirements.
6. Blanking panels and spigots to rear of louvres to suit duct connections as Building Services Engineers requirements.
7. Flashings and trims as necessary to junction with roof terraces.
8. Front louvre blades clipped to mullions (not screwed or rivetted), to allow movement.
9. The louvre-wall to appear as one continuous plane.
10. EPDM damp proof course to perimeter construction as L10/705.
11. Sealant to perimeter joints as L10/810.

- Fixing: Self-drilled, self-tapping bolt fixing through adjustable fixing cleat angles located at the back of the unit bolted to steel framing system or primary structural frame. All as manufacturer's recommendations.
- Secondary steelwork: As L10/670.
- Weather resistance of louvres: As L10/674.
- Drawings: Submit for Architect's examination and comment.

Rev C3 **653 STEEL LOUVRES / LOUVRE-WALL SYSTEM TO GENERAL PLANT AREAS (LOUVRES ET-LV-B03, GH-LV-B10):**

- **Type: multi-paneled louvre-wall units with doors.**
- **Drawing reference(s): 597-15008, 15110, 12101 & External Louvre Schedule 597-51005.**
- **Background support: Existing masonry.**
- **Louvre system:**

Manufacturer and reference: Colt International Ltd. (023 9245 1111)

www.coltgroup.com
1UL/SH (Shallow Section) Universal Louvre System (Steel).
Material: Light gauge zinc coated mild steel.
- **Finish as delivered: Polyester powder coated to non-standard RAL colour (TBC) as section Z31.**
Blade pitch: 50 mm at 45º.
Number of banks: 1 (Single Bank).
- **Accessories/other requirements:**
1. **Side frame, top frame and cill to suit shallow section louvre (single bank). Narrow flange exposed to front external face (20 mm nominal), mitred external corners.**
2. **Bespoke aluminium cill flashing (ppc) factory welded to frame, with 10mm nominal drip to front edge, and 10mm projection, as drawing 597-15008, 15110. Open ends closed with welded infill plate.**
3. **Butted joints with concealed back-strap to lengths over 3.0m (nominal).**
4. **Mullions (concealed) at 1250mm max centres.**
5. **Stainless steel insect/bird-mesh to back of open louvres (duct terminations and plant room/plenum ventilation). Area of open louvre as Services Engineer's requirements.**
6. **Blanking panels and spigots to rear of louvres to suit duct connections as Building Services Engineers requirements.**
7. **Flashings and trims as necessary to junction with roof terraces.**
8. **Front louvre blades clipped to mullions (not screwed or rivetted), to allow movement.**
9. **The louvre-wall to appear as one continuous plane.**
10. **EPDM damp proof course to perimeter construction as L10/705.**
11. **Sealant to perimeter joints as L10/810.**
- **Fixing: Self-drilled, self-tapping bolt fixing through adjustable fixing cleat angles located at the back of the unit bolted to steel framing system or primary structural frame. All as manufacturer's recommendations.**
- **Secondary steelwork: As L10/670.**
- **Weather resistance of louvres: As L10/674.**
- **Drawings: Submit for Architect's examination and comment.**

655 ROBUST STEEL LOUVRES TO UKPN SUBSTATION - WESTERN SERVICE YARD **(LOUVRES GH-LV-G05)**:
- Type: Robust mild steel louvre units (welded) as required by UKPN.

Rev C1 - Drawing reference(s): **597-12102, 597-15001, 579-15005 & External Louvre Schedule 597-51005.**
- Background structure: New brickwork.
- Louvre system:
Manufacturer and reference: Sunray Engineering Ltd. (01233 639039)
http://www.sunraydoors.co.uk
Rev C1 ***Ventapanel***
Material: Galvanised mild steel (2.5 mm).
- Finish as delivered: Polyester powder coated to non standard RAL colour (TBC).
Blade pitch: 50 mm at 48º.
Number of banks: 1 (Single Bank).
- Size of louvres: As Schedule and drawings.
- Accessories/other requirements:
1. Mild steel angle (6 mm) to side frame, top frame and cill to suit louvre blade depth, fully welded.
2. Louvre blades welded to perimeter frame.
3. Mild steel vermin mesh.

Rev C4 ~~4. EPDM damp proof course to perimeter construction as L10/705.~~
4. Perimeter joints as L10B/195 and L10B/810.
- Special requirements:
- Louvres to be fully fabricated before galvanising.
- Fixing: Welded steel lugs with fixing anchors to brickwork as manufacturer's recommendations and UKPN requirements. Calculate loads to determine fixings as L10B/180.
- Drawings: Submit for Architect's examination and comment prior to fabrication.

656 ROBUST STEEL LOUVRE SINGLE DOOR TO UKPN SUBSTATION - WESTERN SERVICE YARD **(LOUVRES GH-LV-G07)**:
- Type: Robust mild steel louvre units (welded) as required by UKPN.

Rev C1 - Drawing reference(s): **597-12102, 597-15000, 597-15001, 597-15005 & External Louvre Schedule 597-51005.**
- Background structure: New brickwork.
- Louvre door:
  Manufacturer and reference: Sunray Engineering Ltd. (01233 639039)
  http://www.sunraydoors.co.uk/ventadoor.htm
Rev C1 ***Ventadoor steel louvred single leaf door***
  Material: Galvanised mild steel (2.5 mm).
Rev C4 - Finish as delivered: Polyester powder coated to ~~non~~ standard RAL colour **7012.**
  Blade pitch: 50 mm at 48º.
  Number of banks: 1 (Single Bank).
Rev C1 - Size of louvre door: **Single leaf door 798x2100mm s/o.**
- Frame: 100 x 50 x 3mm rectangular hollow section to head and jambs with 100 x 10mm flat threshold and lugs for M10 sleeve anchors.
- Accessories/other requirements:
  1. Mild steel angle (6 mm) to side frame, top frame and cill to suit louvre blade depth, fully welded.
  2. Louvre blades welded to perimeter frame.
  3. Mild steel vermin mesh.

Rev C4 ~~4. EPDM damp proof course to perimeter construction as L10/705.~~
  5. Perimeter joints as L10B/195 and L10B/810.
- Locking arrangement for single door: As UKPN requirements.
- Special requirements:
  - Louvre door to be fully fabricated before galvanising.

Rev C4 **- Standard hasp and staple to be fitted to external face of door. Panic bar fitted to internal face of door (as UKPN requirements).**
- Fixing: Welded steel lugs with fixing anchors to concrete as manufacturer's recommendations and UKPN requirements. Calculate loads to determine fixings as L10B/180.
- Drawings: Submit for Architect's examination and comment prior to fabrication.

Rev C3 657 ROBUST STEEL LOUVRE DOUBLE DOORS TO UKPN SUBSTATION - WESTERN SERVICE YARD **(LOUVRES GH-LV-G06 & G08)**:
- Type: Robust mild steel louvre units (welded) as required by UKPN.

Rev C1 - Drawing reference(s): **597-12102, 597-15000, 597-15001, 597-15005 & External Louvre Schedule 597-51005.**
- Background structure: New brickwork.
- Louvre door:
  Manufacturer and reference: Sunray Engineering Ltd. (01233 639039)
  http://www.sunraydoors.co.uk/ventadoor.htm
Rev C1 ***Ventadoor steel louvred double leaf door***
  Material: Galvanised mild steel (2.5 mm).
  - Finish as delivered: Polyester powder coated to non standard RAL colour (TBC).
  Blade pitch: 50 mm at 48º.
  Number of banks: 1 (Single Bank).
Rev C1 - Size of louvre door: **Double leaf door 1585x2100mm s/o.**
- Frame: 100 x 50 x 3mm rectangular hollow section to head and jambs with 100 x 10mm flat threshold and lugs for M10 sleeve anchors.
- Accessories/other requirements:
  1. Mild steel angle (6 mm) to side frame, top frame and cill to suit louvre blade depth, fully welded.
  2. Louvre blades welded to perimeter frame.
  3. Mild steel vermin mesh.

Rev C4 ~~4. EPDM damp proof course to perimeter construction as L10/705.~~
  5. Perimeter joints as L10B/195 and L10B/810.

Rev C4 - Locking arrangement for double doors: **Standard padlock to internal side of door by supplied by UKPN.**
- Special requirements:
  - Louvre door to be fully fabricated before galvanising.
- Fixing: Welded steel lugs with fixing anchors to concrete as manufacturer's recommendations and UKPN requirements. Calculate loads to determine fixings as L10B/180.
- Drawings: Submit for Architect's examination and comment prior to fabrication.

Rev C3 658 SMALL STEEL LOUVRE INFILLS TO SKYLIGHTS, VENTILATION COWLS, ETC **(LOUVRES ET-LV-B04, ET-LV-B05)**:

Rev C2
- Drawing reference(s): **597-12101, 597-15006, 597-15102** and Louvre Schedule **597-51005**
- Manufacturer and reference: Elefant Gratings Ltd. (01732 884123).
  www.elefantgratings.com
  Louvre Grating – Closed Front (Double Bank)
- Free area: 50% minimum (including insect mesh).
- Material: Zinc coated mild steel, with polyester powder coated finish.
- Frame: 50 x 3 mm flat, welded butt-joints at corners.
- Horizontal blades: Section 2 No. x 35 x 2 mm flats, butted together at 90 deg. to form inverted V, with sealed gap.
  Blade angle 45 deg..
  Pitch 20 mm.
- Vertical bars: Section 45 x 2 mm flat.
  Spacing – Equal at 75 mm centres approx.
- Fabrication generally as section Z11.
- Fabrication: Blades and vertical bars to be equally notched for tight interlocked joint. Front edge of blades flush with frame; bars set back 5 mm. All joints spot welded to reverse of grille (no welds visible to front).
- Number of banks: Double.
- Special features:
  1. Internal drainage channel at base to collect any rain leakage.
  2. Front face of louvre flush with brickwork.
  3. Flush weathercill sealed to brickwork.
  4. Bird-mesh to reverse.
  5. Blanking plates and spigots to rear of louvre to suit duct connections as Building Services Engineers requirements.

Rev C2
  6. Installation to be co-ordinated with ~~**brickwork/blockwork construction (F10/110)**~~ **structural background** to ensure fully weathertight construction at interfaces.
  7. Seal perimeter joints as L10/678.
- Finish as delivered: Polyester powder coated as section Z31.
  - Colour: Non-standard RAL colour (TBC).
- Fixing: Angle cleats to reverse to suit wall construction, at 400 mm centres approx., for screw fixing. No fixings to be visible to front.
- Submit: Fabrication drawings.

Rev C9

~~652 STEEL LOUVRES / LOUVRE-WALL SYSTEM TO EXISTING LIBRARY BASEMENT LIGHTWELL (GH.LV.G09):~~
~~Type: louvre-wall units.~~
~~Drawing reference(s): 597-15209, & External Louvre Schedule 597-51005.~~
~~Background support: Existing masonry and/ or timber framing~~
~~Louvre system:~~
~~Manufacturer and reference: Colt International Ltd. (023 9245 1111)~~
~~www.coltgroup.com~~
~~*2UL/SH (Shallow Section) Universal Louvre System (Steel).*~~
~~Material: Light gauge zinc coated mild steel.~~
~~Finish as delivered: Polyester powder coated to non-standard RAL colour (TBC) as section Z31.~~
~~Blade pitch: 50 mm at 45º.~~
~~Number of banks: 2 (Double Bank).~~
~~Accessories/other requirements:~~
~~1. Side frame, top frame and cill to suit shallow section louvre (triple bankdouble bank). Narrow flange exposed to front external face (20 mm nominal), mitred external corners.~~
~~2. Bespoke aluminium cill flashing (ppc) factory welded to frame, with 10mm nominal drip to front edge, and 10mm projection, as drawing 597-15006. Open ends closed with welded infill plate.~~
~~3. Mullions (concealed) at 1250mm max centres.~~
~~4. Stainless steel insect/bird-mesh to back of open louvres (duct terminations and plant room/plenum ventilation). Area of open louvre as Services Engineer's requirements.~~
~~5. Blanking panels and spigots to rear of louvres to suit duct connections as Building Services Engineers requirements.~~
~~7. Flashings and trims as necessary to junction with existing building fabric.~~
~~8. Front louvre blades clipped to mullions (not screwed or rivetted), to allow movement.~~

~~9. The louvre-wall to appear as one continuous plane.~~
~~10.EPDM damp proof course to perimeter construction as L10/705.~~
~~11.Sealant to perimeter joints as L10/810.~~
~~- Fixing: Self-drilled, self-tapping bolt fixing through adjustable fixing cleat angles located at the back of the unit bolted to steel framing system or primary structural frame. All as manufacturer's recommendations..~~
~~- Weather resistance of louvres: As L10/674.~~
~~- Drawings: Submit for Architect's examination and comment.~~

ANCILLARY PRODUCTS

660 'BRONZE' FINS AND LINING TO WINDOWS - LIBRARY EXTENSION:
Rev C4 **Include in Contractor's Designed Portion**
- Drawing reference: 597-**15221**.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc).
  Finish: Pre-patinated - *Dark*, to match window frames.
- Thickness: ~~20 mm~~ **10mm.**
  Form:
  - Sheet: 1.6 mm thick drawn around ~~16 mm~~ **6mm** stainless steel plate core (Grade 316).
    or,
  - Plate: ~~20 mm~~ **10mm.** thick with eased arrises.
- Depth:
  - Fins: ~~186 mm.~~ **180mm**
  - Linings: ~~71 mm.~~ **82mm**
- Height: As drawings.
- Fixings: Unobtrusive angle brackets in matching material at head and base; submit proposals.
- Interface with cill profile to be watertight.
- Other requirements: Fins and linings to be supported independently of window frames.

662 'BRONZE' CILL PROFILE TO WINDOWS - LIBRARY EXTENSION:
- Drawing reference: 597-__.
- Bespoke cill flashings.
- Material: *Brass OT67 Alloy* (67%copper, 33% zinc) sheet.
  Finish: Pre-patinated - *Dark* to match window frames.
- Sheet thickness: 2.0 mm.
- Form:
  - To suit reveal depth, factory welded to frame.
  - Fall: 2º.
  - Downstand to front edge: 20 mm.
  - Projection: 15 mm.
  - Open ends: Closed with welded infill plates.
  - Sides of cill at reveals: To have welded 10 mm minimum upstand to shed water away from joint.
  - Welds: Continuous and polished smooth.
  - Concealed fixings.

STRUCTURAL SUPPORT

670 SECONDARY STEELWORK:
Include in Contractor's Designed Portion
- Scope: Secondary steelwork, including all necessary posts, beams, ties, brackets, etc, and fixings, not shown on the Structural Engineer's drawings, required to secure and support the system to the primary structure.
- Sizes and locations: Calculate to suit loadings as L10/675.
- Material, grade and finish as Structural Engineer's specification section G10.
- Other requirements: As GG10/140.

DESIGN/PERFORMANCE REQUIREMENTS

673 LOADS FOR LOUVRE WALL SYSTEM:
- Structural requirements generally: As Structural Engineer's specification section B50.
- Impact loads: To BS 8200:
  Location and category:
  - Lower-ground and ground floor louvres L10/650, category A.
  - Upper floor louvres L10/650, category F.

674 WEATHER RESISTANCE OF LOUVRES:
- Minimum aerodynamic performance coefficient (Cv): 0.277 (inlet).
- Weathering effectiveness tested in accordance with HEVAC Standard test at windspeed of 13m/s:

Classification:	Air intake velocity:
A	Up to 3.0m/s
B	Up to 3.5m/s

675 STRUCTURAL INTEGRITY - EXTERNAL ASSEMBLIES:
- Requirement: The window assembly must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
- Design wind pressure: Calculate in accordance with (NA) BS EN 1991-1-1 and BS 6262.
- Impact resistance for windows:
  - Hard body impact loads: In accordance with CWCT TN75:
    Location and exposure category:
    - Within 1.5 m of ground Category C.
    - Above 1.5 m of ground Category F.
    Soft body impact loads – glass to BS EN 12600:
  - Location and classification: (TBC).
- Permanent imposed loads: None .
- Temporary imposed loads: Maintenance load to rooflights L10/
- Occupant impact to glass doors and screens: 1.0 kN/m2.
  Activity impact to glass doors and screens: 1.0 kN/m2.

676 DEFLECTION UNDER DEAD LOADS of framing members parallel to the window glazing plane must not:
- Reduce glass bite to less than 75% of the 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.

677 GENERAL MOVEMENT: The window glazing must accommodate anticipated building movements, as advised by the Structural Engineer.

678 CONSTRUCTION OF JOINTS:
Joints within the system and at interface junctions with adjacent construction elements, are to incorporate no less than two distinct lines of defence against water penetration and to resist air pressure leakage as required. To perimeter joints, fill voids with insulation material P10/450 or similar and allow for a double layer of water- and air pressure-resistant membranes as L10/705.

680 WEATHERTIGHTNESS OF WINDOWS:
- Air permeability to BS EN 12207: Class 3 (600 Pa peak pressure).
- Water penetration to BS EN 12208: Class 8A (600 Pa peak pressure).
- Wind resistance to BS EN 12210: Class C4.

681 ULTRAVIOLET (UV) RESISTANCE:
- Requirement:
  1. To resist 99% of UV transmission. Use laminated glass with high performance polyvinyl butyral (PVB) interlayer eg. Kuraray *Butacite,* as L10/687B.
  2. The level of UV transmission in daylight should not exceed 75 µW/lumen through the glass. Take light meter readings of each window and submit results to the CA to confirm compliance prior to Practical Completion.

682 THERMAL PROPERTIES:
- Method of calculating thermal transmittance (U-value) of the glazing: Weighted U-value.
- Average U-value of glazing: 1.2 W/m^{2}K unless noted otherwise.
- Thermal transmittance (U-values) shall be assessed to BS EN 673 and BS EN 10077-1 and -2.
- U-values shall be calculated for whole systems and presented citing centre-pane, framing, and edge loss values.
- Provided that area-weighted averages are maintained, the Contractor may propose trade-offs in performance between systems. These will be reviewed by the Contract Administrator on a case-by-case basis.

683 SOLAR AND LIGHT CONTROL:
- Glass units in external glazing must have:
  - Total solar energy transmission: Maximum g-value – glazing only: 0.42 (TBC).
  - Visible light transmission: Minimum light transmission – glazing only: 60%.
- Glass must be clear/neutral with minimum colour rendering viewed from the interior and minimum colour rendering in reflection viewed from the exterior, caused by the solar control coating. Bronze/pink/purple or excessive blue/green colour rendering is not acceptable.
- Submit samples of glass units with the glass type to be used and to the required glass thickness to the Architect for approval of visual appearance as L10/168.

684 THERMAL STRESS IN GLAZING (THERMAL BREAKAGE):
- Glass panes/ units: Must have adequate resistance to thermal stress generated by orientation, shading, solar control and construction.
- Submit calculations to demonstrate any additional requirements of glass manufacture other than those specified to provide such resistance, for both external and internal panes of double-glazed units.

685 AVOIDANCE OF CONDENSATION
- Requirement: Notional psychrometric conditions under which condensation must not form on building interior surfaces of framing members or any part of infill panels/ facings are:
  - External summer: +18ºC maximum at 65% RH.
  - External winter: -5ºC minimum at 90% RH.
  - Internal summer: +20ºC maximum at 40% RH.
  - Internal winter: +20ºC maximum at 40% RH.

686 SOUND TRANSMITTANCE
- Weighted sound reduction index (Rw) within 100 to 3150 Hz frequency range to BS 5821-3:
  - Between internal and external surfaces of glazing systems (minimum): As Acoustic Engineer's Report.
  - Between adjoining floors abutting glazing systems (minimum): As Acoustic Engineer's Report.
  - Between adjoining rooms on same floor abutting glazing systems (minimum): As Acoustic Engineer's Report.

GLAZING PRODUCTS

687 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, ripplings, 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. Edges must be flat ground and arrises slightly ground, suitable for sealant jointing.
- Roll pattern on all toughened glass panes to be to be horizontal when glazed.

687A THERMALLY TOUGHENED GLASS (HEAT SOAKED TOUGHENED):
- Safety glass: As L10/687C.
- All edgework must be completed before toughening.
- The toughening process must be horizontal to eliminate tong marks and minimise dimensional inaccuracies.
- All toughened glass must be subjected to a heat soaking regime designed to reduce the incidence of failure due to nickel sulfide inclusions. All panes must be heat soaked at a mean glass temperature of 290 ± 10°C for not less than 2 hours as BS EN 14179-1.

687B LAMINATED GLASS:
- Safety glass: As L10/687C.
- Panes must be a combination of thermally toughened and either heat strengthened or annealed leaves.
- Interlayers to glass leaves must be high performance polyvinyl butyral (PVB) eg. Kuraray *Butacite* or ionoplast, eg. Kuraray *"SentryGlas"*. [Note: PVB must be used in external glazing where UV protection is required as L10/682].
- Interlayers must be sealed at the perimeter to prevent deterioration due to water where exposed or glass joint sealant at glass-to-glass joints.

687C SAFETY GLASS:
- Toughened or laminated glass with impact performance as follows:-
  - Toughened glass: To BS EN 12600, Class 1(C)1 (equivalent to BS 6206, Class A).
  - Laminated glass: To BS EN 12600, Class 1(B)1 (equivalent to BS 6206, Class A).
- Kitemark/CE mark: Required; location to be agreed.

687D LAMINATED GLASS (INTUMESCENT):
- Panes: Combination of thermally toughened and heat strengthened glass or heat strengthened glass throughout.
- Interlayers to glass leaves: Clear intumescent or a combination of clear intumescent and PVB.
- Fire performance: Fire rating (minutes resistance) and integrity / insulation classification as specified.
- Acoustic performance: As specified.
- Thickness: To take into account fire requirements and acoustic performance.
- Impact performance: Safety glass as L10/687C.

688 DIMENSIONAL TOLERANCES ON GLASS FIXED WITH STRUCTURAL SEALANT (GLASS-TO-GLASS JOINTS):
- 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.

689 DISTORTIONAL TOLERANCES ON GLASS WITH LOW-EMISSIVITY AND/OR SOLAR CONTROL COATING:
- 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.

692 INSULATING GLASS UNITS:
- Standard for double glazed units: To BS 5713 and Kitemark certified, or equivalent European standard.
- Perimeter spacers: Stainless steel warm-edge.
- Colour of spacer: Black.
- Perimeter seals: Resistant to UV light degradation on exposed edges. Compatible with any structural/ assembly/ weather sealants with which they come into contact.
  Colour of seals: Black.
- Perimeter taping: Not permitted.
- Air-space: Air filled.

693 EDGEWORK OF GLASS FOR STRUCTURAL SEALANT GLAZING
- Bonded, unframed outer edges: Smooth ground with a small arris suitable for open jointing or for weatherseal jointing.

694 GASKETS:
- Noncellular rubber to BS 4255-1
  Cellular rubber to ASTM-C509.
- Outer gaskets of single front sealed curtain walling systems and inner gaskets of drained and ventilated or pressure equalised curtain walling systems must be formed in a complete frame with sealed joints. Vulcanised rubber gaskets must have factory moulded corner joints.
- All gaskets must be resistant to oxidation, ozone and UV degradation.

695 WEATHERSTRIPPING OF OPENING UNITS
- Material:
  - Noncellular rubber to BS 4255-1.
  - Cellular rubber to ASTM-C509.
  - Polypropylene woven pile, silicone treated.
- Attachment: Fixed in undercut grooves in framing sections using preformed corners, with any joints in the length.

696 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.
  - Perimeter sealants in contact with brickwork to be selected to avoid long-term staining of the brickwork from migration of plasticisers.

PRODUCTS

697 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.

698 ALUMINIUM ALLOY SHEET: To BS EN 485, BS EN 515 and BS EN 573 in an alloy, temper and thickness suitable for the application and specified finish.

699 MILD STEEL FRAMING SECTIONS/REINFORCEMENT: To the relevant parts of BS 7668, BS EN 10029, BS EN 10113, BS EN 10137, BS EN 10155 and BS EN 10210, in a thickness suitable for the application, and for galvanizing or other protective coating.

700 MILD STEEL SHEET

- Standards: To relevant parts of BS 1449-1, BS EN 10048, BS EN 10051, BS EN 10111, BS EN 10131, BS EN 10132, BS EN 10139, BS EN 10140, BS EN 10149, BS EN 10209 and BS EN 10268.
- Grade and thickness: Suitable for the application, and for galvanizing or other protective coating.

701 STAINLESS STEEL SHEET
- Standards: To relevant parts of BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10095, BS EN 10258, BS EN 10259.
- Grade: To BS EN 10088-2, austenitic 1.4301 (304) generally, 1.4401 (316) when used externally or in severely corrosive environments.
- Thickness: Suitable for the application.

702 MECHANICAL FIXINGS:
- Stainless steel to BS EN ISO 3506-1 and 2, grade A2 generally, grade A4 when used in severely corrosive environments, or
- Mild steel to BS 4190 and suitable for galvanizing or other protective coating, or
- Aluminium complying with BS 1474 for brackets, rivets and shear pins.

703 ADHESIVES must not be degradable by moisture or water vapour.

704 FIXING ANCHORS must be:
- Of dimensions not less than recommended by their manufacturers.
- Capable of adequate three dimensional adjustment to accommodate building structure and window fabrication/installation tolerances.

705 DAMP PROOF MEMBRANES TO WINDOW FRAMES:
- Damp-proof / airtight membranes to be the following or equivalent:-
- Material: EPDM.
- Manufacturer: Sika Ltd
  www.sika.co.uk
  Sika Membran Outdoor + Membran Universal
- Thickness: 0.6 mm.
- Width: 150 mm (nominal).
- Installation:
  Adhesive: *SikaBond TF Plus*
  Fix in accordance with manufacturer's instructions and recommendations. Fully seal to component frame and base construction. Do not overstretch to allow for differential movement and installation tolerances.
- Secondary airtight seal: *Sika Membran Universal* to inside of construction joint to satisfy air permeability requirements.
- Accessories:
  1. Preformed corner pieces.
- Other requirements:
  1. Obtain confirmation of compatibility from product manufacturer if EPDM to be used in contact with bitumen products.

FINISHES

706 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.

707 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.

FABRICATION AND INSTALLATION

709 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.

710 PROTECTION OF COMPONENTS: Do not deliver to site components which cannot be put immediately into suitable clean, dry, floored and covered storage. Stack near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

711 MOISTURE CONTENT OF TIMBER COMPONENTS: During delivery, storage, fixing and thereafter to Practical Completion maintain conditions of temperature and humidity to suit specified moisture content(s) of components. When instructed by CA, test components with an approved electrical moisture meter used in accordance with manufacturer's recommendations.

712 METALWORK
- Requirement: As section Z11, unless specified otherwise in this section.

713 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.

714 FIXINGS/ ADHESIVES APPLICATION
- Requirement: As section Z20, unless specified otherwise in this section.

715 SEALANT APPLICATION
- Requirement: As section Z22, unless specified otherwise in this section.

716 STRUCTURAL SEALANT GLAZING
- Working conditions: Prepare for and apply structural bonding sealant in a favourable workshop environment.
- Curing: Do not transport units until structural bonding sealant has adequately cured for the period stated in the project specific approval.

717 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.

718 SUITABILITY OF SUPPORTING STRUCTURE
- Pre-installation survey: Submit report if required accuracy or security of glazing system installation cannot be achieved.

719 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.

720 PRELIMINARY GLAZING SYSTEM INSTALLATION
- Requirement: Complete an area for inspection and approval of appearance as follows: Vertically stacked windows L10/400A to blade wall.

722 WELDING
- In situ welding: Not permitted.

725 INTERFACES
- Flashings, closers, dpcs, etc: Locate and form correctly to provide weathertight junctions with the glazing systems.
- Air paths: Fill perimeter gaps behind weatherseals with mineral wool or expanding foam as Section P10, to provide airtight junctions with the window systems and perimeter construction.

730 PRIMING/SEALING: Before fixing components ensure that surfaces of timber which will be inaccessible after installation are primed or sealed as specified.

750 BUILDING IN
- General: Not permitted unless indicated on drawings.
  - Brace and protect components to prevent distortion and damage during construction of adjacent structure.

766 WINDOW INSTALLATION:
- Install windows into prepared openings, maintaining a maximum gap of 10 mm between the frame edge and the surrounding construction.
- Install windows without twist or diagonal racking.
- 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.

770 DAMP PROOF COURSES IN PREPARED OPENINGS: Ensure that cavity closers and other dpcs are positioned correctly in relation to frames and are not displaced during fixing operations.

780 FIXING OF BRONZE FRAMES:
- Standard: As section Z20.
- Fasteners: Fix vertical jambs of frames using heavy duty metal cramps compatible with frame material as manufacturer's recommendations, approx. 250 x 60 x 3 mm, to structural substrate. Shims as required.
- Spacing: When not predrilled or specified otherwise, position fasteners not less that 50 mm and not more than 190 mm from ends of each jamb, adjacent to each hanging point of opening lights and at maximum 900 mm centres.
- Fix horizontal head and sill of frames wider than 1200 mm, with cramps as above, at 500 mm max centres.

810 SEALANT JOINTS TO FRAME PERIMETERS:
- Filler: Closed cell polyethylene foam.
  Manufacturer and reference: Grace Construction Products Ltd. (Tel: 01753 692929).
  http://www.uk.graceconstruction.com/
  Aerofil 1.
  Build in as the work proceeds ensuring no projections into cavities and correct depth of joint to receive sealant system. Thickness of filler to match design width of joint.
- Sealant: One part, low modulus silicone to BS EN ISO 11600, type F or G. Neutral curing where in contact with or close proximity to other products that may be adversely affected by acetoxy curing.
- Joint movement capability: 20%
- Manufacturer and reference: Otto Chemie
  www.otto-chemie.de
  Ottoseal S70
  Colour: Selected by the Architect from standard colours (TBC).
  Primer: As recommended by sealant manufacturer to suit background material.
- Prepare joints and apply sealant as section Z22 and manufacturer's recommendations. Finish with a flat or slightly concave profile.

- Quality control and warranty: As L10/920A**.**
- Construction ofperimeter joints generally as L10/678.

816 STRUCTURAL GLAZING SEALANT TO GLASS-TO-GLASS JOINTS:
- Filler: Closed cell polyethylene foam (black). Build in as the work proceeds ensuring no projections into cavities and correct depth of joint to receive sealant system. Thickness of filler to match design width of joint. Filler to totally fill the back of the joint with no voids/air pockets.
- Sealant: Two-part neutral cure elastomeric sealant (high modulus).
  Manufacturer and reference: Dow Corning
  www.dowcorning.com
  Dow Corning 993 Silicone Structural Glazing Sealant
  Colour: Black.
- Prepare joints and apply sealant as section Z22 and in accordance with manufacturer's instructions and recommendations (" Dow Corning Europe: Silicone Structural Glazing Manual 2010").
  Finish joints smoothly with a flat or slightly concave profile.
- Quality control and warranty: As L10/920.

817 WEATHERSEAL SEALANT TO GLASS-TO-GLASS JOINTS
- Filler: Closed cell polyethylene foam (black). Build in as the work proceeds ensuring no projections into cavities and correct depth of joint to receive sealant system. Thickness of filler to match design width of joint. Filler to totally fill the back of the joint with no voids/air pockets.
- Sealant: One-part medium-modulus silicone sealant.
  Manufacturer and reference: Dow Corning
  www.dowcorning.com
  Dow Corning 791 Silicone Building Sealant
  Colour: Black.
- Prepare joints and apply sealant as section Z22 and in accordance with manufacturer's instructions and recommendations ("Dow Corning Europe: Silicone Structural Glazing Manual 2010".
  Finish joints smoothly with a flat or slightly concave profile.

820 IRONMONGERY: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Prevent damage to ironmongery and adjacent surfaces. At completion check, adjust and lubricate as necessary to ensure correct functioning.

TESTING

850 STRUCTURAL SEALANT GLAZING TESTS
- See also L10/920 and L10/920A.
- Product samples: Provide the structural bonding sealant manufacturer with framing profiles, glass, gaskets, assembly/ weathering sealants and other glazing products that are proposed for contact with structural bonding sealant.
- Testing: By sealant manufacturer to determine compatibility and adhesion of structural bonding sealant under specified design loadings.
- Modification of product to enable compliance with test criteria: Details must be recorded in the sealant manufacturer's project specific approval.

900 AIR PERMEABILITY/LEAKAGE TESTS:
- To CWCT 'Standard for curtain walling', clause 3.4. Peak pressure as specified in clause L10/175.
- Carry out tests in calm wind conditions and standard temperature, pressure and humidity conditions.
- Regions of concentrated air leakage are to be identified by smoke.
- Carry out tests as required by Building Control to check air tightness of the completed building envelope against the target pressure as specified in L10/175.

915 WATERTIGHTNESS - HOSE SITE TEST: Carry out tests on site to completed installation of the external glazing system at locations to be selected by the Architect. On completion of each elevation or part elevation and prior to commencement of internal finishes, the Trade Contractor shall arrange to carry out, at the selected locations, a site water test as described in AAMA 501.2-

83 'Field Check of Metal Curtain Walls for Water Leakage', or to CWCT 'Standard for Curtain Walling', clause 3.11.3.

SEALANT WARRANTY

920 STRUCTURAL SEALANT WARRANTY (DOW CORNING):
- Sealant type: As L10/816.
- Prior to installation submit project-specific structural glazing details to the sealant manufacturer for review and approval.
- Arrange with the sealant manufacturer to carry out project-specific adhesion and compatibility testing on all substrates that will contact the structural silicone, in accordance with manufacturer's instructions and recommendations (eg."Dow Corning Europe: Silicone Structural Glazing Manual 2010").
- Submit Quality Control Log sheets to sealant manufacturer with the formal request for warranty.
- Period of warranty: 20 years.

920A STRUCTURAL SEALANT WARRANTY (ADSHEAD RATCLIFFE):
- Sealant type: As L10/810.
- Register with the structural sealant manufacturer's warranty scheme (ie. Adshead Ratcliffe "Arbomaster Warranty Scheme").
- Prior to installation submit project-specific structural glazing details to the sealant manufacturer for review and approval.
- Arrange with the sealant manufacturer to carry out project-specific adhesion and compatibility testing on all substrates that will contact the structural sealants, in accordance with manufacturer's instructions and recommendations.
- Submit quality control log sheets to sealant manufacturer with the formal request for warranty.
- Period of warranty: 20 years.

COMPLETION

950 DAMAGE:
- Do not repair glazing units without approval. Such approval will not be given where products and units are badly damaged or where the proposed repair will impair performance or appearance.
- Repairs may require additional site testing at the discretion of the Architect.
- Schedule repairs or record on drawings for inclusion in the maintenance manual.

955 CLEANING: At Practical Completion or when otherwise agreed with the Architect, remove any protective coverings and thoroughly clean external and internal window areas. The window manufacturer and incorporated products manufacturers must approve cleaning agents for the purpose.

960 MAINTENANCE: Prepare a maintenance manual in accordance with CWCT 'Guide to good practice for facades', Section 10. Unless otherwise instructed or agreed the manual must be completed and handed over to the Architect at Practical Completion.