

Jon Matthews Architects Ltd

Plot 9A, First Street

Architectural Specification

Final

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A10 Project Particulars

Clauses

110 Project Scope

1. The scheme is a new build mixed-use development containing circa 280,000sq ft of modern high quality BCO 2019 Grade A office with circa 30,000 sq ft office floor plates arranged around a central service core containing service risers and WC provisions.

The office space is to benefit from a winter garden on each floor which is to provide visual, social and working amenity on each floor for the sole use of the tenant of the respective floors. The ninth floor provides an external terrace which again is for the sole use of the tenant on that floor.

The building also benefits from basement level space which is to accommodate multiple ancillary uses for future occupiers.

120 Procurement - Design & Build

1. Design and Build based on RIBA Stage 4 level of design information without novation of the Design Team as depicted in the Employer's Requirements.
2. Contractor to complete the Detailed Design and deliver the Works to meet or exceed the quality, performance criteria and design/ visual intent of the Design.
3. Some predetermined elements (refer to clause A21.140 and each Trade Section) of the Design will be of a descriptive nature and require the appointment of specialist subcontractors' to complete the Detailed Design, manufacture, supply and installation, all as described in the Specification.
4. Post contract, the Detailed Design of elements not of a descriptive nature, are to be completed by the Contractor's, in-house, or outsourced design team through the production of Working Drawings or other methods as agreed.
5. Post contract, the Detailed Design of elements of a descriptive nature are to be completed by a specialist subcontractor through the production of Working Drawings and reviewed for performance and design intent compliance by the Client's architect or the novated team.

Ω End of Section

A21 Definitions and Compliance

Clauses

110 Definitions

1. Defined Terms: The following definitions appear from time to time throughout the Specification. Where reference is made using slightly different terms they are to be interpreted as one of the below by the Architect. If unsure, request clarification at time of Tender.
2. Architect/ Employer/ Employer's Representative: The company or person representing the Client.
3. Specification/ Architectural Specification/ this specification: This Specification comprising sections A to Z inclusive representing the architectural design requirements.
4. Design: All information (drawings, specifications and other supplemental information) forming part of the Employer's Requirements and agreed for Contract purposes which sets out visual/ design intent, minimum performance levels and minimum quality standards to be maintained in the completion of the Detailed Design by the Contractor.
5. Detailed Design: Working Drawings, detailed specifications, calculations, etc. provided by the Contractor or specialist subcontractor, reflecting the final agreed solution to the Design.
6. Working Drawings: Final drawings and supporting information produced by the Contractor or specialist subcontractor, to an appropriate scale, showing fully co-ordinated details (assemblies/ layouts/ visual and non-visual elements/ fixings/ connections/ tolerances/ interfaces/ movement joints/ finishes, etc.) for review (A-B-C system) and acceptance (A Status designation), prior to commencement of manufacture and construction as part of the Detailed Design.
7. Samples: Physical products/ materials along with supportive technical information, representing elements to be incorporated in the Works, after acceptance.
8. Mock-ups/ Control Samples: Full size, three dimensional indicative model demonstrating size, orientation, shape, etc. manufactured from temporary materials.
9. Prototypes: Full size elements representing the final Detailed Design, incorporating actual materials and finishes but not forming part of the permanent works. Prototypes may be tested to confirm compliance with performance requirements.
10. Benchmarks: First section of a pre-identified installation on site for inspection and acceptance.
11. Acceptance/ Approval/ Approved: Confirmation that the proposed materials, systems, components, etc. are visually acceptable and comply with the requirements of the Design. It does not confirm fitness for purpose or compliance with Codes, Standards, or any other requirement.
12. Additional Information: Other information necessary to adequately demonstrate Detailed Design compliance with the Design including, but not limited to certification, manufacturers' information, warranties/ guarantees, programme/ delivery information, detailed QA/ QC systems, relevant reports and data/ calculations.

120 Specification Compliance

1. Comply with the Specification which sets out minimum standards of quality and performance to be maintained or exceeded.
2. For sections/ elements where the Design is of a descriptive nature, the Contractor to appoint a specialist subcontractor to complete the Detailed Design for review and acceptance.
3. Install named systems, products and materials where specified in accordance with the manufacturer's recommendations.
4. Any proposed alternatives to be visually compliant and of the same or better in terms of robustness, performance, guarantee, suitability and quality.
Provide full manufacturer's details to substantiate acceptability of alternative systems, products and materials.
5. Do not commence any part of the Works without acceptance of all submittals.

6. Provide all information to substantiate Specification compliance and adherence to safety requirements, including as necessary, any additional structural work.

130 Contractor and Specialist Sub-Contractor Design Responsibility

1. Complete the Detailed Design by adopting the Design in compliance with all relevant Statutory Regulations, Codes of Practice, National Standards, Local Authority Bye-Laws/ Regulations, Fire/ Building Codes and any other applicable rules and regulations.
2. Check buildability, performance requirements, regulations, codes and manufacturers' recommendations to confirm suitability. Report any concerns at time of Tender.
3. Provide Working Drawings and detailed specifications of all elements together with all necessary additional information and specification for review and acceptance before placing orders or commencing manufacture.
4. Buildability and structural integrity to be maintained and demonstrated.
5. Maintain function, performance and visual intent.
6. Ensure that all interface conditions are acceptable and comply with performance and design intent requirements.
7. Comply with all performance requirements which are to be considered as the minimum acceptable.
8. Provide a design risk assessment.
9. Confirm structural principles in terms of performance and how loads are transferred through the structure in a safe manner whilst taking account of all tolerance requirements.
10. Ensure all elements are fit for purpose.
11. Minimise modification of proprietary products and maintain suitability at all times.
12. Comply with CDM Regulation Designer Duties.
13. Comply with manufacturers' recommendations and ensure suitability for use in the Works.
14. Carry out and satisfy all testing requirements.
15. Provide a complete and fully co-ordinated Detailed Design.
16. Working Drawings to be complete and fully co-ordinated to finalise all details, assemblies, junctions, tolerance allowances, fixings, interfaces, etc.
17. Comply with all planning and Local Authority requirements and provide them with any information/ submissions requested.
18. Provide necessary supplemental information to demonstrate full compliance including structural information/ calculations, etc.
19. Provide summary of deviations for consideration. These may not be acceptable. Take full responsibility for those that are deemed acceptable.

140 Use of Specialist Subcontractors

1. Engage specialist subcontractors' on a design and build basis where stipulated in the Specification, to ensure that the Detailed Design complies with the requirements of the Design and provide adequate warranties and guarantees. The Design of such elements will be of a descriptive nature.
2. All specialist subcontractors are to provide collateral warranties in favour of the Employer, to the effect that the specialist subcontractor will have the same obligations to the Employer as the Contractor has to the Employer with respect to the specialist subcontractors work.
3. Provide a list of proposed specialist subcontractors with the Tender.
4. Specialist subcontractors' to be engaged for the following elements of the Works as applicable:
 - 4.1.
 - Access Hatches/ Panels
 - Access Panels/ Accessories To Ceiling Systems

- Accessories/ Sundry Items
- Bathroom Pods
- Bespoke/ Purpose Made Systems
- Canopies - Metal
- Cladding - Built-up Rainscreen Systems
- Cladding - External Render Systems
- Cladding - Louvre/ Brise Soleil/ Screen Systems
- Cladding - Panel Systems
- Cladding - Special/ Feature/ Trims
- Damp-proof Membranes
- Directional/ Way Finding Signage
- Duct Access Panel Systems
- External Glazed Doorsets
- External Soffit Systems
- External Wall Insulation
- Fall Restraint Cable Systems
- Finishes To Cast-in Place (in Situ) Concrete
- Finishes To Precast Concrete
- Fire Stopping
- Fire/ Smoke Curtains
- Firefighting Lifts Finishes
- Fully Accessible Systems
- Glazed Panels
- Handrails
- Internal Masonry/ Concrete Backgrounds
- Kitchens
- Metal Doorsets
- Passenger Lifts Finishes
- Prefabricated Window Systems
- Proprietary Demountable Partition Systems
- Rainwater Downpipes And Fittings
- Removals/ Alterations
- Revolving Doors
- Specialist Equipment
- Specialist External
- Specialist Floor/ Accessories
- Stair Nosings
- Steel Framing System
- Stick Glazed Curtain Wall Systems
- Trims
- Waterproof Membrane Systems
- Window Boards

150 Satisfying Performance Criteria and Design Intent

1. Generally:
 - 1.1. Maintain design and visual intent through to completion.
 - 1.2. Stated performance criteria to be considered as minimum requirements.
 - 1.3. Provide the necessary warranties and guarantees for all products, systems and components.

- 1.4. Demonstrate compliance at all times.
2. Design Life: Comply with:
 - BS ISO 15686: Part 1, Table B.1, 60 years.
 - BS 7543 table D1.
3. Service Life - Comply with:
 - 3.1. BS ISO 15686: Buildings and construction assets - Service Life Planning.
 - 3.2. BS 7543 Guide to durability of buildings and building elements, products, and components. Table D 1 - Service Life.
 - 3.3. Primary components are those generally inaccessible with a Service Life equal to Design Life, whereas Secondary components are generally accessible and require maintenance or replacement according to manufacturers' recommendations.
 - 3.4. Identify and confirm Secondary components and confirm Service Life expectations.
 - 3.5. Refer to Table D. 1 for Service Life of secondary components with the exception of the following which are to take precedence:
 - Laminated safety glass: 25 years (replaceable).
 - Stainless steel: 30 years (replaceable).
 - Metal frames: 60 years (maintainable).
 - Stone: 40 years (maintainable).
 - Gaskets for external use: 25 years (replaceable).
 - Applied coatings to metalwork: 30 years (maintainable).
 - Metal brackets: 60 years (maintainable).
 - Single membrane waterproofing: 20 years (maintainable).
 - Galvanised steel: 40 years (maintainable).
 - Ironmongery: 15 years (replaceable).
 - Green roofing systems: 20 years (maintainable).
4. Warranties and Guarantees: Provide certified Warranties and Guarantees for the Detailed Design, materials, products, goods and systems incorporated in the Works.

160 Contractor's Proposals

1. To be provided with the Tender demonstrating compliance with the Employer's Requirements, which includes the Design.
2. Tender response to include plans, elevations, key details, layouts, risk analysis, build methodology, technical specifications, etc. which show a complete understanding of the Design.
3. The Detailed Design is not to change the design/ visual intent, quality, performance, function or design/ service life of the Works.
4. Provide a detailed Risk Assessment.

Ω End of Section

A33

Quality standards/ control

Clauses

110 Incomplete documentation

1. General: Where and to the extent that products or work are not fully documented, they are to be:
 - 1.1. Of a kind and standard appropriate to the nature and character of that part of the Works where they will be used.
 - 1.2. Suitable for the purposes stated or reasonably to be inferred from the project documents.
 - 1.3. Contract documents: Omissions or errors in description and/ or quantity shall not vitiate the Contract nor release the Contractor from any obligations or liabilities under the Contract.

120 Workmanship skills

1. Operatives: Appropriately skilled and experienced for the type and quality of work.
2. Registration: With Construction Skills Certification Scheme.
3. Evidence: Operatives must produce evidence of skills/ qualifications when requested.

130 Quality of products

1. Standards: Comply with the Standards stated in the Specification. Where stated Standards have been superseded/ replaced/ enhanced the version published at the time of Contract award shall prevail. Advise at time of Tender any such occurrences.
2. Generally: All products, materials, components, systems, etc. to be new and compliant with appropriate/ applicable National Standards, Codes of Practice and best practice.
3. National Standards/ Codes of Practice: Comply with current Standards, Codes, Planning Requirements, etc. Any such documents referred to herein which have been updated or superseded, advise at the time of Tender and accommodate the latest publication.
4. Supply of each product: From the same source or manufacturer.
Whole quantity of each product required to complete the Works: Consistent kind, size, quality and overall appearance.
5. Tolerances: Where critical, measure a sufficient quantity to determine compliance.
6. Deterioration: Prevent. Order in suitable quantities to a programme and use in appropriate sequence.

131 Quality Control

1. Generally: Comply with BS EN ISO 9001 and ensure compliance with the Specification.
2. Certification: In accordance with BS EN ISO 9001.
3. Compatibility: Materials, systems, components and products to be compatible.
4. Codes and Standards: Comply with current British Standards/ Codes, European Norms and relevant By-Laws. Notify changes immediately.
5. Sustainability: Comply with all sustainability requirements to achieve Client targets.
6. Storage and Handling Materials:
 - 6.1. Compliance: With BS 8000.
 - 6.2. Protection: Protect all items for inclusion in the Works at all times from point of manufacture to installation and ensure pristine condition of all elements at handover.
 - 6.3. Pest Infestations: Implement recommendations of BRE Digest 415 - DIG 415 to avoid pest infestations.
 - 6.4. Cleaning: Clean all elements thoroughly prior to handover.

- 6.5. Defects: Scratches, blemishes, dents, mould, or any other visual defects will not be accepted.
7. Safety: Comply with and demonstrate compliance with CDM and applicable Health and Safety Regulations at all times. Do not incorporate any material, product or component that may be a potential health hazard. Maintain a specific/ residual risk analysis document.
8. Maintenance Manual: Provide and maintain a detailed Maintenance Manual, to include training requirements, test/ inspection results, replacement processes, manufacturers/ suppliers, recommendations for spares, etc, covering all elements and components of the Works.
9. Material Quality:
- 9.1. QA/QC: Implement QA/ QC procedures to guarantee compliance with the qualitative, performance and visual intent described in the Specification.
- 9.2. Certification: Products and systems to be certified by the British Board of Agreement (BBA).
- 9.3. Installation: Final installations to be to a standard of accepted samples and prototypes.
10. Deleterious Materials: Implement the "Good Practice in the Selection of Construction Materials" published by the British Council of Offices. Do not incorporate any of the following in the Works:
- Asbestos of any kind.
 - Wood wool slabs.
 - Lead, lead paint or other liquid applications. (Note: Some roofing and rainwater goods containing minimal amounts of lead may be acceptable in certain circumstances. Seek acceptance prior to ordering).
 - Urea formaldehyde foam and any product that may release formaldehyde.
 - Polyurethane based insulation.
 - Expanded polystyrene and polyurethane.
 - Composite metal panels containing an interstitial polyethylene insulated core.
 - Chloroflourocarbons and hydrochloroflourocarbons of any kind.
 - High alumina cement.
 - Tributyltin (TBT).
 - Chromated Copper Arsenate (CCA).
 - Pentachlorophenol PCP).
 - Contaminated gypsum board.
 - Pitch polymer DPC.
 - Tropical hardwoods. (Note: Some use may be acceptable if proven to be sourced from properly managed and licenced sustainable sources).
 - Man made or natural mineral fibres that are 3 microns diameter and 200 microns in length, to include those that are encapsulated, unsealed and stabilised preventing migration.
 - Admixtures containing calcium chloride.
 - Polychlorinated biphenyls (PCB) and polychlorinated terphenyls (PCT).
 - Lindane wood treatment/ insecticidal spray.
11. Timber:
- 11.1. Procure only from proven and demonstrable sustainable sources.
- 11.2. Avoid the use of tropical hardwoods, including veneers, lippings and boards.
- 11.3. Timber and timber products to be labelled with The Forest Stewardship Council's Trademark or other acceptable label from a recognised independent certification provider.

135 Quality of Execution

1. Generally: Fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.
2. All of the Works to be completed to the satisfaction of the Architect.
3. Compliance: Execute the Works to a very high acceptable standard and comply with:
- BS 8000

- BS EN ISO 8501: Part 1:
 - BS 5493:
 - BS EN ISO 12944: Parts 1-8:
 - BS EN ISO 14713:
4. Visible elements: Angles, junctions, edges, corners, arises, component interfaces and all visible elements to be tight, smooth, correctly positioned, neat, properly aligned, and ready for use without remedial work.
 5. Tolerances: Maintain acceptable tolerances at all times.
 6. Preceding works:
 - 6.1. Check and ensure accuracy of preceding elements before commencement of installation to guarantee accuracy.
 - 6.2. Do not cut, drill or alter the preceding work or interfacing installations without prior authorisation. Any such authorised work shall not change the visual intent.
 7. Sequencing:
 - 7.1. Implement proper sequencing of elements and components to guarantee quality of final installation.
 - 7.2. Ensure building is watertight before commencing internal finishes.
 8. Preparation: Surfaces to receive treatment or attachments to be suitably prepared to ensure accurate installation without causing any damage or reduction in performance, quality or visual intent.
 9. Tools: Minimise use of power activated tools.
 10. Cleaning:
 - 10.1. Blast cleaning: Blast cleaning to be grade Sa 2.5 after removal of all debris and deposits to achieve required surface finish quality. Primer to be applied immediately after blast cleaning.
 - 10.2. Prior to installation: Remove efflorescence, dirt, dust, traces and any other contaminant prior to installation or application of finishes.
 - 10.3. Handover: Professionally clean the Works prior to handover.
 11. Manufacture: Maximise off site manufacture where specified and appropriate.
 12. Installations:
 - 12.1. General: Installations to be permanently stable and remain in position without twisting, warping, loosening, vibrating, knocking, rattling, whistling, etc.
 - 12.2. Weather: Do not carry out installations during inclement weather, unless measures have been taken to mitigate the effects of low temperature, frost, high rainfall, snow, high humidity, etc.
 13. Joints:
 - 13.1. Joints to be as shown on the Working Drawings, be perfectly formed, tight, properly aligned, without lipping and visually acceptable, all within stipulated tolerances.
 - 13.2. Movement joints to be installed as shown on the Working Drawings.
 - 13.3. Minimise the number of joints and maximise alignment.
 14. Fire Stopping: Provide permanent fire stopping solutions maintaining compliance with the visual intent. Fire stopping to meet all fire codes and regulations, including spread of flame and smoke. Material to be installed strictly in accordance with manufacturers' recommendations, ensuring that all gaps are properly sealed, and remain permanently in place for the Design Life of the Building.
 15. Membranes: Fix membranes to adequately cleaned surfaces.
 16. Insulation: Install dry sheet insulation using recommended mechanical or bonded methods, horizontally, vertically or sloping, as appropriate, without lipping, gaps or uneven joints. Stagger joints when installing filter fabric.
 17. Protection: Protect the work at all times, including all sides at junctions, joints, perimeters, etc. when installing high performance, reinforced metal or plastic vapour control and air leakage barriers.

18. Welding: When working on site use manual inert gas tungsten arc welding techniques in accordance with BS EN 1011. Welding to be smooth, continuous and visually acceptable.
19. Colour batching: Do not use different colour batches where they can be seen together.
20. Dimensions: Check on-site dimensions.
21. Finished work: Not defective, e.g. not damaged, disfigured, dirty, faulty, or out of tolerance.
22. Location and fixing of products: Adjust joints open to view so they are even and regular.

140 Evidence of Compliance

1. Proprietary products: Retain on site evidence that the proprietary product specified has been supplied.
2. Performance specification: Submit evidence of compliance, including test reports indicating:
 - Properties tested.
 - Pass/ fail criteria.
 - Test methods and procedures.
 - Test results.
 - Identity of testing agency.
 - Test dates and times.
 - Identities of witnesses.
 - Analysis of results.

150 Inspections

1. Products and executions: Inspection or any other action must not be taken as approval unless confirmed in writing referring to:
 - Date of inspection.
 - Part of the work inspected.
 - Respects or characteristics which are approved.
 - Extent and purpose of the acceptance.
 - Any associated conditions.

160 Related Work

1. Details: Provide all trades with necessary details of related types of work. Before starting each new type or section of work ensure previous related work is:
 - Appropriately complete.
 - In accordance with the project documents.
 - To a suitable standard.
 - In a suitable condition to receive the new work.
2. Preparatory work: Ensure all necessary preparatory work has been carried out.
- 3.

170 Manufacturer's recommendations/ instructions

1. General: Comply with manufacturer's printed recommendations and instructions.
2. Exceptions: Submit details of changes to recommendations or instructions.
3. Execution: Use ancillary products and accessories supplied or recommended by main product manufacturer.
4. Products: Comply with limitations, recommendations and requirements of relevant valid certificates.

180 Water for the works

1. Mains supply: Clean and uncontaminated.
2. Other: Do not use until:
 - Evidence of suitability is provided.
 - Tested to BS EN 1008 if instructed.

210 Samples

1. Scope: Provide the samples listed in the Specification plus any others which are deemed necessary to demonstrate the Contractor's proposed alternatives.
2. Products or executions: Comply with all other specification requirements and in respect of the stated or implied characteristics either:
 - To an acceptable level.:
 - To match a sample previously accepted as a standard for the purpose.

211 Mock-ups

1. Scope: Provide the Mock-ups listed in the Specification.

212 Prototypes

1. Scope: Provide the prototypes listed in the Specification.
2. Use: Finalising details, appearance, connections, finish, etc. and testing where necessary to prove compliance with performance requirements.

213 Benchmarks

1. Scope: Provide the Benchmarks listed in the Specification.

220 Acceptance of products

1. Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.
2. Acceptance: Relates to a sample of the product and not to the product as used in the Works. Do not confirm orders or use the product until approval of the sample has been obtained.
3. Complying sample: Retain in good, clean condition on site. Remove when no longer required.

230 Acceptance fo execution

1. Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.
2. Acceptance: Relates to the stated characteristics of the sample. (If approval of the finished work as a whole is required this is specified separately). Do not conceal, or proceed with affected work until compliance with requirements is confirmed.
3. Complying sample: Retain in good, clean condition on site. Remove when no longer required.

320 Setting out

1. General: Submit details of methods and equipment to be used in setting out the Works.
2. Levels and dimensions: Set out the Works accurately in terms of position, level and alignment. Check and record the results on a copy of drawings. Notify discrepancies and obtain instructions before proceeding.
3. Inform: When complete and before commencing construction.
4. Accuracy: Set out plan positions within a tolerance from primary grid positions of +/-2mm unless otherwise agreed in advance. Check accuracy of previous installations to ensure acceptable installation of following work.

330 Appearance and fit

1. System Tolerances:
 - 1.1. Comply with BS EN ISO 286: Part 1.
 - 1.2. Maintain dimensional tolerances included in the Detailed Design.
 - 1.3. Immediately notify any tolerance omissions, inconsistencies, incompatibilities and/ or deviations from tolerance requirements when discovered.
 - 1.4. Working Drawings to show how tolerances are to be achieved and demonstrate adherence to tolerance requirements throughout manufacture and installation.
 - 1.5. Check completed work on site prior to commencing manufacture where possible to check existing installation tolerances.
 - 1.6. Accommodate anticipated structural tolerances and movement.
 - 1.7. Continually monitor tolerances achieved and keep detailed records.
 - 1.8. Where tolerance clashes/ discrepancies occur, the most stringent is to be met.
 - 1.9. Keep records and report deviations/ discrepancies of all tolerances from manufacture to installation.
 - 1.10. Apply the most stringent tolerance requirement when different solutions are determined for the same condition.
 - 1.11. Do not compound tolerances for adjoining elements, each of which is to be treated individually.
 - 1.12. Prepare written methodology adopted to maintain and check tolerances as the work proceeds.
2. General tolerances (maximum): To BS 5606, tables 1 and 2.

340 Critical dimensions

1. Critical dimensions: Set out and construct the Works to ensure compliance with the tolerances stated.

350 Levels of structural floors

1. Maximum tolerances for designed levels to be:
 - 1.1. Floors to be self-finished, and floors to receive sheet or tile finishes directly bedded in adhesive: +/- 10 mm.
 - 1.2. Floors to receive dry board/ panel construction with little or no tolerance on thickness: +/- 10 mm.
 - 1.3. Floors to receive mastic asphalt flooring/ underlays directly: +/- 10 mm.
 - 1.4. Floors to receive mastic asphalt flooring/ underlays laid on mastic asphalt levelling coat(s): +/- 15 mm.
 - 1.5. Floors to receive fully bonded screeds/ toppings/ beds: +/- 15 mm.
 - 1.6. Floors to receive unbonded or floating screeds/ beds: +/- 20 mm.
2. Maximum tolerances for designed levels to be:
 - 2.1. Floors to be self-finished, and floors to receive sheet or tile finishes directly bedded in adhesive: : +/- 10mm.
 - 2.2. Floors to receive dry board/ panel construction with little or no tolerance on thickness:: +/- 10mm.

351 General structural requirements

1. Take account of Structural Engineer's documents and specifications, etc. related to loadings, tolerances and design and safely accommodate the worst combination of structural conditions, including pressure coefficients.

2. Take account of BS EN 1991: Part 1.
3. Ensure rigidity of materials and components so that they are not adversely affected by any external or internal vibration and safely withstand all forces and loads imposed at all times.
4. Install and align all parts of the Work to accommodate deviations of any part of the structure.
5. Safely accommodate all movement and stresses imposed by the structure as well as all dead/ live loads imposed by self weight, attachments, environmental conditions, temporary loads during construction, without affecting visual intent.
6. All movement joints to be visually acceptable.
7. Components, materials, systems and products to accommodate expansion/ contraction when conditions range between 5°C and 28°C air temperature, as well as surface differential temperature of between five and eighty degrees centigrade solar radiation.
8. Working Drawings to show methods by which tolerances of elements, including interfaces, are accommodated.
9. Take into account the following:
 - BS 6180.
 - BS EN 1991 - Eurocode 1.
 - BS EN 1991 Parts 1 - 4 (as applicable to location). 9.4. PD 6688.
10. All elements to resist all static and dynamic loads, without deformation or changes to visual intent, including conditions of extreme wind loads, moving elements/ components in close proximity and unexpected water absorption.
11. Take account of all loads imposed during cleaning and maintenance operations including operatives, machinery, products, temporary structures and the like to a minimum of 500 Newtons applied through 100mm square.
12. All imposed loads to be safely transferred to the adjoining structure, without detrimental effect to visual intent, performance or functionality.
13. Accommodate all deflections, including those of a temporary nature, without detrimental effect to visual intent, performance or functionality.
14. Maximum allowable deflection, when fully loaded, to be the lower of either 15mm or 1/175 of clear span.
15. Accommodate all thermal movements caused by climatic conditions externally and internally. Provide necessary permanent/ temporary structural support, as necessary, and take measures to mitigate against noise arising.
16. All components, products, materials, fixtures, fittings and systems are to remain rigid under all conditions unless purposefully designed otherwise.
17. Maximum permitted deflection to be span/400 (span maximum 1500mm).

352 General environmental requirements

1. Take account of Services Engineer's documents, specifications, Approved Document Part L of the Building Regulations, etc. related to local conditions, performance requirements, eradication of cold bridging etc.
2. When selecting materials, components, products, etc. take account of prevailing local conditions to ensure suitability for the Design and Service Life of the Works.
3. All products, materials, components etc. to be moisture and water resistant, including resisting changes in moisture content of air or humidity, the effect of freezing and material moisture content.
4. Protect against frost, precipitation of all kinds, humidity, etc. during manufacture, delivery, storage and installation up to handover.
5. Maintain weatherproof and watertight barriers between external and internal conditions, including prevention of water ingress, condensation and capillarity at all times and under all conditions.

6. External, internal or interstitial condensation is not acceptable. Comply with BS 5250 and other applicable codes or standards with regard condensation calculation methods and demonstrate compliance through calculations, testing and adequate detailing.

353 General acoustic requirements

1. Refer to the Acoustic Report and ensure compliance, including BS EN ISO 10848 related to flanking transmission and the provision to maintain no less than DnTf, w 55db across transoms, floor edges and mullions.
2. Ensure that the acoustic performance criteria of Sections B to Y of the Specification are achieved, including at penetrations, junctions, and interfaces to maintain acoustic integrity.
3. Audible noise arising from the finished building, including rattles, creaks, whistling, movement etc. is not acceptable. Airborne noise caused by wind, precipitation, air infiltration, etc. may not exceed 35db (A) at a distance of 1000mm from any external wall, or less if so specified in Sections B to Y of the Specification.

354 General security requirements

1. Take account of the Security Report and comply with the Secured By Design Initiative (Association of Chief Police Officers) and LPCB standard LPS 1175 and classification levels stated in Sections B to Y of the Specification.
2. Comply with BS EN 1627 with regard burglar resistance requirements (doorsets, windows, grilles, shutters etc.) and resistance class requirements stated in Sections B to Y of the Specification.
3. Comply with BS EN 356 with regard to manual impact resistance to glazing.

355 General fire requirements

1. All products, materials, components, systems and the like to be non combustible and properly certified as such. Internal surfaces and linings to be appropriately rated in accordance with the current Building Regulations and Approved Document.
2. Comply with the following:
 - Project Fire Strategy Report and all relevant Approved Documents of the Building Regulations (including Parts A and B), including maintaining very low flame spread characteristics and the non production of smoke or toxic gases during combustion.
 - BS EN 13501: Part 1 - Classification
 - BS 476 and clause 5 of Appendix A - Approved Document Part B, Building Regulations related to fire resistance and performance.
 - BS7974 - Code of Practice, fire safety engineering.
 - BS 9991 - Code of Practice (design/ management/ use).
 - BS 9999 - Code of Practice (design/ management/ use).
 - BS EN 12101 - Smoke/ heat control systems.
 - LPS 1207 - LPCB Approval and listing of internal temporary covering materials.
 - LPS 1215 - LPCB Approval and listing of internal temporary covering external containment net/ sheet materials.
 - TRADA - Timber Research and Development Association.
 - Requests received from and recommendations made by the Fire Services and Statutory Authorities.
 - BS 476: Part 20 - 60 minute floor to floor fire separation, including testing methodology and certifications.
3. Provide test certificates to confirm compliance of all products, materials, components and systems.
4. Provide all necessary smoke and fire resistant cavity barriers, seals and fire/ smoke stops to maintain integrity and insulation, which continue to be effective and in place during a fire.
5. Prevent fire and smoke spreading between fire separation compartments in both floor to floor and area to area on individual floors.

6. Provide designated fire fighting enclosures, lift shafts and lobbies that are adequately ventilated, incorporating sufficient operable vents being a minimum of 25% of the horizontal cross sectional area of each enclosure.

356 Resisting damage

1. Refer to and comply with BS 6180 to ensure that all materials, goods, products, systems, finishes, etc. are durable and maintain original appearance and performance throughout the required Design Life and Service Life, provided adequate maintenance and cleaning are carried out in accordance with the manufacturer's requirements.
2. Barriers and guardrails to be adequate and able to resist loads to which they are subjected in the use for which they are designed, without deformation or loss of integrity, including impact from hand held objects and tools.
3. Maintenance and cleaning activities to have no detrimental effect on performance or appearance.
4. No reduction in performance or visual appearance to emanate from exposure to sunlight or weather conditions.

357 Resisting corrosion

1. Refer to and comply with:
 - BS 4479 - Material to receive coatings.
 - BS 5493 - Code of Practice for protective coating to steel and iron.
 - BS EN ISO 12944: Parts 1-8 - Protective paint systems to steel structures.
 - BS EN ISO 14713 - Zinc coatings.
 - PD 6484 - Bimetallic contact corrosion avoidance.
 - BS EN ISO 9223 - Urban marine environmental conditions.
 - BS EN ISO 14713: Part 1, Table 2 - Zinc coatings Life to First maintenance to be "Very High".
 - For buildings adjacent to water, take special precautions to avoid corrosion of metalwork including effect of salinity: Categories to be:
 - External Corrosion Category 4.
 - Interior corrosion Categories: Interior spaces - C1 for insulated/ heated areas and C2 for uninsulated/ unheated spaces.
2. Take all necessary protective measures to avoid corrosion, including electrochemical corrosion/ staining, from material sourcing through manufacture, delivery, storage and installation to handover.
3. Provide guarantees and certification.
4. Prevent corrosion as a result of electrolytic and galvanic action, in particular where dissimilar metals connect and other points of connection where the use of bolts, welding, screwing, etc. are used.
5. All cut edges of metal components to be treated to avoid corrosion.

358 Lightning protection

1. Conceal, where possible, earth bonding and lightning protection systems.
2. Provide testing certificates.
3. Refer to and comply with:
 - Services Engineer's Specification and associated reports.
 - BS 7651 - Electrical installations.
 - BS EN 62305: Parts 1-4 - Lightning protection.
 - BS 7430 - Code of Practice for protective earthing.

359 Access and services integration

1. Provide safe access to any part of the Works for independent maintenance, component replacement, or any such other purpose such that disturbance to adjacent/ adjoining elements are not damaged or disturbed.
2. Show access panels on the Working Drawings.
3. Wiring and pipework to be concealed, unless agreed otherwise in advance.
4. At points of penetration, adequate and suitable seals, gaskets, grommets, support frames, etc. are to be provided without reduction in performance.
5. Make allowance for all necessary service penetrations.

360 Record drawings

1. Site setting out drawing: Record details of all grid lines, setting-out stations, benchmarks and profiles. Retain on site throughout the Contract and hand over on completion.

540 Defects in existing work

1. Undocumented defects: When discovered, immediately give notice. Do not proceed with affected related work until response has been received.
2. Documented remedial work. Do not execute work which may:
 - Hinder access to defective products or work; or
 - Be rendered abortive by remedial work.

550 Acces for inspection

1. Timing: Agree and record dates and times of tests and inspections to enable all affected parties to be represented.
2. Confirmation: One working day prior to each such test or inspection. If sample or test is not ready, agree a new date and time.
3. Records: Submit a copy of test certificates and retain copies on site.
4. Testing generally:
 - 4.1. Testing to be carried out in accordance with British Standards (including where applicable European Norms) and UKAS requirements to demonstrate compliance with the Specification by independent and accredited establishments, undertaken by qualified staff using regularly calibrated equipment. In house testing facilities and prior certification may only be used when proven to be at least the same level of competence, relevant and agreed in advance.
 - 4.2. Testing samples to be new, properly prepared and tested to reflect all conditions (edges, interfaces, penetrations, perimeters, etc.) and location in the final product or systems incorporated in the Works.
 - 4.3. Successful testing does not negate responsibility for compliance with the Specification.
 - 4.4. Any item which fails a test or is deemed to be inadequate in any way is not to be used in the Works.
 - 4.5. Tests to be recorded and notified in advance such that the Employer's Representative may attend. A post test detailed report is to be prepared and issued.
 - 4.6. Maintain test records for inspection at any time.
5. Prototype testing:
 - 5.1. When testing Prototypes ensure that Client representatives are present unless instructed otherwise in advance.
 - 5.2. Ensure that the Prototype is complete and fully prepared reflecting its site location, including interfaces.
 - 5.3. Prepare separate Working Drawings for each Prototype.

- 5.4. Under testing the prototype will show no signs of deformation, leakage, reduction in performance or changes to visual intent.
- 5.5. Testing to be carried out at the manufacturer's specialist facility or a pre agreed independent facility.
6. Proprietary Products: Retain on site evidence that the proprietary product specified has been supplied.
7. Acoustic Testing:
 - 7.1. Ensure and demonstrate that the acoustic performance requirements of the Specification are met.
 - 7.2. Comply with the following:
 - BS EN ISO 10140 - Sound insulation.
 - Approved Document Part E of the Building Regulations. 7.2.3. The project Acoustic Report.
8. Weatherproofing/ Watertightness:
 - 8.1. Comply with the requirements of BS EN 1027.
 - 8.2. Tests of facades to confirm that the greater of class 600 Pa or 0.25 of design wind pressure has been achieved in respect of water penetration.
 - 8.3. All external walls/ roofs are to be tested or certified to demonstrate that the building is weather and watertight, without leakage or ponding. Any such occurrence to be immediately notified, repaired and re-tested.
9. Flood Testing:
 - 9.1. Supervised and recorded site flood tests to be actioned, as necessary. Such tests are to be carried out by filling the designated area with water to a depth of at least 50mm and 12mm below kerb level, after sealing all outlets, joints, junctions, etc. for a minimum period of 48 hours.
 - 9.2. Depths to be checked every four hours and if lower water levels are recorded, immediately locate the leak point, carry out a satisfactory repair and re-test until no drop in levels is detected.
10. Hose testing: Site hose tests to comply with CWCT TN41 - "Site Testing for Watertightness" and be carried out on benchmarks and designated areas of the final installation as instructed.
11. Fire testing:
 - 11.1. Examine carefully all fire/ smoke seals prior to concealment and test a minimum of one of each type to confirm adequacy.
 - 11.2. Comply with the following:
 - BS EN 1364 - Fire testing no load bearing elements.
 - BS 476 - Fire tests for materials and structures.
 - All recommendations and regulations arising from the Grenfell Enquiry and subsequent Fire Authorities' requirements.
12. Fixings: Carry out tests on items for which acceptable manufacturers' test results/ data is not available. Relevant tests to include proof loading, pull out and ultimate loading as a minimum for each fixing type.
13. Slip Resistance:
 - 13.1. Test finished floor surfaces regularly as the work proceeds. For floors where surface roughness is expressed as Rz, carry out tests with a roughness meter.
 - 13.2. Pendulum Test to be carried out in wet and dry conditions to demonstrate the achievement of the specified value (PTV).
 - 13.3. Comply with the following:
 - BS 7976 - Pendulum testers.
 - HSE document - "Assessing the Slip Resistance of Flooring". 13.3.3. UK Slip Resistance Group recommendations.

14. Coatings Generally:
 - 14.1. Comply with the following:
 - BS EN ISO 2064 - Metallic/ inorganic coatings.
 - AAMA 2605 - Organic coating performance/ testing on aluminium panels/ extrusions. 14.1.3. BS 4842: Clause 10.2.
 - 14.2. To ensure no flaking, cracking or colour change occurs during the Service Life of any coating, carry out both artificial and natural weather tests. For clarification, colour change means less than one step in hue or chroma from original colour, in accordance with the Munsell Atlas.
 - 14.3. Visible defects from a distance of 1000mm, such as dust, blistering, entrapped particles, scratches, etc. are not acceptable.
15. PVDC/ stoved Acrylic Coatings:
 - 15.1. Comply with the following:
 - BS EN ISO 2064.
 - BS 6001: Parts 1 and 2.
 - 15.2. Selected areas and components to be inspected on site by an independent qualified inspector to confirm colour and quality compliance. LQ (Limited Quality) (Pa=10%) = 5%.
 - 15.3. Test 300mm x 200mm flat samples of at least four selected areas for a level 2 inspection to ensure that an Acceptable Quality Level of 1% for each colour is being maintained.
16. Performance Specified Elements: Submit evidence of compliance, including test reports indicating:
 - Properties tested.
 - Pass/ fail criteria.
 - Test methods and procedures. 16.4. Test results.
 - Identity of testing agency. 16.6. Test dates and times.
 - Identities of witnesses.
 - Analysis of results.

570 Air permeability

1. Airtightness/ Wind Resistance:
 - 1.1. Comply with the following:
 - BS EN 1026 - Infiltration.
 - BS EN 12211 - Window/ door wind loads.
 - BS EN 12179 - Curtain walling wind loads.
 - BS EN ISO 9972 - Thermal glazing/ air permeability.
 - CWCT recommendations and guidance.
 - Approved Document Part L Building Regulations, CIBSE TM23 - Air Leakage.
 - 1.2. Air leakage tests to comprise at least five positive pressure cycles to represent maximum wind gusts, followed by five cycles negative pressure to show maximum deflection values are not exceeded.
2. Testing organization: UKAS accredited and registered with the Air Tightness Testing and Measurement Association (ATTMA) or the Independent Air Tightness Testing Scheme (iATS).
3. Infiltration: Air infiltration through external walls is to be controlled such that maximum air infiltration does not exceed 1.5m³/ hour/ °C at any point or condition when tested to 600Pa (max.) as per CWCT guidance. Control and spread evenly over each surface exfiltration and infiltration such that it is not concentrated in a single location. Comply with the Services Engineer's recommendations and specification including provision of test results to confirm performance.
4. Results:
 - Content: Include test results and all supporting data.
 - Copies: Required for building control inspection and inclusion in Building Manual.

- Electronic deposit: Through the ATTMA lodgement database
- Additional copies: Provide on request.

580 Continuity of thermal insulation

1. Record and report: Confirm that work to new, renovated or upgraded thermal elements has been carried out to confirm that the requirements of the Specification have been met. Include:
 - The address of the premises.
 - The Contractor's name and address.
 - The name, qualification and signature of the competent person responsible for checking compliance.
 - The date on which the installation was checked.
2. Submit: Before completion of the Works.
3. Copy: To be lodged in the building manual.

610 Proposals for rectification of defective products/ executions

1. Proposals: Immediately any execution or product is known, or appears, to be not in accordance with the Contract, submit proposals for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution.
2. Acceptability: Such proposals may be unacceptable and contrary instructions may be issued.

620 Measures to establish acceptability

1. General: Wherever inspection or testing shows that the work, materials or goods are not in accordance with the contract and measures (e.g. testing, opening up, experimental making good) are taken to help in establishing whether or not the work is acceptable, such measures:
 - Will be at the expense of the Contractor.
 - Will not be considered as grounds for revision of the completion date.

630 Quality Control

1. Procedures: Establish and maintain to ensure that the Works, including the work of subcontractors, comply with specified requirements.
2. Records: Maintain full records, keep copies on site for inspection, and submit copies on request.
3. Content of records
 - Identification of the element, item, batch or lot including location in the Works.
 - Nature and dates of inspections, tests and approvals.
 - Nature and extent of nonconforming work found.
 - Details of corrective action.

710 Work before completion

1. General: Make good all damage consequent upon the Works.
2. Temporary markings, coverings and protective wrappings: Remove unless otherwise instructed.
3. Cleaning: Clean the Works thoroughly inside and out, including all accessible ducts and voids. Remove all splashes, deposits, efflorescence, rubbish and surplus materials.
4. Cleaning materials and methods: As recommended by manufacturers of products being cleaned, and must not damage or disfigure other materials or construction.
5. COSHH data sheets: Obtain for all materials used for cleaning and ensure they are used only as recommended by their manufacturers.
6. Minor faults: Touch up in newly painted work, carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.

7. Moving parts of new work: Adjust, ease and lubricate as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.

721 Handover

1. General: Leave the Works secure with, where appropriate, all accesses closed and locked.
2. Keys: Account for and adequately label all keys, and hand over together with an itemised schedule, retaining duplicate schedule signed as a receipt.
3. Information: Provide information and records of all materials, products, goods, components, systems, etc. to identify source, manufacturers, suppliers, subcontractors, registration codes, warranties and guarantees.
4. Notification: Provide sufficient time prior to handover to allow proper examination and snagging prior to handover.
5. Completion: Handover will not be achieved until the Architect is satisfied that all installations have been completed to the quality and standards required.

Ω End of Section

C90

Alterations - spot items

General

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

111 Removals/ Alterations - General

1. The Contractor shall carry out a Survey Report on-Site to schedule and detail all removal and alteration items.
2. Precise details of works required and techniques shall be developed in consultation with the Architect to take account of specific conditions found on-Site.
3. No works shall commence without acceptance from the Employer.

112 Schedule of Conditions

1. Agree a Schedule of Conditions of the existing adjacent areas with the Architect.
2. Upon completions of the Contractor's work a joint inspection with the Architect shall be made of adjacent areas to agree and record their condition, including record photographs, which shall be taken at the Contractor's expense and submitted for retention by the Architect.
3. Any damages so occasioned shall be rectified at the Contractor's expense.

113 Removal and Alteration Works

1. The list below details the scope of work items identified. This list shall not be considered exhaustive and the Contractor shall highlight any other potential remedial works required in his Survey Report.

120 Employer's property

1. Components and materials arising from alterations that are to remain the property of the Employer:
 - 1.1. **Protection:** Maintain until items listed above are removed by the Employer or reused in the Works, or until the end of the Contract.

130 Recycled materials

1. **Materials arising from alterations:** May be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
2. **Evidence of compliance:** Submit full details and supporting documentation.
 - 2.1. **Verification:** Allow adequate time in programme for verification of compliance.

Ω End of Section

F10

Brick/ block walling

Types of walling

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 BLK-101 Concrete Fair-faced Blockwork

1. Concrete fair-faced blockwork, as the Design Drawings.
 - 1.1. Blocks:
 - 1.1.1.Manufacturer: Lignacite, or acceptable equivalent.
 - 1.1.2.Reference: Medium Density Range - Fair-faced.
 - 1.1.3.Type: Loadbearing solid concrete, fair-faced block units.
 - 1.1.4.Nominal face size: 440mm x 215mm.
 - 1.1.5.Thickness: As the Design Drawings.
 - 1.1.6.Average compressive strength: To be confirmed by the Architect.
 - 1.1.7.Density: 1570kg/m³.
 - 1.2. Bond: Stretcher, or as otherwise shown on the Design Drawings.
 - 1.3. Mortar:
 - 1.3.1.Type: Cement: Lime: Sand.
 - 1.3.2.Compressive strength to comply with BS EN 1996: Part 1-1.
 - 1.3.3.Colour: Natural.
 - 1.4. Joint profile: Flush.

112 BLK-105 Concrete Fair-faced Blockwork - Wall Type 18

1. Concrete fair-faced blockwork, as the Design Drawings.
 - 1.1. Specific performance:
 - 1.1.1.Fire rating: Refer to the Design Drawings/ Fire Strategy Report.
 - 1.1.2.Acoustic rating: Refer to the Design Drawings/ Acoustic Report.
 - 1.1.3.Duty rating: Severe.
 - 1.2. Blocks:
 - 1.2.1.Manufacturer: Lignacite, or acceptable equivalent.
 - 1.2.2.Reference: Medium Density Range - Fair-faced.
 - 1.2.3.Type: Load bearing solid concrete, fair-faced block units.
 - 1.2.4.Nominal face size: 440mm x 215mm.
 - 1.2.5.Thickness: As the Design Drawings.
 - 1.2.6.Average compressive strength: To be confirmed by the Architect.
 - 1.2.7.Density: 1570kg/m³.
 - 1.3. Bond: Stretcher, or as otherwise shown on the Design Drawings.
 - 1.4. Mortar:
 - 1.4.1.Type: Cement: Lime: Sand.
 - 1.4.2.Compressive strength to comply with BS EN 1996: Part 1-1.

1.4.3.Colour: Natural.

Testing

400 Hard landscaping materials specification

1. Minimum BRE 'Green Guide to Specification' online rating: Refer to Section A.

410 Compressive strength of mortar for each walling type

1. Testing authority: A UKAS Accredited laboratory
2. Test method: To BS EN 1015-11.
3. Preliminary tests procedure: As follows:
 - 3.1. Specimens
 - 3.1.1.Number of specimens: 6.
 - 3.1.2.Type: 40 x 40 x 160 mm prism.
 - 3.1.3.Preparation: At least six weeks before walling commences.
 - 3.2. Specimen testing: Half of specimens at 7 days. Remainder at 28 days.
 - 3.2.1.Retarded mixes: Extend curing periods to include retardation period.
 - 3.3. Response to result: If mean compressive strength at 28 days is not within the range given below repeat tests with more suitable sand or next higher designation of mortar.
4. Site tests procedure: As follows.
 - 4.1. Number of specimens: Six per 150m² of walling or per storey whichever the more frequent.
 - 4.2. Specimen types: As preliminary test, but prepared during construction.
 - 4.3. Specimen testing: Half of specimens at 7 days. Remainder at 28 days.
 - 4.3.1.Retarded mixes: Extend curing periods to include retardation period.
5. Required test mean compressive strength at 28 days (N/mm²): To be agreed.
6. Results: Submit.

Workmanship generally

430 Conditioning of clay bricks and blocks

1. Bricks and blocks delivered warm from manufacturing process: Do not use until cold.
2. Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

460 Mortar designations

1. Mix proportions: For a specified designation select a mix from the following:
 - 1.1. Designation (i) (BS EN 998-2 M12 equivalent)
 - 1.1.1.1:0-¼:3 (Portland cement:lime:sand with or without air entraining additive).
 - 1.1.2.1:3 (Portland cement:sand and air entraining additive).
 - 1.2. Designation (ii) (BS EN 998-2 class M6 equivalent)
 - 1.2.1.1:½:4-5 (Portland cement:lime:sand with or without air entraining additive).
 - 1.2.2.1:3 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1.2.3.1:2½-3½ (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1.2.4.1:3-4 (Portland cement:sand and air entraining additive).
 - 1.3. Designation (iii) (BS EN 998-2 class M4 equivalent)
 - 1.3.1.1:1:5-6 (Portland cement:lime:sand with or without air entraining additive).

- 1.3.2.1:3½-4 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
- 1.3.3.1:4-5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
- 1.3.4.1:5-6 (Portland cement:sand and air entraining additive).
- 1.4. Designation (iv) (BS EN 998-2 class M2 equivalent)
 - 1.4.1.1:2:8-9 (Portland cement:lime:sand with or without air entraining additive).
 - 1.4.2.1:4½ (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1.4.3.1:5½-6½ (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1.4.4.1:7-8 (Portland cement:sand and air entraining additive).
- 2. Batching: Mix proportions by volume.
- 3. Mortar type: Continuous throughout any one type of masonry work.

500 Laying generally

- 1. Mortar joints: Fill vertical joints. Lay blocks on a full bed.
- 2. AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
- 3. Clay block joints
 - 3.1. Thin layer mortar: Lay blocks on a full bed.
 - 3.2. Interlocking perpend: Butted.
- 4. Bond where not specified: Half lap stretcher.
- 5. Vertical joints in brick and concrete block facework: Even widths.

520 Accuracy

- 1. Courses: Level and true to line.
- 2. Faces, angles and features: Plumb.
- 3. Permissible deviations
 - 3.1. Position in plan of any point in
 - 4. relation to the specified building
 - 5. reference line and/ or point at
 - 6. the same level ± 10 mm.
 - 6.1. Straightness in any 5 m length ± 5 mm.
 - 6.2. Verticality up to 3 m height ± 10 mm.
 - 6.3. Verticality up to 7 m height ± 14 mm.
 - 6.4. Overall thickness of walls ± 10 mm.
 - 6.5. Level of bed joints up to 5 m
- 7. (block masonry) ± 13 mm.

535 Height of lifts in walling using cement gauged or hydraulic lime mortar

- 1. Quoins and advance work: Rack back.
- 2. Lift height (maximum): 1.2 m above any other part of work at any time.
- 3. Daily lift height (maximum): 1.5 m for any one leaf.

540 Height of lifts in walling using thin layer mortar

1. Quoins and advance work: Rack back.
2. Lift height (maximum): 1.3 m above any other part of work at any time.

545 Levelling of separate leaves

1. Locations for equal levelling of cavity wall leaves:
 - 1.1. Every course containing vertical twist type ties or other rigid ties.
 - 1.2. Every third tie course for double triangle/ butterfly ties.
 - 1.3. Courses in which lintels are to be bedded.

595 Lintels

1. Bearing: Ensure full length masonry units occur immediately under lintel ends.

610 Support of existing work

1. Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.

620 Block bonding new walls to existing

1. Pocket requirements: Formed as follows
 - 1.1. Width: Full thickness of new wall.
 - 1.2. Depth (minimum): 100mm.
 - 1.3. Vertical spacing
 - 1.3.1. Brick to brick: 4 courses high at 8 course centres.
 - 1.3.2. Block to block: Every other course.
2. Pocket joints: Fully filled with mortar.

635 Jointing

1. Profile: Consistent in appearance.

645 Accessible joints not exposed to view

1. Jointing: Struck flush as work proceeds.

665 Pointing

1. Joint preparation: Remove debris. Dampen surface.
2. Mortar: As Section Z21.
 - 2.1. Standard: To BS EN 998-2
3. Profile: Recessed

671 Fire stopping

1. Avoidance of fire and smoke penetration: Fit tightly between cavity barriers and masonry. Leave no gaps.

690 Adverse weather

1. General: Do not use frozen materials or lay on frozen surfaces.
2. Air temperature requirements: Do not lay bricks/ blocks:
 - 2.1. In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.

- 2.2. In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising, or as manufacturer's/ supplier's recommendations.
- 2.3. In thin layer mortars when outside the limits set by the mortar manufacturer.
3. Temperature of walling during curing: Above freezing until hardened.
4. Newly erected walling: Protect at all times from:
 - 4.1. Rain and snow.
 - 4.2. Drying out too rapidly in hot conditions and in drying winds.

Additional requirements for facework

710 The term facework

1. Definition: Applicable in this specification to block walling finished fair.
 - 1.1. Painted facework: The only requirement to be waived is that relating to colour.

730 Concrete block samples

1. General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: Blocks as in clause F10 .
2. Selection of samples: 3 No. samples of each block representative of the range in variation of appearance.

740 Finished masonry work reference panels

1. General: Before proceeding to construct the walling types, construct sample panels as specified. Give notice when panels are dry.

745 Masonry sample panels

1. Sampling frequency: A panel for each type Specified and delivery of masonry unit. Nominally 1800mm x 1800mm.

750 Colour consistency of masonry units

1. Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
2. Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
3. Finished work: Free from patches, horizontal stripes and racking back marks.

760 Appearance

1. Brick/ block selection: Do not use units with damaged faces or arrises.
2. Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
3. Quality control: Lay masonry units to match relevant reference panels.
 - 3.1. Setting out: To produce satisfactory junctions and joints with built-in features and components.
 - 3.2. Coursing: Evenly spaced using gauge rods.
4. Lifts: Complete in one operation.
5. Methods of protecting facework: Submit proposals.

780 Ground level

1. Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.

790 Putlog scaffolding

1. Use: Not permitted in facework.

830 Cleanliness

1. Facework: Keep clean.
2. Mortar on facework: Allow to dry before removing with stiff bristled brush.
3. Removal of marks and stains: Rubbing not permitted.

Ω End of Section

F30

Accessories/ sundry items for brick/ block/ stone walling

Cavities

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

120 Cleanliness

1. Cavity base and faces, ties, insulation and exposed dpcs: Free from mortar and debris.

130 Perpend joint weep holes

1. Form: Open perpend joint.
2. Locations: Through outer leaf immediately above base of cavity, at cavity trays, stepped dpcs and external openings. 75 mm above top of cavity fill at base of cavity.
3. Provision: At not greater than 1000 mm centres and not less than two over each opening.

131 Bed joint weep holes

1. Form: Open 10 mm diameter hole.
2. Locations: Through outer leaf immediately above base of cavity at cavity trays, stepped dpcs and external openings. 75 mm above top of cavity fill at base of cavity.
3. Provision: At not greater than 1000 mm centres and not less than two over each opening.

150 Full fill cavity insulation

1. Insulation:
 - 1.1. Product certification: As acceptable manufacturer's certification.
2. Manufacturer:
 - 2.1. Product reference: To be proposed by the Contractor.
3. Recycled content: As acceptable manufacturer's specification.
4. Face size (nominal length x width): As acceptable manufacturer's specification.
5. Thickness (nominal): As acceptable manufacturer's specification.
6. Thermal conductivity: As acceptable manufacturer's specification.
7. Reaction to fire class: As acceptable manufacturer's specification.
8. Additional requirements: As acceptable manufacturer's specification.
9. Placement: Continuous and free of mortar and debris.

171 Ventilation ducts in external walling

1. Placement: Across cavity, sloping away from inner leaf. Full mortar joints to seal cavity.
2. Protection from water penetration to inner leaf: Where barrier is not integral to duct, form stepped dpc cavity tray with stop ends above duct, extending 150 mm on each side.

Reinforcing/ fixing accessories

220 Wall ties

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.
2. Material/ finish: Stainless steel.
3. Sizes: To be proposed by the Contractor.

224 Individual brackets

1. Standard: To BS EN 845-1.

260 Angle supports

1. Description: To be proposed by the Contractor.

265 Support system

1. Description: To be proposed by the Contractor.

270 Meshwork joint reinforcement

1. Description: To be proposed by the Contractor.
2. Width: Approximately 40-50 mm less in width than wall or leaf.
3. Placement: Lay on an even bed of mortar in a continuous strip with full laps at angles. Keep back 20 mm from face of external work, 12 mm back from face of internal work and finish joint to normal thickness.

282 Slip ties

1. Standard: To BS EN 845-1.

290 Proprietary special fixings

1. Description: To be proposed by the Contractor.

291 Special fixings

1. Type: Submit proposals.
2. Material/ Finish: To PD 6697, clause 5.3.2.
3. Performance: Of type, size, strength and number necessary to resist loads likely to occur during the life of the building, and prevent lateral displacement or pulling apart of construction.
4. Placement: Fill pockets with bedding mortar finished flush where exposed to view.

Flexible damp proof courses/ cavity trays

310 Damp proof courses – bitumen based

1. Standard: To be proposed by the Contractor.

330 Damp proof courses

1. Description: To be proposed by the Contractor.

345 Site formed flexible sheet cavity trays – plastics

1. Standard: To be proposed by the Contractor.

370 Preformed cavity trays

1. **Placement:** To provide a free draining and watertight installation.

380 Junction cloaks/ stop ends for preformed dpcs/ cavity trays

1. **Placement:** To provide a free draining and watertight installation. Seal laps with dpcs and/ or cavity trays.

385 Junction cloaks/ stop ends for preformed dpcs/ cavity trays

1. **Placement:** Seal laps with dpcs and/ or cavity trays.

390 Junction cloaks/ stop ends for site formed dpcs/ cavity tray

1. **Three dimensional changes in shape:** Form to provide a free draining and watertight installation. Seal laps.
2. **Alternative use of preformed junction cloaks/ stop ends:** Submit proposals.

Installation of dpcs/ cavity trays

415 Installation of horizontal dpcs

1. **Placement:** In continuous lengths on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.
2. **Width:** At least full width of leaf unless otherwise specified. Edges of dpc not covered with mortar or projecting into cavity.
3. **Overlying construction:** Immediately cover with full even bed of mortar to receive next masonry course.
4. **Overall finished joint thickness:** As close to normal as practicable.

425 Installation of ground level dpcs

1. **Joint with damp proof membrane:** Continuous and effectively sealed.

435 Installation of stepped dpcs in external walls

1. **External walls on sloping ground:** Install dpcs not less than 150 mm above adjoining finished ground level.

445 Installation of sill dpcs

1. **Form and placement:** In one piece and turned up at back when sill is in contact with inner leaf.

455 Installation of coping/ capping dpcs

1. **Placement:** Bed in one operation to ensure maximum bond between masonry units, mortar and dpc.
2. **Dpcs crossing cavity:** Provide rigid support to prevent sagging.

465 Sealing of dpcs

1. **Description:** To be proposed by the Contractor.

475 Installation of site formed cavity trays

1. **Requirements to prevent downward ingress of water**
 - 1.1. **Profiles:** To match those shown on drawings. Firmly secured.
 - 1.2. **Joint treatment:** Use continuous length wherever possible, otherwise lap at least 100 mm and seal to produce a free draining and watertight installation.

- 1.3. Horizontal cavity trays: Support using cavity closer.
- 1.4. Sloping cavity trays: Prevent sagging.
- 1.5. Cleanliness: Free from debris and mortar droppings.

485 Installation of cavity trays over openings and other cavity bridgings

1. Length: To extend not less than 150 mm beyond ends of lintels/ bridgings.

515 Dpc/ cavity tray leading edge in facework - flush

1. Treatment at face of masonry: Finish flush and clear of mortar.

525 Dpc/ cavity tray leading edge in facework – set back

1. Treatment at face of masonry: Set back 5mm from face of wall with recessed mortar joint to expose edge.

535 Dpc/ cavity tray leading edge in facework - projecting

1. Treatment at face of masonry: Projecting 5mm from face of wall.

560 Installation of vertical dpcs

1. Form: In one piece wherever possible.
 - 1.1. Joints: Upper part overlapping lower not less than 100 mm.

570 Installation of jamb dpcs at openings

1. Joint with cavity tray/ lintel at head: Full underlap.
2. Joint with sill/ horizontal dpc at base: Full overlap.
3. Projection into cavity: Not less than 25 mm.
4. Relationship with frame: In full contact.

580 Installation of jamb dpcs to built-in timber frames

1. Fixing: Securely fastened to back of frame.
 - 1.1. Fasteners: Galvanized clout nails or staples.

Joints

610 Movement joints with sealant

1. Joint preparation and sealant application: As Section Z22.
2. Filler:
 - 2.1. Thickness: To match design width of joint.
 - 2.2. Placement: Build in as work proceeds with no projections into cavities and to correct depth to receive sealant system.

615 Movement joints without sealant

1. Filler:
 - 1.1. Thickness: To match design width of joint.
 - 1.2. Placement: Build in as work proceeds filling the joint but without projecting into cavities.

616 Fire resisting movement joints without sealant

1. Fire resistant filler
 - 1.1. Placement: Compress and insert into place in open joint.

- 1.2. Adhesives and accessories: Types recommended by filler manufacturer.

630 Unexposed contraction joints

1. Formation: Close butt as work proceeds.

650 Pointing in flashings

1. Joint preparation: Free of debris and lightly wetted.
2. Pointing mortar: As for adjacent walling.
3. Placement: Fill joint and finish flush.

660 Pinning up to soffits

1. Top joint of loadbearing walls: Fill and consolidate with mortar.

Proprietary sills/ lintels/ copings/ dressings

720 Sills

1. Standard: To BS 5642-1.
2. Mortar for bedding/ jointing: Cement gauged as section Z21.
3. Joints: Flush.
4. Bedding one-piece sills: Leave bed joints open except under end bearings and masonry mullions. On completion, point to match adjacent work.

745 Prestressed concrete lintels

1. Standard: To BS EN 845-2.
2. Placement: Bed on mortar used for adjacent work. Prop at not more than 1.2 m centres to prevent displacement during construction. Retain props in position for not less than 14 days or until mortar has matured, whichever is longer.

760 Coping units

1. Standard: To BS 5642-2.
2. Dimensions: As shown on drawings.
3. Mortar for bedding/ jointing: Cement gauged as section Z21.
4. Joints: Full and finished flush.
5. Placement: Lay on a full bed of mortar to line and level.

780 Coping system

1. Manufacturer: To be proposed by the Contractor.
2. Material/ finish: To be agreed with the Architect.

Miscellaneous items

830 Building in frames

1. Preparation: Remove horns and provide support.
2. Fixing cramps: Fully bed in mortar.

840 Openings for frames

1. Formation: Use accurate, rigid templates to required size.

850 Wall plates

1. **Placement:** On full bed of mortar to correct horizontal level.

970 Refuse chutes and accessories

1. **General:** Build in to provide a smooth and even interior surface free from voids and restrictions.
Fill void between chute and surrounding work with concrete.

Ω End of Section

F31

Precast concrete sills/ lintels/ copings/ features

Types of component

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

122 Designed concrete precast

1. Concrete: Designed to BS 8500-2.
2. Target density (oven-dry): Normal.

125 Substitution of proprietary concrete for designated concrete

1. Concrete: Component manufacturer's 'proprietary' concrete.
2. Substitution: Submit proposals for each substitution, including:
 - 2.1. Identity of concrete: Submit labelled sample.
 - 2.2. Performance: Limiting values for w/c ratio, cement/ combination content or, alternatively
 - 2.2.1.the Exposure class to BS 8500, to which concrete conforms.
 - 2.3. Reinforcement: Type and cover.
 - 2.4. Evidence of performance: Third party certification by body
 - 2.4.1.from a UKAS accredited laboratory.

130 Concealed precast lintels

1. Standard: To BS EN 845-2.
 - 1.1. Verification of performance: Submit calculations or test certificates.

131 CON-411 Precast Concrete Plinth

1. Description: Precast concrete plinth, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Type: Precast concrete.
 - 1.3. Finish: Polished.
 - 1.3.1.Colour: Grey, to be agreed through sampling.
 - 1.4. Joints: Refer to the Design Drawings.

150 Concealed precast

1. Concrete: Designated to BS 8500-2: Minimum RC30.
 - 1.1. Aggregate size (maximum): 20 mm.

General requirements

220 Concrete generally

1. Specification: To BS 8500-2 and BS EN 206.

2. **Producer:** Accredited to BS 8500-2 requirements where product conformity certification is required.

250 Reinforcement

1. **Carbon steel reinforcement:** As appropriate to BS 4449, BS 4482 and BS 4483.
 - 1.1. **Cutting and bending:** To BS 8666.
2. **Galvanized reinforcement:** Galvanized to BS EN ISO 1461 after cutting. Chromate treated.
3. **Stainless steel reinforcement:** To BS 6744.
 - 3.1. **Designation** 1.4301.
 - 3.2. **Cutting and bending:** To BS 8666.
4. **Non structural reinforcement:** Include to resist shrinkage and handling stresses.
5. **Bimetallic corrosion and staining:** Prevent by appropriate selection and use of materials.
6. **Condition at time of placement:** Clean, free of corrosive pitting, loose materials and substances that adversely affect reinforcement, concrete, or bond between the two.
7. **Fixing:** Accurate and secure.
 - 7.1. **Method:** Wire tying, approved steel clips or tack welding if permitted.
 - 7.2. **Concrete cover:** Maintain free of all tying wire or clips.

255 Quality assurance of reinforcement

1. **Reinforcement to BS 4449, BS 4483 and BS 6744:** Obtain valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels.

260 Casting and curing

1. **Placing of concrete:** Thoroughly compact.
2. **Protection against drying out:** Methods and duration to BS EN 13369.
3. **Immature components:** Avoid movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
4. **Delivery to site:** Minimum 14 days after casting.

261 Cutting

1. **Cutting of precast concrete components:** Not permitted.

262 Records

1. **Records for each type of component:** Maintain details including:
 - 1.1. Unique identification number.
 - 1.2. Identification of the producer.
 - 1.3. Identification of the place of production.
 - 1.4. Correlation with records of mixes, including batch numbers.
 - 1.5. Date of each stage of manufacture.
 - 1.6. Dates and results of all tests, checks and inspections, including certification where relevant.
 - 1.7. Dimensions related to specified levels of accuracy.
 - 1.8. Specific location in the finished work.
 - 1.9. Weight of the unit.
 - 1.10. Damage and making good.
 - 1.11. Any other pertinent data, e.g. if unit is a production control unit.
2. **Availability of records for inspection:** On request.

Fair faced components

310 Control samples

1. Required samples: After finalization of design, one each of the components.
2. Approval of appearance: Obtain before manufacture of remaining units.
3. Identification and storage location: Clearly label and retain at factory for comparison with production units.

320 Details of samples

1. Submittals after approval of appearance and before manufacture of production units
 - 1.1. Aggregates: Confirm type, maximum size, grading and source.
2. Conformity of designed concrete: Evidence of compliance for compressive strength class and limiting values of composition.

330 Mixes for visible faced components

1. Constituent materials and mix design for each finish type: To remain constant.
2. Colour and appearance of each finish type: To remain constant.
3. Aggregates: To BS EN 12620.
 - 3.1. Origin: Single source for each finish type, having sufficient quantity for whole contract.

341 Conditions for separate facing and backing mixes

1. Difference in cement content: Not greater than 80 kg/m³.
2. Thickness of facing mix: 10 mm greater than maximum aggregate size, minimum 25 mm.
3. Location of reinforcement: Minimum 20 mm away from the interface between mixes.
4. Compaction of facing and backing mix: Carry out to create monolithic construction.

350 Quality of finishes

1. Appearance standard: As established by samples.

365 Cover on exposed aggregate faces

1. Nominal cover: Exclusive of aggregate projection.

370 Cover on visible faces

1. Spacers: Not permitted.
2. Proposed method statement: Submit.

380 Consistency of production methods

1. Production methods: To remain consistent for each matching type of finish.
2. Finish appearance: To remain within the range of variation indicated by the samples
 - 2.1. submitted.
3. Changes to production methods: If variations are proposed for components of the same finish, submit evidence that there will be no difference in appearance.

390 Inspection

1. Completed components: Give notice when ready to be inspected at factory.

Installation

420 Laying

1. Mortar for bedding and jointing: In accordance with Section Z21.
2. Bedding components: On full bed of mortar.
3. Removal of marks, stains and extraneous mortar on visible faces: Rubbing not permitted.

440 One-piece sills/ thresholds

1. Bed joints: Leave clear of mortar except at end bearings and beneath masonry mullions.
 - 1.1. On completion: Point with mortar to match adjacent work.

Ω End of Section

G10

Light steel framing systems

General requirements/ information

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

101 SFS-101 Light Steel Framing System

1. Loadbearing metal section stud wall system, forming internal partitions at the ground floor level where we have FFL-FCL spans of 8000mm.
 - 1.1. Loadbearing metal section stud walling:
 - 1.1.1. Vertical and horizontal primary sections, head and base tracks, intermediate studs, joists, runner channels, bracing, ties, angles, cleats, reinforcements, bracketry (adjustable as required) and other necessary requirements formed from corrosion resistant metalwork.
 - 1.1.2. Framing shall span between structure, fixed back to structural framing at each floor.
 - 1.1.3. Additional supports shall be provided at window openings, services penetrations and other such positions, as required.
 - 1.1.4. Where deflection head details shall be exposed and visible to the building user under normal building use, they shall comply with the visual intent and be incorporated into the system as indicated on the Design Drawings. Where they are not indicated propose options for acceptance by the Architect, whilst complying with the requirements of the Architectural Specification.
 - 1.2. Suitable damp-proof course/ membrane to all base and head channels laid against building structure and other interfaces as required.
 - 1.3. Where not provided as part of the cladding system(s), provide suitable sheathing board(s) and/or intermediate mattresses, insulation and cover plates to external column faces, slab edges and other locations as required, to provide continuous, rigid external lining suitable to receive external cladding. Sheathing boards, where required, shall be continuous past the floor structure.
 - 1.4. Where not provided as part of the cladding system(s), include insulation either independent of or fixed to the cavity facing of the sheathing board. The Contractor shall determine the type, thickness and density of the insulation to maintain thermal performance requirements.
 - 1.5. Where not provided as part of the cladding or lining system(s), include insulation as required (within the framework) and internal board lining to achieve the acoustic requirements. The Contractor shall determine the type, thickness and density of the insulation to maintain acoustic performance requirements.
 - 1.6. Where not provided as part of the cladding or lining systems, include all necessary breather membranes, vapour control layers and air barriers.
 - 1.7. Co-ordinate internal and external interfacing works with the relevant contractor to enable their installation to suitably interface with the loadbearing metal section stud wall system as required to maintain performance requirements, as indicated on the Design Drawings.
 - 1.7.1. The works shall accommodate interfacing systems in a manner acceptable to the manufacturers.

1.7.2. The Contractor shall liaise with the interfacing contractors regarding the design of the system and setting-out requirements and shall factor all components into any necessary calculations.

1.8. Fixings shall be:

1.8.1. Concealed unless accepted otherwise by the Architect.

115 Design constraints – general

1. **Members forming bracing systems or girders of lattice construction:** Unless detailed or instructed otherwise, position so that their lines of action intersect at a point.
2. **Bolts**
 - 2.1. **Diameter (minimum):** To be agreed.
 - 2.2. **Number per connection (minimum):** Two, unless otherwise indicated.
3. **Punching of bolt holes:** To be agreed.
4. **Welds:** To be agreed.

123 Drawings and calculations prepared by Contractor

1. **Information required:** Working Drawings.
2. **General arrangement drawings:** Submit before preparing calculations. Clearly identify:
 - 2.1. Individual steel 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:** Comply with latest edition of National Structural Steelwork Specification (NSSS).
 - 1.1. **Document availability:** For the duration of the work, at fabrication shop and on site.
2. **References to Engineer in NSSS:** For the purpose of this contract, interpret such references as being to the Architect.

Frame systems

150 Metal stud framing system

1. **Manufacturer:** To be proposed by the Contractor.

Cold-formed materials

170 Cold-formed galvanized steel

1. **Description:** To be proposed by the Contractor.

Fabrication

180 Notification of commencement

1. **Notice:** Give notice before fabrication is due to start.
 - 1.1. **Period of notice (minimum):** 14 days.

190 Marking

1. **Identifying and recording materials and components:** Submit details of proposed methods.
2. **Location of marks**

- 2.1. Generally: Visible for checking after erection.
- 2.2. Weathering steel: On surfaces not exposed to open view in the completed work.
3. Steel to be blast cleaned, pickled, metal sprayed or galvanized: Marked so that subsequent treatment cannot obliterate the marking.

195 Hard stamping

1. Usage: Not permitted except as indicated on drawings.

215 Hollow sections

1. Insides of sections: Debris and moisture removed before sealing ends and openings.

225 Steelwork to be galvanized

1. Cutting, drilling and shop welding: Complete before galvanizing.
2. Vent and drain holes: Provide as necessary.
 - 2.1. Locations: Submit proposals.

235 Shop inspection

1. Give notice: Before fabricating ..
 - 1.1. Period of notice (minimum): 14 days.

Welding

250 Welding procedures

1. Quality management systems: To BS EN ISO 3834-3.
2. Certification of welders:
 - 2.1. Third party certification: To BS EN ISO 9606-1.
 - 2.2. Verification of welding procedures: Submit.
 - 2.3. Welding procedure qualification records: To BS EN ISO 15614-1.

255 Site welding

1. Usage: Permitted only where indicated on drawings.
2. Working conditions: Suitable and safe. Do not weld when surfaces are wet or when ambient temperature is below 0°C.

270 Additional welds

1. Welds (including tack welds) not indicated on drawings: Not permitted without approval.

Bolt assemblies

335 Spring washers

1. Standard: To BS 4464.

370 Galvanized coating to bolt assemblies

1. Standard: To BS 7371-6.
2. Galvanizing: Applied by fastener manufacturer. Passivated and lubricated if no additional coatings are specified. Nuts tapped after galvanizing.

375 Sherardized coating to bolt assemblies

1. **Standard:** To BS 7371-8.
2. **Sherardizing:** Applied by fastener manufacturer and passivated.

380 Zinc plated finish to bolt assemblies

1. **Standard:** To BS EN ISO 4042.
 - 1.1. **Designation:** A.
2. **Zinc plating:** Applied by fastener manufacturer. Clear passivated if no additional coatings are specified. Nuts tapped after plating.

Erection

405 Outline method of erection

1. **Documentation:** To be proposed by the Contractor.

410 Pre-erection checks

1. **Scope:** At least 7 days before proposed erection start date, check the following:
 - 1.1. **Foundations and other structures to which steelwork will be attached:** Accuracy of setting out.
 - 1.2. **Holding down bolts:** Position, protruding length, slackness and condition.
2. **Inaccuracies and defects:** Report without delay.
3. **Permission to commence erection:** Obtain.

420 Setting out

1. **Permissible deviations:** In addition to the requirements of the NSSS, add permissible deviations for different types of dimension and locations, as necessary.

425 Modifications

1. **Steelwork:** Do not modify without prior acceptance.

445 Movement joints

1. **Joint type:** To be proposed by the Contractor.
2. **Appearance and fit:** Bolts centred in slotted holes unless otherwise indicated. Joints free to move.

Testing

470 Site testing of anchors to masonry

1. **Standard:** To BS 5080.

475 Products

1. **Steel:** Submit test certificates.

Protective coatings

521 Alternative manufacturers

1. **Short list of manufacturers:** To be proposed by the Contractor.

550 Post-galvanizing inspection

1. **Inspector:** Submit, on request, evidence of training and competence in visual inspection for liquid metal assisted cracking.
2. **Components for which visual inspection is not required (procedure PGI-0):** To be agreed.
3. **Components requiring additional inspection**
 - 3.1. **Procedure PGI-2A:** To be agreed.
 - 3.2. **Procedure PGI-2B:** To be agreed.
4. **Timing:** Before erection of steelwork or application of other coatings.
5. **Action in event of non-compliance**
 - 5.1. **Submit:** Full records of all post-galvanizing inspections, drawing attention to any erected components that are required to be quarantined.
 - 5.2. **Procedure PGI-3:** Carry out on all quarantined components, and submit report.
 - 5.3. **Sites of suspected defects:** Remove zinc coating by grinding back to bright metal for a distance of not less than 50 mm around each defect and from a similar area on opposite face of member and inspect.
 - 5.4. **Remedial actions:** Submit proposals.

Protective coating systems

610 Galvanizing to chemically cleaned steel

1. **Preparation:** Chemical cleaning.
2. **Galvanizing:** To BS EN ISO 1461.
 - 2.1. **Minimum mean coating thickness:** 85 micrometres.

633 Thermally sprayed zinc coating

1. **Zinc coating:** To BS EN ISO 2063-1.

Preparation for painting

755 Uncoated fasteners

1. **Treatment:** After steelwork erection and before applying site coatings, thoroughly degrease and clean. Without delay, coat to match adjacent shop painted areas.

760 Galvanized fasteners

1. **Treatment:** After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.

Painting

810 Environmental conditions

1. **General requirements prior to starting coating work**
 - 1.1. **Surfaces:** Unaffected by moisture or frost.
 - 1.2. **Steel temperature:** At least 3°C above dew point, with conditions stable or improving, and not high enough to cause blistering or wrinkling of the coating.
 - 1.3. **Relative humidity:** Below 85%.

815 Coatings

1. **Surfaces to be coated:** Clean, dust free and suitably dry. Previous coats to be adequately cured.

2. Multiple coats of same material: Use different tints to assist checking of complete coverage.
3. Penultimate coat: Colour recommended by paint manufacturer to suit top coat colour.
4. Finish required: Smooth and even, of uniform thickness and colour, free from defects.

820 Film thickness

1. Wet film thickness: During application, check thickness of each coat with a wheel or comb gauge used in accordance with BS EN ISO 2808.
2. Accumulated dry film thickness: After each coat has dried, check total accumulated film thickness.
 - 2.1. Method: Magnetic or electromagnetic meter.
 - 2.2. Number and position of measurements: As directed.
 - 2.3. Validation: Measurements to be independently witnessed.
 - 2.4. Meter calibration: Check against standard shims and recalibrate regularly against a smooth steel reference plate.
3. Average dry film thickness
 - 3.1. At least specified thickness over any square metre.
 - 3.2. No reading to be less than 75% of specified thickness.
4. Top coat dry film thickness: Sufficient to give an even, solid, opaque appearance.

Ω End of Section

G12

Isolated structural metal members

Products

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

110 ARM-501 Metal Edge Post Framing System

1. Internal metal edge steel post framing system, to support curtain walling, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. The final design and fixing types to be proposed by the specialist sub-contractor, to suit the performance requirements and to the Architect's acceptance.
 - 1.3. Structural performance: Refer to the Structural Engineer's documentation.
 - 1.4. Visual requirements:
 - 1.4.1.Box section profile, width to align with mullion thickness.
 - 1.4.2.Posts to have welded plates, all welds ground down.
 - 1.4.3.Finish/ colour: To match EWS-106 curtain walling in Section H11.
 - 1.4.4.Fixings:
 - 1.4.4.1. U-shape support bracket to secure vertical posts, to match system colour of EWS-106 curtain walling in Section J11.
 - 1.4.4.2. Stainless steel hex head bolts to connections.

Fabrication

510 Fabrication of steel members

1. Cuts and holes: Accurate and neat.
2. Welding: Metal arc method to BS EN 1011-2.
 - 2.1. Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
 - 2.2. Site welding:
3. Joints: Location and layout of fastenings as drawing

520 Samples

1. Provide the following samples:
 - 1.1. 300mm - Colour finish types.
 - 1.2. 500mm - Metal elements.
 - 1.3. Visible fixings.

Execution

610 Installation

1. Accuracy: Members positioned true to line and level using, if necessary, steel packs of sufficient area to allow full transfer of loads to bearing surfaces.
2. Fixing: Use washers under bolt heads and nuts.

- 2.1. **Tapered washers:** Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.
3. Install metalwork systems within the following maximum tolerances:
 - 3.1. Length/ width/ squareness/ alignment: $\pm 2\text{mm}$
 - 3.2. Joints: $\pm 1\text{mm}$
 - 3.3. Twist over complete length: 1°

620 Bonded anchors

1. **Holes:** Clean and free from dust at time of installing anchor.
2. **Permeable sleeves:** Use in conditions where otherwise the loss of bonding agent would be unacceptably high.
3. **Other requirements:**

630 Site testing of anchors to masonry

1. **Standard:** To BS 5080.
2. **Preliminary tests:**
3. **Proof tests:**
4. **Test results:** Report failures and seek instructions.

640 Preparation and priming

1. **Sequence of working:** Fabricate, prepare, prime.
2. **Surfaces inaccessible after assembly:** Apply full treatment and coating system including, if necessary, local application of site coatings.
3. **Galvanized/ sherardized fasteners:** After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.

650 Shop priming

1. **Description:**
2. **Preparation:** To BS EN ISO 12944-4. Remove fins, burrs, sharp edges and weld spatter and clean out crevices.
 - 2.1. **Surface finish:**
 - 2.2. **Prepared surfaces:** Keep in a dry atmosphere and apply first coating without delay.
3. **Priming**
 - 3.1. **Primer:**
 - 3.1.1. **Number of coats:**
 - 3.1.2. **Dry film thickness (minimum):**
 - 3.2. **Application:** To BS EN ISO 12944-7.
4. **Other requirements:**

Completion

910 Steel to timber joints

1. **General:** Inspect accessible bolted and coach screwed joints and tighten fasteners if necessary.
 - 1.1. **Timing:** Immediately prior to installation of finishes, on Completion, and at end of Defects Rectification or Liability Period.
 - 1.2. **Confirmation:** Give notice when inspections and adjustments have been made.

Ω End of Section

H11

Curtain walling/ Glazed Screen

Tendering

1 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

10 Information to be provided with tender

1. Submit the following curtain walling particulars
 - 1.1. **Evidence of compliance:** All curtain walling to be CE marked to BS EN 10830. Submit Declaration of Performance (DoP). CE marking and Declaration of Performance (DoP) requirements for structural sealant glazing to be submitted on the basis of a manufacturer's European Technical assessment (ETA) prepared in accordance with EOTA technical guide ETAG 002 (Parts 1, 2 and 3).
 - 1.2. Typical plan, section and elevation drawings at suitable scales.
 - 1.3. Typical detailed drawings at large scales, including to be agreed.
 - 1.4. Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including to be agreed.
 - 1.5. Certification, reports and calculations demonstrating compliance with specification of proposed curtain walling.
 - 1.6. Proposals for connections to and support from the building structure and building components.
 - 1.7. Proposals for amendments to primary supporting structure and for secondary supporting structure additional to that shown on preliminary design drawings.
 - 1.8. Schedule of builder's work, special provisions and special attendance by others.
 - 1.9. Examples of standard documentation from which project quality plan will be prepared.
 - 1.10. Preliminary fabrication and installation method statements and programme.
 - 1.11. Schedule of products and finishes with a design life expectancy less than that specified in clause 440, with proposals for frequencies and methods of replacement.
 - 1.12. Proposals for replacing damaged or failed products.
 - 1.13. Areas of non-compliance with the specification.

Types of curtain walling

109 EWS-106 Capless Stick Built Curtain Wall System

1. Capless stick built curtain walling system configured as indicated on the Design Drawings.
 - 1.1. Indicative manufacturer: Schüco UK Ltd.
 - 1.2. Size and configuration: As the Design Drawings.
 - 1.3. Performance: Refer to the Energy and Environmental Report and the Ramboll Performance Specification.
 - 1.4. 'Stick' framing:
 - 1.4.1. Square edge mullions and transoms formed from extruded aluminium profiles; thermally broken and separated, and with integral drainage slots/ channels.
 - 1.5. Infill panels:

- 1.5.1. Glazing/ infill panels to be accommodated by the framing, arranged and located as the Design Drawings. Refer to the Infill Panels below for glazing details.
- 1.5.2. The panels are to be mechanically secured to the 'stick' framing using methods to be concealed in the finished works.
- 1.5.3. Fritted manifestation finish(es) to glass infill panels where indicated on the Design Drawings as GLP-111 and the External Samples Schedule.
- 1.6. Visible gaskets: Black.
- 1.7. Corner windows:
 - 1.7.1. Glass to glass corners to have a stepped butt joint with ceramic frit to conceal jointing.
- 1.8. Flashings: Integrated aluminium flashings to the base of the system, finish to match framing.
- 1.9. Externally, junctions between infill panels co-ordinated with the 'stick framing' to be finished/ sealed with black sealants/ seals/ gaskets:
 - 1.9.1. Joint configuration to the Architect's acceptance through sampling.
- 1.10. The glazed curtain walling to be installed using a secure glazing retention system as indicated by the Secured by Design Checklist, the Security Consultant/ Insurer and in accordance with the Building Control requirements.
- 1.11. Fire and smoke stopping as required, this shall be concealed in the finished works.
- 1.12. Acoustic stopping as required, this is to be concealed in the finished works.
- 1.13. Integration of stainless steel components associated with maintenance access equipment where indicated on the Design Drawings. Locations, type and mounting of components to be co-ordinated with and advised by the Maintenance Access Equipment specialist to the acceptance of the Architect.
- 1.14. Visible frame widths and joints to match unitised system as specified below.
- 1.15. Visible metalwork:
 - 1.15.1. Finish: Polyester powder coated.
 - 1.15.2. Colour: Mid-dark grey, to be agreed through sampling.

110 EWS-109 Capless Curtain Wall System Integrated with Parallel Opening Vent

- 1. Capless stick built curtain walling system integrated with parallel opening vent configured as indicated on the Design Drawings.
 - 1.1. Indicative manufacturer: Schüco UK Ltd.
 - 1.2. Size and configuration: As the Design Drawings.
 - 1.3. Performance: Refer to the Energy and Environmental Report and the Ramboll Performance Specification.
 - 1.3.1. Fire rating: Refer Fire Strategy Report.
 - 1.3.2. Acoustic rating: Refer to Acoustic Report.
 - 1.3.3. Security rating: In accordance with the Security Review Report.
 - 1.4. 'Stick' framing:
 - 1.4.1. Mullions and transoms formed from extruded aluminium profiles; thermally broken and separated, and with integral drainage slots/ channels.
 - 1.5. Infill panels:
 - 1.5.1. Glazing/ infill panels to be accommodated by the framing, arranged and located as the Design Drawings. Refer to the Infill panels below for glazing details.
 - 1.5.2. Glazing type to be of a high quality mid ion type and to achieve a visual appearance that is as clear and colourless as possible while maintaining the glazing performance requirements as set out in the Services Engineer's documentation.
 - 1.5.3. The panels are to be mechanically secured to the 'stick' framing using methods to be concealed in the finished works.

- 1.5.4. Fritted manifestation finish(es) to glass infill panels where indicated on the Design Drawings as GLP-111 and the External Samples Schedule.
 - 1.5.4.1. Wide pattern where indicated on the Design Drawings, to be agreed through sampling.
- 1.6. Integrated opening vent panels as type FRP-111 described in Section L20:
 - 1.6.1. Integrated parallel opening vents (POVs), glazing to match the surrounding system, with functionality as shown on the Design Drawings.
 - 1.6.2. Manufacturer: To be confirmed.
 - 1.6.3. Size and configuration: Refer to the Design Drawings.
 - 1.6.4. Framing/ sub-framing consisting of extruded aluminum, to integrate within the assembly so that sight lines created by the framing for the fixed elements, when in the closed position, are maintained. The appearance of additional framing in this position is not to be accepted.
 - 1.6.5. Framing to be factory assembled into unit frames by means of mitred corners, mechanically jointed with cleats and the appropriate additional sealant.
 - 1.6.6. Refer to glazing type GLP-101 described herein.
 - 1.6.7. POV to be no greater than 100mm.
 - 1.6.8. Automatically operated anodised aluminium ironmongery and hardware from the manufacturer's/ supplier's standard range to suit the required functionality and service conditions, linked back to the Building Management System (BMS).
 - 1.6.9. POVs to be lockable.
 - 1.6.10. To include a default locking/ restrictor position, when in the open position, to prevent closing under wind load with manual override to close POV.
 - 1.6.11. System to have fully concealed power supply and secret fixings.
- 1.7. Visible gaskets: Black.
- 1.8. Externally, junctions between infill panels, co-ordinated with the 'stick' framing to be finished with cover caps:
 - 1.8.1. Nominal sizes and profiles as the Design Drawings, where not shown on the Design Drawings locations and appearance of joints between cover caps to be consistent and to the acceptance of the Architect.
- 1.9. Flashings: Integrated aluminium flashings, finish to match framing.
- 1.10. Externally, junctions between infill panels co-ordinated with the 'stick framing' to be finished/ sealed with black sealants/ seals/ gaskets:
 - 1.10.1. Joint configuration to the Architect's acceptance through sampling.
- 1.11. The glazed curtain walling to be installed using a secure glazing retention system as indicated by the Secured by Design Checklist, the Security Consultant/ Insurer and in accordance with the Building Control requirements.
- 1.12. Fire and smoke stopping as required, this shall be concealed in the finished works.
- 1.13. Acoustic stopping as required, this is to be concealed in the finished works.
- 1.14. Integration of stainless steel components associated with maintenance access equipment where indicated on the Design Drawings. Locations, type and mounting of components to be co-ordinated with and advised by the Maintenance Access Equipment specialist to the acceptance of the Architect.
- 1.15. Integrated blind:
 - 1.15.1. Integrated blind box with discreet motors, hidden wireways, suitably concealed fixed.
- 1.16. Visible frame widths and joints to match unitised system as specified below.
- 1.17. Visible metalwork:
 - 1.17.1. Finish: Polyester powder coated.
 - 1.17.2. Colour: Mid-dark grey, to be agreed through sampling.

113 DRS-311 External Metal Framed Glazed Hinged Doorset

1. Integrated framed hinged doorset with access control integrated and to match the interfacing curtain wall system.
 - 1.1. Indicative manufacturer: Jansen.
 - 1.2. Indicative reference: Janisol Hi door.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Performance: Refer to the Energy and Environmental Report.
 - 1.5. Fire rating: To match surrounding glazing system.
 - 1.6. Acoustic rating: To match surrounding glazing system.
 - 1.7. To comply with Secured by Design (SBD) and Equality Act 2010 requirements as well as any LPS 1175 requirements by the Security Consultant/ Insurer/ Building Control.
 - 1.8. Framing:
 - 1.8.1.Extruded aluminium profiles; thermally broken and separated; finished to match the interfacing curtain walling.
 - 1.8.2.Finish: Metallic, polyester powder coated (PPC).
 - 1.9. Glazing:
 - 1.9.1.Extra clear low mid ion glass infill; glass to have the same visual intent as the interfacing curtain walling system.
 - 1.9.2.Glass infill panels used with this curtain walling system to include a black/ opaque/ opaque to graduated enamelled applied finish to the perimeter of the glazing to conceal the frame behind. Exact type to be confirmed by the Architect. This to not be applied to the outer face of the glass unit.
 - 1.9.3.Applied finish(es): Where shown on the Design Drawings and the External Samples Schedule.
 - 1.9.4.Visible gaskets: Black.
 - 1.10. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.
 - 1.11. Ironmongery and hardware: Brush finished stainless steel, from the manufacturer's/ supplier's standard range to suit the required functionality and service conditions.

113A DRS-312 External Single Leaf Metal Frame Glazed Door

1. As DRS-311 but single leaf

113B DRS-313 External Glazed Sliding Metal Frame Door System

1. Six panel automatic sliding metal frame glazed door system to match EWS-106.
2. Manufacturer: Schüco UK Ltd
3. Integration: To form a fully integrated part of EWS-106 in terms of appearance, finish, performance etc. as shown on the Design Drawings.
4. Operation: Doors to open simultaneously, smoothly, quietly and close automatically.
5. Stacking: Doors to stay on the internal side creating a four door entry width.

114 DRS-401 Curved Sliding Entrance Door

1. Integrated curved automatic sliding door comprising a fully round door with two sets of curved biparting sliding doors. To be checked against latest information contained in the Agreement For Lease (AFL) Technical Pack.
 - 1.1. Manufacturer: Meesons A.I. Ltd, Cardea House, Sidings Business Park, Skipton, North Yorkshire. BD23 1TB. Tel: 01756 797727, Email: enquiries@meesons.com
 - 1.2. Reference: Meesons C190 Security Portal or acceptable equivalent.

1.3. Equipment:

- Power supply: 230V AC
- Control: Service mode key switch
- Safety features:
 - Anti-slip floor mat
 - Emergency unlocking device
 - Fail secure
 - IR safety sensors
 - Internal LED light
 - Fire alarm signal
- Portal glazing: In accordance with LPS1175 B3 (SR2)
- Portal doors: Bi-parting
- Portal structure: FB4/NS EN 1522 metal structure
- Portal canopy: FB2/NS EN 1522 Top canopy
- Emergency exit options: Emergency lever, handle or crank
- Outer finish: Brushed stainless steel

1.4. Operation:

- Emergency battery back-up: 6-8 hours
- Installation type: 70mm recessed into the floor
- Average power consumption: 35 watt
- Anti-Piggybacking device: APD ultrasonic sensors - Required for airlock configuration
- Contact mat: 2 zone pressure mat

1.5. Curved cylinder walls:

- 1.5.1. Stainless steel framing to the glass edge, minimal in appearance. Finish to match the interfacing curtain wall system.
- 1.5.2. Curved laminated glass; glass to have the same visual intent as the interfacing curtain walling system.
- 1.5.3. Replaceable skirting, finished to match the framing.

1.6. Safety glass soffit: Use glass with the same visual intent as the interfacing curtain walling system but include an opaque grey interlayer.

1.7. Curved doors:

- 1.7.1. Stainless steel framing to the glass edge, minimal in appearance. Finished to match the interfacing curtain wall system. Where a skirting is required to the cylinder walls, line through with the top edge of the bottom rail of the door leaves.
- 1.7.2. Laminated glass; glass is to have the same visual intent as the interfacing curtain walling system.

1.8. Operation:

- 1.8.1. Electromechanical, activated by discrete motion sensors. Conceal the motor within a floor box and wire ways within the works.
- 1.8.2. Smooth and quiet.
- 1.8.3. Damped action such that after operation the door is to slow gradually to a stop.

1.9. Safety features: Safety cut-off features stopping the drive mechanism, emergency stop button(s) and active/ passive rubber safety buffers.

1.10. Locking: Manual key operated concealed espagnolet locks located in the base rail of at least two of the rotating leaves, accessible and operable only from the interior of the building. Also lockable from the reception desk.

1.11. Mechanical and electrical requirements: Refer to the Services Engineer's documentation.

1.12. Lighting: Refer to the Services Engineer's documentation.

- 1.13. Door performance to comply with Secured by Design requirements.
 - 1.13.1. Revolving doors to be tested and certified to BS EN 1627 RC3. with additional locking features.
- 1.14. Matwell: Form a drainage well at the base of the door assembly with integral drainage to appropriate points of disposal. Edge the drainage well with brushed stainless steel matwell trim, filled with highly durable black coloured matting/ grating.
- 1.15. Seals/ brushes: Easily exchangeable black natural horse hair seals/ brushes, to the edges of the rotating leaves.

118 Infill Panels Generally

- 1. Infill panels (glass units, and other panels 'glazed' into the framing of the specified systems) are integral to these systems, as specified herein and as indicated on the Design Drawings.
 - 1.1. Glazing panel final selection of glass thickness, together with type and location of interlayer and coatings shall remain the Contractor's responsibility, and the following attributes shall be determined to achieve the performance requirements:
 - 1.1.1.External light reflectance.
 - 1.1.2.Internal light reflectance.
 - 1.1.3.Absorption factor.
 - 1.1.4.Shading coefficient/ G-value.
 - 1.1.5.U-Value.
 - 1.1.6.Visual distortion (Rollerwave/ edge drip etc.)

119 GLP-101 Glass Infill Panel

- 1. Hermetically sealed clear mid ion glass infill panel, as the Design Drawings.
 - 1.1. Acoustic treatment, as required, to achieve the system performance requirements set out in the Acoustic Report.
 - 1.2. Panel:
 - 1.2.1.Type and thickness to be determined to satisfy the stipulated performance criteria.
 - 1.2.2.Nominal visual attributes to be in accordance with the Energy and Environmental Report.
 - 1.3. Spacer bars shall be black.

120 GLP-111 Glass Infill Panel - Fritted

- 1. Hermetically sealed clear mid ion glass infill panel, as the Design Drawings.
 - 1.1. Indicative manufacturer: Saint Gobain.
 - 1.2. Acoustic treatment, as required, to achieve the requirements of the Architectural Specification.
 - 1.3. Panel:
 - 1.3.1.Type and thickness to be determined to satisfy the stipulated performance criteria.
 - 1.3.2.Nominal visual attributes to be in accordance with the Energy and Environmental Report.
 - 1.3.3.Wind loading: Refer to the Structural Engineer's documentation.
 - 1.3.4.Thermal performance: Refer to the Thermal Modelling Report.
 - 1.3.5.Refer to the Energy Strategy documentation for air permeability details.
 - 1.3.6.Shall comply with Approved Document Part K of the Building Regulations.
 - 1.4. Manifestation:
 - 1.4.1.Fritted manifestation finish(es) where indicated on the Design Drawings as the External Samples Schedule.

1.4.2. Vertical pattern where indicated on the Design Drawings, to be agreed through sampling.

1.5. Spacer bars shall be black.

123 GLP-121 Back Painted Glass Infill Panel

1. Hermetically sealed, back painted glazing panel with coatings as required.
 - 1.1. Acoustic treatment to achieve the requirements of the Acoustic Report.
 - 1.2. Glazing to be a tinted colour to the acceptance of the Architect.
 - 1.3. Units shall have the following nominal visual attributes in accordance with the Energy and Environmental Report.
 - 1.3.1. Colour to be mid/ dark grey to match adjacent body tint glazing.
 - 1.3.2. Wind loading: Refer to the Façade Contractor's documentation.
 - 1.3.3. Thermal performance: Refer to the Thermal Modelling Report.
 - 1.3.4. Shall comply with Approved Document Part K of the Building Regulations.
 - 1.4. Spacer bars shall be black.
 - 1.5. Clear cavity to the back of the glazing.
 - 1.6. Metalwork to be metallic polyester powder coated finish to match frame.
 - 1.7. Fixing: Secured using concealed methods that are not visible or evident in the finished works, fixed flush with frame.

125 EWS-921 Glazed External Screen

1. Back painted glazed screen fixed to slab as visual barrier to plant located on level 10.
2. Screen to be capless within a secure metal frame supporting the glass panels. Panels set out to a 1.5m module.
3. Panels set out to a 1.5m module.
4. Height to be sufficient to provide a visual barrier from level 10.
5. Frame to be polyester powder coated

150 Materials specification

1. Minimum BRE 'Green Guide to Specification' online rating: In accordance with Section A.
2. Specification of glazing materials to be in accordance with guidance in CIRIA document 'Guidance on glazing at height'.

General requirements/ preparatory work

210 Design

1. **Curtain walling and associated features:** Complete the Detailed Design. Submit before commencement of fabrication.
2. **Related works:** Co-ordinate in the Detailed Design.

215 Design proposals

1. **Submission of alternative proposals:** Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

220 Specification

1. **Compliance standards:** BS EN 13830 and 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 CWCT 'Standard for systemised building envelopes'.
 - 2.2. Publications invoked by the CWCT 'Standard for systemised building envelopes'.

230 Information to be provided during Detailed Design stage

1. Submit the following curtain walling particulars in addition to the information required in the Façade Performance Specification.
 - 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 curtain walling to the structure.
 - 1.3. Proposed fixing anchor details relevant to structural design and construction.
 - 1.4. A detailed testing programme in compliance with the main contract master programme.
 - 1.5. A detailed fabrication and installation programme in compliance with the main contract master programme.
 - 1.6. Proposals to support outstanding applications for Building Regulation consents or relaxations.

Design/ performance requirements

305 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 criteria.

332 Appearance and fit

1. **Requirement:** Design curtain walling system:
 - 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 curtain walling 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.
 - 2.2. **Design tolerances:** To suit visual intent.
3. **Curtain wall envelope zone tolerances**
 - 3.1. **Width:** To be agreed.
 - 3.1.1. **Critical reference location:** To be agreed.
4. **Maximum permitted component and installation tolerances:** To be agreed.
5. Allow for any reveal linings, closers, seals, gasket strips necessary to avoid the visibility of the internal constructions of interfacing works. Visibility of internal constructions through glass shall be unacceptable. This requirement shall apply to all finished conditions, including when windows and/or doors are open.

6. Allow for framing visible to the inside face to be a different colour to framing visible from the outside face. Colours to be confirmed by the CA etc from the special range of RAL colours including RAL 9006 and 9007 metallics.

420 Fire resistance of curtain walling

1. Refer to the Fire Strategy Report.

426 Reaction to fire of curtain walling

1. Refer to the Fire Strategy Report.

430 Fire stopping

1. Refer to the Fire Strategy Report.

435 Opening lights (Windows)

1. Performance criteria: To CWCT 'Standard for systemised building envelopes', part 3
2. Security
 - 2.1. Applicable opening lights: Refer to Security Report.
 - 2.2. Security rating: Refer to Security Report.
3. Opening lights restrictive catches to CWCT 'Standard for systemised building envelopes' clause 4.2.5: To all opening lights
4. Ventilation requirement: Refer to MEP Specification.
5. Windows to be cleaned from inside of the building: Refer to Facade Access Maintenance Report.
6. Fasteners: Concealed multipoint, operated by an internal handle.

436 Doors and other access facilities

1. Strength and durability: To CWCT 'Standard for systemised building envelopes' clause 4.3.3.
2. Security
 - 2.1. Security rating: To be confirmed.

437 Louvres

1. Performance classification to BS EN 13030.

445 Lightning protection system

1. Curtain wall components used as part of lightning protection system: To be proposed by the Contractor.

450 Safety

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

Breeam performance requirements

475 Daylight performance

1. Daylight calculations: In accordance with BS 8206-2, CIBSE 'Lighting guide LG10' and BRE 'Site layout guide'.
2. BREEAM requirements: Refer to the Employer's sustainability requirements.

480 View out

1. Glazed areas/ opening sizes and position: Designed to meet BREEAM 'View out' criteria for relevant building type.
2. Submit design plan and elevation drawings showing the following
 - 2.1. All BREEAM defined 'relevant areas' dependant on building type and room depths.
 - 2.2. Actual or notional workstation/ desk layouts.
 - 2.3. Glazed areas/ open areas.
3. Submit site plan showing: Building location and proximity to external obstructions.

485 Potential for natural ventilation

1. Submit design plan and elevation drawings, and calculations confirming the following: Types of glazed areas/ ventilators and total openable areas

Testing - Not Used

Products - Not Used

Finishes - Not Used

Fabrication and installation - Not Used

Ω End of Section

H42

Precast concrete panel cladding/ features

Tendering

1 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

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. Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
 - 1.3. Proposals for connections to and support from the support structure/ background.
 - 1.4. Proposals for additional support structure/ background to that shown on preliminary design drawings.
 - 1.5. Schedule of builders' work, special provisions and special attendance by others.
 - 1.6. Examples of standard documentation from which project quality plan will be prepared.
 - 1.7. Preliminary fabrication and installation method statements and programme.
 - 1.8. Proposals for replacing damaged or failed products.
 - 1.9. Areas of non-compliance with specification.

Types of cladding/ features

110 EWS-411 Horizontal Precast Concrete Unitized Cladding System - Inverted Profile

1. Description: Horizontal precast concrete cladding articulated with and inverted envelope profile, ornamental pattern and integrated BMS controlled vent panel, as the Design Drawings.
 - 1.1. **Manufacturer:** Techrete, or acceptable equivalent.
 - 1.2. **Size and configuration:** Refer to the Design Drawings.
 - 1.3. **Specific performance:**
 - 1.3.1. **Fire rating:** Refer to the Fire Strategy Report.
 - 1.3.2. **Acoustic rating:** Refer to the Acoustic Report.
 - 1.4. **Support framing:** Corrosion resistant support components, mechanically secured to the loadbearing elements of the primary structure and concealed in the finished works.
 - 1.5. **Intermediate layers/ membranes:** Where required, to suit the service conditions.
 - 1.6. **Panels:**
 - 1.6.1. **External facing:**
 - 1.6.1.1. **Type and material:** Non-loadbearing precast concrete leaf.
 - 1.6.1.2. **Thickness:** As per structural design of the precast panel by the Façade Contractor.
 - 1.6.1.3. **Finish:**
 - 1.6.1.3.1. **Horizontal components:** Acid etched.
 - 1.6.1.3.2. **Vertical components:** Polished.
 - 1.6.1.4. **Colour:** Green, to match the sample agreed by the Architect.

- 1.6.2. Core insulation: Suitable core insulation to suit composite panel construction, fully bonded to inner and outer leaves.
- 1.6.3. Internal facing:
 - 1.6.3.1. **Type and material:** Plasterboard OR Panel lining system with suitable support framework as recommended by the manufacturer to meet the system performance requirements.
 - 1.6.3.2. **Thickness:** As per structural design of the precast panel by the façade contractor.
 - 1.6.3.3. **Finish:** To be confirmed.
- 1.6.4. **Glazing:** Glazing type to be of a high quality mid iron type and to achieve a visual appearance that is as clear and colourless as possible while maintaining the glazing performance requirements as set out in the Services Engineer's documentation.
- 1.6.5. **Vent panel:**
 - 1.6.5.1. Capless opening solid vent panel with decorative profile as type EWS-121 described in Section L20.
- 1.6.6. Overall thickness: To achieve the targeted system performance requirements.
- 1.6.7. Changes in direction: To be achieved using panels that are factory formed to suit the configurations and/ have symmetrical mitred joints while maintaining the returned edges.
- 1.6.8. Corner angle covers or lapped joints are not acceptable to the Architect.
- 1.6.9. Site cutting of panels not to be permitted.
- 1.6.10. **Fixing:** Concealed and mechanically secured to framing in the finished works.
- 1.7. Joints/ junctions between panels:
 - 1.7.1. **Type:** Watertight joints to be consistent in size, as the Design Drawings.
 - 1.7.2. **Sealant:** Flexible sealant, to suit the service conditions.
 - 1.7.3. **Rear of joints:** To be filled using tight fitting and fully bonded factory profiled insulation, suitably taped at joints and to incorporate other accessories, as required, to maintain the performance of the system.
 - 1.7.4. **Mastic joints** to be colour match to surrounding system.
- 1.8. Other requirements (surface appearance):
 - 1.8.1. **Aggregate:** No uneven distribution of aggregate across any visible faces of the concrete.
 - 1.8.2. **Defects:** Surfaces to be free of cracks, air voids/ blowholes, honeycombing, segregation and other defects.
 - 1.8.3. **Release agent:** Careful selection of release agent to ensure that the concrete surface does not become stained or discoloured.
- 1.9. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

111 EWS-412 Horizontal Precast Concrete Cladding - Angled Crown

- 1. Description: Horizontal precast concrete cladding forming an angled crown at the top, as the the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Specific performance:
 - 1.2.1. Fire rating: Refer to the Fire Strategy Report.
 - 1.2.2. Acoustic rating: Refer to the Acoustic Report.
 - 1.3. Support framing: Corrosion resistant support components, mechanically secured to the loadbearing elements of the primary structure and concealed in the finished works.
 - 1.4. Intermediate layers/ membranes: Where required, to suit the service conditions.

- 1.5. Panels:
 - 1.5.1.External facing:
 - 1.5.1.1. Type and material: Non-loadbearing precast concrete leaf.
 - 1.5.1.2. Thickness: To be confirmed.
 - 1.5.1.3. Finish: Polished.
 - 1.5.1.4. Colour: Green, to match agreed sample.
 - 1.5.2.Core insulation where applicable: Suitable core insulation to suit composite panel construction, fully bonded to inner and outer leaves.
 - 1.5.3.Overall thickness: To achieve the targeted system performance requirements.
 - 1.5.4.Changes in direction: To be achieved using panels that are factory formed to suit the configurations/ have symmetrical mitred joints while maintaining the returned edges.
 - 1.5.5.Corner angle covers or lapped joints not acceptable to the Architect.
 - 1.5.6.Site cutting of panels not to be permitted.
 - 1.5.7.Fixing: Concealed and mechanically secured to framing in the finished works.
- 1.6. Joints/ junctions between panels:
 - 1.6.1.Type: Watertight joints to be consistent in size, as the Design Drawings.
 - 1.6.2.Sealant: Flexible sealant, to suit the service conditions.
 - 1.6.3.Rear of joints: To be filled using tight fitting and fully bonded factory profiled insulation, suitably taped at joints and to incorporate other accessories, as required, to maintain the performance of the system.
 - 1.6.4.Mastic joints to be colour matched to concrete.
- 1.7. Other requirements (surface appearance):
 - 1.7.1.Aggregate: No uneven distribution of aggregate across any visible faces of the concrete.
 - 1.7.2.Defects: Surfaces to be free of cracks, air voids/ blowholes, honeycombing, segregation and other defects.
 - 1.7.3.Release agent: Careful selection of release agent to ensure that the concrete surface does not become stained or discoloured.
 - 1.7.4.Final surface appearance: After the concrete has been properly cured, the face to be rubbed down, where necessary, to produce a smooth and even surface.
- 1.8. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

113 EWS-413 Horizontal Precast Concrete Panel - Decorative Perforations

- 1. Description: Horizontal precast concrete panel with decorative perforations, as the the Design Drawings.
 - 1.1. Location: Infront of winter garden curtain walling system, refer to the Design Drawings.
 - 1.2. Size and configuration: Refer to the Design Drawings.
 - 1.3. Specific performance:
 - 1.3.1.Fire rating: Refer to the Fire Strategy Report.
 - 1.3.2.Acoustic rating: Refer to the Acoustic Report.
 - 1.4. Support framing: Corrosion resistant support components, mechanically secured to the loadbearing elements of the primary structure and concealed in the finished works.
- 1.5. Panels:
 - 1.5.1.External facing:
 - 1.5.1.1. Type and material: Non-loadbearing precast concrete leaf.
 - 1.5.1.2. Thickness: To be confirmed.

- 1.5.1.3. Finish: Acid etched.
- 1.5.1.4. **Pattern:** Perforated, as the Design Drawings, to be agreed through sampling.
- 1.5.1.5. Colour: Green, to match sample agreed by the Architect.
- 1.5.2. Overall thickness: To achieve the targeted system performance requirements.
- 1.5.3. Changes in direction: To be achieved using panels that are factory formed to suit the configurations and to have symmetrical mitred joints while maintaining the returned edges.
- 1.5.4. Corner angle covers or lapped joints not acceptable to the Architect. Site cutting of panels not to be permitted.
- 1.5.5. Fixing: Concealed and mechanically secured to framing in the finished works.
- 1.6. Joints/ junctions between panels:
 - 1.6.1. Type: Watertight joints to be consistent in size, as the Design Drawings.
 - 1.6.2. Sealant: Flexible sealant, to suit the service conditions.
- 1.7. Other requirements (surface appearance):
 - 1.7.1. Aggregate: No uneven distribution of aggregate across any visible faces of the concrete.
 - 1.7.2. Defects: Surfaces to be free of cracks, air voids/ blowholes, honeycombing, segregation and other defects.
 - 1.7.3. Release agent: Careful selection of release agent to ensure that the concrete surface does not become stained or discoloured.
 - 1.7.4. Final surface appearance: After the concrete has been properly cured, the face to be rubbed down, where necessary, to produce a smooth and even surface.
- 1.8. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

115 EWS-415 Vertical Precast Concrete Cladding

- 1. Vertical precast concrete cladding, as the the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Specific performance:
 - 1.2.1. Fire rating: Refer to the Fire Strategy Report.
 - 1.2.2. Acoustic rating: Refer to the Acoustic Report.
 - 1.3. Support framing: Corrosion resistant support components, mechanically secured to the loadbearing elements of the primary structure and concealed in the finished works.
 - 1.4. Intermediate layers/ membranes: Where required, to suit the service conditions.
 - 1.5. Panels:
 - 1.5.1. External facing:
 - 1.5.1.1. Type and material: Non-loadbearing precast concrete leaf.
 - 1.5.1.2. Thickness: To be confirmed.
 - 1.5.1.3. Finish: Polished.
 - 1.5.1.4. Colour: Green, to match sample agreed by the Architect.
 - 1.5.2. Core insulation: Suitable core insulation to suit composite panel construction, fully bonded to inner and outer leaves.
 - 1.5.3. Overall thickness: To achieve the targeted system performance requirements.
 - 1.5.4. Changes in direction: To be achieved using panels that are factory formed to suit the configurations/ have symmetrical mitred joints while maintaining the returned edges.
 - 1.5.5. Corner angle covers or lapped joints not acceptable to the Architect. Site cutting of panels not to be permitted.
 - 1.5.6. Fixing: Concealed and mechanically secured to framing in the finished works.

- 1.6. Joints/ junctions between panels:
 - 1.6.1.Type: Watertight joints to be consistent in size, as the Design Drawings.
 - 1.6.2.Sealant: Flexible sealant, to suit the service conditions.
 - 1.6.3.Rear of joints: To be filled using tight fitting and fully bonded factory profiled insulation, suitably taped at joints and to incorporate other accessories, as required, to maintain the performance of the system.
- 1.7. Other requirements (surface appearance):
 - 1.7.1.Aggregate: No uneven distribution of aggregate across any visible faces of the concrete.
 - 1.7.2.Defects: Surfaces to be free of cracks, air voids/ blowholes, honeycombing, segregation and other defects.
 - 1.7.3.Release agent: Careful selection of release agent to ensure that the concrete surface does not become stained or discoloured.
 - 1.7.4.Final surface appearance: After the concrete has been properly cured, the face to be rubbed down, where necessary, to produce a smooth and even surface.
- 1.8. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

General requirements/ preparatory work

205 Contractor's design

1. Design responsibility:
 - 1.1. Design standard: in accordance with BS 8297.
2. Declaration of performance (DoP): CE marked to BS EN 14992.
3. Structural and fire requirements
 - 3.1. Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
4. Additional requirements:
 - 4.1. All work shall be in compliance with the current version of The Government Design Guide Standards.

212 Design proposals

1. Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

216 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 cladding to the support structure.
 - 1.3. Proposed fixing details and systems relevant to structural design and construction with methods of adjustment and tolerances.
 - 1.4. Sample precast unit, including applied facing and finished panel joint.
 - 1.5. Labelled samples, that represent the range of variation in panel finish, for approval of appearance.
 - 1.6. A schedule of fabrication tolerances/ size tolerances.
 - 1.7. A detailed testing, fabrication and installation programme in compliance with main contract master programme.
 - 1.8. Proposals to support outstanding applications for Building Regulation consents or relaxations.

217 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. A sample and testing plan.
 - 2.5. Stages at which check lists will be used and samples of those lists.
 - 2.6. List of work procedures on the correct use of materials or components, both off site and on site.
 - 2.7. List of product information with latest revisions.
 - 2.8. Subcontractors involved in the work.
 - 2.9. Subcontractor's quality plans.
 - 2.10. Storage handling, transport and protection procedures.
 - 2.11. Procedure for registering and reporting non compliances.
 - 2.12. Maintenance procedures and calibration records.
 - 2.13. Certification that completed work complies with specification.
 - 2.14. Check list register to ensure all items have been inspected and non compliances discharged.

218 Information to be provided before commencement of manufacture of cladding panels

1. **Submit the following cladding particulars**
 - 1.1. Detailed drawings to fully describe fabrication and installation.
 - 1.2. Labelled samples that represent the range of variation in panel finish, to confirm appearance and for final approval.
 - 1.3. Detailed calculations to prove compliance with all design/ performance requirements.
 - 1.4. Project-specific fabrication, handling and installation method statements.
 - 1.5. Recommendations for spare parts for future repairs or replacements.
 - 1.6. Recommendations for safe dismantling and recycling or disposal of all products.

222 Fabrication samples

1. **General:** During detailed design work, submit samples of all items specified herein.
 - 1.1. Size: To be confirmed.
 - 1.2. Corners: To be confirmed.
 - 1.3. Obtain approval of appearance before proceeding.

224 Mock-up

1. **General:** Construct during detailed design work. Satisfy purpose and obtain approval of appearance before proceeding. Retain undisturbed until completion of cladding installation.
2. **Mock-up drawings reference:** To be confirmed.

Design/ performance requirements

234 Weather resistance

1. **Requirement**

- 1.1. Cavity environment: Cavity to be free draining and ventilated.
- 1.2. Ingress of moisture: No water to reach inner leaf face.
2. Testing
 - 2.1. Test specimens: To be confirmed.
 - 2.2. Required tests in accordance with BS 8297: To be confirmed.
 - 2.3. Design test pressures: In accordance with BS 8297, clause 12.2.

236 Thermal properties

1. Thermal transmittance (U-value) of precast panel including joint: In accordance with Engineer's documentation.

240 Durability

1. Concrete: Proprietary as defined in BS 8500-1.
 - 1.1. Conformity: To BS 8500-1, Annex A.4 for the specified exposure class and to BS 8500-2.

244 Initial surface absorption

1. Testing: To BS 1881-208.

250 Fire performance

1. In accordance with the Fire Strategy Report.

270 Dimensional coordination

1. Detailing cladding: Comply with the requirements for accuracy in manufacture and erection, and accommodate deviations in support structure.
2. Fixings/ fasteners: Select to give sufficient three dimensional adjustment.
3. Proposals to achieve required tolerances: Submit.

284 Insulated panels – avoidance of interstitial condensation

1. Requirement: Determine interstitial condensation risk using method described in BS 5250 Annex D and if necessary provide a vapour control layer to prevent damage and nuisance from interstitial condensation.

286 Acoustic properties

1. In accordance with the Acoustic Report.

Making concrete

340 Records for each type of mix

1. Requirements: Correlate and maintain records for:
 - 1.1. Mix designs: Composition including admixtures.
 - 1.2. Batching: Relate batch identification numbers to precast unit identification numbers and test samples.
 - 1.3. Slump and other tests at casting yard.
 - 1.4. Testing authority test reports including cube identification numbers.

350 Concrete compressive strength testing authority

1. Testing: Carried out by the precast concrete panel manufacturer.

351 Concrete compressive strength testing authority

1. **Testing:** Carried out by a United Kingdom Accreditation Service (UKAS) approved independent laboratory.

Manufacture

420 Manufacturing accuracy

1. **Standard:** In accordance with BS 8297, Table 6 and to allow compliance with clause 630.

430 Fixings

1. **Materials generally:** Nonferrous metal.
 - 1.1. **Stainless steel:** Austenitic in accordance with BS 8297, clause 4.3.3.
 - 1.2. **Allowable alternative:**
2. **Lifting devices:** Mild steel permitted when mortar cover will provide the same protection required for reinforcement in the panel.
3. **Bimetallic corrosion and staining:** Prevent by appropriate selection and use of materials.

435 Lifting points

1. **Device types:** In accordance with BS 8297, clause 10.2.

450 Placing reinforcement

1. **Method statement:** Submit.
2. **Cover spacers:** Not permitted on visible surfaces.

460 Consistency of production

1. **Production methods:** To remain consistent for each matching type of finish.
 - 1.1. **Finish appearance:** To remain within the range of variation indicated by samples submitted.
2. **Changes to production methods:** If variations are proposed for panels of same finish, submit evidence that there will be no difference in appearance. Obtain approval.

480 Casting and curing

1. **Placement of concrete:** Thoroughly compact.
2. **Immature panels:** Avoid movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
3. **Protection from weather:** Do not expose panels to direct sunlight and drying winds until at least 5 days after casting.
4. **Delivery to site:** Not until at least 14 days after casting.

485 Architectural Precast Concrete

1. Refer to the Ramboll Performance Specification for the architectural precast concrete performance requirements of admixtures, reinforcements, aggregates, cement, chloride, pigments, repair methods etc.

490 Quality of finishes

1. **Appearance standard:** As established by samples/ control panels.

500 Production control panels

1. **Required panels:** Types listed below: To be confirmed.

2. First production panel: Submit for inspection.
3. Approved panels: Retain for use as appearance control standard.
 - 3.1. Identification and storage: Clearly label and retain safely at factory.
 - 3.2. Delivery to site: Last of type.

510 Inspection

1. Give notice: When completed units are ready to be inspected at factory.

520 Records

1. Records for each type of unit: Maintain details including:
 - 1.1. Unique identification number.
 - 1.2. Correlation with records of mixes, including batch numbers.
 - 1.3. Date of each stage of manufacture.
 - 1.4. Dates and results of all tests, checks and inspections.
 - 1.5. Dimensions related to specified levels of accuracy.
 - 1.6. Specific location in finished work.
 - 1.7. Damage and making good.
 - 1.8. Any other pertinent data, e.g. if unit is a production control unit.
2. Availability of records for inspection: On request.

Erection/ fixing/ jointing

610 Installation instructions provided by manufacturer

1. Information: Provide clear and comprehensive instructions and ensure that they are understood by the site operatives.

630 Accuracy of erection

1. Supporting structure: Before commencing installation of precast panels, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - 1.1. Give notice: If the structure will not allow the required accuracy or security of erection.
2. Joint centres: Set out to ensure consistent joint widths.
3. Joint width: Within the length of any joint, including those interrupted by transverse joints, to vary by not more than to be agreed.
 - 3.1. Variations: Evenly distributed with no sudden changes.
 - 3.2. General: Within recommendations of joint sealant or baffle manufacturer.
4. In-line edges in elevation: Deviation across transverse joint to vary by not more than to be agreed.
5. Flat faces of adjacent panels: Offset in plan or section across any joint to vary by not more than to be agreed.
6. Finished appearance: Notwithstanding tolerances stated above and in clause 420, panels must be square, regular, true to line, level and plane with a satisfactory fit at junctions.

640 Final fixing

1. Approval of appearance: Obtain for each elevation prior to tightening fasteners, filling bed joints and dowel sockets or sealing joints.
2. Threaded fasteners: Tighten to torque figures recommended by manufacturer.
 - 2.1. Restraint fixings permitting lateral movement: Do not overtighten.
3. Filling for dowel bars and recessed lifting devices: Well tamped fairly dry 1:4 cement:sand or suitable epoxy or polyester mix.

661 Sealant joints

1. Sealant:
 - 1.1. Application: In accordance with Section Z22.

670 Dual Silicone Seal Joints

1. Rear seals: Airtight and watertight.
2. Baffles and flashings: Securely installed.

Ω End of Section

H72

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

Types of aluminium work

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.
4. Refer to the Ramboll Performance Specification for the aluminium sheet/ extrusion performance requirements including grades, thickness, finishes, durability etc.

111 ARM-101 Aluminium Capping

1. Aluminium capping, as the Design Drawings.
 - 1.1. Sizes and configurations: Refer to the Design Drawings.
 - 1.2. Fully welded and/or sealed pressed aluminium sheets, sufficiently thick to provide a visually flat surface and to eliminate excessive distortion and permanent deformation.
 - 1.3. Prefabricated corner pieces for changes in direction, as the Design Drawings. Cut corners at changes in direction to not be accepted.
 - 1.4. Finish: Polyester powder coated.
 - 1.5. Colour: To be selected from the standard range of RAL colours.
 - 1.6. Non-combustible insulation, including anti-drumming insulation to the underside, as required to suit the performance requirements.
 - 1.7. Membranes and vapour control within the system build-up and at interfaces with other systems, to achieve the performance requirements of the Architectural Specification.
 - 1.8. Joints:
 - 1.8.1. To occur as the Design Drawings.
 - 1.8.2. To be assembled over specially designed support bracketry.
 - 1.8.3. Corners: To be factory mitred or factory formed as continuous pieces, where required.
 - 1.9. Accessories: To suit the service conditions.

112 ARM-111 Aluminium Flashing

1. Pressed aluminium flashings, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Fully welded and/or sealed pressed aluminium sheets, sufficiently thick to provide a visually flat surface and to eliminate excessive distortion and permanent deformation, incorporating adequate falls and drips.
 - 1.3. Prefabricated corner pieces for changes in direction, as the Design Drawings. Cut corners at changes in direction to not be accepted.
 - 1.4. Non-combustible insulation, as required, including anti-drumming insulation to the underside, as required, to suit the performance requirements.
 - 1.5. Finish: Polyester powder coated.
 - 1.6. Colour: To be selected from the standard range of RAL colours.
 - 1.7. Joints: As the Design Drawings.

- 1.8. Accessories: Suitable sealant to suit the service conditions.

113 ARM-112 Aluminium Cill to Match Precast Concrete

1. Description: Pressed aluminium cill, colour to match precast concrete, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Full width pressed aluminium sheets folded at sides, laid to fall.
 - 1.3. Fully welded and/ or sealed of sufficient thickness to provide a visually flat surface and eliminate permanent deformation and excessive distortion, incorporating adequate falls and drips.
 - 1.4. Prefabricated corner pieces for changes in direction, as the Design Drawings. Cut corners at changes in direction are not acceptable.
 - 1.5. Non-combustible insulation, including anti-drumming insulation to the underside, as required to suit the service conditions and meet the system performance requirements.
 - 1.6. Finish: Polyester powder coated.
 - 1.7. Colour: Green, to match precast concrete, be agreed through sampling
 - 1.8. Joints: As the Design Drawings with suitable sealant to suit the service conditions.

114 ARM-121 Metal Panel Soffit Closer

1. Description: Metal panel soffit closer, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Finish: Polyester powder coated.
 - 1.3. Colour: To be agreed through sampling
 - 1.4. Fixing: Suitably conceal fixed to suit the service conditions.

115 ESS-111 Aluminium Soffit Panel

1. Description: Aluminium soffit panel system, as the Design Drawings.
2. Size and configuration: Refer to the Design Drawings.
3. Specific performance:
 - 3.1. Fire rating: Refer to the Fire Strategy Report.
 - 3.2. Acoustic rating: Refer to the Acoustic Report.
4. Support framing: Corrosion resistant support components, mechanically secured to the loadbearing elements of the backing wall/ primary structure and concealed in the finished works.
5. Intermediate layers/ membranes: Where required, to suit the service conditions.
6. Birds and/ or insect mesh: Black coloured aluminium.
7. Insulation: Anti-drumming insulation to rear of panel, as required.
8. Panel:
 - 8.1. Type and material: Aluminium panel.
 - 8.2. Thickness: To be sufficiently thick to provide a visually flat surface and to eliminate excessive distortion and permanent deformation.
 - 8.3. Finish: Anodised.
 - 8.4. Colour: To be selected from the manufacturer's standard range.
 - 8.5. Changes in direction: To be achieved using sheets that are factory formed to suit the configurations/ have symmetrical mitred joints while maintaining the returned edges.
 - 8.6. Corner angle covers or lapped joints not acceptable to the Architect. Site cutting of panels not to be permitted.

- 8.7. Fixing: Concealed and mechanically secured to framing using methods to be concealed in the finished works.
9. Joints/ junctions between panels: Closed.
10. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

130 EWS-311 Decorative Profiled Metal Panel System

1. Description: Decorative profiled metal faced panel cladding system, as the Design Drawings.
2. Size and configuration: Refer to the Design Drawings.
3. Specific performance
 - 3.1. Fire rating: Refer to the Fire Strategy Report.
 - 3.2. Acoustic rating: Refer to the Acoustic Report.
4. Support framing: Corrosion resistant support components, mechanically secured to the loadbearing elements of the primary structure and suitably concealed in the finished works.
5. Intermediate layers/ membranes: Where required, to suit the service conditions.
6. Panels
 - 6.1. External facing
 - 6.1.1. Material: Press folded aluminium sheet.
 - 6.1.2. Profile: Decorative laser etched profile, refer to the Design Drawings.
 - 6.1.3. Thickness: To be confirmed.
 - 6.1.4. Finish: Anodised.
 - 6.1.4.1. Colour: Mid-dark silver finish.
 - 6.2. Breather membrane to meet system performance requirements.
 - 6.3. Framing:
 - 6.3.1. Bracket fixed to curtainwall system and secured to mullion to be developed by Façade Contractor.
 - 6.4. Core insulation: Suitable non- combustible mineral wool core insulation to suit composite panel construction, fully bonded to inner and outer sheets.
 - 6.5. Vapour control layer to meet system performance requirements.
 - 6.6. Internal facing
 - 6.6.1. Material: Press folded aluminium sheet.
 - 6.6.2. Profile: To be confirmed.
 - 6.6.3. Thickness: To be confirmed.
 - 6.6.4. Finish: Anodised
 - 6.6.4.1. Colour: Mid-dark silver finish.
 - 6.7. Overall thickness: To achieve the targeted performance requirements.
 - 6.8. Changes in direction: To be achieved using sheets that are factory formed to suit the configurations/ have symmetrical mitred joints while maintaining the returned edges.
 - 6.9. Corner angle covers or lapped joints not acceptable to the Architect. Site cutting of panels not to be permitted.
 - 6.10. Fixing: Concealed and mechanically secured to framing using methods to be concealed in the finished works.
7. Joints and junctions between panels: Lapped interlocking watertight joints consistent in size, as the Design Drawings.
8. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

135 EWS-321 Insulated Metal Panel Cladding System

1. Description: Insulated metal faced panel cladding system, as the Design Drawings.
2. Size and configuration: Refer to the Design Drawings.
3. Specific performance
 - 3.1. Fire rating: Refer to the Fire Strategy Report.
 - 3.2. Acoustic rating: Refer to the Acoustic Report.
4. Support framing: Corrosion resistant support components, mechanically secured to the loadbearing elements of the primary structure and suitably concealed in the finished works.
5. Intermediate layers/ membranes: Where required, to suit the service conditions.
6. Panels
 - 6.1. External facing
 - 6.1.1. Material: Press folded aluminium sheet.
 - 6.1.2. Thickness: To be confirmed.
 - 6.1.3. Finish: Polyester powder coated.
 - 6.1.3.1. Colour: To be agreed through sampling.
 - 6.2. Core insulation: Suitable non- combustible mineral wool core insulation to suit composite panel construction, fully bonded to inner and outer sheets.
 - 6.3. Internal facing
 - 6.3.1. Material: Press folded aluminium sheet.
 - 6.3.2. Thickness: To be confirmed.
 - 6.3.3. Protective coating: To be confirmed.
 - 6.3.4. Finish: Polyester powder coated.
 - 6.3.4.1. Colour: To be agreed through sampling.
 - 6.4. Overall thickness: To achieve the targeted performance requirements.
 - 6.5. Changes in direction: To be achieved using sheets that are factory formed to suit the configurations/ have symmetrical mitred joints while maintaining the returned edges.
 - 6.6. Corner angle covers or lapped joints not acceptable to the Architect. Site cutting of panels not to be permitted.
 - 6.7. Fixing: Concealed and mechanically secured to framing using methods to be concealed in the finished works.
7. Joints and junctions between panels: Lapped interlocking watertight joints consistent in size, as the Design Drawings.
8. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.

151 CAN-311 Metal Perforated Panel Solar Shading

1. Description: Decorative perforated metal panel for solar shading on suitable support framing, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Support framing:
 - 1.2.1. Refer to the Structural Engineer's documentation.
 - 1.2.2. Type and material: Metal support framing.
 - 1.2.3. Protective coating: Hot dip galvanised - To be confirmed.
 - 1.2.4. Finish: Anodised.
 - 1.2.5. Colour: Mid-dark silver, to be agreed through sampling.

- 1.3. Panels:
 - 1.3.1.Type and material: Perforated metal sheet.
 - 1.3.2.Thickness: To achieve the targeted performance requirements.
 - 1.3.3.Protective coating: Hot dip galvanised - To be confirmed.
 - 1.3.4.Finish: Anodised.
 - 1.3.5.Colour: Mid-dark silver, to be agreed through sampling.
- 1.4. Joints/ junctions between sheets: Interlocking, as the Design Drawings.
- 1.5. System to include all secondary support, signage, fixings, sealing strips, sealants, matching flashings, weathering, cappings, profile fillers and accessories necessary to complete the installation.

155 CAN-320 Metal Canopy Soffit

- 1. Description: Aluminium metal panel rain screen soffit to canopy suspended from suitable metal hangers, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Support framing:
 - 1.2.1.As recommended by the manufacturer.
 - 1.2.2.Type and material: Metal support framing with concealed fixings.
 - 1.2.3.Finish: Galvanized.
 - 1.3. Panels:
 - 1.3.1.Type and material: Flat interlocking panels/ strips suitable reinforced to avoid deflection in wind etc.
 - 1.3.2.Thickness: 3mm with suitable backing to avoid noise and deflection.
 - 1.3.3.Finish: Anodised.
 - 1.3.4.Colour: To be agreed through sampling.
 - 1.4. Joints/ junctions between sheets: Interlocking, as the Design Drawings.
 - 1.5. System to include all secondary support, signage, fixings, sealing strips, sealants, matching flashings, weathering, cappings, profile fillers and accessories necessary to complete the installation.
 - 1.6. Fixings: Concealed/ secretly fixed.

201 Fire performance of external wall

- 1. In accordance with the Fire Strategy Report.

203 Fire performance of inner lining/ cavities

- 1. Reaction to fire: In accordance with the Fire Strategy Report.

General requirements/ preparatory work

510 Workmanship generally

- 1. **Standard:** Generally to BS EN 14783, BS EN 507, CP 143-15 and latest edition of the FTMRC publication '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 aluminium coverings/ flashings. Submit records of experience on request.
- 4. **Measuring, marking, cutting and forming:** 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.
7. **Surface protection:** Fully coat surfaces to be embedded in concrete or mortar with high build bitumen-based paint, after folding.
8. **Sharp metal edges:** Fold under or remove as work proceeds.
9. **Joints:** Do not use sealants to attain waterproofing.
10. **Finished aluminium work:** Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
 - 10.1. **Protection:** Prevent staining, discolouration and damage by subsequent works.

515 Welding - To be confirmed

1. **In situ welding:** Not permitted.

516 Welding - To be confirmed

1. **In situ welding:** Permitted subject to completion of a 'hot work permit' form and compliance with its requirements.

535 Integrity of aluminium

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:** To be confirmed.
3. **Structural requirements**
 - 3.1. **Generally:** As Section B50.
4. **Design:** Complete in accordance with the designated code of practice to satisfy specified performance criteria.

550 Lightning protection

1. **Electrical continuity:** Provide between aluminium strips/ sheets via wetting of joints.

555 Layout

1. **Setting out of longitudinal and cross joints:** Submit proposals.

560 Control samples

1. **General:** Complete areas of finished work and obtain approval of appearance before proceeding.
2. **Size:** To be confirmed.
3. **Location:** To be confirmed.

565 Mock-up

1. **General:** At an agreed stage construct a mock-up as follows: To be confirmed.
2. **Inspection:** Arrange to be carried out. Obtain approval of appearance before proceeding. Retain mock-up in undisturbed condition until completion of aluminium installation.

610 Suitability of substrates

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

Fixing

710 Fixings for clips

1. Nails to timber substrates: Aluminium to BS 1202-3 for aluminium clips. Stainless steel (austenitic) for stainless steel clips.
 - 1.1. Shank type: Annular ringed or helical threaded.
 - 1.2. Shank diameter: Not less than 2.65 mm.
 - 1.3. Head: Flat.
 - 1.4. Length: Not less than 25 mm or equal to substrate thickness.
2. Screws to concrete/ masonry substrates: Sherardized or zinc plated steel or aluminium, for aluminium clips, to BS EN 14592. 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 plastic plugs: Compatible with screws.
3. Screws to composite metal decks: Self tapping, as recommended by the deck and aluminium manufacturer/ supplier for aluminium or stainless steel clips.

720 Standing seam fixed clips

1. Aluminium clips: Cut from same alloy and thickness of metal as that being secured.
2. Stainless steel (austenitic) clips: Cut from same thickness of metal as the aluminium being secured.
3. Dimensions
 - 3.1. Width: Not less than 50 mm.
 - 3.2. Base length: Not less than 20 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. Aluminium clips: Cut from same alloy and thickness of metal as that being secured.
2. Stainless steel (austenitic) clips: Cut from same thickness of metal as the aluminium 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 20 mm.
 - 3.1.3. Upstand: 20 mm, with slot for locating sliding component.
 - 3.2. Sliding component:
 - 3.3. Width: Not less than 35 mm.
 - 3.4. Upstand: To suit standing seam profile.
4. Fixing: Secure each clip to substrate with three fixings.

750 Clips for flashings/ cross joints

1. Material: Cut from same alloy and thickness as that being secured.
2. Stainless steel (austenitic) clips: Cut from same thickness of metal as the aluminium being secured.

3. Dimensions

3.1. Width: Not less than 50 mm.

3.2. Length: Sufficient to suit detail.

4. Fixing: Secure each clip to substrate with two fixings, not more than 50 mm from edge of strip/ sheet being fixed.

760 Continuous clips

1. Material: Cut from same alloy and thickness as that being secured.

2. Stainless steel (austenitic) clips: Cut from same thickness of metal as the aluminium being secured.

3. Dimensions

3.1. Width: Sufficient to suit detail.

3.2. Length: Not more than 1.8 m.

4. Fixing: To substrate at 150 mm centres. Welt edge of strip/ sheet being fixed to continuous clip and dress down.

Jointing

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.

830 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. Forming: Double welt overlap and clips around underlap to form standing seam 25 mm high of consistent cross section.

860 Drip/ Step joints

1. Strip/ Sheet from below step: Fold up full height of upstand and fix to top edge.

2. Form aluminium underlap/ continuous clip

2.1. Cover to roof slope: Not less than 100 mm with anticapillary welt at top edge.

2.2. Projection: 25 mm for forming into drip welt.

2.3. Downstand: Not less than 40 mm with welt at bottom edge.

2.4. Fixing: To roof slope at 100 mm centres, avoiding through fixings at longitudinal joint positions.

3. Strip/ Sheet from above step: Fold around underlap projection and single welt to form a drip.

Ω End of Section

J31

Liquid-applied waterproof roof coatings

Types of coating

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

101 RFS-201 Hot Melt Inverted Roof Covering System

1. Monolithic, fully bonded, hot-applied inverted membrane blue roof system with various surface finishes, as the Design Drawings.
 - 1.1. Indicative manufacturer: Alumasc Building Products Ltd.
 - 1.2. Indicative Reference: BluRoof Stormwater Management.
 - 1.3. Specific performance:
 - 1.3.1. Thermal rating (U-value): Refer to the Energy and Environmental Report.
 - 1.4. Substrate:
 - 1.4.1. Type: Concrete slab with 0% falls.
 - 1.4.2. Preparation:
 - 1.4.2.1. Surface is to be dry, clean, and free from all contaminants, including oils, grease, laitance, dirt and debris.
 - 1.4.2.2. Advance bond tests to be carried out (and recorded for future reference) on all areas, to the manufacturer's recommendations.
 - 1.5. Primer:
 - 1.5.1. Indicative reference: Alumasc Diluted Bitumen Primer.
 - 1.5.2. Type: Solvent based low viscosity bitumen primer, black in colour.
 - 1.5.3. It is recommended that a provisional sum (cost/ m²) is made for the application of Eurorof SB Primer contingent upon adhesion tests.
 - 1.6. Membrane/ coating:
 - 1.6.1. Indicative reference: BluRoof Monolithic Membrane 6125.
 - 1.6.2. Base layer: 3mm thick one-part hot-applied rubberised bituminous membrane.
 - 1.6.3. Reinforcement layer: Non-woven polyester fabric reinforcement layer Flex-Flash F/ Flex-Flash UN, laid and bonded between base and finishing layer(s).
 - 1.6.4. Finishing layer(s): 3mm one-part hot-applied rubberised bituminous membrane.
 - 1.6.5. Minimum dry film thickness (minimal): 6mm in 2 No. 3mm coats.
 - 1.7. Protection sheet to field area:
 - 1.7.1. Indicative reference: Hydrogard 20-AR.
 - 1.7.2. Type: Root resistant protection sheet, formulated from APP modified bitumen (incorporating Preventol B2 root inhibitor) with a polyester reinforcement, a sanded upper surface and a polyethylene film to the underside.
 - 1.8. Protection sheet to exposed details:
 - 1.8.1. Indicative reference: Hydrogard 40M.

- 1.8.2.Type: Glass/ polyester reinforced APP modified bitumen, heavy duty, root resistant protection sheet, with a black mineral upper surface and a torch receivable film to the underside.
- 1.8.3.Application: Laid into the second layer of BluRoof MM6125.
- 1.9. Insulation:
 - 1.9.1.Indicative reference: Alumasc Extruded Polystyrene Plus Insulation.
 - 1.9.2.Type: Extruded polystyrene insulation board insulation of suitable layers to meet the performance requirements, laid loose over roofing membrane, to suit the required roof levels and drainage requirements, including all associated insulation of up stands and penetrations.
- 1.10. Water flow reducing layer:
 - 1.10.1. Indicative reference: Alumasc LO-k Water Flow Reducing Layer (WFRL).
 - 1.10.2. Type: Water vapour permeable, non-woven polyethylene geotextile, light grey in colour, loose laid.
- 1.11. Sub-surface drainage layer:
 - 1.11.1. Indicative reference: Hydrodrain FC6.
 - 1.11.2. Type: Geo-composite unit, comprising a non-woven geotextile filtration layer that is bonded to a High-Density Polyethylene (HD-PE) encapsulated core, loose laid.
- 1.12. Void former:
 - 1.12.1. Indicative reference: BluRoof Void Former.
 - 1.12.2. Type: Open structured, rigid polypropylene, interlocking void former with a 96% void ratio.
- 1.13. Surface finishes:
 - 1.13.1. Concrete paving slabs as Type EXT-141 in Section Q25, arranged as the Design Drawings, on Harmer Modulock Uni-Ring/ Plus Pedestals.
 - 1.13.2. Natural Stone Slab Paving as Type EXT-111 in Section Q25 arranged as the Design Drawings on Harmer Modulock Uni-Ring/ Plus Pedestals.
 - 1.13.3. Ballast arranged as the Design Drawings.
 - 1.13.3.1. Include for the installation of a suitable proprietary separating layer, coloured black or dark grey, between insulation and paving slabs and suitable adjustment pedestal system, to the manufacturer's recommendations.
- 1.14. Drainage outlets:
 - 1.14.1. Insulated drainage outlet assemblies with compatible leaf/ gravel guards, refer to the Services Engineer's documentation.
 - 1.14.2. Indicative reference: BluRoof Outlets/ including Flow Controller (BR).
 - 1.14.3. Indicative reference: Alumasc BluRoof Overflow Outlet(s).
- 1.15. Upstands, kerbs, detailing and accessories: To suit the service conditions.
- 1.16. Pressed metal components/ accessories:
 - 1.16.1. Material: Aluminium.
 - 1.16.2. Finish and colour: Refer to the External Samples Schedule.
- 1.17. Other accessories:
 - 1.17.1. Termination bar.
 - 1.17.2. Alumasc Derbitech Sealstick HD.
 - 1.17.3. Roof-Pro non-penetrative support system.
- 1.18. System to include all vapour control layers, sub-layers, metal framing and pitch pockets, as required, counterflashings, movement/ control joints, sealants (colour co-ordinated where visible), fixings and fastenings, fillets, protection boards, stops, termination bars, adhesives and other accessories to complete the installation.

Performance

205 Completion of roofing design

1. **Requirement:** Complete the Detailed Design to satisfy specified performance criteria and coordinate with the detailed Design of related and adjacent work.

210 Roof performance

1. **General:** Firmly adhered, free-draining and weathertight.
2. **Loads:** Withstand all loads imposed directly, without reduction in performance or appearance.
3. **Solar:** No reduction in performance or appearance as a result of solar radiation or air velocity changes.

225 Avoidance of interstitial condensation

1. **Risk of interstitial condensation in roof construction:** Assess in accordance with BS 5250.
2. **Vapour control layer:** If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

230 Thermal performance

1. **Requirement:** Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
 - 1.1. **Thermal transmittance of roof (maximum):** Refer to the Thermal Modelling Report.
 - 1.2. **Compressive strength of insulation (minimum) at 10% compression:** To be confirmed by the Contractor.
 - 1.3. **Substrate surface:** Suitably even, stable and robust to receive roof coatings.
 - 1.4. **Insulation compliance:** To a relevant European Standard, or Agrément-certified.

240 Fire performance

1. Refer to the Fire Strategy Report.

Products

310 Primer

1. **Manufacturer:** To be confirmed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.

320 Plywood overlay to metal deck

1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.
2. **Plywood:** To BS EN 636, section 8 (plywood for use in humid conditions).
 - 2.1. **Quality:** Naturally durable timber, free from preservative.

330 Air and vapour control layer

1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.

331 Expanded polystyrene (EPS) insulation

1. **Manufacturer:** To be proposed by the Contractor.
2. **Standard:** To BS EN 13163.

2.1. Other BS EN 13163 characteristics:

353 Waterproof coating

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.

355 Perimeter trims

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.

370 Precast concrete paving slabs

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.
2. Standard: To BS EN 1339, hydraulically pressed.

377 Support system for paving slabs or tiles

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.

380 UV-resistant sealer

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.

387 Filter layer

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.

Execution generally

410 Adverse weather

1. Do not apply coatings
 - 1.1. In wet conditions or at temperatures below 5°C, unless otherwise permitted by coating manufacturer.
 - 1.2. In high winds (speeds > 7 m/s), unless adequate temporary windbreaks are erected adjacent to working area.
2. Unfinished areas of roof: Keep dry.

420 Suitability of substrates

1. Substrates generally
 - 1.1. Secure, clean, dry, smooth, free from frost, contaminants, loose material, voids, protrusions and organic growths.
 - 1.2. Compatible with coating system.
2. Preliminary work: Complete, including:
 - 2.1. Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
 - 2.2. Fixing of battens, fillets and anchoring plugs/ strips.
3. Moisture content and stability: Must not impair integrity of roof.

Existing substrates - Not Used

New substrates/ vapour control layers/ warm deck roof insulation

630 Laying air and vapour control layer

1. Membrane: To be proposed by the Contractor.
2. Laps: Sealed using materials and method recommended by membrane manufacturer.
3. Upstands, kerbs and other penetrations: Enclose edges of insulation. Lap with coatings to form a complete seal.

640 Laying warm deck roof insulation

1. Setting out
 - 1.1. Long edges: Fully supported and run at right angles.
 - 1.1.1. Joints: Butted together.
 - 1.2. Ends: Adequately supported.
 - 1.2.1. Joints: Staggered.
2. Mechanical fixing: To be proposed by the Contractor.
3. Completion: Boards must be in good condition, well-fitting and stable.

650 Laying overlay to warm deck roof insulation

1. Setting out
 - 1.1. Joints: Butted together.
 - 1.2. End joints: Staggered to break joint with insulation.
2. Bedding: To be proposed by the Contractor.
3. Mechanical fixing: To be proposed by the Contractor.

660 Fixing perimeter trims

1. Setting out: 3 mm clear from wall or fascia.
2. Fasteners:
 - 2.1. Fixing: 30 mm from ends and at 300 mm (maximum) centres.
3. Jointing
 - 3.1. Sleeves: Fixed one side only.
 - 3.2. GRP trims: Butt ends.
 - 3.3. Aluminium trims: 3 mm gaps between ends.
4. Corner pieces: Purpose made.

670 Installing roof ventilators

1. Setting out: Position evenly over roof area.
 - 1.1. Centres (maximum):
 - 1.2. Distance in from roof edge:
2. Holes for ventilators: Cut neatly to suit size.
3. Priming/ bonding
 - 3.1. Substrate below vents: Do not prime or apply bonding compound.
 - 3.2. Vent skirts: Primed before application of roof coating if recommended by manufacturer.

Roof coating system

710 Adhesion tests

1. **Requirement:** Carry out a trial coating to determine priming requirements and/ or system suitability.
2. **Test results:** Submit and arrange for inspection.

720 Applying primers/ conditioners

1. **Coverage per coat (minimum):** To be proposed by the Contractor.
2. **Surface coverage:** Brushed well in to ensure local or full area coverage according to type.
3. **Coats:** Allow to dry before overcoating.

740 Movement joints in substrate

1. **Debonding tape:** Apply over movement joints.
2. **Reinforcement strip:** Apply over debonding tape.
 - 2.1. **Bedding:** Preliminary coating application.
 - 2.2. **Joints:** Lap in length.
 - 2.3. **Bond:** Continuous over whole surface, with no air pockets.
 - 2.4. **Condition at completion:** Smooth.

750 Preliminary local reinforcement

1. **Reinforcement strip:** Apply to junctions at upstands, penetrations and outlets, joints and fixings in discontinuous unit substrates.
 - 1.1. **Bedding:** Preliminary coating application.
 - 1.2. **Joints:** Lap in length.
 - 1.3. **Bond:** Continuous over whole surface, with no air pockets.
 - 1.4. **Condition at completion:** Smooth.

760 Application of roof coatings

1. **Thickness:** Monitor by taking wet/ dry film thickness readings.
2. **Continuity:** Maintain full thickness of coatings around angles, junctions and features.
3. **Rainwater outlets:** Form with watertight joints.
4. **Drainage systems:** Do not allow liquid coatings to enter piped rainwater or foul systems.
5. **Edge trims:** Apply coatings over horizontal leg of trim and into recess.

770 Skirtings and upstands

1. **Top edges of coatings:** Where not protected by flashings, apply into chases cut to a minimum depth of 10 mm.
2. **Completion of chases:** When coatings are fully cured, prepare chase and apply sealant as section Z22.
 - 2.1. **Sealant:** To be proposed by the Contractor.
 - 2.1.1. **Colour:** Black.

Surfacing

830 Laying inverted roof insulation

1. **Condition of substrate:** Clean.

2. **Separating layer:** Lay polyethylene sheet under insulation where required by coating manufacturer.
3. **Setting out:** Loose-lay with staggered joints. Minimize cutting and avoid small pieces at perimeters and penetrations.
 - 3.1. **Joints:** Butt together.
4. **Projections, upstands, rainwater outlets, etc:** Cut insulation cleanly and fit closely around.
5. **Completion**
 - 5.1. Boards in good condition, well-fitting and stable.
 - 5.2. Cover to prevent wind uplift and flotation as soon as practicable.

840 Laying stone ballast

1. **Condition of substrate:** Clean.
2. **Gravel guards:** Fit to outlets.
3. **Laying:** Spread evenly. Do not pile to excessive heights.
 - 3.1. **Depth (minimum):**

850 Laying precast concrete paving slabs

1. **Condition of substrate:** Clean.
2. **Setting out:** Minimize cutting.
3. **Joints:** Open.
 - 3.1. **Width:** 3mm.
4. **Perimeter upstands:**
5. **Completion:** Slabs must be level and stable.

880 Applying UV-resistant sealer

1. **Coverage per coat (minimum):** As the manufacturer's recommendations.
2. **Surface coverage:** Even and full.

Completion

910 Inspection

1. **Coating surfaces:** Check when cured for discontinuities.
 - 1.1. **Defective areas:** Apply another coating.

920 Electronic roof integrity test

1. **Testing authority:** Independent Authority acceptable to the Architect.
2. **Timing of test:** Upon completion of installation.
3. **Condition of roof prior to testing**
 - 3.1. **Coating:** Complete to a stage where integrity can be tested.
 - 3.2. **Surface:** Clean.
4. **Test results:** Submit.
5. **Waterproof integrity certificate:** On completion of testing, submit.

930 Flood test

1. **Condition of roof prior to testing**
 - 1.1. **Coating:** Complete to a stage where integrity can be tested.
 - 1.2. **Surface:** Clean.

2. **Outlets:** Externally cover and seal. Protect against damage from water pressure using temporary kerbs. Do not use plugs to seal outlets.
3. **Flood levels:** Submit proposals. In no case higher than existing kerbs.
4. **Flood duration:**
5. **Inspection:** Regular to detect leaks.
6. **Completion of test:** Slowly drain roof. Do not overload or flood outlets.
7. **Test results:** Submit.

940 Completion

1. **Roof areas:** Clean.
 - 1.1. **Outlets:** Clear.
 - 1.2. **Flashings:** Dressed into place.
2. **Work necessary to provide a weathertight finish:** Complete.
3. **Storage of materials on finished surface:** Not permitted.
4. **Completed coatings:** Protect against damage.

Ω End of Section

K10

Gypsum board dry linings/ partitions/ ceilings

Types of dry lining

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 CLG-101 Suspended Monolithic Plasterboard Ceiling

1. Plasterboard lining fixed to suspended metal support system, as the Design Drawings.
 - 1.1. Manufacturer: British Gypsum, or acceptable equivalent.
 - 1.2. Reference: CasoLine MF.
 - 1.3. Specific performance:
 - 1.3.1. Fire rating: Refer to the Design Drawings and the Fire Strategy Report.
 - 1.3.2. Acoustic rating: Refer to the Design Drawings and the Acoustic Report.
 - 1.4. Support framing: Suspended metal support framing.
 - 1.5. Linings/ facings: 1 No. layer of 12.5mm thick standard plasterboard lining.
 - 1.6. Finish: Refer to the Finishes Schedule.
 - 1.7. Perimeter trim/ shadow gap: Refer to the Design Drawings.

112 CLG-111 Suspended Monolithic Plasterboard Ceiling (MR)

1. Moisture resistant plasterboard lining fixed to suspended metal support system, as the Design Drawings.
 - 1.1. Manufacturer: British Gypsum, or acceptable equivalent.
 - 1.2. Reference: CasoLine MF.
 - 1.3. Specific performance:
 - 1.3.1. Fire rating: Refer to the Design Drawings and the Fire Strategy Report.
 - 1.3.2. Acoustic performance: Refer to the Design Drawings and the Acoustic Report.
 - 1.4. Support framing: Suspended metal support framing.
 - 1.5. Linings/ facings: 1 No. layer of 12.5mm thick moisture resistant plasterboard lining.
 - 1.6. Finish: Refer to the Finishes Schedule.
 - 1.7. Perimeter trim/ shadow gap: Refer to the Design Drawings.

113 CLG-901 Ceiling Access Panel

1. Standard flush-painted ceiling access panel such as manufactured by British Gypsum, or acceptable equivalent, including budget/ high security lock, hinges, flush finish beaded frame and etched finish to receive decorations and sized as shown on the Design Drawings, as agreed with the Client.

114 IWS-501 Metal Stud Partition Forming Partition/ Wall

1. Manufacturer: British Gypsum.
2. Product reference: ShaftWall.
3. Nominal thickness (excluding finishes): 107mm.
4. Performance criteria:

- 4.1. Fire resistance to BS 476: Part 22:
 - 4.1.1. Shaft to room: 120 minutes integrity, 120 minutes insulation.
 - 4.1.2. Room to shaft: 120 minutes integrity, 120 minutes insulation.
- 4.2. Sound insulation: Rw 45dB.
- 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
- 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 4500mm.
5. Framing:
 - 5.1. Studs: Gypframe 60 | 70 at 600mm centres.
 - 5.2. Floor channel: Gypframe 62 jFEC 50 (height up to 4200mm), Gypframe 62 DC 60 (height over 4200 - 8000mm).
6. Head/ opening channel: Gypframe 60 JC 70.
 - 6.1. Abutment channel: Gypframe 60 SC 55.
 - 6.2. Retaining channel: Gypframe G102.
 - 6.3. Fixing T: Gypframe GFT1 to support horizontal board joints of single layer plasterboard linings.
 - 6.4. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
8. Core: 19mm Gyproc CoreBoard. (If A1 non-combustible rated boards are required around the smoke shaft use 20mm Glasroc F Firecase boards in lieu of 19mm CoreBoard).
 - 8.1. Horizontal joints: Gypframe GA3 angle and 122mm high strip of 19mm Gyproc CoreBoard.
9. Lining: 3 No. layers of 15mm Gyproc FireLine on one side of framing, sheet width 1200mm. (If A1 non-combustible rated boards are required around the smoke shaft use 15mm Glasroc F Firecase boards in lieu of 15mm Fireline).
 - 9.1. Fixing: As clause 591.
 - 9.2. Screws: 25mm, 41mm and 60mm British Gypsum Jack-Point screws to I studs and 25mm, 40mm and 55mm British Gypsum Drywall Screws elsewhere.
10. Cavity insulation: 25mm Isover Acoustic Partition Wall (APR 1200).
 - 10.1. Recycled content: Up to 86%.
11. Gyproc sealant: As clause 516 (General), or clause 521 (air pressure requirement).

115 IWS-501A Metal Stud Partition Forming Partition/ Wall

1. Manufacturer: British Gypsum.
2. Product reference: ShaftWall.
3. Nominal thickness (excluding finishes): 139mm.
4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22.
 - 4.1.1. Shaft to room: 120 minutes integrity, 120 minutes insulation.
 - 4.1.2. Room to shaft: 120 minutes integrity, 120 minutes insulation.
 - 4.2. Sound insulation: Rw 45dB.
 - 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
 - 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 6700mm.
5. Framing:
 - 5.1. Studs: Gypframe 92 | 90 at 600mm centres.

- 5.2. Floor channel: Gypframe 94 FEC 50 (height upto 4200mm), Gypframe 94 DC 60 (height over 4200 - 8000mm).
- 5.3. Head/ opening channel: Gypframe 94 EDC 70.
- 5.4. Abutment channel: Gypframe 92 SC 90.
- 5.5. Retaining channel: Gypframe G105.
- 5.6. Fixing T: Gypframe GFT1 to support horizontal board joints of single layer plasterboard linings.
- 5.7. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
- 6. Head condition: Suitably fixed up to structural soffit.
 - 6.1. Deflection allowance: To be determined by the Structural Engineer.
- 7. Core: 19mm Gyproc CoreBoard. (If A1 non-combustible rated boards are required around the smoke shaft use 20mm Glasroc F Firecase boards in lieu of 19mm CoreBoard.
 - 7.1. Horizontal joints: Gypframe GA3 angle and 122mm high strip of 19mm Gyproc CoreBoard.
- 8. Lining: 3 No. layers of Gyproc FireLine on one side of framing, sheet width 1200mm. (If A1 non-combustible rated boards are required around the smoke shaft use 15mm Glasroc F Firecase boards in lieu of 15mm FireLine).
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm, 41mm and 60mm British Gypsum Jack-Point Screws to I studs and 25mm, 40mm and 55mm British Gypsum Drywall Screws elsewhere.
- 9. Cavity insulation: N/A.
 - 9.1. Recycled content: N/A.
- 10. Gyproc sealant: As clause 516 (General) or clause 521 (air pressure requirement).
 - 10.1. Finishing: 2mm Thistle skim coat plaster (General use) as clause 681 or taped seamless finish as clause 671.
- 11. Accessories: Gyproc Proflex access panels as clause 531, if required.

116 IWS-502 Metal Stud Partition Forming Partition/ Wall

- 1. Manufacturer: British Gypsum.
- 2. Product reference: GypWall Single Frame.
- 3. Nominal thickness (excluding finishes): 122mm.
- 4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22: 60 minutes.
 - 4.2. Sound insulation: Rw 45dB.
 - 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
 - 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 4600mm.
- 5. Timber sole plate: 38mm (nominal) x channel width, if required.
- 6. Framing:
 - 6.1. Studs: Gypframe 70 S 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
 - 6.2. Stud boxing: N/A.
 - 6.3. Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), 72 DC 60 (heights up to 800mm), 72 EDC 80 (heights over 800mm).
 - 6.4. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
 - 6.5. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
- 7. Head condition: Suitably fixed up to structural soffit.

- 7.1. Deflection allowance: To be determined by the Structural Engineer.
- 8. Lining: 2 No. layers of 12.5mm Gyproc WallBoard, sheet width 1200mm, to both sides of framing.
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm and 35mm British Gypsum Drywall Screws.
- 9. Cavity insulation: N/A.
- 10. Recycled content: N/A.
- 11. Gyproc sealant: As clause 516.
- 12. Finishing: 2mm Thistle skim coat plaster (General use), as clause 681, or taped seamless finish as clause 671.

117 IWS-503 Stud Partition Forming Partition/ Wall

- 1. Manufacturer: British Gypsum.
- 2. Product reference: GypWall Single Frame.
- 3. Nominal thickness (excluding finishes): 144mm.
- 4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22: 60 minutes.
 - 4.2. Sound insulation: Rw 45dB (Technical evaluation).
 - 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
 - 4.4. Maximum height based on limited deflection of L/240 at 200Pa: 5700mm.
- 5. Timber sole plate: 38mm (nominal) x channel width, if required.
- 6. Framing:
 - 6.1. Studs: Gypframe 92 S 50 at 600mm centres and Gypframe 92 S 50 at abutments, openings and junctions,.
 - 6.2. Stud boxing: N/A.
 - 6.3. Floor channel: Gypframe 94 FEC 50 (height up to 4200mm), 94 DC 60 (heights up to 8000mm), 94 EDC 70 (heights over 8000mm).
 - 6.4. Head channel: As floor channel or as determined by the deflection criteria.
 - 6.5. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
 - 6.6. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
- 7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
- 8. Lining: 2 No. layers of 12.5mm Gyproc WallBoard, sheet width 1200mm, to both sides of framing.
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm and 35mm British Gypsum Drywall Screws.
- 9. Cavity insulation: N/A.
- 10. Recycled content: N/A.
- 11. Gyproc sealant: As clause 516.
- 12. Finishing: 2mm Thistle skim coat plaster (General use) as clause 681, or taped seamless finish as clause 671.

118 IWS-504 Metal Stud Partition Forming Partition/ Wall

- 1. Manufacturer: British Gypsum.
- 2. Product reference: GypWall Single Frame Enhanced.
- 3. Nominal thickness (excluding finishes): 102mm.
- 4. Performance criteria:

- 4.1. Fire resistance: To BS 476: Part 22: 60 minutes.
- 4.2. Sound insulation: Rw 47dB.
- 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
- 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 4300mm.
5. Timber sole plate: 38mm (nominal) x channel width, if required.
6. Framing:
 - 6.1. Studs: Gypframe 70 | 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
 - 6.2. Stud boxing: N/A.
 - 6.3. Floor channel: Gypframe 72 DC 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
 - 6.4. Head channel: As floor channel or as determined by deflection criteria.
 - 6.5. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
 - 6.6. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
8. Lining: 1 No. layer of 15mm Gyproc DuraLine sheet with 1200mm, to both sides of framing.
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm British Gypsum Drywall Screws.
9. Cavity insulation: 25mm Isover Acoustic Partition Roll (APR 1200).
10. Gyproc sealant: As clause 516.
11. Finishing: 2mm Thistle skim coat plaster (General use) as clause 681 or taped seamless finish as clause 671.

119 IWS-505 Metal Stud Partition Forming Partition/ Wall

1. Manufacturer: British Gypsum.
2. Product reference: GypWall Single Frame.
3. Nominal thickness (excluding finishes): 122mm.
4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22: 120 minutes.
 - 4.2. Sound insulation: RW 46dB.
 - 4.3. Maximum height based on limiting deflection of L/240 at 200Pa: 4600mm.
5. Timber sole plate: 38mm (nominal) x channel width if required.
6. Framing:
 - 6.1. Studs: Gypframe 70 S 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
 - 6.2. Studs: Gypframe 72 FEC 50 (height up to 4200mm), 72 DC 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
 - 6.3. Head channel: As floor channel or as determined by deflection criteria.
 - 6.4. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
 - 6.5. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
8. Lining: 2 No. layers of 12.5mm Gyproc FireLine, sheet width 1200mm, to both sides of framing.

- 8.1. Fixing: As clause 591.
- 8.2. Screws: 25mm and 35mm British Gypsum Drywall Screws.
- 9. Cavity insulation: N/A.
- 10. Recycled content: N/A.
- 11. Gyproc sealant: As clause 516.
- 12. Finishing: 2mm Thistle skim coat plaster (General use) as clause 681, or taped seamless finish as clause 671,

120 IWS-506 Wall Lining on Metal Studs

- 1. Manufacturer: British Gypsum.
- 2. Product reference: GypLyner Universal.
- 3. Background: Concrete.
- 4. Framing:
 - 4.1. Grid: Gypframe GL lining channels at 600mm centres.
 - 4.2. Channel connectors: Gypframe GL3.
 - 4.3. Brackets: Gypframe GL2 (maximum 75mm), or GL9 (maximum 125mm) at 800mm maximum centres.
 - 4.4. Floor/ ceiling track: Gypframe GL8.
- 5. Installation: As clause 481.
- 6. Cavity insulation: N/A.
 - 6.1. Recycled content: N/A.
- 7. Lining: 1 No. layer of 12.5mm Gyproc WallBoard, sheet width 1200mm
 - 7.1. Fixings: As clause 591.
 - 7.2. Screws: 25mm British Gypsum Drywall Screws.
- 8. Thermal sealant: As clause 331, if required.
- 9. Gyproc sealant: As clause 516,
- 10. Finishing: 2mm Thistle skim coat plaster (General use) as clause 681 or taped seamless finish as clause 671.

121 IWS-507 Metal Stud Partition forming Partition/ Wall

- 1. Manufacturer: British Gypsum.
- 2. Product reference: GypWall Single Frame.
- 3. Nominal thickness (including skim finish to both sides): 136mm.
- 4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22: 90 minutes.
 - 4.2. Sound insulation: Rw 55dB when finished both sides with 2mm Thistle Multi-Finish.
 - 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
 - 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 4900mm.
- 5. Timber sole plate: 38mm (nominal) x channel width, if required.
- 6. Framing:
 - 6.1. Studs: Gypframe 70 S 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
 - 6.2. Stud boxing: N/A.
 - 6.3. Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), 72 CD 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
 - 6.4. Head channel: As floor channel or as determined by deflection criteria.

- 6.5. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
- 6.6. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
- 7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
- 8. Lining: 2 No. layers of 15mm Gyproc SoundBloc, sheet width 1200mm, to both sides of framing.
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm and 40mm British Gypsum Drywall Screws.
- 9. Cavity insulation: 25mm Isover Acoustic Partition Roll (APR 1200).
- 10. Recycled content: Up to 86%.
- 11. Gyproc sealant: As clause 516.
- 12. Finishing: 2mm Thistle Multi-Finish skim coat plaster as clause 681.

122 IWS-508 Metal Stud Partition forming Partition/ Wall

- 1. Manufacturer: British Gypsum.
- 2. Product reference: GypWall Single Frame.
- 3. Nominal thickness (excluding finishes): 144mm.
- 4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22: 120 minutes.
 - 4.2. Sound insulation: Rw 51dB.
 - 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
 - 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 5800mm.
- 5. Timber sole plate: 38mm (nominal) x channel width, if required.
- 6. Framing:
 - 6.1. Studs: Gypframe 92 AS 50 AcouStud at 600mm centres and Gypframe 92 S 50 at abutments, openings and junctions.
 - 6.2. Stud boxing: N/A.
 - 6.3. Floor channel: Gypframe 94 FEC 50 (height up to 4200mm), 94 DC 60 (heights up to 8000mm), 94 EDC 70 (heights over 8000mm).
 - 6.4. Head channel: As floor channel or as determined by deflection criteria.
 - 6.5. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
 - 6.6. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
- 7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
- 8. Lining: 2 No. layers of 12.5mm Gyproc FireLine, sheet width 1200mm, to both sides of framing.
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm and 35mm British Gypsum Drywall Screws.
- 9. Cavity insulation: N/A.
- 10. Recycled content: N/A.
- 11. Gyproc sealant: As clause 516.
- 12. Finishing: 2mm Thistle Skim coat plaster (general use) as clause 681 or taped seamless finish as clause 671.

123 IWS-510 Metal Stud Partition forming Partition/ Wall

- 1. Manufacturer: British Gypsum.

2. Product reference: GypWall Single Frame.
3. Nominal thickness (excluding finishes): 144mm.
4. Performance criteria:
 - 4.1. Fire resistance to BS 476: Part 22: 120 minutes.
 - 4.2. Sound insulation: Rw 55dB.
 - 4.3. Partition duty to BS 5234: Parts 1 and 2: Severe.
 - 4.4. Maximum height based on limiting deflection of L/240 at 200Pa: 5800mm.
5. Timber sole plate: 38mm (nominal) x channel width, if required.
6. Framing:
 - 6.1. Studs: Gypframe 92 AS 50 AcouStud at 600mm centres and Gypframe 92 S 50 at abutments, openings and junctions.
 - 6.2. Stud boxing: N/A.
 - 6.3. Floor channel: Gypframe 94 FEC 50 (height up to 4200mm), 94 DC 60 (heights up to 8000mm), 94 EDC 70 (heights over 8000mm).
 - 6.4. Head channel: As floor channel or as determined by deflection criteria.
 - 6.5. Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
 - 6.6. Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
7. Head condition: Suitably fixed up to structural soffit.
 - 7.1. Deflection allowance: To be determined by the Structural Engineer.
8. Lining: 2 No. layers of 12.5mm Gyproc FireLine, sheet width 1200mm, to both sides of framing.
 - 8.1. Fixing: As clause 591.
 - 8.2. Screws: 25mm and 35mm British Gypsum Drywall Screws.
9. Cavity insulation: 50mm Isover Acoustic Partition Roll (APR 1200).
10. Recycled content: Up to 86%.
11. Gyproc sealant: As clause 516.
12. Finishing: 2mm Thistle Skim coat plaster (general use) as clause 681 or taped seamless finish as clause 671.

124 IWS-511 Security Metal Wall System

1. Intent: Provide a metal lined secure wall system to create a protected room as required by the end user. The Design Drawings and specification below have been provided by the tenant who confirms that the details fulfil his requirements. The Design Drawings provide further details of construction and components.
2. Description: Approximately 158mm wide reinforced metal stud partition comprising:
 - 2.1. 3mm skim coat both sides.
 - 2.2. Two x 12.5mm fireproof Soundbloc plasterboard both sides. for 60 minute fire resistant areas and Two x 12.5mm Gyproc FireLine plasterboard to both sides in 120 minute fire resistant areas.
 - 2.3. 1mm steel plate both sides, S275 to BS EN 10025.
 - 2.4. 100mm metal stud C-section with:
 - 2.4.1. Minimum $t = 2\text{mm}$.
 - 2.4.2. Minimum $I = 75.7\text{cm}^4$.
 - 2.4.3. Minimum $X = 16.8\text{cm}^3$.
 - 2.4.4. Minimum $f_y = 275\text{MPa}$.
 - 2.4.5. Minimum $f_u = 460\text{MPa}$.

- 2.5. Insulation: Suitable thickness of Isover Acoustic Roll fixed within stud work framing to achieve 58dB acoustic rating and 60 or 120 (according to location) minutes fire resistance.
3. Fixing:
 - 3.1. Vertical fixing centres of plasterboard 300mm using 3.5 diameter x 20mm screws.
 - 3.2. Vertical fixing centres of steel plate 300mm using 4.2 diameter x 60mm twin thread bugle head self tapping screws.
 - 3.3. Vertical fixing centres of stud sections to suit noggins using 4.2 diameter x 19mm wafer head self drilling screws.
4. General:
 - 4.1. Provide horizontal steel noggins formed from a piece of the stud Header Channel in walls higher than 2440mm.
 - 4.2. Each layer to be firmly fixed at specified centres to all vertical studs.
 - 4.3. Sheet edges to finish precisely on the centre of either a stud or noggin. Where sheets abut an adjoining wall, floor or ceiling fix over the full width of the stud or sole/ head plate unless at a deflection head where the specific detail must be used.
 - 4.4. All joints in sheets to be tightly abutted with a maximum gap of 4mm being offset between layers by a minimum of 400mm vertically and at least one stud centre horizontally.
 - 4.5. Plywood sheets to be a minimum dimension of 400mm and steel sheets 450mm.
 - 4.6. Provide all necessary bracketry, subframes, head reinforcement, door frame reinforcement, threshold reinforcement and movement joints all as shown on the Design Drawings.
 - 4.7. Refer to DRS-212 for doors.

125 IWS-512 Independent Plasterboard Lining

1. Plasterboard lining with metal stud support system as the Design Drawings
2. Manufacturer: British Gypsum or acceptable equivalent.
3. Reference: GypLyner IWL
4. Performance requirements:
 - 4.1. Fire rating: Refer to Fire Strategy Report.
 - 4.2. Acoustic Rating: Refer to Acoustic Report.
 - 4.3. Duty Rating: Severe
5. Stand off (background to face of channel): Minimum 50mm
6. Support Framing: GypFrame 92 "I" 90 at 600mm centres.
7. Insulation (within cavity): 50mm Isover Acoustic Partition Roll (APR 1200). Insulation thickness to be confirmed to achieve U-values stated in Service Engineer's documentation and the Acoustic Report.
8. Finish: Refer to Finishes Schedule.

126 IWS-515 Independent Plasterboard Lining

1. Plasterboard lining with metal stud support system as the Design Drawings
2. Manufacturer: British Gypsum or acceptable equivalent.
3. Reference: Firecase
4. Performance requirements:
 - 4.1. Fire rating: Minimum 90 minutes, refer to the Design Drawings and the Fire Strategy Report.
 - 4.2. Acoustic Rating: Refer to the Design Drawings and the Acoustic Report.
 - 4.3. Duty Rating: Severe
5. Stand off (background to face of channel): Minimum 35mm

6. Support Framing:
 - 6.1. Grid: Gypframe GL1 lining channels at 600mm centres.
 - 6.2. Channel connectors: Gypframe GL3.
 - 6.3. Brackets: Gypframe GL2 (max. 75mm) or GL9 (max. 125mm) at 800mm maximum centres.
 - 6.4. Floor/ ceiling track: Gypframe GL8.
7. Insulation (within cavity): N/A
8. Linings/ facings (to one side of framing): 25mm Glasroc F FIRECASE.
9. Finish: Refer to Finishes Schedule.

127 IWS-516 Metal Stud Partition Forming Partition/ Wall

1. As IWS-505 but one side of the board requires one additional layer of 12.5 mm wallboard in addition to the existing layers.

128 IWS-517 Metal Stud Partition Forming Partition/ Wall

1. As IWS-508 but one side of the board requires one additional layer of 12.5 mm wallboard in addition to the existing layers.

General/ preparation

305 Compliance with performance requirements

1. Testing/ Assessment: Submit UKAS accredited laboratory reports for the following: Fire resistance: Partitions (including deflection heads and doorsets) and suspended ceilings (including access units)..
2. Materials, components and details: As used in testing/ assessment reports. If discrepancies arise, give notice.
3. Linings and Partitions to consist of complete integrated systems and maintain performance from floor slab to soffit.

325 Preparation of masonry to receive wall linings

1. General: Suitable to receive lining system. Redundant fixtures and services removed. Cutting, chasing and making good completed.
2. Holes, gaps, service penetrations, perimeter junctions and around openings: Seal.
3. Adhesive fixings: Prepare substrate to achieve effective bonding.
 - 3.1. Contaminants: Remove loose material, dirt, grease, oil, paper, etc.
 - 3.2. Absorption: Control by dampening, priming or applying bonding agents as necessary.

326 Parge Coats

1. Apply a continuous coat of Gyproc Soundcoat Plus at least 6mm thick to the entire surface of the background ensuring all cracked or unfilled joints are covered. Allow to set before following on with Gyproc plasterboard installation.

331 Thermal Sealants for Gyproc Linings

1. Manufacturer and reference: British Gypsum, Gyproc DriWall Adhesive or Gyproc Sealant.
2. Before installation of dry lining system, fully seal all air paths around the perimeter of the background and around structural openings and service penetrations through the background.
3. Apply as a continuous fillet, leaving no gaps.

335 Additional supports

1. Framing: Accurately position and securely fix to give full support to:

- 1.1. Partition heads running parallel with, but offset from main structural supports.
- 1.2. Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
- 1.3. Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.
2. Backing board:
 - 2.1. Use proprietary tile backing board as outer board where the system will receive a weight $\geq 32\text{kg/m}^2$.
 - 2.2. Performance of the overall system to be maintained.

375 New wet laid bases

1. Dpcs: Install under full width of partitions/ freestanding wall linings.
 - 1.1. Material: Bituminous sheet or plastics.

390 Pre and Post-Contract Samples

1. General: Before placing orders submit representative samples of the following:
 - 1.1. Plasterboard: 500mm x 500mm of each.
 - 1.2. Framing: 500mm length.
 - 1.3. Access panels/ grilles.
2. Delivered materials/ products: To match samples.

395 Control samples

1. General: Complete areas of finished work and obtain approval of appearance before proceeding.
 - First structural bay of each type of partition system.
 - First structural bay of each type of dry lining system.
 - First structural bay of each type of ceiling system.

398 Performance and Testing

1. General:
 - 1.1. BS 5234 - Partitions.
2. Airtight Shafts and Stairs:
 - 2.1. Provide penetration seals as necessary to achieve the required performance.
 - 2.2. Leakage Rates:
 - 2.2.1. Builders work shafts: 0.23 litres/m²/second at 160 Pascals of differential pressure.
 - 2.2.2. Pressurisation shafts: 0.34 litres/m²/second at 50 Pascals of differential pressure.
3. Testing: To be carried out periodically during construction and upon completion of each shaft.
4. Fire Testing: The works shall be tested to comply with the relevant parts of BS EN 1364 and BS 476.
5. Acoustic Testing: Partitions shall be on-Site tested to the relevant Parts of BS EN ISO 10140 and to comply with Approved Document Part E of the Building Regulations.
6. Impact testing: Partitions shall be tested to the relevant Parts of BS 5234.

Components

400 Gypsum boards generally

1. Standard
 - 1.1. Gypsum plasterboard to BS EN 520.

- 1.2. Gypsum fibre board to BS EN 15283-2.
- 1.3. Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).
- 1.4. BS 8212 - Code of practice for dry lining and partitioning using gypsum plasterboard.

401 Gypsum plasterboard

1. Type: To BS EN 520, type A
2. Core density (minimum): 650 kg/m³.
3. Reaction to fire: Class A2-s1, d0 or better
4. Water vapour resistance factor: Manufacturer's standard
5. Thermal conductivity: 0.25 W/(m·K)
6. Other BS EN 520 characteristics: None
7. Recycled content: Submit proposals
8. Exposed surface and edge profiles: Suitable to receive specified finish

403 Gypsum plasterboard (moisture-resistant)

1. Type: To BS EN 520, type H1
2. Core: Moisture-resistant.
 - 2.1. Density (minimum): 710 kg/m³.
3. Paper facings: Moisture-resistant.
4. Reaction to fire: Class A2-s1, d0 or better
5. Water vapour resistance factor: Manufacturer's standard
6. Thermal conductivity: Manufacturer's standard
7. Other BS EN 520 characteristics: None
8. Recycled content: Submit proposals
9. Exposed surface and edge profiles: Suitable to receive specified finish

410 ACTiVair Technology

1. Decoration: After the joint treatment, decoration including any decorator's preparatory work should follow. Any decoration should be breathable to allow Formaldehyde and other pollutants to pass through the system and be absorbed by the plasterboard.
 - 1.1. Painting: Consult the appropriate paint manufacturer.
 - 1.1.1. Limitations: Finishes that restrict the board surface permeability, e.g. non-breathable wall finishes, will limit the absorption of Formaldehyde and other pollutants for the area covered.

432 Metal studs

1. Compliance: To BS7364, BS EN 10162, BS EN 10143.
2. Requirements: Minimum 0.55mm hot-dip zinc/ iron zinc alloy coated steel.

Installation

435 Dry linings generally

1. General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
2. Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing.
 - 2.1. Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.

3. **Fixings boards:** Securely and firmly to suitably prepared and accurately levelled backgrounds.
4. **Finishing:** Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.
5. **Wet or Humid conditions:** : Outer layer of gypsum board to be moisture resistant with appropriate performance characteristics to suit the system.

445 Ceilings

1. **Sequence:** Fix boards to ceilings before installing dry lined walls and partitions.
2. **Orientation of boards:** Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.
3. **Two layer boarding:** Stagger joints between layers.

455 Metal framing for partitions/ wall linings

1. **Setting out:** Accurately aligned and plumb.
 - 1.1. **Frame/ Stud positions:** Equal centres to suit specified linings, maintaining sequence across openings.
 - 1.2. **Additional studs:** To support vertical edges of boards.
2. **Fixing centres at perimeters (maximum):** 600 mm.
3. **Fixings:** Securely back to suitable structure accommodating all deflections.
4. **Openings:** Form and seal accurately with a water based acrylic mastic fire seal without detriment to the appearance or performance of the system.
 - 4.1. **Doorsets:** Use sleeved or boxed metal studs and/ or suitable timber framing to achieve strength grade requirements for framing assembly and adequately support weight of door.
 - 4.2. **Services penetrations:** Allow for associated fire-stopping.

465 Staggered stud partitions

1. **Horizontal frame members (noggins, bearers, etc.) and boards:** Fix between alternate studs and not touching adjacent offset studs.

475A Metal Furrings for Wall Linings (DriLyner MF)

1. Install using components, accessories and methods recommended by the board manufacturer.
2. Set out furrings vertically, at specified centres and adjacent to angles, openings, movement joints, etc.
 - 2.1. Maintain centres of furring across openings. Bed in 200mm long dabs of adhesive at each end of furring and thereafter at 450mm centres. Bed horizontal lengths of furring to provide continuous support to top and bottom edges of board.
3. Accurately align all furrings to a true, vertical plane.
4. Install additional furrings, where necessary, to accept junctions with partitions. Use a continuous line of adhesive to ensure there are no gaps across the cavity.

481A Metal Framing for Gypliner Universal Wall Lining

1. Securely fix Gypframe GL8 floor/ ceiling track at 600mm centres.
2. Position Gypframe GL2/ GL9 brackets at equal vertical centres and fix to background with Gypframe GL11 GypLyner Anchors for solid backgrounds or proprietary fixings for hollow backgrounds.
3. Position Gypframe GL1 lining channels at equal centres, maintaining sequence across openings, and locate in Gypframe GL8 track at floor and ceiling. Provide additional Gypframe GL1 lining channels as Gypframe GL2/ GL9 brackets using Wafer Head Screws.

4. Provide additional Gypframe GL1/ GL8 sections at wall abutments and corners as recommended by the board manufacturer.
5. Install Gypframe GFT1 Fixing T for single layer board applications, inserted between face of framework and back of plasterboard lining, or Gypframe GFS1 Fixing Strap for double layer board applications, inserted between board layers, to receive fixings at end board joints. Ensure end board joints do not coincide with Gypframe GL1 lining joints

485 Suspended ceiling grids

1. **Setting out:** Accurately aligned and level.
 - 1.1. **Grid members and hangers:**
 - 1.1.1. Centres to suit specified linings and imposed loads.
 - 1.1.2. Final locations to be agreed with Services Engineer and appointed sub-contractor.
 - 1.2. **Additional grid members:** Provide bracing and stiffening at upstands, partition heads, access hatches, etc.
2. **Fixing:** Securely at perimeters, grid joints, top and bottom hanger fixings.
3. **Compliance:** BS EN 13964 - Suspended ceilings.

491A Metal Framing for Three Sided Gyplyner Steel Encasement

1. Fix continuous lengths of Gypframe GA2 angle onto face of innermost steel flanges or background using fire resistant fixings at 600mm centres. Alternatively, use shot-fired fixings at same centres.
2. Push fit Gypframe GL10 framing clips onto edges of outermost steel flanges at 800mm maximum centres.
3. Push fit Gypframe GL1 lining channel onto each row of Gypframe GL10 framing clips.
4. Install Gypframe GFT1 fixing T or short sections of Gypframe GL1 lining channel to support ends of boards in single layer linings and Gypframe GFS1 fixing straps to support ends of boards in the face layer of multiple layer linings.
5. Stagger joints between layers in multiple layer boarding.

491B Metal Framing for Four Sided Gyplyner Encasement

1. Push fit Gypframe GL10 framing clips onto edge of each steel flange at 800mm maximum centres.
2. Push fit Gypframe GL1 lining channel onto each row of Gypframe GL10 framing clips.
3. Install Gypframe GFT fixing T or short sections of Gypframe GL1 lining channel to support ends of boards in single layer linings, and Gypframe GFS1 fixing straps to support ends of boards in the face of multiple layer linings.
4. Stagger joints between layers in multiple layer boarding.

505 Installing mineral wool insulation

1. **Fitting insulation:** Closely butted joints and no gaps. Use fasteners to prevent slumping or displacement.
2. **Services**
 - 2.1. **Electrical cables overlaid by insulation:** Sized accordingly.
 - 2.2. **Ceilings:** Cut insulation around electrical fittings, etc.

510 Sealing gaps and air paths

1. **Location of sealant:** To perimeter abutments and around openings.
 - 1.1. **Pressurized shafts and ducts:** At board-to-board and board-to-metal frame junctions.
2. **Application:** To clean, dry and dust free surfaces as a continuous bead with no gaps.

- 2.1. Gaps greater than 6 mm between floor and underside of gypsum board: After sealing, fill with jointing compound.

516A Acoustic Sealant

1. Manufacturer and reference: British Gypsum, Gyproc Sealant.
2. Location: At junctions with adjoining structure, and at other air paths.
3. Apply as a continuous bead to clean, dry, dust-free surfaces, leaving no gaps.
4. Apply application of sealant, bulk fill gaps between floor and underside of plasterboard using Gyproc jointing compound.

521A Air Pressure Sealant (Shaftwall) to

1. Sealant: British Gypsum, Gyproc Sealant.
2. Location:
 - 2.1. To all framing members at perimeter junctions with walls, floors and ceilings, air gaps around openings, and other potential leakage points.
 - 2.2. To frame members prior to fitting core boards and around fire stops cloaking horizontal core board joints.
 - 2.3. To all metal framing around board perimeters of first layer boarding and board perimeters when fixing outer layer board.
 - 2.4. Apply as a continuous board leaving no gaps.

530 Cavity fire barriers within partitions/ wall linings

1. Metal framed systems
 - 1.1. Material:
 - 1.2. Installation: Form accurately and fix securely with no gaps to provide a complete barrier to smoke and flame.
2. Adhesive fixed wall lining systems
 - 2.1. Material: Adhesive compound.
 - 2.2. Installation: Form in a continuous line with no gaps to provide a complete barrier to smoke and flame.

545 Cavity fire barriers within suspended ceilings

1. Type: As recommended by board manufacturer to meet specified performance
2. Fire resistance: Refer to Fire Strategy report.
3. Ceiling void subdivision: Fix barriers as drawings.
4. Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
5. Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.
6. Ceiling systems for fire protection: Do not impair fire-resisting performance of ceiling system.

555 Fire-stopping at perimeters of dry lining systems

1. Material: Tightly packed mineral wool or intumescent mastic/ sealant.
2. Application: To perimeter abutments to provide a complete barrier to smoke and flame.

556 Fire-stopping and barriers generally

1. Comply with BS EN 1364 and BS EN 1366.

2. Fire/acoustic barriers, seals, strips: To be non-visible and appropriate at all conditions whilst maintaining performance.

560 Joints between boards

1. Tapered edged gypsum boards
 - 1.1. Bound edges: Lightly butted.
 - 1.2. Cut/ unbound edges: 3 mm gap.
2. Square edged plasterboards: 3 mm gap.
3. Square edged gypsum fibre boards: 5 mm gap.
4. Movement Joints: Invisible.

565 Vertical joints

1. Joints: Centre on studs.
 - 1.1. Partitions: Stagger joints on opposite sides of studs.
 - 1.2. Two layer boarding: Stagger joints between layers.

570 Horizontal joints

1. Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.
2. Two layer boarding: Stagger joints between layers by at least 600 mm.
3. Edges of boards: Support using additional framing.
 - 3.1. Two layer boarding: Support edges of outer layer.

575 Plank plasterboard

1. First layer in two layer boarding: Square edged with long edges at right angles to studs.

580 Insulation backed plasterboard

1. General: Do not damage or cut away insulation to accommodate services.
2. Installation at corners: Carefully cut back insulation or plasterboard as appropriate along edges of boards to give a continuous plasterboard face, with no gaps in insulation.

586A Fixing Firecase to Beam Casing on Steel Angles

1. Fix continuous lengths of Gypframe FEA1 steel angle to both sides of the top flange or background using fire resistant fixings at 600mm centres. Alternatively, use shot-fired fixings at the same centres. Ensure face of angle is flush with edge of flange.
2. Fix fascia boards to Gypframe FEA1 angles using screws at 150mm centres. In single layer linings fit 60mm wide backing strips behind end joints, fixed through fascia boards using screws at 150mm centres.
3. Fix fascia boards to soffit boards using screws at 150mm centres.
4. Stagger joints in multi-layer linings and butt all boards lightly together. Set screw heads in a depression.

586C Fixing Firecase to Column Casing on Steel Angles

1. Fix continuous lengths of Gyprame FEA1 steel angle to both sides of the flange abutting the wall structure, or to the wall structure itself, using fire resistant fixings at 600mm centres. Alternatively, use shot-fired fixings at the same centres. Ensure face of angle is flush with edge of flange. Use additional Gypframe FEA1 angles where the column flange is set at right-angles to the wall structure.

2. Fix return boards to Gypframe FEA1 angles using screws at 150mm centres, and face boards to return boards using screws at 150mm centres.
3. Stagger joints in multi-layer linings and butt all boards lightly together. Set screws in a depression.

586E Fixing Firecase to Column Casing

1. Fix boards on adjacent faces to each other using screws at 150mm centres.
2. Stagger joints in multi-layer linings and butt all boards lightly together. Set screw heads in a depression.

586F Fixing Firecase Four Sided Beam Casing on Steel Angles

1. Fix continuous lengths of Gypframe FEA1 steel angle to both sides of the top flange or background using fire resistant fixings at 600mm centres. Alternatively use shot-fired fixings at the same centres. Ensure face of angle is flush with edge of flange.
2. Fix fascia boards to Gypframe FEA1 angles using screws at 150mm centres. In single layer linings fit 60mm wide backing strips behind end joints, fixed through fascia boards using screws at 150mm centres.
3. Fix fascia boards to soffit/ top boards using screws at 150mm centres.
4. Stagger joints in multi-layer linings and butt all boards lightly together. Set screw heads in a depression.

590 Fixing gypsum board to metal framing/ Furrings

1. **Partitions/ Wall linings:** Fix securely and firmly at the following centres (maximum):
 - 1.1. **Single layer boarding:** To all framing at 300 mm centres. Reduce to 200 mm centres at external angles.
 - 1.2. **Multi-layer boarding:** Face layer at 300 mm centres, and previous layers around perimeters at 300 mm centres.
2. **Ceilings:** 230 mm. Reduce to 150 mm at board ends and at lining perimeters.
3. **Position of screws from edges of boards (minimum):** 10 mm.
 - 3.1. **Screw heads:** Set in a depression. Do not break paper or gypsum core.

591A Fixing Plasterboard/ Gypsum Fibre Board/ Gypsum Board with Mat Reinforcement to Metal Supports

1. **Partitions/ linings/ casings:**
 - 1.1. Fix securely to all supports at maximum 300mm centres (reduced to 200mm at external angles where recommended by the board manufacturer).
 - 1.2. Previous layer of plank plasterboard: Install with long edges at right angles to studs, and fix securely to each stud using two screws.
 - 1.3. Other previous layers: Fix securely to supports around the perimeter of each board at maximum 300mm centres.
 - 1.4. Rigidur H: It is recommended that Rigidur H boards are pre-drilled and countersunk at screw locations for ease of installation.
2. **Ceilings:** Fix securely to all supports at maximum 230mm centres (reduced to 150mm at board ends and at lining perimeters where recommended by the board manufacturer).
3. Fix working from the centre of each board. Position screws not less than 13mm from cut edges and 10mm from bound edges of boards. Set heads in a depression; do not break paper or gypsum board.

591B Fixing Plasterboard to Metal Supports (Shaftwall)

1. Working from the centre of each board, fix securely to all supports at maximum 300mm centres, reduced to 200mm at external angles.

2. Fix working from the centre of each board. Position screws not less than 13mm from cut edges and 10mm from bound edges of boards. Set heads in a depression; do not break paper or gypsum core.

592 Fixing insulation backed plasterboard to metal furrings

1. **Fixing to furrings:** In addition to screw fixings apply continuous beads of adhesive sealant to furrings.

592B Fixed Rigitone Board to Metal Supports

1. Ceilings: Prior to board installation prime all board edges with an application of Thistle GypPrime diluted four parts water to one part GypPrime and allow to dry for 24 hours.
2. Fix securely to all supports at maximum 230mm centres (reduced to 150mm at board ends).
3. Fix around board perimeters before making fixings in the field of the board. Do not fix into Gypframe MF6 channels around ceiling perimeter. Position screws not less than 13mm from the edge of the board. Set heads in a depression; do not damage the board, perforations or break paper or gypsum core.

595 Deflection heads

1. **Fixing boards:** Do not fix to head channels.
2. **Provide::** Deflection details of all heads and abutments to suit deflection calculations and service conditions.
3. **Visibility::** All works to be concealed.
4. **Documentation::** Refer to Structural Engineers documentation.

610 Fixing gypsum board to timber

1. **Fixing to timber:** Securely at the following centres (maximum):
 - 1.1. Nails: 150 mm.
 - 1.2. Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles.
 - 1.3. Screws to ceilings: 230 mm.
2. **Position of nails/ screws from edges of boards (minimum)**
 - 2.1. Bound edges: 10 mm.
 - 2.2. Cut/ unbound edges: 13 mm.
3. **Position of nails/ screws from edges of timber supports (minimum):** 6 mm.

620 Fixing gypsum board with adhesive dabs

1. **Setting out boards:** Accurately aligned and plumb.
2. **Fixing to substrates:** Securely using adhesive dabs.
3. **Adhesive dab spacings for each board**
 - 3.1. **Horizontally:** One row along top edge and one continuous dab along bottom edge.
 - 3.2. **Vertically:** One row along each edge and thereafter at intermediate spacings to suit size of board:
4. **Thickness (mm) Width (mm) Dab centres (mm)**
5. 9.5 1200 400
6. 9.5/12.5 900 450
7. 12.5 1200 600
8. **Adhesive dab dimensions (width x length):** At least 50-75 mm x 250 mm.
 - 8.1. **Position of dabs from edges/ ends of boards (minimum):** 25 mm.

625 Fixing insulation backed plasterboard with adhesive dabs

1. **Fixing to substrates:** In addition to adhesive dab fixings, secure boards with nailable plugs in locations recommended by board manufacturer.

626A Fixing Drilyner Basic

1. Apply dabs of Gyproc DriWall Adhesive to the background for one board at a time, to achieve at least 20% contact with the surface area of the boards.
2. One row of horizontal dabs to coincide with the top edge of each board.
3. One continuous line of horizontal dabs to coincide with the bottom edge of each board.
4. One row of vertical dabs to coincide with the side edges of each board, and additional vertical row(s) at the following maximum centres:
 - 4.1. 400mm for boards 9.5mm thick x 1200mm wide.
 - 4.2. 600mm for boards 12.5mm thick x 1200mm wide.
 - 4.3. 450mm for boards 9.5mm thick x 900mm wide.
 - 4.4. 450mm for boards 12.5mm thick x 900mm wide.
5. Ensure dabs are at least 25mm from board edges.
6. For linings to receive ceramic finishes, apply one additional row of dabs at mid-storey height.

626B Fixing Drilyner TL

1. Apply dabs of Gyproc Dri-Wall Adhesive to the background for one wall at a time, to achieve at least 20% contact with the surface area of the boards.
 - 1.1. One row of horizontal dabs to coincide with the top edge of each board.
 - 1.2. One continuous line of horizontal dabs to coincide with the bottom edge of each board.
 - 1.3. One row of vertical dabs to coincide with the side edges of each board, and additional vertical row(s) at 600mm maximum centres.
2. Ensure dabs are at least 25mm from board edges.
3. Fix boards to the background using two Nailable Plugs per laminate, location at mid height 15mm from each of the side edges. Ensure plugs penetrate at least 25mm into the background excluding the thickness for any existing plaster finishes.
4. Drive nail heads slightly below the paper surface; do not break paper or gypsum core.
5. For linings to receive ceramic finishes, apply one additional row of dabs at mid-storey height and nine Nailable Plugs through each board.

630 Fixing insulation backed plasterboard with adhesive spots

1. **Setting out boards:** Accurately aligned and plumb.
2. **Fixing to substrates:** Securely using adhesive spots and mechanical fastenings.
3. **Adhesive spot spacings to each board:** Four vertical rows, at 400 mm centres in each row.
4. **Adhesive spot diameters (minimum):** 25 mm.
5. **Mechanical fasteners:** Nailable plugs in locations recommended by board manufacturer.

631A Fixing Drilyner RF (with Gyproc Thermaline Board Linings)

1. Apply 25mm diameter blobs of Gyproc Sealant to the background in five vertical rows at 300mm centres in each row.
2. Fix boards to the background using two Nailable Plugs per laminate located at mid-point in height, 15mm from each vertical edge.
3. Ensure plugs penetrate at least 25mm into the background excluding the thickness of any existing plaster finishes.
4. Drive nails slightly below the paper surface; do not break paper or gypsum core.

5. For boards to receive ceramic finishes, use a total of nine Nailable Plugs.

640 Miscellaneous

1. Sockets/ Outlets/ Data boxes/ Switches:
 - 1.1. Do not locate back to back.
 - 1.2. Detailing as per manufacturer's recommendations.
 - 1.3. Include necessary acoustic and putty pads where required.
2. Plates/ Patreses/ Noggings: Integrate within the system as required to support fixtures and fittings.
3. Loadings: Where partition / loading will receive wall tiling with a weight greater than 31kg/m², tile backer boards to be used.
4. Access Panels: Included within systems whilst maintaining performance in locations agreed.

Finishing

650 Level of dry lining across joints

1. Sudden irregularities: Not permitted.
2. Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.
 - 2.1. Tapered edge joints
 - 2.1.1. Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
 - 2.2. External angles
 - 2.2.1. Permissible deviation (maximum) for both faces: 4 mm.
 - 2.3. Internal angles
 - 2.3.1. Permissible deviation (maximum) for both faces: 5 mm.

670 Seamless jointing to gypsum boards

1. Cut edges of boards: Lightly sand to remove paper burrs.
2. Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of paper tape, fully bedded.
3. Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
4. Finishing: Apply jointing compound. Feather out each application beyond previous application to give a flush, smooth, seamless surface.
5. Nail/ screw depressions: Fill with jointing compound to give a flush surface.
6. Minor imperfections: Remove by light sanding.

671A Taped Seamless Finish to Plasterboard

1. Manufacturer: British Gypsum.
 - 1.1. Joint compound: One or more of the following Gyproc products:
 - 1.1.1. Gyproc EasiFill 60.
 - 1.1.2. Gyproc Joint Filler.
 - 1.1.3. Gyproc QuickSand Joint Cement.
 - 1.1.4. Gyproc ProMix Lite Joint Cement.
 - 1.1.5. Gyproc Ready Mix Joint Cement.
 - 1.2. Joints/ gaps:

- 1.2.1. Gyproc Joint Tape.
- 1.3. Internal/ angled corners:
 - 1.3.1. Gyproc Joint Tape.
- 1.4. External corners:
 - 1.4.1. Gyproc AquaBead.
 - 1.4.2. Gyproc LevelLine.
 - 1.4.3. Gyproc Drywall Metal Angle Bead.
- 1.5. Board ends:
 - 1.5.1. Gyproc Drywall Plastic Edge Bead.
 - 1.5.2. Gyproc Drywall Metal Edge Bead.
- 1.6. Primer/ sealer:
 - 1.6.1.2 No. coats of Gyproc Drywall Sealer where vapour control is required (provides vapour resistance only and does not meet performance requirements for moisture resistant grade boards as defined in BS EN 520, type H1).
 - 1.6.2. Alternatively, 1 No. coat of Gyproc Drywall Sealer for simple steam stripping of wall coverings (except for vinyl or other low permeability wall coverings) at a later date.
 - 1.6.3.1 No. coat Gyproc Drywall Primer elsewhere.
- 2. Lightly sand cut edges of boards to remove paper burrs.
- 3. Fill all joints, gaps and internal angles with joint compound and cover with continuous lengths of tape, fully bedded. Reinforce external angles, stop ends, etc. with the specified bead/ corner tape.
- 4. When set, lightly sand, clean surface of dust, cover with joint compound, feathered out to give a flush, smooth, seamless surface.
- 5. Spot nail/ screw depressions with joint compound to give a flush surface.
- 6. Fill minor indents. After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.
- 7. Apply specified primer/ sealer to give a continuous consistent texture to surface of boards.

671B Taped Seamless Finish to Rigidur H Fibre Reinforced Gypsum Board

- 1. Manufacturer: British Gypsum.
 - 1.1. Joint compound: One or more of the following Gyproc products:
 - 1.1.1. Gyproc EasiFill 60.
 - 1.2. Joints/ gaps:
 - 1.2.1. Gyproc Joint Tape.
 - 1.3. Internal/ angled corners:
 - 1.3.1. Gyproc Joint Tape.
 - 1.4. External corners:
 - 1.4.1. Gyproc AquaBead.
 - 1.4.2. Gyproc LevelLine.
 - 1.4.3. Gyproc Corner Tape.
 - 1.4.4. Gyproc Drywall Metal Angle Bead.
 - 1.5. Board ends:
 - 1.5.1. Gyproc Drywall Plastic Edge Bead.
 - 1.5.2. Gyproc Drywall Metal Edge Bead.
 - 1.6. Primer/ sealer:

- 1.6.1.2 No. coats of Gyproc Drywall Sealer where vapour control is required (provides vapour resistance only and does not meet performance requirements for moisture resistant grade boards as defined in BS EN 520, Type H1).
- 1.6.2. Alternatively, one coat Gyproc Drywall Sealer for simple steam stripping of wall coverings (except for vinyl or other low permeability wall coverings) at a later date.
- 1.7. Reinforce external angles, etc. with the specified bead/ corner tape.
- 1.8. Apply Gyproc EasiFill to the joint and bed in Gyproc Joint Tape or Gyproc Habito Corners. Allow to dry and lightly sand to remove any high spots. Gyproc Joint Tape or Gyproc Habito Corners should be used in internal angle joints. Trowel apply a second coat of Gyproc EasiFill and feather out to about 200mm width on each side of the joint. Allow to dry and lightly sand.
- 1.9. Spot nail/ screw/ staple depressions with 2 No. coats of joint compound to give a flush finish.
- 1.10. Fill minor indents with a single coat of joint compound to give a flush surface.
- 1.11. After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.

676A Taped Seamless Finish to Glasroc Fibre Reinforced Gypsum Board

1. Manufacturer: British Gypsum.
2. Joint compound:
 - 2.1. Gyproc Joint Filler.
 - 2.2. Gyproc QuickSand Joint Cement.
3. Joints/ gaps:
 - 3.1. Gyproc Joint Tape.
4. Internal/ angled corners:
 - 4.1. Gyproc LevelLine.
 - 4.2. Gyproc Joint Tape.
 - 4.3. Thistle Pro Tape FT 50.
5. External corners:
 - 5.1. Gyproc LevelLine.
 - 5.2. Gyproc Drywall Metal Angle Bead (bedded onto Gyproc Joint Filler).
6. Apply Gyproc Joint Cement to the joint and bed in Gyproc Joint Tape. Allow to dry and lightly sand to remove any high spots. Gyproc Joint Tape or Gyproc Habito LevelLine should be used in internal angle joints. Trowel apply a second coat of Gyproc Joint Cement and feather out to about 200mm width on each side of the joint. Allow to dry and lightly sand.
7. Spot nail/ screw/ staple depressions with 2 No. coats of joint compound to give a flush surface.
8. Fill minor indents with a single coat of joint compound to give a flush surface.
9. After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.

676B Seamless Finish to Rigitone

1. Cut edges of boards: Lightly sand to remove paper burrs.
2. Joint filling: Cartridge gun apply Rigitone Vario 60 Jointing Material ensuring that the joint is filled to the full depth of the board. Leave to dry for minimum 50 minutes before striking off excess jointing material.
3. Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
4. Finishing: 24 hours after joint filling is completed finish board joints with an application of Gyproc EasiFill ensuring that board perforations remain clear. Lightly sand when dry to leave a smooth seamless surface.

5. Screw depressions: Fill with Gyproc EasiFill to give a flush surface.
6. Minor imperfections: Lightly sand jointing and spotting to remove any minor imperfections.

680 Skim coat plaster finish

1. Plaster type: Gypsum.
 - 1.1. Thickness: 3mm.
2. **Joints:** Fill and tape except where coincident with metal beads.
3. **Finish:**
 - 3.1. Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
 - 3.2. Moisture resistant plasterboard, or tile backer boards are not to be plastered unless stated otherwise.

681A Skim Coat Plaster Finish (hand applied only)

1. Manufacturer and reference: British Gypsum, Thistle MultiFinish.
 - 1.1. Thickness: 2mm.
2. Pre-treatment: Thistle Bond-It (Glasroc H TileBacker and Gyproc moisture resistant plasterboards).
3. Reinforcement:
 - 3.1. Joints/ gaps/ internal corners: Any gaps exceeding 3mm should be pre-filled, joints reinforced using:
 - 3.1.1. Gyproc Joint Tape or alternatively Thistle Pro Tape FT50 or FT100 may be used.
 - 3.1.2. External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
 - 3.1.3. Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
4. Fill and tape all joints except where coincident with metal beads.
5. Trowel/ float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
6. Lighting design considerations:
 - 6.1. General lighting can have a critical effect on the appearance of the final finished surface. Refer to Annex A - 'Design considerations for work and acceptance of smooth plaster finishes under aspects of lighting' - BS EB 13914: Part 2.

681B Skim Coat Plaster Finish (hand applied only)

1. Manufacturer and reference: British Gypsum, ThistlePro PureFinish.
2. Pre-treatment: Thistle Bond-It (Glasroc H TileBacker and Gyproc moisture resistant plasterboards), Thistle GypPrime (required for Rigid H Boards to control suction).
3. Reinforcement:
 - 3.1. Joints/ gaps/ internal corners: Any gaps exceeding 3mm should be pre-filled, joints reinforced using:
 - 3.1.1. Gyproc Joint Tape or alternatively Thistle ProTape FT50 or FT100 may be used.
 - 3.1.2. External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
 - 3.1.3. Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
4. Fill and tape all joints except where coincident with metal beads.
5. Trowel/ float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
6. ACTIVair Technology:
 - 6.1. Decoration: After the plaster skim has dried, decoration including any decorator's preparatory work should follow. Note, however, that any decoration should be breathable to

allow Formaldehyde and other pollutants to pass through the finish and be absorbed by the plaster.

6.1.1. Painting: Breathable paints - consult the appropriate paint manufacturer.

6.1.2. Wallpaper: Use only breathable wallpapers - consult the appropriate wallpaper manufacturer.

6.2. Limitations: Finishes that restrict the board surface permeability, e.g. Tiling, Marble and other wall coverings, will limit the absorption of Formaldehyde and other pollutants for the area covered.

7. Lighting design considerations:

7.1. General lighting can have a critical effect on the appearance of the final finished surface. Refer to Annex A - 'Design considerations for work and acceptance of smooth plaster finishes under aspects of lighting' - BS EN 13914: Part 2.

681C Skim Coat Plaster Finish (hand applied only)

1. Manufacturer and reference: British Gypsum, Thistle BoardFinish.
 - 1.1. Thickness: 2mm.
2. Pre-Treatment: Thistle Bond-It (Glasroc H TileBacker and Gyproc moisture resistant grade plasterboards).
 - 2.1. Thistle GypPrime (required for Rigidur H boards to control suction).
3. Reinforcement:
 - 3.1. Joints/ gaps/ internal corners: Any gaps exceeding 3mm should be pre-filled, joints reinforced using Gyproc Joint Tape or alternatively Thistle ProTape FT50 or FT100 may be used.
 - 3.2. External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
 - 3.3. Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
4. Fill and tape all joints except where coincident with metal beads.
5. Trowel/ float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
6. Lighting design considerations:
 - 6.1. General lighting can have a critical effect on the appearance of the final finished surface. Refer to Annex A - 'Design considerations for work and acceptance of smooth plaster finishes under aspects of lighting' - BS EN 13914: Part 2.

681D Skim Coat Plaster Finish (hand applied only)

1. Manufacturer and reference: British Gypsum ThistlePro DuraFinish (for improved impact and abrasion resistance).
 - 1.1. Thickness: 2mm.
2. Pre-treatment: Thistle GypPrime (required for Rigidur H boards to control suction).
3. Reinforcement:
 - 3.1. Joints/ gaps/ internal corners: Any gaps exceeding 3mm should be pre-filled, joints reinforced using:
 - 3.1.1. Gyproc Joint Tape or alternatively Thistle ProTape FT50 or FT100 may be used.
 - 3.1.2. External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
 - 3.1.3. Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
4. Fill and tape all joints except where coincident with metal beads.
5. Trowel/ float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
6. Lighting design considerations:

- 6.1. General lighting can have a critical effect on the appearance on the final finished surface.
Refer to Annex A - 'Design considerations for work and acceptance of smooth plaster finishes under aspects of lighting' - BS EN 13914: Part 2.

681E Skim Coat Plaster Finish (machine or hand applied)

1. Manufacturer and reference: British Gypsum, Thistle SprayFinish.
 - 1.1. Thickness: 2mm.
2. Pre-treatment: Thistle Bond-It (Glasroc H TileBacker and Gyproc moisture resistant grade plasterboards).
 - 2.1. Thistle GypPrime (required for Rigidur H boards to control suction).
3. Machine spray application: Worm pump plastering machine, e.g. M-Tec M100SC or PFT Ritmo.
4. Reinforcement:
 - 4.1. Joints/ gaps: Gyproc Joint Tape or Thistle ProTape FT50/ FT100.
 - 4.2. Internal corners: Any gaps exceeding 3mm should be pre-filled joints reinforced using Gyproc Joint Tape or alternatively Thistle ProTape FT100 may be used.
 - 4.3. External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
 - 4.4. Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
5. Fill and tape all joints except where coincident with metal beads.
6. Trowel/ float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
7. Lighting design considerations:
 - 7.1. General lighting can have a critical effect on the appearance of the final finished surface.
Refer to Annex A - 'Design considerations for work and acceptance of smooth plaster finishes under aspects of lighting' - BS EN 13914: Part 2.

681F Skim Coat Plaster Finish (hand applied only)

1. Manufacturer and reference: British Gypsum, ThistlePro Magnetic.
 - 1.1. Thickness: 3mm minimum.
2. Pre-treatment: Thistle Bond-It (Glasroc H TileBacker and Gyproc moisture resistant grade plasterboards).
 - 2.1. Thistle GypPrime (required for Rigidur H boards to control suction).
3. Reinforcement:
 - 3.1. Joints/ gaps/ internal corners: Any gaps exceeding 3mm should be pre-filled, joints reinforced using:
 - 3.2. Gyproc Joint Tape or alternatively Thistle ProTape FT50 or FT100 may be used.
 - 3.3. External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
 - 3.4. Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
4. Fill and tape all joints except where coincident with metal beads.
5. Trowel/ float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
6. Lighting design considerations:
 - 6.1. General lighting can have a critical effect on the appearance of the final finished surface.
Refer to Annex A - 'Design considerations for work and acceptance of smooth plaster finishes under aspects of lighting' - BS EN 13914: Part 2.

692 Rigid beads/stops

1. **Internal:** To BS EN 13658-1.
2. **External:** To BS EN 13658-2.

695 Installing beads/ Stops

1. **Cutting:** Neatly using mitres at return angles.
2. **Fixing:** Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
3. **Finishing:** After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads exposed to view.

Ω End of Section

K13

Rigid sheet fine linings and panelling

Types of lining and panelling

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

101 LIN-305 Metal Sheet Wall Lining

1. Metal wall sheet lining as the Design Drawings.
 - 1.1. Manufacturer: Mirrorinox, or acceptable equivalent.
 - 1.1.1.Reference: Copper Antique uniqueSURPHACE
 - 1.2. Size and configuration: Refer to the Design Drawings.
 - 1.3. Specific performance:
 - 1.3.1.Fire rating: No target rating other than that provided inherently by the system.
 - 1.3.2.Acoustic rating: No target rating other than that provided inherently by the system.
 - 1.4. Support framing: Corrosion resistant support components , mechanically secured to the load bearing elements of the backing wall/ primary structure and concealed in the finished works.
 - 1.5. Intermediate layers/ membranes: Where required to suit the service conditions.
 - 1.6. Sheets:
 - 1.6.1.Type and material: Copper and brush effect wall panels: Refer to the Design Drawings.
 - 1.6.2.Thickness: To be sufficiently thick to provide a visually flat surface and to eliminate excessive distortion and permanent deformation.
 - 1.6.3.Finish: Brush effect.
 - 1.6.4.Colour: Copper, to the acceptance of the Architect through sampling.
 - 1.6.5.Changes in direction: To be achieved using sheets that are factory formed to suit the configurations/ have symmetrical mitred joints while maintaining the returned edges. Corner angle covers or lapped joints not acceptable to the Architect. Site cutting of panels not to be permitted.
 - 1.6.6.Fixing: Concealed and mechanically secured to framing using methods to be concealed in the finished works.
 - 1.7. Joints/ junctions between sheets: As shown on the Design Drawings.
 - 1.8. Fire, smoke and acoustic stopping: As required to be concealed in the finished works and to meet the current requirements of the Building Regulations.
 - 1.9. Access control: As shown on the Design Drawings; refer to the Services Engineer's documentation.
 - 1.10. Additional requirements: Lighting to be integrated into the complete assembly. Refer to the Design Drawings.

102 LIN-901 Back-lit Glass Wall Lining

1. Back-lit glass lining, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Specific performance:
 - 1.2.1.Fire rating: Refer to the Fire Strategy Report.
 - 1.2.2.Acoustic rating: Refer to the Acoustic Report.

- 1.3. Support framing: Aluminium support systems with bespoke decorative lightweight metal frame to face.
- 1.4. Panels:
 - 1.4.1. Manufacturer: Spanlite International, or acceptable equivalent.
 - 1.4.2. Reference: Feature wall with a digital feature print and dummy diagonal joints.
 - 1.4.3. Colour: To be confirmed.
 - 1.4.4. Final onyx print design: To be confirmed.
 - 1.4.5. Manufacturer data as below:

Wall size	Max: Any width by 3m high Typical: Any width by 2.4m high
Panel size	Max: 2m x 3m Typical: 1.2m x 2.4m
Glass	Typically Stratum Image Glass: 13.5mm low-iron, toughened laminate containing image
Cover trim	Finish to client spec, eg: brushed stainless steel, powder-coated aluminium etc.
LEDs	Cree / Osram
LED Driver	Standard, dimmable, DMX, Dali, 1-10V
Lighting	White / dynamic white / RGB / RGBA / colour-change
Wattage	50W/linear metre max
IP Rating	For indoor use, IP65 optional
Lifetime	50,000+ hours

- 1.4.6. Treatment: Factory sealed with Weatherproof and UV stable.
- 1.4.7. Edge finish: Cut edges sealed as recommended by the manufacturer.
- 1.4.8. Corner cutting: Mitred corners.
- 1.5. Panels mechanically secured using concealed methods recommended by the system manufacturer.
- 1.6. Changes in direction to be achieved using panels that are factory formed to suit the configurations or have symmetrical mitred joints whilst maintaining the returned edges. Corner angle covers or lapped joints are not acceptable to the Employer's Agent. Site cutting of panels is not permitted.
- 1.7. Joints:
 - 1.7.1. Size: As the Design Drawings.
 - 1.7.2. Vertical joints: As shown on the Design Drawings.

105 Wood-based sheets generally

1. Standard: To BS EN 13986.
 - 1.1. Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).

110 Wood panelling

1. Description:
2. Substrate:
3. Battens: Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
 - 3.1. Finished size:
 - 3.2. Moisture content at time of fixing (maximum): 18%.
 - 3.3. Spacing (centres):

- 3.4. Method of fixing:
- 4. Panelling
 - 4.1. Materials: Generally to BS EN 942.
 - 4.1.1. Wood species:
 - 4.1.2. Appearance class:
 - 4.2. Panels:
 - 4.2.1. Flame-retardant impregnation treatment:
 - 4.3. Finish (to match approved sample):
 - 4.4. Moisture content at time of fixing:
 - 4.5. Method of fixing:
 - 4.6. Joint treatment:
 - 4.6.1. Adhesive:
- 5. Included features:
- 6. Accessories:
- 7. Joinery workmanship: As section Z10.

120 Wood-veneered panel lining

- 1. Description:
- 2. Substrate:
- 3. Battens: Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
 - 3.1. Finished size:
 - 3.2. Moisture content at time of fixing (maximum): 18%.
 - 3.3. Spacing (centres):
 - 3.4. Method of fixing:
- 4. Panels
 - 4.1. Core material:
 - 4.1.1. Thickness:
 - 4.1.2. Flame-retardant impregnation treatment:
 - 4.2. Face veneer: Free from decay and holes.
 - 4.2.1. Supplier:
 - 4.2.2. Wood species:
 - 4.2.3. Cutting:
 - 4.2.4. Arrangement:
 - 4.3. Backing veneer: As recommended by fabricator.
 - 4.4. Edge treatment:
 - 4.5. Fabrication: As section Z10.
 - 4.5.1. Adhesive: To BS EN 204; Type: To match durability class of core material.
 - 4.6. Finish (to match approved sample):
 - 4.7. Moisture content at time of fixing: As recommended by fabricator to suit environmental conditions.
- 5. Installation
 - 5.1. Method of fixing panels:
 - 5.2. Joint treatment:
- 6. Included features:

7. Accessories:

130 Laminated plastics-veneered panel lining

1. Description:
2. Substrate:
3. Battens: Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
 - 3.1. Finished size:
 - 3.2. Moisture content at time of fixing (maximum): 18%.
 - 3.3. Spacing (centres):
 - 3.4. Method of fixing:
4. Panels
 - 4.1. Core material:
 - 4.1.1.Thickness:
 - 4.1.2.Flame-retardant impregnation treatment:
 - 4.2. Facing sheet:
 - 4.2.1.Manufacturer:
 - 4.2.2.Product reference:
 - 4.2.3.Thickness:
 - 4.2.4.Reaction to fire rating:
 - 4.2.5.Colour/ pattern/ finish:
 - 4.3. Backing sheet
 - 4.3.1.Durability/ Fire rating: As per facing sheet.
 - 4.3.2.Colour/ pattern/ finish: Submit proposals.
 - 4.4. Edge treatment:
 - 4.5. Fabrication: As section Z10.
 - 4.5.1.Adhesive: To BS EN 204; Type: To match durability class of core material.
 - 4.6. Moisture content at time of fixing: As recommended by fabricator to suit environmental conditions.
5. Installation
 - 5.1. Method of fixing panels:
 - 5.2. Joint treatment:
6. Included features:
7. Accessories:

140 Proprietary laminated plastics-veneered panel lining

1. Description:
2. Substrate:
3. Battens: Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
 - 3.1. Finished size:
 - 3.2. Moisture content at time of fixing (maximum): 18%.
 - 3.3. Spacing (centres):
 - 3.4. Method of fixing:
4. Panels

- 4.1. Standard: To BS 4965, Class
- 4.2. Manufacturer:
 - 4.2.1. Product reference:
- 4.3. Thickness:
- 4.4. Colour/ pattern/ finish:
- 4.5. Edge treatment:
- 4.6. Moisture content at time of fixing: As recommended by fabricator to suit environmental conditions.
5. Installation
 - 5.1. Method of fixing panels:
 - 5.2. Joint treatment:
6. Included features:
7. Accessories:

150 Purpose-made

1. Description:
2. Substrate:
3. **Battens:** Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
 - 3.1. Finished size:
 - 3.2. Moisture content at time of fixing (maximum):18%.
 - 3.3. Spacing (centres):
 - 3.4. Method of fixing:
4. Panels
 - 4.1. Core material:
 - 4.1.1. Thickness:
 - 4.1.2. Flame-retardant treatment:
 - 4.2. Facing material:
 - 4.3. Backing veneer: As recommended by fabricator.
 - 4.3.1. Colour/ pattern/ finish: Submit proposals.
 - 4.4. Edge treatment:
 - 4.5. Fabrication: As section Z10.
 - 4.5.1. Adhesive:
 - 4.6. Moisture content at time of fixing: As recommended by fabricator to suit environmental conditions.
5. Installation
 - 5.1. Method of fixing panels:
 - 5.2. Joint treatment:
6. Included features:
7. Accessories:

170 Acoustic panel lining

1. Description:
2. Substrate:
3. **Battens:** Softwood free from decay and active insect attack and with no knots wider than half the width of the section.

- 3.1. Finished size:
- 3.2. Moisture content at time of fixing (maximum): 18%.
- 3.3. Spacing (centres):
- 3.4. Method of fixing:
- 4. Acoustic insulation:
 - 4.1. Manufacturer:
 - 4.1.1. Product reference:
 - 4.2. Thickness:
- 5. Panels
 - 5.1. Manufacturer:
 - 5.1.1. Product reference:
 - 5.2. Type:
 - 5.3. Thickness:
 - 5.4. Finish:
- 6. Installation
 - 6.1. Method of fixing panels:
- 7. Included features:
- 8. Accessories:

General requirements

210 Advance registration

- 1. Materials registered in advance by the employer: Obtain from supplier named in Preliminaries section A56.
 - 1.1. Ordering: Supersede employer's registration and take over responsibility by an order to the supplier covering price, supply and delivery to suit progress of the work.

220 Material samples

- 1. Representative samples of designated materials: Submit before placing orders.
- 2. Lining/ panelling: 300mm x 300mm of each type.
- 3. Demountable support system
- 4. Fixings and demountable supports.

230 Control samples

- 1. Sample area: Complete first finished full height or wall length of each type as part of the finished work.
- 2. Approval of appearance: Obtain before proceeding.

260 Environmental conditions

- 1. General requirements prior to starting work specified in this section: Building weathertight; wet trades completed and affected areas dried out.
- 2. Temperature and humidity before, during and after fixing lining/ panelling: Maintained at levels approximating to those which will prevail after building is occupied.

270 Heating system

- 1. Operating mode:

2. Design output: The system has been designed to provide room temperatures in the range
3. Operation up to Completion of the Works: Submit proposals.

280 Air conditioning system

1. Design output: The system has been designed to provide
2. Operation up to Completion of the Works: Submit proposals.

290 Testing

1. Prototypes: Verify the surface spread of flame performance of the works, to the satisfaction of the Building Inspector.

Fabrication/ fixing/ finishing

310 Accuracy of fabrication

1. Site dimensions: Take as necessary before starting fabrication.
 - 1.1. Discrepancies with drawings: Report without delay and obtain instructions before proceeding.
2. Permissible deviations for panels
 - 2.1. Length: ± 1.5 mm.
 - 2.2. Width: ± 1.5 mm.
 - 2.3. Squareness (taking the longer of 2 sides at a corner as a baseline and measuring the deviation of the shorter side from the baseline perpendicular): ± 1.5 mm in 1 m.
 - 2.4. Flatness (of panels with a core thickness of 12 mm and over, as delivered to site): ± 1 mm under a 600 mm straightedge.
 - 2.5. Maximum creep: 1mm in 2.5m.

320 Laminated timber cores for wood-veneered panels

1. Face grain direction: Perpendicular to specified direction of veneer grain.
 - 1.1. Alternative arrangement: Panels cross-veneered before applying face veneer.

340 Holes/ cut-outs in laminated plastics veneers

1. Internal corners: Formed to a radius, minimum 5 mm when not specified otherwise.
2. Holes for fasteners: Formed slightly oversize.

350 Fixing linings and panelling

1. Setting out: Accurate, true to line and level, free from undulations and lipping, with lines and joints aligned, straight and parallel unless specified otherwise.
2. Movement allowance: Adequate for future moisture and temperature movement of boards.
3. Fixing of panels: Secure, to prevent pulling away, bowing, or other movement during use.
4. Methods of fixing and fasteners: As section Z20 unless specified otherwise.
5. Trims: Wherever possible, to be in unjointed lengths between angles or ends of runs.
 - 5.1. Running joints: Where unavoidable, submit proposals for location and method of jointing.
 - 5.2. Angle joints: Mitred, unless specified otherwise.
6. Linings to be from the same batch and match colour.

360 Open joints (joints without cover strips or similar)

1. **General:** Within a joint (including in-line continuations across transverse joints) greatest width must not exceed the least width by more than:
 2. in 1 metre.
 3. in 2 metres.
 4. in 3 metres.
5. **Variations in width:** Evenly distributed with no sudden changes. Joints with bevelled edges to be measured to the face arrises.

370 Sealant pointing

1. **Sealant:**
 - 1.1. **Manufacturer:**
 - 1.1.1. **Product reference:**
 - 1.2. **Colour:**
2. **Application:** As section Z22.

400 Door frames

1. **Hardwood packing between frames and reveals:** To give even joints of specified width.
 - 1.1. **Position of packs:** Where fixings tighten frame against structure.
2. **Positions of frames:** Accurate, plumb, level, and aligned.
 - 2.1. **Fixing of frames:** Secure to prevent pulling away, deflection, or other movement during use.
 - 2.2. **Fastener locations:** 600 mm maximum centres with at least one fixing 150 mm from each end of jambs and one adjacent to each hanging point.

410 Fire-resisting frames

1. **Gaps between frames and supporting construction:** Filled as necessary in accordance with requirements for certification and/ or door/ doorset manufacturer's instructions.

430 Hanging of prefinished doors

1. **Planing/ Sanding:** Not permitted.

440 Ironmongery

1. **Supplier:**
2. **Installation:**
 - 2.1. **Fasteners:** Supplied by ironmongery manufacturer.
 - 2.1.1. **Finish/ Corrosion resistance:** To match ironmongery.
 - 2.2. **Adjacent surfaces:** Undamaged.
3. **Moving parts:** Adjusted, lubricated and functioning correctly at completion.

480 Clear finished wood

1. **Nail holes:** Filled with stopping coloured to match wood.
2. **Prepared surface:** Smooth, closed and free from sanding marks.
3. **Finish:** Smooth, free from brush marks, nibs, sags, runs and other defects.

Ω End of Section

K21

Wood strip/ board fine flooring/ linings

Types of flooring/ lining

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

112 FLF-201 Timber Floor

1. Product: HW3713 Amazon Venture Plank or acceptable equivalent.
2. Manufacturer: Havwoods International.
3. Details:
 - 3.1. 6mm thick tongued and grooved engineered flooring.
 - 3.2. European Oak (Quercus Robur).
 - 3.3. Sanded single strip pattern with two sides bevelled edged.
 - 3.4. Birch plywood backing.
 - 3.5. Overall thickness 21mm and width 260mm.
 - 3.6. Character grade.

170 Floor finish materials specification

1. Minimum BRE 'Green Guide to Specification Online' rating:

General/ preparation

210 Workmanship generally

1. Moisture content of timber supports: 12-14%.
2. Methods of fixing and fasteners: As section Z20 where not specified.
3. Protection: Protect from dirt, stains and damage using suitable coverings and boards laid as the work proceeds.

220 Environmental conditions

1. General requirements prior to starting work specified in this section: Building weathertight, wet trades completed and affected areas dried out.
2. Temperature and humidity before, during and after installing strips/ boards: Maintained at levels approximating to those which will prevail after building is occupied.

230 Heating system

1. Operating mode:
2. Room temperatures for which the system has been designed:
3. Operation up to Completion:

250 Fixtures

1. Fixtures around which strip flooring is to be fixed: Installed before starting work specified in this section.

260 Dryness of concrete/ screed substrates for flooring

1. Relative humidity above substrate when tested with a hygrometer to BS 8201, Appendix A (maximum): 75%.
 - 1.1. Test points: All corners, around perimeter, and random points over area being tested.
2. Drying aids: Turned off for not less than four days before testing.

270 Strip/ Board moisture content testing

1. Test regime and equipment: Submit proposals.
2. Test results: Submit record of tests and results.

290 Control samples

1. Sample area: Complete as part of the finished work.
 - 1.1. Size (minimum): 2000mm
2. Approval of appearance: Obtain before proceeding.

295 Slip resistance testing

1. Test
 - 1.1. To BS 7976-1, -2 and -3 using a TRL Pendulum.
 - 1.2. When testing with a surface roughness meter, achieve minimum of 20 µm Rz.
 - 1.3. Make arrangements for test to be witnessed/ certified.
2. Report: Submit. Include slip resistance values in the wet and dry states.
3. Requirements: 36PTV (wet and dry conditions).

Fixing/ finishing

305 Workmanship Generally

1. Comply with:
 - 1.1. BS 8201 - Code of practice for installation of flooring of wood and wood-based panels.
 - 1.2. BS EN 13329 - Laminate floor coverings. Elements with a surface layer based on aminoplastic thermosetting resins. Specifications, requirements and test methods.
 - 1.3. BS EN 13629 - Wood flooring. Solid individual and pre-assembled hardwood boards.
 - 1.4. BS EN 14041 - Resilient, textile, laminate and modular multilayer floor coverings. Essential characteristics.
 - 1.5. BS EN 14342 - Wood flooring and parquet. Characteristics, evaluation of conformity and marking.
 - 1.6. BS EN 14904 - Surfaces for sports areas. Indoor surfaces for multi-sports use. Specification.
2. Tolerances
 - 2.1. 1mm maximum height differential between loaded adjacent panels.
 - 2.2. 1mm in 1000mm twist deviation - Unloaded.
 - 2.3. ±3mm - Surface deviation.

335 Treated timber

1. Surfaces exposed by minor cutting and drilling: Treated with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

340 Access panels

1. Size and position: Agree before strips/ boards are fixed.

2. Additional noggings/ dwangs (Scot), battens, etc.: Provide and fix as necessary.

350 Fixing strips/ boards

1. Strips/ Boards: Fixed securely to each support with flat, true surfaces free from undulations, splits, hammer marks, scratches and protruding fastenings.
2. Movement of timber: Allowed for when positioning strips/ boards and fastenings to prevent cupping, springing, opening of joints or other defects.
3. Heading joints (where permitted): End matched, butted and, where applicable, positioned centrally over supports and distributed across the flooring to achieve a random effect.
4. Surface fixing:

360 Expansion provision

1. Expansion gaps
 - 1.1. Edges of flooring: Parallel to lie of strips/ boards and 10mm mm wide.
 - 1.2. Ends of flooring: 10 mm wide.
2. Spacer blocks and debris: Removed before fixing skirtings/ cover fillets.
3. Intermediate expansion/ movement joints: Formed as recommended by flooring manufacturer/ supplier.

370 Finish to flooring

1. Exposed fastener heads: Punched or set below surface and filled with stopping to match wood.
2. Strips/ Boards: Sanded to give a clean, smooth and flush surface free from score marks.
3. Finish:

380 Finish to lining

1. Exposed fastener heads: Punched or set below surface and filled with stopping to match wood.
2. Strips/ Boards: Sanded to give a clean, smooth and flush surface free from score marks.
3. Finish:

Ω End of Section

K30 Panel partitions

Timber requirements

100 Design Compliance

1. Sections to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

105 Timber procurement

1. **Timber (including timber for wood-based products):** Obtain from well managed forests and/ or plantations in accordance with:
 - 1.1. The laws governing forest management in the producer country or countries.
 - 1.2. International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
2. **Documentation:** Provide, in accordance with chain of custody certification scheme requirements, either:
 - 2.1. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied; or
 - 2.2. Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.

Types of partition

111 IWS-605 Framed Glazed Partition System

1. Framed, glazed, slim profile partition system with integrated pivot door, as the Design Drawings.
 - 1.1. Manufacturer: Optima, or acceptable equivalent.
 - 1.2. Reference: To be agreed with the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Specific performance:
 - 1.4.1. Fire rating: Refer to the Fire Strategy Report/ Design Drawings.
 - 1.4.2. Acoustic rating: Refer to the Acoustic Report/ Design Drawings.
 - 1.5. Framing:
 - 1.5.1. Type and material: Extruded slim framed aluminium profiles.
 - 1.5.2. Finish: Polyester powder coated.
 - 1.5.3. Colour: Dark grey.
 - 1.6. Infill panels:
 - 1.6.1. Glazing:
 - 1.6.1.1. Type: Single/ double glazed clear safety glass - to be agreed with the Architect.
 - 1.6.1.2. Manifestation: Where shown on the Design Drawings, sand blasted to suit manifestation design.
 - 1.6.2. Visible gaskets: Black.
 - 1.7. Integrated doorset(s):
 - 1.7.1. Type: Internal framed glazed pivot doorset.
 - 1.7.2. Size and configuration: Refer to the Design Drawings and the Door Schedule.

- 1.7.3. Specific performance:
 - 1.7.3.1. Fire rating: To match surrounding partition system.
 - 1.7.3.2. Acoustic rating: To match surrounding partition system.
- 1.7.4. Operation:
 - 1.7.4.1. Type: Manual/ automatic.
 - 1.7.4.2. Sliding door hardware: To BS EN 1527.
- 1.7.5. Door frame: To match surrounding partition system.
- 1.7.6. Door leaf:
 - 1.7.6.1. Leaf primary and secondary framing, edging: To match door frame.
 - 1.7.6.2. Glazing: To match surrounding partition system.
 - 1.7.6.3. Manifestation: Where shown on the Design Drawings, sand blasted to suit manifestation design.
 - 1.7.6.4. Visible gaskets: To match surrounding partition system.
- 1.7.7. Meeting stiles (to door pairs): Ostensibly square with a subtle radiused profile, to suit the service conditions.
- 1.7.8. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.
- 1.8. Door hardware:
 - 1.8.1. Recessed floor spring complete with top centre pivots.
 - 1.8.2. Electro-magnetic hold-open device (if required).
 - 1.8.3. Manual deadlocks to bottom door rails complete with Europrofile cylinder and thumbturn.
 - 1.8.4. Straight stainless steel pull handles fitted back-to-back through glass, complete with roses to each side of glass.
 - 1.8.5. Access control: The extent of access control to be confirmed by the Architect.
- 1.9. System to be designed and installed as complete integrated systems, including all necessary support structure, bracketry, fixing rails and plates, angles, cleats, fixings and fastenings, rivets, clips, firestops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.

112 IWS-611 Glazed Partition System

- 1. Framed, double glazed partition system, as the Design Drawings.
 - 1.1. Manufacturer: Optima North Contracting or acceptable equivalent.
 - 1.2. Reference: Optima Revolution 100 Double Glazed Partition System.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Height: 2800mm (floor to ceiling). Maximum standard height: 3000mm
 - 1.5. Specific performance:
 - 1.5.1. Fire rating: Not required.
 - 1.5.2. Acoustic rating: Minimum 45dB (Rw). Refer to the Acoustic Report.
 - 1.6. Framing:
 - 1.6.1. Type and material: Extruded aluminium profiles.
 - 1.6.2. Finish: Polyester powder coated.
 - 1.6.3. Colour: Non-standard colour, RAL 7016.
 - 1.7. Glazing Junctions/Corners
 - 1.7.1. Glass-to-glass joints: Nebula dry butt-joint.
 - 1.8. Infill panels:

- 1.8.1. Glazing:
- 1.8.1.1. Type: Full height, dry jointed glazed partition, formed from 2 No. layers of 12mm thick toughened glass.
 - 1.8.1.2. Manifestation: Include an applied film manifestation in compliance with Approved Document Part K of the Building Regulations and as on the Design Drawings, or to the acceptance of the Architect.
- 1.8.2. Visible gaskets: Black.
- 1.8.3. Installation: To allow for mastic post installation of all glazing around the system frame to partition opening (for clean and acoustic seal).
- 1.8.3.1. Colour: To the acceptance of the Architect through sampling.
- 1.9. Integrated doorset(s): Integral micro-flush aluminium door frame with 54mm x 36mm face and leaf set.
- 1.9.1. EDGE Symmetry double glazed leaf on in-line pivots - Lab Tested to 33dB (Rw).
- 1.10. System to be designed and installed as complete integrated systems, including all necessary support structure, bracketry, fixing rails and plates, angles, cleats, fixings and fastenings, rivets, clips, firestops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.
- 1.11. Ironmongery: From the manufacturer's standard ironmongery suite.
- 1.11.1. Full height pull handle in satin stainless steel, in-line pivots, non-locking.
- 1.12. Maximum allowable deflection under the line load:
- +/- 25mm
 - L/120 or 25mm (whichever is least)
 - L/65 or 50mm (whichever is least)
- 1.13. Partition Abutments
- 1.13.1. Head detail: 90mm deep (± 25 mm deflection – internal) for up to 12.8mm glass on both faces.
 - 1.13.2. Wall detail: 25mm deep with clip-on bead for up to 12.8mm glass on both faces.
 - 1.13.3. Transom detail: 50mm deep for up to 12.8mm glass on both faces, allow Double Transom for Power Assist.
- 1.14. Additional requirements:
- 1.14.1. Refer to the Design Drawings, the Acoustic Report and the Fire Strategy Report for ceiling/ floor cavity barriers, and the Structural Engineer's documentation for deflection head details as required.
 - 1.14.2. Sustainability: System to conform to the requirements of:
 - 1.14.2.1. SKA - Compliant with Good Practice Measure M09 - Ref. Sustainability Statement 100300.
 - 1.14.2.2. BREEAM - Satisfies a rating of A against Green Guide Ratings 2008 - Ref. Sustainability Statement 100301.

113 IWS-615 Glazed Partition System

1. Framed, single glazed partition system, as the Design Drawings.
 - 1.1. Manufacturer: Optima North Contracting or acceptable equivalent.
 - 1.2. Reference: Optima 117 PLUS Single Glazed Partition System.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Height: 2900mm/ 3190mm floor to ceiling height. Refer to the Design Drawings.
 - 1.5. Specific performance:
 - 1.5.1. Fire rating: Not required.
 - 1.5.2. Acoustic rating: Minimum 33dB (Rw). Refer to the Acoustic Report.

- 1.6. Framing:
 - 1.6.1. Type and material: Extruded aluminium profiles.
 - 1.6.2. Finish: Polyester powder coated.
 - 1.6.3. Colour: Non-standard colour, RAL 7016.
- 1.7. Glazing Junctions/Corners
 - 1.7.1. Glass-to-glass joints: Nebula dry butt-joint.
- 1.8. Infill panels:
 - 1.8.1. Glazing:
 - 1.8.1.1. Type: Full height, dry glazed and jointed Glazed partitions, formed from 1 No. layer of 12mm thick toughened glass.
 - 1.8.1.2. Manifestation: Include an applied film manifestation in compliance with Approved Document Part K of the Building Regulations and as on the Design Drawings, or to the acceptance of the Architect.
 - 1.8.2. Visible gaskets: Black.
 - 1.8.3. Installation: To allow for mastic post installation of all glazing around system frame to partition opening (for clean and acoustic seal).
- 1.9. Integrated doorset(s): Integral micro-flush aluminium door frame with 54mm x 36mm face and leaf set.
 - 1.9.1. AXILE Pulse frameless door on in-line pivots - Lab tested to 14dB (Rw).
- 1.10. System to be designed and installed as complete integrated systems, including all necessary support structure, bracketry, fixing rails and plates, angles, cleats, fixings and fastenings, rivets, clips, firestops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.
- 1.11. Ironmongery: From the manufacturer's standard ironmongery suite.
 - 1.11.1. 1700mm 3 Point Guardman D handle, in-line pivots, top and bottom patch and PT20/30 overhead panel fixings.
- 1.12. Maximum allowable deflection under the line load:
 - +/-25mm
 - L/120 or 25mm (whichever is least)
 - L/65 or 50mm (whichever is least)
- 1.13. Partition Abutments
 - 1.13.1. Head detail (Deflection allowance): 135mm deep (±40mm deflection – internal).
 - 1.13.2. Floor detail: 25mm deep x 25mm wide with clip-on bead.
 - 1.13.3. Wall detail: 25mm deep x 25mm wide.
- 1.14. Additional requirements:
 - 1.14.1. Refer to the Design Drawings, the Acoustic Report and the Fire Strategy Report for ceiling/ floor cavity barriers, and the Structural Engineer's documentation for deflection head details as required.
 - 1.14.2. Sustainability: System to conform to the requirements of:
 - 1.14.2.1. SKA - Compliant with Good Practice Measure M09 - Ref. Sustainability Statement 100300.
 - 1.14.2.2. BREEAM - Satisfies a rating of A against Green Guide Ratings 2008 - Ref. Sustainability Statement 100301.

114 IWS-625 Glazed Partition System

1. Framed, double glazed partition system, as the Design Drawings.
 - 1.1. Manufacturer: Optima Systems Ltd. or acceptable equivalent.

- 1.2. Reference: Optima Revolution 100 Double Glazed Partition System.
- 1.3. Size and configuration: Refer to the Design Drawings.
- 1.4. Height: 3910mm floor to ceiling height.
- 1.5. Specific performance:
 - 1.5.1. Fire rating: Not required.
 - 1.5.2. Acoustic rating: Minimum 51dB (Rw). Refer to the Acoustic Report.
- 1.6. Framing:
 - 1.6.1. Type and material: Extruded aluminium profiles.
 - 1.6.2. Finish: Polyester powder coated.
 - 1.6.3. Colour: Non-standard colour, RAL 7016.
- 1.7. Infill panels:
 - 1.7.1. Glazing:
 - 1.7.1.1. Type: Glazed partition, formed from 13.5mm acoustic laminate and 17.5mm toughened laminate glass.
 - 1.7.1.2. Manifestation: Include an applied film manifestation in compliance with Approved Document Part K of the Building Regulations and as on the Design Drawings, or to the acceptance of the Architect.
 - 1.7.2. Visible gaskets: Black.
 - 1.7.3. Installation: To allow for mastic post installation of all glazing around system frame to partition opening (for clean and acoustic seal).
 - 1.7.3.1. Colour: To the acceptance of the Architect through sampling.
- 1.8. Integrated doorset(s): Integral micro-flush D665 aluminium door frame with 65mm face and leaf set - 2400mm high with glazed overpanel up to 3900mm.
 - 1.8.1. EDGE Affinity single glazed leaf on offset pivots/ hinges - Lab Tested to 39dB (Rw).
- 1.9. System to be designed and installed as complete integrated systems, including all necessary support structure, bracketry, fixing rails and plates, angles, cleats, fixings and fastenings, rivets, clips, firestops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.
- 1.10. Ironmongery: From the manufacturer's standard ironmongery suite.
 - 1.10.1. Full height 3 Point Guardsman D Handle, off-set pivots, non-locking.
- 1.11. Additional requirements:
 - 1.11.1. Refer to the Design Drawings, the Acoustic Report and the Fire Strategy Report for ceiling/ floor cavity barriers, and the Structural Engineer's documentation for deflection head details as required.
 - 1.11.2. Include polyester powder coated spandrel panels where shown, from 3200mm to 3900mm, with acoustic insulation.
 - 1.11.3. Sustainability: System to conform to the requirements of:
 - 1.11.3.1. SKA - Compliant with Good Practice Measure M09 - Ref. Sustainability Statement 100300.
 - 1.11.3.2. BREEAM - Satisfies a rating of A against Green Guide Ratings 2008 - Ref. Sustainability Statement 100301.

115 IWS-621 Smoke Retardant Glazed Partition

1. Framed single glazed partition system as the Design Drawings.
2. Manufacturer: Optima North Contracting or acceptable equivalent.
3. Reference: Optima Revolution 100 Double Glazed Partition System.
4. Size and configuration: Refer to Design Drawings

5. Height: 2800mm floor to bulkhead. Refer to Design Drawings
6. Performance:
 - 6.1. Fire rating: Smoke retardant. Refer to Fire Strategy Report
 - 6.2. Acoustic rating: Minimum 51db (Rw). Refer to Acoustic Report.
7. Framing:
 - 7.1. Type and material: Extruded aluminium profiles.
 - 7.2. Finish: Polyester powder coated.
 - 7.3. Colour: Non standard RAL to be selected.
8. Infill panels:
 - 8.1. Glazing:
 - 8.1.1. Type: Full height, dry jointed glazed partition formed from 16.8mm acoustic laminate glass + 17.5mm toughened laminate glass.
 - 8.1.2. Manifestation: Include an applied film manifestation in compliance with Approved Document Part K of the Building Regulations and as shown on the Design Drawings.
 - 8.2. Visible gaskets to be black.
 - 8.3. Installation: Allow for mastic post installation of all glazing around system frame to partition opening (for clean and acoustic seal). provide colour samples for selection.
9. Integrated Doorsets:
 - 9.1. Integral Microflush D665 aluminium door frame with 65mm face and leaf set: 2400mm high with Glazed Overpanel up to 2800mm.
10. Solid panels: Solid Bulkhead clad with PPC metal panels to match with glazed partition capable of taking the lateral support of the glazed partition.
11. System to be detailed, designed and installed as a complete integrated system including all necessary support structure, bracketary, fixing rails, plates, angles, cleats, fixings, fastenings, rivets, clips, firestops, cavity barriers, acoustic breaks, pressed metal components, closure seals, sealants, gaskets, fillers, tapes, spacers, jacks, shims, isolators and all other necessary accessories and components necessary to complete the installation.
12. Maximum allowable deflection under the line load:
 - +/- 40mm
 - L/120 or 25mm (whichever is least)
 - L/65 or 50mm (whichever is least)
13. Partition Abutments
 - 13.1. Head detail:
 - 135mm deep (± 40 mm deflection – internal) for up to 16.8mm glass on both faces
 - 50mm deep for up to 17.5mm glass on both faces
 - 13.2. Wall detail: 25mm deep with clip-on bead for up to 17.5mm glass on both faces.
 - 13.3. Transom detail: N/A.
 - 13.4. Mullion detail: 1000mm Maximum Module.
14. Ironmongery: From the manufacturers standard catalogue.
15. Additional requirements: refer to the Design Drawings, Acoustic Report, Fire Strategy Report for ceiling/ floor cavity barriers and the Structural Engineer's documentation deflection head details as required.

116 IWS-635 Glazed Partition System

1. Framed, single glazed partition system, as the Design Drawings.
 - 1.1. Manufacturer: Optima North Contracting or acceptable equivalent.
 - 1.2. Reference: Technishield 65 Single Glazed Partition System.
 - 1.3. Size and configuration: Refer to the Design Drawings.

- 1.4. Height: 3015mm floor to ceiling height. Refer to the Design Drawings.
- 1.5. Specific performance:
 - 1.5.1. Fire rating: Minimum 60 minutes integrity and insulation. Refer to the Fire Strategy Report.
 - 1.5.2. Acoustic rating: 42db(Rw).
- 1.6. Framing:
 - 1.6.1. Type and material: Insulated steel sections with welded frames and spigot-jointed rails.
 - 1.6.2. Finish: Polyester powder coated.
 - 1.6.3. Colour: Non-standard colour, RAL 7016.
- 1.7. Infill panels:
 - 1.7.1. Glazing:
 - 1.7.1.1. Type: Full height (with or without transom), silicone glazed with fully framed 25mm Pyrogard.
 - 1.7.1.2. Manifestation: Include an applied film manifestation in compliance with Approved Document Part K of the Building Regulations and as on the Design Drawings, or to the acceptance of the Architect.
 - 1.7.2. Visible gaskets: Black.
 - 1.7.3. Installation: To allow for mastic post installation of all glazing around system frame to partition opening (for clean and acoustic seal).
 - 1.7.3.1. Colour: To the acceptance of the Architect through sampling.
- 1.8. Integrated doorset(s):
 - 1.8.1. EI60 door and frame: Non-rebated double door and frame with overpanel.
- 1.9. System to be designed and installed as complete integrated systems, including all necessary support structure, bracketry, fixing rails and plates, angles, cleats, fixings and fastenings, rivets, clips, firestops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.
- 1.10. Ironmongery: From the manufacturer's standard ironmongery suite.
 - 1.10.1. Full height D Handle, side hung hinges; TS-93 overhead closer; Type RO drop seal.
- 1.11. Deflections (maximum):
 - +/- 25mm
 - L/120 or 25mm (whichever is least)
 - L/65 or 50mm (whichever is least)
- 1.12. Partition /Side Panel Abutments
 - 1.12.1. Head detail: EI60 - 70mm deep x 65mm wide - screen with over-panel (with deflection).
 - 1.12.2. Floor detail: EI60 - 90mm deep x 50mm wide - screen with over-panel.
 - 1.12.3. Wall detail: As head detail for EI60.
 - 1.12.4. Transom: Allow double transom for Power Assist.
- 1.13. Additional requirements:
 - 1.13.1. To be confirmed by the manufacturer.
 - 1.13.2. Refer to the Design Drawings, the Acoustic Report and the Fire Strategy Report for ceiling/ floor cavity barriers, and the Structural Engineer's documentation for deflection head details as required.

117 IWS-651 Glazed Partition System

1. Framed, single glazed partition system, as the Design Drawings.
 - 1.1. Manufacturer: Optima North Contracting or acceptable equivalent.

- 1.2. Reference: Technishield 65 Single Glazed Partition System.
- 1.3. Size and configuration: Refer to the Design Drawings.
- 1.4. Height: 3400mm floor to ceiling height. Refer to the Design Drawings.
- 1.5. Specific performance:
 - 1.5.1. Fire rating: Minimum 30 minutes integrity and insulation. Refer to the Fire Strategy Report.
 - 1.5.2. Acoustic rating: 45db(Rw).
- 1.6. Framing:
 - 1.6.1. Type and material: Insulated steel sections with welded frames and spigot-jointed rails.
 - 1.6.2. Finish: Polyester powder coated.
 - 1.6.3. Colour: Non-standard colour, RAL 7016.
- 1.7. Infill panels:
 - 1.7.1. Glazing:
 - 1.7.1.1. Type: Full height (with or without transom), silicone glazed with fully framed 25mm Pyroguard.
 - 1.7.1.2. Manifestation: Include an applied film manifestation in compliance with Approved Document Part K of the Building Regulations and as on the Design Drawings, or to the acceptance of the Architect.
 - 1.7.2. Visible gaskets: Black.
 - 1.7.3. Installation: To allow for mastic post installation of all glazing around system frame to partition opening (for clean and acoustic seal).
 - 1.7.3.1. Colour: To the acceptance of the Architect through sampling.
- 1.8. Integrated doorset(s):
 - 1.8.1. EI60 door and frame: Non-rebated double door and frame with overpanel.
- 1.9. System to be designed and installed as complete integrated systems, including all necessary support structure, bracketry, fixing rails and plates, angles, cleats, fixings and fastenings, rivets, clips, firestops and cavity barriers, acoustic breaks, pressed metal components, closures, seals and sealants, gaskets, fillers, tapes, spacers, packers, shims, isolators and all other accessories and components necessary to complete the installation.
- 1.10. Ironmongery: From the manufacturer's standard ironmongery suite.
 - 1.10.1. Full height D Handle, side hung hinges; TS-93 overhead closer; Type RO drop seal.
- 1.11. Partition /Side Panel Abutments
 - 1.11.1. Head detail: EI60 - 70mm deep x 65mm wide - screen with over-panel (with deflection).
 - 1.11.2. Floor detail: EI60 - 90mm deep x 50mm wide - screen with over-panel.
 - 1.11.3. Wall detail: As head detail for EI30.
 - 1.11.4. Transom: Allow double transom for Power Assist.
- 1.12. Additional requirements:
 - 1.12.1. To be confirmed by the manufacturer.
 - 1.12.2. Refer to the Design Drawings, the Acoustic Report and the Fire Strategy Report for ceiling/ floor cavity barriers, and the Structural Engineer's documentation for deflection head details as required.

Generally

310 Compliance with performance requirements

1. UKAS or equivalent accredited laboratory test/ assessment reports: Submit proof of compliance.

2. **Materials, components and details:** In accordance with test/ assessment reports. Give notice if discrepancies arise.

320 Samples

1. **Representative samples:** Before placing orders, submit the following:
 - 1.1. 500mm x 500mm of each glass type.
 - 1.2. 500mm length of each finished frame type.
2. **Delivered materials/ products:** To match samples.

330 Control samples

1. **General:** Complete areas of finished work and obtain approval of appearance before proceeding.

340 Environmental conditions

1. **General:** Before, during and after installation, maintain temperature and humidity levels similar to those that will prevail after building is occupied.

Installation

410 Workmanship generally

1. **Setting out:** Plumb, true to line and level, and free from bowing, undulations and other planar distortions.
2. **Joints:** Align accurately with no lipping.
3. **Stability:** Fix securely, with additional supports where necessary at perimeters.
4. **Moisture and thermal movement of framing/ panels:** Make adequate allowance.

470 Perimeter seals

1. **Sealant material:** A type recommended by partition/ panel manufacturer.
2. **Application:** Continuously, to clean, dry, dust-free surfaces, leaving no gaps. In accordance with the sealant manufacturer's instructions.

475 Fire-stopping

1. **General:** Seal gaps at junctions of partitions with perimeter abutments, cavity barriers, service penetrations, etc. to prevent penetration of smoke and flame.
2. **Materials:** Non-combustible or intumescent.
3. **Fire-stopping:** Cross-reference NBS section P12 for requirements of fire-stopping systems.

480 Glazing for partitions

1. **Glass standards:** To BS 952 and relevant parts of:
 - 1.1. BS EN 572 for basic soda lime silicate glass.
 - 1.2. BS EN 1096 for coated glass.
 - 1.3. BS EN 1748 for borosilicate glass.
 - 1.4. BS EN 1863 for heat-strengthened soda lime silicate glass.
 - 1.5. BS EN 12150 for thermally toughened glass.
 - 1.6. BS EN 12337 for chemically strengthened soda lime silicate glass.
 - 1.7. BS EN ISO 12543 for laminated glass.
 - 1.8. BS EN 13024 for thermally toughened borosilicate safety glass.
 - 1.9. BS EN 14178 for basic alkaline earth silicate glass.
 - 1.10. BS EN 14321 for thermally toughened alkaline earth silicate safety glass.

- 1.11. BS EN 14449 for laminated glass and laminated safety glass.
2. **Insulated glass unit standard:** To relevant parts of BS EN 1279.
3. **Pane size:** Within ± 2 mm of nominal size.
4. **Pane condition:** Clean and free from obvious scratches, bubbles, rippling, dimples and other defects.
5. **Glazing standard:** To relevant parts of BS 6262.
6. **Preglazed panes:** To be capable of being reglazed in situ.

490 Ironmongery for partitions

1. **Frames and doors:** Prepare accurately to accept ironmongery and associated fixings.
2. **Ironmongery installation:** Accurate and without damage to components or surrounding surfaces.
 - 2.1. **Fasteners:** Supplied by partition/ ironmongery manufacturer. Finish to match component.
3. **Completion:** Check, adjust and lubricate as necessary for correct operation.

495 Post-installation requirements for partitions

1. **General:** Inspect and adjust for correct fit and operation.
2. **Documentation:** Submit in accordance with the requirements of Regulation 38. Submit for each partition type, including:
 - 2.1. Partition type and construction.
 - 2.2. Manufacturer's identity.
 - 2.3. Sound and fire rating.
 - 2.4. Surface finishes and Light Reflectance Values (as manufactured).
 - 2.5. Requirements for fixtures and fittings.
 - 2.6. Test data and fire certificates.
 - 2.7. Special requirements.
 - 2.8. Dismantling and reassembly procedures.
 - 2.9. **Maintenance:** Replacement of panels, access to services, cleaning, etc.
3. **Spares:** Provide and hand over to the employer, as follows:

Ω End of Section

K32

Panel cubicles/ duct and wall linings/ screens

To be read with preliminaries/ general conditions.

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 PAN-301 Duct Access Panel System

1. Proprietary integrated plumbing system (IPS) with metal support frame to specialist sub-contractor's design, as the Design Drawings.
 - 1.1. Indicative manufacturer: Inscape Interiors.
 - 1.2. Indicative reference: To be confirmed by the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Support framing:
 - 1.4.1.Type and material: Galvanised mild steel sections with aluminium brace bars.
 - 1.4.2.Headrail, baserail and wall rails (docking frame): Extruded aluminium profiles.
 - 1.5. Panels:
 - 1.5.1.Type and material: Solid grade laminate (SGL) with highly durable colour coating - to be confirmed by the Architect.
 - 1.5.2.Thickness: To be confirmed by the Architect.
 - 1.5.3.Edge detail: To be confirmed by the Architect.
 - 1.5.4.Finish: Refer to the Finishes Schedule.
 - 1.5.5.Colour: Refer to the Finishes Schedule.
 - 1.6. Flashgaps: To match panels.
 - 1.7. Fixing: Suitably concealed fixed. Where shown, fixings to permit demounting of panels by maintenance personnel. Fixed panels to be securely fixed in place so that they remain secure when accessible lower panels are removed.
 - 1.8. Pre-plumbing: Sanitary appliances pre-fixed and sealed to integrated plumbing system, refer to the Design Drawings and Section N13.
 - 1.9. Ironmongery:
 - 1.9.1.Linear-bearing hinge: Zinc plated steel with chrome plated rivets and black glass filled nylon linear-bearing.
 - 1.9.2.Panel lock: Stainless steel with polished finish.

210 Samples

1. General: Before placing orders submit representative samples of the following:
 - 1.1. Panel: 300mm x 200mm.
 - 1.2. Exposed ironmongery: 1 of each.
 - 1.3. Exposed fixings: 1 of each.
 - 1.4. Exposed cubicle accessories: 1 of each.
2. Delivered materials/ products: To match samples.

220 Control samples

1. **General:** Complete samples as part of finished work and obtain approval of appearance before proceeding.
2. **Types:** First pair of each type installed in location to be agreed.

250 Installation

1. **Programming:** Do not install cubicles or duct/ wall panels before building is weathertight, wet trades have finished their work, wall and floor finishes are complete, and the building is well dried out.
2. **Accuracy:** Set out to ensure frames and/ or panels and doors are plumb, level and accurately aligned.
3. **Modifications:** Do not cut, plane or sand prefinished components except where shown on drawings.
4. **Fixing:** Secure components using methods and fasteners recommended by the cubicle/ panel manufacturer. Prevent pulling away, bowing or other distortions to frames, panels and doors.
5. **Moisture and thermal movement:** Make adequate allowance for future movement.
6. **Tolerances::**
 - 6.1. Horizontal, vertical and in plane: ± 1 mm in 2 m.
 - 6.2. Interfaces: ± 1 mm.

Ω End of Section

K40

Demountable suspended ceilings

Types of ceiling system

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

110 CLG-501 Metal Mesh Ceiling Tile

1. Metal mesh ceiling, as the Design Drawings:
 - 1.1. Manufacturer: SAS International, or acceptable equivalent.
 - 1.2. Reference: SAS 200 system.
 - 1.3. Specific performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report.
 - 1.3.2. Acoustic rating: Refer to the Acoustic Report.
 - 1.4. Support grid:
 - 1.4.1. Reference: SAS J-Bar suspension method.
 - 1.4.2. Type: Suspended concealed metal grid support framing.
 - 1.5. Tile:
 - 1.5.1. Reference: SAS Mesh Diamond Medium (Brig/ SAS-DM).
 - 1.5.2. Type and material: Feature mesh lay-in ceiling tile.
 - 1.5.3. Tile size: As the Design Drawings.
 - 1.5.4. Open area: 50% approximate.
 - 1.5.5. Pattern: 16 x 8 - 2 x 1.
 - 1.5.6. Edge detail: Square.
 - 1.5.7. Finish: Polyester powder coated.
 - 1.5.8. Colour: Dark grey/ black - to be agreed with the Architect.
 - 1.6. Joints: Closed recess joints using a 3mm black foam, recessed gasket.
 - 1.7. Exposed metalwork finish and colour: To match tile.
 - 1.8. Perimeter trim/ shadow gap: Refer to the Design Drawings.

111 LFT-101 Metal Mesh Ceiling Tile to Lift

1. Metal mesh ceiling, as the Design Drawings: (Note: read in conjunction with the engineers lift specification and architectural finishes schedule)
 - 1.1. Manufacturer: SAS International, or acceptable equivalent.
 - 1.2. Reference: SAS 200 system.
 - 1.3. Specific performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report.
 - 1.3.2. Acoustic rating: Refer to the Acoustic Report.
 - 1.4. Support grid:
 - 1.4.1. Reference: SAS J-Bar suspension method.
 - 1.4.2. Type: Suspended concealed metal grid support framing.

- 1.5. Tile:
 - 1.5.1.Reference: SAS Mesh Diamond Medium (Brig/ SAS-DM).
 - 1.5.2.Type and material: Feature mesh lay-in ceiling tile.
 - 1.5.3.Tile size: As the Design Drawings.
 - 1.5.4.Open area: 50% approximate.
 - 1.5.5.Pattern: 16 x 8 - 2 x 1.
 - 1.5.6.Edge detail: Square.
 - 1.5.7.Finish: Polyester powder coated.
 - 1.5.8.Colour: Dark grey/ black - to be agreed with the Architect.
- 1.6. Joints: Closed recess joints using a 3mm black foam, recessed gasket.
- 1.7. Exposed metalwork finish and colour: To match tile.
- 1.8. Perimeter trim/ shadow gap: Refer to the Design Drawings.

111 CLG-811 Suspended Ceiling Raft System

- 1. Proprietary suspended plasterboard ceiling system, arranged and configured as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Suspension system:
 - 1.2.1.Hangers: M6 threaded suspension rod.
 - 1.2.2.Grid: Concealed galvanised J-Bar support channel.
 - 1.3. Insulation:
 - 1.3.1.Acoustic pad: 16mm deep, 80kg density mineral-wool pad with black tissue face.
 - 1.4. Tiles:
 - 1.4.1.Size: Refer to the Design Drawings.
 - 1.4.2.Finish: Polyester powder coated.
 - 1.4.3.Colour: To be selected by the Architect.
 - 1.4.4.Edge detail: Square.
 - 1.5. Perimeter detail as on the Design Drawings.
 - 1.6. System to include all supports, fixings, clips and all other associated accessories required to complete the installation.

General/ performance

205 Compliance with performance requirements

- 1. **Materials, components and details:** Use those used in the test and identified in the assessment reports. If discrepancies arise, give notice.

220 Structural performance

- 1. **Loads:** The ceiling system must safely support all anticipated loads, including services fittings:
 - 1.1. Class: To be confirmed.
- 2. **Deflection (maximum) between points of support**
 - 2.1. Span under 1200 mm: Span/400.
 - 2.2. Span 1200-1800 mm: Span/500.
 - 2.3. Span over 1800 mm: Span/600.
- 3. **Test standard:** To BS EN 13964.

225 Fire performance

1. **Description:** In accordance with the Fire Strategy Report.
2. **Test reports or assessments:** Include details of performance related to the particular elements of construction.
 - 2.1. **Ceilings with integrated luminaires:** Test/ assess with luminaires in place.

230 Acoustic performance

1. **Description:** In accordance with the Acoustic Report.

Components

240 Samples

1. **General:** Submit representative samples of the following: . .
 - 1.1. Infill units: 300mm x 200mm (include corners and adjacent edges).
 - 1.2. Finishes.
 - 1.3. Ceiling grid, support systems, access panels/ grilles.
 - 1.4. Trims and other fixings that are visible.
 - 1.5. Insulation and cavity barriers.

245 Standards

1. **Steel panels:** To BS EN 10346.
2. **Aluminium sheet, strip and plate:** To BS EN 485-1 and -2.
3. **Aluminium bars, tubes and sections:** To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

250 Suspension system

1. **Extent of system:** Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc. necessary to complete the ceiling system and achieve specified performance.

290 Air plenum barriers

1. **Material:** Rigid or semirigid non porous sheets with smooth nondusting surfaces.
2. **Fire spread rating:** Not less than ceiling materials exposed within the ceiling void.

Execution

302 Control samples

1. **Approval:** Obtain before completing areas of similar work.

303 Installation Tolerances

1. **Grid dimensions:** ± 1 mm of nominal positions.
2. **Final surface levels:** ± 2 mm of nominal horizontal plane.
3. **Visible gasket widths:** $\pm 5\%$ nominal dimension.
4. **Gridline creep:** 1mm in 10,000mm.

305 Setting out

1. **General:** Completed ceiling should present, over the whole of its surface exposed to the room below, a continuous and even surface, jointed (where applicable) at regular intervals.

2. **Infill and access units, integrated services:** Fitted correctly and aligned.
3. **Edge/ perimeter infill units size (minimum):** Half standard width or length.
4. **Corner infill units size (minimum):** Half standard width and length.
5. **Grid:** Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes of infill unit.
6. **Infill joints and exposed suspension members:** Straight, aligned and parallel to walls, unless specified otherwise.
7. **Suitability of construction:** Give notice where building elements and features to which the ceiling systems relate are not square, straight or level.

310 Bracing

1. **General:** Secure, with additional bracing and stiffening to give a stable ceiling system resistant to design loads and pressures.

315 Protection

1. **Loading:** Do not apply loads for which the suspension system is not designed.
2. **Ceiling materials:** When necessary, remove and replace correctly using special tools and clean gloves, etc. as appropriate.

320 Top fixing

1. **Building structure:** Verify suitability.
2. **Structural soffit:**
 - 2.1. **Suitability to receive specified fixings:** Evaluate and confirm.
3. **Fixing generally:** In accordance with BS EN 13964.
4. **Fixing to**
 - 4.1. **Concrete:** Drill and insert suitable expanding anchors.
 - 4.2. **Aerated concrete:** Fix through from the top of concrete units and provide a system of primary support channels.
 - 4.3. **Structural steel:** Drill, or use suitable proprietary clips/ adaptors.
 - 4.4. **Metal roof decking:** Fix to sides of liner tray corrugations.
 - 4.5. **Timber:** Fix to side of joists at least 50 mm from bottom edge. If ceiling system is intended for fire protection, fix into top third of joists.
 - 4.6. **Hollow structural members:** Submit fixing proposals.

325 Installing hangers

1. **Wire hangers:** Straighten and tension before use.
2. **Installation:** Install vertical or near vertical, without bends or kinks. Do not allow hangers to press against fittings, services, or insulation covering ducts/ pipes.
3. **Obstructions:** Where obstructions prevent vertical installation, either brace diagonal hangers against lateral movement, or hang ceiling system on an appropriate rigid sub-grid bridging across obstructions and supported to prevent lateral movement.
4. **Extra hangers:** Provide as necessary to carry additional loads.
5. **Fixing**
 - 5.1. **Wire hangers:** Tie securely at top with tight bends to loops to prevent vertical movement.
 - 5.2. **Angle/ strap hangers:** Do not use rivets for top fixing.
6. **Spacings:**

335 Perimeter trims

1. **Jointing:** Neat and accurate, without lipping or twisting.

- 1.1. **Intermediate butt joints:** Minimize. Use longest available lengths of trim. Align adjacent lengths.
2. **Fixing:** Fix firmly to perimeter wall, edge battens or other building structure.

345 Concealed grids

1. **Primary support channels:** Install level. Do not kink or bend hangers.
 - 1.1. **Wire hangers wrapped around primary channels:** Twice wrapped. Loops tightly formed.
 - 1.2. **Angle/ Strap hangers:** Do not use rivets for bottom fixing.
2. **Splines:** Locate between infill units to assist levelling of adjacent units and to resist air movement at joints.
3. **Spring-tee grids:** Do not omit primary channel.

365 Installing metal infill units

1. **Sound absorbing pads:** Fit to prevent upward air movement through infill units. Cut or fold pads in cut perimeter infill units to full unit size. Reseal cut pads.
2. **Perimeter infill units:** Firmly wedge cut units into perimeter trim, or clip down.

390 Openings in ceiling materials

1. **General:** Neat and accurate. To suit sizes and edge details of fittings. Do not distort ceiling system.

395 Integrated services

1. **General:** Position services accurately, support adequately. Align and level in relation to the ceiling and suspension system. Do not diminish performance of ceiling system.
2. **Small fittings:** Support with rigid backing boards or other suitable means. Do not damage or distort the ceiling.
 - 2.1. **Surface spread of flame rating of additional supporting material:** Not less than ceiling material.
3. **Services outlets**
 - 3.1. **Supported by ceiling system:** Provide additional hangers.
 - 3.2. **Independently supported:** Provide flanges to support ceiling system.

401 Ceiling-mounted luminaires

1. **Support:**
 - 1.1. **Independently supported luminaires:** Suspension adjusted to line and level of ceiling.
2. **Surface mounted luminaires:** Units installed so that in event of a fire the designed grid expansion provision is not affected.
3. **Modular fluorescent recessed luminaires:** Compatible with ceiling module. Extension boxes must not foul ceiling system.
4. **Recessed rows of luminaires:** Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
5. **Fire-protecting/ resisting ceiling systems:** Luminaires must not diminish protection integrity of ceiling system.
6. **Access:** Provide access for maintenance of luminaires.

406 Trunking

1. **Recessed trunking:** Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.

411 Mechanical services

1. Fan coil units
 - 1.1. Inlet/ Outlet grilles: Trim ceiling grid and infill units to suit.
 - 1.2. Space beneath: Sufficient for ceiling system components.
 - 1.3. Suspension and connections: Permit accurate setting out and levelling of fan coil units.
2. Air grilles and diffusers
 - 2.1. Setting out: Accurate and level.
 - 2.2. Linear air diffusers: Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
 - 2.3. Grille/ Diffuser ceiling joints: Provide smudge rings and edge seals.
3. Smoke detectors and PA speakers
 - 3.1. Ceiling infill units: Scribe and trim to suit.
 - 3.2. Independent suspension:
 - 3.3. Flexible connections: Required.
4. Sprinkler heads: Carefully set out and level.

435 Installing air plenum barriers

1. Fixing: Fix tightly at perimeters and joints using methods recommended by the barrier manufacturer to ensure permanent stability.
2. Edges and joints: Seal effectively to prevent air leakage.

Completion

520 User instructions

1. Contents: Include the following:
 - 1.1. Correct methods for removing and replacing infill units and other components.
 - 1.2. Cleaning methods and materials.
 - 1.3. Recommendations for redecoration.
 - 1.4. Ceiling systems intended for fire protection: Limitations placed on subsequent alterations and maintenance procedures, to ensure that their fire performance is not impaired.
 - 1.5. Maximum number, position and value of point loads that can be applied to ceiling system after installation.

Ω End of Section

K41 Raised access floors

Types of raised access floor

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

111 RAF-105 Raised Access Floor (Medium Duty)

1. Fully accessible raised access flooring system.
 - 1.1. Manufacturer: Kingspan Access Floors Limited, or acceptable equivalent such as Bathgate.
 - 1.2. Structural grade: Medium density to comply with MOB PF2 PSU/ SPU.
 - 1.3. Acoustic rating: Refer to the Acoustic Report.
 - 1.4. Sub-floor: As the Design Drawings.
 - 1.5. Support system:
 - 1.5.1. Pedestals to be provided to support the finished floor height above the sub-floor, as the Design Drawings.
 - 1.5.2. The support system to be provided is to strictly comply with that recommended in writing by the manufacturer of the floor panels.
 - 1.5.3. Adjustable pedestals such as Heavy Duty Alpha V support pedestals, or acceptable equivalent, adhesive bonded and/or mechanically fixed to substrates to support the finished floor height above the sub-floor, as the Design Drawings.
 - 1.5.4. The fixing zones as the Design Drawings.
 - 1.5.5. The works to be supported directly onto the primary structure.
 - 1.5.6. All steel to be hot dip galvanised to comply with BS EN ISO 1461.
 - 1.6. Panels:
 - 1.6.1. Panel thickness: As recommended by the manufacturer.
 - 1.6.2. Weight: 25kg/m².
 - 1.6.3. Panel size: 600mm x 600mm.
 - 1.6.4. The joints between flooring panels to be constant with fixing details, as the Working Drawings.
 - 1.6.5. Cut-outs in panels to be carried out at the point of manufacture and not on-Site. All exposed ends, cuts, etc. to be suitably finished and sealed.
 - 1.6.6. Panels to be protected against corrosion after fabrication and prior to application of finishes. All exposed faces of metal, including ends, to be treated to avoid corrosion.
 - 1.6.7. No panels to have sharp edges.
 - 1.6.8. The core of the panel to be protected by metal encapsulation, foil or steel backing.
 - 1.6.9. All exposed faces of metal, including ends, to be treated to avoid corrosion.
 - 1.7. Accessories:
 - 1.7.1. Cut-out panels to incorporate electrical outlets/ air supply outlets and all services outlets, as the Services Engineer's drawings.
 - 1.7.2. Temporary cover plates to be included as necessary.
 - 1.7.3. Floor air supply outlets to comply with the Services Engineer's documentation.

- 1.7.4. Installation and final setting out of services outlets: All installation procedures to comply with the manufacturer's recommendations to the satisfaction of the Services Engineer and the Architect.
- 1.8. Finish: Raised access floor system to accept floor finish as part of the tenant fit-out. Thickness of tile to be in the region of 29-40mm.
- 1.9. Other requirements:
 - 1.9.1. Steps and ramps to be provided as the Design Drawings. Steps to include riser panels, vertical infill panels and flush nosing and general profiles, as the Design Drawings.
 - 1.9.2. Provide seals at perimeter and abutment conditions maintaining the integrity of the works.
 - 1.9.3. Provide all underfloor cavity barriers.
 - 1.9.4. Structural movement joints, where visible, to the acceptance of the Architect.
 - 1.9.5. Earth bonding of the works to comply with the Services Engineer's documentation.
 - 1.9.6. Seal all gaps at the junction of the works with the walls with fireproof material to prevent penetration of smoke and flame.
 - 1.9.7. Seal all encapsulated tiles with sealant or welding material to prevent egress of water into the core material.

General/ performance

210 General performance

1. **Structural requirement:** Resist all direct, implied, dead and live loads without detrimental effect of performance or use.
2. Accommodate all movements to avoid deflection in any condition.

219 Installation

1. **Completed installation:** Clean and stable. Free from bounce and vibration. No lipping between floor panels.

229 Hygrothermal performance

1. **Environmental conditions**
 - 1.1. **Location:** As shown on the Design Drawings.
 - 1.2. **Consequential limits to use:** Submit.
2. **Deemed-to-satisfy test results:** Submit, with testing authority's opinion.

234 Fire performance

1. **Reaction to fire:** Refer to the Fire Strategy Report.
2. Comply with BS 7974 and testing requirements of BS 476.

239 Sound transmission

1. **Laboratory system test:** In accordance with BS EN ISO10848-2.
2. Refer to the Acoustic Report.
3. Provide UKAS accredited compliance confirmation.

Components

310 Samples

1. General: Submit representative samples of the following:
 - 1.1. 1 No. of each panel type.

- 1.2. 1 No. of each element of fixing and support structure.

340 Cavity barriers

1. **Type:** To be proposed by the Contractor.
2. **Performance**
 - 2.1. **General:** Permanently stable, continuous, and an effective barrier to smoke and flame.
 - 2.2. **Fire resistance:** Refer to the Fire Strategy Report.
3. **Spacing:** Maximum dimension in any direction to be as recommended by the manufacturer.
4. **Fixing:** Fix securely so that their performance is unlikely to be affected by:
 - 4.1. Movement of the building due to subsidence, shrinkage or temperature change.
 - 4.2. Failure of their fixings in a fire.
 - 4.3. Failure in a fire of any abutting material or construction.
 - 4.4. Collapse in a fire of any services penetrating them.
5. **Floor panels above cavity barriers:** To be firmly secured.
6. **Gaps between cavity barriers and other elements:** Seal with mineral wool or other suitable material.
7. **Notification:** Give notice when cavity barriers have been installed.

360 Service outlet boxes

1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.

Installation

410 Control samples

1. **General:** Complete areas of finished work as agreed with the Architect - not less than a 20m² area.

421 Preparation

1. **Areas where flooring is to be installed:** Clean before installation and keep clean during installation.
2. **Setting out of flooring:** Indelibly mark pedestal positions before installing services.
3. **Fixtures:** Before installing floor, complete fixtures that floor panels are to be cut around, or that are to be bridged by floor supports.
4. **Bridging structures - supplementary supports:** As recommended by the manufacturer.

425 Environmental conditions

1. **General:** Dry, well ventilated, not subject to rapid variations or extremes of temperature or humidity.
2. **RH of air (maximum):** 75%.
3. **Subfloors**
 - 3.1. **Moisture content:** TBC.
 - 3.2. **RH (maximum):** 75%.
 - 3.3. **Temperature (minimum):** 5°C.

431 Dust-proofing

1. **Preparation:** Surfaces to be sealed must be clean, dry and free from dust, grease and other contaminants.

2. Extent of sealing:
3. Sealer: Recommended by raised access floor manufacturer. Compatible with materials used to pack and/ or fix pedestals.
 - 3.1. Colour: Tinted; different tint for each coat.
 - 3.2. First coat: Apply before pedestals are erected.
 - 3.3. Second coat: Apply after completion of services and other associated work.

433 Pedestal adhesive testing

1. Test method: As recommended by the manufacturer.

435 Cut floor panels

1. Size (minimum): Half standard width x half standard length.
2. Edges
 - 2.1. Burrs and rough edges: Make smooth.
 - 2.2. Sealing: Seal exposed cut edges of floor panels that have moisture sensitive or combustible cores.
 - 2.2.1. Sealer: Self-adhesive aluminium foil tape, to match fire rating of panel, or better.

441 Raised access floor levels

1. Permissible deviations in level: +/-1mm in any direction.

445 Perimeters

1. Expansion gaps
 - 1.1. Size: 10 mm.
 - 1.2. Location: At abutments.
2. Expansion gap filling
 - 2.1. Filler type: Resilient closed cell.
 - 2.2. Filling: Before fixing skirtings and cover strips.

455 Level changes

1. Performance
 - 1.1. Ramps and steps: Comparable with performance of associated raised access floor.
 - 1.2. Balustrades: Structural and safety requirements in accordance with BS 6180.

460 Under-Floor plenum air barriers

1. Material: Rigid or semirigid nonporous sheets with smooth nondusting surfaces.
2. Performance: Permanently stable, continuous and airtight.
3. Fixing: Fix securely to subfloor, at joints and as necessary.
4. Edges and joints: Seal.

470 Integral finishes electrical resistance testing

1. Extent of testing: Test complete raised access floor.
2. Testing agent: Qualified electrician.

Completion

510 Tools

1. **Floor panel lifting devices:** At completion, supply one set of suitable devices for each type of raised access floor finish installed. Train designated personnel in their use.
2. **Pedestal locking:** At completion, supply one set of tools for releasing pedestal locking.

515 User instructions

1. **User manual contents:** Include the following:
 - 1.1. Correct method for lifting and replacing floor panels and stringers.
 - 1.2. Limitations on sequence, number and positions of floor panels and stringers that can be removed safely at one time.
 - 1.3. Permissible loading, with guidance on use of spreader plates when shifting heavy equipment and subsequent maintenance.
 - 1.4. Methods for installing cabling and ducts to prevent damage to supporting structure.
 - 1.5. Methods for cleaning floor panels and integral finishes.
 - 1.6. Method for replacing integral floor panel coverings.
 - 1.7. Method for adjusting and locking pedestals.
 - 1.8. Recommended maintenance methods and frequency.
 - 1.8.1. Minimum maintenance-free life of raised access floor system.
 - 1.8.2. Minimum maintenance-free life of replaceable parts where this differs from that of the whole system.
 - 1.8.3. Minimum period during which replaceable components will be available.
 - 1.9. Installation instructions, including COSHH Assessment.

525 Cleaning

1. **Subfloors:** At completion, thoroughly clean accessible areas of subfloors and leave free of dust and debris.
2. **Raised access floor:** Before delivery of items carried by floor, clean thoroughly.

Ω End of Section

L10 Louvres

General

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions,
2. Design: Refer to and comply with A10.120 and A21.140.

101 EWS-701 Micro-Louvred Panel with Vent

1. Aluminium ventilation and rain defence louvres with opening vent.
 - 1.1. Size/ configuration: As indicated on the Design Drawings.
 - 1.2. Works to be carried out in accordance with the Wind Pressure Report.
 - 1.3. Works to be carried out in accordance with the Structural Engineer's documentation.
 - 1.4. Concealed thermally broken and separated aluminium perimeter framing and mullions, mechanically secured to the loadbearing elements of the backing wall/ primary structure.
 - 1.5. Horizontal extruded aluminium Louvre blades, mechanically secured to mullions using concealed methods.
 - 1.6. Louvre blade profile: To be confirmed by the Architect.
 - 1.7. Black coloured stainless steel or aluminium mesh to prevent the passage of birds and/or insects.
 - 1.8. Half height opening vent formed with 3mm polyester powder coated finish aluminium and brushed stainless steel opening handle.
 - 1.9. Technical requirements for open louvres:
 - 1.9.1. Core density: Refer to the Services Engineer's documentation.
 - 1.9.2. Refer to the Energy Strategy documentation for air permeability details.
 - 1.9.3. Free area: Refer to the Services Engineer's documentation, which states minimum requirements.
 - 1.9.4. Air permeability (discharge and energy co-efficients):
 - 1.9.4.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.9.4.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
 - 1.9.5. Weather and water penetration resistance:
 - 1.9.5.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.9.5.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
 - 1.10. Rear blanking panels:
 - 1.10.1. Panels shall be formed from 3mm polyester powder coated steel sheet, with suitable 125mm thick insulation, as required (refer to the Acoustic Report), 2 x layers of Gyproc SoundBloc and 1mm galvanised steel sheet. Insulation shall be encapsulated and protected by the aluminium sheet.
 - 1.10.2. Where indicated in the Services Engineer's documentation and/or on the Design Drawings, blanking panels shall be connected to ductwork. Methods of connection, where visible, shall be to the acceptance of the Architect.
 - 1.10.3. Apertures shall be accurately cut to co-ordinate and align with services and ductwork requirements. Performance shall be maintained.

- 1.11. Visible external metalwork shall be a standard powder coat finish to RAL colour to be confirmed by the Architect.
- 1.12. Visible internal metalwork shall be a polyester powder coated finish, colour to be white, to RAL9010.

102 EWS-703 Perforated Panel

- 1. Aluminium perforated linear slot panel:
 - 1.1. Specialist sub-contractor to determine appropriate required system.
 - 1.2. System to be installed in accordance with the manufacturer's recommendations.
 - 1.3. Size/ configuration as indicated on the Design Drawings.
 - 1.4. Works to be carried out in accordance with the Acoustic Report.
 - 1.5. Refer to the Energy Strategy documentation for air permeability requirements.
 - 1.6. Works to be carried out in accordance with the Energy Report.
 - 1.7. Works to be carried out in accordance with the Wind Pressure Report.
 - 1.8. Works to be carried out in accordance with the Structural Engineer's Movement and Tolerances Report
 - 1.9. Minimal frame, flush finish with the cladding and glazing.
 - 1.10. System to provide barrier protection to comply with Approved Document Part K of the Building Regulations.
 - 1.11. Substrate: As indicated on the Design Drawings.
 - 1.12. System to include insulated backing panel (refer to the Acoustic Report).
 - 1.13. Panel:
 - 1.13.1. Profile: Perforated horizontal linear slots - to be confirmed by the Architect.
 - 1.13.2. Free area requirements: 40%.
 - 1.13.3. Material: Aluminium.
 - 1.13.4. Thickness: As required to suit the barrier loading performance requirements and to comply with the Secured by Design Checklist.
 - 1.14. Visible metalwork shall be a standard powder coated finish to both sides to a bronze RAL colour to be confirmed by the Architect.
 - 1.15. Provide intake/ extract ventilation as required by the Services Engineer, refer to the Services Engineer's documentation.
 - 1.16. Include stainless steel or aluminium bird guard/ insect mesh to open areas and insulated backing panel, colour to match the louvres.
 - 1.17. Fixings: Concealed.

103 EWS-704 Micro-Louvred Panel

- 1. Aluminium ventilation and rain defence louvres.
 - 1.1. Size/ configuration: As indicated on the Design Drawings.
 - 1.2. Works to be carried out in accordance with the Wind Pressure Report.
 - 1.3. Works to be carried out in accordance with the Structural Engineer's documentation.
 - 1.4. Concealed thermally broken and separated aluminium perimeter framing and mullions, mechanically secured to the load bearing elements of the backing wall/ primary structure.
 - 1.5. Horizontal extruded aluminium louvre blades, mechanically secured to mullions using concealed methods.
 - 1.6. Louvre blade profile: To be confirmed by the Architect.
 - 1.7. Black coloured stainless steel or aluminium mesh to prevent the passage of birds and/or insects.

- 1.8. Technical requirements for open louvres:
 - 1.8.1. Core density: Refer to the Services Engineer's documentation.
 - 1.8.2. Free area: Refer to the Services Engineer's documentation, which states minimum requirements.
 - 1.8.3. Refer to the Energy Strategy documentation for air permeability details,
 - 1.8.4. Air permeability (discharge and entry co-efficients):
 - 1.8.4.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.8.4.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
 - 1.8.5. Weather and water penetration resistance:
 - 1.8.5.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.8.5.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
 - 1.8.6. Rear blanking panels:
 - 1.8.6.1. Panels shall be formed from aluminium sheet, with suitable insulation as required (refer to the Acoustic Report). Insulation shall be encapsulated and protected by the aluminium sheet.
 - 1.8.6.2. Where indicated in the Services Engineer's documentation and/or the Design Drawings, blanking panels shall be connected to ductwork. Methods of connection, where visible, shall be to the acceptance of the Architect.
 - 1.8.6.3. Apertures shall be accurately cut to co-ordinate and align with services and ductwork requirements. Performance shall be maintained.
 - 1.8.7. Visible external metalwork shall be a standard powder coat finish to RAL colour to be confirmed by the Architect.
 - 1.8.8. Visible internal metalwork shall be a polyester powder coated finish, colour to be white, to RAL 9010.

104 EWS-705 Micro-Louvred Panel with Vent

- 1. Aluminium ventilation and rain defence louvres with opening vent.
 - 1.1. Size/ configuration: As indicated on the Design Drawings.
 - 1.2. Works to be carried out in accordance with the Wind Pressure Report.
 - 1.3. Works to be carried out in accordance with the Structural Engineer's documentation.
 - 1.4. Concealed, thermally broken and separated aluminium perimeter framing and mullions, mechanically secured to the load bearing elements of the backing wall/ primary structure.
 - 1.5. Horizontal extruded aluminium louvre blades, mechanically secured to mullions using concealed methods.
 - 1.6. Louvre blade profile: To be confirmed by the Architect.
 - 1.7. Black coloured stainless steel or aluminium mesh to prevent the passage of birds and/or insects.
 - 1.8. Half height opening vent with brushed stainless steel opening handle.
 - 1.9. Technical requirements for open louvres:
 - 1.9.1. Core density: Refer to the Services Engineer's documentation.
 - 1.9.2. Free area: Refer to the Services Engineer's documentation, which states minimum requirements.
 - 1.9.3. Refer to the Energy Strategy documentation for air permeability details,
 - 1.9.4. Air permeability (discharge and entry co-efficients):
 - 1.9.4.1. The louvres shall be classified in accordance with BS EN 13030.

- 1.9.4.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
- 1.9.5. Weather and water penetration resistance:
 - 1.9.5.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.9.5.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
- 1.9.6. Rear blanking panels:
 - 1.9.6.1. Panels shall be formed from aluminium sheet, with suitable insulation as required (refer to the Acoustic Report). Insulation shall be encapsulated and protected by the aluminium sheet.
 - 1.9.6.2. Where indicated in the Services Engineer's documentation and/or the Design Drawings, blanking panels shall be connected to ductwork. Methods of connection, where visible, shall be to the acceptance of the Architect.
 - 1.9.6.3. Apertures shall be accurately cut to co-ordinate and align with services and ductwork requirements. Performance shall be maintained.
- 1.9.7. Visible external metalwork shall be a standard powder coat finish to RAL colour to be confirmed by the Architect.
- 1.9.8. Visible internal metalwork shall be a polyester powder coated finish, colour to be white, to RAL 9010.

105 EWS-706 Louvred Panel

- 1. Aluminium ventilation and rain defence louvres.
 - 1.1. Specialist sub-contractor to determine appropriate required system, for design intent refer to indicative system Muurrooster 411ZF as manufactured by Renson.
 - 1.2. System to be integrated in accordance with the manufacturer's recommendations.
 - 1.3. Size/ configuration as indicated on the Design Drawings.
 - 1.4. Works to be carried out in accordance with the Acoustic Report.
 - 1.5. Refer to the Energy Strategy documentation for air permeability details.
 - 1.6. Works to be carried out in accordance with the Energy Report.
 - 1.7. Works to be carried out in accordance with the Wind Pressure Report.
 - 1.8. Works to be carried out in accordance with the Structural Engineer's Movement and Tolerances Report.
 - 1.9. Minimal frame, flush finish with the cladding and glazing.
 - 1.10. System to provide barrier protection to comply with Approved Document Part K of the Building Regulations.
 - 1.11. Substrate: As indicated on the Design Drawings.
 - 1.12. System to include insulated backing panel (refer to the Acoustic Report).
 - 1.13. Louvre system:
 - 1.13.1. Profile: Extruded aluminium 'S' Profile louvres.
 - 1.13.2. Pitch size: 50mm.
 - 1.14. Louvre blades:
 - 1.14.1. Profile: Cut and sealed end caps.
 - 1.14.2. Material: Aluminium.
 - 1.14.3. Size: 6mm thick.
 - 1.14.4. Clipping system: Aluminium tension clip system to locate into slots in the Louvre and lock under the clip above. Once positioned the clip shall become immovable.

- 1.15. Visible external metalwork shall be a standard powder coated finish to RAL colour to be confirmed by the Architect.
- 1.16. Visible internal metalwork shall be a polyester powder coated finish, colour to be white, to RAL 9010.
- 1.17. Provide intake/ extract ventilation as required by the Services Engineer, refer to Services Engineer's documentation.
- 1.18. Include stainless steel, or aluminium bird guard/ insect mesh to open areas and insulated backing panel, colour to match the Louvres.

106 EWS-707 Micro-Louvred Panel with Vent

- 1. Aluminium ventilation and rain defence louvres with opening vent.
 - 1.1. Size/ configuration: As indicated on the Design Drawings.
 - 1.2. Works to be carried out in accordance with the Wind Pressure Report.
 - 1.3. Works to be carried out in accordance with the Structural Engineer's documentation.
 - 1.4. Concealed thermally broken and separated aluminium perimeter framing and mullions, mechanically secured to the load bearing elements of the backing wall/ primary structure.
 - 1.5. Horizontal extruded aluminium louvre blades, mechanically secured to mullions using concealed methods.
 - 1.6. Louvre blade profile: To be confirmed by the Architect.
 - 1.7. Black coloured stainless steel or aluminium mesh to prevent the passage of birds and/or insects.
 - 1.8. Half height opening vent formed with 3mm polyester powder coated finish aluminium and brushed stainless steel opening handle.
 - 1.9. Technical requirements for open louvres:
 - 1.9.1. Core density: Refer to the Services Engineer's documentation.
 - 1.9.2. Free area: Refer to the Services Engineer's documentation, which states minimum requirements.
 - 1.9.3. Refer to the Energy Strategy documentation for air permeability details.
 - 1.9.4. Air permeability (discharge and entry co-efficients):
 - 1.9.4.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.9.4.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
 - 1.9.5. Weather and water penetration resistance:
 - 1.9.5.1. The louvres shall be classified in accordance with BS EN 13030.
 - 1.9.5.2. The performance classification(s) shall be confirmed by the Architect in conjunction with the Services Engineer with regard to the particular service conditions.
 - 1.10. Rear blanking panels:
 - 1.10.1. Panels shall be formed from 3mm polyester powder coated steel sheet, 15mm cement particleboard, with suitable 125mm thick insulation as required (refer to the Acoustic Report), 15mm Gyproc SoundBloc and 3mm galvanised steel sheet. Insulation shall be encapsulated and protected by the aluminium sheet.
 - 1.10.2. 18mm thick cement particleboard cavity closers as indicated on the Design Drawings, for density refer to the Acoustic Report.
 - 1.10.3. Where indicated in the Services Engineer's documentation and/or on the Design Drawings, blanking panels shall be connected to ductwork. Methods of connection, where visible, shall be to the acceptance of the Architect.
 - 1.10.4. Apertures shall be accurately cut to co-ordinate and align with services and ductwork requirements. Performance shall be maintained.

- 1.11. Visible external metalwork shall be a standard powder coat finish to RAL colour to be confirmed by the Architect.
- 1.12. Visible internal metalwork shall be a polyester powder coated finish, colour to be white, to RAL 9010.

107 DRS-605 Automatic Opening Vent (AOV) Panel

1. Automatic opening vent to locations indicated on the Design Drawings.
 - 1.1. Fire rating: Refer to the Fire Strategy Report.
 - 1.2. Construction:
 - 1.2.1. Material: EN AW-6063 T6 aluminium alloy.
 - 1.2.2. The base and flap are thermally broken and it has continuous inner and outer seals.
 - 1.2.3. Infill panel to be sandwich panel (double skin aluminium with infill material).
 - 1.3. Dimensions as indicated on the Design Drawings/ Fire Strategy Report.
 - 1.4. Operation: Refer to the Design Drawings/ Fire Strategy Report, system shall be linked to the Fire Alarm system.
 - 1.5. Finish: Powder coated, matt finish, colour to the acceptance of the Architect through sampling.

110 Evidence of performance

1. **Certification:** Provide independently certified evidence that all incorporated components comply with specified performance requirements.

120 Pre-construction survey

1. **Procedure:** Before starting work take site dimensions, record on shop drawings and use to ensure accurate fabrication.
2. **Primary support structure:** Carry out survey sufficient to verify that required accuracy and security of erection can be achieved.
3. **Timing:** Before fabrication.

140 Control samples

1. **Procedure**
 - 1.1. Finalise component details.
 - 1.2. Fabricate one of each of the items as part of the quantity required for the project.
 - 1.3. Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.

160 Potential for natural ventilation

1. Submit design plan and elevation drawings, and calculations confirming the following:

Products - Not Used

Execution

710 Protection of components

1. **General:** Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
2. **Stored components:** Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

750 Building in

1. **General:** Not permitted unless indicated on drawings.
 - 1.1. Brace and protect components to prevent distortion and damage during construction of adjacent structure.

781 Fixing of steel frames

1. **Standard:** As section Z20.
2. **Fasteners:**
 - 2.1. **Spacing:** When not pre-drilled or specified otherwise, position fasteners not less than 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.

782 Fixing of aluminium frames

1. **Standard:** As section Z20.
2. **Fasteners:**
 - 2.1. **Spacing:** When not pre-drilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

810 Sealant joints

1. **Sealant**
 - 1.1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1.1. **Product reference:** To be proposed by the Contractor.
 - 1.2. **Colour:**
 - 1.3. **Application:** As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 Ironmongery

1. **Fixing:** In accordance with any third-party certification conditions applicable. Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
2. **Checking/ adjusting/ lubricating:** Carry out at Completion and ensure correct functioning.

Ω End of Section

L10A

Windows/ rooflights/ screens/ louvres

General

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

110 Evidence of performance

1. **Certification:** Provide independently certified evidence that all incorporated components comply with specified performance requirements.

120 Preconstruction survey

1. **Procedure:** Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
2. **Primary support structure:** Carry out survey sufficient to verify that required accuracy and security of erection can be achieved.
3. **Timing:** Before fabrication.

140 Control samples

1. **Procedure**
 - 1.1. Finalize component details.
 - 1.2. Fabricate one of each of the following designated items as part of the quantity required for the project.
 - 1.3. Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.

150 Daylight performance

1. **Daylight calculations:** In accordance with BS 8206-2 and CIBSE 'Lighting guide LG10'.

155 View out

1. **Windows/ opening sizes and position:** Design to meet BREEAM 'View out' criteria for relevant building type.
2. **Submit design plan and elevation drawings showing the following**
 - 2.1. All BREEAM defined 'relevant areas' dependent on building type and room depths.
 - 2.2. Actual or notional workstation/ desk layouts.
 - 2.3. Window/ open areas.
3. **Submit site plan showing:** Building location and proximity to external obstructions.

Products

330 EWS-111 Fixed Aluminium Window System

1. **Description:** Fixed window system configured as indicated on the Design Drawings.
 - 1.1. **Indicative manufacturer:** Schüco UK Ltd.

- 1.2. **Size and configuration:** As the Design Drawings.
- 1.3. **Performance:** Refer to the Energy and Environmental Report.
 - 1.3.1. **Fire rating:** Refer to the Fire Strategy Report.
 - 1.3.2. **Acoustic rating:** Refer to the Acoustic Report.
 - 1.3.3. **Security rating:** Refer to the Security Report.
- 1.4. **Framing:**
 - 1.4.1. Mullions and transoms formed from extruded aluminium profiles; thermally broken and separated.
 - 1.4.2. **New Item:** Reinforced using concealed methods, as required.
- 1.5. **Infill panels:**
 - 1.5.1. Glazing/ infill panels to be accommodated by the framing, arranged and located as the Design Drawings. Refer to glazing panels described in Sections H11 for glazing Details.
 - 1.5.2. Glazing type to be of a high quality mid ion type and to achieve a visual appearance that is as clear and colourless as possible while maintaining the glazing performance requirements as set out in the Services Engineer's documentation.
 - 1.5.3. Manifestation finish(es) to glass infill panels where indicated on the Design Drawings and the External Samples Schedule.
 - 1.5.3.1. **Configuration:** As indicated on the Design Drawings.
- 1.6. **Visible gaskets:** Black.
- 1.7. Fire and smoke stopping as required, to be concealed in the finished works.
- 1.8. Acoustic stopping as required, to be concealed in the finished works.
- 1.9. **Integrated blind:**
 - 1.9.1. Integrated blind box with discreet motors, hidden wireways, suitable concealed fixed.
- 1.10. **Visible metalwork:**
 - 1.10.1. **Finish:** Polyester powder coated.
 - 1.10.2. **Colour:** Mid-dark grey, to be agreed through sampling.

651 EWS-711 External Vertical Metal Louvre System

1. External vertical metal louvre enclosure system, screening external plant, as the the Design Drawings.
 - 1.1. **Size and configuration:** Refer to the Design Drawings.
 - 1.2. **Framing:**
 - 1.2.1. **Type and material:** Extruded aluminium profiles.
 - 1.2.2. **Finish:** Polyester powder coated.
 - 1.2.3. **Colour:** Mid-grey metallic, to be agreed through sampling.
 - 1.3. **Louvres:**
 - 1.3.1. **Type and material:** Extruded aluminium horizontal louvre blades welded back to the framing.
 - 1.3.2. **Birds and/ or insect mesh:** Black coloured aluminium.
 - 1.3.3. **Finish:** Polyester powder coated.
 - 1.3.4. **Colour:** Mid-grey metallic, to be agreed through sampling.
 - 1.4. **Fixing:** Concealed to suit the service conditions.
 - 1.5. System to include all fixings, bracketry, support framing and any other components or accessories necessary required to complete the works.

652 DRS-702 Integrated Metal Louvre Door

1. Mid Grey metal louvre door to match and be integrated seamlessly into EWS-711 louvre wall system.

653 EWS-713 External Vertical Metal Louvre System with Integrated Doors

1. Metal vertical louvre system fixed to metal support framing with integrated doorset(s), as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Framing:
 - 1.2.1.Type and material: Extruded aluminium profiles.
 - 1.2.2.Protective coating: Hot dip galvanised.
 - 1.2.3.Finish: Polyester powder coated.
 - 1.2.4.Colour: Mid-grey metallic, to be agreed through sampling.
 - 1.3. Louvres:
 - 1.3.1.Free area technical requirements: In accordance with the Services Engineer's documentation and in compliance with UKPN requirements.
 - 1.3.2.Ventilation and rain defence louvres to generally comply with the requirements of BS EN 13030.
 - 1.3.3.Works to accommodate all architectural and functional features while maintaining the specified performance, as indicated in the Design Drawings and in accordance with the Services Engineer's documentation.
 - 1.3.4.Louvres are to prevent the passage of rain to internal areas.
 - 1.3.5.Louvre blades mounted to the front of mullions to have concealed fixings.
 - 1.3.6.Stainless steel black coloured insect/ fly mesh to the rear.
 - 1.3.7.Material: Extruded aluminium horizontal louvre blades welded back to the framing.
 - 1.3.8.Type: Slim profile.
 - 1.3.9.Birds and/ or insect mesh: Black coloured aluminium.
 - 1.3.10. Protective coating: Hot dip galvanised.
 - 1.3.11. Finish: Polyester powder coated.
 - 1.3.12. Colour: Mid-grey metallic, to be agreed through sampling.
 - 1.4. Integrated doorset(s): Refer to Type DRS-211 described in Section L20.
 - 1.5. System to include all accessories, fixings and components to complete the installation.

654 EWS-721 External Metal Ventilation Louvres

1. External ventilation louvres at high level, as the the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Framing:
 - 1.2.1.Type and material: Extruded aluminium profiles.
 - 1.2.2.Protective coating: Hot dip galvanised.
 - 1.2.3.Finish: Polyester powder coated - To be confirmed.
 - 1.2.4.Colour: Mid-dark silver metallic, to be agreed through sampling.
 - 1.3. Louvres:
 - 1.3.1.Free area/ technical requirements: In accordance with the Services Engineer's documentation and in compliance with Electricity North West requirements.
 - 1.3.2.Type and material: Extruded aluminium horizontal louvre blades welded back to the framing.

- 1.3.3. Birds and/ or insect mesh: Black coloured aluminium.
- 1.3.4. Protective coating: Hot dip galvanised.
- 1.3.5. Finish: Polyester powder coated.
- 1.3.6. Colour: Mid-dark silver metallic, to be agreed through sampling.
- 1.4. Fixing: Concealed to suit the service conditions.
- 1.5. System to include all fixings, bracketry, support framing and any other components or accessories necessary required to complete the works.

Execution

710 Protection of components

- 1. **General:** Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
- 2. **Stored components:** Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

730 Priming/ sealing

- 1. **Wood surfaces inaccessible after installation:** Prime or seal as specified before fixing components.

740 Corrosion protection

- 1. **Protective coating:** Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
 - 1.1. **Timing of application:** Before fixing components.

750 Building in

- 1. **General:** Not permitted unless indicated on drawings.
 - 1.1. Brace and protect components to prevent distortion and damage during construction of adjacent structure.

765 Window installation generally

- 1. **Installation:** Into prepared openings.
- 2. **Distortion:** Install windows without twist or diagonal racking.

766 Location of openable windows in naturally ventilated buildings

- 1. **Location:** Over 10 m from sources of external pollution.

770 Damp-proof courses in prepared openings

- 1. **Location:** Ensure correct positioning in relation to window frames. Do not displace during fixing operations.

782 Fixing of aluminium frames

- 1. **Standard:** In accordance with Section Z20.
- 2. **Fasteners:**
 - 2.1. **Spacing:** When not predrilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

810 Sealant joints

1. Sealant
 - 1.1. **Application:** As Section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 Ironmongery

1. **Fixing:** In accordance with any third-party certification conditions applicable. Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
2. **Checking/ Adjusting/ Lubricating:** Carry out at Completion and ensure correct functioning.

Ω End of Section

L20

Doors/ shutters/ hatches

General

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

110 Evidence of performance

1. **Certification:** Provide independently certified evidence that all incorporated components comply with specified performance requirements.

111 Security Rating

1. All metal doors to be rated as SR2 in accordance with BRE requirements.
2. Provide certification accordingly.

112 Timber procurement

1. **Timber (including timber for wood-based products):** Obtained from well-managed forests and/ or plantations in accordance with:
 - 1.1. The laws governing forest management in the producer country or countries.
 - 1.2. International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
2. **Documentation:** Provide either:
 - 2.1. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
 - 2.2. Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.

115 Fire resisting and smoke control pedestrian doors/ door assemblies/ doorsets

1. **CE marked fire resisting and smoke control pedestrian doorsets:** To BS EN 16034 and in conjunction with BS EN 13241 and BS EN 14351-1 (and eventually prEN 14351-2).
2. **Door products:** As defined in BS EN 12519.
3. **Evidence of fire performance:** Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ door assembly/ doorset supplied will comply with the specified requirements for fire resisting and/ or smoke control if tested to BS 476-22, BS EN 1634-1, BS EN 1634-3 or is CE marked to BS EN 16034. Specified values should not be a combination of both standards. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.
4. Components, assemblies or sets will be marked to the relevant CE marking European product standard (hEN), national product standard and/ or third party certification rating.

120 Non fire resisting pedestrian doors/ door assemblies/ doorsets

1. Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each pedestrian door/ doorset/ assembly supplied will comply with the specified

requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

2. Components and assemblies will be marked to the relevant CE marking European product standard (hEN), national product standard and/ or third party certification rating.

150 Site dimensions

1. **Procedure:** Before starting work take site dimensions, record on shop drawings and use to ensure accurate fabrication.

160 Samples

1. General: Before placing orders submit representative samples of the following:
 - 1.1. One quarter finished section of each door type.
 - 1.2. Finished frame: 1000mm.
 - 1.3. Sealants and seals: 500mm.
 - 1.4. Finished glass: 500mm x 500mm.
2. Delivered materials/ products: To match samples.

170 Control samples

1. **Procedure**
 - 1.1. Finalize component details.
 - 1.2. Fabricate one of each of the following designated items as part of the quantity required for the project.
 - 1.3. Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.
2. Items: First completed doorset of each type.

Products

200 DRS-205 External Hinged Metal Doorset

1. External metal hinged security doorset, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings and the Door Schedule.
 - 1.2. Specific performance:
 - 1.2.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.2.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.2.3. Security rating: PAS 24, STS01 or LPS 1175 SR2.
 - 1.2.4. Thermal rating (U-value): Refer to the Services Engineer's documentation.
 - 1.3. Door frame:
 - 1.3.1. Profiled, insulated core door frame.
 - 1.3.2. Perimeter seals to satisfy the stipulated performance criteria.
 - 1.3.3. Finish and colour: To match door leaf.
 - 1.3.4. Sill (external): Low profile sill, to match door frame.
 - 1.4. Door leaf:
 - 1.4.1. Type: Double leaf.
 - 1.4.2. Zinc coated mild steel door skins to overlap to prevent jamming.
 - 1.4.3. Reinforced and insulated core.

- 1.4.4. Anti-pick, high security cylinder lock, under the project Master Key plan.
- 1.4.5. Heavy duty hinges with dog-bolts.
- 1.4.6. Finish: Refer to the Finishes Schedule.
- 1.4.7. Colour: Refer to the Finishes Schedule.
- 1.5. Meeting stiles (to door pairs): Ostensibly square with a suitable radius profile, to suit the service conditions.
- 1.6. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.
- 1.7. Ironmongery: Refer to the Design Drawings and Section P21.

201 DRS-211 External Hinged Vertical Louvred Metal Doorset

- 1. Single bank ventilation and rain defence, external metal louvred hinged security doorset, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings and the Door Schedule.
 - 1.2. Specific performance:
 - 1.2.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.2.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.2.3. Security rating: PAS 24, STS01 or LPS 1175 SR2.
 - 1.2.4. Thermal rating (U-value): Refer to the Services Engineer's documentation.
 - 1.3. Door frame:
 - 1.3.1. Material: Extruded aluminium profiles with square edges and glazing beads, thermally broken.
 - 1.3.2. Finish and colour: To match door leaf.
 - 1.3.3. Sill (external): Low profile sill, to match door frame.
 - 1.4. Door leaf:
 - 1.4.1. Type: Single/ double leaf.
 - 1.4.2. Material: Aluminium box frame with louvre blades welded back to the framing.
 - 1.4.3. Free area/ technical requirements: Refer to the Services Engineer's documentation and to comply with UKPN requirements.
 - 1.4.4. Birds and/or insect mesh: Black coloured aluminium.
 - 1.4.5. Blanking panels: Where permitted and insulated where necessary.
 - 1.4.6. Finish: Polyester powder coated.
 - 1.4.7. Colour: Mid-grey metallic, to be agreed through sampling.
 - 1.5. Rear blanking panels (where required):
 - 1.5.1. Type and material: Insulated rear blanking composite aluminium panels.
 - 1.5.2. Finish and colour: To match louvres.
 - 1.5.3. Sealant: Air sealed to framing, surrounding panels and duct. Sealant colour to match louvres.
 - 1.5.4. Ductwork connection: Where shown in the Services Engineer's documentation and/or on the Design Drawings.
 - 1.5.5. Apertures: Accurately cut to co-ordinate and align with services and ductwork requirements. Performance to be maintained.
 - 1.6. Meeting stiles (to door pairs): Ostensibly square with a subtle radius profile, to suit the service conditions.
 - 1.7. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.

- 1.8. Ironmongery: Refer to the Design Drawings and Section P21.

202 FRP-111 Parallel Opening Vent

1. Integrated parallel opening vents (POVs), with functionality as shown on the Design Drawings.
 - 1.1. Indicative manufacturer/ reference: To be confirmed.
 - 1.2. Size and configuration: Refer to the Design Drawings.
 - 1.3. Framing/ sub-framing consisting of extruded aluminium, to integrate within the assembly so the sight lines created by the framing for the fixed elements, when in the closed position, are maintained. The appearance of additional framing in this position is not to be accepted.
 - 1.4. Framing to be factory assembled into unit frames by means of mitred corners, mechanically jointed with cleats and the appropriate additional sealant.
 - 1.5. Refer to glazing Type GLP-101 in Section H11.
 - 1.6. POV to open now greater than 90mm.
 - 1.7. Automatically operated anodised aluminium ironmongery and hardware from the manufacturer's/ supplier's standard range to suit the required functionality and service conditions, linked back to the Building Management System (BMS).
 - 1.8. POVs to be lockable.
 - 1.9. To include a default locking/ restrictor position, when in the open position, to prevent closing under wind load with manual override to close POV.
 - 1.10. System to have fully concealed power supply and secret fixings.

202 FRP-711 Automatic Opening Vent (AOV) Panel

1. Automatic opening vent panel, as the Design Drawings.
 - 1.1. Indicative manufacturer: Dyer Environmental Controls Ltd.
 - 1.2. Size and configuration: Refer to the Design Drawings.
 - 1.3. Specific performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.3.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.4. Operation:
 - 1.4.1. Type: Automatic.
 - 1.4.2. Alarm system: Link control to the building Fire Management System and the BMS system to ensure full closing on activation of the fire alarm.
 - 1.5. Panel:
 - 1.5.1. Type and material: EN AW-6063 T6 aluminium alloy insulated core panel.
 - 1.5.2. Finish: Polyester powder coated.
 - 1.5.3. Colour: Refer to the External Samples Schedule.
 - 1.6. Base flap: Thermally broken and it has continuous inner and outer seals.
 - 1.7. Seals: Intumescent and smoke seals to be of a type on which the manufacturer's certification is based.

203 FRP-713 Capless Automatic Opening Solid Vent Panel with Decorative Profile

1. Capeless automatic opening solid vent panel with decorative profile under BMS control, as part of precast unitized cladding system EWS-411 described in Section H42 and as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.

- 1.2. Specific performance:
 - 1.2.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.2.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
- 1.3. Operation:
 - 1.3.1. Type: Automatic.
 - 1.3.2. Alarm system: Link control to the building Fire Management System and the BMS system to ensure full closing on activation of the fire alarm.
- 1.4. Panel:
 - 1.4.1. Type and material: EN AW-6063 T6 aluminium alloy insulated core panel.
 - 1.4.2. Finish: Anodised.
 - 1.4.3. Colour: Mid-dark silver finish to be agreed through sampling.
- 1.5. Base flap: Thermally broken and it has continuous inner and outer seals.
- 1.6. Seals: Intumescent and smoke seals to be of a type on which the manufacturer's certification is based.

204 DRS-101 Internal Timber Hinged Doorset - Painted Moisture Resistant Finish, Single Leaf (Non-rated)

- 1. Non-rated internal single leaf timber doorset with a moisture resistant paint finish.
 - 1.1. Manufacturer: Doorpac, or acceptable equivalent.
 - 1.2. Size and configuration: As the Design Drawings and Door Schedule.
 - 1.3. Performance:
 - 1.3.1. Fire rating: N/A.
 - 1.3.2. Acoustic rating: N/A.
 - 1.4. Door frame:
 - 1.4.1. Type: Rebated profile, split frame to satisfy the wall/ partition depth.
 - 1.4.2. Material: Hardwood of minimum density, 650kg/m³ fully compliant with the qualitative and sustainability criteria stipulated herein.
 - 1.4.3. Finish: Thoroughly sanded and factory primed to receive decoration on-site.
 - 1.5. Door leaf:
 - 1.5.1. Solid laminated timber/ flaxboard core.
 - 1.5.2. Lippings: Hardwood lippings to all edges, applied before application of the painting overlayment.
 - 1.5.3. Pre-finish: Factory priming applied to a medium density overlay paper.
 - 1.5.4. Finish: Moisture resistant polyurethane (PU) paint finish, from the manufacturer's standard range.
 - 1.5.5. Provide vision panels where shown on the Door Schedule/ Design Drawings.
 - 1.5.5.1. Dimensions as the Design Drawings.
 - 1.5.5.2. Factory formed.
 - 1.5.5.3. Kitemarked safety glass of type to satisfy the performance criteria.
 - 1.5.5.4. Flush beading in hardwood to match the hardwood edging.
 - 1.5.5.5. Bedding: Intumescent/ acoustic glazing compound or proprietary glazing channel dependent upon the method on which the manufacturer's performance certification is based.
 - 1.6. Overpanels (where shown on the Door Schedule) to be permanently fixed into the rebated frame and intumescently sealed.

- 1.7. Ironmongery: Provide prototype lock cases, strikes, hinges and closers to the door manufacturer to enable factory machining/ fitting. Refer to the Ironmongery Schedule and Section P21.

204A DRS-102 Internal Timber Hinged Doorset - Painted Moisture Resistant Finish, Single Leaf (non-rated)

1. As DRS-101 but double swing.

204B DRS-103 Internal Timber Hinged Doorset - Painted, Double Leaf and Double Swing. (non-rated).

1. As DRS-102 but not moisture resistant.

204C FRP-501 Fire/ Smoke Curtain

1. Electrically operated automatic fire/ smoke curtain, used to form a virtually continuous barrier against smoke, as the Design Drawings.
 - 1.1. Indicative manufacturer: Coopers Fire Ltd.
 - 1.2. Indicative reference: FireMaster Plus 2 Fire Curtain.
 - 1.3. Standards: BS 8524-1.
 - 1.4. Specific performance:
 - 1.4.1. Fire rating: Refer to the Fire Strategy Report.
 - 1.4.2. Acoustic rating: Not required.
 - 1.5. Secondary support:
 - 1.5.1. Provide all necessary secondary support framing, including all brackets, fixings, hangers, braces necessary for the safe and complete installation of the works.
 - 1.5.2. The secondary framework is to be painted galvanised steel supplied by the manufacturer of the smoke curtain to suit their system.
 - 1.6. Performance:
 - 1.6.1. Durability: C0.
 - 1.6.2. Fire resistance: 180 minutes (3 hours) integrity.
 - 1.6.3. Classification: E180 EW90 C0 (single).
 - 1.7. Smoke curtain:
 - 1.7.1. Barrel: Steel tube with helical counter-balance springs, mounted on a steel shaft.
 - 1.7.2. Side guides: Galvanised mild steel.
 - 1.7.3. Ball bearing guide rollers to be sealed, requiring no lubrication.
 - 1.8. Fabric:
 - 1.8.1. The smoke curtain fabric is to comprise satin weave glass fibre with a special aluminium reflective coating, producing a fire resistant fabric, stainless steel reinforced for impact resistance.
 - 1.8.2. A weighted bottom bar is to be attached to the foot of the fabric to ensure gravity descent in the event of power failure.
 - 1.8.3. Fabric is to be tested as part of the complete assembly in the orientation and standard use of their application and installation and to comply with the requirements of BS EN 12101: Part 1 and the fire resistance test for BS EN 12101: Part 1.
 - 1.9. Curtain enclosure box:
 - 1.9.1. Heavy duty 1.5mm thick folded galvanised mild steel plate with steel hollow section welded frame.
 - 1.9.2. The curtain enclosure box is to be concealed within the ceiling zone.

- 1.10. Bottom bar: 2 No. back-to-back polyester powder coated mild steel angles with adhesive bonded polyester powder coated aluminium plate to finish flush with ceiling.
- 1.11. Operational characteristics:
 - 1.11.1. The smoke curtain control panel is required to receive a signal and, on receipt of the signal, the curtain is to fully close.
 - 1.11.2. The smoke curtain is to include a 30 minute battery back-up for use in the event of power failure.
 - 1.11.3. Key operated 'over-ride' control panel facility for testing purposed.
 - 1.11.4. Audible/ visual warning on opening/ closing operation.
- 1.12. Control panel(s):
 - 1.12.1. Provide and agree details of control panel and audible/ visual alarm sizes with the Architect prior to placing any orders for the control panel.
 - 1.12.2. The control panel is to be within 5000mm of the smoke curtain, unless otherwise shown.
 - 1.12.3. Provide as many control panels as are required to ensure full and proper operation of the works.
 - 1.12.4. Advise the Architect of the number of control panels required.
 - 1.12.5. Where the location of a control panel is not adjacent to the smoke curtain, and therefore remote from the curtain, provide a 'local' audible and visual warning alarm adjacent to the curtain.
 - 1.12.6. The exact location of all control panels and audible/ visual alarms, and whether the control/ alarm and associated wiring is surface-mounted or recessed, is to be agreed with the Architect.
 - 1.12.7. The control panels is to have a key operated over-ride facility.
- 1.13. Motor and controls:
 - 1.13.1. Provide a 240V d.c. geared electric motor with control unit, emergency and thermal cut-out.
 - 1.13.2. Link control to the building Fire Management System and the BMS system to ensure full closing on activation of the fire alarm.
 - 1.13.3. The system is to have a fusible link back-up.
- 1.14. Signage:
 - 1.14.1. Provide all necessary and relevant operational, maintenance, statutory and safety signage.
 - 1.14.2. The smoke curtain is to have a Loss Prevention Certification Board (LPCB) badge of conformity.

204D DRS-104 Internal Timber Hinged Doorset - Single, FR, MR

- 1. As DRS-101 but fire resistant as per Door Schedule.

205 DRS-105 Internal Timber Hinged Doorset - Painted, Single Leaf (Rated)

- 1. Internal single leaf timber doorset with a paint finish.
 - 1.1. Manufacturer: Doorpac, or acceptable equivalent.
 - 1.2. Size and configuration: As the Design Drawings and Door Schedule.
 - 1.3. Performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.3.2. Acoustic rating: N/A.
 - 1.4. Door frame:
 - 1.4.1. Type: Rebated profile, spit frame to satisfy the wall/ partition depth.

- 1.4.2. Material: Hardwood of minimum density, 650kg/m³ fully compliant with the qualitative and sustainability criteria stipulated herein.
- 1.4.3. Finish: Thoroughly sanded and factory primed to receive decoration on-site.
- 1.5. Door leaf:
 - 1.5.1. Solid laminated timber/ flaxboard core.
 - 1.5.2. Lippings: Hardwood lippings to all edges, applied before application of the painting overlayment.
 - 1.5.3. Pre-finish: Factory priming applied to a medium density overlay paper.
 - 1.5.4. Finish: Polyurethane (PU) paint finish, from the manufacturer's standard range.
 - 1.5.5. Provide vision panels where shown on the Door Schedule/ Design Drawings.
 - 1.5.5.1. Dimensions as the Design Drawings.
 - 1.5.5.2. Factory formed.
 - 1.5.5.3. Kitemarked safety glass of type to satisfy the performance criteria.
 - 1.5.5.4. Flush beading in hardwood to match the hardwood edging.
 - 1.5.5.5. Provide vision panels where shown on the Door Schedule/ Design Drawings.
- 1.6. Overpanels (where shown on the Door Schedule) to be permanently fixed into the rebated frame and intumescently sealed.
- 1.7. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.
- 1.8. Ironmongery: Provide prototype lock cases, strikes, hinges and closers to the door manufacturer to enable factory machining/ fitting. Refer to the Ironmongery Schedule and Section P21.

206 DRS-111 Internal Timber Hinged Doorset - Painted, Leaf and a half (Rated)

- 1. Internal leaf and a half timber doorset with a paint finish.
 - 1.1. Manufacturer: Doorpac, or acceptable equivalent.
 - 1.2. Size and configuration: As the Design Drawings and Door Schedule.
 - 1.3. Performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.3.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.4. Door frame:
 - 1.4.1. Type: Rebated profile, split frame to satisfy the wall/ partition depth.
 - 1.4.2. Material: Hardwood of minimum density, 650kg/m³ fully compliant with the qualitative and sustainability criteria stipulated herein.
 - 1.4.3. Finish: Thoroughly sanded and factory primed to receive decoration on-site.
 - 1.5. Door leaf:
 - 1.5.1. Solid laminated timber/ flaxboard core.
 - 1.5.2. Lippings: hardwood lippings to all edges, applied before application of the painting overlayment.
 - 1.5.3. Pre-finish: Factory priming applied to a medium density overlay paper.
 - 1.5.4. Finish: Polyurethane (PU) paint finish, from the manufacturer's standard range.
 - 1.5.5. Provide vision panels where shown on the Door Schedule/ Design Drawings.
 - 1.5.5.1. Dimensions as the Design Drawings.
 - 1.5.5.2. Factory formed.
 - 1.5.5.3. Kitemarked safety glass of type to satisfy the performance criteria.

- 1.5.5.4. Flush beading in hardwood to match the hardwood edging.
- 1.5.5.5. Bedding: Intumescent/ acoustic glazing compound or proprietary glazing channel dependent upon the method on which the manufacturer's performance certification is based.
- 1.6. Overpanels (where shown on the Door Schedule) to be permanently fixed into the rebated frame and intumescently sealed.
- 1.7. Meeting stiles (to door pairs) to be ostensibly square with a subtle radius profile to comply with the intumescent/ smoke seal/ acoustic seal manufacturer's recommendations.
- 1.8. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.
- 1.9. Ironmongery: Provide prototype lock cases, strikes, hinges and closers to the door manufacturer to enable factory machining/ fitting. Refer to the Ironmongery Schedule and Section P21.

207 DRS-115 Internal Timber Hinged Doorset - Painted, Double Leaf (Rated)

- 1. Internal double leaf timber doorset with a paint finish.
 - 1.1. Manufacturer: Doorpac, or acceptable equivalent.
 - 1.2. Size and configuration: As the Design Drawings and Door Schedule.
 - 1.3. Performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.3.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.4. Door frame:
 - 1.4.1. Type: Rebated profile, split frame to satisfy the wall/ partition depth.
 - 1.4.2. Material: Hardwood of minimum density, 650kg/m³ fully compliant with the qualitative and sustainability criteria stipulated herein.
 - 1.4.3. Finish: Thoroughly sanded and factory primed to receive decoration on-site.
 - 1.5. Door leaf:
 - 1.5.1. Solid laminated timber/ flaxboard core.
 - 1.5.2. Lippings: Hardwood lippings to all edges, applied before application of the painting overlayment.
 - 1.5.3. Pre-finish: Factory priming applied to a medium density overlay paper.
 - 1.5.4. Finish: Polyurethane (PU) paint finish, from the manufacturer's standard range.
 - 1.5.5. Provide vision panels where shown on the Door Schedule/ Design Drawings.
 - 1.5.5.1. Dimensions as the Design Drawings.
 - 1.5.5.2. Factory formed.
 - 1.5.5.3. Kitemarked safety glass of type to satisfy the performance criteria.
 - 1.5.5.4. Flush beading in hardwood to match the hardwood edging.
 - 1.5.5.5. Bedding: Intumescent/ acoustic glazing compound or proprietary glazing channel dependent upon the method on which the manufacturer's performance certification is based.
 - 1.6. Overpanels (where shown on the Door Schedule) to be permanently fixed into the rebated frame and intumescently sealed.
 - 1.7. Meeting stiles (to door pairs) to be ostensibly square with a subtle radius profile to comply with the intumescent/ smoke seal/ acoustic seal manufacturer's recommendations.
 - 1.8. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.

- 1.9. Ironmongery: Provide prototype lock cases, strikes, hinges and closers to the door manufacturer to enable factory machining/ fitting. Refer to the Ironmongery Schedule and Section P21.

207A DRS-116 Internal Timber Hinged Doorset - Painted Finish, Double Leaf (Rated)

1. As DRS-115 but double swing.

208 DRS-121 Internal Timber Hinged Doorset - Special Finish, Single/ Double Leaf

1. Internal single/ double leaf timber doorset with a special finish and concealed frame.
 - 1.1. Manufacturer: Spanlite, or acceptable equivalent.
 - 1.2. Size and configuration: Double swing as the Design Drawings and Door Schedule.
 - 1.3. Performance:
 - 1.3.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.3.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.4. Door frame: Concealed.
 - 1.5. Door leaf:
 - 1.5.1. Solid laminated timber/ flaxboard core.
 - 1.5.2. Lippings: Hardwood lippings to all edges, applied before application of the finish.
 - 1.5.3. Doors to be fully concealed, with no visible fixings, flush finished and fully integrated into the back-lit reception feature wall - door finish to match adjacent wall finish.
 - 1.5.3.1. Indicative manufacturer: Spanlite, or acceptable equivalent.
 - 1.5.3.2. Description: Back lit glasswork with digital print, dimmable LED lighting and aluminium support system. Bespoke decorative lightweight metal frame to face.
 - 1.5.3.3. Free area/ technical requirements: Refer to the Services Engineer's documentation and to comply with UKPN requirements.
 - 1.5.3.4. Bird and/or insect mesh: Black coloured aluminium.
 - 1.5.3.5. Blanking panels: Where permitted and insulated where necessary.
 - 1.5.3.6. Finish: Tiger Drylac Powder Coatings.
 - 1.5.3.7. Colour: To be confirmed.
 - 1.5.3.8. To be integrated into feature wall system.
 - 1.6. Rear blanking panels (where required):
 - 1.6.1. Type and material: Insulated rear blanking composite aluminium panels.
 - 1.6.2. Finish and colour: To match louvres.
 - 1.6.3. Sealant: Air sealed to framing, surrounding panels and duct. Sealant colour to match louvres.
 - 1.6.4. Ductwork connection: Where shown in the Services Engineer's documentation and/or on the Design Drawings.
 - 1.6.5. Apertures: Accurately cut to co-ordinate and align with services and ductwork requirements. Performance to be maintained.
 - 1.7. Meeting stiles (to door pairs): Ostensibly square with a subtle radius profile, to suit the service conditions.
 - 1.8. Seals: Intumescent, smoke and acoustic seals to be of a type on which the manufacturer's certification is based.
 - 1.9. Ironmongery: Refer to the Design Drawings and Section P21.

209 DRS-601 Roof Access Hatch

1. Proprietary, manually operated roof access hatch, as the Design Drawings.
 - 1.1. Manufacturer: Bilco UK Ltd. or acceptable equivalent.
 - 1.2. Dimensions as shown on the Design Drawings.
 - 1.3. Construction:
 - 1.3.1. Grade 1.4301 stainless steel cover and frame, minimum 1.9mm thick.
 - 1.3.2. Cover: Fully welded and insulated and reinforced to accept a maximum loading of 4800kg/m².
 - 1.3.3. Kerb: Height to suit location, insulated with integral cap flashing.
 - 1.4. Finish: Off-site powder coat finish.
 - 1.5. Colours: From the manufacturer's standard range, to be confirmed by the Architect.
 - 1.6. Insulation:
 - 1.6.1. Rigid foam minimum 50mm thick along the outside of the upright edge and 80mm thick in the cover itself.
 - 1.6.2. Final thicknesses to be determined by the Contractor to meet the visual and performance requirements.
 - 1.6.3. Weather seals as required to complete the installation.
 - 1.7. Ironmongery:
 - 1.7.1. Closure mechanism: Two-point closing mechanism with Euro Cylinder lock and 3 No. keys.
 - 1.7.2. Heavy duty stainless steel hinges.
 - 1.7.3. Slam latch with interior and exterior turn handles and padlock hasps.
 - 1.7.4. Lift assistance: Compression spring operators enclosed in telescopic tubes.
 - 1.7.5. Finish to stainless steel: Sandblast finish.

211 DRS-801 Internal Riser Metal Hinged Doorset

1. Proprietary internal metal riser door, as the Design Drawings.
 - 1.1. Manufacturer: Profab Access Ltd. or acceptable equivalent.
 - 1.2. Reference: Profab Concealed Riser Doors.
 - 1.3. Size and configuration: Refer to the Design Drawings and Door Schedule.
 - 1.4. Performance requirements:
 - 1.4.1. Fire rating: Refer to the Fire Strategy Report and/or the Door Schedule/ Design Drawings.
 - 1.4.2. Acoustic rating: Refer to the Acoustic Report and/or the Door Schedule/ Design Drawings.
 - 1.5. Door frame:
 - 1.5.1. Type: Concealed beaded frame. Refer to the Design Drawings.
 - 1.5.2. Material: Profiled zinc coated mild steel.
 - 1.5.3. Seals: Perimeter seals to satisfy the stipulated performance criteria.
 - 1.5.4. Fixing: Frames to be morticed, reinforced, drilled and tapped for hinges and strikes.
 - 1.6. Door leaf(s):
 - 1.6.1. Material: Zinc coated mild steel.
 - 1.7. Finish: Polyester powder coated.
 - 1.8. Range: United Anodisers organic and anolok range.
 - 1.9. Colour: To be confirmed by the Architect.
 - 1.10. Ironmongery:

- 1.10.1. Refer to the Ironmongery Schedule, Ironmongery Set-out Drawings, Door Schedule and Section P21.
- 1.10.2. Doors to be supplied as proprietary system, including all signage and ironmongery required to be agreed with the Architect.
- 1.11. Accessories: Refer to the Ironmongery Schedule.

212 DRS-701 Steel Security Shutter

- 1. Electrically operated, perforated aluminium colour to match louvres, direct drive roller shutter with controlled descent, including motor drive, controls, hand chain operation, accessories and fixings.
 - 1.1. Indicative manufacturer: Aluroll or acceptable equivalent.
 - 1.2. Reference: V77 Elite or acceptable equivalent.
 - 1.3. Location, size and configuration as indicated on the Design Drawings.
 - 1.4. Security rating: SR2.
 - 1.5. Shutter:
 - 1.5.1. The shutter to comprise 'curved' powder coated perforated aluminium interlocking laths with aluminium end locks.
 - 1.5.2. The shutter to include an inverted 'T' section aluminium bottom rail.
 - 1.5.3. Side guides to comprise powder coated aluminium channel sections or wind guides fixed to powder coated aluminium angles.
 - 1.5.4. End plates to be attached to the top of the guide angles.
 - 1.5.5. Barrel to be constructed from high quality aluminium tube mounted on aluminium spools.
 - 1.6. Operation:
 - 1.6.1. High speed shutter certified to LPS 1175 (6.0).
 - 1.6.2. Operated by a key fob/ proximity reader system with no automatic egress.
 - 1.6.3. Alarmed emergency override push button for escape.
 - 1.6.4. Electric drive motor system incorporating gear box and separate safety brake.
 - 1.6.5. The motor position to be positioned to suit the Site conditions.
 - 1.6.6. An emergency hand chain to be provided for use in the event of a power failure.
 - 1.6.7. The motor and shutter to meet the requirements of BS EN 12604 and BS EN 12453.
 - 1.6.8. Concealed mechanism, without visible boxing in to house roller shutter.
 - 1.7. Control types to be as indicated in the Services Engineer's documentation.
 - 1.8. Finishes:
 - 1.8.1. All metalwork to be polyester powder coated finish, bronze colour to match louvres, RAL to be confirmed by the Architect.

213 DRS-212 Steel Security Door

- 1. Intent: Provision of security door to fit in IWS-511 wall system. Refer to IWS-511 for details.
- 2. Description: Fire rated acoustic steel security door to match IWS-511 without reduction in level of security or performance of the wall.

690 Performance

- 1. Standards: in accordance with Approved Document Part E of the Building Regulations, BS EN 1192, BS 6375, BS EN 12207, BS EN 12210, BS EN 12400, BS EN 13241, BS EN 14351, BS EN 16034, BS EN ISO 10077, BS 6262, BS EN 12600, BS 8214, WIS 1-47 - 'Timber external doors', published by TRADA Technology, BS 8300, LPS 1207 - Requirements for the LPCB Approval and Listing for fire performance of temporary protective covering materials for use in the interior of buildings, LPS 1215, BS EN 12217.

2. Environmental:
 - 2.1. External doorsets: minimum thermal performance 1.68W/m²K, thermal performance in accordance with the Services Engineer's documentation.
 - 2.2. Meet requirements of BS 6375: Part 1 for external door weathertightness relating to exposure category.
3. Fire and Smoke:
 - 3.1. Doorsets and seals: fire resistance rating and smoke control in accordance with BS 476: Part 22 and Part 31.1 or BS EN 1634: Parts 1 and 3.
 - 3.2. Mark Fire doorsets/doors sufficiently to show conformance to third party certifying schemes such as Exova BM TRADA Q-Mark Fire Door Manufacturer Scheme or BWF's (British Woodworking Federation) Certifire Fire Door and Doorset Scheme.
4. Acoustic:
 - 4.1. Doorsets and seals to achieve acoustic rating to BS EN ISO 717: Part 1.
 - 4.2. Door operation to be smooth and silent (maximum 68dB at 1000mm distance).
5. Mechanical strength requirements: Refer to the Ramboll Performance Specification.
6. Security:
 - 6.1. External doorsets to be secure and lockable.
 - 6.2. To be confirmed by the Security Consultant/ SBD Consultant.
In accordance with BS 6375: Part 3, Basic security. OR
In accordance with PAS 24. OR
In accordance with Loss Prevention Certification Board (LPCB): Security Rating ***2/ 3/ 4*** as LPS 1175. OR
In accordance with burglar resistance Class ***4/ 5/ 6*** as BS EN 1627.

695 Materials

1. Standards: In accordance with BS EN 12519, BS EN 1313, BS 1245, BS 6206, BS 6262.
2. Solid core timber door panels of suitable/ specified thickness to have minimum moisture content of 12% ± 2% - internal use and 16% ± 3% - external use.
3. Hardwood to comply with sustainability and density (maximum 650kg/m³ for fire doors) requirements.
4. Metal frames manufactured in specialist facility to required profile. Door stops to be integrated. Metal frames manufactured from 1.6mm gauge zinc annealed steel with preformed fixing points and space for integral wiring where needed.
5. Connect any security doors to Building Management System.

Execution

705 Workmanship Generally

1. Standards: In accordance with Door and Hardware Federation (DHF) 'Code of Practice for fire resisting metal doorsets', ASDMA documents - 'Guidance on Fire Door Installation' and 'Guidance and Recommendations for the Coordination of Bespoke Doorsets', BS 8213, BS 8214, BS 1186, BS 4787, BS 5277, EN 24, BS 5278, EN 25, BS EN 951, BS EN 1529, BS EN 1530.
2. Tolerances:
 - 2.1. Length and width - ±1mm.
 - 2.2. Thickness - ±0.5mm.
 - 2.3. Door to frame perimeter gaps and floor finish - 3mm (±1mm).
 - 2.4. Deviation from theoretical vertical plane - 1mm.
 - 2.5. Primary grid deviation - ±2mm.
 - 2.6. Plumb - ±1mm.
 - 2.7. Bow - ±1.5mm.

- 2.8. Flatness/ straightness - +1.5mm in 2000mm in any direction.
- 2.9. Perpendicular reference plane - ± 2 mm.
- 2.10. Twist - 1° maximum.
- 2.11. Cut-outs - ± 1 mm.
- 2.12. Adjacent elements - ± 2 mm.

710 Protection of components

- 1. **General:** Do not deliver to site components that cannot be installed immediately or placed in clean, dry, floored and covered storage.
- 2. **Stored components:** Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

730 Priming/ sealing

- 1. **Wood surfaces inaccessible after installation:** Primed or sealed as specified before fixing components.

740 Corrosion protection

- 1. **Protective coating:** Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
 - 1.1. **Timing of application:** Before fixing components.

750 Fixing doorsets

- 1. **Timing:** After associated rooms have been made weathertight and the work of wet trades is finished and dried out.

760 Building in

- 1. **General:** Not permitted unless indicated on drawings.

770 Damp proof courses associated with built-in wood frames

- 1. **Method of fixing:** To backs of frames using galvanized clout nails.

780 Damp proof courses in prepared openings

- 1. **Location:** Correctly positioned in relation to door frames. Do not displace during fixing operations.

790 Fixing of wood frames

- 1. **Spacing of fixings (frames not predrilled):** Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

800 Fixing of loose thresholds

- 1. **Spacing of fixings:** Maximum 150 mm from each end and at 600 mm maximum centres.

809 Fire resisting and smoke control doors/ door assemblies/ doorsets/ roller shutters and curtains – accredited installer

- 1. **Installation:** By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

820 Sealant joints

- 1. **Sealant**

- 1.1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1.1. **Product reference:** To be proposed by the Contractor.
- 1.2. **Colour:** To be confirmed.
- 1.3. **Application:** In accordance with Section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 Fixing ironmongery generally

- 1. **Fasteners:** Supplied by ironmongery manufacturer.
 - 1.1. **Finish/ Corrosion resistance:** To match ironmongery.
- 2. **Holes for components:** No larger than required for satisfactory fit/ operation.
- 3. **Adjacent surfaces:** Undamaged.
- 4. **Moving parts:** Adjusted, lubricated and functioning correctly at completion.

840 Fixing ironmongery to fire resisting door assemblies

- 1. **General:** All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
- 2. **Holes for through fixings and components:** Accurately cut.
 - 2.1. **Clearances:** Not more than 8 mm unless protected by intumescent paste or similar.
 - 2.2. **Lock/ Latch cases for fire doors requiring**

850 Location of hinges

- 1. **Primary hinges:** Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
- 2. **Third hinge:** Where specified, positioned as recommended by the manufacturer.
- 3. **Hinges for fire resisting doors:** Positioned in accordance with door leaf manufacturer's recommendations.

860 Installation of emergency exit devices

- 1. **Standard:** Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.

Ω End of Section

L30 Stair Balustrades

Preliminary information/ requirements

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

130 Site dimensions

1. **Procedure:** Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.

Components

553 BAL-111 Internal Metal Balustrade and Handrail

1. Internal metal balustrade and handrail with support posts, as the Design Drawings.
2. Size and configuration: Refer to the Design Drawings.
3. Support posts, infill rods/ panel:
 - 3.1. Material: Mild steel.
 - 3.2. Profile: Circular, as the Design Drawings.
 - 3.3. Finish: Polyester powder coated.
4. Handrail:
 - 4.1. Material and finish: To match support posts, infill rods/ panel.
 - 4.2. Size: As the Design Drawings.
 - 4.3. Corners and connections: Mitred and welded with matching end caps.
5. Fixing:
 - 5.1. Type: Bolt and bracket, concealed and securely fixed to substrate.
 - 5.2. Material: Stainless steel.
6. System to include all necessary fastenings, bracketing and accessories required to complete the installation.

554 BAL-141 External Metal Balustrade and Handrail

1. Bespoke flat plate balustrade system to the acceptance of the Architect.
2. Size and configuration: As indicated on the Design Drawings.
3. Substrate: As indicated on the Design Drawings.
4. Balustrade
 - 4.1. Nominal 10mm thick steel x 70mm deep frame, subject to the Structural Calculations by the Façade Contractor - to be confirmed.
 - 4.2. Finish to be polyester powder coated, to the acceptance of the Architect through sampling.
 - 4.3. 10mm thick steel x 50mm deep balusters to match frame, subject to the Structural Calculations by the Façade Contractor - to be confirmed.
 - 4.4. All welds to be ground down to be to the acceptance of the Architect through sampling.
 - 4.5. Fixings to be counter sunk, hex, head stainless steel as indicated on the Design Drawings.

5. Workmanship

- 5.1. Installation: System to be installed in accordance with the manufacturer's recommendations.

555 STR-101 Bespoke Helical Metal Staircase (Feature Stair)

1. Bespoke metal staircase, as the Design Drawings.
1.1. Final system details to specialist sub-contractor's design.

556 STR-206 Bespoke Reception Feature Staircase (Wellbeing Stairs/ Reception)

1. Bespoke reception feature metal staircase with a GRC finish to treads and risers, to match Type FX-801 bespoke reception desk finish, as the Design Drawings.
1.1. Final system details to specialist sub-contractor's design.

557 STR-221 Internal Metal and Glass Staircase (Tenant Staircase, Fls 07-09)

1. Internal metal and glass staircase, as the Design Drawings.
1.1. Final system details to specialist sub-contractor's design.

558 STR-226 Internal Metal Staircase (GF Escape/ Service Corridor)

1. Internal metal staircase, as the Design Drawings.
1.1. Final system details to specialist sub-contractor's design.

559 BAL-101 Internal Glass Balustrade

1. Capless glass balustrade, as the Design Drawings.
1.1. Size and configuration: Refer to the Design Drawings.
1.2. Balustrade system to comply with all performance requirements.
1.3. Infill panel:
1.3.1. Material: Cantilevered curved low iron and toughened glass panels.
1.3.2. Edges: Polished.
1.4. Fixing:
1.4.1. Type: Concealed and securely fixed to substrate.
1.4.2. Material: Stainless steel.
1.5. System to include all necessary fastenings, bracketing and accessories required to complete the installation.

561 BAL-125 Internal Metal Handrail

1. Bespoke, wall mounted metal handrail as the Design Drawings.
1.1. Handrail:
1.1.1. Material: Steel.
1.1.2. Type: Circular.
1.1.3. Size: Refer to the Design Drawings.
1.1.4. Finish/ colour: PPC. Colour to be confirmed.
1.1.5. Handrail corners to be mitred and welded to suit installation conditions.
1.1.6. Install handrail at height as the Design Drawings.
1.2. Fixing:
1.2.1. Bolt and bracket fixed, of minimal profiles to maintain the performance requirements and to the acceptance of the Architect.

1.2.2. Material/ finish: To match the main assembly.

1.2.3. System to include all necessary fastenings, bracketing and accessories required to complete the installation.

562 BAL-305 Internal Metal Handrail

1. Bespoke, wall mounted metal handrail as the Design Drawings.

1.1. Handrail:

1.1.1. Material: Steel.

1.1.2. Type: Circular.

1.1.3. Size: 40mm diameter.

1.1.4. Finish/ colour: Polyester powder coated finish, to a dark grey colour, RAL colour to agreed with the Architect.

1.1.5. Handrail corners to be mitred and welded to suit installation conditions.

1.1.6. Install handrail at height as the Design Drawings.

1.2. Fixing:

1.2.1. Bolt and bracket fixed, of minimal profiles to maintain the performance requirements and to the acceptance of the Architect.

1.2.2. Material/ finish: To match the main assembly.

1.2.3. All welds ground down.

1.2.4. System to include all necessary fastenings, bracketing and accessories required to complete the installation.

Installation

600 Samples

1. 450mm length of each type of baluster and frame member.
2. 450mm x 450mm sample of each type of infill.
3. All visible fixings and accessories.

601 Benchmarks

1. The first completed area/item of each system.

610 Moisture content

1. **Temperature and humidity:** Monitor and control internal conditions to achieve specified moisture content in wood components at time of installation.

620 Priming/ Sealing/ Painting

1. **Surfaces inaccessible after assembly/installation:** Before fixing components, apply full protective/decorative treatment/coating system.

630 Corrosion protection of dissimilar materials

1. **Components/ substrates/ fasteners of dissimilar materials:** Isolate using washers/ sleeves or other suitable means to separate materials to avoid corrosion and/ or staining.

635 Fabrication Tolerances

1. **Squareness:** $\pm 1:1000$ deviation to longest side.
2. **Length:** $\pm 2\text{mm}$.
3. **Width:** $\pm 2\text{mm}$.

4. Flatness: $\pm 1\text{mm}$ under a 600mm straightedge.
5. Twist / Warp: $< 2\text{mm}$.

640 Installation generally

1. Fasteners and methods of fixing: To Section Z20.
2. Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
3. Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
4. Applied finishes: Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as finish manufacturer's recommendation before application.
5. Visible fixings: Stainless steel hex socket machine (Allen) screws, countersunk where possible.
6. Tolerances:
 - 6.1. Squareness: No diagonal panel deviation of $\pm 3\text{mm}$ or $\pm 0.075\%$, whichever is the lowest.
 - 6.2. Levelness: $\pm 2\text{mm}$ from 2m straight edge
 - 6.3. Flatness: $\pm 2\text{mm}$ from 2m straight edge
 - 6.4. Vertical joints: $< 1.5\text{mm}$ from another joint.
 - 6.5. Vertical plane: < 1 in 1000. Theoretical position $\pm 1.5\text{mm}$.
 - 6.6. Bow: 3mm or 0.075% whichever is the lowest.
 - 6.7. Twist: $< 1^\circ$ from either end.
 - 6.8. Alignment: $\pm 2\text{mm}$ of other elements.

670 Installation of tread inserts/ nosings

1. Treads: Fully cured, sound and level.

Completion

910 Inspection

1. Timing: Two weeks after request by Contract Administrator
2. Period of notice (minimum): 5 working days

915 Slip resistance testing

1. Surfaces to be tested: All areas.
 - 1.1. Surface condition: Dry and wet.
2. Timing: As agreed with contract administrator
3. Period of notice (minimum): 5 working days
4. Test standard: To BS 7976
 - 4.1. Testing authority: A UKAS accredited laboratory
 - 4.2. Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: To be agreed.
 - 4.3. Report: Submit.
 - 4.3.1. Format: As required under BS 7976

920 Documentation

1. Contents
 - 1.1. Copies of structural design calculations/ test reports.
 - 1.2. General product information.

- 1.3. Installation information.
- 1.4. Inspection and maintenance reports.

Ω End of Section

L35

Fixed utilitarian access systems

General

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 ARM-301 Metal Floor Grillage

1. Metal floor grillage, as the Design Drawings.
 - 1.1. Indicative manufacturer: To be agreed with the Architect.
 - 1.2. Indicative reference: To be agreed with the Architect.
 - 1.3. Size and configuration: As the Design Drawings.
 - 1.4. Finish: Galvanised.
 - 1.5. Mesh/ bars/ edge/ finish: Galvanised steel - self colour.
 - 1.6. Suitable framing system, as required.
 - 1.7. The grille to be removable for access to the void.
 - 1.8. Fixing: Concealed but accessible fixing as the Services Engineer's documentation.

System performance

212 Contractor's design

1. Description:
2. Design responsibility:
3. Structural requirements:
 - 3.1. Generally: As section B50.
 - 3.1.1.Modifications:
 - 3.2. Design: Complete in accordance with the designated code of practice to satisfy specified performance criteria.
4. Functional requirements:
5. Additional requirements:
6. Design and production information:
7. Timing of submissions:
8. Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

214 Completion of design

1. Description:
2. Requirement: Complete the detailed design to satisfy specified performance criteria and coordinate with the detailed design of related and adjacent work.
 - 2.1. Standards:
3. Structural requirements:
 - 3.1. Generally: As section B50.
 - 3.1.1.Modifications:

- 3.2. Design: Complete in accordance with the designated code of practice to satisfy specified performance criteria.
4. Additional requirements:
5. Design and production information:
6. Timing of submissions:

240 Structural design provided

1. Description:
2. Design standard:
 - 2.1. Generally: As section B50.
3. Deflections (maximum):
4. Additional requirements:

Products

310 Companionways

1. Standard: In accordance with BS 5395-3.
2. Manufacturer:
 - 2.1. Product reference:

320 Duckboards

1. Manufacturer:
 - 1.1. Product reference:

330 Ladders

1. Standard: In accordance with BS 5395-3.
2. Manufacturer:
 - 2.1. Product reference:

340 High level walkways

1. Standard: In accordance with BS 5395-3.
2. Manufacturer:
 - 2.1. Product reference:

350 Stairs

1. Type:
2. Standard: In accordance with
3. Manufacturer:
 - 3.1. Product reference:

360 Working platforms

1. Standard: In accordance with BS 5395-3.
2. Manufacturer:
 - 2.1. Product reference:

370 Guardings

1. Standard:

2. Manufacturer:
 - 2.1. Product reference:

410 Aluminium components

1. Material:
 - 1.1. Designation:
2. Solid floor and tread plates: To BS 4592-5.
 - 2.1. Thickness:
3. Expanded metal grating panels: To BS 4592-2.
4. Open bar gratings: To BS 4592-1.
 - 4.1. Depth:
5. Finish:
 - 5.1. Colour:
6. Fixings:

420 Carbon steel components

1. Material:
 - 1.1. Grade:
 - 1.2. Options:
2. Solid floor and tread plates: To BS 4592-5.
 - 2.1. Thickness:
3. Expanded metal grating panels: To BS 4592-2.
4. Open bar gratings: To BS 4592-1.
 - 4.1. Depth:
5. Finish:
 - 5.1. Colour:
6. Fixings:

440 Stainless steel components

1. Material: To BS EN 10088-1, -2 and -3 as appropriate.
 - 1.1. Grade:
2. Solid floor and tread plates: To BS 4592-5.
 - 2.1. Thickness:
3. Expanded metal grating panels: To BS 4592-2.
4. Open bar gratings: To BS 4592-1.
 - 4.1. Depth:
5. Finish:
6. Fixings:

460 Cast iron components

1. Standard:
 - 1.1. Material designation:
2. Component:
 - 2.1. Manufacturer:
 - 2.1.1. Product reference:

470 GRP components

1. Manufacturer:
 - 1.1. Product reference:
2. Panels:
 - 2.1. Thickness:
 - 2.2. Finish:
3. Solid plates: To BS 4592-5.
4. Open bar gratings: To BS 4592-4.
 - 4.1. Depth:
5. Finish:
 - 5.1. Colour:
6. Fixings:

490 Anchors

1. Manufacturer:
 - 1.1. Product reference:
2. Material and finish:
3. Size:

Fabrication

510 Fabrication generally

1. Shop drawings: Submit.

Execution

620 Execution generally

1. **Structural members:** Do not subject to nondesign loading. Do not modify, cut, notch or make unspecified holes.
2. **Frameworks:** Assemble and brace, including temporary members required for installation.
 - 2.1. **Temporary support:** Do not use access systems as temporary support or strutting for other work.
3. **External durability of fastenings:** Corrosion resistant material or with a corrosion resistant finish.
4. **Bolted joints**
 - 4.1. **Contact between dissimilar metals:** Avoid.
 - 4.2. **Bolts and washers:** Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
5. **Welded joints**
 - 5.1. **Standards**
 - 5.1.1. **Aluminium alloys:** TIG or MIG welding to BS EN 1011-4.
 - 5.1.2. **Carbon steel:** Metal arc welding to BS EN 1011-1 and -2.
 - 5.1.3. **Stainless steel:** TIG welding to BS EN 1011-3.
 - 5.2. **Surfaces to be jointed:** Clean.
 - 5.3. **Tack welds:** Use only for temporary attachment.
 - 5.4. **Traces of flux residue, slag and weld spatter:** Remove.
 - 5.5. **Surface of welds:** Grind smooth.

- 5.6. Joints: Fully bonded with no holes or cracks.
- 6. Finished components
 - 6.1. Free: From distortion, cracks, burrs and sharp arrises.
 - 6.2. Corner junctions of identical sections: Mitre.
 - 6.3. Handrails: Smooth and continuous, with no sharp edges.

660 Anchoring

- 1. Fixing positions: Coordinate location of holding down bolts and wall fixings with services fixing positions.
- 2. Edge distance and spacing (minimum):

Completion

910 Cleaning

- 1. General: Clean surfaces and wipe down finishes.

920 Inspection

- 1. Notice for inspection (minimum):

930 Documentation

- 1. Operation and maintenance instructions: Submit.
- 2. Record drawings: Submit.

Ω End of Section

M10

Cement based levelling/ wearing screeds

Types of screed

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 SCR-101 Floating Screed

1. Modified floating screed, as the Design Drawings.
 - 1.1. Manufacturer: Tarmac, or acceptable equivalent.
 - 1.2. Reference: Tufscreeed F.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Substrate(s): Refer to the Design Drawings.
 - 1.5. Preparation and priming: To suit the service conditions.
 - 1.6. Drainage membrane: Refer to the Structural Engineer's documentation.
 - 1.7. Insulation: Refer to Type INS-111 Rigid Insulation Board in Section P10.
 - 1.7.1.Thickness: To satisfy the stipulated performance criteria.
 - 1.8. Separation layer: Polythene separation layer.
 - 1.9. Screed:
 - 1.9.1.Type: Semi-dry cementitious screed.
 - 1.9.2.Reinforcement: Polypropylene fibres for crack control.
 - 1.9.3.Thickness: To satisfy the stipulated performance criteria.
 - 1.10. Surface finish: Worked uniform, smooth, but unpolished dense surface to suit final floor finish.

112 SCR-201 Bonded Screed

1. Modified bonded screed, as the Design Drawings.
 - 1.1. Manufacturer: Tarmac, or acceptable equivalent.
 - 1.2. Reference: Tufscreeed F.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Substrate(s): Refer to the Design Drawings.
 - 1.5. Preparation and priming: Solvent free epoxy resin bonding agent, to suit the service conditions.
 - 1.6. Screed:
 - 1.6.1.Type: Semi-dry cementitious screed.
 - 1.6.2.Reinforcement: Polypropylene fibres for crack control.
 - 1.6.3.Thickness: To satisfy the stipulated performance criteria.
 - 1.7. Surface finish: Trowelled, to a uniform, smooth, but unpolished dense surface to suit final floor finish.

113 SCR-401 Levelling Screed

1. Self-levelling smoothing screed, as the Design Drawings.
 - 1.1. Manufacturer: Flowcrete UK Ltd. or acceptable equivalent.

- 1.2. Reference: Isocrete Self Level Renovation.
- 1.3. Size and configuration: Refer to the Design Drawings.
- 1.4. Substrate(s): Refer to the Design Drawings.
- 1.5. Preparation and priming: To suit the service conditions.
- 1.6. Screed:
 - 1.6.1.Type: High strength, fast drying, self-levelling, smoothing, cementitious screed.
 - 1.6.2.Thickness: To satisfy the stipulated performance criteria.
 - 1.6.3.Movement joint edge: Refer to the Design Drawings.
 - 1.6.4.Surface finish: Worked uniform, smooth, but unpolished dense surface to suit final floor finish.

Generally/ preparation

210 Suitability of substrates

1. General
 - 1.1. Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
 - 1.2. Sound and free from significant cracks and gaps.
2. Concrete strength: In accordance with BS 8204-1, Table 2.
3. Cleanliness: Remove plaster, debris and dirt.
4. Moisture content: To suit screed type. New concrete slabs to receive fully or partially bonded construction must be dried out by exposure to the air for minimum six weeks.

215 Surface hardness of substrates to receive polymer modified wearing screeds

1. General: Substrates must restrain stresses that occur during setting and hardening of wearing screeds.
2. Test for surface hardness: To BS EN 12504-2 using a rebound hammer with compliance values as follows:
 - 2.1. Rebound hammer value (minimum)
 - 2.1.1.Screed thickness 15 mm or less: 25.
 - 2.1.2.Screed thickness greater than 15 mm: 30.
3. Report: Submit details of areas where substrate surface hardness does not comply with these values.

220 Proprietary levelling/wearing screeds

1. General: Materials, mix proportions, mixing methods, minimum/ maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
2. Standard:

225 Samples

1. General: Before placing orders submit representative samples of the following:
 - 1.1. Movement joints and edge restraints: 300mm long.
2. Delivered materials/ products: To match samples.

230 Control samples

1. General: Complete areas of finished work and obtain approval of appearance before proceeding.
2. Screed type:

2.1. Location/ Size: 20m².

250 Conduits under floating screeds

1. **Haunching:** Before laying insulation for floating screeds, haunch up in 1:4 cement:sand on both sides of conduits.

251 Conduits cast into or under screeds

1. **Reinforcement:** Overlay with reinforcement selected from:
 - 1.1. 500 mm wide strip of steel fabric to BS 4483, reference D49, or
 - 1.2. Welded mesh manufactured in rolls from mild steel wire minimum 1.5 mm diameter to BS 1052, mesh size 50 x 50 mm.
2. **Placing reinforcement:** Mid depth between top of conduit and the screed surface.
 - 2.1. Width of reinforcement (minimum): 300 mm.
3. **Screed cover over conduit (minimum):** 25mm.

255 Pipe ducts/ trunking

1. **Preformed access ducts:** Before laying screed, fix securely to substrates and level accurately in relation to finished floor surface.

260 Fully bonded construction

1. **Preparation:** Generally in accordance with BS 8204-1.
2. **Removing mortar matrix:** Shortly before laying screed, expose coarse aggregate over entire area of hardened substrate.
3. **Texture of surface:** Suitable to accept screed and achieve a full bond over complete area.
4. **Bonding coat:** As recommended by the manufacturer.

270 Partially bonded construction

1. **Preparation:** Generally in accordance with BS 8204-1.
2. **Substrate surface:** Brushed finish with no surface laitance.
 - 2.1. **Texture of surface:** Suitable to accept screed and achieve a bond over complete area.
3. **Bonding coat:** As recommended by the manufacturer.

275 Cement slurry bonding

1. **Slurry type:** To be proposed by the Contractor.
2. **Application:** Shortly before laying screed, thoroughly wash clean the surface and keep well wetted for several hours. Remove free water then brush in cement slurry bonding coat of creamy consistency.
3. **Screeding:** While slurry is still wet.

280 Unbonded construction

1. **Separation:** Lay screed over a suitable sheet dpm or a separating layer.
 - 1.1. **Type:** To be proposed by the Contractor.
2. **Installation of separating layer:** Lay on clean substrate. Turn up for full depth of screed at abutments with walls, columns, etc. Lap 100 mm at joints.

290 Floating construction

1. **Insulation**
 - 1.1. **Type:** To be proposed by the Contractor.

- 1.2. **Installation:** Lay with tight butt joints. Continue up at perimeter abutments for full depth of screed.
2. **Separating layer**
 - 2.1. **Type:** To be proposed by the Contractor.
 - 2.2. **Installation:** Lay over insulation and turn up at perimeter abutments. Lap 100 mm at joints.

295 Floating construction (thin sheet impact sound insulation)

1. **Substrate:** Remove projections that may puncture the insulation.
2. **Insulation**
 - 2.1. **Type:** To be proposed by the Contractor.
 - 2.2. **Installation:** Lay on substrate. Turn up for full depth of screed at perimeter abutments. Lap 100 mm at joints and seal with tape.
 - 2.3. **Perimeter:** Maintain isolation of screed.

Batching/ mixing

302 Cements

1. **Cement types:** In accordance with BS 8204-1, clause 5.1.3.

305 Aggregates

1. **Sand:** To BS EN 13139.
 - 1.1. **Grading limits:** In accordance with BS 8204-1, Table B.1.
2. **Coarse aggregates for fine concrete levelling screeds**
 - 2.1. **Standard:** To BS EN 12620.
 - 2.2. **Designation:** 4/10.
3. **Lightweight aggregates:** In accordance with BS 8204-1, Annex A.

307 Admixtures

1. **Standard:** In accordance with BS 8204-1, Table 1.
2. **Calcium chloride:** Do not use in admixtures.

311 Batching with lightweight aggregates

1. **Standard:** In accordance with BS 8204-1, Annex A.
2. **Mix proportions:** Specified by volume.
3. **Batching:** Use accurate gauge boxes.

330 Mixing

1. **Water content:** Minimum necessary to achieve full compaction, low enough to prevent excessive water being brought to surface during compaction.
2. **Mixing:** Mix materials thoroughly to uniform consistency. Mixes other than no-fines must be mixed in a suitable forced action mechanical mixer. Do not use a free fall drum type mixer.
3. **Consistency:** Use while sufficiently plastic for full compaction.
4. **Ready-mixed retarded screed mortar:** Use within working time and site temperatures recommended by manufacturer. Do not retemper.

335 In situ crushing resistance (ISCR)

1. **Standards and category:** In accordance with BS 8204-1, table 4.
 - 1.1. **Testing of bonded and unbonded screeds:** To Annex D.

1.2. Testing of floating levelling screeds: To Annex E.

340 Adverse weather

1. Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
2. Hot weather: Prevent premature setting or drying out.

Laying

341 General

1. Maximise each pour size.
2. Bay and joints: As per working drawings or agreed with the Architect.
3. Edging: Straight, unblemished, clean and continuous. Dividing strips to be added.

345 Level of screed surfaces

1. Permissible deviation: (Allowing for thickness of coverings +/-3mm).

350 Screeding to falls

1. Minimum screed cover: Maintain at the lowest point.
2. Falls: Gradual and consistent.

355 Flatness/ Surface regularity of floor screeds

1. Standard: In accordance with BS 8204-1, Table 5.
2. Test: In accordance with BS 8204-1, Annex C.
3. Sudden irregularities: Not permitted.

365 Flatness/ Surface regularity of roof screeds

1. Sudden irregularities: Not permitted.
2. Deviation of surface: Measure from underside of a 2 m straightedge (between points of contact), placed anywhere on surface.
 - 2.1. Permissible deviation (maximum): 6 mm.

375 Compaction of screeds

1. General: Compact thoroughly over entire area.
2. Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

405 Joints in levelling screeds generally

1. Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
2. Daywork joints: Form with vertical edge.

460 Strip movement joints

1. Description:
2. Manufacturer:
 - 2.1. Product reference:
 - 2.2. Size:
3. Installation: Set securely into screed to exact finished level of floor. Extend joints through to substrate.

- 3.1. **Secure fixing to substrate:** To manufacturer's recommendation.

468 Sealant movement joints with metal edgings

1. **Description:** To be proposed by the Contractor.
2. **Edging material:** To be proposed by the Contractor.
 - 2.1. **Size:** To be proposed by the Contractor.
 - 2.2. **Bedding:** 1:3 cement:sand.
3. **Installation:** Centre over joints in substrate. Set to exact finished level of floor.
 - 3.1. **Secure fixing to substrate:**
4. **Joint width:** <10mm.
5. **Sealant**
 - 5.1. **Manufacturer:** To be confirmed by the Contractor.
 - 5.2. **Product reference:** To be confirmed by the Contractor.
 - 5.3. **Colour:** TBA.
 - 5.4. **Preparation and application:** As section Z22.

Finishing/curing

510 Finishing generally

1. **Timing:** Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
2. **Prohibited treatments to screed surfaces**
 - 2.1. **Wetting to assist surface working.**
 - 2.2. **Sprinkling cement.**

520 Wood floated finish

1. **Finish:** Slightly coarse, even texture with no ridges or steps.

530 Smooth floated finish

1. **Finish:** Even texture with no ridges or steps.

540 Trowelled finish to levelling screeds

1. **Floating:** To an even texture with no ridges or steps.
2. **Trowelling:** To a uniform, smooth but not polished surface, free from trowel marks and other blemishes, and suitable to receive specified flooring material.

550 Trowelled finish to wearing screeds

1. **Floating:** To an even texture with no ridges or steps.
2. **Trowelling:** Successively trowel at intervals, applying sufficient pressure to close surface and give a uniform smooth finish free from trowel marks and other blemishes.

560 Dewatered trowelled finish to wearing screeds

1. **Dewatering:** Immediately after compaction of wearing screeds, remove water using a vacuum process.
2. **Floating:** Without delay, power float to an even texture with no ridges or steps.
3. **Trowelling:** Successively trowel at intervals, applying sufficient pressure to close surface and give a uniform smooth finish free from trowel marks and other blemishes.

600 Power ground finish to wearing screeds

1. **Floating:** To an even surface with no ridges or steps. Immediately commence curing.
2. **Grinding:** When concrete is sufficiently hard for sand particles not to be torn from surface, remove 1 - 2 mm from surface to give an even glass-paper texture, free from blemishes and trowel marks.
3. **Cleaning:** Remove dust and wash down. Resume curing without delay.

650 Curing

1. **General:** Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight. As soon as screed has set sufficiently, closely cover with polyethylene sheeting.
2. **Curing period (minimum):** Keep polyethylene sheeting in position for:
3. **Drying after curing:** Allow screeds to dry gradually. Do not subject screeds to artificial drying conditions that will cause cracking or other shrinkage related problems.

680 Surface sealer to wearing screeds

1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.
2. **Preparation:** Clean cured screed surface to remove dirt, grease, oil and other surface contaminants.
3. **Moisture content of screed:** As recommended by sealer manufacturer. Test relative humidity in accordance with BS 8203, Annex A if required to verify suitability to receive sealer.
4. **Application:** Evenly to dry surfaces using sufficient coats to form an effective seal but without a glossy finish.

690 Slip resistance testing of wearing screeds

1. **Test**
 - 1.1. To BS 7976-1, -2 and -3 using a TRL Pendulum.
 - 1.2. When testing with a surface roughness meter, achieve minimum of 20 µm Rz.
 - 1.3. **Make arrangements for test to be witnessed/ certified by:**
2. **Report:** Submit. Include slip resistance values in the wet and dry states.
3. **Pedestrian screed requirements::** 36PTV (wet and dry conditions).

700 Abrasion testing of wearing screeds

1. **Test method:** To BS EN 13892-4.

710 Impact testing

1. Use 4kg weight, to comply with the BRE Information Paper 11/84 - 'BRE screed tester: classification of screeds, sampling and acceptance limits'.

Ω End of Section

M12 Resin flooring

Types of flooring

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

110 FLF-301 Resin floor screed

1. **Description:** Resin Flooring as shown on the Design Drawings
2. **Substrate:** As shown on the Design Drawings.
 - 2.1. **Preparation:** To suit the service conditions.
3. Resin flooring system to BS EN 13813
 - 3.1. **Evidence of compliance:** Submit.
 - 3.2. **Manufacturer:** Altro Resin Systems or acceptable equivalent.
 - 3.3. **Resin flooring reference:** Altro Screed 6mm - FERFA Type 6
 - 3.4. **Application:** 6mm nominal thickness
 - 3.5. **Colour:** To be agreed
 - 3.6. **Surface finish/ treatment:** In accordance with manufacturers requirements.
 - 3.6.1. **Classification of surface regularity to BS 8204-6:** SR-1 - High
4. **Joints/ Junctions:** Not accepted, to represent a seamless appearance.
5. **Flatness/ Surface regularity**
 - 5.1. **Sudden irregularities:** Not permitted.
6. **Transition strips/ trims:** Stainless steel - brush finish
7. **Skirtings:** As shown on the Design Drawings.
8. **Slip resistance:** Pendulum test value to BS 7976-2 or in accordance with BS 8204-6, Annex B: 40 (minimum) for wet and dry tests 40 (minimum) for wet and dry tests.
9. **Other requirements:** Refer to manufacturers technical sheets.

Preparation of substrates

210 Testing moisture content of substrates

1. **Drying aids:** Remove minimum four days prior to test.
2. **Test:** In accordance with BS 8203, Annex B using an accurately calibrated hygrometer.
 - 2.1. **Location of readings:** Corners, along edges, and at various points over the test area.
3. **Relative humidity before laying resin flooring (maximum):** 75% R.H.

211 Surface Applied DPM

1. **Manufacturer and reference:** Altro Proof standard, epoxy surface DPM by Altro Floors effective up to 97% R.H.
2. **Apply** in accordance with manufacturers instructions

220 Surface hardness of substrates

1. **General:** Substrates must restrain stresses that occur during setting and hardening of resin and in service..

2. **Test for surface hardness:** To BS EN 12504-2 using a rebound hammer to ensure that a minimum strength of 26N/ mm.sq is achieved.
3. **Test results:** Submit.
4. **Areas of non-compliance:** Submit remedial proposals for repair or cut out and replacement.

230 Preparation of substrates generally

1. **Chases/ Saw cuts:** Cut/ break out at skirtings, free edges, movement joints, etc. for termination of resin flooring.
2. **Blow holes, cavities, cracks, etc.:** Fill with repair product recommended by resin flooring manufacturer.
3. **Cleanliness:** Remove surface contaminants, debris, dirt and dust.
4. **Surface texture:** Suitable to accept resin flooring and achieve a full bond over the complete area.
5. **Movement:** : All live movement/ crack induced joints to be brought through the resin and infilled with colour matched Altro Expand.

240 Existing substrates

1. **Preparation:** Remove surface imperfections, ingrained contaminants, coatings and residues all in accordance with manufacturers recommendations.
 - 1.1. **Contaminated areas:** Submit proposals for removal and repair.

250 Existing tile/ sheet floor coverings

1. **Preparation:** Remove coverings, residual adhesive, bedding, grouting and pointing.

260 Metal substrates

1. **Cleaning:** Shot blast to BS EN ISO 8501-1, Grade Sa2.5.
 - 1.1. **Treated surfaces:** Clean. Free from visible oil, grease and dirt, mill scale, rust, paint coatings and foreign matter.

Laying flooring

310 Workmanship

1. **Operatives**
 - 1.1. **Trained/ Experienced** in the application of resin floorings.
 - 1.2. **Evidence of training/ experience:** Submit on request.
2. **Fillers and incorporated aggregates:** Thoroughly mix in to ensure wetting. Avoid over-vigorous mixing resulting in excessive air entrainment.
3. **Scattered aggregates:** Broadcast onto wet surface of resin.
 - 3.1. **Appearance:** Consistent.
4. **Curing:** Allow appropriate periods between coats and before surface treatments and trafficking/ use.
5. **Health and Safety:** Refer to MSDS's/ FERFA publication: Guide to use with Insitu Resin Floors and Surface Preparation.

315 Samples

1. **General:** Before placing orders submit representative samples of the following:
 - 1.1. 300 x 300mm of each complete type inclusive of skirtings.
2. **Delivered materials/ products:** To match samples.

320 Control samples

1. Complete areas of finished work in the following locations: To agreed but a minimum area of 20m².
2. Approval of appearance: Obtain before proceeding.

330 Primers

1. Product:: Altro Prime Standard.
2. Application: Apply with a medium pile roller (ensuring that the substrate is fully satisfied and sealed). While wet lightly seed with single size Altro Grip aggregate at a rate of 100g/m³ (0.7 to 1.2mm). Leave to cure for maximum of 24 hours to leave an even closed film across the sub floor.

340 Reinforcement

1. Fabric: Promesh Grade 5 glass fibre or similar equivalent.
 - 1.1. Locations: Bay joints.
 - 1.2. Laps (minimum): Minimum 50 mm.
 - 1.3. Bedding: Roll into prime coat.

350 Coated resin flooring

1. Application: Even, of uniform thickness, surface finish and colour.
2. Resin coatings will not deteriorate in appearance or performance when resisting water penetration from below.

357 Trowel applied screeded resin flooring

1. Application: Even and thoroughly compacted, of uniform thickness, surface finish and colour.
2. Process: Use stainless steel trowel taking care to compact and close the surface evenly, keeping trowel marks to a bare minimum. Allow to cure for a maximum of 24 hours.

360 Surface abrading/ polishing

1. Surface on completion: Uniform, fine and dust free.

370 Surface grinding/ grouting/ abrading/ polishing

1. Surface on completion
 - 1.1. Grinding: Regular appearance to exposed aggregate and dust free.
 - 1.2. Grouting: Surface defects filled.
 - 1.3. Abrading/ Polishing: Uniform, fine and dust free.

380 Surface sealer

1. Application: Even to completely wet resin surface.
2. Process:: After thorough de-nibbing and vacuuming of cured screed apply one coat of Altro Screed slip-resistant seal coat which is worked thoroughly into the the surface ensuring that porous areas are fully satisfied. Mix and roller apply a tight finishing seal coat leaving an even closed film across the whole floor.

390 Slip resistance testing of finished resin flooring

1. Standard: In accordance with BS 8204-6, Annex B and pendulum test to BS 7976-2.
2. Timing: Give notice.
 - 2.1. Notice period (minimum): 24 hours.
3. Results: Submit pendulum test values, for both wet and dry states.

- 3.1. When testing with a surface roughness meter, achieve minimum of 20 µm Rz.
- 3.2. Pedestrian screed requirements: 36PTV (wet and dry conditions).

400 Bond strength of resin flooring

1. **Contact surfaces:** Substrate and fully cured resin flooring.
2. **Bond:** In accordance with manufacturer's performance data.
3. **Test:** To BS 8204-6, clause 11.4 and BS EN 1542.

410 Resin skirtings/ upstands

1. **Quality:** 4mm Altro Screed standard coving. Sealer to match floor finish .
2. **Colour:** As flooring.
3. **Profile:** Radius cove.
4. **Top edge of skirting/ upstand:** Retain with stop bead.

420 Free edges of resin flooring

1. **Transition to abutting floor finishes:** Straight and smooth. Prime surfaces using Altro Prime Standard.
2. **Retention of resin edges:** Chamfer edges to a depth of 1.5 times the nominal thickness of the system allowing for toeing in.

430 Sealant movement joints

1. **Location:** Centre over movement joints in substrate.
2. **Preparation and application:** Cut required chases mechanically and pack out the cut groove with flexible packer before applying sealant.
3. **Joint width:** TBA
4. **Sealant:** Altro Expand.
 - 4.1. **Colour:** Matched to resin.

Ω End of Section

M20

Plastered/ rendered/ roughcast coatings

Types of coating

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 PLS-101 Board Finish Gypsum Plaster

1. Single finish skim coat of Gypsum plaster to plasterboard substrates.
 - 1.1. Manufacturer: British Gypsum, or acceptable equivalent.
 - 1.2. Skim coat(s) to be board finish plaster to BS EN 13279: Parts 1 and 2, Class B.
 - 1.3. Thickness: 2mm/ 3mm applied in one coat.
 - 1.4. Finish: Smooth to match accepted benchmark.
 - 1.5. With accessories or beads/ stops.

112 PLS-201 Hardwall Finish Gypsum Plaster

1. Two-coat, high impact resistant, lightweight gypsum plaster system, to surfaces of concrete and masonry walls.
 - 1.1. Undercoat:
 - 1.1.1. Pre-mixed plaster, high impact resistant undercoat.
 - 1.1.2. Admixture to be water retaining and as recommended by the panel manufacturer.
 - 1.1.3. Thickness to be 2mm.
 - 1.2. Final coat:
 - 1.2.1. Final coat to be pre-mixed gypsum finish plaster to BS EN 13279: Parts 1 and 2.
 - 1.2.2. Thickness to be 2mm.
 - 1.2.3. Finish: Smooth.
 - 1.3. With accessories or beads/ strips.

General

413 Samples

1. General: Provide representative samples of the following: Not required.

418 Control samples

1. Complete sample areas, being part of the finished work, in locations agreed with the Architect.

421 Scaffolding

1. General: Prevent putlog holes and other breaks in coatings.

Materials and marking of mortar

430 Ready-to-use cement gauged mortars

1. Time and temperature limitations: Use within limits prescribed by mortar manufacturer
 - 1.1. Retempering: Restore workability with water only within prescribed time limits.

438 Cements for mortars

1. Cement: To BS EN 197-1.
 - 1.1. Types: Portland cement, CEM I.
2. Portland slag cement, CEM II.
3. Portland fly ash cement, CEM II.
 - 3.1. Strength class: 32.5, 42.5 or 52.5.
4. White cement: To BS EN 197-1.
 - 4.1. Type: Portland cement, CEM1.
 - 4.2. Strength class: 52.5.
5. Sulfate resisting Portland cement: To BS EN 197-1.
 - 5.1. Strength class: 42.5.
6. Masonry cement: To BS EN 998-1 and Kitemarked.

440 Sand for cement gauged mortars

1. Standard: To BS EN 13139.
 - 1.1. Grading: 0/2 or 0/4 (CP or MP); Category 2 fines.
2. Colour and texture: Consistent. Obtain from one source.

443 Lime for cement gauged mortars

1. Standard: To BS EN 459-1.
 - 1.1. Type: CL 90S.

445 Pigment for coloured mortars

1. Standard: To BS EN 12878.

449 Admixtures for cement gauged mortars

1. Suitable admixtures: Select from:
 - 1.1. Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
 - 1.2. Other admixtures: Submit proposals.
2. Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.

450 Chloride content of mortars

1. Chloride content (maximum): 0.1% by dry mass.

478 Hydraulic lime

1. Standard: To BS EN 459-1.
 - 1.1. Type: Natural hydraulic lime (NHL).

481 Ready prepared lime putty

1. Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.
 - 1.1. Maturation: In pits/ containers that allow excess water to drain away.
 - 1.2. Density of matured lime putty: 1.3-1.4 kg/L.
2. Maturation period before use (minimum): 90 days.
3. Storage: Prevent drying out or wetting: Protect from frost.

491 Pozzolan additives for nonhydraulic lime:sand mortars

1. Manufacturer/ Supplier:
 - 1.1. Product reference:
2. Mixing: Mix thoroughly into mortar during knocking up.

495 Mixing

1. Render mortars (site prepared)
 - 1.1. Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - 1.2. Mix proportions: Based on damp sand. Adjust for dry sand.
 - 1.3. Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
2. Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
3. Contamination: Prevent intermixing with other materials.

497 Cold weather

1. General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
2. External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
3. Internal work: Take precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

Preparing substrates

510 Suitability of substrates

1. Soundness: Free from loose areas and significant cracks and gaps.
2. Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
3. Tolerances: Permitting specified flatness/ regularity of finished coatings.
4. Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

527 Raking out for key

1. Joints in existing masonry: Rake out to a depth of 13 mm (minimum).
 - 1.1. Dust and debris: Remove from joints.

531 Roughening for key

1. Substrates: Roughen thoroughly and evenly.
 - 1.1. Depth of surface removal: Minimum necessary to provide an effective key.

538 Stipple key

1. Materials
 - 1.1. Cement: To BS EN 197-1.
 - 1.2. Sand: Clean, coarse.
 - 1.3. Admixture:
2. Mix proportions (cement:sand): 1:1.5–2.
3. Consistency: Thick slurry, well stirred.
4. Application: Brushed and stippled to form deep, close textured key.
5. Curing: Controlled to achieve a firm bond to substrate.

541 Bonding agent application

1. **General:** Apply evenly to substrate to achieve effective bond of plaster/ render coat. Protect adjacent joinery and other surfaces.

Backings/ beads/ joints

600 Additional framing supports for backings

1. **Framing:** Accurately position and securely fix to give full support to fixtures, fittings and service outlets.
2. **Support board edges and perimeters:** As recommended by board manufacturer to suit type and performance of board.

605 Gypsum plasterboard backings

1. **Type:** To BS EN 520
 - 1.1. **Core density (minimum):** 650 kg/m³.
2. **Exposed surface and edge profiles:** Suitable to receive specified plaster finish.

607 Proprietary gypsum plasterboard backings

1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.
2. **Exposed surface and edge profiles:** Suitable to receive specified plaster finish.

630 Beads/ stops for internal use

1. **Standard:** In accordance with BS EN 13914-2, Table 2.
2. **Material:** To be proposed by the Contractor.

634 Beads/ stops

1. **Manufacturer:** To be proposed by the Contractor.
 - 1.1. **Product reference:** To be proposed by the Contractor.

640 Beads/ stops generally

1. **Location:** External angles and stop ends except where specified otherwise.
2. **Corners:** Neat mitres at return angles.
3. **Fixing:** Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
 - 3.1. **Beads/ stops for external render:** Fix mechanically.
4. **Finishing:** After coatings have been applied, remove surplus material while still wet, from surfaces of beads/ stops exposed to view.

646 Crack control at junctions between dissimilar solid substrates

1. **Locations:** Where defined movement joints are not required. Where dissimilar solid substrate materials are in same plane and rigidly bonded or tied together.
2. **Crack control materials**
 - 2.1. **Isolating layer:** Building paper to BS 1521.
 - 2.2. **Metal lathing:**
3. **Installation:** Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
4. **Width of installation over single junctions**

- 4.1. Isolating layer: 150 mm.
- 4.2. Lathing: 300 mm.
5. Width of installation across face of dissimilar substrate material (column, beam, etc. with face width not greater than 450 mm)
 - 5.1. Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrate.
 - 5.2. Lathing: 100 mm (minimum) beyond edges of isolating layer.

Mouldings/ decorative plasterwork - Not Used

Internal plastering

710 Application generally

1. **Application of coatings:** Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
2. **Appearance of finished surfaces:** Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
 - 2.1. **Accuracy:** Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
3. **Drying out:** Prevent excessively rapid or localized drying out.

715 Flatness/ surface regularity

1. **Sudden irregularities:** Not permitted.
2. **Deviation of plaster surface:** Measure from underside of a straight edge placed anywhere on surface.
 - 2.1. **Permissible deviation (maximum) for plaster not less than 13 mm thick:** 3 mm in any consecutive length of 1800 mm.

718 Junction of new plasterwork with existing

1. **New plasterwork:** Finish flush with original face of existing plasterwork to form a seamless junction.

720 Dubbing out

1. **General:** Correct substrate inaccuracies.
2. **New smooth dense concrete and similar surfaces:** Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.
3. **Thickness of any one coat (maximum):** 10 mm.
4. **Mix:** As undercoat.
5. **Application:** Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each coat.

725 Undercoats generally

1. **General:** Rule to an even surface. Cross scratch to provide a key for the next coat.
2. **Undercoats on metal lathing:** Work well into interstices to obtain maximum key.
3. **Undercoats gauged with Portland cement:** Do not apply next coat until drying shrinkage is substantially complete.

742 Thin coat plaster

1. **Preparation for plasters less than 2 mm thick:** Fill holes, scratches and voids with finishing plaster.

747 Projection plaster

1. **Application:** Evenly and in one continuous operation between angles and joints.
2. **Finish:** A level open textured surface before finishing manually.

777 Smooth finish

1. **Appearance:** A tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks. Avoid water brush, excessive trowelling and over polishing.

778 Wood float finish

1. **Appearance:** An even overall texture. Finish with a dry wood float as soon as wet sheen has disappeared.

782 Textured/ patterned finishes

1. **Appearance:** Consistent and even. Carry out work on each surface as one continuous operation.

786 Plastering on timber lathing

1. **Application of undercoat:** Force between laths to form continuous keys.

788 Nonhydraulic lime plaster undercoats

1. **Suction control:** Dampen substrate.
2. **Application:** Apply firmly. Trowel to an even surface. Consolidate/ scour as necessary to control shrinkage. Cross scratch to provide an undercut key for the next coat. Do not penetrate through the coat.
 - 2.1. **Key for final coats:** Lightly scratch using a wood 'devil' float.
3. **Curing coatings:** Keep damp by light spraying with water until coating is sufficiently firm.

External rendering - Not Used

Ω End of Section

M40

Stone/ concrete/ quarry/ ceramic tiling/ mosaic

Types of tiling/ mosaic

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

110 FLF-701 Ceramic Floor Tiles

1. Architect to select from the following three options:
 - 1.1. Option 1
 - 1.1.1. Manufacturer: Mosa or acceptable equivalent.
 - 1.1.2. Product: Global collection
 - 1.1.3. Size: 600mm x 600mm.
 - 1.1.4. Colour: Stone Grey code 216 V - Smooth finish..
 - 1.2. Option 2
 - 1.2.1. As Option 1 but Solids colour 5108
 - 1.3. Option 3
 - 1.4. As option 1 but Canvas with colours either:
 - 1.4.1. Light cool grey code 3504
 - 1.4.2. Dark cool grey code 3506
 - 1.4.3. Mid warm grey code 3510

112 FLF-711 Ceramic Tile Floor Finish

1. Ceramic tile floor finish including skirting.
 - 1.1. Substrate(s):
 - 1.1.1. As the Design Drawings.
 - 1.1.2. Use preparatory produces and processes to suit substrates.
 - 1.2. Adhesive(s)/ bedding compound(s): As recommended by the tile manufacturer.
 - 1.3. Tiles:
 - 1.3.1. Manufacturer: Mosa, or acceptable equivalent.
 - 1.3.2. Range/ reference: Global Collection.
 - 1.3.3. Face size(s): Refer to the Design Drawings.
 - 1.3.4. Thickness: Refer to the Design Drawings/ Finishes Schedule.
 - 1.3.5. Three finish options as FLF-701.
 - 1.4. Joints: 2mm/ 3mm - to be agreed with the Architect.
 - 1.5. Grout:
 - 1.5.1. Manufacturer: To be agreed with the Architect.
 - 1.5.2. Reference: To be agreed with the Architect.
 - 1.5.3. Colour: To match tile colour.
 - 1.6. Grout sealer: Proprietary penetrative sealer to resist water, oils, acid/ alkaline-based contaminants and staining, as recommend by the grout manufacturer. Sealer is not to impair the visual or performance requirements of the grout.
 - 1.7. Joints/ edgings/ transition strips: Refer to the Design Drawings/ Finishes Schedule.

- 1.8. Sealant:
 - 1.8.1.Type: Proprietary non-staining, flexible, water impervious, mould and chemical resistant as recommended by the manufacturer.
 - 1.8.2.Colour: To match tile colour.

113 LIN-601 Ceramic Tile Wall Finish

- 1. Ceramic tile wall finish:
 - 1.1. Substrate(s):
 - 1.1.1.As the Design Drawings.
 - 1.1.2.Use preparatory products and processes to suit substrates.
 - 1.2. Adhesive(s)/ bedding compound(s): As recommended by the tile manufacturer.
 - 1.3. Tiles:
 - 1.3.1.Manufacturer: Johnson Tiles, or acceptable equivalent.
 - 1.3.2.Range: Select Collection.
 - 1.3.3.Reference: Monochrome.
 - 1.3.4.Finish: Satin.
 - 1.3.5.Colour: White, PRS 12.
 - 1.3.6.Face size(s): Refer to the Design Drawings.
 - 1.3.7.Thickness: 8.5mm.
 - 1.4. Joints: 2mm/ 3mm - to be agreed with the Architect.
 - 1.5. Grout:
 - 1.5.1.Manufacturer: To be agreed with the Architect.
 - 1.5.2.Reference: To be agreed with the Architect.
 - 1.5.3.Colour: Dark grey/ black, to be agreed with the Architect.
 - 1.6. Grout sealer: Proprietary penetrative sealer to resist water, oils, acid/ alkaline-based contaminants and staining, as recommended by the grout manufacturer. Sealer is not to impair the visual or performance requirements of the grout.
 - 1.7. Joints/ edgings/ transition strips: Refer to the Design Drawings/ Finishes Schedule.
 - 1.8. Sealant:
 - 1.8.1.Type: Proprietary non-staining, flexible, water impervious, mould and chemical resistant as recommended by the tile manufacturer.
 - 1.8.2.Colour: To match tile colour.

114 TRM-651 Ceramic Tile Skirting

- 1. Ceramic tiled floor finish including skirting.
 - 1.1. Substrate(s):
 - 1.1.1.As the Design Drawings.
 - 1.1.2.Use preparatory products and processes to suit substrates.
 - 1.2. Adhesive(s)/ bedding compound(s): As recommended by the tile manufacturer.
 - 1.3. Tiles:
 - 1.3.1.Manufacturer: Mosa, or acceptable equivalent.
 - 1.3.2.Range/ reference: Global Collection.
 - 1.3.3.Finish: Textured.
 - 1.3.4.Colour: Refer to the Finishes Schedule.
 - 1.3.5.Face size(s): Refer to the Design Drawings.
 - 1.3.6.Thickness: Refer to the Design Drawings/ Finishes Schedule.

- 1.4. Joints: 2mm/ 3mm - to be agreed with the Architect.
- 1.5. Grout:
 - 1.5.1. Manufacturer: To be agreed with the Architect.
 - 1.5.2. Reference: To be agreed with the Architect.
 - 1.5.3. Colour: To match tile colour.
- 1.6. Grout sealer: Proprietary penetrative sealer to resist water, oils, acid/ alkaline based contaminants and staining, as recommended by the grout manufacturer. Sealer is not to impair the visual or performance requirements of the grout.
- 1.7. Joints/ edgings/ transition strips: Refer to the Design Drawings/ Finishes Schedule.
- 1.8. Sealant:
 - 1.8.1. Type: Proprietary non-staining, flexible, water impervious, mould and chemical resistant as recommended by the tile manufacturer.
 - 1.8.2. Colour: To match tile colour.

130 Floor finish materials specification

- 1. Minimum BRE 'Green Guide to Specification Online' rating:

General

210 Suitability of backgrounds/ bases

- 1. **Background/ base tolerances:** To permit specified flatness/ regularity of finished surfaces given the permissible minimum and maximum thickness of bedding.
- 2. **New background drying times (minimum)**
 - 2.1. Concrete walls: six weeks.
 - 2.2. Brick/ block walls: six weeks.
 - 2.3. Rendering: two weeks.
 - 2.4. Gypsum plaster: four weeks.
- 3. **New base drying times (minimum)**
 - 3.1. Concrete slabs: six weeks.
 - 3.2. Cement:sand screeds: three weeks.

215 Falls in the bases

- 1. **General:** Give notice if falls are inadequate.

250 Samples

- 1. **General:** Submit representative samples of the following: Each type of tile.

260 Control samples

- 1. **General:** Complete sample areas, being part of finished work, in locations agreed with the Architect.
 - 1.1. Approval of appearance: Obtain before proceeding.

270 Materials, Performance & Quality

- 1. **Standards:** In accordance with BS 5385, BS EN 1991, BS EN ISO 10545, BS ISO 13006. BS EN 14411, BS 8000, BS 8204.
- 2. **Loadings:** Floor tiles and components to resist the following loads:
 - 2.1. Dead loads: 3kN/m²
 - 2.2. Point loads: 10kN

- 2.3. Imposed loads: 5kN/ m²
- 2.4. Imposed loads when supporting partition systems: 6kN/m²
- 3. Waterproofing: In accordance with BS EN 14891.
- 4. Grouts / adhesives: In accordance with BS EN 12004, BS EN 13888, BS ISO 13007.

280 Slip resistance testing

- 1. Test
 - 1.1. To BS 7976-1, -2 and -3 using a TRL Pendulum.
 - 1.2. When testing with a surface roughness meter, achieve minimum of 20 µm Rz.
 - 1.3. Make arrangements for test to be witnessed/ certified.
- 2. Report: Submit. Include slip resistance values in the wet and dry states.
- 3. Requirements: 40PTV (wet and dry conditions).

Preparation

310 Existing backgrounds/ bases generally

- 1. Efflorescence, laitance, dirt and other loose material: Remove.
- 2. Deposits of oil, grease and other materials incompatible with the bedding: Remove.
- 3. Tile, paint and other nonporous surfaces: Clean.
- 4. Wet backgrounds: Dry before tiling.

320 Existing concrete/ screeds

- 1. Loose or hollow portions: Cut out.
- 2. Making good: Use matching screed.

370 New in situ concrete

- 1. Backgrounds/ bases to be tiled: Remove mould oil, surface retarders and other materials incompatible with bedding.

410 Hacking for key

- 1. Keying: Roughen backgrounds thoroughly and evenly to a depth of 3 mm.
- 2. Backgrounds to be keyed: Screed.

420 Raking out for key

- 1. Soft joints in existing masonry: Rake out to a depth of 13 mm (minimum).

438 Preparing concrete bases for fully bonded bedding

- 1. Surface cement:sand matrix: Remove to expose coarse aggregate.
- 2. Surface preparation: Suitable to achieve a full bond with bedding. Select from:
 - 2.1. Keep well wetted for several hours. Remove free water then brush in a slurry bonding coat.
 - 2.1.1.Slurry:
 - 2.2. Prepare, prime as necessary and apply a bonding agent.
 - 2.2.1.Bonding agent:

444 Preparing concrete bases for partially bonded bedding

- 1. Surface finish: Brushed, with no laitance.
- 2. Surface preparation: Suitable to achieve a full bond with bedding. Select from:

- 2.1. Keep well wetted for several hours. Remove free water then brush in a slurry bonding coat.
 - 2.1.1. Slurry:
- 2.2. Prepare, prime as necessary and apply a bonding agent.
 - 2.2.1. Bonding agent:

450 Preparing concrete bases for unbonded bedding – without separating layer

1. Surface finish: Smooth.
2. Surface preparation: Dampen lightly before laying mortar bed.

451 Preparing concrete bases for unbonded bedding

1. Separating layer: Polyethylene sheet.
 - 1.1. Thickness: As recommended by the manufacturer.
 - 1.2. Lap at joints: 100 mm.

460 Smoothing underlayment

1. Type: Recommended by adhesive manufacturer.
2. Condition: Allow to dry before tiling.

Fixing

510 Fixing generally

1. Colour/ shade: Unintended variations within tiles for use in each area/ room are not permitted.
 - 1.1. Variegated tiles: Mix thoroughly.
2. Adhesive: Compatible with background/ base. Prime if recommended by adhesive manufacturer.
3. Use of admixtures with cementitious adhesives: Only admixtures approved by adhesive manufacturer.
4. Cut tiles: Neat and accurate.
5. Fixing: Provide adhesion over entire background/ base and tile backs.
6. Final appearance: Before bedding material sets, make adjustments necessary to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
7. Surplus bedding material: Clean from joints and face of tiles without disturbing tiles.

530 Setting out

1. Joints: True to line, continuous and without steps.
 - 1.1. Joints on walls: Horizontal, vertical and aligned round corners.
 - 1.2. Joints in floors: Parallel to the main axis of the space or specified features.
2. Cut tiles: Minimize number, maximize size and locate unobtrusively.
3. Joints in adjoining floors and walls: Align.
4. Joints in adjoining floors and skirtings: Align.
5. Movement joints: Where locations are not indicated, submit proposals.

540 Level of floor tiling

1. Permissible deviation in level from datum: +/-1mm.

550 Flatness/ Regularity of tiling/ mosaics

1. Sudden irregularities: Not permitted.

2. **Deviation of surface:** Measure from underside of a 2 m straightedge with 3 mm thick feet placed anywhere on surface. The straightedge should not be obstructed by the tiles and no gap should be greater than 6 mm, i.e. a tolerance of

560 Level of tiling across joints

1. **Deviation (maximum) between tile surfaces either side of any type of joint**
 - 1.1. 1 mm for joints less than 6 mm wide.
 - 1.2. 2 mm for joints 6 mm or greater in width.

570 Mortar bedding

1. **Bedding mix**
 - 1.1. **Cement:** Portland to BS EN 197-1, type CEM I/42.5.
 - 1.2. **Sand for walls:** Fine aggregate to BS EN 13139.
 - 1.2.1. **Grading designation:** 0/2 (CP or MP) category 2 fines.
 - 1.3. **Sand for floors:** Fine aggregate to BS EN 13139.
 - 1.3.1. **Grading designation:** 0/4 (MP) category 1 fines and between 20%-66% passing a 0.5 sieve.
2. **Batching:** Select from:
 - 2.1. **Batch by weight.**
 - 2.2. **Batch by volume:** Permitted on the basis of previously established weight:volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.
3. **Mixing:** Mix materials thoroughly to uniform consistence. Use a suitable forced action mechanical mixer. Do not use a free fall type mixer.
4. **Application:** At normal temperatures use within two hours. Do not use after initial set. Do not retemper.

578 Crack control reinforcement

1. **Type to BS 4483:**
2. **Installation:** Place centrally in depth of bed. Lap not less than 100 mm and securely tie together with steel wire.
3. **Corners:** Avoid a four layer build at corners.

580 Porous tiles

1. **Tiles to be bedded in cement:sand:** Soak in clean water for at least 30 minutes. Fix as soon as surface water has drained.

710 Adhesive bed – notched trowel and buttering method (floors)

1. **Application:** Floated coat of adhesive to dry base and comb surface.
2. **Tiling:** Apply coat of adhesive to backs of dry tiles. Fill any ribbed, deep keyed or button profiles. Press tiles firmly onto float coat.
3. **Finished adhesive thickness:** Within range allowed by manufacturer.

720 Cement:sand mortar bedding (floors)

1. **Mortar bedding mix:** 1:3-4 cement:sand.
 - 1.1. **Consistency:** Stiff plastic.
2. **Laying:** Lay suitably small working areas of screeded bed. Compact thoroughly to level.
 - 2.1. **Finished bed thickness**

2.1.1. For tiles up to 10 mm thick: 10-15 mm.

2.1.2. For tiles greater than 10 mm thick: 15-20 mm.

3. Tiling: Within two hours and before bedding sets, evenly coat backs of tiles with adhesive. Press tiles firmly into position.
4. Finished adhesive thickness: Within range recommended by manufacturer.

Movement joints/ grouting/ completion

805 Sealant movement joints with metal edgings

1. Edging material: To be proposed by the Contractor.
 - 1.1. Size: To be proposed by the Contractor.
 - 1.2. Bedding: Bed in 1:3 cement:sand.
2. Installation: Centre over joints in base. Set to exact finished level of floor.
 - 2.1. Fixing to base:
3. Joint width: 3mm.
4. Sealant: To be proposed by the Contractor.
 - 4.1. Colour:
 - 4.2. Preparation and application: As section Z22.

825 Strip movement joints

1. Manufacturer: To be proposed by the Contractor.
 - 1.1. Product reference: To be proposed by the Contractor.
 - 1.2. Colour: To match tile.
2. Joint width: 3mm.
3. Joints: Extend through tiles and bedding to base.

855 Cement:sand grouting mix

1. Grout mix
 - 1.1. Cement: To be proposed by the Contractor.
 - 1.2. Sand (Fine aggregate)
 - 1.2.1. Joint widths of 6 mm or greater: To BS EN 13139, grading designation 0/2 (FP or MP), category 2 fines.
 - 1.2.2. Joint widths of 3-6 mm:
 - 1.3. Proportions (cement:sand):
 - 1.4. Pigment: To provide colour match.
2. Mixing: Mix thoroughly. Use the minimum of clean water needed for workability.

875 Grouting

1. Sequence: Grout when bed/adhesive has set sufficient to prevent disturbance of tiles.
2. Joints: 6 mm deep (or depth of tile if less). Free from dust and debris.
3. Grouting: Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.
 - 3.1. Profile:
4. Polishing: When grout is hard, polish tiling with a dry cloth.

885 Coloured grout

1. Staining of tiles: Not permitted

2. Evaluating risk of staining: Apply grout to a few tiles in a small trial area. If discoloration occurs apply a protective sealer to tiles and repeat trial.

Performance

900 Pendulum floor covering slip resistance testing

1. Floor covering(s) to be tested: M40/ all types.
2. Testing authority: A UKAS accredited laboratory
3. Test: To BS 7976-1, -2 and -3.
 - 3.1. Floor covering condition: Dry and wet
 - 3.2. Requirements: 40 PTV.
 - 3.3. Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract Administrator.
 - 3.4. Report: Submit.

Ω End of Section

M50

Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting

Types of covering

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

130 FLF-102 Carpet tiling

1. Description: Carpet tiling as shown on the Design Drawings
2. Location: As Design Drawings
3. Base: As Design Drawings
4. Fabricated underlay: As recommended by the manufacturer
5. Carpet tiles
 - 5.1. Standards: To BS EN 14041 and BS EN 1307.
 - 5.1.1.Evidence of compliance: Submit.
 - 5.2. Reaction to fire classification: Class A1fl or better
 - 5.3. Manufacturer: Interface Europe Ltd or acceptable equivalent
 - 5.3.1.Product reference: Ice Breaker Range
 - 5.4. Sustainability: Carbon neutral with EPD rating 4.5 CO₂/ m² and 85%+ recycled content.
 - 5.5. BS EN 1307 classification
 - 5.5.1.Levels of use class: 32
 - 5.5.2.Luxury rating class: LC4
 - 5.5.3.Additional performance properties to BS EN 1307: Castor chair suitability (Intensive use)
 - 5.6. Recycled content: 50% (minimum to BS EN ISO 14021
 - 5.7. Size: 500mm x 500mm
 - 5.8. Colour/ pattern: To be selected from samples
6. Method of laying: Fully adhere all tiles with release adhesive recommended by tile manufacturer.
7. Accessories: Edging strip at thresholds

General requirements

210 Workmanship generally

1. Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.
2. Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

220 Samples

1. Covering samples: Before placing orders, submit representative sample of each type.

270 Extra material

1. Provision of extra material: At completion, hand to Employer extra material of each type of covering to extent of

330 Commencement

1. Required condition of works prior to laying materials
 - 1.1. Building is weathertight and well dried out.
 - 1.2. Wet trades have finished work.
 - 1.3. Paintwork is finished and dry.
 - 1.4. Conflicting overhead work is complete.
 - 1.5. Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.
2. Notification: Submit not less than 48 hours before commencing laying.

340 Conditioning

1. Prior to laying: Condition materials by unpacking and separating in spaces where they are to be laid. Maintain resilient flooring rolls in an upright position. Unroll carpet and keep flat on a supporting surface.
2. Conditioning time and temperature (minimum): As recommended by manufacturer with time extended by a factor of two for materials stored or transported at a temperature of less than 10°C immediately prior to laying.

350 Environment

1. Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.
2. Ventilation: Before during and after laying, maintain adequate provision.

360 Floors with underfloor heating

1. Commencement of laying: Not before a period of 48 hours after heating has been turned off.
2. Post laying start up of heating system: Slowly return heating to its operative temperature not less than 48 hours after completing laying.

370 Fire Performance

1. Carpet Flammability: Low radius of char ignition factor rating when tested using the hot metal nut method to BS 4790.
2. Reaction: Carpet to achieve minimum Class Cfl rating to BS EN 13501: Part 1.

375 Antistatic Performance

1. Static dissipative or static conductive floor coverings in accordance with BS 2050 and BS ISO 2878.

380 Testing

1. Where required, in accordance with BS EN ISO 10580, BS EN 13893, BS EN 1081, BS EN 1815, PSA MOB PF2 PS/ SPU, clause T43.00, BS 4790, BS EN ISO 9239: Part 1.

390 Materials

1. Where required, in accordance with BS EN 14041, BS EN ISO 24342, BS EN 650, BS EN 651, BS EN 652, BS EN 653, BS EN ISO 10581, BS EN ISO 10582, BS EN ISO 10595, BS ISO 11638, BS EN 13413, BS EN 13553, BS EN 13845, BS EN 14565, BS EN ISO 26986, BS EN 12199, BS EN 1816, BS EN 1817, BS EN 14521, BS EN 686, BS EN 687, BS EN ISO 24011, BS EN 655, BS EN 12104, BS EN 688, BS EN ISO 20326, BS ISO 2424, BS EN 14499.
2. Usage classifications:
 - 2.1. Resilient floor: BS EN ISO 10874.

2.2. Carpet: BS EN 1307.

Preparing bases

405 Workmanship Generally

1. In accordance with BS 5325, BS 8203, BS ISO 13746.

420 Existing bases

1. **Notification:** Before commencing work, confirm that existing bases will, after preparation, be suitable to receive coverings.
2. **Suitability of bases and conditions within any area:** Commencement of laying of coverings will be taken as acceptance of suitability.

430 New wet laid bases

1. **Base drying aids:** Not used for at least four days prior to moisture content testing.
2. **Base moisture content test:** Carry out in accordance with BS 5325, Annex A or BS 8203, Annex A.
 - 2.1. **Locations for readings:** In all corners, along edges, and at various points over area being tested.
3. **Commencement of laying coverings:** Not until all readings show 75% relative humidity or less.

440 Substrates to receive thin coverings

1. **Trowelled finishes:** Uniform, smooth surface free from trowel marks and other blemishes. Abrade suitably to receive specified floor covering material.

Laying coverings

610 Setting out tiles

1. **Method:** Set out from centre of area/ room, so that wherever possible:
 - 1.1. Tiles along opposite edges are of equal size.
 - 1.2. Edge tiles are more than 50% of full tile width.

620 Colour consistency

1. **Finished work in any one area/ room:** Free from banding or patchiness.

640 Adhesive fixing generally

1. **Adhesive type:** As specified, as recommended by covering/ underlay, manufacturer or as approved.
2. **Primer:** Type and usage as recommended by adhesive manufacturer.
3. **Application:** As necessary to achieve good bond.
4. **Finished surface:** Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

650 Seams

1. **Patterns:** Matched.
2. **Joints:** Tight without gaps.

670 Borders and feature strips in sheet material

1. **Curl:** Not acceptable.

2. Corners: Mitre joints.

700 Loose laid carpet tiles

1. Areas of adhered tiles: Secure using double sided tape or peelable adhesive.
2. Joints: Butted.
 - 2.1. Perimeter joints: Accurately cut to match abutment and prevent movement.

720 Doorways

1. Joint location: On centre line of door leaf.

Completion

880 Waste

1. Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

Ω End of Section

M52

Decorative papers/ fabrics

Types of covering

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

110 LIN-701 Wallcovering

1. Fabric backed vinyl wall covering, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Substrate: As the Design Drawings.
 - 1.3. Preparation: To suit the conditions of service.
 - 1.4. Wallcovering:
 - 1.4.1. Manufacturer: Vescom, or acceptable equivalent.
 - 1.4.2. Reference: Tonga.
 - 1.4.3. Type: Water-based ink printed vinyl coating, cotton backing.
 - 1.4.4. Pattern/ layout: Refer to the Design Drawings.
 - 1.4.5. Colour: Refer to the Design Drawings.
 - 1.5. Fixing: As recommended by the manufacturer.

120 LIN-702 Vinyl Wallcovering

1. Fabric backed vinyl wall covering, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Preparation: To suit the conditions of service.
 - 1.3. Wallcovering:
 - 1.3.1. Manufacturer: Tektura Studio or acceptable equivalent.
 - 1.3.2. Reference: Geometrics range
 - 1.3.3. Pattern/ layout: Broken Lines
 - 1.3.4. Fabric backed digital print.
 - 1.3.5. Colour: TBC
 - 1.4. Fixing: As recommended by the manufacturer.

Generally

220 Samples

1. **General:** Submit a representative sample of each type of covering before placing orders.
 - 1.1. Size (minimum): Roll width x 1000mm.

225 Wallpaper generally

1. Standards
 - 1.1. Finished wallpapers, wall vinyls and plastics wallcoverings: To BS EN 233.
 - 1.2. Wallcoverings for subsequent decoration: To BS EN 234.
 - 1.3. Heavy duty wallcoverings: To BS EN 259-1.

- 1.4. Textile wallcoverings: To BS EN 266.

230 Extra material

1. General: Provide extra coverings in clearly identified complete rolls/ lengths as follows:
2. Ordering: At same time as installed material. Hand over to Employer at completion or when otherwise agreed.

241 Environment

1. Conditions: During hanging and drying of linings/ coverings, maintain working area ambient temperature and humidity levels approximate to those proposed in service.

251 Conditioning

1. General: Unwrap coverings and allow to acclimatize in working area as follows:

Preparation

310 Preparation generally

1. Preparation materials: Types recommended by their manufacturers and covering manufacturer for situation and substrate being prepared.
2. Substrates: Sufficiently dry in depth to suit covering to be hung.
3. Efflorescence salts: Remove.
4. Dirt, grease and oil: Remove. Give notice if contamination of substrates has occurred.
5. Substrate irregularities: Fill cracks, joints, holes and other depressions with stoppers/ fillers. Work well in and finish off flush with surface. Abrade to a smooth finish.
6. Dust, particles and residues from abrasion: Remove.

330 Fixtures and fittings

1. Before commencing work: Remove the following:
2. On completion of work: Clean and refix when coverings are dry.

340 Coated substrates

1. Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coverings.
2. Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
3. Water soluble coatings: Completely remove.
4. Significant rot, corrosion or other degradation of substrates: If revealed, give notice.
5. Retained coatings
 - 5.1. Thoroughly clean to remove dirt, grease and contaminants.
 - 5.2. Lead based coatings: If discovered, give notice.
 - 5.3. Abrade gloss coated substrates to provide a key.
 - 5.4. Carry out tests for compatibility with adhesives.

350 Paper/ fabric covered substrates

1. Existing coverings: Remove by wet or dry stripping.
2. Old adhesive and size: Remove by washing.
3. Significant loose or damaged plaster or other degradation of substrates: If revealed, give notice.

360 Vinyl covered substrates

1. Existing covering: Remove peelable vinyl surface.
2. Paper base to vinyl: May be retained as a lining if in good condition and firmly adhering. Stick down lifting edges and corners.

370 Organic growths

1. Loose growths and infected coatings/ decorations: Remove and dispose of.
2. Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
3. Dead growth: Remove and dispose of.
4. Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.
5. Biocides: Types listed in current Health and Safety Executive (HSE) 'Pesticides', Part B, as surface biocides.

380 Size/ sealer

1. Absorbent substrates: Apply one coat of a dilute solution of adhesive where recommended by covering manufacturer.

Hanging

420 Hanging generally

1. Coatings on adjacent surfaces
 - 1.1. Complete and dry before commencement of hanging coverings.
 - 1.2. Efflorescence salts: Ensure no recurrence.
2. Sequence of hanging coverings
 - 2.1. Apply to ceilings before walls.
 - 2.2. Commence adjacent to main source of natural light.
 - 2.3. From centre of feature and isolated walls.
3. Surplus adhesive: Carefully remove from face of coverings, adjacent surfaces and fittings whilst still wet.
4. Completed coverings: Securely adhered, smooth and free of air bubbles, wrinkles, gaps, tears, adhesive marks and stains. Joints truly vertical/ horizontal and straight.

450 Setting out

1. Approval of setting out: Obtain before commencement of hanging coverings, for the following:
.....

480 Linings

1. Type and weight: To suit coverings and substrates.
2. Hang lengths: With neat butt joints; do not overlap.
3. Drying period: Leave for 24 hours before hanging coverings.

490 Coverings

1. Selvedged coverings: Trim to a true straight edge before hanging, unless overlap joints are recommended by manufacturer.
2. Hanging lengths
 - 2.1. Wall coverings: Vertical.
 - 2.2. Ceiling coverings: Parallel to main window wall.

500 Joints in coverings

1. **Butt joints:** Hang lengths with neat butt joints generally.
2. **Overlap joints:** Hang lengths with neat overlap joints only where recommended by covering manufacturer. Cut through joints when stable to a true straight edge, without damaging substrate, and bond joints.
3. **Cross joints:** Hang lengths in one piece generally. Cross joints are only permitted where single lengths are impractical.

520 Shading

1. **Matching:** Ensure colour consistency of adjacent lengths.
2. **Hanging lengths:** Use in sequence as cut from roll.
3. **Alternate lengths:** Do not reverse unless recommended by covering manufacturer.
4. **Shade variation:** Check after hanging first three lengths. If variation occurs, give notice before proceeding.

530 Pattern

1. **Patterned coverings:** Accurately align and match.
2. **Mismatches:** Anticipate and obtain approval for locations.

Ω End of Section

M60

Painting/clear finishing

Coating systems

100 Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 PNT-131 Decorative Metalwork Paint

1. Paint to exposed soffit of composite metal deck, as the Design Drawings.
 - 1.1. Type: To be confirmed by the Structural Engineer, to suit the conditions of service.
 - 1.2. Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants, allow to dry, and to suit the service conditions.
 - 1.3. Colours:
 - 1.3.1. Offices to be painted White/ Light Grey - final RAL colour to be confirmed by the Architect.
 - 1.3.2. FOH areas (reception, lift lobbies, etc.) to be painted in final RAL colour to be confirmed by the Architect.
 - 1.4. Initial coat(s): To the manufacturer's recommendations.
 - 1.5. Application: To the manufacturer's recommendations.

112 PNT-141 Moisture Resistant Paint

1. Moisture resistant paint to interior plasterboard walls and ceilings likely to be disfigured by mould, as the Design Drawings.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade Mouldshield Fungicidal Matt.
 - 1.3. Application: Synthetic brush and gloss roller or spray.

113 PNT-121 Concrete Dust Sealer

1. Dust sealer to concrete floors, as the Design Drawings.
 - 1.1. Manufacturer: Keim Paints, or acceptable equivalent.
 - 1.2. Reference: Keim Concretal Lasur.
 - 1.3. Finish: Matt.
 - 1.4. Colour: Clear.
 - 1.5. Preparation: Thoroughly clean down the surfaces to removed all dirt, grease and surface contaminants, allow to dry, and to suit the service conditions.
 - 1.6. Initial coat(s), finishing coat(s) and application: To suit the service conditions.
 - 1.7. Application: Airless spray or brush and laid off with a lambswool pile roller if necessary.

114 PNT-101 Emulsion Paint

1. Emulsion paint to plaster/ plasterboard surfaces, as the Design Drawings.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade Diamond Matt.
 - 1.3. Colour: Refer to the Finishes Schedule.

- 1.4. Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants and allow to dry.
- 1.5. Initial coats:
 - 1.5.1. Spot prime any bare metal, metal fixings and nail heads with 1 No. coat of Dulux Trade Metalshield QD Metal Primer.
 - 1.5.2. Prime overall with 1 No. coat of Dulux Trade Dry Wall Primer Sealer.
- 1.6. Finishing coat(s): Minimum 2 No. coats of Dulux Trade Diamond White.
- 1.7. Application: Brush and roller or spray.

115 PNT-111 Eggshell Paint

1. Eggshell paint to internal plaster and masonry, as the Design Drawings.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade Quick Drying Eggshell Finish.
 - 1.3. Colour: Refer to the Finishes Schedule.
 - 1.4. Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants and allow to dry.
 - 1.5. Initial coat(s):
 - 1.5.1. Spot prime any bare metal, metal fixings and nail heads with 1 No. coat of Dulux Trade Metalshield QD Metal Primer.
 - 1.5.2. Prime overall with 1 No. coat of Dulux Trade Dry Wall Primer Sealer.
 - 1.6. Finishing coat(s): Minimum 2 No. coats of Dulux Trade Diamond QD Eggshell.
 - 1.7. Application: Brush and roller or spray.

116 PNT-115 Satinwood Paint

1. Satinwood paint to timber and MDF surfaces.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade Quick Drying Satinwood.
 - 1.3. Colour: Refer to the Finishes Schedule.
 - 1.4. Preparation:
 - 1.4.1. Thoroughly clean down surfaces to remove all dirt, oils, grease and contamination.
 - 1.4.2. Abrade overall to remove any raised grain and round all sharp edges to a 3mm radius and dust off.
 - 1.4.3. Apply appropriate knotting solution to all knots and resinous areas and allow to fully cure.
 - 1.5. Initial coat(s):
 - 1.5.1. Spot prime any bare metal, metal fixings and nail heads with one coat of Dulux Trade Metalshield QD Metal Primer.
 - 1.5.2. Prime overall with one coat of Dulux Trade Quick Dry Undercoat.
 - 1.6. Finishing coat(s): Minimum two coats of Dulux Trade Quick Drying Satinwood.
 - 1.7. Application: Synthetic brush and gloss roller or spray.

117 PNT-118 Metal Paint

1. Gloss paint to internal metal surfaces.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade Quick Dry Gloss.
 - 1.3. Colour: Refer to the Finishes Schedule.
 - 1.4. Preparation:

- 1.4.1. Thoroughly clean down surfaces to remove all dirt, oils, grease and contamination.
- 1.4.2. Abrade overall to remove an raised grain and round all sharp edges to a 3mm radius and dust off.
- 1.4.3. Apply appropriate knotting solution to all knots and resinous areas and allow to fully cure.
- 1.5. Initial coat(s):
 - 1.5.1. Spot prime any bare metal, metal fixings and nail heads with one coat of Dulux Trade Metalshield QD Metal Primer.
 - 1.5.2. Prime overall with one coat of Dulux Trade Quick Dry Undercoat.
- 1.6. Finishing coat(s): Minimum two coats of Dulux Trade Quick Dry Gloss.
- 1.7. Application: Synthetic brush and gloss roller or spray.

118 PNT-125 Metalwork Paint

- 1. Paint to exposed steel fascia, as the Design Drawings.
 - 1.1. Type: To be agreed with the Architect, to suit the conditions of service.
 - 1.2. Preparation: Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants, allow to dry, and to suit the service conditions.
 - 1.3. Finish/ colour: To match the ground floor metal helical staircase in Section L30.
 - 1.4. Initial coat(s), finishing coat(s) and application: As recommended by the manufacturer, to suit the service conditions.
 - 1.5. Application: To the manufacturer's recommendations.

119 PNT-151 Mineral Paint

- 1. Multi-purpose exterior sol silicate paint system, as the Design Drawings.
 - 1.1. Manufacturer: Keim Mineral Paints Ltd. or acceptable equivalent.
 - 1.2. Reference: Soldalit.
 - 1.3. Finish: Matt.
 - 1.4. Colour: Refer to the Finishes Schedule.
 - 1.5. Preparation: To suit the conditions of service.
 - 1.6. Finishing coat: 2 No. full coats of Keim Soldalit paint diluted to the required level.
 - 1.7. Application: Brush and roller or spray.

120 PNT-155 Line Marking Paint

- 1. Line marking paint, with a low VOC paint finish, as the Design Drawings.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade Line Marking Paint.
 - 1.3. Colour: Refer to the Finishes Schedule and/or the Design Drawings.
 - 1.4. Preparation:
 - 1.4.1. Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants.
 - 1.4.2. Surfaces to be fully dry before proceeding.
 - 1.4.3. On previously coated surfaces, remove all blistered, poorly adhering or otherwise defective coatings.
 - 1.4.4. Remove all loose or powdery material by vigorously brushing down with suitable stiff brushes and dust off.
 - 1.4.5. Where appropriate (not applicable to textured surfaces), abrade to provide a 'key' and 'feather' broken edges of existing coatings and dust off.

- 1.5. Initial coat(s):
 - 1.5.1. newly laid bitumen based surfaces to be sealed with 1 No. coat of emulsion paint or an appropriate knotting solution, in order to prevent bleeding.
 - 1.5.2. Spot prime any bare ferrous metal with 1 No. coat of Dulux Trade Metalshield Zinc Phosphate Primer.
 - 1.5.3. Prime all sound bare areas and, where applicable, all areas exposed by the removal of previous coatings with 1 No. coat of Dulux Trade Line Marking Paint of appropriate shade.
- 1.6. Finishing coat(s):
 - 1.6.1.1 No. coat of Dulux Trade Line Marking Paint of selected shade.
 - 1.6.2. For heavily textured surfaces, apply an additional coat.
- 1.7. Application: Brush or roller.

121 PNT-161 Floor Paint

1. Epoxy concrete/ masonry floor paint.
 - 1.1. Manufacturer: AkzoNobel, or acceptable equivalent.
 - 1.2. Reference: Dulux Trade High Performance Floor Paint.
 - 1.3. Colour: Refer to the Finishes Schedule.
 - 1.4. Preparation:
 - 1.4.1. Scrape off any loosely adhering material, for example, plaster splashes and loose concrete.
 - 1.4.2. Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants.
 - 1.4.3. Where necessary, use a 'floor etchant' to remove surface laitance.
 - 1.4.4. Before painting, sweep and vacuum the floor to remove any surface dust.
 - 1.4.5. Make any repairs necessary using a levelling compound that is suitable for the usage and loading requirements of the area involved.
 - 1.5. Initial coat(s):
 - 1.5.1. Spot prime any bare ferrous metal with one coat of Dulux Trade Metalshield Zinc Phosphate Primer.
 - 1.5.2. Prime overall with one coat of Dulux Trade High Performance Floor Paint of selected shade thinned up to 1 part water to 10 parts of activated paint as appropriate.
 - 1.6. Finishing coat(s): Two coats of Dulux Trade High Performance Floor Paint of selected shade.
 - 1.7. Application: Brush or roller.

122 PNT-162 Concrete Sealant

1. Concrete sealant to car park floor:
 - 1.1. Manufacturer: Flowcrete, or acceptable equivalent.
 - 1.2. Reference: Deckshield ID
 - 1.3. Colour/ coats: TBC
 - 1.4. Preparation:
 - 1.4.1. Scrape off any loosely adhering material, for example, plaster splashes and loose concrete.
 - 1.4.2. Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants.
 - 1.4.3. Where necessary, use a 'floor etchant' to remove surface laitance.
 - 1.4.4. Before coating, sweep and vacuum the floor to remove any surface dust.

1.4.5. Make any repairs necessary using a levelling compound that is suitable for the usage and loading requirements of the area involved.

1.5. Application: As recommended by the manufacturer

Generally

215 Handling and storage

1. **Coating materials:** Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
2. **Materials from more than one batch:** Store separately. Allocate to distinct parts or areas of the work.

220 Compatibility

1. **Coating materials selected by contractor**
 - 1.1. Recommended by their manufacturers for the particular surface and conditions of exposure.
 - 1.2. Compatible with each other.
 - 1.3. Compatible with and not inhibiting performance of preservative/fire-retardant pretreatments.

280 Protection

1. **'Wet paint' signs and barriers:** Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

290 Samples

1. **General:** Submit representative samples of the following:
 - 1.1. 600mm x 600mm of each paint finish to the relevant substrate.
2. **Delivered materials/ products:** To match samples.

300 Control samples

1. **Sample areas of finished work:** Carry out, including preparation, as follows:
 - 1.1. First 9m² of each coating.
2. **Approval of appearance:** Obtain before commencement of general coating work.

320 Inspection by coating manufacturers

1. **General:** Permit manufacturers to inspect work in progress and take samples of their materials from site if requested.

321 Inspection of work stages

1. **Programme for inspections:** Submit schedule for agreement.
2. **Inspection:** Give prior notice when each stage is ready for inspection.

330 Slip Resistance

1. **Testing of floor paints:**
 - 1.1. Surface roughness meter: minimum of 20 µm Rz.
 - 1.2. Pendulum Test: 36PTV (wet and dry conditions).
2. **Report:** Submit.

340 Emissions

1. Comply with BS EN 13300 and Paints Directive 2004/42/CE.

2. Only fungi/ algae resistant products to be used. Products must demonstrate low VOC levels.

350 Testing

1. Standard: In accordance with BS EN 16402, BS EN ISO 11890: Part 2, BS EN ISO 17895, BS EN ISO 2808.
2. Tests and inspections to be carried out as BS EN ISO 2808.

360 Materials

1. Standard: In accordance with BS 2015, BS 7664, BS EN ISO 4618, BS EN ISO 2813.

Preparation

400 Preparation generally

1. Standard: In accordance with BS 6150, BS 8000: Part 12, BS EN ISO 2808
2. Refer to any pre-existing CDM Health and Safety File.
3. Refer to CDM Construction Phase Plan where applicable.
4. Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
5. Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
6. Substrates: Sufficiently dry in depth to suit coating.
7. Efflorescence salts: Remove.
8. Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
9. Surface irregularities: Remove.
10. Joints, cracks, holes and other depressions: Fill flush with surface, to provide smooth finish.
11. Dust, particles and residues from preparation: Remove and dispose of safely.
12. Water based stoppers and fillers
 - 12.1. Apply before priming unless recommended otherwise by manufacturer.
 - 12.2. If applied after priming: Patch prime.
13. Oil based stoppers and fillers: Apply after priming.
14. Doors, opening windows and other moving parts
 - 14.1. Ease, if necessary, before coating.
 - 14.2. Prime resulting bare areas.

420 Fixtures and fittings

1. Removal: Before commencing work remove all fixtures and fittings.
2. Replacement: Refurbish as necessary, refit when coating is dry.

425 Ironmongery

1. Removal: Before commencing work: Remove ironmongery from surfaces to be coated.
2. Replacement: Refurbishment as necessary; refit when coating is dry.

471 Preprimed wood

1. Areas of defective primer: Take back to bare wood and reprime.

481 Uncoated wood

1. **General:** Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
2. **Heads of fasteners:** Countersink sufficient to hold stoppers/fillers.
3. **Resinous areas and knots:** Apply two coats of knotting.

500 Preprimed steel

1. **Areas of defective primer, corrosion and loose scale:** Take back to bare metal. Reprime as soon as possible.

511 Galvanized, sherardized and electroplated steel

1. **White rust:** Remove.
2. **Pretreatment:** Apply one of the following:
 - 2.1. Mordant solution to blacken whole surface.
 - 2.2. Etching primer recommended by coating system manufacturer.

622 Organic growths

1. **Dead and loose growths and infected coatings:** Scrape off and remove from site.
2. **Treatment biocide:** Apply appropriate solution to growth areas and surrounding surfaces.
3. **Residual effect biocide:** Apply appropriate solution to inhibit re-establishment of growths.

645 Sealing of internal movement joints

1. **General:** To junctions of walls and ceilings with architraves, skirtings and other trims.
2. **Sealant:** Waterborne acrylic.
 - 2.1. **Manufacturer:**
 - 2.1.1. **Product reference:**
 - 2.2. **Preparation and application:** As section Z22.

Application

711 Coating generally

1. **Application standard:** In accordance with BS 6150, clause 9.
2. **Conditions:** Maintain suitable temperature, humidity and air quality during application and drying.
3. **Surfaces:** Clean and dry at time of application.
4. **Thinning and intermixing of coatings:** Not permitted unless recommended by manufacturer and agreed with the Architect.
5. **Overpainting:** Do not paint over intumescent strips or silicone mastics.
6. **Priming coats**
 - 6.1. **Thickness:** To suit surface porosity.
 - 6.2. **Application:** As soon as possible on same day as preparation is completed.
7. **Finish**
 - 7.1. Even, smooth and of uniform colour.
 - 7.2. Free from brush marks, sags, runs and other defects.
 - 7.3. Cut in neatly.
8. **Doors, opening windows and other moving parts:** Ease before coating and between coats.
9. **Application::** Material from a single batch, providing an even finish, free from any defects.

10. **Thickness::** Paint thickness must always be consistent and checked with a wet film thickness wheel or comb gauge.
11. **Drying::** Must never be accelerated through artificial means such as heaters or dehumidifiers.
12. **Final Coat::** Applied as a single coat and once dried it shall be viewed from 2 metres to determine colour consistency and quality.
13. **Inspection:** : Conducted on-site by appropriately qualified person to inspect the work/ quality control documentation/ test results.

720 Priming joinery

1. **Preservative treated timber:** Retreat cut surfaces with two flood coats of a suitable preservative before priming.
2. **End grain:** Coat liberally allow to soak in, and recoat.

730 Workshop coating of concealed joinery surfaces

1. **General:** Apply coatings to all surfaces of components.

751 Staining wood

1. **Primer:** Apply if recommended by stain manufacturer.
2. **Application:** Apply in flowing coats and brush out excess stain to produce uniform appearance.

760 Varnishing wood

1. **First coat:**
 - 1.1. Brush well in and lay off avoiding aeration.
2. **Subsequent coats:** Provide light key and smooth along the grain between coats.

770 External doors

1. **Bottom edges:** Prime and coat before hanging doors.

780 Bead glazing to coated wood

1. **Before glazing:** Apply first two coats to rebates and beads.

790 Linseed oil putty glazing

1. **Setting:** Allow putty to set for seven days.
2. **Sealing**
 - 2.1. Within a further 14 days, seal with a solvent-borne primer.
 - 2.2. Fully protect putty with coating system as soon as it is sufficiently hard.
 - 2.3. Extend finishing coats on to glass up to sight line.

800 Glazing

1. **Etched, sand blasted and ground glass:** Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.

810 Water-repellent

1. **Application:** Liberally flood surface, giving complete and even coverage.

Ω End of Section

M61

Intumescent coatings for fire protection of steelwork

Protective coating systems

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

111 FRP-101 Intumescent Paint System

1. Proprietary intumescent coating systems to exposed steelwork.
 - 1.1. Indicative manufacturer: AkzoNobel or Sherwin Williams or acceptable equivalent.
 - 1.2. Indicative reference: To be proposed by the Contractor to suit the conditions of service.
 - 1.3. Fire resistance to comply with BS 476: Parts 20 and 22.
 - 1.3.1.90 minutes to ground floor and generally.
 - 1.3.2.120 minutes to the at basement areas.
 - 1.4. Surface: Blast cleaned structural steelwork.
 - 1.5. The intumescent coating system to generally comprise the following elements (other elements to be included as required), to achieve the requirements of the Architectural Specification:
 - 1.5.1.Particular preparatory process and primer/ base coat(s).
 - 1.5.2.Intumescent coat(s).
 - 1.5.3.Sealer coat(s).
 - 1.6. Colour: RAL colour to be confirmed by the Architect.
 - 1.7. Finish: Architectural decorative finish, to match the accepted sample.
 - 1.8. Bolt caps: Interchar bolt caps to be snapped into place over all structural bolt connections.

Performance and general requirements

202 Fire performance

1. Reaction to fire: In accordance with the Fire Strategy Report.

205 Validation of materials

1. Project-specific evaluation of intumescent coating materials
 - 1.1. Standard: In accordance with BS EN 16623, clause 4.
 - 1.2. Test results: Submit on request.

210 Working procedures

1. Standard: In accordance with BS EN 16623.
2. Give notice: Before commencing surface preparation and coating application.
3. Quality control: Record project specific procedures for surface preparation and coating application.

215 Working conditions

1. **General:** Maintain manufacturer's recommended temperature, humidity and air quality conditions during application and drying.
2. **Surface condition:** Clean and dry at time of application.

220 Applicator's personnel

1. **Operatives:** Trained/ experienced in anticorrosive and intumescent coatings.
2. **Evidence of training/ experience:** Submit on request.

250 Sprayed coating application on site

1. **Standard:** In accordance with BS EN 16623.
2. **Spray drift:** Minimize.
3. **Masking:** Protect designated adjacent surfaces.

255 Sprayed coating application off site

1. **Standard:** In accordance with BS EN 16623.

260 Control samples

1. **General:** Carry out sample areas of finished work as follows: To be agreed.
2. **Approval of appearance:** Obtain before commencement of general application.

270 Inspection

1. **Permit intumescent manufacturer to**
 - 1.1. Inspect work in progress.
 - 1.2. Inspect quality control records.
 - 1.3. Take dry film thickness and other measurements.
 - 1.4. Take samples of products.
2. **Intumescent manufacturer's inspection reports:** Submit without delay.

280 Off-site-coated steel

1. **Handling and erection:** Use methods and devices designed to minimize damage to intumescent coatings.
2. **Damaged areas of coating:** Reinstate in accordance with coating manufacturer's recommendations.

Preparation of surfaces

315 New steel – blast-cleaning

1. **Preparation:** Remove oil, grease and contaminants.
2. **Blast-cleaning**
 - 2.1. **Atmospheric condition:** Dry.
 - 2.2. **Abrasive:** Suitable type and size, free from fines, moisture and oil.
 - 2.3. **Finish:** To BS EN ISO 8501-1, preparation grade SA2½, with an average profile of approximately 75 micrometres.
 - 2.4. **Abrasive residues and moisture:** Remove.
3. **Primer:** Apply as soon as possible after cleaning and before gingering or blackening appears.

Application of castings

402 Intumescent casting thickness

1. **Required thickness:** Determine for every steel member to give specified period of fire resistance. Use intumescent casting manufacturer's current published loading tables.
 - 1.1. **Special sections and partial fire exposure conditions:** Obtain required thickness in writing from manufacturer.
2. **Schedule and drawings:** Submit at least two weeks before starting work.
 - 2.1. **Schedule content:** Member sizes, weights/ thicknesses, loading conditions, etc. showing, for each variant, the exposed perimeter/ sectional area (H_p/A) ratio and required casting thickness.
 - 2.2. **Drawing content:** Steelwork drawings marked in colour to show required thickness for each member.

404 Intumescent casting installation

1. **Assembly:** Adhesive fix casting sections tight to steel substrate.
2. **Filling:** Apply intumescent filler to all joints and deformations to produce a smooth and uniform finish.

Application of coatings

410 Intumescent coating dry film thickness (dft)

1. **Required dft:** Determine for every steel member to give specified period of fire resistance. Use intumescent coating manufacturer's current published loading tables.
 - 1.1. **Special sections and partial fire exposure conditions:** Obtain required dft in writing from manufacturer.
2. **Schedule and drawings:** Submit at least two weeks before starting work.
 - 2.1. **Schedule content:** Member sizes, weights/ thicknesses, loading conditions, etc. showing, for each variant, the exposed perimeter/ sectional area (H_p/A) ratio and required dft.
 - 2.2. **Drawing content:** Steelwork drawings marked in colour to show required dft for each member.

420 Measurement of intumescent dft

1. **Primer dft:** Determine average dft (for deduction from total dft after application of intumescent).
2. **Intumescent dft:** Determine at:
 - 2.1. 500 mm centres along each coated plane of universal sections (8 planes), and rectangular hollow sections (4 planes).
 - 2.2. 125 mm centres along coated circular hollow sections, spread evenly around circumference.
3. **Acceptance standard**
 - 3.1. **Average intumescent dft:** Not less than required dft (exclusive of primer and top sealer).
 - 3.2. **Local intumescent dft:** Not less than 80% of required dft. Areas greater than 100 mm equivalent diameter with a dft of less than 80% of required dft must be brought up to thickness.

440 Basic finish

1. **Definition:** Reasonably smooth and even. Orange peel, other texture, minor runs and similar minor defects are acceptable.

450 Normal decorative finish

1. **Definition:** Good standard of cosmetic finish generally, when viewed from a distance of 5 m or more. Minor orange peel or other texture is acceptable.

460 High decorative finish

1. **Definition:** High standard of evenness, smoothness and gloss when viewed from a minimum distance of 2 m.

490 Top sealer coat

1. **Application:** To achieve dft recommended by manufacturer and to give an even, solid, opaque appearance, free from runs, sags and other visual defects.

520 Completion of off-site-coated steel

1. **Uncovered areas, including fixings:** Following erection of steelwork, apply intumescent coating locally.
2. **Unscheduled additional connections to erected steelwork:** Remove and reinstate intumescent coating locally.

Completion

530 Records of intumescent application

1. On completion of intumescent work, submit
 - 1.1. Accurate surface preparation, coating and intumescent application records.
 - 1.2. Fire resistance certificates.
 - 1.3. Intumescent manufacturer's recommendations for maintenance and overcoating.

Ω End of Section

N10

General fixtures/ furnishings/ equipment

Products

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

102 FIX-101 Roller Blind

1. Proprietary manual roller blind system.
 - 1.1. Manufacturer/ supplier: Waverley Contract and Supply Ltd. or acceptable equivalent.
 - 1.2. Reference: ShadeTech RBL-C Roller Blind System.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Fabric: Verosol OmniaScreen intrinsically flame retardant 4% openness PVC/ PET screen fabric with metabolised reflective backing.
 - 1.5. Colour: To be selected from the manufacturer's standard range.
 - 1.6. Headbox: 170mm x 170mm square cassette head box.
 - 1.7. Side channels: 33mm x 28mm.
 - 1.8. Headbox and channels to be powder coated finished to match the curtain walling system.
 - 1.9. Operation: Side chain operation with stainless steel bead chain.
 - 1.10. Controls: ShadeMatic KNX controls to provide automated control of blinds with sun tracking via roof mounted weather station.
 - 1.11. Solar shading coefficient: Refer to the MEP Thermal Information.
 - 1.12. Fixing: As the Design Drawings.
 - 1.13. Accessories:
 - 1.13.1. 22mm x 20mm tear-drop aluminium hembar.
 - 1.13.2. Lift assist springs for blind size greater than 3.5m².
 - 1.13.3. Chain retainer.

105 FIX-325 Lock and Changing Room Bench System

1. Locker and changing bench system, as the Design Drawings.
 - 1.1. Manufacturer: Atepaa, or acceptable equivalent.
 - 1.2. Reference: Kill Series.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Type: Proprietary locker system with built-in floating bench.
 - 1.5. Locker:
 - 1.5.1. Material: Metal.
 - 1.5.2. Thickness: Minimum 0.8mm.
 - 1.5.3. Finish/ colour: Powder coated to RAL colour to be confirmed by the Architect.
 - 1.6. Bench:
 - 1.6.1. Finish: Natural wood.
 - 1.7. Operation: Digital code access - to be agreed with the Architect.

105 FIX-326 Drying Cabinet

1. Drying cabinet, as the Design Drawings.
 - 1.1. Manufacturer: Peko, or acceptable equivalent.
 - 1.2. Reference: PEKO ED-1900R Drying Cabinet.
 - 1.3. Size: 595 x 605 x 1900 mm
 - 1.4. Type: Proprietary heated drying cabinet with hanging rails and manual controls.
 - 1.5. Locker:
 - 1.5.1. Material: Metal.
 - 1.5.2. Finish/ colour: White.
 - 1.6. Operation: Manual.
 - 1.7. Noise level: Max 55 dB(A).

106 FIX-601 Mirror

1. Wall mounted mirror, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Frame: To be agreed with the Architect.
 - 1.3. Glass:
 - 1.3.1. Material: Safety glass.
 - 1.3.2. Thickness: Nominal 6mm.
 - 1.3.3. Edges: Squared polished edges.
 - 1.3.4. Rear: Laminated with 3M safety film.
 - 1.4. Fixing: Suitably concealed fixed.

107 FIX-605 Mirror

1. Full height wall mounted mirror, as the Design Drawings.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Frame: To be agreed with the Architect.
 - 1.3. Glass:
 - 1.3.1. Material: Safety glass.
 - 1.3.2. Thickness: Nominal 6mm.
 - 1.3.3. Edges: Square polished edges.
 - 1.3.4. Rear: Laminated with 3M safety film.
 - 1.4. Fixing: Suitably concealed fixed.

108 FIX-901 Access Control System

1. Access control system, as the Design Drawings.
 - 1.1. Manufacturer: Boon Edam, or acceptable equivalent.
 - 1.2. Reference: Lifeline Speed Lane Slide.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Speedgate units:
 - 1.4.1. Material: Refer to the Finishes Schedule.
 - 1.4.2. Finish: Refer to the Finishes Schedule.
 - 1.4.3. Colour: Refer to the Finishes Schedule.
 - 1.5. Glass panels:
 - 1.5.1. Material: Clear laminated safety glass panels.

- 1.5.2.Type: Slide.
- 1.5.3.Operation: Silent, high-speed operation.
- 1.6. Automatic touch control line to designated lift, refer to the Services Engineer's documentation.
- 1.7. System to include all accessories required to complete the installation.

109 FIX-905 Access Control Swing Gate

- 1. Access control swing gate, as the Design Drawings.
 - 1.1. Manufacturer: Boon Edam, or acceptable equivalent.
 - 1.2. Reference: Winglock Swing.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Control gate:
 - 1.4.1.Material/ finish: Stainless steel.
 - 1.4.2.Control: Refer to the Services Engineer's documentation.
 - 1.5. System to include all accessories required to complete the installation.

110 FIX-911 Mailbox

- 1. Heavy duty mailbox system, as the Design Drawings.
 - 1.1. Manufacturer: Bringme, or acceptable equivalent.
 - 1.2. Referencer: Bringme Box.
 - 1.3. Type: Secure access, smart parcel store configuration for couriers and parcels with built-in real-time communication.
 - 1.4. Size and configuration: Refer to the Design Drawings.
 - 1.5. Finish: Refer to the Finishes Schedule.
 - 1.6. Colour: Refer to the Finishes Schedule.
 - 1.7. Ironmongery: To be selected from the manufacturer's standard range.
 - 1.8. Fixing: Suitably concealed fixed.

111 FLF-101 Entrance Barrier Matting

- 1. Proprietary entrance barrier matting system.
 - 1.1. Form accurate matwell within the interfacing substrate:
 - 1.1.1.As the Design Drawings.
 - 1.1.2.Use preparatory products and processes to suit substrates.
 - 1.1.3.Where necessary and as recommended by the barrier matting system manufacturer install a levelling screed/ compound.
 - 1.2. Barrier matting system:
 - 1.2.1.Manufacturer: Intrasytems, or acceptable equivalent.
 - 1.2.2.Reference: Intraform Low Profile entrance matting. (Note: final product selection from samples).
 - 1.2.3.Tread:
 - 1.2.3.1. Type: 12mm heavy duty aluminium system.
 - 1.2.3.2. Colour: Selected from manufacturers range.
 - 1.2.3.3. Rail finish: Refer to the Finishes Schedule.
 - 1.2.3.4. Spline options: To be confirmed by the Architect.
 - 1.2.4.Frame:
 - 1.2.4.1. Type:Recycled aluminium.

- 1.2.4.2. Finish: Refer to the Finishes Schedule.
- 1.2.5.Edge trim:
 - 1.2.5.1. Type: Recycled aluminium.
 - 1.2.5.2. Finish: Refer to the Finishes Schedule.
 - 1.2.5.3. Spacers: To be confirmed by the Architect.

112 FIX-701 Built-in Vanity Unit

1. Bespoke fabricated, built-in vanity unit with integrated trough sink and concealed paper towel bin set within, to specialist sub-contractor's design. Refer to the Design Intent Drawings.
 - 1.1. Indicative manufacturer: Incscape Interiors.
 - 1.2. Indicative reference: To be confirmed by the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Support framing: Specialist fabricator designed metal or timber support frame anchored to primary structure before the final finish is fixed.
 - 1.5. Carcass/ core:
 - 1.5.1. Base unit to be raised off floor, as the Design Drawings.
 - 1.5.2. Material: Medium-density fibreboard (MDF)/ Moisture resistant, medium-density fibreboard (MDF.H)/ Water and boil proof (WBP) plywood - to be confirmed by the Architect.
 - 1.5.3. Thickness: 18mm - to be confirmed by the Architect.
 - 1.5.4. Fixing: Suitably concealed fixed.
 - 1.5.5. Shelving: Adjustable shelving with concealed fixings/ support pins.
 - 1.6. Internal lining/ facings/ finishes:
 - 1.6.1. Material: Plastic laminate.
 - 1.6.2. Colour: White, or as otherwise shown on the Design Drawings.
 - 1.7. External (visible) linings/ facings/ finishes:
 - 1.7.1. Material:
 - 1.7.1.1. Type: Plastic laminate.
 - 1.7.1.2. Minimum thickness: Refer to the Design Drawings.
 - 1.7.2. Doors to be full height.
 - 1.7.3. Colour: To be selected from the manufacturer's standard range.
 - 1.8. Worktop/ countertop:
 - 1.8.1. Material: Silestone.
 - 1.8.2. Thickness: Refer to the Design Drawings.
 - 1.8.3. Edge detail: To be confirmed by the Architect.
 - 1.8.4. Colour: To be selected from the manufacturer's standard range.
 - 1.8.5. Joints (where required): Seamless joints, sealed with a colour matched joint adhesive. Refer to the Design Drawings.
 - 1.9. Undermounted basin: Bespoke rectangular undermount trough sink set within Silestone countertop. Refer to the Sanitaryware Schedule.
 - 1.10. Integrated paper towel bin unit: Refer to the Design Drawings.
 - 1.11. Apertures/ cut-outs (where required): To be precision factory-formed using rigid, manufacturer's templates. Cut-out for paper towel disposal to bin. Refer to the Design Drawings.
 - 1.12. Services and lighting: Refer to the Services Engineer's documentation.
 - 1.13. Ironmongery: Brushed stainless steel to all horizontal items and stainless steel effect T-bar.

113 FIX-711 Mirror Cabinet

1. Bespoke wall mounted mirrored cabinet, to specialist sub-contractor's design. Refer to the Design Intent Drawings.
 - 1.1. Indicative manufacturer: Inscape Interiors.
 - 1.2. Indicative reference: To be confirmed by the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Carcass/ shelving:
 - 1.4.1. Material: Moisture resistant medium density fibreboard.
 - 1.4.2. Finish: Refer to the Finishes Schedule.
 - 1.4.3. Hardware: Push opening system.
 - 1.5. Door frame:
 - 1.5.1. Material: Silvered float glass mirror to BS EN 1036: Part 1.
 - 1.5.2. Thickness: To suit the conditions of service.
 - 1.5.3. Edges: Satin nickel metal framed.
 - 1.5.4. Rear of mirror to be laminated with 3M safety film.
 - 1.5.5. Text engravings etched into surface of mirror indicating 'soap', 'paper towels' and 'hook' for hanging bags.
 - 1.6. Adjustable shelving:
 - 1.6.1. Material: To be agreed with the Architect.
 - 1.6.2. Size: Refer to the Design Drawings.
 - 1.6.3. Thickness: Refer to the Design Drawings.
 - 1.7. Integrated, concealed soap dispenser within cabinet: Refer to the Design Drawings.
 - 1.8. Integrated, concealed paper towel within cabinet: Refer to the Design Drawings.
 - 1.9. Fixing: Concealed, to suit the conditions of service.
 - 1.10. Lighting requirements: Refer to the Specialist Lighting documentation.
 - 1.11. Demister and shaver sockets: Refer to the Services Engineer's documentation.
 - 1.12. The system to include fixings, bracketry, support framing and all other components/ accessories necessary to complete the works to suit the conditions of service.

114 FIX-721 Shelving Cabinet

1. Bespoke shelving cabinet.
 - 1.1. Indicative manufacturer: Consentino or acceptable equivalent.
 - 1.2. Indicative reference: To be confirmed by the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Carcass: as FIX-703.
 - 1.5. Door fronts:
 - 1.5.1. Material: Plastic laminate.
 - 1.5.2. Thickness: To suit the conditions of service.
 - 1.5.3. Colour: To be selected from the manufacturer's standard range.
 - 1.6. Cabinet doors to be lockable with a key.
 - 1.7. Adjustable shelving:
 - 1.7.1. Material: To be agreed with the Architect.
 - 1.7.2. Size: To be agreed with the Architect.
 - 1.7.3. Thickness: To be agreed with the Architect.
 - 1.7.4. Edges: To be agreed with the Architect.

- 1.8. Fixing: Concealed, to suit the conditions of service.
- 1.9. Lighting requirements: Refer to the Specialist Lighting documentation.
- 1.10. Demister and shaving sockets: Refer to the Services Engineer's documentation.
- 1.11. The system to include fixings, bracketry, support framing and all other components/ accessories necessary to complete the works to suit the conditions of service.

115 FIX-725 Wooden Shower bench

- 1. Wall mounted, marine grade timber shower bench.
- 2. Manufacturer: To be confirmed
- 3. Material: Slatted, stress treated, marine grade solid teak or acceptable equivalent.
- 4. Size: Approximately 500mm x 350MM
- 5. Height: 450mm
- 6. Fixings: Concealed stainless steel bolts.
- 7. Frame: Stainless steel frame and wall bracket to allow folded or seated position.

116 FIX-801 Reception Desk

- 1. Bespoke reception desk, as the Design Drawings.
 - 1.1. Size/ configuration; As the Design Drawings.
 - 1.2. Support framing: To suit the service conditions.
 - 1.3. Panels and countertop.
 - 1.3.1. Material: To be agreed with the Architect.
 - 1.3.2. Thickness: Refer to the Design Drawings.
 - 1.3.3. Colour: As the Design Drawings.
 - 1.3.4. Joints: As the Design Drawings.
 - 1.4. Drawers:
 - 1.4.1. Core: Suitable core material to maintain the performance requirements.
 - 1.4.2. Finish: To match panels and countertop.
 - 1.4.3. Hardware: Soft close hinges and integrated lock.
 - 1.5. Fixings: Suitably concealed fixed.
 - 1.6. Services:
 - 1.6.1. Refer to the Services Engineer's documentation.
 - 1.6.2. All services to be flush mounted to desk upstand.
 - 1.6.3. Cable ways from floor boxes: Incorporate into back panels underneath.
 - 1.6.4. Grommets: Flush and to match desk colour.
 - 1.7. Additional requirements: System to include fixings, bracketry and all other components/ accessories necessary to complete the works.

117 FIX-705 Vanity Worktop

- 1. Bespoke fabricated, built-in vanity worktop, to specialist sub-contractor's design. Refer to the Design Intent Drawings.
 - 1.1. Indicative manufacturer: Consentino or acceptable equivalent.
 - 1.2. Indicative reference: To be confirmed by the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Support framing: Specialist fabricator designed metal or timber support frame anchored to primary structure before the final finish is fixed.
 - 1.5. Worktop/ countertop:

- 1.5.1. Material: Silestone.
- 1.5.2. Thickness: Refer to the Design Drawings.
- 1.5.3. Edge detail: To be confirmed by the Architect.
- 1.5.4. Colour: To be selected from the manufacturer's standard range.
- 1.5.5. Joints (where required): Seamless joints, sealed with a colour matched joint adhesive.
Refer to the Design Drawings.
- 1.6. Cut outs as per Design Drawings set within Silestone countertop.
- 1.7. Apertures/ cut-outs (where required): To be precision factory-formed using rigid, manufacturer's templates. Refer to the Design Drawings.
- 1.8. Services and lighting: Refer to the Services Engineer's documentation.
- 1.9. Ironmongery: Refer to ironmongery schedule.

119 FIX-703 Bespoke cupboard unit

- 1. Bespoke cupboard unit, to specialist sub-contractor's design. Refer to the Design Intent Drawings.
 - 1.1. Indicative manufacturer: Consentino or acceptable equivalent.
 - 1.2. Indicative reference: To be confirmed by the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Support framing: Specialist fabricator designed metal or timber support frame anchored to primary structure before the final finish is fixed.
 - 1.5. Carcass/ core:
 - 1.5.1. Base unit to be raised off floor, as the Design Drawings.
 - 1.5.2. Material: Medium-density fibreboard (MDF)/ Moisture resistant, medium-density fibreboard (MDF.H)/ Water and boil proof (WBP) plywood - to be confirmed by the Architect.
 - 1.5.3. Thickness: 18mm - to be confirmed by the Architect.
 - 1.5.4. Fixing: Suitably concealed fixed.
 - 1.5.5. Shelving: Adjustable shelving with concealed fixings/ support pins.
 - 1.6. Internal lining/ facings/ finishes:
 - 1.6.1. Material: Plastic laminate.
 - 1.6.2. Colour: To be confirmed, or as otherwise shown on the Design Drawings.
 - 1.7. Worktop/ countertop:
 - 1.7.1. Material: Plastic laminate.
 - 1.7.2. Thickness: Refer to the Design Drawings.
 - 1.7.3. Edge detail: To be confirmed by the Architect.
 - 1.7.4. Colour: To be selected from the manufacturer's standard range.
 - 1.7.5. Joints (where required): Seamless joints, sealed with a colour matched joint adhesive.
Refer to the Design Drawings.
 - 1.8. Cut outs as per Design Drawings set within Silestone countertop.
 - 1.9. Apertures/ cut-outs (where required): To be precision factory-formed using rigid, manufacturer's templates. Refer to the Design Drawings.
 - 1.10. Services and lighting: Refer to the Services Engineer's documentation.
 - 1.11. Ironmongery: Refer to ironmongery schedule.

120 FIX-724 Bespoke open shelving

- 1. Bespoke open shelving, to specialist sub-contractor's design. Refer to the Design Intent Drawings.
 - 1.1. Indicative manufacturer: Consentino or acceptable equivalent.

- 1.2. Indicative reference: To be confirmed by the Architect.
- 1.3. Size and configuration: Refer to the Design Drawings.
- 1.4. Support framing: Specialist fabricator designed metal or timber support frame anchored to primary structure before the final finish is fixed.
- 1.5. Carcass/ core:
 - 1.5.1. Material: Medium-density fibreboard (MDF)/ Moisture resistant, medium-density fibreboard (MDF.H)/ Water and boil proof (WBP) plywood - to be confirmed by the Architect.
 - 1.5.2. Thickness: 18mm - to be confirmed by the Architect.
 - 1.5.3. Fixing: Suitably concealed fixed.
 - 1.5.4. Shelving: Adjustable shelving with concealed fixings/ support pins.
- 1.6. Internal lining/ facings/ finishes:
 - 1.6.1. Material: Plastic laminate.
 - 1.6.2. Colour: To be confirmed, or as otherwise shown on the Design Drawings.
- 1.7. External (visible) linings/ facings/ finishes:
 - 1.7.1. Material:
 - 1.7.1.1. Type: Plastic laminate.
 - 1.7.1.2. Minimum thickness: Refer to the Design Drawings.
 - 1.7.2. Colour: To be selected from the manufacturer's standard range.

600 Samples

1. Before placing orders submit representative samples of each item specified.

605 Control Samples

1. Sample area: Each item specified.
2. Approval of appearance: Obtain before proceeding.

610 Quality

1. Compliance:
 - 1.1. BS EN 13120 - Internal blinds.
 - 1.2. BS EN 13561 - External blinds and awnings.
 - 1.3. BS 5867 - Textiles and textile products.
 - 1.4. BS 7953 - Entrance flooring systems.

Execution

720 Installation generally

1. Fixing and fasteners: As section Z20.
2. Tolerances:
 - 2.1. Vertical and horizontal positions within $\pm 1\text{mm}$ up to 2000mm
 - 2.2. Maximum offset in plane, level or section between adjacent elements $\pm 1\text{mm}$ and cut-outs $\pm 1\text{mm}$.

770 Trims

1. Lengths: Wherever possible, unjointed between angles or ends of runs.
2. Running joints: Where unavoidable, obtain approval of location and method of jointing.
3. Angle joints: Mitred.

Completion

910 General

1. **Doors and drawers:** Accurately aligned, not binding. Adjusted to ensure smooth operation.
2. **Ironmongery:** Checked, adjusted and lubricated to ensure correct functioning.

920 Appliances

1. **Test:** Ensure that all functions and features work correctly.
2. **Documentation:** Submit guarantees, instruction manuals, etc.

Ω End of Section

N13 Sanitary appliances and fittings

Products

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

101 Sanitaryware - Generally

1. Refer to the Sanitaryware Schedule.
2. Size and configuration: Refer to the Design Drawings.
3. Exposed finishes to be confirmed by the Architect where not stated in the Sanitaryware Schedule.
4. Concealed components to be finished to suit the corrosion protection requirements.

600 Samples

1. Before placing orders submit representative samples of each appliance or fitting specified.

605 Control Samples

1. Sample area: Each item specified.
2. Approval of appearance: Obtain before proceeding.

Execution

610 Installation generally

1. **Assembly and fixing:** Surfaces designed to falls to drain as intended.
2. **Fasteners:** Nonferrous or stainless steel.
3. **Supply and discharge pipework:** Fix before appliances.
4. **Fixing:** Fix appliances securely to structure. Do not support on pipework. Once fixed, all elements to be stable, firmly fixed and free from leaks including when in use.
5. **Jointing and bedding compounds:** Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.
6. **Appliances:** Do not use. Do not stand on appliances.
7. **On completion:** Components and accessories working correctly with no leaks.
8. **Labels and stickers:** Remove.
9. **Compliance::** BS 3402 - Specification for quality of vitreous china sanitary appliances.
BS EN 33 - WC pans and WC suites.
BS EN 997 - WC pans and WC suites with integral trap.
BS EN 13407 - Wall-hung urinals.
BS 1206 - Specification for fireclay sinks.
BS EN 14688 - Sanitary appliances.
BS EN 31 - Wash basins. BS EN 14055 - WC and urinal flushing cisterns.
BS EN 200 - Sanitary tapware.
BS EN ISO 1456 - Metallic and other inorganic coatings.
BS EN 14516 - Baths for domestic purposes.
BS EN 198 - Sanitary appliances. BS EN 14428 - Shower enclosures.
BS EN 14527 - Shower trays for domestic purposes.
BS 6340: Part 4 - Shower units.

10. **Public mains water supply::** Water fittings to comply with Water Supply (Water Fittings) Regulations and have Water Regulations Advisory Scheme (WRAS) approval when connecting to/from a public mains water supply.

613 Compatibility of components

1. **General:** Each sanitary assembly must consist of functionally compatible components, preferably obtained from a single manufacturer.
 - 1.1. **Exceptions:**

620 Noggings and bearers

1. **Noggings, bearers, etc. to support sanitary appliances and fittings:** Position accurately. Fix securely.

630 Tiled backgrounds other than splashbacks

1. **Timing:** Complete before fixing appliances.
2. **Fixing appliances:** Do not overstress tiles.

650 Installing WC pans

1. **Floor-mounted pans:** Screw fix and fit cover caps over screw heads. Do not use mortar or other beddings.
2. **Seat and cover:** Stable when raised.

660 Installing slab urinals

1. **Waterproofing of walls and floor (specified elsewhere):** Completed before fixing urinal components.
2. **Gap between components:** 3 mm.
3. **Space behind channels and slabs:** Grout with 1:5 cement:sand grout.
4. **Pointing:** Rake out joints to 10 mm depth. Point flush with waterproof jointing compound recommended by urinal manufacturer.

670 Installing cisterns

1. **Cistern operating components:** Obtain from cistern manufacturer.
2. **Inlet and flushing valves:** Match to pressure of water supply.
3. **Internal overflows:** Into pan, to give visible warning of discharge.
4. **External overflows:** Fix pipes to falls and locate to give visible warning of discharge. Agree location where not shown on drawings.

710 Installing taps

1. **Fixing:** Secure against twisting.
2. **Seal with appliance:** Watertight.
3. **Positioning:** Hot tap to left of cold tap as viewed by user of appliance.

720 Installing wastes and overflows

1. **Bedding:** Waterproof jointing compound.
2. **Fixing:** With resilient washer between appliance and backnut.

725 Installing hand dryers

1. **Fused connection units**

- 1.1. Type: Switched
- 1.2. Engraving: With 'HAND DRYER'.
- 2. Final connection: Concealed.

Ω End of Section

N15

Internal fire and safety signage systems

General

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

110 Fire and safety signage systems

1. Description:
2. System manufacturer:
 - 2.1. System reference:
3. Locations and layout:
 - 3.1. Language: English.
4. Material:
 - 4.1. Other properties:

111 SGN-101 Statutory Signage

1. Statutory signage, to include all fixings, bracketry, support framing and accessories necessary to complete the works, as the Design Drawings.
 - 1.1. Type, size and configuration: Refer to the Services Engineer's documentation and the Signage Schedule.
 - 1.2. All statutory signage proposed to be to the Architect's acceptance through sampling.
 - 1.3. Refer to the Design Drawings and the Signage Schedule.

112 SGN-201 Directional/ Way Finding Signage

1. Directional/ way finding signage, as the Design Drawings.
 - 1.1. Refer to the Design Drawings and the Signage Schedule.

113 SGN-301 Super Graphics

1. Super graphics, as the Design Drawings.
 - 1.1. To be developed.

114 SGN-305 Bespoke Signage

1. Bespoke floor level graphic cut into bronze panel to detailed design.
 - 1.1. Refer to the Design Drawings and the Signage Schedule.

System performance

205 Design of internal signage systems

1. Description:
2. Design: Complete detailed design and submit before commencing work.
3. Content: Signs including facing information, components, inserts, accessories and fixings necessary to complete the system.

4. **Proposals:** Submit drawings, schedules, technical information, calculations and manufacturer's literature before commencing work.

210 General requirements

1. Signage and way guidance system design:
 - 1.1. For fire escape and evacuation signage: In accordance with: BS 5499-4 or BS ISO 16069.
 - 1.2. For way guidance systems: In accordance with BS ISO 16069.
 - 1.3. For safety signs other than escape route signage: In accordance with: BS 5499-10.
2. Comply with the requirements of:

220 Sign design and format

1. Description:
2. Format:
3. Geometric shapes, colours and layout: In accordance with BS ISO 3864-1.
4. Design principles for graphical symbols: In accordance with BS ISO 3864-3.
5. Colorimetric and photometric properties of safety sign materials: In accordance with BS ISO 3864-4.
6. Water safety: In accordance with BS EN ISO 7010.

260 Photoluminescent properties

1. Description:
2. Luminance delay classification to BS ISO 17398:

270 Fire performance

1. Description:
2. Reaction to fire
 - 2.1. Standard:
 - 2.2. Class:

280 Design life

1. Description:
2. Duration:
 - 2.1. Subject to reasonable wear and tear.
3. Condition of use: Subject to regular maintenance.

290 Signage samples

1. Sign type:
 - 1.1. Action: Submit labelled samples.
 - 1.2. Conformity: Retain samples on site for the duration of the contract, or until instructed to remove them.
 - 1.3. Delivered products: To conform with labelled samples.

Products

310 Adhesive vinyl

1. Description:
2. Manufacturer:

- 2.1. Product reference:
- 3. Component thickness:
- 4. Finish:

320 Aluminium plate

- 1. Description:
- 2. Manufacturer:
 - 2.1. Product reference:
- 3. Component thickness:
- 4. Finish:
- 5. Perimeters:
- 6. Supports/ fixings:
- 7. Accessories:

330 Plastics sheet

- 1. Description:
- 2. Material:
- 3. Manufacturer:
 - 3.1. Product reference:
- 4. Component thickness:
- 5. Finish:
- 6. Perimeters:
- 7. Supports/ fixings:
- 8. Accessories:

340 Stainless steel plate

- 1. Description:
- 2. Manufacturer:
 - 2.1. Product reference:
- 3. Base material:
- 4. Component thickness:
- 5. Finish:
- 6. Perimeters:
- 7. Supports/ fixings:
- 8. Accessories:

350 Stove-enamelled metal plate

- 1. Description:
- 2. Manufacturer:
 - 2.1. Product reference:
- 3. Base material:
- 4. Component thickness:
- 5. Finish:
- 6. Perimeters:
- 7. Supports/ fixings:

8. Accessories:

Execution

610 Fixing signs generally

1. Installation: Secure, plumb and level.
2. Fasteners and adhesives: As section Z20.
3. Strength of fasteners: Sufficient to support live and dead loads.
4. Fixings showing on surface of sign: Must not detract from the message being displayed.

Completion

910 Documentation

1. Submit
 - 1.1. Manufacturer's maintenance instructions.
 - 1.2. Guarantees, warranties, test certificates, record schedules and logbooks.

920 Spares

1. Supply as follows
 - 1.1. Type:
 - 1.2. Quantity:

930 Specialist tools

1. Supply as follows:

Ω End of Section

N25

Permanent access and safety equipment

Types of system/ equipment

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

111 ASE-105 Key Clamp Barrier System

1. Safe-zone demarcation barrier as shown on the Design Drawings.
 - 1.1. Handrail system with integrated gate to match:
 - 1.1.1. Indicative manufacturer: Alvin Key Clamp.
 - 1.1.2. Size: To suit the requirements of the Structural Engineer's documentation.
 - 1.1.3. System to incorporate system compatible gate to match barrier style/ size/ finish.

112 ASE-201 Abseiling Fixing Rail

1. Proprietary abseil rail fixed to the parapet, allowing full façade access via rope access methods, with folding fall arrest ladder for safe access.
 - 1.1. Indicative manufacturer: Heightsafe Systems Ltd.
 - 1.2. Indicative reference: SafeAccess and NAV 7 Trolley for Rope Access.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Performance:
 - 1.4.1. To comply with BS EN 795 type D 2012 CEN/ TS 16415.
 - 1.4.2. Maximum 4 No. people working simultaneously.
 - 1.4.3. Maximum 2 No. users between two brackets.
 - 1.4.4. Maximum distance between brackets 3000mm.
 - 1.4.5. Curved section having a radius of 600mm.
 - 1.5. Type: Trolley for rope access technicians, moved by pushing on the façade, the trolley has a brake. It is inserted through one of the ends of the rail.
 - 1.6. Material: Aluminium alloy EN AW6060 T6, to withstand a marine environment and powder coated RAL 7040 (Qualicoat class 1 category 3, license P-0554).
 - 1.7. Fixings: To the manufacturer's recommendations.
 - 1.8. Integrated ladder for safe access to the abseil rail:
 - 1.8.1. Indicative reference: PivotLoc Foldable Ladder System.
 - 1.8.2. The foldable ladder system prevents unauthorised use of the system in the same way as the cover plate.
 - 1.8.3. Fixing: As the manufacturer's recommendations.

Design/ performance requirements

415 Wind loading to BS EN 1991-1-4

1. **General:** Design access/ safety system to withstand calculated wind loads with equipment in position of maximum exposure and in parked position.

2. **Design wind pressure:** Calculate to BS EN 1991-1-4 taking account of prevailing conditions at location..

420 Wind loading from existing data

1. **General:** Design the access/ safety system to withstand specified wind loads with equipment in position of maximum exposure and in parked position.

430 Safety

1. **General:** The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
2. **Finished surfaces and edges of all accessible parts:** Regular and smooth.

440 Design life/ Maintenance programme

1. **Design life of access safety equipment:** Not less than 50 years.
2. **Schedule for maintenance and for replacement of components:** Submit.

450 Testing of permanent suspended access equipment

1. **Pre-installation testing:** Test roof rig at manufacturer's/ supplier's works. The rig must be capable of lifting and sustaining a proof load of 125% of the specified rated load without suffering damage or permanent deformation.
2. **Post-installation testing:** Immediately on completion of installation, or when otherwise agreed, examine and test the complete installation in accordance with recommendations given in BS 6037-1, clause 14. Give adequate notice of testing arrangements.
3. **Certificates for works and site testing:** Submit within 7 days of completion of satisfactory acceptance tests.

460 Assessment/ Testing of anchor devices

1. **Design and testing of anchors:** To BS EN 795.

Fabrication, assembly and installation

510 Fabrication and assembly generally

1. **Machine cutting, drilling and assembly:** Carry out as much as possible in the workshop. Obtain approval for any reassembly on site.
2. **Dissimilar metal surfaces of assembly components/ supports/ fixings:** Isolate to prevent electrolytic corrosion.

520 Protection

1. **General:** Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

530 Suitability of structure/ fabric

1. **Visual and geometric survey of supporting structure and fabric:** Carry out before commencing installation of access/ safety system. Report immediately if structure/ fabric will not allow required accuracy/ security of erection/ fixing and if structural testing is required.

535 Execution generally

1. **Structural members:** Do not modify, cut notch or make holes in structural members without permission.
2. **Frameworks:** Assemble and brace, including temporary members required for installation.

- 2.1. **Temporary support:** Do not use access systems as temporary support or strutting for other work.
3. **Bolted joints**
 - 3.1. **Contact between dissimilar metals:** Avoid.
 - 3.2. **Bolts and washers:** Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
4. **Welded joints:** Comply with latest edition of National Structural Steelwork Specification (NSSS), Section 5.
5. **Finished components:** Smooth, free from distortion, cracks, burrs and sharp arrises.

540 Mechanical fixings

1. **Materials:** Unless otherwise recommended by equipment manufacturer:
 - 1.1. **Connecting bolts and other fixings fully accessible for inspection:** Carbon steel hot dip galvanized to BS 7371-6.
2. **Nuts:** Tapped after galvanizing.
 - 2.1. **Cast-in anchors and other fixings not accessible for routine inspection:** Austenitic stainless steel, grade 1.4401 (316) to BS EN 10088-1.

550 Fasteners, inserts and bolts for building in

1. **Supplier:** Equipment manufacturer/ supplier.

560 Fixings for securing equipment

1. **Adjustment capability:** Adequate three dimensional adjustment to accommodate building structure/ fabric irregularities.

570 Fixing anchor installation

1. **Site drilling or cutting into structure/ fabric:** Permitted only in approved locations.
2. **Distance between all fixing devices and edges of supporting material:** Not less than recommended by fixing manufacturer.

605 Identification and registration labels for suspended access system

1. **Provision**
 - 1.1. **Suspension rig and any non-dedicated track systems:** Provide and fix a permanent label giving:
 - 1.1.1.a) Manufacturer's name, address and telephone number.
 - 1.1.2.b) Name and/ or reference code of model.
 - 1.1.3.c) Serial number and year of manufacture.
 - 1.1.4.d) Rated load of suspended platform (where the platform is permanently attached to the system) or maximum total suspended load (where the platform can be derigged).
 - 1.2. **Suspended platform:** As a), b) and c) above, plus
 - 1.2.1.d) Rated load and self weight in kg of the platform.
 - 1.2.2.e) Maximum number of persons allowed on the platform.
 - 1.2.3.f) Identification mark or number of the suspension rig or rigs with which the platform is compatible (where the platform can be derigged).
 - 1.3. **Suspension and safety ropes (detachable):** Marked with length and unique identification number.
2. **Location:** In positions such that labels can be easily read.

610 Identification and registration labels for other equipment

1. **Provision:** Provide and fix to each piece of equipment a permanent label giving:
 - 1.1. Manufacturer's name, address and telephone number.
 - 1.2. Name and/ or reference code of model.
 - 1.3. Serial number and year of manufacture.
 - 1.4. Maximum load (in kilograms) that may be sustained by the equipment.
2. **Location:** In positions such that labels can be easily read.

615 UKCA/ UKNI/ CE marking and declaration of conformity of permanently installed suspended access equipment

1. **Marking:** Equipment to be clearly labelled with a UKCA/ UKNI/ CE mark indicating conformity with the current edition of the Supply of Machinery (Safety) Regulations.
2. **Declaration of conformity:** Provide for the complete installation a declaration of conformity with Machinery Directive 2006/42/EC together with certificates of incorporation for parts not supplied or installed by the main equipment manufacturer or supplier.

630 Lifting equipment configuration

1. **General:** Where the rated load of machinery for lifting depends on its configuration, the identification and registration labels and rated load notices must indicate the rated load for each configuration.

640 Marking of anchor devices

1. **Provision:** Provide on or near each anchor device a label or other clear marking giving:
 - 1.1. Manufacturer's name and telephone number.
 - 1.2. Serial number and year of manufacture of device.
 - 1.3. Maximum number of personnel that may be attached to the device at any one time.
 - 1.4. Requirements for energy absorbers, ground clearance, etc.
2. **Anchor devices intended solely for use with personal protective equipment:** Indicate restriction of use by pictogram or other suitable marking on or near the device.

710 Electrical installation

1. **General:** Install, test and commission electrical work forming part of the access equipment system up to and including wiring of isolating switch or switches provided by the electrical contractor, all in accordance with BS 7671.
2. **Components/ Fasteners:** Use waterproof components and corrosion resisting fasteners throughout. Avoid contact between dissimilar metals.
3. **Control system:** Designed so that an electrical supply failure, or the failure or malfunction of any electrical component, will cause the system to fail to safety.
4. **Failsafe provision:** In the event of power failure the system must be capable of delivering the working platform to a position of safety either by hand winding or by a controlled gravity descent device.
5. **Isolating switches:** Clearly labelled to identify purpose. Labels to display an emergency contact telephone number.

810 Service/ Maintenance

1. **General:** Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include a 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.

2. **Service/ Maintenance period:** To be confirmed.

820 Operating instructions

1. **Equipment and accessories:** Where appropriate, mark in such a way that it is possible to identify the correct mode of operation for their safe use.

830 Operating and maintenance manual

1. **General:** Provide, for inclusion in the Building Manual, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.
2. **Content**
 - 2.1. Instructions for assembling/ erecting equipment for use.
 - 2.2. Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew.
 - 2.3. Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of machinery parts.
 - 2.4. List of replacement parts, with references.
 - 2.5. Recommended procedures for testing equipment.

840 As installed drawings

1. **General:** After commissioning/ testing of the equipment provide as installed drawings for inclusion in the Building Manual.
 - 1.1. **Number of sets:** To be confirmed.
2. **Drawing content**
 - 2.1. Contractor's name and contract number.
 - 2.2. Location and date of installation.
 - 2.3. Manufacturer's name, model and type numbers.
 - 2.4. General arrangement of the complete installation.
 - 2.5. Electrical circuit wiring diagrams complete with details and ratings of all items of equipment.

Ω End of Section

P10

Sundry insulation/ proofing work

Types of insulation

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

111 INS-101 Mineral Wool Insulation

1. Semi-rigid stone mineral wool acoustic insulation.
 - 1.1. Indicative manufacturer: Rockwool.
 - 1.2. Indicative reference: RWA 45.
 - 1.3. Thickness: As the Design Drawings. To meet the performance requirements.
 - 1.4. Fixing: Suitable mechanically or adhered to substrate/ framing system.

112 INS-111 Rigid Insulation Board

1. High performance rigid PIR insulation.
 - 1.1. Manufacturer: Celotex, or acceptable equivalent.
 - 1.2. Reference: GA 4000.
 - 1.3. Thickness: As the Design Drawings. To meet the performance requirements.
 - 1.4. Fixing: Suitable mechanically or adhered to substrate/ framing system.

500 Samples

1. Insulation: 500mm x 500mm
2. 1 of each visible fixings, accessories and other visible elements.

600 Workmanship

1. Accurately install all elements as indicated on the Working Drawings.
2. Tolerance: $\pm 2\text{mm}$ or 0.1% of overall length, whichever is the lowest.
3. The performance of interfacing elements must not be adversely affected.

Ω End of Section

P12 Fire-stopping systems

General

110 Compliance

1. All work shall be in compliance with the current version of The Government Design Guide Standards.

System performance

210 Design

1. **Design:** Complete the design of the fire-stopping system.
2. **Proposals:** Submit drawings, technical information, calculations and manufacturers' literature.

240 Fire performance

1. **Description:** In accordance with the Fire Strategy Report.

260 Design life

1. **Effective design life:** In accordance with the Fire Strategy Report.

Products

305 Product certification

1. **Certification:** For products specified generically, submit evidence of compliance with the specification.

Execution

610 Third-party-certified installer

1. **Certification:** For the technical competency of the installer of the evidence of compliance with a third-party installation certification scheme.

620 Workmanship generally

1. **Gaps:** Seal between building elements and services, to provide effective resistance to fire and the passage of smoke. Allow for capping sealants where required. Finish flush with surrounds.
2. **Adjacent surfaces:** Prevent overrun of filler, sealant or mortar on to finished surfaces.

650 Installing flexible intumescent gap sealer

1. **Fitting of strips:** Compress strips and fit into gap so that, as they decompress, the strips wedge themselves in the void.
2. **Joints**
 - 2.1. **Ends of strips:** Fit intumescent 'end piece' at both ends of run of fire stop laminate.
 - 2.2. **Joints between strips:** Fit two intumescent 'end pieces' at each butt joint.

710 Installing mineral wool batts

1. **Installing batts:** Fit tight into void between the penetrating services and the surrounding construction to form a solid barrier.
2. **Face of batts:** Flush with the surface of wall, floor or soffit.

3. Gaps between services and barrier: Seal with fire-resisting sealant.

745 Applying sealants generally

1. Application: As section Z22.

Completion

910 Cleaning

1. Masking tapes: Remove.
2. Cleaning: Clean off splashes and droppings. Wipe down finishes.

920 Inspection

1. Notice for inspection (minimum): To be agreed.

Ω End of Section

P20

Unframed isolated trims/ skirtings/ sundry items

To be read with preliminaries/ general conditions

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

111 TRM-501 Stair Nosing

1. Aluminium stair nosing with a coloured infill of matt PVC applied to precast concrete stairs with concealed fixings, as the Design Drawings.
 - 1.1. Manufacturer: Watco, or acceptable equivalent.
 - 1.2. Type: Full width, continuous heavy duty, coarse grit, GRP angular nosing covering top of riser and tread edge.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Contrasting nosing to comply with Approved Documents Part K and Part M of the Building Regulations and BS 8300: Part 2.
 - 1.5. Colour: Black.
 - 1.6. Fixing: Suitably concealed fixed.

112 TRM-101 Timber Architrave

1. Moisture resistant, medium-density fibreboard (MDF-MR) architrave suitably concealed fixed.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Packing: Treated softwood, as necessary.
 - 1.3. Architrave:
 - 1.3.1. Material: Medium-density fibreboard (MDF).
 - 1.3.2. Profile: As the Design Drawings.
 - 1.3.3. Edges: Square edge.
 - 1.3.4. Finish: Painted, refer to Section M60. Apply a suitable balancing paint to the rear.
 - 1.4. Joints:
 - 1.4.1. Straight-runs: To be formed in single lengths wherever possible.
 - 1.4.2. Running joints: Scarf joints, location of running joints to be agreed.
 - 1.4.3. Joints at angles: Mitred, unless otherwise shown on the Design Drawings.
 - 1.4.4. Corner joints: Ease arrises.
 - 1.5. Fixing: Countersunk screwed, and filled.

113 TRM-105 Concealed Door Frame

1. Concealed metal door frame, as the Design Drawings.
 - 1.1. Manufacturer: EzyJamb, or acceptable equivalent.
 - 1.2. Reference: SRC Single Rebate Door Frame.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Material: Galvanneal steel.
 - 1.5. Fixing: Suitably concealed fixed.

114 TRM-111 Recessed Timber Architrave

1. Recessed, flush finished, moisture resistant, medium-density fibreboard (MDF-MR) architrave suitably concealed fixed.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Packing: Treated softwood, as necessary.
 - 1.3. Architrave:
 - 1.3.1. Material: Medium-density fibreboard (MDF).
 - 1.3.2. Profile: As the Design Drawings.
 - 1.3.3. Edges: Square edge.
 - 1.3.4. Finish: Painted, refer to Section M60. Apply a suitable balancing paint to the rear.
 - 1.4. Joints:
 - 1.4.1. Straight-runs: To be formed in single lengths wherever possible.
 - 1.4.2. Running joints: Scarf joints, location of running joints to be agreed.
 - 1.4.3. Joints at angles: Mitred, unless otherwise shown on the Design Drawings.
 - 1.4.4. Corner joints: Ease arrises.
 - 1.5. Fixing: Countersunk screwed, and filled.

115 TRM-451 Wall Protection Corner Guard

1. Proprietary wall protection guard with concealed fixings, as the Design Drawings.
 - 1.1. Manufacturer: Gradus, or acceptable equivalent.
 - 1.2. Reference: SSCG5090U.
 - 1.3. Configuration: Refer to the Design Drawings.
 - 1.4. Material: Stainless steel.
 - 1.5. Finish: Brushed.
 - 1.6. Size: Refer to the Design Drawings.
 - 1.7. Fixing: Mechanically or adhesive fixed to the manufacturer's recommendations.

116 TRM-504 Stair Nosing (Reception Stairs)

1. Metal stair nosing suitably concealed fixed, as the Design Drawings.
 - 1.1. Manufacturer: Gradus, or acceptable equivalent.
 - 1.2. Reference: To be agreed with the Architect.
 - 1.3. Size and configuration: Refer to the Design Drawings.
 - 1.4. Material: Stainless steel strips fixed onto GRC.
 - 1.5. Finish: Brushed bronze.
 - 1.6. Fixing: Suitably concealed fixed.

117 TRM-601 MDF Skirting

1. Moisture resistant, medium density fibreboard (MDF.H) skirting suitably concealed fixed.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Packing, Treated softwood, as necessary.
 - 1.3. Skirting:
 - 1.3.1. Material: Moisture resistant, medium-density fibreboard (MDF.H).
 - 1.3.2. Profile: As the Design Drawings.
 - 1.3.3. Edges: Square edge, plant-on.
 - 1.3.4. Finish: Painted, refer to Section M60. Apply a suitable balancing paint to the rear.

- 1.4. Joints:
 - 1.4.1. Straight runs: To be formed in single lengths wherever possible.
 - 1.4.2. Running joints: Scarf joints, location of running joints to be agreed.
 - 1.4.3. Joints at angles: Mitred, unless otherwise shown on the Design Drawings.
 - 1.4.4. Corner joints: Ease arrises.
- 1.5. Fixing: Countersunk screwed, and filled.

118 TRM-605 Recessed MDF Skirting

- 1. Recessed, flush finished, moisture resistant, medium-density fibreboard (MDF.H) skirting suitably concealed fixed.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Packing: Treated softwood, as necessary.
 - 1.3. Skirting:
 - 1.3.1. Material: Moisture resistant, medium-density fibreboard (MDF.H).
 - 1.3.2. Profile: As the Design Drawings.
 - 1.3.3. Edges: Square edge.
 - 1.3.4. Finish: Painted, refer to Section M60. Apply a suitable balancing paint to the rear.
 - 1.4. Joints:
 - 1.4.1. Straight runs: To be formed in single lengths wherever possible.
 - 1.4.2. Running joints: Scarf joints, location of running joints to be agreed.
 - 1.4.3. Joints at angles: Mitred, unless otherwise shown on the Design Drawings.
 - 1.4.4. Corner joints: Ease arrises.
 - 1.5. Fixing: Countersunk screwed, and filled.

119 TRM-611 Recessed Skirting with Integrated LED Lights

- 1. Recessed skirting with integrated LED lights suitably concealed fixed.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Skirting:
 - 1.2.1. Material: Aluminium.
 - 1.2.2. Profile: As the Design Drawings.
 - 1.2.3. Edges: As the Design Drawings.
 - 1.2.4. Finish/ colour: Refer to the Finishes Schedule.
 - 1.3. Joints:
 - 1.3.1. Straight runs: To be formed in single lengths wherever possible.
 - 1.3.2. Running joints: As agreed with the Architect, location of running joints to be agreed.
 - 1.3.3. Joints at angles: Mitred, unless otherwise shown on the Design Drawings.
 - 1.3.4. Corner joints: Ease arrises.
 - 1.4. Integrated lighting: Refer to the Services Engineer's documentation.
 - 1.5. Fixing: Suitably conceal fixed.

121 TRM-701 Metal Trim

- 1. Stainless steel trim as the Design Drawings:
 - 1.1. Manufacturer to be confirmed
 - 1.2. Reference: To be confirmed
 - 1.3. Material: Stainless steel

- 1.4. Thickness: 3mm
- 1.5. Finish: Brushed
- 1.6. Fixing: Concealed

123 TRM-705 Metal Trim

- 1. Aluminium trim as the Design Drawings:
 - 1.1. Manufacturer: Quantum or acceptable equivalent.
 - 1.2. Reference: Q-Range.
 - 1.3. Material: Aluminium.
 - 1.4. Colour: To be confirmed.
 - 1.5. Channel: All over tread.
 - 1.6. Adjoining floor type: Vinyl.
 - 1.7. Gauge: 2mm.
 - 1.8. Shape: Flat front.
 - 1.9. Tread: 55mm.
 - 1.10. Riser: 56mm.

125 TRM-751 Threshold Strip

- 1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
- 2. Reference: TBC
- 3. Profile: Square edged.
- 4. Material: Stainless steel.
- 5. Finish: Satin
- 6. Fixing: Concealed.
- 7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
- 8. Location: Ceramic tile to ceramic tiles.

126 TRM-755 Threshold Strip

- 1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
- 2. Reference: TBC
- 3. Profile: Square edged.
- 4. Material: Stainless steel.
- 5. Finish: Satin
- 6. Fixing: Concealed.
- 7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
- 8. Location: Ceramic tile to resin floor.

127 TRM-761 Threshold Strip

- 1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
- 2. Reference: TBC
- 3. Profile: Square edged.
- 4. Material: Stainless steel.
- 5. Finish: Satin
- 6. Fixing: Concealed.

7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
8. Location: Ceramic tile to RAF tenant floor.

128 TRM-765 Threshold Strip

1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
2. Reference: TBC
3. Profile: Square edged.
4. Material: Stainless steel.
5. Finish: Satin
6. Fixing: Concealed.
7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
8. Locations:
 - 8.1. Engineered oak to ceramic floor.
 - 8.2. Ceramic Tile to Carpet Tile

128A TRM-766 Threshold Strip

1. AS TRM-765 but Satin stainless steel
2. Location Ceramic tiles to screed

128B TRM-767 Threshold Strip

1. AS TRM-765 but Satin stainless steel
2. Location: Ceramic tile to external paving

128C TRM-768 Threshold Strip

1. AS TRM-765 but Satin stainless steel
2. Location: Resin floor to external paving

129 TRM-781 Threshold Strip

1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
2. Reference: TBC
3. Profile: Square edged.
4. Material: Satin stainless steel.
5. Finish: Satin
6. Fixing: Concealed.
7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
8. Locations:
 - 8.1. Resin floor to concrete
 - 8.2. Resin floor to carpet tile

130 TRM-785 Threshold Strip

1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
2. Reference: TBC
3. Profile: Refer to finishes schedule.

4. Material: Refer to finishes schedule.
5. Finish: Refer to finishes schedule.
6. Fixing: Concealed.
7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
8. Location: Entrance barrier matting to ceramic tile.

131 TRM-791 Threshold Strip

1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
2. Reference: TBC
3. Profile: Square edge.
4. Material: Stainless Steel.
5. Finish: Satin.
6. Fixing: Concealed.
7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
8. Location: Resin floor to screed..

132 TRM-795 Threshold Strip

1. Manufacturer: TBC. Proprietary metal threshold strip as the Design Drawings.
2. Reference: TBC
3. Profile: Square edge.
4. Material: Stainless Steel.
5. Finish: Satin.
6. Fixing: Concealed.
7. Threshold strip to include 3mm packer to achieve correct height as shown on the Design Drawings.
8. Location: Raised access floor to WinterGarden engineered oak floor.

133 TRM-796 Threshold Strip

1. As TRM-795 but:
 - 1.1. Raised profile to suit change in height strip 10-15mm
 - 1.2. Location: Concrete to tiles in car park

450 Samples

1. General: Before placing orders submit representative samples of the following:
 - 1.1. 500mm of any visible element.
2. Delivered materials/ products: To match samples.

455 Control Samples

1. General: Complete areas of finished work and obtain approval of appearance before proceeding.

Execution

510 Installation generally

1. Joinery workmanship: As section Z10.
2. Metal workmanship: As section Z11.

3. **Methods of fixing and fasteners:** As section Z20 where not specified.
4. **Straight runs:** To be in one piece, or in long lengths with as few joints as possible.
5. **Running joints:** Location and method of forming to be agreed where not detailed.
6. **Joints at angles:**
7. **Position and level:** To be agreed where not detailed.
8. **Fixing::** Maintain straight, vertical and horizontal lines within $\pm 1\text{mm}$ from notional positions including plane and cut-outs.
9. **Tolerances:** The works shall be installed to achieve the following:
 - 9.1. Vertical tolerance: $\pm 1\text{mm}$ up to 300mm and $\pm 1.5\text{mm}$ up to 600mm of its notional setting- out position.
 - 9.2. Horizontal tolerance: $\pm 1\text{mm}$ up to 500mm and $\pm 1.5\text{mm}$ up to 1000mm of its notional setting- out position.
 - 9.3. Straight lines and flat planes in all directions.

Ω End of Section

Q25 Slab/ brick/ sett/ cobble pavings

General

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.
3. All work shall be in compliance with the current version of The Government Design Guide Standards.

111 EXT-111 Natural Stone Slab Paving

1. Natural stone slab paving, as the Design Drawings.
 - 1.1. Substrate: Refer to the Design Drawings.
 - 1.2. The ballast below to be suitable for the conditions of service and to comply with the specialist sub-contractor wind uplift calculations.
 - 1.2.1. All wind uplift calculations to be confirmed by specialist sub-contractor and is not the responsibility of the Architect.
 - 1.3. Support pedestals: Exterior grade, height adjustable support pedestals, adhesive bonded and/or mechanically fixed to substrate, as specified in Type RFS-201 in Section J31.
 - 1.4. Slab paving:
 - 1.4.1. Manufacturer: Marshalls, or acceptable equivalent.
 - 1.4.2. Reference: Belville Granite.
 - 1.4.3. Type: Granite.
 - 1.4.4. Quarry of origin: Binh Dinh Province, Vietnam.
 - 1.4.5. Size(s): 600mm x 600mm.
 - 1.4.6. Thickness: 50mm.
 - 1.4.7. Finish: To be confirmed by the Architect.
 - 1.4.8. Colour: To be selected from the manufacturer's standard range.
 - 1.5. Joints: Open, 3mm.
 - 1.6. Where the final finish may not be providing fire stopping alone, the sub-contractor is to provide fire stopping design by either providing fire rated pedestals, or by providing an alternative floor finish product that meets the architectural design intent of a natural stone aesthetic.

112 EXT-141 Precast Concrete Slab Paving

1. Precast concrete slab paving to roof level.
 - 1.1. Size and configuration: Refer to the Design Drawings.
 - 1.2. Substrate: Refer to the Design Drawings.
 - 1.3. The ballast below to be suitable for the conditions of service and to comply with the specialist sub-contractor wind uplift calculations.
 - 1.3.1. All wind uplift calculations to be confirmed by specialist sub-contractor and is not the responsibility of the Architect.
 - 1.4. Support pedestals: Exterior grade, height adjustable support pedestals, adhesive boned and/or mechanically fixed to substrate, as specified in Type RFS-201 in Section J31.
 - 1.5. Slab paving:
 - 1.5.1. Manufacturer: Marshalls plc, or acceptable equivalent.

- 1.5.2.Reference: Perfecta.
- 1.5.3.Type: Precast concrete, hydraulically pressed.
- 1.5.4.Size(s): 600mm x 600mm.
- 1.5.5.Thickness: 50mm.
- 1.5.6.Colour: Natural/ Buff.
- 1.5.7.Pattern: As the Design Drawings.
- 1.6. Joints: Refer to the Design Drawings.

System performance

210 Design – natural stone slab paving system

- 1. **Design:** Complete the design of the natural stone slab paving system in accordance with BS 7533-4.
- 2. **Proposals:** Submit drawings, technical information, calculations and manufacturers' literature.

220 Design – concrete paving system

- 1. **Design:** Complete the design of the concrete slab paving system in accordance with BS 7533-4.
- 2. **Proposals:** Submit drawings, technical information, calculations and manufacturers' literature.

Products

310 Natural stone slabs

- 1. **Standard:** To BS EN 1341.

315 Concrete flags

- 1. **Standard:** To BS EN 1339.

370 Cement for site mixed mortar

- 1. **Standard:** As section Z21.

375 Sand/ Fine aggregate for site mixed mortar

- 1. **Standard:** To BS EN 12620, designations:

380 Lime for site mixed mortar

- 1. **Standard:** Nonhydraulic to BS EN 459-1, -2 and -3, type CL 90 or, if ready-mixed lime:sand, to BS EN 998-2.

390 Sand/ fine aggregate for unbound laying course and jointing of concrete flag paving

- 1. **Standard:** To BS 7533-4, unbound construction laying course and jointing material.
- 2. **Purity:** Free from deleterious salts, contaminants, lime and cement.
- 3. **Procurement:** Obtain from one source and ensure consistent grading.

Execution

610 Material samples

- 1. **Samples representative of colour and appearance of designated materials:** Submit before placing orders.

615 Control samples

1. Sample areas: Complete as part of the finished work.
 - 1.1. Types of paving: As specified herein.
 - 1.2. Location: To be agreed.
 - 1.3. Size (minimum): To be agreed.
 - 1.4. Included features: To be agreed.
2. Approval of appearance and surface: Obtain before proceeding.

620 Adverse weather

1. General
 - 1.1. Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
 - 1.2. Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
2. Paving with mortar joints and/ or bedding
 - 2.1. Protect from frost damage, rapid drying out and saturation until mortar has hardened.
3. Paving laid and jointed in sand/ fine aggregate
 - 3.1. Stockpiled laying course sand/ fine aggregate: Protect from saturation.
 - 3.2. Exposed areas of unbound laying course and uncompacted areas of unbound paving: Protect from heavy rainfall.
 - 3.3. Saturated unbound laying course: Remove and replace, or allow to dry before proceeding.
 - 3.4. Laying dry sand/ fine aggregate jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

625 Laying pavings – general

1. Appearance: Smooth and even with regular joints and accurate to line, level and profile.
2. Falls: To prevent ponding.
3. Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
 - 3.1. Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
4. Slopes: Lay paving units upwards from the bottom of slopes.
5. Paving units: Free of mortar and sand stains.
6. Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.

630 Levels of paving

1. Permissible deviation from specified levels
 - 1.1. Generally: ± 6 mm.
2. Height of finished paving above features
 - 2.1. At gullies: +6 to +10 mm.
 - 2.2. At drainage channels and kerbs: +3 to +6 mm.

635 Regularity of paved surfaces

1. Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface)
 - 1.1. Precast concrete paving blocks and clay pavers for flexible pavements: 10 mm.
 - 1.2. Precast concrete flags or natural stone slabs: 3 mm.

2. Difference in level between adjacent paving units (maximum): 2 mm.
3. Sudden irregularities: Not permitted.

637 Regularity of paved surfaces

1. Maximum undulations in the surface of pavings (except tactile paving surfaces) under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface): 3 mm.
2. Joints between paving units or utility access covers
 - 2.1. Joints flush with the surface: difference in level between adjacent units to be no more than twice the joint width (with a 5 mm max difference in level).
 - 2.2. Recessed, filled joints: difference in level between adjacent units to be no greater than 2 mm; the recess to be no deeper than 5 mm.
 - 2.3. Unfilled joints: difference in level between adjacent units to be no greater than 2 mm.
3. Sudden irregularities: Not permitted.

645 Protection

1. Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
2. Materials storage: Do not overload pavings with stacks of materials.
3. Handling: Do not damage paving unit corners, arrises, or previously laid paving.
4. Mortar bedded pavings: Keep free from traffic after laying:
 - 4.1. Pedestrian traffic (minimum):
 - 4.2. Vehicular traffic (minimum):
5. Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 Cementitious bases and sub-bases

1. General: Protect from moisture loss, if not covered by another pavement course within 2 hours of completion.

655 Condition of sub-bases/ bases before spreading laying course

1. Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
2. Granular surfaces: Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
3. Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
4. Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
5. Levels and falls: Accurate and within the specified tolerances.
6. Drainage outlets: Within 0-10 mm of the required finished level.
7. Features in unbound paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
8. Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS 7533-4.

675 Laying geotextile sheet edging strips

1. Location: Immediately below the laying course, abutting features which interrupt the laying course, including:
 - 1.1. Perimeters/ Edge restraints/ Kerbs.

- 1.2. Other types of paving.
- 1.3. Drainage fittings, e.g. channels and manholes.
2. **Edge detail:** Turn sheet up to a height not less than thickness of the laying course to form an upstand fitted neatly against features.
3. **Width:**

680 Laying geotextile sheet patches over drainage holes

1. **Laying:** Lay geotextile patches on the base, centred over each hole.

685 Laying geotextile sheet overlays

1. **Location:** Immediately below the laying course.
2. **Laying:** Fit neatly at edge restraints and other features that interrupt the laying course, e.g. drainage fittings, channels, manholes and kerbs.
3. **Edge detail:** Turn sheet up to form an upstand against features, height not less than thickness of the laying course.

710 Laying flag and slab paving – sand/ fine aggregate laying course and jointing

1. **Standard:** In accordance with BS 7533-4.
2. **Flag installation and cutting:** To Interpave 'Concrete flag paving'.
3. **Laying course**
 - 3.1. **Nominal thickness after compaction:** To be agreed.
4. **Joint width:** 2-5 mm.

715 Laying flag and slab paving – mortar laying course and jointing

1. **Standard generally:** In accordance with BS 7533-4.
2. **Flag installation and cutting:** To Interpave 'Concrete flag paving'.

730 Laying natural stone sett paving

1. **Standard generally:** In accordance with BS 7533-7.
2. **Laying type:** Rigid.
 - 2.1. **Laying and jointing method:**
3. **Laying course**
 - 3.1. **Target thickness after compaction:**
4. **Joint width (nominal):**

780 Laying mortar-bedded accessories

1. **Bedding**
 - 1.1. **Thickness:** 10 mm minimum to 40 mm maximum.
2. **Laying:** Bed units on foundation, and secure with continuous mortar haunching.
 - 2.1. **Keep exposed faces clean and free from mortar.**

785 Tooled joints in mortar-bedded units

1. **Joints:** Completely filled with bedding mortar as work proceeds.
 - 1.1. **Finish:** Neat flush profile.

795 Sealant movement joints in mortar-bedded units

1. **Joint filler:** Compressible cellular rubber or plastics compatible with specified sealant. Build in as work proceeds.
2. **Barrier (joint breaker):** As recommended by sealant manufacturer. Position filler and barrier accurately to fully support sealant at recommended distance from exposed faces of units.
3. **Sealant**
 - 3.1. **Application:** As section Z22.

800 Applying sealer/ stabilizer to blocks and setts

1. **Surface preparation:** Sweep clear of loose sand before sealing.
 - 1.1. **Application:** To dry paving.

810 Pedestal installation

1. **Surface to accept pedestals:** Clean and free of debris.
2. **Setting out:** Mark centre-point of pedestal on substrate surface, with perpendicular guidelines to ensure square layout.
 - 2.1. **Orientation:** Align parallel with adjacent features.
 - 2.2. **Spacing:** To suit paving material and dimensions.
3. **Movement tolerance at perimeter of paver system (maximum):** 5 mm.

Completion

915 Completion of paving with dry sand or fine aggregate filled joints

1. **Final compaction of the surface course:** In accordance with BS 7533-3.
2. **Vacuum cleaning machines:** Not allowed.

Ω End of Section

Q50

Site/ street furniture/ equipment

Gates, barriers and parking controls

100 Design Compliance

1. Section to be read in conjunction with the A and Z Sections which form part of the Specification and Contract Conditions.
2. Design: Refer to and comply with A10.120 and A21.140.

Site and street furniture

210 EXT-301 Cycle stands

1. Manufacturer: Bikedock Solutions or acceptable equivalent.
 - 1.1. Product reference: TTBR1.
2. Type: Two tier bike rack
3. Material:
 - 3.1. Finish: Hot-dip galvanized to BS EN ISO 1461
 - 3.2. Colour: RAL to be confirmed.
4. Method of fixing: As recommended by the manufacturer.

212 EXT-303 Carbon steel cycle stands

1. Manufacturer: Bikedock Solutions or acceptable equivalent.
 - 1.1. Product reference: BS2 2123
2. Stand type: Sheffield Cycle Stand
3. Number of stands: Single.
4. Base: As recommended by the manufacturer.
5. Finish as delivered: Galvanized.
6. Colours: RAL to be confirmed.
7. Size: 750mm x 750mm.

215 EXT-310 Lock Store Rail

1. Manufacturer: Bikedock Solutions or acceptable equivalent.
2. Reference: Lock Store Rail.
3. Finish: RAL colour to be confirmed.

218 EXT-315 Bike Repair Station

1. Manufacturer: Cyclehoop or acceptable equivalent.
2. Reference: Deluxe Repair Station.
3. Material: Formed and TIG welded steel, cast aluminum.
4. Finish: Grey RAL 7045 colour to be confirmed.
5. Size: 1408mm (H) x 225mm (W) x 530mm (D)

220 EXT-321 Double Compartment Locker

1. Manufacturer: Bikedock Solutions or acceptable equivalent.
2. Reference: Z Locker.

3. Finish: Mild steel or aluminium carcass, metal or Solid Grade Laminate, to be confirmed.
4. Size: 1850mm (H) x 330mm (W) x 450mm (D)

Installation

510 Concrete foundations generally

1. Standard: To BS 8500-2.
2. Concrete: Standard prescribed, not less than ST2
3. Admixtures: Do not use.
4. Foundation holes: Neat vertical sides.
5. Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

515 Setting components in concrete

1. Holes: 250 x 250 x minimum 300 mm deep
2. Components: Accurately positioned and securely supported.
3. Concrete fill: Fully compacted as filling proceeds.
4. Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
5. Temporary component support: Maintain undisturbed for minimum 48 hours.

540 Building in to masonry walls

1. Components being built in: Accurately positioned and securely supported. Set in mortar and pointed neatly to match adjacent walling.
2. Temporary support: Maintain for 48 hours (minimum) and prevent disturbance.

560 Site painting

1. Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

Ω End of Section

Z01 Various Materials

To be read with preliminaries/ general conditions.

100 Cement/ Aggregate/ Water/ Sand

1. Standards: comply with
 - 1.1.
 - BS 197 - Cement.
 - BS EN 1008 - Water for concrete.
 - BS EN 12620 - Aggregates for concrete.
 - BS EN 13055 - Lightweight aggregates.
 - BS EN 13139 - Aggregates for mortar.
 - PD 6682-3 - Aggregate guidance related to BS EN 13139.
 - PD 6682 - Lightweight aggregate related to concrete, mortar and grout.
 - GRCA recommendations.
 2. Materials
 - 2.1. Sand:
 - Minimise organic impurities.
 - Restrict the use of deleterious reactive materials containing alkalis in cement.
 - Use coarse aggregate or dust/ salt/ silt free natural sand.
 - Less than 10% of material to be able to pass through a 150 micron sieve.
 - Maintain +/- 20% variation in fineness modulus for facing mix design.
 - Remove all soluble material.
 - Carefully control mix variables.
 - 2.2. Water: To remain clean, fresh, potable and impurity free from a known and reliable source.

200 Plasterboard

1. Standards: Comply with:
 - 1.1.
 - BS 8000-8 - Code of Practice for plasterboard and partitions.
 - BS 8212 - Plasterboard dry lining.
 - BS EN 520 - Gypsum plasterboard.
 - GPDA (Gypsum Products Development Association) recommendations.
 - FIS (Finishes and Interiors Sector) recommendations.
 2. Materials:
 - 2.1. Quality:
 - To be high performance type of 1500kg/ m² density when used in high humidity/ damp areas and/ or when walls are to receive tiling, linings and the like.
 - In areas likely to be wet or very damp use moisture resistant plasterboard.
 - Use Type A/ H/ E and P where standard sheets are required.
 - Use Type I in high density areas such as cores where glass fibre is required as reinforcement.
 - Metal foil backed sheets are not acceptable as a water/ vapour barrier.
 - Before applying wet render of plaster to moisture resistant boards without suitable pre-treatment with an appropriate bonding agent. Such treatment to be agreed in advance.
 - All boards to be new.

3. Installation:

3.1. Workmanship:

- Multiple layer boarding to be staggered by 600mm.
- Boards to be undamaged, clean and dry with no sign of having been wet prior to installation.
- Fix to suitably prepared and stable framework/ substrate.
- Only install in dry interior areas.
- Joints to be tight butts without any lipping, imperfect edges or indentations.
- Cuts to be straight and neat.
- Cut edges to be lightly sanded, sealed and smooth forming a tight continuous fit.
- Avoid using cut boards at perimeter conditions or at edges of penetrations.
- Use only recommended and appropriate fixings installed strictly in accordance with the manufacturer's recommendations.
- Apply fixings at appropriate centres commencing in the middle of each board.
- Final surfaces to be smooth and flat without indentations caused by fixings.
- Taper edge joints and butt each sheet with a minimal gap of no more than 2mm.
- Stagger joints either side of the partition.
- Install appropriate flush beading/ reinforcement at edges, openings, perimeters, interfaces, stress points, etc. where necessary.
- Tape and fill all joints/ gaps to provide a smooth, flat and continuous surface finish using 100% secured tape and apply plaster skim coat of appropriate thickness.

300 Rigid Sheet Boarding

1. Standards:

1.1. Comply with:

- BS 476-6 - Class 0 fire propagation.
- BS 476-7 - Class 1 surface spread of flame.
- BS 1088 - Marine plywood.
- BS 3757 - Rigid PVC sheet.
- BS EN 300 - Oriented strand board - Classification.
- BS EN 309 - Particleboards - Classification.
- BS EN 310 - Wood based panels - MOE and bending strength.
- BS EN 311 - Wood based panels - Surface soundness.
- BS EN 312 - Particleboards - Specifications.
- BS EN 313 - Plywood - Classification.
- BS EN 314 - Bonding quality - Minimum Class 3 (WBP).
- BS EN 315 - Plywood - Tolerances.
- BS EN 316 - Wood fibre boards - Classification.
- BS EN 322 - Wood based panels - Moisture content.
- BS EN 323 - Wood base panels - Density.
- BS EN 335 - Durability - Class 3.
- BS EN 438-3 - Decorative high pressure laminates - ≥ 2 mm thick.
- BS EN 438-4 - Compact grade laminates laminates - 2mm or more thick.
- BS EN 438-7 - Compact grade laminate/ composite high pressure laminate.
- BS EN 622-1 - Fibreboard.
- BS EN 622-2 - Hardboard.
- BS EN 622-3 - Medium density boards.
- BS EN 622-4 - Softboard.
- BS EN 622-5 - MDF board.

- BS EN 633 - Cement bonded particleboards - Classification.
- BS EN 634 - Cement bonded particleboards - Specification.
- BS EN 636 - Plywood - Specification.
- BS EN 942 - Timber used in joinery.
- BS EN 12467 - Flat fibre cement sheets - Specification.
- BS EN 12871 - Wood based panels - Load bearing floors/ roofs/ walls performance.
- BS EN 14322 - Melamine faced wood based panels - classification. Interior use.
- BRE Digest 477-1 - Wood based panels - OSB (Oriented Strand Board).
- BRE Digest 477-2 - Wood based panels - Particleboard/ chipboard.
- BRE Digest 477-3 - Wood based panels - Cement bonded particleboard.
- BRE Digest 477-4 - Wood based panels - Plywood.
- BRE Digest 477-5 - Wood based panels - MDF (Medium Density Fibreboard).
- BRE Digest 477-6 - Wood based panels - Hardboard/ medium board/ softboard.
- BRE Digest 477-7 - Wood based panels - Selection/ compact grade/ high pressure composite laminate boards.
- PD CEN/TR 1099 - Plywood biological durability - grade H or better.
- PD CEN/TR 12872 - Load bearing wood based panels.
- Approved Document Part B - Building Regulations - Bitumen impregnated fibreboard.
- BFP (British Plastic Federation) - recommendations for laminated sheets.
- BLFA (British laminateFabricators Association) - recommendations for laminated sheets.

2. Materials:

- 2.1. General: Board grade to be sufficiently and suitably robust, sound, of suitable class/ thickness and moisture resistant to suit prevailing conditions and use.
- 2.2. Fibreboard: Only use bitumen impregnated fibreboard with cavity barriers.
- 2.3. Laminated faced panels:
 - Core substrate to be of suitable type and quality of either:
 - Plywood.
 - Grade P5 particleboard.
 - MDF.
 - Blockboard.
 - Laminboard.
 - Control moisture content to suit prevailing environmental conditions and core material.
 - Bond sheets in presses.
 - Fully condition sheets prior to lamination.
 - Oversize holes to compensate for shrinkage of the laminate.
 - Final board thickness (including laminate) to provide:
 - Sufficient structural strength.
 - Impact resistance.
 - Stability.
 - Laminated panels to be balanced to stop warping, bowing, etc.
 - Allow a minimum of 36 hours atmospheric conditioning prior to commencement of high pressure laminate bonding.
 - All edges to be smooth cut and match adjoining panels/ surfaces.
 - Apply laminate to edges first followed by main surfaces.
 - Edge and top joints to be chamfered at 45°.
 - Black lines at edges are not acceptable.

- Final finish to be from from bowing/ twisting/ chips/ pimpling/ scratches/ cracks/ surface contamination, debris and marks/ depressions/ stains/ colour, texture and pattern irregularities.
 - Edge conditions to be agreed as either:
 - Hardwood lipping.
 - Post formed edges.
 - 3mm thick PVC in matching or agreed colour.
 - Decorative laminate in matching or agreed colour, using radio frequency edgebanders.
 - No edging.
3. Workmanship:
- 3.1. Board fixing:
- Run edges along supports.
 - At 150mm c/c maximum to intermediate supports.
 - At 100mm c/c maximum to edge boards.
 - Inset 12mm from edge.
- 3.2. Plywood:
- Take care storing on site to ensure protection from adverse environmental conditions with free airflow maintained at all times.
 - Fix plywood:
 - Long edges running at 90° to supports.
 - End joints to be staggered in alignment with supports.
 - 150mm c/c at perimeters/ edges.
 - 300mm c/c at intermediate supports.
 - Use 50mm x 3mm annular ring shank nails.
 - Bond floor joints using PVA adhesive.
- 3.3. Chipboard:
- Long edges running at 90° to supports.
 - End joints to be staggered in alignment with supports.
 - 300mm c/c at perimeters/ edges/ interim supports.
 - Use 50mm x 3mm annular ring shank nails.
 - Bond floor joints using PVA adhesive.
 - Leave a 10mm gap around all perimeter edges for expansion.
- 3.4. Laminated panels: No lipping with flush joints and flat surfaces panel to panel in all directions.

400 Glass / Coatings

1. Comply with:
- BS 476- 20 and 22 - Fire resistant glass.
 - BS 952 - Glass for glazing.
 - BS 5516-1 and 2 - Patent glazing.
 - BS 6206 - Safety glass impact performance
 - BS 6262 - Glazing in buildings.
 - BS EN 572 - Lime silicate glass.
 - BS EN 572-2 - Float glass.
 - BS EN 572-3 - Polished wire glass.
 - BS EN 572-5 - Patterned glass.
 - BS EN 572-6 - Patterned wired glass.
 - BS EN 1036 - Mirrors.
 - BS EN 1096 - Coated glass.

- BS EN 1279 - Insulated glass units.
- BS EN 1288 - Bending strength.
- BS EN 1748-1 - Borosilicate glass.
- BS EN 1748-2 - Glass ceramics.
- BS EN 1863 - Heat strengthening.
- BS EN 1873 - Impact testing.
- BS EN 1991-1 to 4 - Snow/ wind loads.
- BS EN 12150 - Safety glass - soda lime silicate glass.
- BS EN 12600 - Classification/ tests.
- BS EN 12758 - Sound insulation.
- BS EN 13024 - Safety glass - borosilicate glass.
- BS EN 13541 - Security glazing.
- BS EN 14179 - Toughened soda lime silicate safety glass.
- BS EN 14449 - Laminated glass/ safety glass.
- BS EN 15682 - Toughened alkaline earth silicate safety glass.
- BS EN 16477 - Painted glass.
- BS EN ISO 11485 - curved glass.
- BS EN ISO 12543 - Laminated glass/ safety glass.
- BS EN ISO 18543 - Electrochromic glazing.
- ACR(M) 001 - CWCT Technical Note No. 66 - Health and Safety in Roof Work guidance.
- Building Regulation Approved Document Part B - Fire safety.
- Building Regulation Approved Document Part K - Protection.
- Institute of Glazing Trade for Glazing Technology guidance in respect of visual quality.
- Glass and Glazing Federation Safety and Security Glazing - Good Practice Guide.

2. Materials

2.1. General:

- Use only float process to manufacture annealed glass.
- Glass to be clear, undistorted and free from reflection.
- Glass packaging to show place of manufacture.
- Glass to be sourced from a single source for each element of the Works.
- Only use kitemarked safety glass.
- Glass to be free from impurities.
- Glass/ glazing systems to be fully warranted and guaranteed to suit design and service life requirements.
- Glass/ glazing systems to be suitable for intended use, of an appropriate type/ quality, of adequate thickness and to an acceptable finish.
- Glass/ glazing systems to comply with all performance and visual intent requirements.
- Mirror glass is not acceptable unless specifically requested.
- Glazing installations to be visually consistent and acceptable throughout, maintaining the appearance and quality of all accepted samples, prototypes and benchmarks.
- Visual acceptance to be determined by observation/ inspection from a distance of 1000mm at multiple angles with both blue sky and cloudy backgrounds.
- The following are unacceptable:
 - Visual distortion.
 - Air bubbles.
 - Imperfections of any kind.
 - Smoke vanes.

- Glazing systems to be manufactured in specialist facilities using appropriate equipment to ensure pristine accuracy in terms of cutting, finishing, assembly, etc.
- Edges, joints, to be smooth, even, ground and arrised to provide a visually acceptable product.
- Assemblies to be installed safely into frames within the recommended/ agreed tolerances as shown on the Working Drawings.
- Panels to be designed to facilitate individual removal for maintenance/ removal purposes.
- Glazing systems are not to exert stress or external force on any component/ assembly in any condition that reduces its performance, visual appearance, shape or safety.
- Coatings and finishes to remain pristine.
- Carry out full stress analysis to confirm compliance.
- Wired glass to be minimum 3mm thick, using clear annealed sheet glass with 1.3mm gauge georgian wire embedded during glass manufacture.
- Fire resistant safety glass to be Category B/ Class 2B2 minimum being clear and unwired incorporating fire rated beading.

2.2. Laminated glass:

- To be carried out at a specialist facility.
- Bond a minimum of two layers of flat glass with a suitable clear interlayer between each panel.
- Accurately align each sheet to prevent overlapping at edges.
- No distortions are acceptable.
- Support bottom edges such that loads are supported evenly along the full length of each unit.
- Point loading is not acceptable.
- Fully seal all edges.

2.3. Heat strengthening glass:

- To be carried out at a specialist facility.
- Fully control strengthening process and anisotropy to avoid reduction in performance, quality or visual intent.
- Edge dip not to exceed 0.25mm.
- Glass edge bowing to be less than 0.003mm.
- Flatness criteria to be 1mm in 1000mm in any direction and non accumulative over 3000mm.
- Minimise roller wave distortion such that it is not visible/ detectable in any direction/ orientation.
- Small visible ripples may be accepted provided that they are horizontally consistent and evenly spaced over the whole panel.

2.4. Toughened glass:

- Generally unacceptable unless agreed in advance in writing.
- Provide full technical details and guarantee of performance, suitability and adherence to visual intent if toughening is proposed.

2.5. Curved glass:

- To be carried out at a specialist facility.
- Maintain a consistent radius.
- Use specially prepared and appropriate types of glass. Demonstrate compliance through calculations and samples/ prototypes.
- Maintain performance requirements, visual intent and quality.
- Maintain tight tolerances to guarantee a consistent curve when multiple panels and connected.

- Maintain perfect alignment at vertical and horizontal edges which are to be continuous with consistent joint widths.
- Maximum allowable deviation in curvature of a complete installation to be a maximum of $\pm 4\text{mm}$ from the theoretical position.

2.6. Mirror glass: To be:

- New.
- Clean.
- Flat.
- Clear.
- Smooth.
- Free of defects, marks or blemishes.
- Completely undistorted.

2.7. Horizontal/ inclined glazing:

- Use only suitably strengthened glass.
- Fix into a suitable and adequate support framing system which is structurally sound.
- Fixing/ restraining methods to guarantee a safe installation.
- Performance requirements and visual intent to be maintained.
- Glass to remain in place (i.e. no pieces of glass or support system will fall to the ground) should damage or breakage occur.
- System to be sufficiently sound to resist all live and dead loads to which it is subjected including accidental damage, maintenance, cleaning, etc.
- Carry out impact tests to an energy level of 1200J minimum.

500 Insulation

1. Comply with:

- BS 4841 - Rigid polyisocyanurate and polyurethane.
- BS ISO 1922 - Rigid cellular plastics - Shear strength.
- BS ISO 4898 - Rigid cellular plastics - Thermal insulation.
- BS ISO 20310 - Aluminosilicate wool.
- BS EN 13162 - Mineral wool.
- BS EN 13163 - Expanded polystyrene.
- BS EN 13164 - Extruded polystyrene foam.
- BS EN 13165 - Polyurethane foam.
- BS EN 13166 - Phenolic foam.
- BS EN 13167 - Cellular glass.
- BS EN 13168 - Wood wool.
- BS EN 13169 - Expanded perlite board.
- BS EN 13170 - Expanded cork.
- BS EN 13171 - Wood fibre.
- BS EN 13501 - Insulation.
- BS EN ISO 844 - Rigid cellular plastics - Compression.
- BS EN ISO 4590 - Rigid cellular plastics - Open and closed cell percentages.
- BRE Green Guide to Specification - Sustainability.

2. Materials:

2.1. General: Insulation to be:

- Durable, Inert, vermin and rot proof.
- Euroclass A2 except in zones between sub-base and ground floor slab or ground floor slab and screed or areas with zero risk of combustion where Euroclass E is acceptable. Agree the use of E class material in advance.

- Have sufficient compressive strength to support products, materials, systems, maintenance/ use traffic, temporary loads, etc. to which it is subjected from above without sagging, delamination or bulging.
 - Provide insulation material that is of a suitable type/ thickness to sustain anticipated use without reduction in performance or stability.
 - Suitable to receive necessary overlay and finish surface.
 - Resistant to, water, water vapour/ moisture and extreme temperature ranges.
- 2.2. EPS: Do not use expanded polystyrene unless agreed in advance.
- 2.3. Sustainability:
- Rating A/ A+ (Green Guide).
 - Material to be free from CFC (chlorofluorocarbon) and HFC (hydrochlorofluorocarbon).
 - Material to be free from ODP (Ozone Depleting Potential).
 - Material to have a GWP (Global Warming Potential) of ≤ 5 .
 - In accordance with BREEAM requirements, material to have a minimal environmental impact.
3. Workmanship:
- 3.1.
- Lay flat and even with surface contact.
 - Provide a solid and stable underlayer at all times and in all conditions.
 - Joints to be tight with no lipping or gaps.

600 Membranes

1. Comply with:
- BS 743 - DPC.
 - BS 1521 - Waterproof building paper.
 - BS 8000-0 and 4 - Workmanship on site.
 - BS 8102 - Code of Practice for waterproofing structures below ground.
 - BS 8215 - Code of Practice for masonry DPCs.
 - BS 6014 - Ethylene propylene rubber compounds.
 - BS 6398 - Bitumen DPC.
 - BS 6515 - Polyethylene DPC.
 - BS 8102 - Code of Practice for below ground membranes.
 - BS 8215 - Code of Practice for DPC in masonry.
 - BS 8747 - RBM (Reinforced Bitumen Membrane) for roofs.
 - BS EN 13984 - Flexible sheet waterproofing/ vapour control.
2. Materials:
- 2.1. General: Membranes to be:
- Durable, inert, vermin and rot proof.
 - Non combustible, with Class 0 surface spread of flame.
 - Airtight.
 - Water resistant/ impermeable.
 - Vapour permeable.
 - Sufficiently flexible to accommodate structural/ environmental movement without any reduction in performance.
 - Resistant to chemical attack.
 - Non degradable.
 - Of sufficient type and gauge to resist puncturing.

- Compatible with all materials which it is in direct contact without degradation or reduction in performance.
 - Agrément certified.
 - Used as part of a complete waterproofing system.
 - Compatible with all fixing methods, accessories and components recommended by the manufacturer.
- 2.2. DPM (Damp Proof Membrane): To be EPDM (Ethylene Propylene Diene Monomer) unless deemed inappropriate by the manufacturer/ Contractor.
- 2.3. Breather membrane: To be a non woven, superbonded, high density polypropylene unless deemed inappropriate by the manufacturer/ Contractor.
- 2.4. Vapour control barriers: To be:
- High performance reinforced membrane of suitable strength and thickness.
 - Membrane to be adequately protected on both sides as recommended by the manufacturer.
 - Moisture vapour transmission (g/□/hour) to be sufficient to satisfy performance requirements.
 - Moisture vapour resistance (MNs/ g) to be sufficient to satisfy performance requirements.
 - Bituminous vapour barriers to be a self adhesive or fully bonded polyester based material of suitable type and grade, with an expandable aluminium core and SBS (Styrene Butadiene Styrene) coating.
- 2.5. Waterproof sheet membranes: To be:
- PVC (Polyvinylchloride) or FPO (Flexible Polyolefin).
 - PVC to be coated on both sides with liquid plastisol.
 - FPO to be coated on both sides with compounded flexible plasticised polyolefins.
 - Membrane to be fleece backed.
 - Suitable for use in conditions of exposure to Ultra Violet light and direct sunlight.
3. Workmanship:
- 3.1.
- Installed membranes to provide a watertight barrier at all conditions and interfaces.
 - Lay on adequately and suitably prepared base which:
 - Sufficiently flat, smooth and without voids or sharp protrusions.
 - When laid on hardcore shall be blinded with 12mm sift sand or other suitable material and a 50mm standard mix concrete screed (GEN 1 or ST1/ST2).
 - Lay membrane flat, smooth and fully bonded/ mechanically using suitable fixings and flat smooth galvanised steel bars/ washers to substrate without air bubbles, ridges, ripples, etc.
 - Membrane to be suitably lapped and sealed at all joints.
 - Laps to be staggered with a minimum 75mm overlap at edges and a minimum 150mm at ends.
 - Watertight seals to be provided at all interfaces including drains, services and structural penetrations.
 - Use adequate protection boards where necessary.
 - Tears or punctures to be repaired immediately or replaced to guarantee future performance and watertightness. Report all such instances.
 - Use primers as appropriate and necessary in accordance with the manufacturer's recommendations.
 - Installation to accommodate without reduction in performance all movement to which it is exposed including those resulting from thermal expansion, moisture, structure, environmental conditions, etc.
 - When jointing polyethylene use a continuous mastic strip, appropriate tape and folded welts at upstands.

- Flexible sheet bitumen to be fixed using bitumen lap cement.
- Gas retardant bitumen to be fixed using fully bonded hot bitumen.
- Geocomposite drainage to be sealed with non-combustible fabric at all exposed edges.
- Vapour control layers to be installed to provide an unbroken and continuous barrier. Fix to warm side of thermal insulation material where required.
- DPC and cavity trays to:
 - Cover the full wall width including surface finishes.
 - Be fully sealed and laid on a bed of fresh pliable mortar.
 - Sealed laps to comprise adhesive, mastic or by torching.
 - Be installed with special care at any change of direction or level. Measures such as preformed cloaks and welding where appropriate are acceptable provided continuity of performance is maintained at all conditions and details.

700 Stone

1. Standards:

1.1. Comply with:

- BS 8298 - Natural stone cladding and lining.
- BS EN 1341 - Natural stone paving.
- BS EN 1468 - Rough slabs.
- BS EN 1469 - Slabs used for cladding.
- BS EN 1925 - Water absorption - Coefficient by capillary.
- BS EN 1926 - Uniaxial compressive strength.
- BS EN 1936 - Density and porosity.
- BS EN 12057 - Modular tiles.
- BS EN 12058 - Floor slabs.
- BS EN 12059 - Stonework dimensions.
- BS EN 12372 - Flexural strength - Concentrated loads.
- BS EN 12407 - Petrographic examination.
- BS EN 12370 - Salt crystallisation resistance.
- BS EN 12371 - Frost resistance.
- BS EN 12440 - Denomination of natural stone.
- BS EN 12524 - Water vapour permeability.
- BS EN 12670 - Terminology.
- BS EN 13161 - Flexural strength - Constant moment.
- BS EN 13755 - Water absorption - Atmospheric pressure.
- BS EN 14066 - Thermal shock and ageing resistance.
- BS EN 14157 - Abrasion resistance.
- PD CEN/TR 17024 - General guidance.

2. Materials:

2.1. Testing:

- All tests to be carried out or certified by an independent testing specialist/ laboratory.
- Test or demonstrate testing of a minimum of three slabs for each stone type.
- Check compliance with samples and technical data provided.
- Material to be certified and CE marked to demonstrate compliance with performance and strength requirements.

2.2. Sourcing:

- Identify quarry or supplier and facilitate inspection.
- Provide samples from identified potential sources.
- Confirm adequate quantities available from a single source.
- Confirm quality and performance compliance.
- Provide sufficient samples within colour and finish range to be selected.
- All material used in the Works to be within the agreed range of colour and texture.
- Confirm location of preparation, including cutting, finishing and packing.

2.3. Quality: Slabs to be:

- Visually acceptable within agreed range.
- Of sufficient strength.
- Free from imperfections, stains, marking, cracks, holes, chips, etc.
- Free from contaminants or harmful constituents.
- Grout to be visually acceptable and technically compatible.
- Sealer to be visually acceptable and technically compatible.

3. Workmanship

3.1.

- Install to line and level to provide a flat and horizontal/ vertical surface.
- Alignment of slabs to be precise with no lipping, inconsistent joints or change of level.
- Cuts to be straight and accurate.
- Edges to be straight and smooth with no imperfections.
- No surface marking or visual imperfections.
- Apply cured sealer coats as required to dry, clean and dust free surfaces.
- Sealer to be completely dry before application of further coats.
- Control areas to be sealed so as to maintain consistency of finish and appearance.
- Replace areas not accepted in terms of workmanship quality, finish or visual intent.
- Before polishing, clean and prepare the surfaces so that they can be treated immediately.
- Allow for visual inspection of material at all times.
- Replace any slabs deemed to be:
 - Damaged.
 - Of insufficient quality.
 - Stained.
 - Outside of the agreed sample range.
 - Unacceptable for failure to comply with the design intent.

800 Homogeneous Solid Surfaces

1. Standards: Comply with:

1.1.

- EN 101 - Surface hardness - Mohs index.
- ISO 4586 T10 - Dimensional stability @ 20°C.
- ASTM D638/ D638M - Tensile properties of plastics.
- BS EN ISO 178 - Flexural properties.
- BS EN ISO 438-2 - Thermosetting resins.
- BS EN ISO 527 - Tensile properties.
- BS EN ISO 1183 - Non cellular density plastics.
- BS EN ISO 4892-2 - Methods of laboratory light exposure - Xenon arc lamps.
- DIN 68861-4/ 6/ 7/ 8 - Finish surfaces.
 - Part 4 - Scratch resistance.

- Part 6 - Cigarette burn resistance.
 - Part 7 - Dry heat exposure behaviour.
 - Part 8 - Wet heat exposure behaviour.
2. Certification: Provide LGA Hygiene Certificate for each material.
 - 3.

900 Gaskets

1. Standards: Comply with:
 - 1.1.
 - BS 4255 - Rubber gaskets.
 - BS EN 12365-1 - Gasket classification/ performance.
2. Materials:
 - 2.1.
 - Provide certification from the manufacturer confirming that products are appropriate and suitable for their intended purpose.
 - Manufacture from suitable material of appropriate grade and hardness characteristics.
 - Accommodate maximum movement when fixed in position without any distortion or reduction in performance.
 - Provide required acoustic, air-tightness and weather tightness performance characteristics.
 - Heat seal butt joints to gasket joints where necessary.
 - Frame corners to be pre-formed and factory vulcanised in ladders.
 - Colour to be black unless agreed or instructed otherwise.
 - Extrusion to be designed to best suit the condition using extruded and moulded elements, all to comply with the visual intent.
 - Appear and perform as an unbroken and unjointed single element.
 - Maintain elasticity throughout Service Life of the product.
 - Be compatible with all substrates, interface materials and components.
 - Avoid contact with materials/ products which may cause staining.
 - Be resistant to attack from chemical, insect or any other form of attack.
 - Do not shrink, warp, distort, deteriorate or disfigure under any circumstance during Service Life.
 - Retain glazed elements under loading and use.

Ω End of Section

Z10

Purpose made joinery

To be read with preliminaries/ general conditions.

100 Standards

1. Comply with:
 - 1.1. BS 1186 - Timber and workmanship.
BS 1313 - Hardwood and softwood sizes and deviations.
BS 4978 - Softwood strength/ grading.
BS 5756 - Hardwood strength/ grading.
BS EN 204 - Thermoplastic wood adhesives classification.
BS EN 338 - Strength of structural timber.
BS EN 350 - Durability.
BS EN 942 - Timber used in joinery.
BS EN 1912 - Visual grades/ species/ classes structural timber.
BS EN 1995 - Timber structure design.
BS EN 13556 - Round/ sawn timber.
BS EN 13986 - Wood panels.
BS EN 14081 - Structural cross section strength grades.
BS EN 14220 - External windows/ doors/ frames.
BS EN 14221 - Internal windows/ doors/ frames.
BS EN 16737 - Tropical hardwood visual strength.

105 Timber

1. Suitability: Use only suitable dried, marked and milled wood.
2. Quality: Straight, defect free, knot free, crack free with no discolouration, insect holes or distortion.
3. Class: E1 - zero formaldehyde release.
4. Hardwood: Kiln dried, high grade, Class J2 with controlled moisture content of between 8% and 12%. Mill from quarter sawn stock.

110 Fabrication

1. Standard: To BS 1186-2.
2. Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
 - 2.1. Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
3. Joints: Tight and close fitting.
4. Assembled components: Rigid. Free from distortion.
5. Screws: Provide pilot holes.
 - 5.1. Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
 - 5.2. Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
6. Adhesives: Compatible with wood preservatives applied and end uses of timber.
7. Repairs: Replace and do not repair visible/ semi visible Class J2/ J5/ CSH timber.

120 Cross section dimensions of timber

1. General: Dimensions on Working Drawings are finished sizes.
2. Maximum permitted deviations from finished sizes
 - 2.1. Softwood sections: To BS EN 1313-1:

- 2.1.1.Clause 6 for sawn sections.
- 2.2. Hardwood sections: To BS EN 1313-2:
 - 2.2.1.Clause 6 for sawn sections.
 - 2.2.2.Clause NA.3 for further processed sections.

130 Preservative treated wood

1. Cutting and machining: Completed as far as possible before treatment.
2. Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
3. Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.
4. General:
 - 4.1. Apply before cutting, notching, concealing, ploughing, sawing, planning or processing.
 - 4.2. Retreat areas again after machining, cutting, notching, concealing, ploughing, sawing, planning or processing.
 - 4.3. Pay special attention to cut edges, including drilled holes.
 - 4.4. Apply a minimum of two coats.

140 Moisture content

1. Wood and wood based products: Maintained within range specified for the component during manufacture and storage.
2. Control: Maintain within an acceptable range during all stages of manufacture and installation to maintain stability and minimise movement/ expansion/ contraction/ shrinkage.
3. Temperature/ humidity: Maintain consistent and acceptable temperature/ humidity conditions through all stages of delivery, manufacture, storage and installation. Take regular meter readings and report.

210 Laminated plastics veneered boards/ panels

1. Fabrication: To British Laminated Plastics Fabricators Association Ltd (BLF) fabricating standards.
2. Balancing veneer: From decorative veneer manufacturer and of similar composition. Applied to reverse side of core material.
3. Finished components: Free from defects, including bow, twist, scratches, chipping, cracks, pimpling, indentations, glue marks, staining and variations in colour and pattern.
4. Joints visible in completed work: Tight butted, true and flush.
5. Preparation: Suitable and fully prepared surfaces to receive fully bonded veneer.

220 Wood veneered boards/ panels

1. Core material and veneers: Conditioned before bonding.
2. Setting out: Veneer features and grain pattern aligned regularly and symmetrically unless instructed otherwise.
3. Balancing veneer: Applied to reverse side of core material.
 - 3.1. Moisture and temperature movement characteristics: As facing veneer.
4. Veneer edges: Tight butted and flush, with no gaps.
5. Tolerance of veneer thickness (maximum): ± 0.5 mm.
6. Finished components: Free from defects, including bow, twist, scratches, chipping, splits, blebs, indentations, glue marks and staining.

7. **Surface finish:** Fine, smooth, free from sanding marks, no visible defects (including telegraphing). Carefully sand where agreed in advance without damaging or changing appearance.
8. **Veneer Selection requirements:** Must include grain orientation requirements:. Where not indicated on the Design Drawings, obtain confirmation of grain orientation from the Architect.

250 Finishing

1. **Surfaces:** Smooth, even and suitable to receive finishes.
 - 1.1. **Arrises:** Eased unless shown otherwise on Working Drawings.
2. **End grain in external components:** Sealed with primer or sealer as section M60 and allowed to dry before assembly.
3. **Final treatment:** To be smooth, flat and colour consistent.

Ω End of Section

Z11

Purpose made metalwork

To be read with preliminaries/ general conditions.

310 Materials generally

1. Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
2. Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
3. Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.
4. Design:: To BS EN 1993.
5. Quality/ workmanship:
 - 5.1. Vent holes in hollow sections to be completely sealed.
 - 5.2. All permanent connections to be fitted accurately and neatly.
 - 5.3. No distortion is acceptable, including that caused by welding.
 - 5.4. All welds to be shown on the Working Drawings.
 - 5.5. Visible lines/ depressions on external surfaces resulting from internal welds to hollow sections are not acceptable.
6. Surface preparation::
7. Remove all traces of rust, scale and surface contamination.
8. Surface finish quality to be Sa 2.5 as BS EN ISO 8501. (Note withdrawn but not yet replaced).
9. Do not Acid Pickle to remove contaminants.
10. Lettering:: Raised lettering, hard stamping and the like will not be acceptable where visible in the finished Works.

320 Steel long and flat products

1. Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 10025-1.
2. Fine grain steels, including special steels: To BS EN 10025-3 and -4.
3. Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.

330 Steel plate, sheet and strip

1. Plates and wide flats, high yield strength steel: To BS EN 10025-6.

340 Hot rolled steel plate, sheet and strip

1. Flat products, high yield strength for cold forming: To BS EN 10149-1, -2 and -3.
2. Carbon steel sheet and strip for cold forming: To BS EN 10111.
3. Narrow strip, formable steel and steel for general engineering purposes: To BS 1449-1.8 and BS 1449-1.14.

350 Cold rolled steel plate, sheet and strip

1. Steel sections: To BS EN 10162.
2. Flat products, high yield strength micro-alloyed steels for cold forming: To BS EN 10268.
3. Carbon steel flat products for cold forming: To BS EN 10130 and BS EN 10131.
4. Uncoated carbon steel narrow strip for cold forming: To BS EN 10139 and BS EN 10140.
5. Narrow strip steel for general engineering purposes: To BS EN 10132-1, -2, and -3.

6. Carbon steel flat products for vitreous enamelling: To BS EN 10209.

360 Coated steel flat products

1. Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10346 and BS EN 10143.
2. Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10346.
3. Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10346.
4. Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10346.
5. Organic coated flat products: To BS EN 10169.

370 Steel structural hollow sections (SHS)

1. Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
2. Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
3. Weather resistant steels, hot finished: To BS 7668.

380 Other steel sections

1. Equal flange tees: To BS EN 10055.
2. Equal and unequal angles: To BS EN 10056-1 and -2.
3. Wire, carbon steel for general engineering purposes: To BS 1052.
4. Wire and wire products, general: To BS EN 10218-2.
5. Tubes
 - 5.1. Seamless circular: To BS EN 10297-1.
 - 5.2. Seamless cold drawn: To BS EN 10305-1.
 - 5.3. Welded and cold sized square and rectangular: To BS EN 10305-5.
 - 5.4. Welded circular: To BS EN 10296-1.
 - 5.5. Welded cold drawn: To BS EN 10305-2.
 - 5.6. Welded cold sized: To BS EN 10305-3.

400 Stainless steel products

1. Chemical composition and physical properties: To BS EN 10088-1.
2. Sheet, strip and plate: To BS EN 10088-2.
3. Semi-finished products bars, rods and sections: To BS EN 10088-3.
4. Wire: To BS EN 1088-3.
5. Tubes
 - 5.1. Welded circular: To BS EN 10296-2.
 - 5.2. Seamless circular: To BS EN 10297-2.
6. Fasteners:
 - 6.1. BS EN ISO 3506-1 and 2 - fixings, screws, bolts, nuts etc.
 - 6.2. BS EN 10263-5 - wire and cold forged.
7. Tolerances: BS EN 10095.
BS EN 10029.
BS EN 10048.
BS EN 10051.
BS EN 9445-1 and 2.
8. Electrodes: BS EN ISO 3581 - Arc welding.
9. Forgings: BS EN 10250 Part 4.

10. **Masonry wall ties:** BS EN 845-1.
11. **Castings:** BS EN 10283.
BS 3146-2.
12. **Surface finish:**
 - 12.1. Avoid cracking, tensile stress, corrosion, residual stress, etc.
 - 12.2. Utilise lost wax manufacturing process or acceptable equivalent, avoiding exposed feeder portland die lines.
 - 12.3. **Acceptable finishing processes to include at least two of the following::**
 - 12.3.1. Bead blasting.
 - 12.3.2. Electropolishing.
 - 12.3.3. Blasting.
 - 12.3.4. Acid pickling.
 - 12.4. **Treatment::**
 - 12.4.1. Brushed 240 grit at internal locations.
 - 12.4.2. Brushed 2K with $\square$ 0.5 microns Ra at external locations.
 - 12.4.3. Do not use aluminium oxide abrasives.
13. **Surface Roughness::** SCRATA A2.
14. **Material grades (minimum): :**
 - 14.1. Grade 1.4401 - Use in visible external areas (including fixings).
 - 14.2. Grade 1.4301 - Use in non-visible internal areas.
 - 14.3. Grade 1.4408 - Corrosion resistant castings.
15. **Cleaning::** Comply with BSSA (British Stainless Steel Association) recommendations. In particular those relating to:
 - 15.1. Characteristic resistivity.
 - 15.2. Preventing ferritic contamination.
16. **Terne coating::**
 - 16.1. To BS EN 502.
 - 16.2. To BS EN 508-3.
 - 16.3. Continuously hot dip in lead tin alloy or a continuous coating of tin using the electrodeposition method to a uniform finish.
17. **Weathering steel:**
 - 17.1. **Comply with:** To ASTM A242/ 242M.
To ASTM A588/ A588M.
To ASTM A606/ A606M.
To BS EN 10025.
 - 17.2. **Achieve:**
 - 17.2.1. Low alloy.
 - 17.2.2. High strength.
 - 17.2.3. Resistance to atmospheric corrosion.
 - 17.3. Blast clean (or pickle) surfaces to remove mill scale.
 - 17.4. Avoid contamination from grease, oil or other shop marking process.
 - 17.5. Provide oxide finish to components, fixings, welds and perforations.

410 Aluminium alloy products

1. **Designations**
 - 1.1. **Designation system, chemical composition and forms:** To BS EN 573-1, -2, -3 and -5.

- 1.2. Temper designations: To BS EN 515.
2. Sheet, strip and plate: To BS EN 485-1 to -4.
3. Cold drawn rods, bars and tubes: To BS EN 754-1 and -2.
4. Extruded rods, bars, tubes and profiles: To BS EN 755-1 and -2.
5. Drawn wire: To BS EN 1301-1, -2 and -3.
6. Rivet, bolt and screw stock: To BS 1473.
7. Structural sections: To BS 1161.
8. Alloy profiles: To BS EN 12020-1 and 2.
9. Structural design: To BS EN 1999/ PD 6702-1.
10. Sheet thickness: 3mm unless specified or agreed otherwise.
11. Alloys: Use relevant grade with profiles EN AW-6060 and/ or EN AW-6063. Use J57S for flat panels to be anodised.
12. Die drawings: Submit as Working Drawings.
13. Protection: Low tack adhesive film.
14. Grain in panels: To run in same direction.
15. Bracketry/ cleats, etc: Use alloy of suitable grade to visually match attached and surrounding panels and frames.
16. Unacceptable items: No warping, sagging, dimpling, bowing, pillowing, rippling, oil canning, visible irregularities/ discolouration, lipping/ irregular transitions at joints, etc., or any other visible irregularities.

420 Copper alloy products

1. Sheet, strip, plate and circles for general purposes: To BS EN 1652.
2. Sheet and strip for building purposes: To BS EN 1172.
3. Rods: To BS EN 12163.
4. Profiles and rectangular bars: To BS EN 12167.
5. Wire: To BS EN 12166.
6. Tubes: To BS EN 12449.
7. Springs/ connectors: To BS EN 1654.
8. Forging stock (wrought/ unwrought): To BS EN 12165.
9. Forgings: To BS EN 12420.
10. Copper sheet roofs/ wall coverings: To CP 143 Part 12.
11. Trade Association: To recommendations of CDA (Copper Development Association).
12. Appearance: Colour, appearance and texture consistent with naturally aged copper composition. Visible pinholes, inclusions, laminations, etc. are not acceptable.

425 Zinc products

1. Standards:
 - 1.1. BS EN 988 - Alloys for rolled flat products.
 - 1.2. BS EN 501 - Zinc sheet for roofs.
 - 1.3. CP 143 Part 1 - Sheet roof and wall coverings.
 - 1.4. Recommendations of ZIC (Zinc Information Centre).
2. Quality: Pinholes, laminations and inclusions are not acceptable.

Fabrication

515 Fabrication generally

1. Contact between dissimilar metals in components: Avoid.
2. Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
 - 2.1. Moving parts: Free moving without binding.
3. Corner junctions of identical sections: Mitre.
4. Aluminium/ metal sheets: To be ridged fully welded/ sealed, tempered, and visually flat (1:1000 over 3000mm in all directions), without distortion.
5. Corners: Corners to comprise purpose made components and not cut unless shown otherwise on the Working Drawings. Colour and finish to match adjoining elements.
6. Protection: Provide adequate protection at all times.
7. Insulation: Provide, where necessary, to negate drumming and other noise.
8. Joints: To be concealed, continuous and sealed.
9. Ends: Aluminium ends to be mill finished. Metal ends to be hot dipped galvanised.

520 Cold formed work

1. Profiles: Accurate, with straight arrises.

525 Adhesive bonding

1. Preparation of surfaces of metals to receive adhesives
 - 1.1. Degrease.
 - 1.2. Abrade mechanically or chemically etch.
 - 1.3. Prime: To suit adhesive.
2. Adhesive bond: Form under pressure.

527 Welding

1. Description: Continuous and suitable.
2. Welding procedures
 - 2.1. Method and standard: Full penetration welds, flush ground where visible. Use jigs/ clamps, as necessary, to ensure a precise fit.
 - 2.2. Welding Procedure Specification (WPS): Provide written procedure statement.
3. Preparation
 - 3.1. Joint preparation: Clean thoroughly.
 - 3.2. Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter, residue build up and splatter.
4. Jointing
 - 4.1. Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
 - 4.2. Dissimilar metals: Use appropriate material and techniques.
 - 4.3. Strength requirements: Welds to achieve design loads.
 - 4.4. Heat straightening: Only when agreed in advance.
 - 4.5. Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
 - 4.6. Tack welds: Use only for temporary attachment.
 - 4.7. Jigs: Provide to support and restrain members during welding.
 - 4.8. Filler plates: Obtain approval.

- 4.9. **Lap joints:** Minimum 5 x metal thickness or 25 mm, whichever is greater.
- 4.10. **Weld terminations:** Clean and sound.
- 4.11. **Workmanship:** Visible holes, inclusions, ridges, cracks, undercuts or porosity are not acceptable.
- 4.12. **Stainless steel welds:** :
 - 4.12.1. Grind to leave smooth and seamless surface.
 - 4.12.2. Remove heat tints using light abrasives, wire brushing, pickling paste or other similar and acceptable method.
 - 4.12.3. Comply with BS 499 and BS EN 101.
 - 4.12.4. Minimise distortion during welding.
 - 4.12.5. All welds, methods and consumables to achieve, as a minimum, the same level of corrosion resistance as the base material.

530 Stainless steel fabrication

- 1. **Guillotining or punching:** Do not use for metal thicknesses greater than 10 mm.
- 2. **Thermal cutting**
 - 2.1. **Carbonation in the heat affected zone:** Remove, after cutting.
- 3. **Bending**
 - 3.1. **Plates or bars:** Cold bending radius not less than material thickness.
 - 3.2. **Tubes:** Cold bending radius not less than 2 x tube diameter.
- 4. **Welding:** In addition to general welding requirements:
 - 4.1. Protect adjacent surfaces from weld spatter.
 - 4.2. Pickle all welds before post fabrication treatments.
- 5. **Protection:** Provide protection to fabricated components during transit and on site.
- 6. **Corrosion:** Not acceptable.

555 Brazing

- 1. **Standard:** To BS EN 14324.
- 2. **Testing**
 - 2.1. **Destructive testing:** To BS EN 12797.
 - 2.2. **Nondestructive testing:** To BS EN 12799.

620 Workmanship general

- 1. **Standards:**
 - 1.1. To BS EN 1011-1 and 2 - Metal arc welding.
 - 1.2. To BS EN ISO 15614-1 - Manual inert gas tungsten arc welding.
 - 1.3. To BS EN 14324 - Brazing.
 - 1.4. To EN ISO 17672 - Brazing filler materials.
 - 1.5. To BS EN ISO 9606 - Personnel qualification/ testing.
 - 1.6. To the NFRC (National Federation of Roofing Contractors) Good Practice Guide for profiled sheet metal roofing and cladding.
 - 1.7. To MCRMA (Metal Cladding and Roofing Manufacturers Association) Design Guide for profiled metal roofing and pressed metal components.
- 2. **Dissimilar metals:**
 - 2.1. Keep apart where moisture is present or likely to occur.
 - 2.2. Prevent bimetallic corrosion between dissimilar materials.

- 2.3. Retain connectivity to lightning protection system as necessary.
3. Coatings:
 - 3.1. Apply post fabrication and drilling.
 - 3.2. Thoroughly clean to remove all contaminants and blemishes prior to application.
 - 3.3. Repair defects prior to application.
 - 3.4. Apply only to smooth and thoroughly prepared surfaces ready to receive coating.
 - 3.5. Final finish to be smooth, blemish free and acceptable.
4. Finished components: Remain rigid and free from cracking, imprints, distortion, burrs, rolling marks, sharp arrises.

Finishing

710 Finishing welded and brazed joints visible in complete work

1. Standard: To BS EN ISO 8501-3.
 - 1.1. Preparation grade: To be proposed by Contractor and agreed.
2. Butt joints: Smooth, and flush with adjacent surfaces.
3. Fillet joints: Neat.
4. Grinding: Grind smooth where indicated on drawings.

745 Preparation for application of coatings

1. General: Complete fabrication, and drill fixing holes before applying coatings.
2. Paint, grease, flux, rust, burrs and sharp arrises: Remove.

750 Liquid organic coating for aluminium alloy components

1. Standard: To BS 4842.

760 Zinc and cadmium plating of iron and steel surfaces

1. Zinc plating: To BS EN ISO 2081.
2. Cadmium plating: To BS EN ISO 2082.

770 Chromium plating

1. Standard: To BS EN ISO 1456.

780 Galvanizing

1. Standard: To BS EN ISO 1461.
2. Preparation
 - 2.1. Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
 - 2.2. Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
 - 2.3. Welding slag: Remove.
 - 2.4. Component cleaning: To BS EN ISO 8501-3.
 - 2.5. Grade: To be proposed by Contractor and agreed.

790 Vitreous enamelling

1. Standard: To BS EN ISO 28722.
2. Substrate metal: Steel to BS EN 10209.

Completion

910 Documentation

1. Submit
 - 1.1. Manufacturer's maintenance instructions.
 - 1.2. Guarantees, warranties, test certificates, record schedules and log books.

920 Completion

1. Protection: Remove.
2. Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

Ω End of Section

Z12

Preservative/ flame-retardant treatment

To be read with preliminaries/ general conditions.

105 Standards

1. BS 8417 - Wood preservation.
2. BS EN 335 - Durability.
3. BS EN 351 - Durability.
4. BS EN 599 - Efficacy determined by biological testing.

110 Treatment application

1. **Timing:** After cutting and machining timber, and before assembling components.
2. **Processor:** Licensed by manufacturer of specified treatment solution.
 - 2.1. **Operatives:** Fully trained and licensed.
3. **Certification:** For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 Commodity specifications

1. **Standard:** In accordance with the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

130 Preservative treatment solution strengths/ treatment cycles

1. **General:** Select to achieve specified service life and to suit treatability of specified wood species.

140 Copper-organic preservative treatment

1. **Solution**
 - 1.1. **Manufacturer:** To be as stated in the relevant work section or an acceptable firm proposed by the Contractor.
 - 1.1.1. **Product reference:** To be as stated in the relevant work section or an acceptable product proposed by the Contractor.
 - 1.2. **Colour:** To be as stated in the relevant work section as per samples provided and accepted.
 - 1.3. **Application:** High-pressure impregnation.
2. **Moisture content of wood**
 - 2.1. **At time of treatment:** Not more than 28%.
 - 2.2. **After treatment:** Timber to be surface dry before using.

150 Water-based organic preservative treatment

1. **Solution**
 - 1.1. **Manufacturer:** To be as stated in the relevant Work Section or an acceptable firm proposed by the Contractor.
 - 1.1.1. **Product reference:** To be as stated in the relevant Work Section or an acceptable product proposed by the Contractor.
 - 1.2. **Application:** High-pressure impregnation.
2. **Moisture content of wood**
 - 2.1. **At time of treatment:** Not more than 28%.
 - 2.2. **After treatment:** Timber to be surface dry before use.

160 Organic solvent preservative treatment

1. Solution
 - 1.1. **Manufacturer:** To be as stated in the relevant Work Section or an acceptable firm proposed by the Contractor.
 - 1.1.1. **Product reference:** To be as stated in the relevant Work Section or an acceptable product proposed by the Contractor, being based on copper and organic biocides.
 - 1.2. **Application:** Double vacuum + low-pressure impregnation, or immersion.
2. **Moisture content of wood**
 - 2.1. **At time of treatment:** As specified for the timber/ component at time of fixing.
 - 2.2. **After treatment:** Timber to be surface dry before use.

165 Water-based microemulsion preservative treatment

1. Solution
 - 1.1. **Manufacturer:** To be as stated in the relevant Work Section or an acceptable firm proposed by the Contractor.
 - 1.1.1. **Product reference:** To be as stated in the relevant Work Section or an acceptable product proposed by the Contractor.
 - 1.2. **Application:** Double vacuum + low-pressure impregnation.
2. **Moisture content of wood**
 - 2.1. **At time of treatment:** As specified for the timber/ component at time of fixing.
 - 2.2. **After treatment:** Timber to be surface dry before use.

167 Boron compound preservative treatment

1. Solution
 - 1.1. **Manufacturer:** To be as stated in the relevant work section or an acceptable firm proposed by the Contractor.
 - 1.1.1. **Product reference:** To be as stated in the relevant work section or an acceptable product proposed by the Contractor.
 - 1.2. **Application:** High-pressure impregnation.
2. **Moisture content of wood**
 - 2.1. **At time of treatment:** Not more than 28%.
 - 2.2. **After treatment:** Timber to be surface dry before using.

170 Leach resistant fire retardant treatment

1. Solution
 - 1.1. **Manufacturer:** To be as stated in the relevant work section or an acceptable firm proposed by the Contractor.
 - 1.1.1. **Product reference:** To be as stated in the relevant work section or an acceptable product proposed by the Contractor.
 - 1.2. **Application:** Vacuum/ hydraulic and low pressure.
2. **Moisture content of wood**
 - 2.1. **At time of treatment:** 50mm thick timber not more than 22%.
 - 2.1.1. 50mm thick timber not more than 22%.
 - 2.1.2. Thicker timber not more than 25%.
 - 2.2. **After treatment:** Timber to be surface dry before using

210 Flame-retardant treatment

1. **Standard:** In accordance with the Wood Protection Association (WPA) publication 'Industrial flame retardant treatment of wood and wood-based panel products'.
2. **Solution type:**
 - 2.1. **Manufacturer:** To be as stated in the relevant Work Section or an acceptable firm proposed by the Contractor
 - 2.1.1. **Product reference:** To be as stated in the relevant Work Section or an acceptable product proposed by the Contractor.
 - 2.2. **Application:** Vacuum +-pressure impregnation.
3. **Moisture content of wood**
 - 3.1. **At time of treatment:**
 - 3.1.1. 50mm thick timber not more than 22%.
 - 3.1.2. Thicker timber not more than 25%.
 - 3.2. **After treatment:** Timber to be redried slowly at temperatures not exceeding 60°C to minimize distortion and degradation.

610 Making good to preservative treatment on site

1. **Preservative solution:** Compatible with off-site treatment.
2. **Application:** In accordance with preservative manufacturer's recommendations.

620 Making good to flame-retardant treatment on site

1. **Flame-retardant:** Compatible with off-site treatment.
2. **Application:** In accordance with flame-retardant manufacturer's recommendations.

Ω End of Section

Z20

Fixings and adhesives

Products

310 Fasteners generally

1. **Materials:** To have:
 - 1.1. Bimetallic corrosion resistance appropriate to items being fixed.
 - 1.2. Atmospheric corrosion resistance appropriate to fixing location.
 - 1.3. Suitable strength and properties to safely accommodate attachments and movements.
 - 1.4. To be appropriate, secure and firmly fixed in place.
 - 1.5. Bowing, distortion, vibration and other movement is not acceptable.
 - 1.6. Unless shown otherwise on the Working Drawings, fixings are not to be visible.
 - 1.7. Fixings to aluminium frames and cappings to match material to which they are attached.
 - 1.8. Removable items to have invisible secret fixings unless shown otherwise on the Working Drawings.
 - 1.9. Fixings to comply with all relevant Standards and Codes of Practice, being suitable for their intended purpose in terms of strength and type.
 - 1.10. Maximise use of Allen headed bolts on proprietary systems.
 - 1.11. Fixing systems to be complete and include all accessories necessary such as bearings, brackets, flashings, closures etc.
 - 1.12. Galvanise steel subframe assemblies.
 - 1.13. When fixing to concrete utilise cast-in channels as appropriate.
 - 1.14. When fixing to structural steel use direct fixings as appropriate.
2. **Appearance:** Submit samples.
 - 2.1. To PD 6484 - Durability and corrosion resistance at bi metallic contact.
 - 2.2. BS 5080-1 and 2 - Testing.
 - 2.3. BS 6037-1 - Inspection of structural fixings.
 - 2.4. BS 4190 - Steel bolts, screws and nuts.
 - 2.5. BS 1473 - Aluminium rivets, bolts and screws.
 - 2.6. BS 4078-2 - Power actuated fixings.
 - 2.7. BS EN ISO 4016 - Steel bolts, screws and nuts.
 - 2.8. BS EN ISO 4034 - Steel bolts, screws and nuts.
 - 2.9. BS EN 20898-7 - Mechanical properties.
 - 2.10. BS EN ISO 898-1, 2 and 5 - Mechanical properties.
 - 2.11. BS EN ISO 3506 - Corrosion resistant stainless steel fasteners.

320 Packings

1. **Materials:** Noncompressible, corrosion proof.
2. **Area of packings:** Sufficient to transfer loads.

330 Nailed timber fasteners

1. **Nails**
 - 1.1. **Steel:** To BS 1202-1 or BS EN 10230-1.
 - 1.2. **Copper:** To BS EN 1202-2.
 - 1.3. **Aluminium:** To BS 1202-3.

340 Masonry fixings

1. Light duty: Plugs and screws.
2. Heavy duty: Expansion anchors or chemical anchors.

350 Plugs

1. Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.
2. Quality:: Locate plugs accurately in appropriate size holes.

360 Anchors

1. Types
 - 1.1. Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
 - 1.2. Adhesive or chemical
 - 1.2.1. For use in substrate where expansion of anchor would fracture substrate.
 - 1.2.2. For use in irregular substrate where expansion anchors cannot transfer load on anchor.
 - 1.3. Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.

370 Wood screws

1. Type
 - 1.1. Wood screws (traditional pattern).
 - 1.1.1. Standard: To BS 1210.
 - 1.2. Wood screws.
 - 1.2.1. Pattern: Parallel, fully threaded shank or twin thread types.
2. Washers and screw cups: Where required are to be of same material as screw.

380 Miscellaneous screws

1. Type: To suit the fixing requirement of the components and substrate.
 - 1.1. Pattern: Self-tapping, metallic drive screws, or power driven screws.
2. Washers and screw cups: Where required to be of same material as screw.

390 Adhesives

1. Standards
 - 1.1. Hot-setting phenolic and aminoplastic: To BS 1203.
 - 1.2. Thermosetting wood adhesives: To BS EN 12765.
 - 1.3. Thermoplastic adhesives: To BS EN 204.
 - 1.4. Non-structural wood adhesives:: To BS EN 205.
 - 1.5. Loadbearing timber structure adhesive, phenolic and aminoplastic:: To BS EN 301.
 - 1.6. Test methods for loadbearing timber structure adhesives:: To BS EN 302.
 - 1.7. Timber structure design:: BS EN 1995.
 - 1.8. Animal glues:: BS EN ISO 9665.
2. Compatibility:: Compatible with VOC requirements, finished surfaces and preservative/ fire retardant treatments.

410 Powder actuated fixing systems

1. Types of fastener, accessories and consumables: As recommended by tool manufacturer.

Execution

610 Fixing generally

1. **Integrity of supported components:** Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.
2. **Components, substrates, fixings and fasteners of dissimilar metals:** Isolate with washers/ sleeves to avoid bimetallic corrosion.
3. **Fixing to structure:** Record all primary fixings to include size, type, spacing, embedment, precise location, edge dimensions, shimming, isolation techniques for dissimilar metals, locking washers, etc. and test results.
4. **Bolts:** After tightening, leave a minimum of one clear thread above each nut.
5. **Appearance:** Fixings to be in straight lines at regular centres.
6. **Compliance:** To Approved Document Part A, Section 2 of the Building Regulations.
7. **Tools:** Use purpose made tooling systems where appropriate and necessary to ensure consistent and adequate depths and perpendicular installation.
8. **Screws:** Countersunk screw heads visible in the finished works require countersinks to be machined in order to receive them.

620 Fixing through finishes

1. **Penetration of fasteners and plugs into substrate:** To achieve a secure fixing.

630 Fixing packings

1. **Function:** To take up tolerances and prevent distortion of materials and components.
2. **Limits:** Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
3. **Locations:** Not within zones to be filled with sealant.
4. **Quality:**
 - 4.1. Use only rot-proof, non-corrodible and non-compressible materials next to fixing points.
 - 4.2. Packings not to be visible.
 - 4.3. In floors, allow 10mm gap at each edge, parallel to the lie of the boards.

640 Fixing cramps

1. **Cramp positions:** Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
2. **Fasteners:** Fix cramps to frames with screws of same material as cramps.
3. **Fixings in masonry work:** Fully bed in mortar.

650 Nailed timber fixing

1. **Penetration:** Drive fully in without splitting or crushing timber.
2. **Surfaces visible in completed work:** Punch nail heads below wrot surfaces.
3. **Nailed timber joints:** Two nails per joint (minimum), opposed skew driven.

660 Screw fixing

1. **Finished level of countersunk screw heads**
 - 1.1. **Exposed:** Flush with timber surface.
 - 1.2. **Concealed (holes filled or stopped):** Sink minimum 2 mm below surface.
 - 1.3. **Hardwood:** Drill pilot holes to half the diameter of the shank when using 8 gauge (or more) screws.

670 Pelleted countersunk screw fixing

1. Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
2. Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
3. Finished level of pellets: Flush with surface.

680 Plugged countersunk screw fixing

1. Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
2. Plugs: Glue in to full depth of hole.
3. Finished level of plugs: Projecting above surface.

690 Using powder actuated fixing systems

1. Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
2. Operatives: Trained and certified as competent by tool manufacturer.
3. Primer:: Apply zinc rich primer to external fastener heads or locations subject to possible dampness.
4. Isolation:: Isolate stainless steel components from external cartridge fired nails using top hat section plastic washers.

700 Applying adhesives

1. Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.
2. Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.
3. Finished adhesive joints: Fully bonded. Free of surplus adhesive.
4. Conditions:: Do not use during unsuitable climatic/ environmental conditions, after recommended "use by" date/ open pot times.
5. Application::
 - 5.1. Use the appropriate primer which is left to dry before adhesive is applied.
 - 5.2. Use recommended spreaders/ applicators/ tools to ensure adequate and even coverage.
 - 5.3. Remove surplus adhesive before it dries.

Ω End of Section

Z30 General Metalwork Finishes

To be read with preliminaries/ general conditions.

100 Standards

1. Comply with:
 - BS 1344-7/ 16/ 21 and 22 -Testing vitreous enamel finishes.
 - BS 4842 - Liquid organic coatings.
 - BS 6001-1 - Acceptable Quality Level 2 - Minimum 1% for every finish and colour required.
 - BS 6001-2 - Limited Quality (LQ) to be (Pa=10%)+5% for each element identified as being damaged or without a test certificate.
 - BE EN ISO 1456 - Chromium plating.
 - BS EN 1461 - Galvanising.
 - BS EN 10027-1 - Steel designation to grade DC 03 ED to receive vitreous enamel finish.
 - BS EN 10209 - Cold rolled low carbon steel receiving vitreous enamel finish.
 - BS EN ISO 2063 - Thermal spraying.
 - BS EN ISO 2081 - Electroplated zinc coatings to iron and steel.
 - BS EN ISO 2082 - Electroplated cadmium coatings to iron and steel.
 - BS EN ISO 2746 - Vitreous/ porcelain enamel finishes.
 - BS EN ISO 4534 - Fusion flow test.
 - BS EN ISO 6370-1 and 2 - Abrasion resistance.
 - BS EN ISO 8289 - Defect detection test at independent facility.
 - BS EN ISO 8501-1 - Surface preparation to Sa 2.5.
 - BS EN ISO 8502-1 and 2 - Blast cleaning (applications ≥ 86 microns).
 - BS EN ISO 8503 - Blast cleaning (applications ≥ 86 microns).
 - BS EN ISO 12944-2 - Corrosion protection (paint) to steel structures.
 - BS EN ISO 14713 - Zinc coatings.
 - BS EN ISO 17834 - Spray coating thicknesses.
 - BS EN ISO 28706 - Achieve Class A classification for chemical corrosion resistance in vitreous enamel finishes.
 - BS EN ISO 28722 - Vitreous and enamel coatings.
 - BS EN ISO 28764 - Testing enamels on steel sheet, aluminium and cast iron.
2. Other standards:
 - Zinc Information Centre recommendations for zinc metal and galvanising applications (sprayed).
 - PEI:S-1001 - 60 microns local thickness minimum/ 500 microns local thickness maximum.

302 Preparation/ quality

1. Surfaces to receive treatment to be:
 - 1.1. Bare metal.
 - 1.2. Clean and free from any existing surface finish.
 - 1.3. Smooth and regular.
 - 1.4. Uncontaminated.
 - 1.5. Consistent in terms of colour and texture.
 - 1.6. Uniform.
 - 1.7. Unblemished and undistorted.

- 1.8. Free of scratches, dents or other imperfections.
2. Finished surfaces to be:
 - 2.1. Of acceptable quality and finish.
 - 2.2. Colour and texture consistent/ uniform.
 - 2.3. Resistant to fading, prevailing environmental conditions.
 - 2.4. Stable.
 - 2.5. Unaffected by UV light.
 - 2.6. Free of surface imperfection.
3. Allow for metallics, including RAL 9006 and RAL 9007. 30% gloss. Allow for bespoke colour matching to samples held at the Architect's office.

305 Galvanised Finishes

1. Workmanship/ Quality:
 - 1.1. Evenly applied to an agreed, uniform and appropriate thickness to achieve the design intent and visual requirements.
 - 1.2. Smooth, uniform and consistent with no edges, ridges, burrs and the like.
 - 1.3. Clean with no staining or visible drip marks.
 - 1.4. Fill pinholes prior to application.
 - 1.5. Confirm suitability of steel to be coated prior to galvanising, including suitability for acid pickling in diluted hydrochloric acid and passivated if required.
 - 1.6. Single dip application only.
 - 1.7. Do not touch up and repair any coated surface without prior written agreement.
 - 1.8. Do not use Galvafrond or any paint applied finish.
 - 1.9. Minimise distortion and keep within visual tolerances that are acceptable.

306 Vitreous enamel finishes

1. Base material:
 - 1.1. To be decarbonised.
 - 1.2. Maximum 0.006% carbon content allowable unless stabilised by addition of appropriate amount of titanium. All to be agreed in advance.
 - 1.3. Internal stresses resulting from cold rolling of steel are not acceptable.
 - 1.4. Corrosion free.
 - 1.5. Clause 302 above applies as relevant.
2.
 - 2.1. Colour, texture and finish to be consistent and acceptable.
 - 2.2. Variance of gloss levels to remain within seven units of that agreed.
 - 2.3. Mirroring is not acceptable.
3. Quality/ workmanship
 - 3.1. All surfaces to be fully coated.
 - 3.2. Welding material to be consistent and ground smooth at all locations including corners and whirls.
 - 3.3. Maintain full coating/ testing records on site prior to installation for checking when requested.

Ω End of Section



Specification created using NBS Chorus