

Maffeis Engineering SPA

Euston Travelodge

SPECIFICATION EWS-001

MHBC-008-SD-SP101_REV02

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B50 General structural requirements

Tendering

10 Information to be provided with tender

1. **Description:** For standing seam, metal deck, aluminium "L" profile and aluminium brackets
2. **Submit the following**
 - 2.1. **Drawings:** Details and locations of connections to supporting structure
 - 2.2. **Calculations:** Schedule and location of loads to be transmitted to the supporting structure
 - 2.3. **Technical information:** The Contractor shall submit all relevant reports (e.g. Structural, thermal, test results) to demonstrate full compliance with the Specifications requirements established in this Specification document.
 - 2.4. **Proposals:** The Contractor shall justify any proposed modification of the facade systems shown in the drawings and demonstrate full compliance with the technical requirements established in this Specification document. Describe and give reasons for any proposals for:
 - 2.4.1. Additional support or other changes to the supporting structure.
 - 2.4.2. Changes to the specification.
 - 2.4.3. Changes to the adjacent building fabric.
 - 2.5. **Builders work, special provisions and special attendance by others:** Confirm that full provision has been made in the tender price

General

110 Eurocodes

1. **National Annexes:** Reference to a Eurocode, or to an execution or a material standard referenced therein, is deemed to include the appropriate United Kingdom National Annex, to the Eurocode or referenced standard. Nationally determined parameters shall apply. Non-contradictory complementary information: Applies when referenced in the National Annex.

120 Structural work

1. **Designated codes of practice:** To the Eurocodes appropriate to the nature of the structure
2. **Design working life:** Category 4 to BS EN 1990
3. **Completed structure generally:** To comply with the requirements of the designated codes of practice and the standards referenced therein. Deflections and other structural movements at serviceability limit state to be compatible with requirements of the building fabric, movement joints and weathertightness.

130 Contractor's design

1. **Engineer responsible for overall stability of structure:** Submit proposal, including details of qualifications and experience
2. **Design supervision/ checking levels:** To BS EN 1990, Table B4, level DSL3
3. **Design requirements:** None additional
4. **Design quality control:** To BS EN ISO 9001
5. **Maintenance:** The Contractor shall submit all detail drawings relevant to the facade scope of works to ensure the safety and serviceability of the structure, including:
 - 5.1. Critical parts that should be regularly inspected, with recommendations for the frequency of inspection.

- 5.2. Elements susceptible to corrosion, mechanical wear or fatigue that may need to be reconstructed or replaced during the design working life of the structure.
- 5.3. Means of safe access for maintenance and repair.

Performance

220 Exposure to fire

1. **Building purpose group:** In accordance with Table D1 of Building Regulations (Eng) (Approved Document B, Volume 2) the type of accommodation is a mixed and may be described in the terms used in point 4 and 12 as follow:
Committee room, common room, conference room, dining room, lounge or bar (other than in (1) above), meeting room, reading room, restaurant, staff room or waiting room and bedroom
 - 1.1. **Height of top floor above ground:** 25 m (west elevation) and 12 m (south-east elevation)
 - 1.2. **Depth of lowest basement:** Not applicable
2. **Loadbearing capacity, integrity and insulation:** Demonstrate adequacy of the structure testing to BS 476-21.
3. **Reaction to fire of structural elements:** To Building Regulations.
 - 3.1. **Requirements (minimum):** All facade materials shall be minimum Class A2-s1, d0 as per BS EN 13501-1.

470 Wind loads/ actions – contractor determined

1. **Description:** FOR WALL
2. **Standard:** To BS EN 1991-1-4.
 - 2.1. **Factors and coefficients:** Appropriate to location, exposure, altitude, building shape and size, and taking account of existing and known future adjacent and/ or attached buildings.
3. **Shelter from upwind obstacles:** As Standard

Execution

700 Execution generally

1. **Standard:** Report conflict between specification and the designated codes of practice and the standards referenced therein before ordering affected materials or executing affected work.
2. **Inspection levels:** To BS EN 1990, Table B5, level IL3.
 - 2.1. **Special requirements:** None
3. **Quality control:** To BS EN ISO 9001
4. **Tolerances:** Notwithstanding tolerances specified elsewhere, do not exceed requirements for compliance with the designated code.

705 Connections and anchorages

1. **End and edge distances and spacing (minimum):** Unless otherwise specified or detailed, as required by the designated code of practice for fixings/ anchorages carrying maximum load.
2. **Report locations where**
 - 2.1. Type and number of fixings cannot be accommodated.
 - 2.2. Size or position of members prevents correct positioning.

740 Condition survey of existing buildings and structures

1. **Application:** SFS system
2. **Before starting work:** The Contractor shall submit dimensional survey report showing current condition, deviations and verifying that new cladding can be accommodated in the existing SFS.

- 2.1. **Items to be recorded:** Modifications and other irregularities of the fabric, if any
- 2.2. **Additional investigations:** None
- 3. **Report:** Submit for comment.

Ω End of Section

G10

Structural framing

General requirements/ information

112 Contractor's design

1. Description: aluminium "L" profile, aluminium brackets
2. Design responsibility: Design and detail members and joints to suit the conceptual layout detailed in the contract drawings.
3. Structural requirements
 - 3.1. Generally: As section B50.
 - 3.1.1.Modifications: None
 - 3.2. Design: Complete in accordance with the designated code of practice to satisfy specified performance criteria.
 - 3.3. Connections: Design and detail joints to designated code of practice
 - 3.4. Fixings to foundations and walls: No special requirements
 - 3.5. Limitations on aluminium members layout: Aluminium "L" profile centres to be as SFS Stud spacing (600 mm)
 - 3.6. Additional requirements: Aluminium brackets centres to be not more than 600 mm

123 Drawings and calculations prepared by Contractor

1. Information required: As submission schedule
2. General arrangement drawings: Submit before preparing calculations. Clearly identify:
 - 2.1. Individual aluminium members.
 - 2.2. Conflicts with other work.
 - 2.3. Proposed changes to contract drawings.
3. Member and joint calculations: Submit before preparing fabrication drawings.

125 Specification standard

1. Standard: To the Eurocodes appropriate to the nature of the structure

130 General aluminium sections and plates

1. Description: Aluminium "L" profile and aluminium brackets
2. Standard: BS EN 1999-1-1; BS EN 1999-1-1 NA
3. Grade: 6060 T5 (for "L" profile) or better
6005A T6 (for brackets) or better
4. Thickness: 2 mm ("L" profile); 3 mm (Brackets) or better

Cold-formed materials

178 Fixing profiled sheet to aluminium members Type A

1. End supports
 - 1.1. Fasteners: All fixings and fasteners as per BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
 - 1.1.1.Location: In trough of sheet (not more than 400 mm)

178 Fixing aluminium members to aluminium brackets Type B

1. End supports
 - 1.1. Fasteners: All fixings and fasteners as per BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
 - 1.1.1.Location: Brackets are connected to mullions not more than 600 mm along their length

178 Fixing aluminium brackets to SFS Stud Type C

1. End supports
 - 1.1. Fasteners: All fixings and fasteners as per BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
 - 1.1.1.Location: All brackets are connected to SFS Stud

Erection

445 Movement joints

1. Joint type: Due to movements between floors, the facade shall accommodate and guaranteed all differential movements at the interface with adjacent facades. In addition, movement joints shall provide continuous insulation and weathering barriers.

Ω End of Section

G30

Metal profiled sheet decking

Proprietary specified roof/ floor decking

110 Metal profiled sheet decking

1. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
2. **Material:** Steel, Grade S350 GD + Z275 to BS EN 10346
3. **Thickness (nominal):** 0.7 mm
4. **End laps (minimum):** 150 mm
 - 4.1. **Configuration:** Standard
5. **Supporting structure:** Aluminium "L" profile at 600mm and aluminium brackets

Performance specified roof/ floor decking

155 Contractor's design

1. **Description:** Of wall decking as a substrate for the standing seam panels
2. **Design responsibility:** Determine depth and thickness of profile and type, sizes and number of fixings to suit the layout and details of supporting steelwork shown on drawing and calculation report included in the tender package
3. **Structural and fire requirements**
 - 3.1. **Generally:** As section B50.
 - 3.2. **Design:** Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
4. **Functional requirements:** Not applicable
5. **Additional requirements:** None
6. **Design and production information:** List of calculations to demonstrate compliance with specified structural and functional criteria, or verification of performance by laboratory testing or computer modelling

180 Design requirements for decking

1. **Material:** Steel, Grade S350 GD + Z275 to BS EN 10326
2. **Depth of profile:** 32 mm
3. **Maximum allowable deflection:** L/150

Fixing decking

230 Prevention of electrolytic action

1. **Isolating tape:** Type recommended by decking manufacturer.
 - 1.1. **Location:** To contact surfaces of supports and sheets of dissimilar metals.
2. **Avoid risk of bi-metallic corrosion.** Include separators where different metallic materials are used.

240 Fire resisting profile fillers

1. **Supplier:** Decking manufacturer.
2. **Type/ shape:** To match decking profile void.
3. **Location:** Parallel and continuous to supports

4. **Fixing:** Fit securely, as recommended by manufacturer, to form fire compartment.

260 Fixing decking generally

1. **Cut sheets:** Clean edges with true lines and no burrs.
 - 1.1. **Treatment of edges:** As recommended by manufacturer
2. **Penetrations:** Cut openings to the minimum size necessary.
 - 2.1. **Edge reinforcement:** Submit proposals
3. **Fixings:** Drill all holes.
4. **Cleanliness:** Remove debris from within decking construction.
5. **Installation:** Seams and ribs of deck must be parallel, with no damage to deck coating.

Ω End of Section

H73

Copper strip/ sheet fully supported roof and wall coverings/ flashings

Types of copperwork

130 Copper sheet fully supported wall covering

1. Description: Standing seam panel with galvanised steel deck as a substrate
2. Covering system: Traditional sheet
3. Fire performance
 - 3.1. External wall covering: As clause 201
 - 3.2. Inner lining/ cavities: As clause 203
 - 3.3. Insulation: As clause 206
4. Insurance and warranties: As clause 205
5. Membrane: As P10/320
6. Insulation: As P10/217
7. Substrate: 0.7 mm Steel deck (As G30)
8. Sheet Underlay: As clause 645
9. Copper: Sheet/ strip, as clause 520
 - 9.1. Material condition: R240 (half-hard temper)
 - 9.2. Thickness: 0.7 mm
 - 9.3. Finish: Coloured (ral as per existing standing seam)
10. Vertical joints: Standing seams
 - 10.1. Spacing: Determined by contractor (as per existing standing seam)
11. Bottom edge detail: Standing seams with closed ends
12. Cross joints: Single lock welts
 - 12.1. Spacing: Determined by contractor (as per existing standing seam)
13. Head detail: As per existing standing seam

201 Fire performance of external wall

1. Wall covering: Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better.
2. Substrate: Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better.

203 Fire performance of inner lining/ cavities

1. Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better

205 Insurance and warranties

1. Requirements and testing: To LPS 1582
2. Additional requirements: To NHBC standard

206 Fire performance of insulation

1. Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better

340 Standing seam eaves with closed ends

1. Copper underlap: Continuous clips
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- 1.1. **Projection:** 20 mm for forming into drip welt.
- 1.2. Avoid through fixings at standing seam positions.
- 2. **Standing seams**
 - 2.1. **Ends:** Fold Square.

370 Standing seam verge

- 1. **Verge copper:** Sheet/ strip, as clause 520
 - 1.1. **Material condition:** R240 (half-hard temper)
 - 1.2. **Thickness:** 0.7 mm
 - 1.3. **Finish:** Coloured (ral as per existing standing seam)
- 2. **Joints:** Single lock welts
 - 2.1. **Spacing:** Determined by contractor (as per existing standing seam)
- 3. **Top edge**
 - 3.1. **Standing seam longitudinal joint:** Position flush with verge.
 - 3.2. **Forming:** Secure top of verge into double welt and clips of standing seam.
- 4. **Bottom edge**
 - 4.1. **Continuous clips:** Fix at 200 mm centres.
 - 4.2. **Forming:** Secure bottom of verge around clip with fold.

General requirements/ preparatory work

510 Workmanship generally

- 1. **Standard:** Generally to CP 143-12 and latest editions of Copper Alliance publications 154 'The Guide to Copper in Architecture' and 156 'Copper in architecture: copper roofing in detail' and the Federation of Traditional Metal Roofing Contractors' 'UK Guide to Good practice in fully supported metal roofing and cladding'.
- 2. **Fabrication and fixing:** To provide a secure, free draining and completely weathertight installation.
- 3. **Operatives:** Trained in the application of copper coverings/ flashings. Submit records of experience on request.
- 4. **Preforming:** Measure, mark, cut and form copper prior to assembly wherever possible.
- 5. **Marking out:** With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
- 6. **Folding:** With mechanical or manual presses to give straight, regular and tight bends, leaving panels free from ripples, kinks, buckling and cracks. Use hand tools only for folding details that cannot be pressed mechanically.
- 7. **Sharp metal edges:** Fold under or remove as work proceeds.
- 8. **Free edges:** Fold under by 10 mm to provide additional stiffness.
- 9. **Finished copper work:** Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
 - 9.1. **Protection:** Prevent staining, discolouration and damage by subsequent works.

520 Copper strip/ sheet

- 1. **Type:** Material designation Cu-DHP
- 2. **Standard:** To BS EN 14783
 - 2.1. Stamped or labelled with material condition designation, nominal thickness and finish.

3. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.

3.1. **Product reference:** Contractor's choice (as per existing standing seam)

535 Integrity of copper

1. **Requirement:** Design coverings/ flashings and methods of attachment to prevent loss of weathertightness and permanent deformation due to wind pressure or suction.
2. **Wind loads:** As section B50
3. **Structural requirements**
 - 3.1. **Generally:** As section B50.
 - 3.1.1. **Modifications:** None
 - 3.2. **Design:** Complete in accordance with the designated code of practice to satisfy specified performance criteria.

610 Suitability of substrates

1. **Condition:** Dry and free of dust, debris, grease and other deleterious matter.

645 Sheet underlay

1. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.1. **Product reference:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.2. **Reaction to fire:** To BS EN 13501-1, Class A2-s1, d0 or better

Fixing copper

710 Fixings for clips

1. **Nails to timber substrates:** Copper clout nails to BS 1202-2, table 2 for copper clips. Stainless steel (austenitic) for stainless steel clips.
 - 1.1. **Shank type:** Annular ringed, helical threaded or serrated.
 - 1.2. **Shank diameter:** Not less than 2.65 mm.
 - 1.3. **Length:** Not less than 25 mm or equal to substrate thickness.
2. **Screws to concrete or masonry substrates:** Brass, for copper clips. Stainless steel (austenitic) to BS EN 14592 for stainless steel clips.
 - 2.1. **Diameter:** Not less than 3.35 mm.
 - 2.2. **Length:** Not less than 25 mm.
 - 2.3. **Washers and plastics plugs:** Compatible with screws.
3. **Screws to composite metal decks:** Self tapping, as recommended by the deck and copper manufacturer/ supplier for copper or stainless steel clips.

720 Standing seam fixed clips

1. **Copper clips:** Cut from strip/ sheet of same material condition and thickness as that being secured.
2. **Stainless steel (austenitic) clips:** Cut from the same thickness of metal as the copper being secured.
3. **Dimensions**

- 3.1. Width: Not less than 38 mm.
- 3.2. Base length: Not less than 25 mm.
- 3.3. Upstand: To suit standing seam profile.
- 4. Fixing: Secure each clip to substrate with two fixings.

725 Standing seam sliding clips

- 1. Copper clips: Cut from strip of same material condition and thickness as that being secured.
- 2. Stainless steel (austenitic) clips: Cut from the same thickness of metal as the copper being secured.
- 3. Dimensions
 - 3.1. Fixed component
 - 3.1.1. Width: Not less than 90 mm.
 - 3.1.2. Base length: Not less than 25 mm.
 - 3.1.3. Upstand: 20 mm height with 60 mm length slot.
 - 3.2. Sliding component
 - 3.2.1. Width: Not less than 40 mm, folded through centre of slot.
 - 3.2.2. Upstand: Fishtail upstands of 50 mm and 60 mm.
- 4. Fixing: Secure each clip to substrate with three fixings.

750 Clips for flashings/ cross joints

- 1. Material: Cut from strip/ sheet of same material condition and thickness as that being secured.
- 2. Dimensions
 - 2.1. Width: Not less than 50 mm.
 - 2.2. Length: To suit detail.
- 3. Fixing: Secure each clip to substrate with minimum two fixings not more than 50 mm from edge of copper strip/ sheet. Clips folded around edges of strip/ sheet to be turned over 25 mm.

760 Continuous clips (cleats)

- 1. Material: Cut from strip/ sheet of same material condition and thickness as that being secured.
- 2. Dimensions
 - 2.1. Width: To suit detail.
 - 2.2. Length: Not exceeding 1800 mm.
- 3. Fixing: To substrate at 200 mm centres. Welt edge of copper strip/ sheet to continuous clip and dress down.

Jointing copper

810 Forming details

- 1. Folding and welting: Do not thin, cut or split copper strip/ sheet.
- 2. Soldering: Use only where there is no risk of thermal movement stresses at the joint.
 - 2.1. Seams: Neat and consistent with 10 mm overlap of bright copper.
 - 2.2. Solder: Sn97 Cu3 to BS EN ISO 9453, with a nonacidic flux. Remove flux residues as work proceeds.
- 3. Brazing: Use only where there is no risk of thermal movement stresses at the joint.
 - 3.1. Seams: Neat and consistent with 10 mm overlap of copper.
 - 3.2. Solder: Cu P6 to BS EN ISO 17672.

835 Angle standing seam joints

1. **Joint allowances:** 45 mm overlap, 35 mm underlap and not less than 3 mm gap for thermal movement.
2. **Clip positions**
 - 2.1. Fixed clips Determined by contractor.
 - 2.2. Sliding clips Determined by contractor.
3. **Forming:** Single welt overlap and clips around underlap, fold at right angles to upstand to form a standing seam 25 mm high of consistent cross section.

880 Single lock welt joints

1. **Joint allowance:** 100 mm overlap and 50 mm underlap.
2. **Overlap:** Welt around underlap and dress down.
3. **Forming:** Fold welts lightly to allow freedom of movement.

Ω End of Section

H74

Zinc strip/ sheet fully supported roof and wall coverings/ flashings

Types of zinc work

130 Zinc sheet fully supported wall covering

1. Description: Standing seam panel with galvanised steel deck as a substrate
2. Covering system: Traditional sheet
3. Fire performance
 - 3.1. Wall covering: As clause 201
 - 3.2. Inner lining: As clause 203
 - 3.3. Insulation: As clause 206
4. Insurance and warranties: As clause 205
5. Membrane: As P10/320
6. Insulation: As P10/217
7. Substrate: 0.7 mm Steel deck (As G30)
8. Sheet underlay: As clause 645
9. Zinc
 - 9.1. Type: Standard temper alloy, as clause 520
 - 9.2. Thickness: 0.7 mm
 - 9.3. Finish: Coloured zinc (ral as per existing standing seam)
10. Vertical joints: Standing seams
11. Spacing: Determined by contractor (as per existing standing seam)
12. Cross joints: Single-lock welts
13. Spacing: Determined by contractor (as per existing standing seam)
14. Bottom edge detail: Standing seam termination
15. Head detail: Capped welt dressed under weathering

201 Fire performance of external wall

1. Wall covering: Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better.
2. Substrate: Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better.

203 Fire performance of inner lining/ cavities

1. Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better

205 Insurance and warranties

1. Requirements and testing: To LPS 1582
2. Additional requirements: To NHBC Standards

206 Fire performance of insulation

1. Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better

340 Standing seam eaves with closed ends

1. Zinc underlap: Continuous clips
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- 1.1. **Projection:** 25 mm for forming into drip welt.
2. **Standing seams:** Cut and fold ends square .

370 Standing seam verge

1. **Verge zinc**
 - 1.1. **Type:** Standard temper alloy, as clause 520
 - 1.2. **Finish:** Coloured zinc (ral as per existing standing seam)
 - 1.3. **Thickness:** 0.7 mm
2. **Joints:** Single-lock welts
 - 2.1. **Spacing:** Determined by contractor (as per existing standing seam)
3. **Top edge**
 - 3.1. **Standing seam joint:** Position flush with verge.
 - 3.2. **Forming:** Secure top of verge into double welt and clips of standing seam.
4. **Bottom edge**
 - 4.1. **Continuous clip:** Fix at 200 mm centres.
 - 4.2. **Forming:** Secure bottom of verge around clip.

General requirements/ preparatory work

510 Workmanship generally

1. **Standard:** Generally to CP 143-5 and Federation of Traditional Metal Roofing Contractors' 'UK Guide to Good practice in fully supported metal roofing and cladding'.
2. **Fabrication and fixing:** To provide a secure, free draining and completely weathertight installation.
3. **Operatives:** Trained in the application of zinc coverings/ flashings. Submit records of experience on request.
4. **Preforming:** Measure, mark, cut and form zinc prior to assembly wherever possible.
5. **Metal temperature:** Do not form zinc when the metal temperature is below the minimum recommended for working by the manufacturer.
6. **Marking out:** With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
7. **Folding:** With mechanical or manual presses to give straight, regular and tight bends, leaving panels free from ripples, kinks, buckling and cracks. Use hand tools only for folding details that cannot be pressed.
8. **Sharp metal edges:** Fold under or remove as work proceeds.
9. **Sealants:** Do not use in joints to attain waterproofing.
10. **Solder:** Use only where specified.
11. **Finished zinc work:** Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
 - 11.1. **Protection:** Prevent staining, discolouration and damage by subsequent works.

520 Zinc strip/ sheet – standard temper alloy

1. **Type:** Zinc-titanium-copper, standard temper alloy
2. **Standard:** To BS EN 14783
 - 2.1. **Stamped or labelled** with type, finish and thickness.
3. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.

- 3.1. **Product reference:** Contractor's choice (as per existing standing seam)

535 Integrity of zinc

1. **Requirement:** Design coverings/ flashings and methods of attachment to prevent loss of weathertightness and permanent deformation due to wind pressure or suction.
2. **Wind loads:** As section B50.
3. **Structural requirements**
 - 3.1. **Generally:** As section B50.
 - 3.1.1. **Modifications:** None
 - 3.2. **Design:** Complete in accordance with the designated code of practice to satisfy specified performance criteria.

610 Suitability of substrates

1. **Condition:** Dry and free of dust, debris, grease and other deleterious matter.

645 Sheet underlay

1. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.1. **Product reference:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.2. **Reaction to fire:** To BS EN 13501-1, Class A2-s1, d0 or better

Fixing zinc

715 Zinc clips

1. **General:** Cut from strip/ sheet with clip length in direction of rolling.

720 Standing seam fixed clips

1. **Zinc clips:** Cut from same thickness of metal as that being secured.
2. **Dimensions**
 - 2.1. **Width:** Not less than 30 mm.
 - 2.2. **Base length:** Not less than 20 mm.
 - 2.3. **Upstand:** To suit standing seam profile.
3. **Stainless steel (austenitic) clips:** As supplied or recommended by the zinc manufacturer to suit project conditions.
4. **Fixing:** Secure each clip to substrate with two fixings.

725 Standing seam sliding clips

1. **Zinc clips:** Cut from same thickness of metal as that being secured.
 - 1.1. **Fixed component dimensions**
 - 1.1.1. **Width:** Not less than 90 mm.
 - 1.1.2. **Base length:** Not less than 20 mm.
 - 1.1.3. **Upstand:** 20 mm, with slot for locating sliding component.
 - 1.2. **Sliding component dimensions**
 - 1.2.1. **Width:** Not less than 30 mm.

1.2.2.Upstand: To suit standing seam profile.

2. **Stainless steel (austenitic) clips:** As supplied or recommended by the zinc manufacturer to suit project conditions.
3. **Fixing:** Secure each clip to substrate with three fixings.

750 Clips for flashings/ cross joints

1. **Material:** Zinc of same thickness as that being secured.
2. **Dimensions**
 - 2.1. **Width:** Not less than 50 mm.
 - 2.2. **Length:** To suit detail.
3. **Fixing:** Secure each clip to substrate with two fixings not more than 50 mm from edge of strip/ sheet being fixed. Clips folded around edges of strip/ sheet to be turned over 25 mm.

760 Continuous clips

1. **Material:** Zinc of same thickness as that being secured.
2. **Dimensions**
 - 2.1. **Width:** To suit detail.
 - 2.2. **Length:** Not more than 1800 mm.
3. **Fixing:** To substrate at 200 mm centres. Welt edge of strip/ sheet being fixed to continuous clip and dress down.

Jointing zinc

810 Forming details

1. **Folds and welts:** Form without thinning, or splitting the strip/ sheet.
2. **Thermal movement:** Form details with appropriate allowance for movement, without impairment of security at full expansion or contraction.

835 Angle standing seam joints

1. **Joint allowances:** 45 mm overlap, 35 mm underlap and 5 mm gap for thermal movement. Preformed interlocking profiles for overlap and underlap are permitted.
2. **Clip positions**
 - 2.1. **Fixed clips:** Determined by contractor
 - 2.2. **Sliding clips:** Determined by contractor
3. **Forming:** Single welt overlap and clips around underlap, fold at right angles to upstand to form a standing seam 25 mm high of consistent cross section.

880 Single-lock welt joints

1. **Joint allowance:** 100 mm overlap and 50 mm underlap.
2. **Underlap:** Welt and secure with clips two per bay.
3. **Overlap:** Welt around underlap and clips and dress down.

Ω End of Section

H92 Rainscreen cladding

Tendering

10 Information to be provided with tender

1. Submit the following cladding particulars
 - 1.1. Typical plan, section and elevation drawings at suitable scales.
 - 1.2. Typical detailed drawings at large scales
 - 1.3. Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including Thermal insulation.
 - 1.4. Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
 - 1.5. Proposals for connections to and support from the primary support structure.
 - 1.6. Proposals for primary support structure additional to that shown on preliminary design drawings.
 - 1.7. Schedule of builders' work, special provisions and special attendance by others.
 - 1.8. Examples of standard documentation from which project quality plan will be prepared.
 - 1.9. Preliminary fabrication and installation method statements and programme.
 - 1.10. Proposals for replacing damaged or failed products.
 - 1.11. Areas of non-compliance with specification.

Type(s) of rainscreen cladding

110 Rainscreen cladding

1. **Description:** Zinc or Copper sheet fully supported by metal deck fixed to a supporting structure (SFS) by aluminium framing. Following the stratigraphy of the facade system :
 1. Substrate (Plasterboard + SFS with fullfil insulation + cement bord) to be retained
 2. Breather membrane (new material)
 3. Mineral wool insulation (new material)
 4. Aluminium brackets + Aluminium L profile (new elements)
 5. Metal Deck (new elements)
 6. Zinc or Copper Standing Seam (New material)
2. Rainscreen cladding system
 - 2.1. **Type:** Drained and back-ventilated
 - 2.2. **Requirement:** The Contractor shall submit all relevant reports (e.g. Structural, thermal, test results) to demonstrate full compliance with the Specifications requirements established in this Specification document.
 - 2.3. **Design/ performance requirements:** Generally - as clause 310
3. Rainscreen panel
 - 3.1. **Type:** Standing seam supported by metal deck (As G30 and H74 or H73)
4. Air gap: Not less than 20 mm.
5. Backing wall: Existing SFS System
 - 5.1. **Thermal insulation:** As P10/217
 - 5.2. **Breather membrane:** As P10/320

General requirements/ preparatory work

210 Design

1. **Rainscreen cladding system and associated features:** The Contractor shall complete the detail design in accordance with this Specification document. The Contractor shall include in their proposal, but not limited to, the following: all engineering details, material submittals, reports (e.g. thermal, structural), test results to meet the design intent and the technical performance requirements. The Contractor shall submit their proposal for review and approval prior to fabrication.
2. **Related works:** Coordinate in detailed design.

215 Design proposals

1. **Submission of alternative proposals:** The Contractor shall justify any proposed modification of the facade systems shown in the drawings and demonstrate full compliance with the technical requirements established in this Specification document.

220 Specification

1. **Compliance standards:** The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
2. **Reference information:** For the duration of the contract, keep available at the design office, workshop and on site copies of:
 - 2.1. The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - 2.2. Publications invoked by the CWCT 'Standard for systemised building envelopes'.
 - 2.3. All relevant British and European Standards.

230 Information to be provided during detailed design

1. **Submit the following cladding particulars**
 - 1.1. A schedule of detailed drawings and dates for submission for comment.
 - 1.2. A schedule of loads that will be transmitted from the rainscreen cladding to the structure.
 - 1.3. Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.
 - 1.4. A schedule of fabrication tolerances/ size tolerances.
 - 1.5. A detailed testing programme in compliance with the main contract master programme.
 - 1.6. A detailed fabrication and installation programme in compliance with the main contract master programme.
 - 1.7. Proposals to support outstanding applications for Building Regulations consents or relaxations.
 - 1.8. Material submittals including product data and technical data sheets.
 - 1.9. Tests Reports.

232 Quality plan

1. **Requirement:** Submit during detailed design.
2. **Content:** In accordance with BS EN ISO 9001 and including the following:
 - 2.1. Name of the quality manager.
 - 2.2. Quality assessment procedures.
 - 2.3. Inspection procedures to be adopted in checking the work.
 - 2.4. Stages at which check lists will be used and samples of the lists.

- 2.5. List of work procedures on the correct use of materials or components, both off site and on site.
- 2.6. List of product information with latest revisions.
- 2.7. Subcontractors involved in the work.
- 2.8. Subcontractors quality plans.
- 2.9. Storage, handling, transport and protection procedures.
- 2.10. Procedure for registering and reporting non-compliances.
- 2.11. Maintenance procedures and calibration records.
- 2.12. Certification that completed work complies with specification.
- 2.13. Check list register to ensure all items have been inspected and non-compliances discharged.

235 Information to be provided before commencement of testing or manufacture of rainscreen cladding system

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

Design/performance requirements

236 Avoidance of interstitial condensation

1. **Requirement:** Determine interstitial condensation risk of cladding system using the method described in BS 5250 Annex D. If necessary, provide a vapour control layer and/ or revise thermal insulation to ensure that damage and nuisance from interstitial condensation does not occur. Do not allow condensation to form on internal surfaces or in hidden areas of the facades systems.
2. **Outdoor psychrometric conditions (notional):** As follows:
 - 2.1. Temperature: Winter -9°C, summer 18°C
 - 2.2. Relative humidity: Winter 60%, summer 65%
3. **Indoor psychrometric conditions (notional):** As follows:
 - 3.1. Temperature: 20°C
 - 3.2. Relative humidity: 50%

237 Avoidance of surface condensation

1. **Requirement:** Determine surface condensation risk of cladding system using the method described in BS EN ISO 13788. If necessary, revise thermal insulation to provide satisfactory temperature factor (fmin). Ensure that damage and nuisance from surface condensation does not occur. Do not allow condensation to form on internal surfaces or in hidden areas of the facades systems.

310 CWCT 'Standard for systemised building envelopes'

1. **General:** Unless specified or agreed otherwise, comply with:
 - 1.1. Part 2 - 'Loads, fixings and movement'.
 - 1.2. Part 3 - 'Air, water and wind resistance'.
 - 1.3. Part 4 - 'Operable components, additional elements and means of access'.
 - 1.4. Part 5 - 'Thermal, moisture and acoustic performance'.

- 1.5. Part 6 - 'Fire performance'.
- 1.6. Part 7 - 'Robustness, durability, tolerances and workmanship'.
2. **Project performance requirements specified in this subsection:** Read in conjunction with CWCT performance requirements.

335 Integrity

1. **Requirement:** The rainscreen cladding must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
2. **Design wind pressure:** As section B50

370 Appearance and fit

1. **Requirement:** Design rainscreen wall:
 - 1.1. To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - 1.2. To accommodate deviations in the primary support structure.
2. **Primary support structure:** Before commencing installation of rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - 2.1. **Give notice:** If the structure will not allow the required accuracy or security of erection.

450 Air and Vapour control layer

1. **Condensation risk within rainscreen wall:** Determine using the method described in BS 5250. Where required, provide a suitable air and vapour control layer to ensure that damage and nuisance from condensation is reduced.

470 Fire performance of rainscreen cladding

1. **Standard:** In accordance with the CWCT 'Standard for systemised building envelopes', section 6 and TN 98.
2. **Reaction to fire**
 - 2.1. **External surfaces:** To BS EN 13501-1, Class A2-s1, d0 or better
 - 2.2. **Internal (cavity) surfaces:** To BS EN 13501-1, Class A2-s1, d0 or better
3. **Verification of fire performance:** In accordance with BRE BR 135 and BS 8414-2

485 Internal reaction to fire of backing wall

1. **Class (minimum):** BS EN 13501-1, Class A2-s1, d0

495 Durability

1. **Design life of the rainscreen cladding system:** Not less than 30 years
2. **Secondary components:** The Contractor shall submit the method statement including details of the type and frequency of maintenance required to meet the expected design life. It will include information about the replacement frequency and strategy for each component and material.

Products

710 Aluminium alloy framing sections

1. **Standards:** To BS EN 755 alloy EN AW-6060 T5, EN AW 6005A T6
2. **Structural members:** To comply with BS EN 1999-1-1, 1999-1-1 NA

730 Mechanical fixings – material requirements

1. **Stainless steel:** To BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.

732 Adhesives

1. **General:** Not degradable by moisture or water vapour.
 - 1.1. **Installation:** Installation relying upon adhesives only shall not be permitted.

735 Fixings and fasteners

1. **Type and use:** The Contractor shall submit relevant material submittal for review and approval.
2. **Dimensions:** Not less than recommended by their manufacturers.
3. **Adjustment capability:** Sufficient in three dimensions to accommodate primary support structure and rainscreen cladding fabrication/ installation tolerances.

775 Thermal insulation

1. **Material:** Mineral wool to BS EN 13162 (As P10/217)
 - 1.1. **Properties:** Durable, rot and vermin proof and not degradable by moisture or water vapour.
2. **Recycled content:** Contractor's choice
3. **Fixing:** Attached to the outer face or supported within the backing wall so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the rainscreen cladding.

785 Breather membrane

1. **Standard:** To BS EN 13859-2 (As P10/320)
2. **Material:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
3. **Characteristics:** Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better
4. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 4.1. **Product reference:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
5. **Continuity:** No breaks. Minimize joints.
 - 5.1. **Penetrations and abutments:** Attach to breather membrane with tape. Achieve full bond.
 - 5.2. **Laps:** Not less than 150 mm, bond with tape. Achieve full bond.
6. **Tape:** As recommended by breather membrane manufacturer.
7. **Repairs:** Lapped patch of breather membrane material secured with continuous band of tape on edges.
8. **Installation:** The Contractor shall follow all supplier's technical guide, setting Instructions and recommendations for installation works.

Fabrication and installation

910 Generally

1. **Electrolytic corrosion:** Take necessary measures to prevent.
2. **Identification of products:** Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the complete installation.

912 Metalwork

1. **Requirement:** As section Z11, unless specified otherwise in this section.

922 Fixings/ adhesives application

1. **Requirement:** As specified in this section.

930 Assembly

1. **Location:** Carry out as much assembly as possible in the workshop.
2. **Joints:** Other than movement joints and designed open joints, must be rigidly secured, reinforced where necessary and fixed with hairline abutments.
3. **Displacement of components in assembled units:** Submit proposals for reassembly on site.

970 Rainscreen cladding installation

1. **Tightening mechanical fasteners:** To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
2. **Protective coverings:** Remove only where necessary to facilitate installation and from surfaces which will be inaccessible on completion.

980 Interfaces

1. **Installation:** Locate flashings, closers etc. correctly and neatly overlap cladding to form a weathertight junction.

985 Damage

1. **Repairs:** Do not repair cladding without approval.
 - 1.1. **Approval:** Will not be given where the proposed repair will impair performance or appearance.
2. **Record of repairs:** Prepare schedule or record on drawings for inclusion in the maintenance manual.

995 Maintenance

1. **Maintenance manual:** Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes', clause 7.6.1.

Ω End of Section

P10 Sundry insulation/ proofing work

Types of insulation

217 Insulation slabs fixed to backing wall

1. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.1. **Product reference:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.2. **Characteristics:** Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better
2. **Material:** Rock wool to BS EN 13162
3. **Recycled content:** Contractor's choice
4. **Thickness:** 85 mm - 100 mm
5. **Installation requirements**
 - 5.1. **Joints:** Butted, no gaps. Fit insulation tightly between/ around cladding supports.
 - 5.2. **Fasteners:** Stainless steel with minimum 70 mm diameter retaining head

320 Breather membrane

1. **Manufacturer:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
 - 1.1. **Product reference:** The Contractor shall propose a compliant material and shall submit product data including technical data sheets, tests reports to demonstrate compliance with technical requirements.
2. **Standard:** BS EN 13859-2
 - 2.1. **Characteristics:** Reaction to fire: To BS EN 13501-1, Class A2-s1, d0 or better
3. **Installation requirements**
 - 3.1. **Setting out:** Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
 - 3.2. **Method of fixing:** Stainless steel staples at 300 mm centres on line of horizontal laps into sheathing board
 - 3.3. **Joints:** Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
 - 3.4. **Openings:** Membrane fixed to reveals.
 - 3.5. **Bottom edges:** Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
4. **Penetrations:** Penetration and overlaps shall be sealed following the supplier's technical guide and recommendations. The Contractor shall ensure the weather proof, insulation and vapour continuity of the building envelope.

Ω End of Section



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