Manchester Life Plot 3_Loom

TITLE **SPECIFICATION**

NO. **FCB-1777-SPEC-WS4-001**

ML1-LOOM-RIBA4-FCB-SP-00-00-A-1777-001

REV.			
	First Issue	14.08.2015	Issue for preparation of BQ's
	Second Issue	28.08.2015	Building Regulations Application
	Third Issue	15.09.2015	Second Issue for Preparation of BQ's. Refer to contact sheet for ammended clauses.
	Fourth Issue	18.09.2015	Tender Issue

NOTES

This document is to be read in conjunction with all other Architect's and Consultants' drawings and specifications

The Architect is to be notified immediately if any discrepancies are found, either within this document or when read against other drawings and/or specifications including that of the other Consultants.

MANCHESTER LIFE
RESTRICTED
Not to be copied or distributed without written permission of MLDC

Murrays Mills Specification

TENDER DOCUMENT

18 September 2015

This document includes:

Code	Section	Revision	Dated
C10	Site survey	-	12 Aug 2015
C20	Dismantle / Demolish / Disassemble	-	13 Aug 2015
C40	Cleaning masonry/ concrete	-	13 Aug 2015
C41	Repairing/ Renovating/ Conserving masonry	-	13 Aug 2015
C90	Repairing/ Renovating/ Conserving Historic Metalwork	-	13 Aug 2015
E20	Formwork for in situ concrete	-	10 Sep 2015
F10	Brick/ block walling	-	13 Aug 2015
F31	Precast concrete sills/ lintels/ copings/ features	-	14 Aug 2015
G12	Isolated structural metal members	-	5 Aug 2015
G20	Carpentry/ timber framing/ first fixing	-	13 Aug 2015
H11	Curtain walling	-	18 Aug 2015
H62	Natural slating	-	13 Aug 2015
H71	Lead sheet coverings/ flashings	-	13 Aug 2015
H74	Zinc strip/ sheet coverings/ flashings	-	13 Aug 2015
H92	Rainscreen cladding	-	13 Aug 2015
J40	Flexible sheet waterproofing/ damp proofing	-	7 Sep 2015
K10	Plasterboard dry linings/ partitions/ ceilings	-	11 Sep 2015
K11	Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings	A	18 Sep 2015
K20	Timber board flooring/ sarking/ linings/ casings	-	13 Aug 2015
L10	Windows/ Rooflights/ Screens/ Louvres	-	18 Sep 2015
L20	Doors/ shutters/ hatches	A	18 Sep 2015
L30	Stairs/ ladders/ walkways/ handrails/ balustrades	-	10 Sep 2015
L40	General glazing	-	13 Aug 2015
M10	Cement based levelling/ wearing screeds	-	11 Sep 2015
M20	Plastered/ Rendered/ Roughcast coatings	-	11 Aug 2015
M22	Sprayed monolithic coatings	-	6 Aug 2015
M40	Stone/ concrete/ quarry/ ceramic tiling/ mosaic	-	11 Aug 2015
M41	Terrazzo tiling/ in situ terrazzo	-	23 Jul 2015
M50	Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting	A	18 Sep 2015
M60	Painting/clear finishing	-	13 Aug 2015
N10	General fixtures/ furnishings/ equipment	-	13 Aug 2015
N11	Domestic kitchen fittings, furnishings and equipment	-	1 Sep 2015
N13	Sanitary appliances and fittings	-	13 Aug 2015
P10	Sundry insulation/ proofing work	-	10 Aug 2015
P12	Fire stopping systems	-	13 Aug 2015

P20	Unframed isolated trims/ skirtings/ sundry items	-	14 Aug 2015
P21	Door/ window ironmongery	-	14 Aug 2015
R10	Rainwater drainage systems	-	13 Aug 2015
R11	Above ground foul drainage systems	-	14 Aug 2015
Z10	Purpose made joinery	-	11 Aug 2015
Z11	Purpose made metalwork	A	18 Sep 2015
Z12	Preservative/ fire retardant treatment	-	16 Jul 2015
Z20	Fixings/ adhesives	-	13 Aug 2015
Z21	Mortars	-	23 Jul 2015
Z22	Sealants	-	4 Aug 2015
Z31	Powder coatings	-	13 Aug 2015

Table of Contents

Title		Page
C	Demolition/ Alteration/ Renovation	
C10	Site survey	
C20	Dismantle / Demolish / Disassemble	
C40	Cleaning masonry/ concrete	
C41	Repairing/ Renovating/ Conserving masonry	
C90	Repairing/ Renovating/ Conserving Historic Metalwork	
E	In situ concrete/Large precast concrete	
E20	Formwork for in situ concrete	
F	Masonry	
F10	Brick/ block walling	
F31	Precast concrete sills/ lintels/ copings/ features	
G	Structural/Carcassing metal/timber	
G12	Isolated structural metal members	
G20	Carpentry/ timber framing/ first fixing	
H	Cladding/Covering	
H11	Curtain walling	
H62	Natural slating	
H71	Lead sheet coverings/ flashings	
H74	Zinc strip/ sheet coverings/ flashings	
H92	Rainscreen cladding	
J	Waterproofing	
J40	Flexible sheet waterproofing/ damp proofing	
K	Linings/Sheathing/Dry partitioning	

K10	Plasterboard dry linings/ partitions/ ceilings
K11	Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings
K20	Timber board flooring/ sarking/ linings/ casings
L	Windows/Doors/Stairs
L10	Windows/ Rooflights/ Screens/ Louvres
L20	Doors/ shutters/ hatches
L30	Stairs/ ladders/ walkways/ handrails/ balustrades
L40	General glazing
M	Surface finishes
M10	Cement based levelling/ wearing screeds
M20	Plastered/ Rendered/ Roughcast coatings
M22	Sprayed monolithic coatings
M40	Stone/ concrete/ quarry/ ceramic tiling/ mosaic
M41	Terrazzo tiling/ in situ terrazzo
M50	Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting
M60	Painting/clear finishing
N	Furniture/Equipment
N10	General fixtures/ furnishings/ equipment
N11	Domestic kitchen fittings, furnishings and equipment
N13	Sanitary appliances and fittings
P	Building fabric sundries
P10	Sundry insulation/ proofing work
P12	Fire stopping systems
P20	Unframed isolated trims/ skirtings/ sundry items
P21	Door/ window ironmongery
R	Disposal systems

R10 Rainwater drainage systems

R11 Above ground foul drainage systems

Z Building fabric reference specification

Z10 Purpose made joinery

Z11 Purpose made metalwork

Z12 Preservative/ fire retardant treatment

Z20 Fixings/ adhesives

Z21 Mortars

Z22 Sealants

Z31 Powder coatings

C
Demolition/ Alteration/ Renovation

C10
Site survey

Section Revision History

No.	Purpose	
-	TENDER ISSUE	12th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

C10 Site survey

To be read with Preliminaries/ General conditions.

125A BUILDING SURVEY - MEASURED
The contractor will be required to fully appraise the existing structure to determine the setting out of the new elements in accordance with the principles described in the Architectural Package. The irregular condition of the fabric requires careful assessment of setting out on site to both review the proposals and determine the most appropriate solution should the proposals require adjustment.

- Qualifications of survey author: Member of the Royal Institution of Chartered Surveyors (RICS).
- Area to be surveyed: Buildings.
- Site datum: To be determined from existing survey undertaken by Survey Operations.
- Objectives:
  - General: Establish/ record positions, dimensions and levels including Confirmation of wall, beam, column, existing fabric, etc. Location, Level, Position to inform the accurate and precise setting out of the new fabric.
  - Features: Record positions, dimensions and levels including Elements of the fabric that will challenge the setting out of the plans.
- Methodology: Do not use intrusive survey techniques. Avoid disturbing natural features or wildlife.
  - Permissible survey techniques: Direct measurement.
- Control points: Establish and record measuring stations/ targets to facilitate future remeasuring.
  - Standards: To BS 5964-1 and -2.
    Type: Benchmarks - long term markers.
- Dimensional accuracy:
  - Angular: ± ??? minutes of arc.
  - Horizontal: ± 5mm in 1m.
  - Vertical: ± 5mm.
- Site survey report: Submit.
  - Timing: To suit the contractors programme and enable any arising matters to be reviewed and assessed by the Architect and Engineer. Allow a minimum 10 working days between reporting of issue and meeting on site to assess options.

135 ASSESSMENT SURVEY HERITAGE
In support of the Management of the Works as part of the Main Contractors Team
and / or
To assist in the discharge of conditions relating to the Listed Building Consent and Planning Permission

- Qualifications of survey author:
  Accredited Conservator with experience of cataloguing / collections ie a PACR Accredited Conservator
  and / or
  Accredited member of ICON (Institute of Conservation). .
- Area to be surveyed: Existing Fabric as defined with Condition 4 and 6 of the LBC and Planing Permission.
- Objectives: Identify and match artefacts/ buildings/ structures within site boundary. Criteria: Listed, grade 2 & 2*.
- Permissible survey techniques to acquire additional data: Desk study and Site reconnaissance.
- Source data for reference/ verification: The following information is provided:
  Drawings - All as required and as contained within the Tender Package.
  Design and Access Statement (Submitted as part of the Planning Application
  Site survey reports - Prepared by ARUP - list available upon request.
- Assessment survey report: Submit.
  - Timing: Surveys, Statements, Documents to be prepared and submitted with account of the Contractors Programme which is to make due account of the requirements for the management of the works within the special context of the Listed Buildings.

410 BENCH MARKS

- Unrecorded bench marks and other survey information: Give notice when found and notify Ordnance Survey.

420 UNFORESEEN HAZARDS

- Unrecorded hazards and hazardous materials: Give notice when found. Do not disturb.

430 SURVEY INSTRUMENTS

- Equipment calibration: In accordance with manufacturer's recommendations.
- Site use calibration: To relevant parts of BS 7334-1, -3, -4, -5 and -8.
- Calibration: Use only persons accredited by the United Kingdom Accreditation Service (UKAS).
- Calibration compliance: Submit evidence prior to use.

COMPLETION

910 DOCUMENTATION – PAPER - FOR ALL SURVEYS

- General format: Comb bound, size A4 / A3, clear cover sheet.
  - Front cover design: Seek template from MLDC.
- Charts/ Diagrams/ Tabulated data: Integrated.
- Photographs: Integrated.
  - Size: A4 or A3.
  - Granularity: Camera output 12 million pixels (minimum), ISO 100 (maximum), prints from TIFF or RAW format.
  - Post camera modification: As required.
- Drawings: Integrated at reduced scale for reference with full size drawings as a separate appendicies.
  - Size: as required.
  - Scale: as required.

915A DOCUMENTATION – ELECTRONIC - FOR ALL SURVEYS

- Storage medium: DVD+R.
- File naming: Seek claification from MACE.
- Document Files types: PDF

980 SCAFFOLD TO ALL EXISTING BUILDINGS

" Cornices and other projecting architectural features cannot be used for support.

" The use of resin anchors is to be avoided unless the architect's express permission is given. Any such fixing is to be a stainless steel socket type. Any fixing must have pull out tests prior to adoption for this project.

" It must be the aim of the team including scaffolding operatives to keep physical fixings into the building envelope to an absolute minimum.

" After appointment and no later than 14 days before commencement on site the contractor shall present his design for the scaffolding to the Architect and Employer for their approval. The Architect will seek the advice of a Structural Engineer to check the design and to require amendments where he considers the design inadequate in terms of location, safety and serviceability.

" Cornices or parapets must not be used for support.

" All surfaces used for support must be capable of safely transmitting the loads placed upon them and must be protected against abrasion, impact or any other damage. All tubes placed within 25 mm of the face of the building are to be fitted with double plastic caps to prevent damage by abrasion.

" The contractor shall examine the suitability of the existing ground and structures and must satisfy himself of their ability to support the loads anticipated. Particular note is to be made of those areas identified on the aforementioned drawing where scaffolding is to be erected over basement areas, and the necessary propping agreed with the Architect / Structural Engineer. Similarly where access is required over roofs to chimney and dormer structures.

" All rainwater must be directed away from the building using temporary gutters, rainwater pipes.

" Ground level scaffold it is to be secured to a height of 5m from ground level to prevent unauthorised access.

" Ensure that all ladders from ground level to a height of 5m are removed and locked away at the end of each working day.

" All scaffolding must also be protected with green debris netting.

" It will be necessary to use the scaffold for hoisting materials to the required level and as a working platform upon which items can be stored after dismantling and/or prior to reincorporation.

" Agree design loading with contractor or greater if required by contractor.

" Lifting gear should be capable of safely carrying objects up to 500 kg in weight.

" The use of 'ladder' or 'unit' beams is permitted provided they conform to the manufacturer's recommendations and the Structural Engineer approves of their use.

" Allow for erecting, adapting and dismantling the scaffold as work proceeds to meet the contract programme.

" Proprietary couplers must be used between any wall channels and scaffold units.

" The contractor shall ensure that a competent person inspects all materials to be used for any scaffold prior to erection and inspect the completed scaffolding within seven days of erection and prior to use. Further inspections shall be carried out within seven days of any alteration to the scaffolding and prior to use.

" Working platforms will be required to the full height of each elevation, including chimneys.

" Ladder accesses are to be built within the scaffold to the full height.

C20
Dismantle / Demolish / Disassemble

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

C20 Dismantle / Demolish / Disassemble

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS

110A DESK STUDY/ SURVEY

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
  - the structure or structures to be deconstructed/ demolished,
  - the site on which the structure or structures stand, and
  - the surrounding area.
- Report and method statements:
  Method Statements are to be prepared by the Contractor's Heritage Specialist to describe the work to the listed fabric. These are to form a critical part of the information required to discharge the Listed Building Consent Conditions.
  Submit, describing:
  - Form, condition and details of the structure or structures, the site, and the surrounding area.
    Extent: as described within the site plan and the Intervention and Repair Package .
  - Type, location and condition of features of historical, archaeological, geological or ecological importance.
  - Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
  - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
  - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
  - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
  - Proposed programme of work, including sequence and methods of deconstruction/ demolition.
  - Details of specific pre-weakening required.
  - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
  - Arrangements for control of site transport and traffic.
  - Special requirements:
  - Results of tests to determine the precise nature of hazardous materials;
  - Site waste management plan development and proposals; and - Structural calculations in support of method statements .
- Format of report: Printed and digital document with supporting dilapidations photographs. 2 No. sets to be issued on disc to the CA for distribution as necessary .

120A EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures as defined within the INTERVENTION and REPAIR PACKAGE

140 BENCH MARKS
- Unrecorded bench marks and other survey information: Give notice when found. Do not remove marks or destroy the fabric on which they are found.

150 FEATURES TO BE RETAINED
- General: Keep in place and protect the following: building fabric as defined within the INTERVENTION and REPAIR PACKAGE. The principle is for the minimal loss of historic fabric. Any items not identified within the package are to be identified to the Architect for further consideration.

210 SERVICES REGULATIONS
- Work carried out to or affecting new and/ or existing services: Carry out in accordance with the byelaws and/ or regulations of the relevant Statutory Authority.

220 LOCATION OF SERVICES
- Services affected by deconstruction/ demolition work: Locate and mark positions.
- Mains services marking: Arrange with the appropriate authorities for services to be located and marked.
  - Marking standard: In accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities' apparatus'.

230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR
- General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

240 DISCONNECTION OF DRAINS
- General: Locate, disconnect and seal disused foul and surface water drains.
- Sealing: Permanent, and within the site.

250 LIVE FOUL AND SURFACE WATER DRAINS
- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
  - Protect; maintain normal flow during deconstruction/ demolition.
  - Make good any damage arising from deconstruction/ demolition work.
  - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: Post completion camera survey of any retained systems to confirm their condition and functionality.

DECONSTRUCTION/ DEMOLITION WORK

310 WORKMANSHIP
- Standard: Demolish structures in accordance with BS 6187.
- Operatives:
  - Appropriately skilled and experienced for the type of work.
  - Holding, or in training to obtain, relevant CITB Certificates of Competence.
- Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

320 GAS OR VAPOUR RISKS
- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.

330 DUST CONTROL
- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- Lead dust: Submit method statement for control, containment and clean-up regimes.

340 HEALTH HAZARDS
- Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.

350 ADJOINING PROPERTY
- Temporary support and protection: Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
- Defects: Report immediately on discovery.
- Damage: Minimize. Repair promptly to ensure safety, stability, weather protection and security.
- Support to foundations: Do not disturb.

360 STRUCTURES TO BE RETAINED
- Extent: Refer to INTERVENTION and REPAIR PACKAGE.
- Parts which are to be kept in place: Protect.
- Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

370 PARTLY DEMOLISHED STRUCTURES
- General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
- Temporary works: Prevent overloading due to debris.
- Access: Prevent access by unauthorized persons.

380 DANGEROUS OPENINGS
- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- Access: Prevent access by unauthorized persons.

390 ASBESTOS-CONTAINING MATERIALS – KNOWN OCCURRENCES
- General: Materials containing asbestos are known to be present in: the former sprinkler riser pipes contained within the stair cores. Refer to the Asbestos Survey..
- Removal: By contractor licensed by the Health and Safety Executive, and prior to other works starting in these locations.

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES
- Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
- Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

410 UNFORESEEN HAZARDS
- Discovery: Give notice immediately when hazards such as unrecorded voids, tanks, chemicals, are discovered during deconstruction/ demolition.
- Removal: Submit details of proposed methods for filling, removal, etc.

420 OPEN BASEMENTS, ETC

- Temporary support: Leave adequate buttress walls or provide temporary support to basement retaining walls up to ground level.
- Safety: Make remaining sections of retaining and buttress walls safe and secure.
- Water movement: Make holes in basement floors to allow water drainage or penetration (depending on water table). Provide a hole for every 10 m², not less than 600 mm in diameter.

MATERIALS ARISING

511 EMPLOYER'S PROPERTY

- Components and materials to remain the property of the Employer: All metrical arising from the 'demolition' of the existing building fabric where that fabric is of appropriate condition to enable its re-use.
- Protection: Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.
- Special requirements: There is a stated requirement for all historic fabric to be re-used where possible. Refer to the INTERVENTION and REPAIR PACKAGE.

520 RECYCLED MATERIALS

- Materials arising from deconstruction/ demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
- Evidence of compliance: Submit full details and supporting documentation.
  - Verification: Allow adequate time in programme for verification of compliance.

C40
Cleaning masonry/ concrete

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

C40 Cleaning masonry/ concrete

To be read with Preliminaries/ General conditions.

GENERAL/ PREPARATION

110 SCOPE OF WORK
- Cleaning of moss, lichen and other organic growth from the surface of brickwork and stonework to walls in general including parapets, string courses, hood moulds and other projecting features as identified on elevation drawings within the INTERVENTION and REPAIR PACKAGE.

120 RELATED REPAIR AND REMEDIAL WORKS
- Work to be carried out before cleaning work: Execute repairs to brickwork and stonework as described in Section C41. Any associated pointing to be carried out following completion of the cleaning works.

142 REMOVAL OF FITTINGS
- Timing: Before commencement of cleaning work.
- Disturbance to surfaces: Minimize.
- Items for disposal: unprotected ferrous fixings that are embedded within the external face of the existing walls.
- Items to be kept for reuse: as identified with in the INTERVENTION and REPAIR PACKAGE.

160 PROTECTION
- Surfaces not designated for cleaning: Prevent damage, including marking and staining.
- Openings: Prevent ingress of water, cleaning agents and detritus.
  - Vents and grilles: Seek instructions before sealing up.
- Temporary mechanical fastenings:
  - In masonry: Locate in joints.
  - In other surfaces: Seek instructions.
- Additional protection: None .

175 CONTROL AND DISPOSAL OF WASH WATER AND DETRITUS
- Disposal: Safely. Obtain approvals from relevant Authority.
- Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
- Above and below ground drainage systems: Keep free from detritus and maintain normal operation.

180 COLD WEATHER
- Cleaning procedures using water: Do not use when air temperature is at or below 5°C. Protect damp surfaces from frost.
- Chemical cleaning agents: Do not use when surface temperatures are below those recommended by manufacturer.

190 CLEANING GENERALLY

- Operatives: Appropriately trained and experienced for each type of cleaning work.
  - Evidence of training: Submit on request.
- Control of cleaning: Confine cleaning processes and materials to designated areas. Prevent wind drift.
- Detritus: Remove regularly. Dispose of safely.
- Monitoring: Frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved, seek instructions.
- Modifications to cleaning methods and materials: Seek instructions.

215 RECORD OF CLEANING WORKS

- Written report: Record cleaning methods and procedures used for each type of surface and deposit.
  - Content: Relevant attributes of cleaning methods used including:
    Equipment and settings.
    Dwell times.
    Number of applications.
    Ambient temperatures.
- Additional documentation: None.
- Submission: At completion of cleaning works.

230 TRIAL SAMPLES

- Trial sample reference: To be identified on site.
  - Surface: Clay brick and Sandstone.
  - Location/ Size: 1m2.
  - Type of soiling:
    - Atmospheric soiling;
    - Biological growths;
    - Efflorescence;
    - Graffiti; and
    - Grease.
  - Cleaning methods: Steam ('DOFF' system), possibly followed by other (chemical poultice) in localised areas where calcium from bird detritus has been drawn into the stone or where there is an oil buildup on the surface of the masonry. DO NOT USE - Abrasive Cleaning Equipment / Pressure Washing / Chemically Abrasive or Erosive Treatments.
- Records: Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

PRODUCTS/ EQUIPMENT

300 COMPATIBILITY OF CHEMICAL PRODUCTS

- Products: Compatible and produced by the same manufacturer.

312 SURFACE BIOCIDES

- Types: Registered by the Health and Safety Executive (HSE) and listed on the HSE website under non-agricultural pesticides.
- Compatibility with surface: Free from staining or other harmful effects.

352 STEAM CLEANING EQUIPMENT
- Manufacturer: Stonehealth - 01453 540600 .
  - Product reference: DOFF .

APPLICATION

412 REMOVAL OF LOOSELY ADHERED DEPOSITS
- Timing: Before commencement of other cleaning methods.
- Surfaces: Prevent damage, including abrasion.

422 BIOCIDE APPLICATION
- Preparation: Remove loose growths.
- Surfaces: Prevent damage, including abrasion.
- Biocide treatment: Appropriate solutions to kill growths and inhibit further growths.
  - Dead growths: Remove.

482 STEAM CLEANING
- Surfaces: Prevent damage, including abrasion.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

500 CHEMICAL CLEANING
- Surfaces: Prevent damage, including discolouration, bleaching and efflorescence.
- Product variables (including concentrations, dwell times and number of applications): Adjust for each surface to achieve optimum cleaning performance.
- Application: To wetted surfaces.
  - Drying out: Prevent unless recommended otherwise by cleaning product manufacturer.
- Removal of chemicals and neutralization: As recommended by product manufacturer, including rinsing with clean water.
  - Additional treatment: Where water rinsing is insufficient to neutralize surface, apply compatible neutralizing agent.
  - Surfaces and joints: Minimize absorption of chemicals. Prevent damage, including abrasion.

C41
Repairing/ Renovating/ Conserving masonry

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

C41 Repairing/ Renovating/ Conserving masonry

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION

110 SCOPE OF WORK

- Schedule: As necessary to enable the renovation of the Mill buildings. Refer to ARUP repair proposals and the INTERVENTION and REPAIR PACKAGE .
- Records of masonry to be repaired: Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.
- Identification of masonry units to be removed, replaced or repaired: Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced. Transcribe markings to drawings/ photographs.

120 SITE INSPECTION

- Purpose: To confirm type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
- Parties involved: Structural engineer, Architect, Specialist Contractor and Contract Administrator.
- Timing: At least 5 working days before starting each section of work.
- Instructions issued during inspection: Contractor to confirm in writing, with drawings and schedules as required, before commencing work.

125 REMOVAL OF FITTINGS/ FIXTURES

- Items to be removed, and reinstated on completion of repair work: as defined within the INTERVENTION and REPAIR PACKAGE.
  - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe refixing instructions, where applicable.
  - Treatment following removal: Metal items are to be overhauled, prepared and decorated, refer to M60.
  - Storage: Protect against damage, and store until required.
    Storage location: On site within a secure container.
  - Reinstatement: Refit in original locations using original installation methods.
- Items unsuitable or not required for reuse: as defined within the INTERVENTION and REPAIR PACKAGE.
  - Disposal: Obtain instructions before removing and disposing of any material that cannot be reinstated or is not identified within the INTERVENTION and REPAIR PACKAGE.
- Masonry fabric and surfaces: Do not damage during removal and replacement of fittings/ fixtures.

130A REMOVAL OF PLANT GROWTHS FROM MASONRY
All of the following was undertaken during the 2006 enveloping works. However where plant growth is identified the following is to apply.
" Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
" Removal of roots: Use dampened temporary wood wedges or other approved method to assist removal. Where growths cannot be removed completely without disturbing masonry advise the CA and Architect. The removal of plant growth is important. Where root systems have penetrated the wall it is highly likely that the wall will require localised dismantling to enable the complete removal of the plant roots.

- Unwanted plants close to masonry: Where removal of root system is not possible or desirable, cut through stem as close to the ground as possible. Remove bark from stump and apply herbicide paste. Leave stump to wither.

140 RECORD OF WORK

- General: Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings and photographs, as necessary.
- Specific records: Mark up elevation drawings contained within the INTERVENTION and REPAIR PACKAGE.
- Documentation: Submit on completion of the work.
  - Number of sets: Two - paper and digital.

WORKMANSHIP GENERALLY

150 POWER TOOLS

- Usage for removal of mortar: Generally not permitted, although the use of Fein cutters may be appropriate in certain circumstances. Discuss with Architect if unclear. Trials will be necessary. .

155 PUTLOG SCAFFOLDING

- Usage: Not permitted .

160 PROTECTION OF MASONRY UNITS AND MASONRY

- Masonry units: Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points, where provided.
- Masonry: Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking on facework. Protect using suitable nonstaining slats, boards, tarpaulins, etc. Remove protection on completion of the work.

165 STRUCTURAL STABILITY

- General: Maintain stability of masonry. Report defects, including signs of movement that are exposed or become apparent during the removal of masonry units.

170 DISTURBANCE TO RETAINED MASONRY

- Retained masonry in the vicinity of repair works: Disturb as little as possible.
- Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
- Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.

180 WORKMANSHIP

- Skill and experience of site operatives: Appropriate for types of work on which they are employed.
  - Documentary evidence: Submit on request.

185A ADVERSE WEATHER

The unheated fabric has been exposed to decades of weather meaning that it is likely to have a high relative humidity. The existing fabric will not readily tolerate the introduction of additional moisture from new wet work during cold months of the year. This will require careful consideration by the contractor who will need to ensure the works are programmed to occur before or after the coldest months of the year, typically mid-December until early March when the ambient temperature is more likely to be at least at 3°C and rising.

- General: Do not use frozen materials or lay masonry units on frozen surfaces.
- Air temperature: Do not bed masonry units or repoint:
  - In cement gauged mortars when ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected.
  - In hydraulic lime:sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising.
  - **In nonhydraulic lime:sand mortars in cold weather, unless approval is given.**
- Temperature of the work: Maintain above freezing until mortar has fully set.
- Rain, snow and dew: Protect masonry by covering during precipitation, and at all times when work is not proceeding.
- Hot conditions and drying winds: Prevent masonry from drying out rapidly.
- New mortar damaged by frost: Rake out and replace.

190A CONTROL SAMPLES

- General: Obtain approval of the following before proceeding with the remainder:

Repointing : First stage approval - after raking out of existing joints, an area approximately 1 metre square. Second stage approval - after repointing. This is to apply to each elevation and where the masonry units differ in size and texture resulting in a variety of joint types.
Repairs to Stone : Approval of material sample MUST be given by the Architect prior to ordering, followed by approval of typical indent repair to a plain ashlar block, and an item of carved work such as a string course, hood mould or window / door surround .
Replacement Bricks : 1 - Reclaimed to match. 2 - Manufactured to match. 3 - New conservation bricks for unseen work.
Stone Samples
Opening up and Reformation of Brick Walls and Reveals .

Protection: Protect from adverse weather and damage.

Approval of material and samples will require the acceptance of the Conservation Officer. The contractor should make due allowance for the time necessary to agree the samples prior to their presentation to the Conservation Officer. Where samples are not to the required standard or do not provide an adequate match further samples will be required. Works for the repair and repointing of the masonry will not be permitted to continue until approval is obtained from the Conservation Officer and subsequently reported to the contractor via the Architect and / or CA.

MATERIALS/ PRODUCTION/ ACCESSORIES

215 MATERIAL SAMPLES
- Representative samples of designated materials: Submit before placing orders.
  - Designated materials: Sands for bedding and pointing, other parts of the mix identified as part of the mortar analysis, NHL and Lime Putty .
- Retention of samples: Unless instructed otherwise, retain samples on site for reference. Protect from damage and contamination.

220 RECORDING PROFILES
- Profiles: Take measurements from existing masonry units, as instructed, to allow accurate matching of replacements.
- Recording in situ: If there are no suitable joints to allow use of inserts, seek instructions.
- Drawings and templates: Prepare as necessary. Templates must be clearly and indelibly marked to identify use and location.

240 STONE
- Supplier: Contractor to advise of Quarries / Masonry Sub-Contractors.
- Type: Sandstone - Mottled Hollington as used for the 2006 enveloping works - To be approved following submission of sample.
- Quality: Free from vents, cracks, fissures, discolouration, or other defects that may adversely affect strength, durability or appearance. Thoroughly seasoned, dressed and worked in accordance with shop drawings prepared by the supplier.
- Finish: To match that on site most commonly honed.

245A REPLACEMENT STONE UNITS
- Sizes and profiles: To match existing masonry. Maintain existing joint widths.
- Sinkings for fixings, joggles and lifting devices: Accurately aligned and positioned in relation to existing masonry.
- Marking: Mark each block/ dressing clearly and indelibly on a concealed face to indicate the natural bed and position in the finished work.
  Stone repairs are to be carried out with new stone to match the existing.
  Indents must be minimum 100mm fixed with SS threaded bar. Repairs to cills will extend back to the glass line.

250 STONE ORIENTATION
- Orientation of natural bed:
  - In plain walling: Horizontal.
  - In projecting stones and copings: Vertical and perpendicular to wall face.
  - In arches: Perpendicular to line of thrust.

255 ASHLAR BLOCKS/ DRESSINGS
- Cutting and dressing stone: To true and regular surfaces, free from hollow or rough areas.

260 BRICKS
- Manufacturer: Furness Brick - 01229 462411.
  - Product reference: A blend of several bricks to be made to match existing.
- Size: to match existing.
- Special shapes: none.
- Recycled content: None permitted.

281A FIXINGS REPLACEMENT STONEWORK

- Procurement: Selected by the specialist contractor/ supplier. Submit details of proposed fixings, and agree with structural engineer.
  " Material: All dowels, cramps and threaded bar to copings, cills, lintels and ashlar to be 316 austenitic stainless steel.
  " Type, size, strength and number: As necessary to resist all loads likely to occur during the life of the building fabric, and to prevent any lateral displacement or pulling apart of the construction.

DISMANTLING/ REBUILDING

310 DISMANTLING MASONRY FOR REUSE

- Masonry units to be reused: Remove carefully and in one piece.
  - Treatment: Clean off old mortar, organic growths and dirt, and leave units in a suitable condition for rebuilding.
  - Identification: Mark each unit clearly and indelibly on a concealed face, indicating its original position in the construction. Transcribe makings to drawings/ photographs.

320 REBUILDING DOOR OPENINGS, WINDOW OPENINGS and as identified within the INTERVENTION and REPAIR PACKAGE

- Replacement materials: Stone as clause 240 and brick as clause 260.
- Mortar: As section Z21.
  - Mix: Mix: 1:3 NHL 3.5 hydraulic lime : sand, dependent on analysis of existing mix.
  - Sand source/ type: Well graded, sourced from supply and / or crushed stone to approved sample, 4 parts course to 5 parts fine.
- Fixings: Cramps and dowels as clause 281A.
- Rebuilding: To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work/ backing masonry, as appropriate.
- Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Joints: Conservation flush joints, refer to Z21.
- Other requirements: All in accordance with approved samples.

REPLACEMENTS AND INSERTIONS

330 PREPARATION FOR REPLACEMENT MASONRY

- Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
- Existing metal fixings, frame members, etc: Report when exposed.
- Redundant metal fixings: Remove.
- Recesses: Remove projections and loose material; leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather if units are not to be placed immediately.

340 REPLACEMENT OF STONE PLAIN ASHLAR - FULL BLOCK and PART BLOCK

- Stone: Sandstone as clause 240 .
- Bedding depths: To match Existing - approx 180mm .
- Mortar: As section Z21.
  - Mix: As Z21 - Lime:Sand .
  - Sand source/ type: As Z21 and 320 .
- Fixings: Stainless steel dowels / cramps if considered necessary, as clause 281 .
- Joints: Conservation flush joints, refer to Z21 .
- Other requirements: Carefully cut out ashlar block, in one piece if possible, and insert new stone on 1:3 lime sand mortar bedding and backing. Keep mortar back from face 25mm, or twice the height of the joint, for later repointing .

350 STONE INSERTS PLAIN ASHLAR - FULL FACE

- Stone: Sandstone as clause 240.
- Finish: Flush and to match existing.
- Preparation and insertion: As clause 395.
- Mortar: As section Z21.
  - Mix: As Z21 - Lime:Sand.
  - Sand source/ type: Well Graded with fine sharp sand for full face indent work - Masonry Sub-Contractor to advise.
- Fixings: Stainless steel dowels / cramps if considered necessary, as clause 281.
- Joints: Very fine.
- Other requirements: Only to be used if blocks are min. 200mm thick. No resin / adhesives are to be used as a bonding material for inserts, although such use is permitted for securing to dowels. A positive 3 - 5mm mortar pointed joint should be formed between the insert and surrounding masonry, and similarly mortar should be used as a bedding and backing material.

365 REPLACEMENT OF BRICKS TO ALL AREAS OF THE MILL BUILDINGS

- Bricks: Clay as clause 260.
- Mortar: As section Z21.
  - Mix: Z21 - lime:sand.
  - Sand source/ type: Well graded crushed stone to approval.
- Fixings: Not required.
- Joints: Conservation flush, refer to Z21.
- Other requirements: Bricks are to be toothed in with new and existing forming a completely bonded wall. Keep mortar back from face 25mm, or twice the height of the joint for later repointing.

385 LAYING REPLACEMENT MASONRY UNITS

- Exposed faces of new material: Keep to agreed face lines.
- Faces, angles and features: Align accurately. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
- Joint surfaces: Dampen to control suction as necessary.
- Laying units: On a full bed of mortar, all joints filled.
- Exposed faces: Keep clear of mortar and grout.

395A INSTALLING STONE INSERTS

- Pockets to receive inserts:
  - Cut out accurately. Undercut sides of pocket where necessary to provide space for bonding material.
  - Adjust depth so that insert stands proud of existing stone for finishing in situ.
  - Clean out thoroughly.
- Inserts: Cut to the smallest rectangular shape necessary to replace the defective area and provide a firm seating. Install accurately and securely.
  - Exposed faces: Keep clear of bonding material.
- Existing joint widths: Maintain. Do not bridge joints.
  NOTE: No resin / adhesives should be used as bonding materials, all inserts should be bedded backed and pointed in mortar, as clause 320, 350, 405 and Section Z21.

405 BONDED DOWELS FOR STONE

- Dowels: 6mm diameter 316 austenitic stainless steel..
- Adhesive: Secured into clean, dry holes with Epoxy Resin adhesive for use with porous stone. Do not use adhesive to bond stones at joints.
- Holes for dowels: Suitably sized and accurately aligned in masonry background and in rear of replacement/ insert stone; clean and dry.
- Other requirements: Do not use adhesive to bond stones at joints unless instructed.

410 CORRODED METAL FIXINGS

- Removal: Cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
- Replacement: Compatible fixings as clause 281A.

420 TEMPORARY DISTANCE PIECES FOR JOINTS IN ASHLAR STONEWORK

- Material: Lead or stainless steel.
- Removal: When mortar/ grout is sufficiently strong to take loading without compression.

TOOLING/ DRESSING STONE IN SITU

450 WEATHERING LEDGES AT JOINTS

- Locations: Where stones project or are recessed.
- Requirement: Carefully weather the ledge, to approval.
- Method: Suitably graded carborundum blocks or tooling as appropriate.

455 DESCALING STONE

- Requirement: Carefully remove loose scaling and powdering from stones to the extent agreed.
- Method: Suitable bristle brushes or carborundum blocks. Do not use wire brushes.

458 REDRESSING STONE

- Requirement: Carefully dress back stones to the extent agreed.
- Method: Suitably graded carborundum blocks or tooling as appropriate.

POINTING/ REPOINTING

810 PREPARATION FOR REPOINTING

- Existing mortar: Working from top of wall downwards, remove mortar carefully, without damaging adjacent masonry or widening joints, to a minimum depth of 30 mm or to a depth that is twice that the height of the joint, which ever is the greater.
  - Loose or friable mortar: Seek instructions when mortar beyond specified recess depth is loose or friable and/ or if cavities are found.
- Raked joints: Remove dust and debris.

820 POINTING BRICK and STONEWORK GENERALLY

- Preparation of joints: Rake out (if soft) or chop back (if hard) to a clean depth of 25mm minimum or twice the height of the joint. The old mortar is to be left with a square face, and the arisses lightly dressed to exclude water traps. The use of power tools is forbidden, (except that of Fein machines in circumstances to be agreed with the CA), and all work is to be carried out by hand.
- Mortar: As section Z21.
  - Mix: As Z21 - 1:3 Hydraulic Lime (NHL 3.5) : Sand.
  - Sand source/ type: Well graded crushed stone pointing sand to approved sample, 4 parts course to 5 parts fine, dependent on analysis of existing mix ..
- Joints profile/ finish: Conservation flush joints: The cleaned joint is to be flushed out with clean water and ironed in with a pointing iron, bringing the mortar out of the joint slightly. After the initial set has taken place the mortar face is to be knocked off, then hit back with a stiff bristle brush to compact the mortar within the joint thoroughly, while also exposing the aggregate ..
- Other requirements: Any loose or flaking stonework is to be dressed back lightly by hand.

840 POINTING WITH TOOLS/ IRONS

- General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled.
- Face of masonry: Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.

C90
Repairing/ Renovating/ Conserving Historic Metalwork

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

C90 Repairing/ Renovating/ Conserving Historic Metalwork

120A GENERAL EMPLOYER'S PROPERTY

- Components and materials arising from alterations that are to remain the property of the Employer: Refer to the INTERVENTION and REPAIR package. Items that are to remain the property of the employer include: Fire Escape Stairs, Iron Pipework, All other embedded and afixed Iron Elements.
  - Protection: Maintain until items listed above are removed by the Employer or reused in the Works, or until the end of the Contract.
- Special requirements: Historic components taken from the building are to be dismantled into component form recorded and documented to allow accurate subsequent re-erection. Each component is to be presented for inspection so that any that are not to be reinstated in the location that they are removed from can be assessed for re-use elsewhere. All components that are to be retained should be packed and protected for transport and taken to an appropriate conservation facility in readiness for repair and restoration. A full written and photographic record is to be made of all components that are taken from the building whether they are to be reinstated or not. .

150 GENERAL PRINCIPLES

HISTORIC SENSITIVITY OF THE STRUCTURE: The Structure or objects are to be treated with special consideration and care reflecting its historic importance, particularly in the selection of the workforce employed on the works.

PHOTOGRAPHIC RECORD: Before commencing work photographically record each component. Photographs are to be dated and objects are to be labelled with a unique identifier.

TEMPORARY SUPPORT: Where requested submit in duplicate to the CA for appraisal, drawings and calculations of the proposals for the temporary support. Modify such drawings and calculations until the CA is satisfied that works may proceed on site. Show clearly all loads from the temporary works applied to the buildings and structures.

HISTORIC METALWORK TREATMENT SPECIFICATION

210 GENERAL

This outline specification is not intended as a definitive treatment spec but should be read in conjunction with other documentation provided associated drawings. This document intends to demonstrate an appropriate treatment philosophy whilst upholding accepted best conservation practice.

DISMANTLING. Where elements or components are to be removed from the body of the building they should be dismantled into component form recorded and documented to allow accurate subsequent re-erection. All components should be packed and protected for transport and taken to an appropriate conservation facility.

WORKS OFFSITE. All works should be carried out by persons suitably qualified and practised in the conservation and restoration of this type of historic structure. Particular account should be taken of historic repair techniques and experience. Works should be carried out using materials and techniques compatible with the existing structure and original construction detail.

WELDING ON SITE: Site welding is not permitted unless a 'Hot Work Permit' form and compliance with its requirements. Do not weld when ambient temperature is below 0oC or surfaces are wet.

DISC CUTTING AND GRINDING: is permitted subject to completion of a 'Hot Work Permit' form and compliance with its requirements. k

220 QUALITY OF WORK AND CONSERVATION PHILOSOPHY

- Retain as much of original components and detailing as possible, fitting new to old.
- It is not the intention to distress modern metals to replicate original surfaces although hand forged components should display the nature of the hand finish.
- Cut, shape and assemble parts to ensure accurate erection.
- Proprietary components where used to be to manufacturers' recommendations, and to the satisfaction of the Architect.
- The ends of structural sections shall be cold sawn or machined except where special permission is granted for hot sawing.
- All plates and sections to be true to form and free from twists, accurately straightened, planed or shaped as necessary.
- Where material lengths are incorrect, the extension of members by welding onto additional material will only be permitted with the authority of the Architect.

230 WROUGHT IRON REPAIR AND NEW WROUGHT IRON COMPONENTS

- Before commencing work identify the type of original iron and advise the Architect.
- Where specified all work shall be executed in true wrought iron to match the original. No mild steel or other substitute materials will be allowed without the prior approval of the Architect.
- All wrought iron shall be best quality forged iron, tough, ductile and fibrous in character, of even texture. All work is to be executed by craftsmen skilled in the trade.
- All ornamental work shall be carefully forged, hand wrought and incised where and as required to produce the design and effect desired.
- All work shall be substantially framed together and closely fitted. All joinings shall be neatly and strongly tenoned and riveted/mechanically fixed together, or forge welded. Heads of rivets/fixings and tenons are to be finished appropriately to the spirit of the piece, normally they will be expressed proud of the surface unless countersinking is specified.
- All glazing bars and other replacement wrought iron shall be forged; collars where required shall be forge welded. All leaves, other free ornament shall be forged from substantial charcoal iron and forge welded where connected with stems or other ironwork replicating as far as is reasonably possible the original construction technique.
- All welding shall be done at the forge and all shall be clean and perfect. No cast parts will be accepted as alternatives for wrought work without prior consent from the Architect.
- All solid ornamental works shall be worked and incised as required by approved design.
- When building up of wasted/pitted bars or for structural purposes, where part replacement is required, electric welding may then be permitted. All such welding must be undertaken using an experienced welder familiar with this type of work.

240 CAST IRON COMPONENTS

- The maximum amount of original cast iron will be retained and re-used joining missing sections to existing where practicable.
- Welding cast iron will not be permitted without the express permission of the Architect and in exceptional circumstances. When welding old cast iron it is rarely possible to obtain a strong and structural repair.
- Splits and fractures and breaks to cast iron should be repaired using a combination of mechanical fixings dowels plates and cold metal stitching as appropriate and agreed with the Architect.
- Porosity in the surface of cast components should be filled with polyester resin in small areas or epoxy metal filler for large areas after cleaning but prior to painting to allow an even and continuous paint film.
- Whilst some rust bleeding is to be expected from historic ironwork careful filling and proper application of paint will help keep rust bleeding to a practicable minimum.
- New cast components should normally be cast from patterns pressed into green sand. Complex castings may require the addition of phosphor or other adjustments to make the characteristics of the molten iron suitable for replication of complex historic castings. The use of Spherical Graphoid (SG) iron will be considered for the replication of structural ironwork however detailing and section sizes may need to be increased to suit this material which has a lower flow characteristic.
- New castings should be blasted to Sa2.5 to remove foundry contaminants and provide an appropriate key for the paint system.
- New castings should be fettled and de-burred to remove flash and finished to a level appropriate for incorporation within the project.

250 PURE IRON

- As an alternative to Wrought Iron the Architect will consider the use of Pure Iron. The specialist contractor is to detail where this material will be incorporated into the works and all work will be carried out in a manner similar to that if true wrought iron were to be used.
- Pure iron is to be sourced from a reputable supplier and should be 99.8% pure iron – certificates of authenticity will be required from suppliers to confirm its originality.

260 NEW STEEL COMPONENTS

Where specified in this section clean down and use original wrought iron components as patterns for new work. Form rods and accurately transfer dimensions, cut, shape and assemble parts including chamfers and radiused edges. Where chamfers/radiused edges are not present lightly remove sharp corners.
Laser cut replica items to be manufactured to agreed drawings / CNC cut files. After cutting all sharp edges to be softened either by abrasive cleaning or by hand in advance of application of agreed paint coatings.
Grade of steel:

- Cold formed sections in uncoated steel shall be manufactured from strip in accordance with BS EN 10147
- Hot rolled sections and angles grade S275/S355
  Undertake workmanship in accordance with sections 4, 5, 6 and 7 of the National Structural Steelwork Specification
  Welding: V Weld components and grind off surfaces flush.

270 INSITU PREPARATION OF METAL COMPONENTS (refer to M60/195A, 195B and 195C.)

The 2006 works were specified to ensure the existing metalwork was prepared and painted with the removal of previous paint coatings. Inspection on site has identified instances where early coatings remain. It must be assumed that most components have been coated with early paint coatings. Unless noted otherwise these should be assumed to contain lead or other harmful constituents and the appropriate methods of preparation adopted to protect the health and safety of staff in the vicinity of the works.

- Erect suitable protection to allow in-situ works to be executed safely without impeding other work packages or creating a hazard for the public.
- Erect signs warning of any hazards and work in progress.
- Thoroughly steam clean and pressure wash surfaces of metal (ensuring any adjacent fabric such as masonry or timber is not affected) to remove environmental deposits failing paint and loosely adhering corrosion. Allow to dry. Internal ironwork should be vacuum cleaned to remove loose debris and carefully cleaned with a conservation grade detergent (Vulpex or similar) to remove dirt.
- Flat off and abrade to remove corrosion products, bare metal works are to be prepared to an ST3 standard to obtain a satisfactory keyed surface for application of surface coatings. Retained paintwork is to be feathered to a smooth edge and keyed to accept new surface coatings.
- Apply suitable masking to stonework and other surfaces not to be prepared.
- Wear appropriate protection during works.
- Remove temporary enclosures and other protection after completion.
- Apply initial coating within 4 hours of preparation.

280 OFF-SITE PREPARATION OF METAL COMPONENTS

- Preparation to be carried out under cover in properly lit, heated and ventilated conditions with operatives wearing appropriate personal protective equipment.
- Thoroughly wash and rinse surfaces to be abrasive cleaned with clean water and mild detergent applied using a hand pressure sprayer. Allow to dry.
- Remove all traces of existing coatings, lamination, corrosion and other contamination by appropriate mechanical means and blast clean in accordance with BS 7079: Part A1, preparation grade Sa2½.
- Internal surfaces of hollow sections and columns are to be prepared to remove corrosion and adequately prepare the surfaces for paint coatings. This is to be achieved by the use of internal blast probes and blast clean operatives experienced in achieving best practice cleaning in difficult to access / blind areas.
- Rinse surfaces to be coated with clean water applied using a hand pressure sprayer and allow to dry.
- Abrade and prepare surfaces ready for application of surface coating to the satisfaction of the Architect.
- Apply initial coating within 4 hours of preparation. Where this period is exceeded, immediately before coating, undertake a light overall sweep blast of the surfaces to remove flash rust etc.

290 COATING SYSTEMS Refer to M60.

- Apply coatings in a controlled workshop environment recommended by the coating manufacturer.
- Immediately before coating remove flash rust with a light overall sweep blast of abrasive.
- Extent of coatings: To ensure the full application of the coating to all surfaces, allow each side to dry before coating the remaining side. The complete paint system should be applied to all surfaces of all components including interfaces and all internal / hollow surfaces.
- At each stage check thickness of coatings using an appropriate gauge or thickness meter.
- Apply protective coatings to manufacturer's instructions.
- Apply appropriate two pack metallic filler in accordance with manufacturer's recommendations to seal porosity and any pinholes in cast iron components.
- Apply coating by airless spray or other agreed application technique in accordance with manufacturer's instructions.

INSITU APPLIED PROTECTIVE AND DECORATIVE COATING SYSTEMS

- This clause describes the general treatment and is to be read in conjunction with particular clauses in this section describing specific requirements.
- Maintain on site a current copy of the coating systems data sheet for each coating. Where there is a difference in instruction between this specification and the data sheet this specification shall prevail
- At each stage check thickness of coatings using an appropriate meter.
- Mix and apply coatings and fillers strictly in accordance with manufacturer's recommendations ensuring that all minimum and maximum re-coat times are followed. Work coatings as far as possible behind the backs of frames and into voids and blow-holes ensuring full coating thickness is achieved at sharp edges by applying stripe coats.
- Apply protective and final coatings as M60.

For the application of new paint coatings onto existing paint coating specialist advice should be obtained from the paint manufacturer based on the suitability and compatibility of the earlier coatings.

E
In situ concrete/Large precast concrete

E20
Formwork for in situ concrete

Section Revision History

No.	Purpose	
-	TENDER ISSUE	10th Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

E20 Formwork for in situ concrete

To be read with Preliminaries/ General conditions.

GENERALLY/ PREPARATION

GENERAL NOTE
Refer to ARUP Engineers Specification and Design Drawings.
The following identifies the insulation below the slab. Design and specification for the slab is described in ARUP's documents.

200 PROPRIETARY UNDERSLAB INSULATION
- Manufacturer: Kingspan.
  - Product reference: Styrozone N 500 R.
- Recycled content: None permitted.
- Thickness:
  - Under slab: Two layers 50mm - Total 100mm thickness.
  - To edge of slab: Not required where cementitious tanking is applied over the top of slab, refer to J40/125. In all other instances allow for 25mm.

CONSTRUCTION

310 ACCURACY
- General requirement for formwork: Accurately and robustly constructed to produce finished concrete in the required positions and to the required dimensions.
- Formed surfaces: Free from twist and bow (other than any required cambers).
- Intersections, lines and angles: Square, plumb and true.

315 SUBSTRUCTURE FORMWORK AND UNDERSLAB INSULATION
- Cutting: Neat and accurate to edges, and around penetrations and downstands.
- Laying: Tightly butted and fully supported on firm, even substrate.
- Vertical faces: Stiffen as necessary to act as shutter.
- Formwork/ insulation surfaces: Protect from indentation by spacers and other items.
- Joints in formwork/ insulation and with edge structure and penetrations: Seal to prevent penetration of concrete.
- Concrete placement: Restrain formwork/ insulation against movement.

F
Masonry

F10
Brick/ block walling

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

Brick Supplier

Taylor Maxwell and Co.Ltd
Carlton House
18 Albert Square
Manchester
M2 5PE

Contact : Chris Taylor
Email . christaylor@taylor.maxwell.co.uk
Tel 07774 624702

110 CLAY FACING BRICKWORK TO WING MILL - as part of precast fabrication

- Bricks: To BS EN 771-1.
  - Manufacturer: Ibstock Brick Ltd.
    Product reference: Commercial Red Linear - 440x102x65mm.
  - Recycled content: None permitted.
  - Special shapes: BS 4729 types BD.1.1, BN.1.2, BN.3.1 right hand and left hand, BN.4.1 - bricks shaped to suit the design of the pre-cast facade (as resolved in discussion with the Architect).
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:3 masonry cement:sand .
  - Additional requirements: Samples of a mortar mixes to be provided and agreed. Mortar to be made with a well graded sand and a white cement to emulate lime mortar while being of a hardness appropriate for use as part of a pre-case concrete unit .
- Bond: Half lap stretcher / stack - refer to detail elevation drawing of Wing Mill.
- Joints: Flush with a beaten face to reveal the aggregate - as is typical of a joint in lime mortar.
- Features: Pistol Bricks were required to suit the pre-cast facade and the steel structure.

115 CLAY FACING BRICKWORK TO WING MILL - as part of walls

- Bricks: To BS EN 771-1.
  - Manufacturer: Ibstock Brick Ltd.
    Product reference: Commercial Red Linear - 215x102x65mm.
  - Recycled content: None permitted.
  - Special shapes: BS 4729 types BD.1.1, BN.1.2, BN.3.1 right hand and left hand, BN.4.1 - bricks shaped to suit the design of the pre-cast facade (as resolved in discussion with the Architect).
- Mortar: As section Z21.
  - Standard: To BS EN 998-2
    The durability designation of the bricks is to be F2
    The soluble salt content is to be Category S2
    The minimum compressive strength of the bricks is to be 20N/mm2
    The maximum water absorption of the bricks is to be 12% by weight.
    The initial rate of suction for the bricks is >0.8kg/m2/min.
  - Mix: 1:3 NHL3.5 hydraulic lime:sharp well graded sand for self supporting external masonry in clay common brickwork.
  - Additional requirements: Samples of a mortar mixes to be provided and agreed. Mortar to be to match the tone, colour and texture of that used on the pre-cast units .
- Bond: Half lap stretcher / stack - refer to detail elevation drawing of Wing Mill.
- Joints: Flush with a beaten face to reveal the aggregate - as is typical of a joint in lime mortar.
- Features: Brick plinth as detailed.

120 CLAY FACING BRICKWORK TO WING MILL - as part of plinth

- Bricks: To BS EN 771-1.
  - Manufacturer: Ibstock Brick Ltd.
    Product reference: Onyx Black - 215x102x65mm.
  - Recycled content: None permitted.
  - Special shapes: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:3 masonry cement:sand .
  - Additional requirements: Coloured mortar to match bricks .
- Bond: Half lap stretcher.
- Joints: Bucket handle.
- Features: None.

240 SELECTED NEW BRICK FACING BRICKWORK TO ALL HISTORIC MILL BUILDINGS

- Brick Factor and Manufacturer: York Handmade Brick, Forest Lane, Alne, York, TO61 1TU - 01347 830065.
  Product reference: [Murrays' Mill Blend - specifically resolved in consultation with the Planning Conservation Officer as part of the 2006 works. Brick sizes vary to pick up on the different sizes of the existing bricks, e.g.].
  Brick Description: Open creased texture sand finished hand thrown through colour multi red bodied clay brick
  Technical Specification in accordance with BS EN771-1
  Durability Against Freeze Thaw: F2
  Active Soluble Salts: S2
  Compressive Strength: no less than 20N/mm2
  Water Absorption: no more than 18%
  Dimensional Tolerance: T2
  Dimensional Range: R1Mortar: As section Z21.
  - Standard: [To BS EN 998-2].
  - Mix: [1:3 lime:sand].
    Bond: [Half lap stretcher, Flemish and other to match the exiting wall].
    Joints: [Flush, beaten back - see Pointing Spec].

355 CONCRETE COMMON BLOCKWORK AS INTERNAL LINING TO EXTERNAL WALLS - 100mm

- Blocks: To BS EN 771-3.
  - Manufacturer: Tarmac.
    Product reference: Topcrete Solid Block.
  - Configuration: Group 1.
  - Compressive strength:
    Mean value: 7.3 N/mm².
    Characteristic value: Refer to Structural Engineers Specification.
    Category: Aggregate Concrete Masonry Unit.
  - Freeze/ Thaw resistance: Frost resistant where used below DPC and on the cold side of insulation.
  - Thermal properties: Thermal conductivity: 1.29 W/mK.
  - Recycled content: None permitted.
  - Work sizes (length x width x height): 440mm x 215mm x 100mm.
    Tolerance category: D1.
  - Special shapes: None.
  - Additional requirements: Refer to Structural Engineers Specification.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:3 masonry cement:sand.
  - Additional requirements: Refer to Structural Engineers Specification.
- Bond: Half lap stretcher.

356 CONCRETE COMMON BLOCKWORK 140mm

- Blocks: To BS EN 771-3.
  - Manufacturer: Tarmac.
    Product reference: Topcrete Solid Block.
  - Configuration: Group 1.
  - Compressive strength:
    Mean value: 7.3 N/mm².
    Characteristic value: Refer to Structural Engineers Specification.
    Category: Aggregate Concrete Masonry Unit.
  - Freeze/ Thaw resistance: Frost resistant where used below DPC and on the cold side of insulation.
  - Thermal properties: Thermal resistance: 0.11m²K/W.
  - Recycled content: None permitted.
  - Work sizes (length x width x height): 440mm x 215mm x 140mm.
    Tolerance category: D1.
  - Special shapes: None.
  - Additional requirements: Refer to Structural Engineers Specification.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:3 masonry cement:sand.
  - Additional requirements: Refer to Structural Engineers Specification.
- Bond: Half lap stretcher.

357 CONCRETE COMMON BLOCKWORK 215mm

- Blocks: To BS EN 771-3.
  - Manufacturer: Clarke Group.
    Product reference: '225mm Cavity Block' range.
  - Configuration: Group 1.
  - Compressive strength:
    Mean value: SE Spec of - 15 N/mm². Product available at 21 N/mm2.
    Characteristic value: Refer to Structural Engineers Specification.
    Category: Aggregate Concrete Masonry Unit.
  - Freeze/ Thaw resistance: Frost resistant where used below DPC and on the cold side of insulation.
  - Thermal properties: Thermal conductivity: 1.29 W/mK.
  - Recycled content: None permitted.
  - Work sizes (length x width x height): 440mm x 215mm x 215mm.
    Tolerance category: D1.
  - Special shapes: None.
  - Additional requirements: Refer to Structural Engineers Specification.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:3 masonry cement:sand.
  - Additional requirements: Refer to Structural Engineers Specification - blocks must be fully filled with concrete. No voids.
- Bond: Half lap stretcher.

TESTING

WORKMANSHIP GENERALLY

420 SITE STORAGE

Bricks shall be inspected on delivery, carefully unloaded to minimise damage and set directly onto a well-drained, puddle free level area, not in contact with soil. Pay special attention to the storage and handling of Glazed products as the faces are easily damaged. All products should be immediately protected from rain and snow.
It is important not to overload floor slabs or scaffolding with bricks.
Store units in stable stacks clear of the ground and clearly identified by type, strength, grade, etc.
Protect from adverse weather and keep clean and dry.

430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS AND CLAY BLOCKS

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

440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS

- Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
- Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
- Avoidance of suction in concrete bricks/ blocks: Do not wet.
  - Use of water retaining mortar admixture: Submit details.

460A MORTAR GROUPS - WHERE RELEVANT TO NEW MASONRY BUT NOT THE REPAIR OF THE EXISTING FABRIC

- Mix proportions: For a specified group select a mix design from the following:
  - Group 1:
    1:0–0.25:3 (Portland cement:lime:sand with or without air entraining additive).
    1:3 (Portland cement:sand and air entraining additive).
  - Group 2:
    1:0.5:4–5 (Portland cement:lime:sand with or without air entraining additive).
    1:3 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
    1:2.5–3.5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
    1:3–4 (Portland cement:sand and air entraining additive.)
  - Group 3:
    1:1:5–6 (Portland cement:lime:sand with or without air entraining additive).
    1:3.5–4 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
    1:4–5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
    1:5–6 (Portland cement:sand and air entraining additive).
  - Group 4:
    1:2:8–9 (Portland cement:lime:sand with or without air entraining additive).
    1:4.5 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
    1:5.5–6.5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
    1:7–8 (Portland cement:sand and air entraining additive).
- Batching: Mix proportions by volume.
- Mortar type: Continuous throughout any one type of masonry work.

500A LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- Bond where not specified: Half lap stretcher.
- Vertical joints in brick and concrete block facework: Even widths. Plumb at every fifth cross joint.

All bricks/blocks shall be laid on a full bed of mortar and all cross-joints shall be solidly filled with mortar. Do not furrow. Do not tip and tail.
Build walls in stretcher half lap bond when not specified otherwise.
Plumb perpends of facework every third or fifth cross joint along a course and even out the joint widths in between.
Bricks supplied should be set out horizontally and vertically to gauge to match appearance of reference panel.
Brickwork built in a day shall not exceed 16 courses in height without prior permission of the contract administrator.
The cavity shall be kept clear of mortar and any other debris.
All damp proof courses shall be sandwiched between beds of mortar.
All facework shall be protected against damage during the course of the work.
In addition to the above, workmanship and site practice shall be in accordance with BS 8000-3 and PD 6697.
Movement joints should be incorporated in accordance with EN 1996, PD 6697 and with the recommendations contained in 'Designing for Movement' published by Ibstock Brick Limited.

520 ACCURACY

- Courses: Level and true to line.
- Faces, angles and features: Plumb.
- Permissible deviations:

- Position in plan of any point in relation to the specified building reference line and/ or point at the same level	± 10 mm.
- Straightness in any 5 m length	± 5 mm.
- Verticality up to 3 m height	± 10 mm.
- Verticality up to 7 m height	± 14 mm.
- Overall thickness of walls	± 10 mm.
- Level of bed joints up to 5 m (brick masonry)	± 11 mm.
- Level of bed joints up to 5 m (block masonry)	± 13 mm.

535 HEIGHT OF LIFTS IN WALLING USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR

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

545 LEVELLING OF SEPARATE LEAVES

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

560A COURSING BRICKWORK

- Gauge: Four brick courses including bed joints to 300 mm.
  Brickwork, to work sizes 215x102x65mm, should be set out horizontally 4 bricks to 900mm (co-ordinating size) in stretcher bond and vertically to gauge 4 courses to 300mm to match the appearance of the reference panel.
  Setting out should also ensure satisfactory junctions and joints with adjoining or built in elements and components.

561 COURSING BRICKWORK WITH EXISTING

- Gauge: Line up with existing brick courses.

580A LAYING FROGGED BRICKS

- Single frogged bricks: Frog uppermost.
- Double frogged bricks: Larger frog uppermost.
- Frog cavity: Fill with mortar.
  Clay Bricks may be perforated, solid or frogged. Frogged bricks must be laid frog up unless stated otherwise by the specifier.
  Lay single frogged bricks with frog uppermost; lay double frogged bricks with deeper frog uppermost. In either case completely fill frogs with mortar.
  No perforation or frog is to be exposed in work. Solid bricks must be used where necessary

595 LINTELS

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

610 SUPPORT OF EXISTING WORK

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

620 BLOCK BONDING NEW WALLS TO EXISTING

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

635A JOINTING

- Profile: Consistent in appearance.
  Joints to be tooled to the specified profile whilst the mortar is still green (cement) / has achieved its initial set (Lime).
  When the mortar has been raked out to achieve a recessed joint, the new surface of the mortar must be re-tooled to re-seal the surface.
  Raked joints should not exceed 3-4mm.
  If using glazed products consideration should be given to the impact that exposing the non-glazed bed surface will have to the visual appearance

645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW

- Jointing: Struck flush as work proceeds.

665A POINTING TO NEW MASONRY OF WING MILL

- Where specified, rake out joints to a depth of 12-15mm as the work proceeds. Subsequently, remove loose debris from the joints using a dry brush, dampen the work, and neatly point to the specified profile in a continuous operation from the top of the wall downwards as the scaffolding is taken down.

665B POINTING TO EXISTING AND HISTORIC WALLS

- Refer to C41/810 - 840 and Z21/310B.

671 FIRE STOPPING

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

690 ADVERSE WEATHER

- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay bricks/ blocks:
  - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
  - In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
  - In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
  - Rain and snow.
  - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

710 THE TERM FACEWORK

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

730 BRICK/ CONCRETE BLOCK SAMPLES

- General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: ALL BRICK TYPES - to be approved by the Conservation Officer .
- Selection of samples: Representative of the range in variation of appearance.

745A MASONRY SAMPLE PANELS

- Sampling frequency: A panel for each type and delivery of masonry unit.
- Selection of masonry units: Reasonably representative of the average quality of the whole order to be delivered .
- Panel types: C41/190A.

750A COLOUR CONSISTENCY OF MASONRY UNITS

- Agree with the manufacturer to ensure that the supply of facing units is of a consistent, even colour range, batch to batch and within batches.
  Check each delivery for consistency of appearance with previous deliveries and with approved samples or reference panels; do not use if variation is excessive and advice the supplier immediately.
  The Contractor shall mix from different packs (minimum 3) and deliveries to avoid patches, horizontal banding and racking back marks in the finished work.

760 APPEARANCE

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

780 GROUND LEVEL

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

790 PUTLOG SCAFFOLDING

- Use: Not permitted in facework.

800 TOOTHED BOND

- New and existing facework in same plane: Bond together at every course to achieve continuity.

830A CLEANLINESS

- Keep facework clean during construction and thereafter until Practical Completion.
  Turn back scaffold boards at night and during heavy rain. If, despite precautions, mortar marks are deposited on the face of masonry units, leave to dry then remove with a stiff brush.
  Rubbing to remove marks or stains will not be permitted. In the event that cleaning should be required, this shall be done using a proprietary masonry cleaner in accordance with the manufacturer?s instructions. See C40/230 and C40/352, Stonehealth, DOFF STEAM CLEANING.
  The use of jet washing or power washing will not be acceptable.

  Special instructions for glazed products.
  Avoid wiping the mortar residue onto the glazed surfaces. Use a wooden tool to remove any clumps of mortar from the glazed surfaces.
  To clean down after mortar has cured wash with clean running water and a rag or soft bristle brush, repeatedly rinsing out in water.
  A detergent type cleaning agent may be used for stubborn areas. Be sure to wet the wall prior to application. A final rinse with clean running water should be done immediately. If there is still a milky film on the glazed surface, wash the area with very dilute acid-based cleaner, then rinse. This should remove the residue. (Trial and error may be needed to determine an effective mix.)

  Do not use cleaners containing hydrofluoric acid or any form of chemical cleaning without consultation with the Architect.

F31
Precast concrete sills/ lintels/ copings/ features

Section Revision History

No.	Purpose	
-	TENDER ISSUE	14th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

F31 Precast concrete sills/ lintels/ copings/ features

To be read with Preliminaries/ General conditions.

105A PRECAST WING MILL

- **CDP EMPLOYER'S REQUIREMENTS**
  PRECAST BRICK ELEMENTS

  Design Responsibility, Appearance and Performance

  The Contract Documents describe the Design Intent and define the performance criteria, the mandatory geometry of visible elements, dimensions positions and detail the required principle materials and visible finishes. The Sub-Contractor shall be responsible for developing and completing the design in accordance with the Contract Documents. Any suggested solutions described in the Contract Documents shall not in any way relieve the contractor from their responsibility for the design and construction of the Works.

  Precast brick elements are to achieve the following criteria:

  Utilise bricks to match the bricks specified for the Wing Mill – F10/110

  Precast brick elements are to follow design intent as described on architectural drawings and specification - refer to Architectural Package:

  Wing Mill Envelope – External Wall 621**

Façade at Upper Floor Slab	1777-A-62101
Façade at 1st Floor Slab Soffit	1777-A-62102
Façade at Typical Upper Floor	1777-A-62103
Façade at 1st Floor Soffit Where Glazed	1777-A-62104
Façade at Typical Upper Floor Where Glazed	1777-A-62105
Façade at Typical Upper Floor Horizontal Section	1777-A-62106
Façade at Typical Upper Floor Window - Horizontal Section	1777-A-62107
Façade at Typical Upper Floor Smoke Vent Window	1777-A-62108
Brick and Rainscreen Cladding Systems - Elevation	1777-A-62109
Rainscreen Cladding Systems – Steel Panel	1777-A-62110
Façade Abutment with Existing Buildings – Ground Floor	1777-A-62111
Façade Abutment with Existing Buildings – Upper Floors	1777-A-62112

  NBS specification Section F31 and other sections referenced in F31.

  The precast brickwork contractor is to coordinate the design with the Rainscreen Cladding CDP contractor who is to provide / Co-ordinate the Cast Aluminium, Steel Panels, Steel balustrades (Architectural Metalwork); which is to be anchored into the Precast elements with due consideration and allowance for fixing positions by the Precast brick contractor. The Precast brick contractor is to be responsible and warrant the casting in of anchors that are to be provided for the architectural metalwork.

  Precast Brickwork contractor is to allow for ties between precast element and brickwork to prevent differential movement/opening up of joints.

  Responsibility
  Contractor to complete the design build up/construction of all precast brick elements including: thickness of concrete, reinforcement, specification of concrete, any cast -in elements, the bracketry and fixings back to the primary structure.

Scope
Refer to Architects drawings for locations of precast elements included within CDP package.
The precast brick elements comprise the following:

Facades of Wing Mill

Secondary steelwork
The design and installation of all necessary secondary steelwork and fixing back to primary structure is to be included within Precast brickwork CDP package. All steelwork and fixings to be Stainless Steel.
Contractor is responsible for sizing and specifying all necessary steelwork fixings to ensure that panels remain in situ for the lifespan of the building and take into account all necessary dead, live and imposed loads as defined by Structural Engineer, loads of brickwork window reveals built of the precast cills, loads of brickwork built off precast soffits (to varying degrees) and provide structural calculations for Structural Engineers comment. All fixings into primary structure are to be agreed with Structural Engineer. Any fixings cast into / welded / fixed to the primary structure are to be agreed with Structural Engineer and coordinated with relevant contractor by Precast brickwork CDP contractor.

Samples
Sectional sample of cast element with adjacent connections and showing the co-ordination of the architectural metalwork and rain-screen cladding.

Tolerances
Precast brickwork panels are to be constructed and installed in accordance with the tolerances set out in the Structural Engineers specification.
The design is to incorporate adjustment required in fixings to allow precast panels to be positioned and levelled to meet the required tolerances.

Movement and Deflection
Refer to Structural Engineers documentation for detail of live and dead load deflections etc. The Contractor is to make an assessment of and incorporate all movement and deflection including thermal expansion and contraction and propose a build up/details which accommodate this.

Design Life
60 years.

Warranties
The Contractor is to provide a 15 year warranty for both the materials and workmanship of the precast concrete elements installation.

Other
Contractors to use only recognised good practices and comply with all relevant British standards and Codes of Practice.

Note : Joints between brickwork to be left open. Pointing of joints to be carried out on site by main brickwork contractor with mortar to match Z21/310A – 320A.

110 PRECAST FABRICATOR KEVINGTON

- Kevington are the preferred fabricator for the pre-cast works.
  Contact - Neil Magner - 07866738907

PRE-CAST BRICK FACED UNITS

-Non- structural pre-cast brick faced columns/ spandrel panels, approximately 200mm thick x 440mm complete with 10mm recessed open joints for pointing by others on site
-BBA approved.
-Concrete grade and cover to reinforcement: As clause 360.
-Finish to visible faces:

- Cut bricks to form a mechanical keys element as an integral part of the section
  -Cut bricks for facing component as F10/110.
  -Bedding and jointing mortar: As F10/110, F10/665.
  -Other requirements:
  -Detailed to specialist manufacturers' recommendations.
  -Ancon stainless steel cast in channels/ brackets for fixing pre-cast units back to the main frame TBC
- All PC units to have cast in lifting sockets by CFS with lifting Loops supplied Certificates to be provided upon request

GENERAL REQUIREMENTS

210 MOULDS

- Permissible fabrication and operating tolerances: Length 0 to +6 mm, other dimensions ±3 mm.

220 CONCRETE GENERALLY

- Specification: To BS 8500-2 and BS EN 206-1.
- Producer: Currently certified by a body accredited by UKAS to BS EN 45011 or BS EN ISO/IEC 17065 for product conformity certification of ready-mixed concrete.
- Chloride class of concrete:
  - Excluding SRPC: C1 0.40.
  - Using SRPC: C1 0.20.
  - Reinforced and heat cured: C1 0.10.
  - Prestressed: C1 0.10.
- Admixtures containing calcium chloride: Not allowed.

250 REINFORCEMENT

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

255 QUALITY ASSURANCE OF REINFORCEMENT
Reinforcement to BS 4449, BS 4483, BS 6744: Obtain valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels.

260 CASTING AND CURING
- Placing of concrete: Thoroughly compact.
- Protection against drying out: Methods and duration to BS EN 13369 clause 4.2.1.3.
- Immature components: Avoid movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
- Delivery to site: Minimum 14 days after casting.

261 CUTTING
- Cutting of precast concrete components: Not permitted.

262 RECORDS
- Records for each type of component: Maintain details including:
  - Unique identification number.
  - Identification of the producer.
  - Identification of the place of production.
  - Correlation with records of mixes, including batch numbers.
  - Date of each stage of manufacture.
  - Dates and results of all tests, checks and inspections.
  - Dimensions related to specified levels of accuracy.
  - Specific location in the finished work.
  - Weight of the unit.
  - Damage and making good.
  - Any other pertinent data, e.g. if unit is a production control unit.
- Availability of records for inspection: On request.

FAIR FACED COMPONENTS

BRICK FACING
-Each brick segment to be cast as positively keyed into reinforced concrete backing.
-Brick as F10/110
-Brick tolerances need to be taken into consideration when manufacturing piers of this nature.

315 CONTROL SAMPLES
- -If required samples: After finalization of design can be chosen for inspection/ samples panel manufacturing.
  -Approval of appearance: Obtain before manufacture of remaining units.
  -Identification and storage location: Clearly label and retain at factory for comparison with production units.
  -Final use: Deliver to site for incorporation in works installation by others

320 DETAILS OF SAMPLES

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

341 CONDITIONS FOR SEPARATE FACING AND BACKING MIXES

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

350 QUALITY OF FINISHES

- Appearance standard: As established by samples.

360 DURABILITY FOR EXTERNAL COMPONENTS

- Concrete grade and cover to reinforcement. The quality of concrete and nominal cover to reinforcement (including secondary reinforcement) on visible faces in the finished work must be related and chosen from the following table:

  Minimum acceptable concrete grades to BS 8500:
  -Designated mixes RC40 RC45 RC50
  -Designed mixes C40 C45 C50

  Minimum cement content (kg/m3):
  -With 20 mm aggregate 325 350 400
  -With 10 mm aggregate 365 390 440

  Maximum free 0.55 0.50 0.45 water/cement ratio
  Air entrainment Required Optional
  Nominal cover (mm) for:
  -Visible faces:
  Single mix 50 40 30
  Different mixes for 50 50 50
  facing and backing
  -Internal faces (protected) 30 25 20
  -Bedded faces: Thickness of nominal cover: 20 mm.
  -Exposed aggregate faces: Thickness of nominal cover to be exclusive of aggregate projection.
  -Use of sulphate resisting cement: Thickness of nominal cover on visible faces to be increased by 10 mm.
  -Use of galvanized or stainless steel reinforcement: Submit proposals for quality of concrete and nominal cover.
  -Air entrainment: 5% by volume using admixture to BS EN 934-2.
  -Concrete testing: Sample and cube test every batch.

365 COVER ON EXPOSED AGGREGATE FACES

- Nominal cover: Exclusive of aggregate projection.

370 COVER ON VISIBLE FACES
- Spacers: Not permitted.
- Proposed method statement: Submit.

380 CONSISTENCY OF PRODUCTION METHODS
- Production methods: To remain consistent for each matching type of finish.
  - Finish appearance: To remain within the range of variation indicated by the samples submitted.
- 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
- Completed components: Give notice when ready to be inspected at factory.

INSTALLATION

431 SUSPENSION FIXINGS
- System to be based on the principles set out in the Structural Engineers design.
  Specialist manufacturer to take the design principles forward to develop the fabrication of the fixings and anchors.
  Refer to Ancon or equal approved specialist manufacturer.

G
Structural/Carcassing metal/timber

G12
Isolated structural metal members

Section Revision History

No.	Purpose	
-	TENDER ISSUE	5th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

G12 Isolated structural metal members

To be read with Preliminaries/ General conditions.

GENERAL NOTE
Refer to ARUP Engineers Specification for more detail.
Fabrication design of secondary steel members is to be undertaken by the Contractor. The Architectural assembly details provide guidance and general detail of the requirements.
Fabrication / Shop drawings are to be provided for comment prior to final fabrication.
Refer to A31/300 of the Preliminaries.

FABRICATION

510 FABRICATION OF STEEL MEMBERS
- Cuts and holes: Accurate and neat.
- Welding: Metal arc method to BS EN 1011-2.
  - Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
  - Site welding: Obtain approval.
- Joints: Location and layout of fastenings as drawing To be resolved as part of the fabrication design - refer to the Architectural Assembly Drawings.

EXECUTION

610 INSTALLATION
- 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.
- Fixing: Use washers under bolt heads and nuts.
  - Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.

620 BONDED ANCHORS
- Holes: Clean and free from dust at time of installing anchor.
- Permeable sleeves: Use in conditions where otherwise the loss of bonding agent would be unacceptably high.
- Other requirements: refer to Arup Engineers Specification.

640 PREPARATION AND PRIMING
- Sequence of working: Fabricate, prepare, prime.
- Surfaces inaccessible after assembly: Apply full treatment and coating system including, if necessary, local application of site coatings.
- Galvanized/ sheradized fasteners: After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.

650 SHOP PRIMING GENERALLY

- Preparation: To BS EN ISO 12944-4. Remove fins, burrs, sharp edges and weld spatter and clean out crevices.
  - Surface finish: Blast cleaned to BS EN ISO 8501-1, grade Sa 2½.
  - Prepared surfaces: Keep in a dry atmosphere and apply first coating without delay.
- Priming:
  - Primer: High build zinc phosphate epoxy - M60/195B.
    Number of coats: One.
    Dry film thickness (minimum): 60 micrometres per coat.
  - Application: To BS EN ISO 12944-7.
- Other requirements: Overcoat ends of beams built into solid external walls with high build bituminous paint. Extend coating 120mm from face of wall onto exposed steelwork.

COMPLETION

910 STEEL TO TIMBER JOINTS

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

G20
Carpentry/ timber framing/ first fixing

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

G20 Carpentry/ timber framing/ first fixing

To be read with Preliminaries/ General conditions.

60 TIMBER PROCUREMENT - SUSTAINABLE RESOURCES

- All timbers including softwoods, temperate hardwoods and all tropical hardwoods are to be from sustainable sources.

- In particular tropical hardwoods in timber or timber products (e.g. veneers, lippings, boards, plywood etc) are expressly prohibited except where the Contractor has provided the following information for each type, and the Architect is satisfied as to the content.
  a The species and country of origin of each tropical hardwood timber.
  b The name of the concession / plantation within each of the countries of origin which will supply these timbers / products.
  c Copies of the forestry policies pursued by the concessions/plantations, independently verified, that must confirm a sustainable resource policy is followed.
  d Relevant shipping documents confirming that the UK supplier has actually obtained these timbers, etc., from the given concession / plantation.
  An alternative way of confirming suitability, to a, b, c & d above, is the use of timber or timber products containing tropical hardwoods certified by the Forest Stewardship Council (FSC).
  FSC UK Working Group, Unit K, Station Building, Llanidloes, Powys, Wales SY18 6EB
  telephone: 01686 413916, fax 01686 412176, e-mail: fsc-uk@fsc-uk.demon.co.uk
  None of the relevant material should be ordered before confirmation of the acceptability of this documentation.
  Tropical hardwoods include "Meranti", "Iroko", "Sapele", "Angre", "Mahogany" and "Ramin".

- A way of confirming suitability of Softwoods and Temperate Hardwoods is the use of timber or timber products certified by the FSC (as above) or by the Programme for the Endorsement of Forest Certification (PEFC).
  PEFC UK Limited, Sheffield Technology Parks, Cooper Buildings, Arundel Street, Sheffield S1 2NS telephone 0114 3072334, e-mail: info@pefc.co.uk

- If requested, the Contractor is to confirm in writing to the Architect the composition and sources of any timber or timber product (e.g. veneers, lippings, boards, plywood etc) to confirm that the foregoing is maintained.

GENERAL

120 STRUCTURAL DESIGN PROVIDED

- Description: repair and refurbishment as Structural Engineers Detailed Design Report and Drawings together with new work including, but not limited to, the following
  " The lower ground floor is to be formed of tantalized timber joists built over the existing basement level with the floor built to similar details as proposed for the building above.
  " Framing and treated 22mm thick douglas fir penny gap boarding to inset dormers of the Mill buildings, all to receive building paper, weatherings and appropriate external finishes as H71.
  " Treated softwood framing to rooflights, fixed back to existing timber roof structures. Framing infilled with insulation material, together with breather membrane, vapour control layer and WBP or close grained softwood T&G sarking boards as required. Refer to Architects Detail.
  " Framing and WBP ply sheeting on roof areas of Wing Mill and at interfaces, all to receive roof finishes.
  " Treated SW framing and plywood backings/pattresses within partitions to suit localised requirements, typically in utility cupboards and other service spaces where plant and utilities are to be fixed, suspended and hung.
  " Treated SW framing for bathroom vanity units and other applications .
- Requirements:
  - Generally: As section B50/B51.
  - Additional requirements: None .

150 STRENGTH GRADING OF TIMBER

- Grader: A company currently registered under a third party quality assurance scheme operated by a certification body approved by the UK Timber Grading Committee.

160 GRADING AND MARKING OF SOFTWOOD

- Timber of a target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

PRODUCTS

210 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS) FOR JOISTS, PURLINS & RAFTERS

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Strength class to BS EN 338: C24.
- Treatment:
  - Preservative treatment: to lower ground floor timbers (use class 1 or 2): Tanalith E impregnation to treatment code TE/BI and to NBS section Z12
    except for sole plates which are to receive Tanalith E impregnation to treatment code TE/BX.
    Design service life: of preservative treatment: 60 years.
  - Fire retardant treatment: None required.

270 UNGRADED SOFTWOOD FOR INTERNAL NONSTRUCTURAL USE

- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Planed all round.
- Treatment:
  - Preservative treatment: None required.
  - Design service life: 60 years.
  - Fire retardant treatment: None required.

310 STRUCTURAL PLYWOOD FOR DECKING TO ROOFS ETC

- Standard: To BS EN 636.
- Service class to BS EN 1995-1-1: Class 2.
- Load duration class to BS EN 12369-2: Long-term.
- Characteristic strength class to BS EN 12369-2: as specified by structural engineer.
- Characteristic modulus class to BS EN 12369-2: as specified by structural engineer.
- Appearance class to BS EN 635: IV.
- Bonding quality to BS EN 314-2: Class 2.
- Nominal thickness: 18 mm.
- Finish: Unsanded.
- Treatment: none.
  - Preservative treatment: None required.
    Design service life: 60 years.
  - Fire retardant treatment: None required.

311 NON-STRUCTURAL PLYWOOD FOR INTERNAL NONSTRUCTURAL USE

- Standard: To an approved national standard.
- Thickness: as required.
- Appearance class to BS EN 635: I.
- Bond quality to BS EN 314-2: Class 1.
- Finish: Sanded.
- Treatment:
  - Preservative treatment: None required.
    Design service life: 60 years.
  - Fire retardant treatment: None required.

WORKMANSHIP GENERALLY

401 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD

- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
- Tolerances: The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
  - Tolerance class 1 (T1) for sawn surfaces.
  - Tolerance class 2 (T2) for further processed surfaces.

402 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD

- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
- Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1, clause 6 for sawn sections.

403 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL HARDWOOD

- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
- Maximum permitted deviations from finished sizes: As stated in BS EN 1313-2:
  - Clause 6 for sawn sections.
  - Clause NA.3 for further processed sections.

420 WARPING OF TIMBER

- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978 or BS EN 14081-1 for softwood, or BS 5756 for hardwood.

430 SELECTION AND USE OF TIMBER

- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.

435 NOTCHES, HOLES AND JOINTS IN TIMBER

- Notches and holes:
  - General: Avoid if possible.
  - Sizes: Minimum needed to accommodate services.
  - Position: Do not locate near knots or other defects.
  - In same joist: Minimum 100 mm apart horizontally.
  - Notches in joists:
    Position: Locate at top. Form by sawing down to a drilled hole.
    Depth (maximum): 0.15 x joist depth.
    Distance from supports: Between 0.1 and 0.2 x span.
  - Holes in joists:
    Position: Locate on neutral axis.
    Diameter (maximum): 0.25 x joist depth.
    Centres (minimum): 3 x diameter of largest hole.
    Distance from supports: Between 0.25 and 0.4 of span.
  - Notches in roof rafters, struts and truss members: Not permitted.
  - Holes in struts and columns: Locate on neutral axis.
    Diameter (maximum): 0.25 x minimum width of member.
    Centres (minimum): 3 x diameter of largest hole.
    Distance from ends: Between 0.25 and 0.4 of span.
- Scarf joints, finger joints and splice plates: Do not use without approval.

440 PROCESSING TREATED TIMBER
- Cutting and machining: Carry out as much as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

450 MOISTURE CONTENT
- Moisture content of wood and wood based products at time of installation: Not more than:
  - Covered in generally unheated spaces: 24%.
  - Covered in generally heated spaces: 20%.
  - Internal in continuously heated spaces: 20%.

451 MOISTURE CONTENT TESTING
- Procedure: When instructed, test timber sections with an approved electrical moisture meter.
- Test sample: Test 5% but not less than 10 lengths of each cross-section in the centre of the length.
- Test results: 90% of values obtained to be within the specified range. Provide records of all tests.

510 PROTECTION
- Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- Timber and components: Store under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.
- Trussed rafters: Keep vertical during handling and storage.

550 EXPOSED TIMBER
- Planed structural timber exposed to view in completed work: Prevent damage to and marking of surfaces and arrises.

JOINTING TIMBER

570 JOINTING/ FIXING GENERALLY
- Generally: Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

630 BOLTED JOINTS
- Bolt spacings (minimum): To BS EN 1995-1-1, section 8.5.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
  - Checking: At agreed regular intervals up to Completion. Tighten as necessary.

670 ANTI-CORROSION FINISHES FOR FASTENERS

- Galvanizing: To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
- Sherardizing: To BS 7371-8, Class 1.
- Zinc plating: To BS EN ISO 4042 and passivated.

ERECTION AND INSTALLATION

740 PRE-ERECTION CHECKING

- Timing: Not less than 10 days before proposed erection start date.
- Checklist:
  - Foundations and other structures to which timber structure will be attached: Check for accuracy of setting out.
  - Holding down bolts: Check for position, protruding length, condition and slackness.
- Inaccuracies and defects: Report without delay.
- Erection: Obtain permission to commence.

750 MODIFICATIONS/REPAIRS

- Defects due to detailing or fabrication errors: Report without delay.
- Methods of rectification: Obtain approval of proposals before starting modification or remedial work.
- Defective/damaged components: Timber members/ components may be rejected if the nature and/or number of defects would result in an excessive amount of site repair.

760 TEMPORARY BRACING

- Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

770 ADDITIONAL SUPPORTS

- Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheets materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings
- Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

775 BEARINGS

- Timber surfaces which are to transmit loads: Finished to ensure close contact over the whole of the designed bearing area.
- Packings: Where provided, to cover the whole of the designed bearing area.
  - Crushing strength: Not less than timber being supported.
  - In external or inaccessible locations: Rot and corrosion proof.

780 WALL PLATES

- Position and alignment: To give the correct span and level for trusses, joists, etc.
- Bedding: Fully in fresh mortar.
- Joints: At corners and elsewhere where joints are unavoidable use nailed half lap joints. Do not use short lengths of timber.

784 JOISTS GENERALLY

- Centres: Equal, and not exceeding designed spacing.
- Bowed joists: Installed with positive camber.
- End joists: Positioned approximately 50 mm from masonry walls.

786 JOISTS ON HANGERS

- Hangers: Bedded directly on and hard against supporting construction. Do not use packs or bed on mortar.
- Joists: Cut to leave not more than 6 mm gap between ends of joists and back of hanger. Rebated to lie flush with underside of hangers.
- Fixing to hangers: A nail in every hole.

795 TRIMMING OPENINGS

- Trimmers and trimming joists: When not specified otherwise, not less than 25 mm wider than general joists.

850 INSPECTION GENERALLY

- Structural timber-work: Give reasonable notice before covering up.

860 BOLTED JOINTS INSPECTION

- Timing: Inspect all accessible bolts at the end of the Defects Liability Period and tighten if necessary.

H
Cladding/Covering

H11
Curtain walling

Section Revision History

No.	Purpose	
-	TENDER ISSUE	18th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

H11 Curtain walling

To be read with Preliminaries/ General conditions.

TENDERING

10 INFORMATION TO BE PROVIDED WITH TENDER

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

TYPES OF CURTAIN WALLING

110 CURTAIN WALLING TO WING MILL

- Supporting structure: Cold Rolled Steel .
- Curtain walling system:
  - Manufacturer: Schueco UK Ltd. - Tel: 01908 282111 .
    Product reference: Schuco Jansen Viss TV 50mm wide steel thermally broken curtain walling system .
  - Type: Stick system, pressure equalised transome zone drained and ventilated .
- Internal framing member:
  - Material: Steel .
  - Finish: hot dip galvanized to be polyester powder coated .
    Colour/ texture: RAL TBC/ gloss .
    Minimum film thickness: 50 micrometres .
- External cover cap:
  - Material: Aluminium
    Mullion cover cap - Schuco Jansen ref 407.862 25mm cap profile
    Transom cover cap - Schuco Jansen ref 407.861 18mm cap profile .
  - Finish: Powder coating .
    Colour/ texture: RAL TBC/ gloss .
    Minimum film thickness: 50 micrometres .
- Glazing: Insulating glass units - Generally - 30mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8.4/16/6 = 33dB Rw+Ctr
  Safety glass to BS 6206 below 800 mm above finished floor level and below 1500mm within 300mm of doors .
  - Inner pane: Heat strengthened glass .
  - Outer pane: Laminated solar control glass .
- Glazing system: Gaskets, cover plate fixed as clause 760 .
- Panel/ facing type: Composite infill panels, external cover plate fixed .
  - External material: Laminated ceramic coated glass .
  - External finish: Not required .
  - Internal material: brass cover sheet .
  - Internal finish: PVDF coating where concealed .
  - Core insulation: as part of Schuco system .
- Accessories:
  Schuco Jansen Viss curtain walling tansome fixed via connection spigot method
  Schuco EPDM reference 150mm 224 154
  All as required for a complete installation .
- Incorporated components:
  Schuco Jansen doors as clause L20/480B
  Powder coated sill flashing to base of curtain walling as per Architects drawings.
  Powder coated flashings to sides and head of curtain walling system as per Architects drawings .
- Other requirements:
  The Schuco Jansen steel curtain walling system shall be installed in complete accordance with the information published by Schuco Jansen UK, exclusively by authorised fabricators.
  System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .

135 DOORS as L20/480B
- Manufacturer: Schuco .
  - Product reference: Janisol .
- Material: steel .
- Finish: galvanized and PPC .
  - Colour/ texture: TCB .
  - Minimum film thickness: 50 micrometres .
- Fixing: as manufacturers recommendations .
- Other requirements: L20/480A .

GENERAL REQUIREMENTS/ PREPARATORY WORK

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

215 DESIGN PROPOSALS
- Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

220 SPECIFICATION
- Compliance standard: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
- Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
  - The CWCT 'Standard for systemised building envelopes'.
  - Publications invoked by the CWCT 'Standard for systemised building envelopes'.

230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN STAGE
- Submit the following curtain walling particulars:
  - A schedule of detailed drawings and dates for submission for comment.
  - A schedule of loads that will be transmitted from the curtain walling to the structure.
  - Proposed fixing anchor details relevant to structural design and construction.
  - A detailed testing programme in compliance with the Main Contract master programme.
  - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
  - Proposals to support outstanding applications for Building Regulation consents or relaxations.

232 QUALITY PLAN

- Requirement: Submit during detailed design.
- Content: In accordance with BS EN ISO 9001 and including the following:
  - Name of the quality manager.
  - Quality assessment procedures.
  - Inspection procedures to be adopted in checking the work.
  - Stages at which check lists will be used and samples of the lists.
  - List of work procedures on the correct use of materials or components, both off site and on site.
  - List of product information with latest revisions.
  - Subcontractors involved in the work.
  - Subcontractors' quality plans.
  - Storage, handling, transport and protection procedures.
  - Procedure for registering and reporting non compliances.
  - Maintenance procedures and calibration records.
  - Certification that completed work complies with specification.
  - Check list register to ensure all items have been inspected and non compliances discharged.

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

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

240 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF STRUCTURAL SEALANT GLAZING

- Submit structural bonding sealant manufacturer's project specific approval for:
  - Compatibility and adhesion of products and finishes.
  - Full details of structural sealant glazing design.
  - Structural sealant dimensions.
  - Project specific sealant application method statement.

250 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of:
  - colour samples
  - frame sections in preferred colour
  - sample of glass unit
  - sample of insulated composite unit .

260 SAMPLES OF FIXINGS

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

270 FABRICATION SAMPLES

- General: During detailed design, submit samples of:
  - Fixing / cleats / anchors
  - Bespoke elements .
  - Obtain approval of appearance before proceeding.

280 MOCK-UP

- General: Construct during detailed design work in an approved location. Obtain approval of appearance before proceeding. Retain undisturbed until completion of curtain walling installation.
- Extent: Approx. 800mm of each key interface / junction
  Plinth to Base
  Edge to Side Panel
  Top to Pre-cast system .
- Purpose: to confirm the assembly and co-ordination and resolve the fabrication design .

DESIGN/ PERFORMANCE REQUIREMENTS

305 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'

- General: Unless specified or agreed otherwise comply with:
  Part 2 - Loads, fixings and movement.
  Part 3 - Air, water and wind resistance.
  Part 4 - Operable components, additional elements and means of access.
  Part 5 - Thermal, moisture and acoustic performance.
  Part 6 - Fire performance
  Part 7 - Robustness, durability, tolerances and workmanship.
- Project performance requirements specified in this subsection: Read in conjunction with CWCT performance criteria.

312 INTEGRITY

- Requirement: The curtain walling must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
- Design wind pressure: Calculate in accordance with BS 6399-2, Standard Method:
  - Basic wind speed (Vb):
  - Altitude factor (Sa):
  - Direction factor (Sd):
  - Seasonal factor (Ss): 1.
  - Probability factor (Sp): 1.
  - Terrain and building factor (Sb):
  - Size effect factor (Ca): 1.
  - External pressure coefficients (Cpe):
  - Internal pressure coefficients (Cpi):

  Hard body impact loads: In accordance with CWCT TN75:
  - Location and category: [Street Level - category A].

  Soft body impact loads - curtain walling to BS EN 14019:
  - Location and classification: [Street Level - class E1].

  Permanent imposed loads: [____confirm____].
  Temporary imposed loads: [____confirm____].

320 DEFLECTION UNDER DEAD LOADS

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

325 DEFLECTION UNDER WIND LOAD

- Requirement: To CWCT 'Standard for systemised building envelopes' clause 3.5 2 and the following additional requirements: None.
- Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5 4.2: Allowed.

330 GENERAL MOVEMENT

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

332 APPEARANCE AND FIT

- Requirement: Design curtain walling system:
  - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
  - To accommodate deviations in the primary support structure.
- Primary support structure: Before commencing installation of curtain walling system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
  - Give notice: If the structure will not allow the required accuracy or security of erection.
  - Design tolerances: Refer to the Structural Engineers specification for more information - National Structural Steelwork Specification.
- Curtain wall envelope zone tolerances:
  - Width: TBC - assume - 5mm.
    Critical reference location: TBC.
- Maximum permitted component and installation tolerances: TBC - assume - 5mm.

340 AIR PERMEABILITY

- Requirement: Permissible air leakage rates of 1.5m³/hr/m² for fixed lights and 2.0 m³/hr/lin.m for opening lights must not be exceeded when the curtain walling is subjected to the peak test pressure.
- Permeability class to BS EN 12152: A4.
  - Peak test pressure: 600 Pa.

345 AIR PERMEABILITY EXFILTRATION

- Requirement: The maximum permissible air exfiltration rate through the curtain walling system must not exceed:
  All external walls: 3 m³/(h.m²) at a test pressure of 50 Pa.
  Curtain Walling: 4 m³/(h.m²) at a test pressure of 50 Pa..

350 WATER PENETRATION

- Watertightness class to BS EN 12154: R5.
  - Peak test pressure: 300 Pa.
- Additional requirements: Underside of any transom not to be wetted at peak test pressure.

370 THERMAL PROPERTIES
- Method of calculating the thermal transmittance (U-value) of curtain walling/ each zone of curtain walling: Weighted U-value.
- Average U-value of curtain walling: 2.5 W/m²K to walling Type B.
- Curtain wall zone interfaces: Co-ordinate to achieve required average U-value.
- Method for assessing thermal transmittance (U-value) of assemblies: By calculation.

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

390 AVOIDANCE OF CONDENSATION
- Requirement: Notional psychrometric conditions under which condensation must not form on building interior surfaces of framing members or any part of infill panels/ facings are:
  - Notional outdoor psychrometric conditions as BS 6229, table A1.
  - Notional indoor psychrometric conditions:
    Temperature: 20°C.
    Relative humidity: 35%.
    Vapour pressure: 1.28 kPa .

425 INTERNAL SURFACE SPREAD OF FLAME OF CURTAIN WALLING
- Standard: To BS 476-7.
  - Class 1.

426 REACTION TO FIRE OF CURTAIN WALLING
- Standard: To BS EN 13501-1.
  - Class: B-s3, d2 or better.

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

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

460 STRUCTURAL SEALANT GLAZING REQUIREMENTS
- Structural sealant glazing units: Installable, removable and replaceable without site application of structural bonding sealant.
- Structural sealant glazing design: Must limit design tensile stress of sealants to 138 kPa.

PRODUCTS

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

715 CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT
- Standards: To relevant parts of BS 7668, BS EN 10029, and BS EN 10210.
- Thickness: Suitable for the application, and for galvanizing or other protective coating.

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

720 STAINLESS STEEL SHEET
- Standards: To relevant parts of BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10095 and BS EN ISO 9445.
- Grade: To BS EN 10088-2, austenitic 1.4301 (304) generally, 1.4401 (316) when used externally or in severely corrosive environments.
- Thickness: Suitable for the application.

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

732 ADHESIVES
- General: Not degradable by moisture or water vapour.

735 FIXING ANCHORS
- Type and use: Reviewed and approved by fixing manufacturers. Submit confirmatory information on request.
- Dimensions: Not less than recommended by their manufacturers.
- Adjustment capability: Sufficient in three dimensions to accommodate building structure and curtain walling fabrication/ installation tolerances.

737 GLASS GENERALLY
- Standards: To BS 952 and relevant parts of:
  - BS EN 572 for basic soda lime silicate glass.
  - BS EN 1096 for coated glass.
  - BS EN 1748 for borosilicate glass.
  - BS EN 1863 for heat strengthened soda lime silicate glass.
  - BS EN 12150 for thermally toughened soda lime silicate glass.
  - BS EN 13024 for thermally toughened borosilicate glass.
  - BS EN ISO 12543 for laminated glass.
- Selection of glass type and thickness in accordance with recommendations of CIRIA publication 'Guidance on glazing at height'.
- Glass quality: Clean and free from obvious scratches, bubbles, cracks, ripplings, dimples and other defects.
- Glass edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

739 DIMENSIONAL TOLERANCES ON GLASS AS PART of WING MILL

- Measurement of tolerances: Before any thermal toughening/ heat strengthening.
- Pane dimensions less than 1500 mm:
  - For 3 to 6 mm thick glass: ± 1.0 mm.
  - For 8 to 12 mm thick glass: ± 1.5 mm.
  - For 15 mm thick glass: ± 2.0 mm.
  - For 19 mm and 25 mm thick glass: ± 2.5 mm.
- Pane dimensions more than 1500 mm:
  - For 3 to 6 mm thick glass: ± 1.5 mm.
  - For 8 to 12 mm thick glass: ± 2.0 mm.
  - For 15 mm thick glass: ± 2.5 mm.
  - For 19 mm and 25 mm thick glass: ± 3.0 mm.
- Pane squareness: Not more than 4 mm difference in diagonal measurements.

741 DISTORTIONAL TOLERANCES ON GLASS AS PART of WING MILL

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

745 INSULATING GLASS UNITS

- Standard and labels for hermetically sealed units: To BS EN 1279.
- Label: Each pane.
- Colour of aluminium perimeter spacers: Black.
- Perimeter taping: Not to be used.
- Perimeter seals:
  - Resistant to UV light degradation on exposed edges.
  - Compatible with structural, assembly and weather sealants.

747 GLASS EDGE CONDITION FOR STRUCTURAL SEALANT GLAZING

- Bonded, unframed outer edges: Flat ground with a small arris suitable for open jointing or for weatherseal jointing.

750 INFILL PANELS/ FACINGS

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

760 GASKETS

- Material:
  - Noncellular rubber to BS 4255-1.
  - Cellular rubber to ASTM-C509.
- Continuity: Outer gaskets of single front sealed curtain walling systems and inner gaskets of drained and ventilated or pressure equalized curtain walling systems must be formed in a complete frame with sealed joints. Vulcanized rubber gaskets must have factory moulded corner joints.
- Durability: Resistant to oxidation, ozone and UV degradation.

765 WEATHERSTRIPPING OF OPENING UNITS

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

770 GENERAL SEALANTS

- Selection: In accordance with BS 6213 from:
  - Silicone.
  - One part polysulfide.
  - Two part polysulfide.
  - One or two part polyurethane.
- Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible.

785 VAPOUR CONTROL LAYER

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

FINISHES

810 PROTECTIVE COATING OF CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT

- Treatment: One of the following to all surfaces:
  - Hot dip galvanized to BS EN ISO 1461.
  - An appropriate equivalent coating to BS EN ISO 12944-5 or BS EN ISO 14713-1, -2 and -3.

820 PROTECTIVE COATING OF CARBON STEEL MECHANICAL FIXINGS

- Treatment: One of the following to all surfaces:
  - Hot dip galvanized to BS EN ISO 1461.
  - Sherardized to BS 4921, class 1 coating thickness and passivated.
  - Zinc plated to BS EN ISO 2081, coating designation Fe//Zn//C for an iridescent (yellow passivate) chromate conversion coating or Fe//Zn//D for an opaque (olive green) chromate conversion coating.

FABRICATION AND INSTALLATION

910 GENERALLY

- Electrolytic corrosion: Prevent. Submit proposed methods.
- Fixings: Concealed unless indicated on detailed drawings. Where exposed they must match material and finish of the products fixed.
- Fabrication: Machine cut and drill products in the workshop wherever possible.
- Identification of products: Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the completed installation.

912 METALWORK

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

915 GLAZING

- Requirement: As section L40, unless specified otherwise in this section.
- Directional patterned/ wired glass: Generally fix parallel to surround and align adjacent panes where seen together at close quarters.

917 FIXINGS/ ADHESIVES APPLICATION

- Requirement: As section Z20, unless specified otherwise in this section.

920 SEALANT APPLICATION

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

925 STRUCTURAL SEALANT GLAZING

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

930 ASSEMBLY

- General: Carry out as much assembly as possible in the workshop.
- Joints (other than movement joints): Rigidly secured, reinforced where necessary and fixed with hairline abutments.
- Displacement of components in assembled units: Submit proposals for reassembly on site.

955 FIXING ANCHOR INSTALLATION

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

970 CURTAIN WALLING INSTALLATION

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

980 INTERFACES

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

H62
Natural slating

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

H62 Natural slating

To be read with Preliminaries/ General conditions.

TYPES OF SLATING

110A EXISTING ROOF SLATING WITH COUNTERBATTENS TO ALL EXISTING ROOFS
The specification is concerned with the intervention into the existing slate roof to enable the formation of new roof penetrations. All slate is to be reinstated to match the existing with traditional details used at the eaves, bedded verge, ridge and any abutments.

- Substrate: The following are based on non-intrusive inspections - opening up on site will be necessary for the existing build-up to be confirmed. This may impact upon the current proposed makeup for the insulation of the roofs.
  MILL BUILDINGS - Rafters at 450 mm centres with T&G softwood sarking fixed to the top face of the rafters, Vapour Barrier overlain with rigid rockwool bat, 19mm ply, 25mm x 50mm tanalized counter battens, Klober Permo Forte roofing felt, 25mm x 32mm tanalized slating battens.
  MURRAY ST - Rafters at 450 mm centres with rockwool fleece suspended on a Vapour Barrier between the rafters, 19mm ply, 25mm x 50mm tanalized counter battens, Klober Permo Forte roofing felt, 25mm x 32mm tanalized slating battens.
- Pitch: 32° approx. and varying.
- Slates:
  - Supplier: Welsh Slate - 01248 600656.
    Product reference: Penrhyn.
  - Type: Heather Blues - Best Quality.
  - Size: Diminishing Courses - All selected to match the existing - Largest Slate approx 1200mm x 800mm - Smallest approx. 400mm x 250mm - to be confirmed on site.
  - Head-lap (minimum): Seek 115mm minimum and to match the existing..
  - Sidelap: To BS 5534, clause 5.3, to suit slate size, roof pitch and exposure.
  - Fixing: Two nails each slate - Stainless Steel annular ring shank. Ref 275A.
- Accessories: Insulation on lining trays..

SLATING GENERALLY

210 BASIC WORKMANSHIP
- General: Fix slating and accessories to make the whole sound and weathertight at earliest opportunity.
- Setting out: To true lines and regular appearance, with neat fit at edges, junctions and features.
- Fixings for slating accessories: As recommended by manufacturer.
- Gutters and pipes: Keep free of debris. Clean out at completion.

220 REMOVING EXISTING SLATING
- General: Carefully remove slates, battens, underlay, etc. with minimum disturbance of adjacent retained slating.
- Undamaged slates: Set aside for reuse.

240 UNDERLAY
- Handling: Do not tear or puncture.
- Laying: Maintain consistent tautness.
- Vertical laps (minimum): 100 mm wide, coinciding with supports and securely fixed.
- Fixing: Galvanized steel, copper or aluminium 20 x 3 mm extra large clout head nails.
- Eaves: Where exposed, underlay must be BS 8747 Annex B, type 5U, or equivalent UV durable type.
- Penetrations: Use proprietary underlay seals or cut underlay to give a watertight fit around pipes and components.
- Ventilation paths: Do not obstruct.

245 BATTENS/ COUNTERBATTENS - TREATED
- Timber: Sawn softwood.
  - Species: To BS 5534, clause 4.12.1.
  - Permissible characteristics and defects: Not to exceed limits in BS 5534, annex C.
  - Grading: Factory pre-graded with site grading of knots and wane.
  - Moisture content at time of fixing and covering (maximum): 22%.
- Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
  - Type: Copper-organic.

255A COUNTERBATTENS ON RIGID SARKING
- Fixing: Through rigid sarking into rafters at not more than 300 mm centres. Check the type of fixing used in the 2006 restoration works. Assume Ancon Staifix Super-7 Thor Helical Nail for pitched roofs. Seek to match existing.

265 BATTEN FIXING
- Setting out: Align parallel to ridge in straight horizontal lines to gauge of slates. Align on adjacent areas.
- Batten length (minimum): Sufficient to span over three supports.
- Joints in length: Square cut. Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
- Additional battens: Provide where unsupported laps in underlay occur between battens.
- Fixing: Each batten to each support. Splay fix at joints in length.

270 BATTENS FIXED TO MASONRY
- Setting out: In straight horizontal lines. Align on adjacent areas.
- Batten length (minimum): 3 m.
- Fixing centres (maximum): 400 mm.

272 TIMBER FOR SLATING SUBSTRATE WORK
- Timber: Sawn softwood, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
  - Moisture content at time of fixing and covering (maximum): 22%.
- Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
  - Type: Copper-organic.

275A SLATE FIXING

- Setting out: Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
- Slate thickness: Consistent in any one course. Lay with thicker end as tail.
- Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. **Do not use slates less than 250 mm wide** .
- Top course: Head-nail short course to maintain gauge.
- Fixing: Centre nail each slate twice through countersunk holes 20-25 mm from side edges.
  - Nails: **Copper clout to BS 1202-2** or **Stainless Steel Annular Ringshank to BS 1202 A2 304**
  - Nail dimensions: Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.

290A MORTAR BEDDING/ POINTING

- Mortar: As section Z21, 1:3 cement:sand, with plasticizing admixtures permitted and Granolithic content for hardness and durability. Appliance of bedding is to match that of the adjacent roofs.
  - Bond strength providing resistance to uplift: To BS 5534.
- Weather: Do not use in wet or frosty conditions or when imminent.
- Preparation of concrete and clay tile accessories to be bedded: Wet and drain surface water before fixing.
- Appearance: Finish neatly as work proceeds and remove residue.

ROOF SLATING EDGES/ JUNCTIONS/ FEATURES

305 GENERALLY

- Fittings and accessories: As recommended by slate supplier, do not improvise.
  - Exposed fittings and accessories: To match slate colour and finish.
- Cut slates: Cut only where necessary, to give straight, clean edges.
- Flashings: Fix with or immediately after slating. Form neatly.

325 FIRE SEPARATING WALLS

- Separating walls: Completely fill space between top of wall and underside of slates with mineral wool quilt to provide fire stopping.
- Boxed eaves: Completely seal air paths in plane of separating wall with wire reinforced mineral wool, not less than 50 mm thick, fixed to rafters and carefully cut to shape to provide fire stopping.

445A MORTAR BEDDED VERGES WITH BEDDED UNDERCLOAK

- Underlay: Carry 50 mm onto outer leaf of gable wall and bed on mortar.
- Undercloak: Slates.
  - Position: Over underlay, level with underside of slating battens, sloping towards verge.
  - Projection beyond face of wall: 50 mm.
  - Bedding: On granolithic mortar.
    Slating battens: Carry onto undercloak and finish 100 mm from verge edge. Ensure sawn ends are treated.
- Verge slates:
  - Bedding: Slightly overhanging undercloak by approx. 10mm and laid on 80 mm wide bed of mortar that stops short of the end of the slating batten.
  - Pointing: Flush profile cut clean to verge slate and undercloak.
  - Fixing: Do not displace or crack mortar.

555A MORTAR BEDDED AND MECHANICALLY ANCHORED TILE HIPS
Lift and Re-Bed all allotting for the introduction of new 3mm Stainless Steel anchors to each tile to prevent slipping.

- Underlay: Lay courses over hip.
  - Overlaps (minimum): 150 mm.
- Roof slates: Cut and fix closely at hip.
- Hip irons: Re-use existing where available. Assume to be Galvanized steel to BS 5534, clause 4.16.1.
  - Fixing: To hip rafter or hip batten with not less than two zinc coated steel screws.
- Hip tiles: Re-use existing.
  - Bedding: **On granolithic mortar, continuous to edges and solid to joints with the hollow of the tile full filled with mortar. Assume that the removal of several tiles will be required to enable the appropriate assessment of the completeness of the works.**
  - Fixing: Where rigid masonry walls support or abut hip, secure hip tiles within 900 mm of such walls to hip rafters or supplementary hip battens with self-sealing non-ferrous through fixings.
  - Bottom hip tiles: Shape neatly to align with corner of eaves and fill ends with mortar and slips of tile finished flush.

660 SIDE ABUTMENTS
- Underlay: Turn up not less than 100 mm at abutments.
- Abutment slates: Cut as necessary. Fix close to abutments.
- Soakers: Interleave with abutment slates. Fix by turning down over head of abutment slates.

690 ROOF WINDOWS
- Underlay: Turn up not less than 100 mm at window surrounds under integral flashings/ soakers.
- Roof slates: Cut as necessary and fix closely all round.

750A MORTAR BEDDED AND MECHANICALLY FIXED TILE RIDGES
Existing Ridge Tiles to be re-fixed.
- Underlay: Lay courses over ridge.
  - Overlap (minimum): 150 mm.
- Ridge tile fixing battens: Assess existing and renew if any sign of rot. Batten to be 50mm x 32mm tanalized.
- Ridge tiles: Existing.
  - Bedding: On granolithic mortar, continuous to edges and solid to joints with the hollow of the tile full filled. Assume that several of the tiles will be lifted to confirm that the works have been completed to the appropriate standard.
  - Fixing: Secure to ridge tile fixing battens with self-sealing non-ferrous fixings.
  - Gable end ridge tiles: Fill ends with mortar and slips of tiles finished flush.
- Ridge terminals: Existing.

H71
Lead sheet coverings/ flashings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

H71 Lead sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF LEADWORK
SCOPE - The lead work will not be limited to the new interventions but will need to include remediation of defects within the existing roof coverings. Allowance is to be made for the re -fixing of all cover flashings with some requiring adjustment to ensure the lead is not fixed in lengths that exceed those set out by the Lead Sheet Association. Lead gutters and other flashings will need to be reviewed once access is available.

150A INSET DORMERS

- Main roof covering: Lead sheet.
- Substrate: Penny gap softwood boarding.
  - Preparation: Substrate to be prepared in accordance with LSA guidance and details.
- Underlay: Building paper.
- Type of lead: Rolled to BS EN 12588.
  - Thickness: 3.15 mm (Code 7).
- Pretreatment: Apply chalk slurry coat to underside of lead and allow to dry before laying, followed by chalk paste coat after bossing but before final fixing.
- Joints in top/ sill: Wood cored rolls with splashlap .
- Joints in cheeks: Vertical welted seams.
- Intermediate fixings in cheeks: Brass cup and screw with lead welded diamond shaped cap.

200 GUTTER LINING

- Substrate: Plywood on rafters at 450 mm centres / softwood penny gap boards.
  - Preparation: gutter base to be formed to falls and profiled to receive lead i.e. chamfered sides and rebated front edge to receive lead..
- Underlay: Building paper.
- Type of lead: Rolled to BS EN 12588.
  - Thickness: 2.50 or 2.65 mm (Code 6).
- Pretreatment: Apply chalk slurry coat to underside of lead and allow to dry before laying, followed by chalk paste coat after bossing but before final fixing.
- Joints in direction of fall: Wood cored roll .
  - Spacing: On centre line of gutter.
- Cross joints: Wood cored roll at gutter watershed.
  - Spacing: 1500 mm.
- Outlets: Catchpit with overflow pipe and outlet through wall to hopper.

250 WEATHERING TO GENERAL AREAS - New and Existing conditions

- Substrate: As EXISTING - to be reviewed on site.
- Underlay: Building paper.
- Type of lead: Rolled to BS EN 12588.
  - Thickness: 2.50 or 2.65 mm (Code 6).
- Joints: Laps (100 mm minimum).
  - Spacing: 2250 mm.
- Edge details: Welted drip at front, upstand at rear with tuck in .
- Fixing: Stainless steel clips at 300 centres with stainless steel screw fixing into bed joint. Joint to be fully prepared - refer to masonry specification.
- Accessories: Sleeves for balustrades on parapets.

310 RIDGE/ HIP ROLLS TO LEAD ROOFS

- Core: Rounded timber.
  - Size: 45 mm high x 45 mm wide.
  - Shape: Tapered to a flat base 30 mm wide
  - Fixing: To ridge/ hip board with brass or stainless steel countersunk screws at not more than 600 mm centres.
- Roof covering: Dress roofing sheets up roll to form 50 mm upstand.
  - Fixing: Nail each sheet at underlapping end.
- Lead capping:
  - Thickness: As roof covering.
  - Lengths: Not more than 1500 mm.
  - Wings: Extend not less than 75 mm on to roof.
  - Laps in length: Not less than 150 mm for ridges, 100 mm for hips.
- Fixing: Secure wings with one copper or stainless steel clip per roofing bay and at each lap.

322 SOAKERS FOR MITRED HIPS TO SLATE/ PLAIN TILE ROOFS

- Lead:
  - Thickness: 1.25 or 1.32 mm (Code 3).
- Dimensions:
  - Length: Slate/ tile gauge + lap + 25 mm.
  - Underlaps: Not less than 150 mm.

410 APRON FLASHINGS TO INSET DORMERS and OTHER PROTRUSIONS / INCISIONS WITHIN THE ROOF PLANE

- Lead:
  - Thickness: 2.65 mm (Code 6).
- Dimensions:
  - Lengths: Not more than 1500 mm.
  - End to end joints: Laps of not less than 100 mm.
  - Upstand: Not less than 75 mm.
  - Cover to abutment: Not less than 115 mm.
- Fixing:
  At Brickwork - Lead wedges into bed joint every 400mm pointed up with sealant as 770.
  Within the Roof Plane - clips to bottom edge every 300mm and at laps.

420A COVER FLASHINGS TO EXISTING PARAPET GUTTERS
- Lead:
  - Thickness: 2.65mm (Code 6).
- Dimensions:
  - Lengths: Not more than 1500 mm.
  - End to end joints: Laps of not less than 150 mm.
  - Cover: Overlap to upstand of not less than 75 mm.
- Fixing: Lead wedges into bed joint every 400mm centres pointed up with sealant as 770 and stainless steel clips at laps and 400 mm centres.

470 FLASHINGS IN GENERAL
- Lead:
  - Thickness: 2.00 or 2.24 mm (Code 5).
- Dimensions:
  - Lengths: Not more than 1500 mm.
- Fixing: Fixing: Nail top edge at 150 mm centres and welt edge. Clip bottom edge at laps and 500 mm centres..

480 LEAD SLATES
- Manufacturer: Fabricated by the LSA approved sub-contractor.
- Lead:
  - Thickness: 2.00 or 2.24 mm (Code 5).
- Dimensions:
  - Base: Not less than 400 x 400 mm.
  - Upstand: Not less than 150 mm, to fit pipe and at angle to suit roof pitch.

GENERAL REQUIREMENTS/ PREPARATORY WORK

510 WORKMANSHIP GENERALLY
- Standard: To BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
- Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
- Operatives: Trained in the application of lead coverings/ flashings. Submit records of experience on request.
- Preforming: Measure, mark, cut and form lead prior to assembly wherever possible.
- Marking out: With pencil, chalk of crayon. Do not use scribers or other sharp instruments without approval.
- Bossing and forming: Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
- Solder: Use only where specified.
- Sharp metal edges: Fold under or remove as work proceeds.
- Finished work: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
  - Protection: Prevent staining, discolouration and damage by subsequent works.

516A LEADWELDING

- In situ leadwelding: Is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.
  All welding is to be undertaken before 12 noon.
  No work is to be undertaken where the underside of substrate cannot be inspected once the lead welding has been complete to determine if damage has occurred to the substrate or to determine the presence of embers / fire/

520 LEAD SHEET

- Production method:
  - Rolled, to BS EN 12588, or
  - Machine cast and BBA certified, or
  - Sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of ±10%.
- Identification: Labelled to show thickness/ code, weight and type.

555 LAYOUT

- Setting out of longitudinal and cross joints: Submit proposals.

565 MOCK-UP

- General: At an agreed stage in the detailed design work construct a mock-up as follows:
- Size: 1:1 of a typical service ventilation inset dormer.
- Location: Within the site.
- Purpose: To agree the appliance and principles with the Conservation Officer and assess the details and workmanship.
- Inspection: Obtain approval of appearance before proceeding. Retain mock-up in undisturbed condition until completion of lead installation.

570 EXISTING METAL RETAINED

- Type/ Location/ Extent: All of the existing lead is to be retained. Any lead arising from the remediation of the existing roof is to be set aside for inspection. This is to remain the property of the Employer.
- Cleaning: Remove dirt without damage to metal or adversely affecting other material.

610 SUITABILITY OF SUBSTRATES

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

620 PREPARATION OF EXISTING TIMBER SUBSTRATES

- Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
- Defective boards: Give notice.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.

630A PLYWOOD UNDERLAY
- Standard: Manufactured to an approved national standard and to BS EN 636-3, section 8 (exterior grade plywood).
  - Sheet size: 2400 or 1200 x 1200 mm and 19 mm thick.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
- Laying: Cross joints staggered and a 0.5 to 1 mm gap between boards.
- Fixing: With 25 mm annular ringed shank copper or stainless steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges.
  - Nail heads: Set flush or just below the surface.

630B SOFTWOOD UNDERLAY
- Standard: Vacuum Treated structural softwood.
  - Plank size: Penny Gap Boarding - 100mm wide x 24mm thick - length to suit.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
- Laying: Over the top of firings laid on minimum 75mm x 50mm treated timber framework. - Boards to be laid in direction of gutter fall where possible.
  Fixing: With 25 mm annular ringed shank copper or stainless steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges.
  - Nail heads: Set flush or just below the surface.

640 TIMBER FOR USE WITH LEADWORK
- Quality: Planed, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
- Moisture content: Not more than 22% at time of fixing and covering. Give notice if greater than 16%.
- Preservative treatment: Organic solvent as section Z12 and Wood Protection Association Commodity Specification C8.

645 NEEDLE PUNCHED NONWOVEN POLYESTER GEOTEXTILE UNDERLAY
- Manufacturer: Proctor Group - 01250 872 261.
  - Product reference: Building Paper 410.
- Weight: 200 g/m².
- Recycled content: None permitted.

650 LAYING UNDERLAY
- Handling: Prevent tears and punctures.
- Laying: Butt or overlap jointed onto a dry substrate.
  - Fixing edges: With copper or stainless steel staples or clout nails.
  - Do not lay over roof edges but do turn up at abutments.
  - Wood core rolls: Fixed over underlay.
  - Protection: Keep dry and cover with lead at the earliest opportunity.

FIXING LEAD

705 HEAD FIXING LEAD SHEET
- Top edge: Secured with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
- Sheets less than 500 mm deep: May be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

710 FIXINGS

- Nails to timber substrates: Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
  - Shank type: Annular ringed, helical threaded or serrated.
  - Shank diameter: Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
  - Length: Not less than 20 mm or equal to substrate thickness.
- Screws to concrete or masonry substrates: Brass or stainless steel to BS 1210, tables 3 or 4.
  - Diameter: Not less than 3.35 mm.
  - Length: Not less than 19 mm.
  - Washers and plastic plugs: Compatible with screws and lead.
- Screws to composite metal decks: Self tapping as recommended by the deck and lead manufacturer/ supplier for clips.

715 CLIPS

- Manufacturer: Submit proposals.
- Material:
  - Lead clips: Cut from sheets of same thickness/ code as sheet being secured.
  - Copper clips:
    Thickness: 0.70 mm.
    Temper: BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere; dipped in solder if exposed to view.
  - Stainless steel clips:
    Thickness: 0.71 mm.
    Grade: BS EN 10088, 1.4301(304) terne coated if exposed to view.
- Dimensions:
  - Width: 50 mm where not continuous.
  - Length: To suit detail.
- Fixing clips: Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm.
- Fixing lead sheet: Welt clips around edges and turn over 25 mm.

760A CONTINUOUS CLIPS

- Material:
  - Stainless steel continuous clips:
    Thickness: 0.70 mm.
    Grade: BS EN 10088, 1.4301(304).
- Dimensions:
  - Width: To suit detail.
- Fixing clips: Secure at 200 mm centres.
- Fixing lead sheet: Welt edge around continuous clip and dress down.

765 CONTINUOUS CLIPS FOR CROSS JOINTS IN ROOFING

- Lead continuous clips: 50 mm wide, cut from sheets of same thickness/ code as sheet being secured.
- Fixing clips: Leadweld top edge of clips to underlap sheet, 50 mm from lower edge of overlap.
- Fixing lead sheet: Welt edge around continuous clip and dress down.

770 WEDGE FIXING INTO JOINTS/ CHASES
- Joint/ chase: Rake out to a depth of not less than 25 mm.
- Lead: Dress into joint/chase.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Sealant: BLM Leadmate.
  - Application: As section Z22.

780 WEDGE FIXING INTO DAMP PROOF COURSE JOINTS
- Joint: Rake/ cut out under damp proof course to a depth of not less than 25 mm.
- Lead: Dress lead into joint.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Sealant: As 770.
  - Application: As section Z22.

790 SCREW FIXING INTO JOINTS/ CHASES
- Joint/ chase: Rake out to a depth of not less than 25 mm.
- Lead: Dress into joint/ chase and up back face.
  - Fixing: Into back face with stainless steel screws and washers and plastics plugs at not more than 450 mm centres, at every change of direction, and with at least two fixings for each piece of lead.
- Sealant: As 770.
  - Application: As section Z22.

JOINTING LEAD

810 FORMING DETAILS
- Method: Bossing or leadwelding except where bossing is specifically required.
- Leadwelded seams: Neatly and consistently formed.
  - Seams: Do not undercut or reduce sheet thickness.
  - Filler strips: Of the same composition as the sheets being joined.
  - Butt joints: Formed to a thickness one third more than the sheets being joined.
  - Lap joints: Formed with 25 mm laps and two loadings to the edge of the overlap.
- Bossing: Carried out without thinning, cutting or otherwise splitting the lead sheet.
  - Details where bossing must be used: Not applicable .

840 WOOD CORED ROLL JOINTS WITHOUT SPLASH LAP
- Wood core:
  - Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
  - Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
- Undercloak: Dress half way around core.
- Copper or stainless steel clips. Fix to core at not more than 450 mm centres. Do not restrict thermal movement of the undercloak.
- Overcloak: Dress around core with edge welted around ends of clips, finishing 5 mm clear of main surface.

845 WOOD CORED ROLL JOINTS WITH SPLASH LAP

- Wood core:
  - Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
  - Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
- Undercloak: Dress three quarters around core.
  - Fixing: Nail to core at 150 mm centres for one third length of the sheet starting from the head.
- Overcloak: Dress around core and extend on to main surface to form a 40 mm splash lap.

860 DRIPS WITH SPLASH LAPS

- Underlap: Dress into rebate along top edge of drip.
  - Fixing: One row of nails at 50 mm centres on centre line of rebate.
- Overlap: Dress over drip and form a 40 mm splash lap.

862 DRIPS WITH SPLASH LAPS

- Underlap: Dress up full height of drip upstand.
  - Fixing: Two rows of nails to lower level substrate, 25 mm and 50 mm from face of drip. At 75 mm centres in each row, evenly spaced and staggered. Seal over nails with a soldered or leadwelded dot.
- Overlap: Dress over drip and form a 75 mm splash lap.
  - Fixing: Lead clips, leadwelded to underlap, with not less than one per bay.

880 WELTED JOINTS

- Joint allowance: 50 mm overlap and 25 mm underlap.
- Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
- Overlap: Welt around underlap and clips and lightly dress down.

950 PLAQUES - EXISTING

- Existing plaques/ inscriptions: Retain and refix in approved locations by leadwelding along edges.

970 PATINATION OIL

- Manufacturer: BLM.
  - Product reference: Patination Oil.
- Location: To all new leadwork.
- Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

H74
Zinc strip/ sheet coverings/ flashings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

H74 Zinc strip/ sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF ZINC WORK

110 ROOFING TO WING MILL
- Roofing system: VMZINC Structural Roof (long strip standing seam).
- Substrate: 18mm ply (bonded to insulation (Metdeck).
  - Preparation: Not required.
- Underlay: VMZINC Breather Membrane.
- Zinc: Standard temper alloy.
  - Finish: VMZINC PLUS in ANTHRA-ZINC.
  - Thickness: 0.7mm or 0.8mm.
- Joints in direction of fall: 25mm high double lock standing seam.
  - Spacing: 430mm, 530mm, 600mm in accordance with design and wind loadings.
- Cross joints: none (all panels less than 13m).
  - Spacing: n/a.
- Eaves detail: as clause 340.
- Ridge/ Hip detail: as clause 310A.
- Verge detail: none anticipated (otherwise as clause 370).
- Accessories: none.

210A GUTTER LINING WITH PROPRIETARY EXPANSION JOINTS
- Substrate: Plywood with softwood framing and ply formers supported by roof edge beam and roof deck, laid to 1:1000 fall.
  - Preparation: Not required.
- Underlay: breather membrane.
- Stainless steel: Standard temper alloy.
  - Manufacturer: Uginox (Aperam Stainless Europe).
  - Finish: Patinated K44 (tin coated).
  - Thickness: 0.4mm or 0.5mm in accordance with design and wind loadings.
- Proprietary expansion joints: Chloroprene and Stainless Steel.
  - Manufacturer: T-Pren (stockist Matthew Hebden,Sheffield).
    Product reference: T-Pren Terne Coated Gutter Expansion Joint.
  - Spacing: Not more than 20m.
  - Joints to gutter linings: Solder.
- Outlets: Chute outlet to adjacent hopper head.

310A RIDGE/ HIP
- Non-vented folded metal cap with fixing clips.
  - Size: 370mm capping width
  - Fixing: to substrate with VMZINC Ridge Clip G3 with decompression strip G3, in accordance with manufacturers detail and recommendations.
  - Capping: Zinc of same thickness and finish as roof covering, in preformed lengths.
  - Fixing: Overlap each length and secure with capping clip.
  - Thickness: 0.7mm or 0.8mm.
  - Joint spacing: not more than 2m.

340 STANDING SEAM EAVES WITH CLOSED ENDS

- Zinc underlap: Continuous clip and apron strip jointed at no more than 2m .
  - Cover to roof slope: Not less than 100 mm with anticapillary welt at top edge.
  - Projection: 25 mm for forming into drip welt.
  - Fixing: To roof slope at 100 mm centres avoiding through fixings at standing seam positions.
- Standing seams: Cut and fold ends with equal splays (vertical) .
- Roof covering: Fold around underlap projection and single welt to form a drip.

370 STANDING SEAM VERGE

- Verge zinc: Standard temper alloy.
  - Finish: of same finish as roof covering.
  - Thickness: of same thickness as roof covering.
- Joints: Single lock welts
  - Spacing: 2m.
- Top edge:
  - Standing seam joint: Position flush with verge.
  - Forming: Secure top of verge into double welt and clips of standing seam.
- Bottom edge:
  - Continuous clip: Fix at 200 mm centres.
  - Forming: Secure bottom of verge around clip.

GENERAL REQUIREMENTS/ PREPARATORY WORK

510 WORKMANSHIP GENERALLY

- Standard: Generally to CP 143-5.
- Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
- Operatives: Trained in the application of zinc coverings/ flashings. Submit records of experience on request.
- Preforming: Measure, mark, cut and form zinc prior to assembly wherever possible.
- Metal temperature: Do not form zinc when the metal temperature is below the minimum recommended for working by the manufacturer.
- Marking out: With pencil, chalk or crayon. Do not use scribers or other sharp instruments without approval.
- 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.
- Sharp metal edges: Fold under or remove as work proceeds.
- Sealants: Do not use in joints to attain waterproofing.
- Solder: Use only where specified.
- Finished zinc work: Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
  - Protection: Prevent staining, discolouration and damage by subsequent works.

516 SOLDERING AND NAKED FLAME PREHEATING

- In situ soldering and naked flame preheating: Permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

520 ZINC STRIP/ SHEET - STANDARD TEMPER ALLOY

- Zinc-titanium-copper:
  - To BS EN 501 and BS EN 988.
  - Stamped or labelled with type, finish and thickness.
- Manufacturer: VMZINC.
  - Product reference: VMZINC PLUS with patinated ANTHRA-ZINC finish.

535 INTEGRITY OF ZINC

- Requirement: Design coverings/ flashings and methods of attachment to prevent loss of weathertightness and permanent deformation due to wind pressure or suction.
- Wind loads: Calculate to BS 6399-2.
- Structural requirements:
  - Generally: As section B50.
    Modifications: none.
  - Design: Complete in accordance with the designated code of practice to satisfy specified performance criteria.

550 LIGHTNING PROTECTION

- Zinc coverings: Attach the following to a lightning protection system: as specified by electrical engineer .
  - Electrical continuity: Provide between zinc strips/ sheets via welting of joints.

555 LAYOUT

- Setting out of joints in direction of fall and cross joints: Submit proposals.

560 CONTROL SAMPLES

- General: Complete areas of finished work and obtain approval of appearance before proceeding:
- Size: 3m width .
- Location: Submit proposals .

610 SUITABILITY OF SUBSTRATES

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

620 PREPARATION OF EXISTING TIMBER SUBSTRATES

- Remedial work: Adjust boards to level and securely fix. Punch in any protruding fasteners and plane or sand to achieve an even surface.
- Defective boards: Give notice.
- Moisture content: Not more than 22% at time of covering.

640 TIMBER FOR USE WITH ZINC WORK

- Quality: Planed, free from wane, splits, pitch pockets, decay and insect attack (ambrosia beetle excepted).
- Moisture content: Not more than 22% at time of fixing and covering.
- Preservative treatment: Organic solvent as section Z12, and Wood Protection Association Commodity Specification C8.

650A LAYING UNDERLAY **VMZINC Membrane**

- Handling: Prevent tears and punctures.
- Laying: Overlapped joints onto a dry substrate.
  - Overlap the VMZ Membrane by 150mm; on slopes lower than 22º the overlap should be 200mm; on slopes lower than 14º all overlaps should be taped.
  - Fixing edges: With galvanized, sherardized or stainless steel staples and Dupont Tyvek Tape.
  - Do not lay over eaves and drip/ step zinc underlaps.
- Protection: Keep dry and cover with zinc at the earliest opportunity.

FIXING ZINC

710A FIXINGS FOR CLIPS

- Rigid plastic spacer (for fixed section only) with variable length according to the thickness of the insulation (50mm – 180mm)
- Stainless steel load distribution plate (for the sliding section), (220002861)
- Stainless steel 4.8mm diameter flat head countersunk screws.

720A STANDING SEAM FIXED CLIPS

- Stainless steel (austenitic) clips: As supplied or recommended by the zinc manufacturer to suit project conditions.
- Fixing: Secure each clip to substrate with two fixings. Minimum of 5 fixed clips per panel.
- Each clip to withstand a pulling force of 50 daN

725A STANDING SEAM SLIDING CLIPS

- Stainless steel (austenitic) clips: As supplied or recommended by the zinc manufacturer to suit project conditions.
- Two piece clips with 70mm sliding movement (220002860)
- Fixing: Secure each clip to substrate with one fixing.
  - Each clip to withstand a pulling force of 50 daN
  - Typical clip spacing:
    Middle zone every 330mm
    Edge zone 200mm
    Corner zone 150mm

750 CLIPS FOR FLASHINGS/ CROSS JOINTS

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

760 CONTINUOUS CLIPS

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

JOINTING ZINC

810 FORMING DETAILS

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

825A SOLDERING DETAILS

- Solder (not less than 40% tin content) and flux: As recommended by the zinc manufacturer.
- Flux residues: Wash away as work proceeds.
- Seams: Neat and consistent with an overlap of clean zinc as recommended for the particular joint by the zinc manufacturer.
- All zinc must be cleaned back to its natural state. The protective coat on the underside of the upper panel must be removed over a width of 20mm either chemically, using DECALAQ, or mechanically, using a 3 MTM RolocTM Bristle Disc brush mounted on a small disc sander. The pre-weathering must be removed from the parts to be soldered. ZINN7 (flux) to be applied to allow spot soldering with solder (40% tin 60% lead) ZINN7 applied over whole length of joint and then soldered. Wipe clean

H92
Rainscreen cladding

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

H92 Rainscreen cladding

To be read with Preliminaries/General conditions.

TENDERING

10 INFORMATION TO BE PROVIDED WITH TENDER

- Submit the following cladding particulars:
  - Typical plan, section and elevation drawings at suitable scales.
  - Typical detailed drawings at large scales, including support structure and interfaces with adjacent elements .
  - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including alloy and surface finish .
  - Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
  - Proposals for connections to and support from the primary support structure.
  - Proposals for primary support structure additional to that shown on preliminary design drawings.
  - Schedule of builder's work, special provisions and special attendance by others.
  - Examples of standard documentation from which project quality plan will be prepared.
  - Preliminary fabrication and installation method statements and programme.
  - Proposals for replacing damaged or failed products.
  - Areas of non-compliance with specification.

TYPE(S) OF RAINSCREEN CLADDING

110 RAINSCREEN CLADDING TO WING MILL FACADE

- Primary support structure: concrete blockwork and cold formed stainless steel sections.
- Rainscreen cladding system:
  - Type: Drained and back ventilated.
  - Requirement: Include products, fixings and interfaces necessary to complete the fabrication and installation. Performance criteria to comply with Design/ Performance Requirements and Testing subsections.
- Rainscreen panel:
  - Type: cast panel as clause 130.
  - Material: as clause 130.
  - Thickness: as clause 130.
  - Finish/ Colour: as clause 130.
  - Other panel requirements: as clause 130.
  - Fixing system: Secret.
  - Fasteners: Stainless steel, designed to suit loadings and support system. Number and location of fasteners: As determined by clause 310 and 342.
  - Joint type: Open.
- Air gap: Not less than 50 mm.
- Secondary support/ framing system: Vertical and horizontal carrier rails.
  - Material: Stainless steel.
  - Fasteners: Stainless steel, designed to suit loadings and support system. Number and location: As determined by clause 310 and 342.
- Backing wall: concrete blockwork and cold formed stainless steel sections.
  - Thermal insulation: As clauses P10-190A, P10-190B, P10-212A & P10-212B.
  - Breather membrane: As clause P10-320.
- Accessories: None.
- Incorporated components: None.
- Other requirements: Refer to H92/120
  1777/A/62109 - Facade Detail Wing Mill
  1777/A/62110 - Wing Mill Detail - Metal Screen to Ground Floor
  1777/A/62101 - Wing Mill Detail - Facade at Typical Upper Floor Section
  1777/A/62102 - Wing Mill Detail - Facade at Typical Upper Floor Section
  1777/A/62103 - Wing Mill Detail - Facade at Typical Upper Floor Section
  1777/A/62106 - Wing Mill Detail - Facade at Typical Floor Upper Plan Section
  1777/A/62107 - Wing Mill Detail - Facade at Typical Floor Upper Plan Section
  1777/A/62108 - Wing Mill Detail - Facade at Typical Floor Upper Plan Section.

120A RAINSCREEN CLADDING TO WING MILL FACADE - GROUND FLOOR

- Primary support structure: concrete blockwork and cold formed stainless steel sections.
- Rainscreen cladding system:
  - Manufacturer: Contractor to identify specialist fabricator / sub-contractor / installer to complete the design for construction..
  - Type: Drained and back ventilated.
- Rainscreen panel:
  - Manufacturer:
    STEEL Fabrication:
    Refer to Z11.

    TP ASPINALL & SONS LTD
    unit 8 Eastgate,
    White Lund Ind Est,
    MORECAMBE LA3 3DY
    Tel: 01524 840824 .

    Product reference: Refer to drawn details of steel panels to rainscreen and doors.
  - Material: Steel.
  - Thickness: Refer to drawn details inc:
    1777/A/62109 - Facade Detail Wing Mill
    1777/A/62110 - Wing Mill Detail - Metal Screen to Ground Floor
    1777/A/62101 - Wing Mill Detail - Facade at Typical Upper Floor Section
    1777/A/62102 - Wing Mill Detail - Facade at Typical Upper Floor Section
    1777/A/62103 - Wing Mill Detail - Facade at Typical Upper Floor Section
    1777/A/62106 - Wing Mill Detail - Facade at Typical Floor Upper Plan Section
    1777/A/62107 - Wing Mill Detail - Facade at Typical Floor Upper Plan Section
    1777/A/62108 - Wing Mill Detail - Facade at Typical Floor Upper Plan Section.
  - Finish/ Colour: M60/175A.
  - Fasteners: steel with gaskets.
    Number and location: Jamb, Head and Cill - To be developed with fabrication design.
- Air gap: 25 mm where possible.
- Secondary support/framing system: as required.
- Backing wall: Concrete blockwork as section F10/356.
  - Vapour control layer: P10/310.
  - Thermal insulation: P10/190A, 190B, 195A, 212A, 212B.
  - Breather membrane: P10/320.
- Accessories: refer to drawn details.
- Incorporated components: refer to drawn details.
- Other requirements: Refer to H92/110
  Screens to also feature as components of external doors. - Refer to drawn details.
  1777-A-63106 wing mill detail ground fl doors outward opening sect
  1777-A-63107 wing mill detail ground fl doors inward opening sect
  1777-A-63108 wing mill detail door to meter room
  1777-A-63109 wing mill detail door to meter room
  1777-A-63110 wing mill detail door to recycling room.

130 MAJOR NONSTANDARD COMPONENTS TO WING MILL FACADE RAINSCREEN

- Manufacturer: ALUMINIUM CASTING:
  FSE Foundry Limited
  11 Swinbourne Drive
  Springwood Industrial Estate Braintree
  Essex
  CM7 2YP
  Tel:01376 321170.
  - Product reference: sand cast aluminium panels to architects' profile design.
- Material: Aluminium alloy LM6.
- Finish: Shot blasted, self finished.
- Fixing: Secret fixing, stainless steel, drilled and tapped into cast panel rear face.
- Other requirements: panel dimensions 2490mm x 626mm x 10mm (minimum)
  Refer to Z11.

GENERAL REQUIREMENTS/PREPARATORY WORK

210 DESIGN

- Rainscreen cladding system and associated features: Complete detailed design in accordance with this specification and the preliminary design drawings and submit before commencement of fabrication.
- Related works: Coordinate in detailed design.

215 DESIGN PROPOSALS

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

220 SPECIFICATION

- Compliance standards: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
- Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
  - The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
  - Publications invoked by the CWCT 'Standard for systemised building envelopes'.

230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN

- Submit the following cladding particulars:
  - A schedule of detailed drawings and dates for submission for comment.
  - A schedule of loads that will be transmitted from the rainscreen cladding to the structure.
  - Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.
  - A schedule of fabrication tolerances/ size tolerances.
  - A detailed testing programme in compliance with the Main Contract master programme.
  - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
  - Proposals to support outstanding applications for Building Regulation consents or relaxations.

232 QUALITY PLAN

- Requirement: Submit during detailed design.
- Content: In accordance with BS EN ISO 9001 and including the following:
  - Name of the quality manager.
  - Quality assessment procedures.
  - Inspection procedures to be adopted in checking the work.
  - Stages at which check lists will be used and samples of the lists.
  - List of work procedures on the correct use of materials or components, both off site and on site.
  - List of product information with latest revisions.
  - Subcontractors involved in the work.
  - Subcontractors quality plans.
  - Storage, handling, transport and protection procedures.
  - Procedure for registering and reporting non compliances.
  - Maintenance procedures and calibration records.
  - Certification that completed work complies with specification.
  - Check list register to ensure all items have been inspected and non compliances discharged.

235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF TESTING OR MANUFACTURE OF RAINSCREEN CLADDING SYSTEM

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

260 FABRICATION SAMPLES

- General: During detailed design, submit samples of: cast metal panel shot blasted finish . Obtain approval of appearance before proceeding.

270A MOCK-UP

- General: No mock-ups are required however on commencement of installation on site one bay should be completed at an agreed location and signed off in advance of the rest of the installation .
  Satisfy purpose and obtain approval of appearance before proceeding. Retain undisturbed until completion of cladding installation.
- Extent: one bay, which may be retained as part of finished works .
- Purpose: to serve as an installation reference panel .

DESIGN/PERFORMANCE REQUIREMENTS

310 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'

- General: Unless specified or agreed otherwise comply with:
  Part 2 - Loads, fixings and movement.
  Part 3 - Air, water and wind resistance.
  Part 4 - Operable components, additional elements and means of access.
  Part 5 - Thermal, moisture and acoustic performance.
  Part 6 - Fire performance.
  Part 7 - Robustness, durability, tolerances and workmanship.
- Project performance requirements specified in this subsection: Read in conjunction with CWCT performance requirements.

342 CONTRACTOR'S DESIGN OF RAINSCREEN TO WING MILL FACADE

- Design responsibility: Determine types sizes and locations of fixings and Contractor's design of secondary support system.
- Design standard: To CWCT 'Standard for systemised building envelopes'.
- Structural and fire requirements:
  - Generally: As section B50.
  - Modifications: None.
  - Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
- Functional requirements: Not applicable.
- Additional requirements: coordination of design and responsibility for performance at interfaces with adjoining facade element.

360 WIND RESISTANCE - CYCLIC LOADING

- Requirement: No reduction in the integrity of the rainscreen cladding must occur when subjected to the test sequence given in CWCT 'Standard for systemised building envelopes', clause 8.14.6.
- Test method: As clause 665.
  - Effective wind pressure: Acting on the rainscreen of a drained and ventilated envelope: q x Cpe.

370 APPEARANCE AND FIT

- Requirement: Design rainscreen wall:
  - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
  - To accommodate deviations in the primary support structure.
- Primary support structure: Before commencing installation of rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
  - Give notice: If the structure will not allow the required accuracy or security of erection.
  - Design tolerances: As sections G10 and F10.
- Rainscreen envelope zone tolerances:
  - Width: tolerance ±3 mm.
    Critical reference location: none.
- Maximum permitted component and installation tolerances: combined panel and installation tolerance ±2 mm.

380 GENERAL MOVEMENT

- Requirement: Rainscreen cladding must accommodate anticipated building movements as follows: as calculated usually by the Structural Engineer .

385 THERMAL MOVEMENT - SERVICE TEMPERATURE RANGES

- Requirement: To CWCT 'Standard for systemised building envelopes' clause 2.7.2 amended and/ or with the addition of the following: -20°C to +65°C.

390 AIR PERMEABILITY EXFILTRATION

- Requirement: The maximum permissible air exfiltration rate through the building envelope system must not exceed: 3m³/hr/m² at 50 Pa.

410 AIR PERMEABILITY

- Permeability class to BS EN 12152: A2.
  - Peak test pressure: 300 Pa.

420 WATER PENETRATION

- Watertightness class to BS EN 12154: R5.
  - Peak test pressure: 300 Pa.
- Additional requirements: none.

430 THERMAL PROPERTIES

- Method for calculating the thermal transmittance (U-value) of the rainscreen wall: Weighted U-value.
- Average U-value of rainscreen wall: overall buildup to achieve a calculated U value of 0.14 W/m2K.
- Method for assessing thermal transmittance (U-value) of assemblies: By calculation.

440 AVOIDANCE OF CONDENSATION

- Requirement: Psychrometric conditions under which condensation must not form within or on the interior surface of the rainscreen wall or any surface of the wall that is on the warm side of insulation are:
  - Notional outdoor psychrometric conditions as BS 6229, table A1.
  - Notional indoor psychrometric conditions:
    Temperature: 20°C.
    Relative humidity: 55%.
    Vapour pressure: 1.28 kPa .
- Winter interstitial condensate:
  - Calculated amount (maximum): 0.35 kg/m².
  - Calculated annual net retention: Nil.

450 VAPOUR CONTROL LAYER

- Interstitial condensation risk within rainscreen wall: Determine using the method described in BS 5250 Annex D. If necessary, provide a suitable vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.

460A SOUND TRANSMITTANCE
Manchester City Council guidance document GD03 advises the following requirements in relation to internal noise levels relating to residential amenity.
Bedrooms (Night time 23:00 to 07:00): 30dBLAeq and individual noise events should not normally exceed 45dBLAmax
Living Rooms (Daytime 07:00 to 23:00): 40dBLAeq: .

- Non glazed sections of the residential façade at Wing Mill have an inner leaf of 140mm dense block which, in the assessment of the acoustic engineer, provides sufficient sound insulation properties to attenuate noise to meet the MCC
break in criteria without any contribution from the rainscreen panel. .

490 CAVITY FIRE BARRIERS TO BS 476-20

- Requirement: To resist the passage of flame and smoke for not less than 30 min. integrity, 15 min, insulation .

495 DURABILITY

- Relevant agents or degradation mechanisms: Urban environment with annual driving rain index of 33 to less than 56.5 l /m2 per spell (moderate).
- Design life of the rainscreen cladding system: Not less than 60 years.
- Secondary components: Submit details together with required maintenance regime, replacement periods and methods of replacement.

497 LIGHTNING PROTECTION SYSTEM

- Rainscreen components used as part of lightning protection system: A lightning protection system will be provided to the new Wing Mill building in accordance
with BS EN 62305 with an air termination network installed on the roof of Wing Mill and bonded to the structural steel of the building structure which will be used as a
natural down conductor to earth within the foundations. All external metalwork, including rainscreen panels, will need to be bonded to the lightning protection system.

TESTING

515 PROJECT TESTING (LABORATORY)

- Timing of testing: At an agreed stage in detailed design work arrange for laboratory testing of specimens of rainscreen cladding and components in accordance with relevant clauses of this specification.
- Commencement of fabrication and installation of rainscreen cladding: Not until test results and reports showing compliance with this specification have been submitted.

520 PROJECT TESTING (SITE)

- Timing of testing: At an agreed stage during preliminary installation on site arrange for testing of a section of rainscreen cladding in accordance with relevant clauses of this specification.
- Continuation of installation of general areas of rainscreen cladding: Not until site test results and reports showing compliance with this specification have been submitted.

535 TESTING AUTHORITY

- Requirement: Project testing must be carried out by the rainscreen cladding manufacturer/ contractor and is to be witnessed and certified by: a qualified independent consultant such as H. Montresor, Montresor Partnership, Wraxall House, North Wraxall, Wiltshire SN14 7AD. Tel. 01225 892193 www.montresorpartnersh ip.com .

540 LARGE TEST SPECIMEN ONE BAY WING MILL FACADE

- Arrangement and overall dimensions: 2.65 high x 2.56 wide including interface with window .
- Features: surrounding steel frame, balustrade and window .
- Test sequences: As clause 560 .

560 TEST SEQUENCE - STANDARD LABORATORY TESTS

- Requirement: To CWCT 'Standard for systemised building envelopes' Standard sequence B, clause 8.12.2, and as follows:
- Air permeability (infiltration): n/a.
  - Peak test pressure: As clause 410.
  - Method for identifying areas of concentrated air leakage: .
- Air permeability (exfiltration): n/a.
  - Peak test pressure: As clause 410.
  - Allowable exfiltration rates: As clause 390.
  - Method of identifying areas of concentrated air leakage: .
- Water penetration resistance - static: n/a.
  - Peak test pressure: As clause 420.
- Wind resistance - serviceability: To CWCT clause 8.8.
  - Peak test pressure: Equal to design wind pressure specified in clause 310.
  - Position of displacement measuring devices: at mid span.
  - Allowable elastic and residual deformation: as CWCT Standard, maximum allowable deflection as clause 3.5.2.9 and maximum residual deformation for framing members as clause 3.5.2.11.
- Air permeability (infiltration): Repeat as above.
- Air permeability (exfiltration): Repeat as above.
- Water penetration resistance - static: Repeat as above.
- Water penetration resistance - dynamic: To CWCT clause 8.7.2.
  - Test method: Dynamic aero engine.
  - Test pressure: As clause 420.
- Hose test: Not required.
  - Joints to be tested: .
- Wind resistance - safety: To CWCT clause 8.8
  - Peak test pressure: Equal to 1.5 times design wind pressure specified in clause 310.
  - Position of displacement measuring devices: at mid span.
  - Allowable residual deformation: as CWCT Standard clause 3.6.2.2 (1/500 of the span, measured between points of attachment to the building, one hour after the loading has been removed).
- Impact - safety: Not required.
  - Location, sequence and number of impacts to be applied: .
  - Type of soft body impactor: .
  - Energy of soft body impactor (E): .
  - Required hard body impact load category: .
  - Required soft body impact classification: .
- Testing of wind loading on rainscreen panels: To CWCT 'Standard test methods for building envelopes' Section 13 if panels are unable to be tested as part of the wind resistance serviceability or safety test .
  - Peak test pressure: Equal to design wind pressure specified in clause 310.
  - Position of displacement measuring devices: at mid span.
  - Allowable residual deformation: as CWCT Standard, maximum allowable deflection as clause 3.5.2.9 and maximum residual deformation for framing members as clause 3.5.2.11.
- Dismantle inspect and record.

670 TESTING OF FIXINGS
- Requirement: To CWCT 'Standard for systemised building envelope', 'Standard test methods for building envelopes' Section 19.
- Type of test: Serviceability.
  - Peak load: proof load tests of 1.5 times the design load.
    Load directions: horizontal and vertical.

PRODUCTS

710 ALUMINIUM ALLOY FRAMING SECTIONS
- Standards: To BS EN 755 alloy EN AW-6063 and suitable for the specified finish.
- Structural members: To comply with BS EN 1999-1-1, -3 and -4.

712 ALUMINIUM ALLOY SHEET
- Standards: To BS EN 485, BS EN 515 and BS EN 573.
- Alloy, temper and thickness: Suitable for the application and specified finish.

715 CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT
- Standards: To the relevant parts of BS 7668, BS EN 10029, BS EN 10025, and BS EN 10210.
- Thickness: Suitable for the application, and for galvanizing or other protective coating.

717 CARBON STEEL SHEET
- Standards: To the relevant parts of BS 1449-1, BS EN 10048, BS EN 10051, BS EN 10111, BS EN 10131, BS EN 10132, BS EN 10139, BS EN 10140, BS EN 10149-1, -2, -3, BS EN 10209, and BS EN 10268.
- Grade and thickness: Suitable for the application, and for galvanizing or other protective coating.

720 STAINLESS STEEL SHEET
- Standards: To the relevant parts of BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10095 and BS EN ISO 9445-1 and -2.
- Grade: To BS EN 10088-2, -4, -5, austenitic 1.4301 (304) generally, 1.4301 (316) when used externally or in severely corrosive environments.
- Thickness: Suitable for the application.

730 MECHANICAL FIXINGS - MATERIAL REQUIREMENTS
- Stainless steel: To BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
- Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
- Aluminium: To BS EN 755.

732 ADHESIVES
- General: Not degradable by moisture or water vapour.

735 FIXINGS AND FASTENERS
- Type and use: Reviewed and approved by manufacturers. Submit confirmatory information on request.
- Dimensions: Not less than recommended by their manufacturers.
- Adjustment capability: Sufficient in three dimensions to accommodate primary support structure and rainscreen cladding fabrication/ installation tolerances.

760 GASKETS

- Material:
  - Noncellular rubber to BS 4255-1.
  - Cellular rubber to ASTM-C509.
- Durability: Resistant to oxidation, ozone and UV degradation.

770 GENERAL SEALANTS

- Selection: In accordance with BS 6213 from:
  - Silicone.
  - One part polysulfide.
  - Two part polysulfide.
  - One or two part polyurethane.
- Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible.

775 THERMAL INSULATION

- Material: Foil faced rigid polyisocyanurate foam and Rockwool, as clauses P10-190A, P10-190B, P10-212A & P10-212B.
  - Properties: Durable, rot and vermin proof and not degradable by moisture or water vapour.
- Recycled content: Not applicable.
- Fixing: Attached to the outer face or supported within the backing wall so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the rainscreen cladding.

780 VAPOUR CONTROL LAYER

- Material: reinforced three layer high performance polythene as clause P10-310.
  - Minimum vapour resistance: 500 MN s/g.
  - Manufacturer: Icopal/Monarflex.
    Product reference: Monofilament 250.
- Continuity: No breaks and with the minimum of joints.
  - Penetrations and abutments: Seal to vapour control layer. If necessary, prime substrates to achieve full bond.
  - Sheet laps: Not less than 150 mm, seal with tape. Prime substrates as necessary to achieve full bond.
- Sheet tape: Double sided sealant with vapour resistivity not less than the vapour control sheet.
  - Size (width and thickness): Monobond LT Tape 15mm x 2mm.
- Sheet repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges.

785 BREATHER MEMBRANE
- Material: non woven polyester multilayer, as clause P10-320 .
- Manufacturer: A. Proctor Group Ltd.
  - Product reference: Roofshield.
- Continuity: No breaks. Minimize joints.
  - Penetrations and abutments: Attach to breather membrane with tape. Achieve full bond.
  - Laps: Not less than 150 mm, bond with tape. Achieve full bond.
- Tape: As recommended by breather membrane manufacturer.
- Repairs: Lapped patch of breather membrane material secured with continuous band of tape on edges.
- Junctions at flashings, sills, gutters etc. Overlap and allow free drainage to exterior.

FABRICATION AND INSTALLATION

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

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

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

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

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

960 PRELIMINARY RAINSCREEN CLADDING INSTALLATION
- Requirement: Complete an area of cladding as set out below for inspection and approval of appearance.
  as clause 270A .

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

975 WELDING
- In situ welding: Not permitted.

980 INTERFACES

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

985 DAMAGE

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

995 MAINTENANCE

- Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes', clause 7.6.1.
  - Materials certification and test reports to be included: none in addition to those listed in CWCT Standard clause 7.6.1.

J
Waterproofing

J40
Flexible sheet waterproofing/ damp proofing

Section Revision History

No.	Purpose	
-	TENDER ISSUE	7th Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

J40 Flexible sheet waterproofing/ damp proofing

To be read with Preliminaries/ General conditions.

105 MEMBRANE DESIGN AND EXECUTION

CDP EMPLOYER'S REQUIREMENTS
TANKING

CONTRACTOR DESIGN
The resolution of non-typical details has been undertaken by Feilden Clegg Bradley Studios in discussion with Grace Construction Products. The installer is to make themselves familiar with the buildings into which the membranes are to be fitted. The installer will be responsible for completing the design of the membranes making due allowance for all the necessary standard details not repeated within the architectural package. The installer will be required to provide a complete waterproofing solution within the context of the listed buildings and strategy set out below.

The details, specification and commentary are generally concerned with resolving designs for the formation of spaces to serve as Grade 2 and 3 internal environments, as defined in BS 8102. Typically no water penetration is acceptable and the internal environments are to be appropriate for use as residential accommodation at basement level.

The Grade 2 environment is for use as plant rooms, and other areas where the performance level permits no water penetration, but higher levels of water vapour would be tolerable and surface condensation may occur.

The Grade 3 environment is for ventilated residential and working areas which require a drier environment.

Design Responsibility, Appearance and Performance
The Contract Documents describe the Design Intent and define the performance criteria, the mandatory geometry of visible elements, dimensions positions and detail the required principle materials and visible finishes. The Sub-Contractor shall be responsible for developing and completing the design in accordance with the Contract Documents. Any suggested solutions described in the Contract Documents shall not in any way relieve the contractor from their responsibility for the design and construction of the Works. Contractor is to develop and complete the design of all Tanking to achieve the performance as described on Architects drawings and set out in NBS Section J40.

SCOPE:
The waterproofing of the Lower Ground floors as necessary to enable their use as residential apartments.
In general the contractor is to design all parts of the Drained Membrane, Damp Proof , Gas Resistant and Tanking Systems.
The design is to use the principles resolved in the existing details and as described in both the details and specification. Refer to:

Tanking

Old Mill Tanking Details – Sheet 1	1777-A-01901
Old Mill Tanking Details – Sheet 2	1777-A-01902
Decker Mill Tanking Details	1777-A-01903
New Mill Tanking Details – Sheet 1	1777-A-01904
New Mill Tanking Details – Sheet 2	1777-A-01905
General Abutment Details	1777-A-01906

NBS – Tanking – J40

Refer to Structural Engineers documentation for structural details and specification of work so the sub-structure and super structure.

Co-Ordination
The contractor is to work to ensure interface between the tanking system and adjacent builders work is undertaken with due consideration for the performance of and integrity of the Membrane Systems. Where typical and standard manufacturer's details are not available the contractor is to obtain details that meet the required standards and conform to the recommended method of application of the tanking system manufacturer.

Design Life
60 years as required when working with Heritage Assets.

Warranties
The Contractor is to provide a 15 year warranty for both the materials, workmanship and installation of all handrails/balustrades.

Other
Contractors to use only recognised good practices and comply with all relevant British standards and Codes of Practice.

CONTEXT

The existing building offers a series of situations that present challenges to the delivery of the above.

Historic Fabric – The existing walls and iron features affixed to them are of heritage significance and cannot be unduly impacted by the conversion of the basement. Designs for the tanking and lining out of the Lower Ground Floor spaces have been developed to avoid alteration to the historic fabric. The use of a drained membrane applied over the external walls complemented by drainage channels and gulley's has been resolved to minimise the impact upon the listed fabric.

Ground Beams / Underpinning – The 2006 structural stabilisation works introduced reinforced concrete ground beams stitched into the base of the existing walls. These beams form a latticework that runs thought out the Lower Ground Floors of both mill buildings. The beams define the lowest point that a new floor can sit.
Within New Mill the ground beam is sufficiently low that the formation of the membrane lapping details can be resolved in line with the membrane manufacturer's standard details. The ground beam within Old Mill is shallow leaving less space within which the waterproofing can be formed. The details have been developed to recognise this condition while seeking to achieve a robust solution that is not typical or standard.

Window Reveals – The windows are located at pavement level. The pavement has gradually risen over the past 200 years meaning that it is now located at window cill level. The window openings present a risk of water ingress. The performance of the junction between the window and wall is essential to prevent water penetration at or around the window. The integrity of the window seal is to be addressed under a separate specification. Due to the high pavement level there will be a higher degrees of moisture saturation in the wall near the windows. As such it is likely that an inherent weakness will exist in the location. The details have sought to address this with due consideration for the importance of Historic Fabric.

Pavement Lights – The introduction of the pavement lights in 1900 entailed the alteration of the window openings to Decker Mill. The pavement lights may have been introduced to minimise the impact of the loss of the window as a result of the rising pavement level. Where the pavement lights occur they extend from the window line into the pavement and sit over a light brick and tile light well. The pavement lights are fitted under the window W40 steel frames and carried by a steel angle.
The existing pavement lights were restored in 2006.
The current arrangement it typical of its day and relies on cement bedding and grout to form a water stop detail between the cast iron pavement light and the adjacent pavement. The existing pavement lights allow water to permeate the Lower Ground Floor. There is no robust solution to enhance the existing detail which is inherently porous. To address this condition the membranes are to be terminated short of the pavement light. Any water that enters the building via the areas of the pavement light is to be collected and drained. To ensure the internal environment of the room is adequate a 'secondary glazing' system will be employed to create an environmental barrier between the light well and the room. This system is specified elsewhere. Ventilation of the space will be essential to help ensure the moisture that will be inherent within the light well can dissipate.

Existing Environment – It is important to note that the waterproofing details have been developed to suit the known environmental condition of the Lower Ground Floors of the

mills. The spaces are predominantly dry with water percolating though in limited areas of obvious weakness. These include: Pavement Lights, Former Canal Tunnel, Canal Basin. The broader design strategy has sought to mitigate the risk that these areas of weakness present. In the absence of these areas of weakness the basements are not inherently damp spaces with no running or standing water evident.

MEMBRANE SYSTEM

The system has been developed with the use of Grace Construction Products. The following components have been identified for use. Refer to the drawn details for more detail.

Grace Betek Flex - A two component flexible cementitious waterproof coating system designed for the protection of new and existing structures. Comprising a liquid polymer and special cement based powder component, BETEC Flex offers excellent adhesion to correctly prepared internal or external concrete, masonry and rendered type surfaces. BETEC Flex is able to resist both a positive (30m) and negative (15m) hydrostatic pressure and due to its flexibility is able to bridge drying shrinkage or hairline cracks.

Grace Gas Membrane 400 - Grace Gas Membrane 400 is a high performance, reinforced polyethylene membrane incorporating a gas resistant aluminium foil. The multi-layered laminate structure gives good strength, flexibility and installation properties. The upper surface of the membrane is coloured green. When used with other components in the Grace® Gas Membrane 400 System, a high performance gas protection system can be installed to prevent harmful gases and vapours from entering buildings.

Grace Liquid Membrane - Two component elastomeric, cold applied liquid compound, which cures to form a tough seamless rubber-like waterproof layer. Grace Liquid Membrane shall conform to irregular profiles and be suitable for detailing curved, irregular or stepped profiles, pile penetrations, internal corners, flashing round drains, gullies, pipe entries and edge sealing at terminations.

Waterstops - Adcor® 500S, Adcor® 550MI, Servitite®, Serviseal® waterstops for expansion joints and additional protection at construction joints providing single point responsibility see specification clause Grace Waterstops E40/310

Preprufe® Tape - Has a highly aggressive, pressure sensitive adhesive layer for overbanding cut edges and roll ends, and for providing continuity of waterproofing at penetrations and detailing.

Preprufe® 800PA – Self adhesive membrane for open excavation applications for use when the design intent is to prevent water migration around structures below ground through micro-compartments in accordance with BS 8102:2009 see specification clause Preprufe 800PA J40/297A

Preprufe® 160R Plus – Preapplied waterproofing membrane for use on walls for use when the design intent is to prevent water migration around structures below ground through micro-compartments in accordance with BS 8102:2009 see specification clause Preprufe 160R Plus J40/297A

115 CONCRETE BLINDING TO HARDCORE BEDS

- Concrete: Designated GEN 1 or Standardized prescribed ST2.
  - Thickness: 50 mm minimum.
- Finish on completion: Smooth.

TYPES OF TANKING/ DAMP PROOFING

125 PROPRIETARY MORTAR – TANKING TO BASEMENT

BETEC Flex - A two component flexible cementitious waterproof coating system designed for the protection of new and existing structures. Comprising a liquid polymer and special cement based powder component, BETEC Flex offers excellent adhesion to correctly prepared internal or external concrete, masonry and rendered type surfaces. BETEC Flex is able to resist both a positive (30m) and negative (15m) hydrostatic pressure and due to its flexibility is able to bridge drying shrinkage or hairline cracks.

When used in conjunction with BETEC NSM Mortars, BETEC Flex is suitable for protection of basement grades 1, 2 and 3 as defined in BS8102: 2009

BETEC Flex and BETEC NSM Mortar are to be used in limited areas in the historic fabric. It will not be acceptable to use this product as a complete system due to the irreversible impact upon the historic fabric.

Substrate: Existing brick, 2006 concrete work, new concrete slab and newly prepared substrates as part of renovation works.

- Manufacturer: Grace Construction Products .
  - Product reference: BETEC Flex.
- Thickness/ Gauge: 1.3 – 1.7mm each coat (Suitable where there is Hydrostatic Pressure) .
  No Coats: 2 Coats over NSM primed surface.
- Joints:
  - Surfaces to be joined: Clean and dry beyond full width of joint.
    Accessories -
    BETEC NSM Mortar – cementitious mortars for repair / levelling of substrates prior to the application of BETEC Seal
    BETEC Plug – quick setting, cementitious waterproof plugging compound
    BETEC Mesh 1000 – reinforcing mesh for use where substrate cracking is likely to occur
    BETEC Band 150 – elastomeric tape for use at all designed movement joints, construction joints and horizontal to vertical joints

    MIXING: Shake liquid (component A) well and pour approximately 75% of the contents into clean plastic bucket. Slowly add the powder (component B), mixing with paddle stirrer and slow speed drill (500-600rpm). Mix until a homogeneous slurry, free from all lumps is formed. Scrape any unmixed material from sides of bucket with a trowel and mix-in. Finally add appropriate amount of the remaining liquid (component A) to achieve the required consistency for application. Do not part-mix. Do not add extra water, cement, sand or other addition to BETEC Flex.

    Air temperature requirements: Do not apply coatings when at or below 5°C and falling, or below 3°C and rising. Maintain temperature of work above 5°C until coatings have hardened sufficiently. Do not apply to surfaces below 5 degrees C.

145 LOOSE LAID WELDABLE POLYETHYLENE GAS RETARDANT DAMP PROOFING

- Substrate: Insulation generally with lapping onto prepared brickwork and concrete elsewhere..
- Manufacturer: GRACE.
  - Product reference: Gas Membrane 400.
- Thickness/ Gauge: 400um.
- Colour: Not required.
- Joints:
  - Surfaces to be joined: Clean and dry beyond full width of joint.
  - Laps (minimum): End and side min 150mm and to suit the junction / at penetrations and between sheets - min 150mm.
  - Jointing: With Bitustik 4000 jointing tape and Hot air welded.
  - Sealing: Gas resistant foil backed tape and other standard Grace products to achieve a complete installation.

145A LOOSE LAID WELDABLE GAS RETARDANT DAMP PROOFING

- Substrate: Insulation generally with lapping onto prepared brickwork and concrete elsewhere..
- Manufacturer: GRACE.
  - Product reference: Gas Membrane 400.
- Thickness/ Gauge: 400um.
- Colour: Not required.
- Joints:
  - Surfaces to be joined: Clean and dry beyond full width of joint.
  - Laps (minimum): End and side min 150mm and to suit the junction / at penetrations and between sheets - min 150mm.
  - Jointing: With Bitustik 4000 jointing tape or Hot air welded.
  - Sealing: Gas resistant foil backed tape and other standard Grace products to achieve a complete installation.

Application:

Surface Preparation -
Suitable substrates include concrete, venting geocomposite, insulation, sand or other well consolidated aggregate.
Where aggregate cannot be compacted to provide a smooth closed surface, a further blinding of sand or other fine aggregate should be applied. Remove any sharp protrusions that could puncture the membrane and ensure surfaces are well consolidated.

Membrane Installation:
1. Grace® Gas Membrane 400 to be installed below the ground bearing slabs.
2. Where Grace ® Gasvoid PF or FF is used, lay the membrane directly onto the Gasvoid product.
3. Minimum lap width is 150 mm, seal all laps by taping with Bitustik 4000 jointing tape or using heat welding equipment.
4. Any membrane integrity testing should be carried out before installation of protection boards or screed.
5. For above slab and exposed installations, temporary or permanent protection against site damage should be provided with Grace 3 mm Servipak boards or a minimum 50 mm screed.

Penetrations:
All pipe entries, stanchion bases, columns and other penetrations through Grace® Gas Membrane 400 should be sealed as per Grace typical details.

Lift Pits, Service Ducts etc:
All vertical and inclined concrete and masonry surfaces should be primed with Grace B2 primer, prior to the application of Bituthene 8000 self adhesive gas resistant membrane.

Accessories:
Grace® Gas Membrane 400
" BitustikTM 4000 – bituminous tape for sealing laps
" Bituthene® MRX* – self adhesive gas resistant membrane
" Bituthene® MR DPC* – foil based gas resistant DPC
" Grace® Servipak Board* – 3 mm bituminous protection sheet
" Grace® Gasvoid PF – venting geo-composite for partial footprint venting

" Grace® Gasvoid FF – venting geo-composite for full footprint venting
" Venting system components – for venting at building perimeters

For combined gas protection and waterproofing applications, the following additional Grace products may also be used.
" Preprufe® 300R/160R* – pre installed waterproof and gas resistant membrane
" Bituthene® 8000* – self adhesive waterproof and gas resistant membrane

290A HIGH DENSITY POLYETHYLENE/ POLYPROPYLENE STUDDED CAVITY DRAIN MEMBRANE

- GENERAL GUIDANCE:
  This Section includes waterproofing systems with the design intent of managing water ingress through structures by means of a studded cavity former in accordance with BS 8102:2009

  Hydroduct CF an internally placed high density, high strength, chemically resistant polyethylene drained cavity former. Designed to reduce the risk of water ingress beneath floor screeds and between concrete and block work walls of new and existing sub-structures. When installed HydroductÒ CF creates an efficient, continuous drainage path, which must be linked with the site internal drainage system.

  Hydroduct® CF is a highly efficient, cost effective drained cavity former. When installed against the internal face of concrete floors and walls Hydroduct CF will provide a continuous drainage path that must link with the site internal drainage system.

  Substrate: existing historic brick walls.
  - Preparation: Protrusions to be removed, wall surface to be cleaned C40 generally, also C40/110 and 352 - Refer to INTERVENTION and REPAIR Package prepared to describe the treatment of the historic fabric in preparation for the renovation of the Mill buildings.
- Manufacturer: Grace Construction Products.
  - Product reference: Hydroduct CF20.
- Stud height: 20 mm.
- Colour: Brown.
- Fixing: Hydroduct CF Anchor.
  - Fasteners: Hydroduct CF Plug.
    Fixing centres: 600mm max with additional for piers, window reveals, short walls, etc.....
    Sealing: Hydroduct CF Plug Seal.
- Joints: Lapped minimum 200 mm.
  - Sealing:
    Servijoint One - A one-part, high modulus, fast curing polyurethane sealant for all fixing penetrations through membrane.
    Hydroduct Strip - Double-sided tape for vapour check continuity at butt joints and details.
    Servitape - Preformed adhesive bitumen tape for vapour check and continuity at overlaps.
    Primer B1 - Roller or brush applied primer for all surfaces other than HydroductÒ CF.
- Drainage components:
  Hydroduct CF channel & Hydroduct CF channel upstand: 2 metre long PVC channel including hole to collect water ingress and drain away to a sump.
  Hydroduct CF end outlet: To close the end of Hydroduct CF channel or to connect to sump. Use as a flow reducer to Ø 40 mm before connection to sump through plumbing pipe. It should not be connected into foul sewage systems, soil pipes or any system which would allow foul odours to enter the building.
  Hydroduct CF jetting eye: To be connected to Hydroduct CF corner or Hydroduct CF T-junction. Grace recommends cleaning ports every 10 meters of Hydroduct CF channel.
  Hydroduct CF Straight connector: To connect two length of Hydroduct CF channel.
  Hydroduct CF corner junction: Connectors that allow connection of Hydroduct CF channel at corner. Works also as a cleaning port when connected with Hydroduct CF jetting eye.
  Hydroduct CF T-junction: T-section junction allows Hydroduct CF channel to be split Works also as a cleaning port when connected with Hydroduct CF jetting eye.

.

- Accessories: Refer to drawn details and Grace System requirements - Allowance is to be made for proprietary connectors, specifically from the drained cavity channel to the drainage pipe where non standard items cannot be accommodated.

297A WATERPROOFING/ DAMP PROOFING MEMBRANE

- GENERAL GUIDANCE:
  This Section includes waterproofing systems with the design intent of preventing water migration around structures below ground through micro-compartments in accordance with BS 8102:2009 (Figure 6) for the following application:

  Integrally bonded HDPE sheet waterproofing with dual adhesive laps for pre-applied waterproofing applications for installation below slab. Basis of design is Grace Preprufe® 300R Plus by Grace Construction Products.

  Membrane shall be 1.2mm thick, uniform, flexible sheets consisting of 0.8mm thick, HDPE sheet coated with a pressure-sensitive adhesive, a trafficable weather resistant coating. The membrane shall have a kick-out roll function to facilitate ease of application and shall have no release liner to reduce the environmental impact. Continuity between adjacent sheets shall be assured with dual adhesive laps. The membrane shall form an integral and permanent bond to placed concrete to prevent water migration at the interface of the membrane and structural concrete.
  The membrane shall be chemically resistant and protect the structure from salt and sulphate attack. It shall have been proven to be tested to a resist a minimum lateral water migration of 70m head of water (686kpa), at the membrane concrete interface and have a zero permeance to moisture, it will not activate prematurely due to wet conditions and is unaffected by ground settlement beneath slabs.

  Substrate: Rigid insulation and Concrete blinded hardcore - ensure the membrane applicator is consulted when assessing application over rigid insulation.
- Manufacturer: Grace Construction Products .
  - Product reference: Preprufe® 300R Plus.
- Number of layers: One.
- Thickness: 1.2mm
  Bonding: To prevent water migration shall form a minimum bond to concrete of 2.88N/mm.
- Joints:
  - Surfaces to be joined: Clean and dry beyond full width of joint.
  - Laps (minimum): 75mm min - Side laps formed by dual adhesive laps, Tape roll ends.
  - Sealing: After overlap execution removing the yellow and the blue zip strips, press and seal it with a roller..
- Accessories: Refer to membrane drawings and as required to achieve a complete installation.

WORKMANSHIP

310A WORKMANSHIP GENERALLY
- Condition of substrate:
  - Clean and even textured, free from voids and sharp protrusions.
  - Moisture content: Compatible with damp proofing/ tanking.
- Air and surface temperature: Do not apply sheets if below five degrees C - minimum recommended by membrane manufacturer.
- Condition of membrane at completion:
  - Neat, smooth and fully supported, dressed well into abutments and around intrusions.
  - Completely impervious and continuous.
  - Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible and within 56 days.

320 INSPECTION
- Give notice: Before covering any part of membrane with overlying construction.

335A PRIMERS
Grace Primer B1 - Apply Grace Primer B1 by roller or brush in a thin even single coat to prepare non-HydroductÒ CF surfaces. Allow to dry thoroughly before applying membrane. ANGLES IN FULLY BONDED SHEETING: Hydroduct Strip - Internal angles may be formed as recommended by the manufacturer.

345 COLD APPLIED BONDING COMPOUNDS
- Type and application: As recommended for the purpose by the membrane manufacturer.

350A ANGLES IN BONDED DAMP PROOFING/ TANKING
Refer to individual product requirements for specific detail.
Generally:
Preprufe 300R Plus Corners:
- Formed by fold and crease

Preformed rot proof fillet to internal angles:
- Size (minimum): 50 x 50 mm, splay faced.
- Bedding: Bitumen mastic or bonding compound.
- Reinforcing strip to all angles:
  - Material: As damp proofing tanking.
  - Width (minimum): 300 mm.
  - Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100 mm.

360 JUNCTIONS WITH PROJECTING DPCS/ CAVITY TRAYS
- Adjoining surfaces: Clean and dry.
- Dpcs/ Cavity trays: Lap and fully bond/ seal with sheeting.
  - Laps (minimum): 100 mm.
  - Bonding/ Sealing: Grace Liquid Membrane.

365 JUNCTIONS WITH FLUSH DPCS/ CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpcs/ Cavity trays:
  - Expose edge where concealed.
  - Lap and fully bond/ seal sheeting to wall.
  - Dressing of sheeting beyond dpc/ cavity tray (minimum): 50 mm.
  - Bonding/ Sealing: Mastic tape.

370A PREFORMED COLLARS FOR PIPES, DUCTS, CABLES, ETC.

Through Hydroduct - Hydroduct Strip - Where these pass through sheeting, make junctions completely impervious with the use of Hydroduct Strip as recommended by the manufacturer.

Through Preprufe Membrane - Membrane to be scribed tight to the penetration, if not within 12mm applies Preprufe Tape to cover gap. Where required wrap penetration with Preprufe Tape by positioning tape a minimum 12mm above the membrane. Grace Liquid Membrane to be applied around penetration, forming a fillet to provide a watertight seal between Preprufeâ membrane and Tape.

- Completed junctions: Impervious.

388A CAVITY DRAINAGE SUMPS WITH INTEGRAL PUMPS

- The sumps and any pumps are described within the mechanical package. Please note that the moisture that drains from the Hydroduct is to be carried to a sump and must be linked to formal drainage. This is to be resolved in conjunction with the contractors final design of the tanking system.

WORKMANSHIP OF CEMENTITIOUS WATERPROOF COATING SYSTEM

420 PREPARATION OF MORTAR JOINTS AND CAVITIES:

- Mortar joints: Rake out to a depth of 12 mm (minimum). Remove debris and flush out with water. Repoint using waterproof mortar recommended by the tanking mortar manufacturer. Blow holes, cavities, cracks, etc: Remove loose material and fill flush using waterproof mortar recommended by the tanking mortar manufacturer.

430 TANKING INTEGRITY

- Penetrations for fixings, services: Not permitted, unless otherwise specified by Grace Construction Products

510 APPLICATION OF CEMENTITIOUS WATERPROOF COATING SYSTEM GENERALLY

- Application methods and coating sequence: As recommended by the tanking mortar/ admixture manufacturer to achieve a water resistant structure.

520 JOINTS/ JUNCTIONS AND PENETRATIONS

Abutments (wall-to-floor, etc.), joints and active cracks: Sealed and watertight.
Movement joints: Centred over joints in substrate and extended through waterproof coating and finishes.
Day work joints in successive coatings: Staggered and lapped. No joints at angles.
Penetrations: Watertight.

530 APPEARANCE OF TANKING

- Render/ Screed coatings: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  Accuracy: A true plane, to correct line and level. Walls and reveals plumb and square with neat arrises
  Thin slurry coatings: Consistent and free from hollows, cracks and crazing. Suitable to receive specified finish.

540 FLATNESS/ SURFACE REGULARITY OF TANKING SCREEDS

- Measurement method: From the underside of a 3 m straightedge (between points of contact) placed anywhere on surface and using a slip gauge to BS 8204 -1 or –2 (or equivalent).
  Deviation of surface: Sudden irregularities not permitted.
  Maximum permissible deviation: Consult Grace Construction Products

550 CURING AND DRYING

- General: Prevent premature setting, uneven drying and cracking of each coat.
  Curing coatings: Prevent evaporation from surface.
  Curing period (minimum): As recommended by the tanking mortar/ admixture manufacturer.

560 PROTECTION

- Mechanical damage: Prevent impact and abrasion.
  Application of protective coatings/ linings: After completion of curing.

K
Linings/Sheathing/Dry partitioning

K10
Plasterboard dry linings/ partitions/ ceilings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	11th Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING

TYPES OF DRY LINING
The following Specification has been prepared with the direct input of British Gypsum. The wall types described in the Architectural Drawings have been categorised as follows:

COMPARTMENT WALLS
Wall Type 01 - K10/130 - Light Weight Acoustic Partition - Common Areas and Apartments - 198mm Staggered Stud - 55 Rw+Ctr

Wall Type 02 - K10/131 - Heavy Weight Compartment Wall - Circulation Shafts - approx. 383mm - >65 Rw+Ctr

Wall Type 03 - K10/132 - Light Weight Compartment Wall - Between Apartments - 256mm - >62 Rw + Ctr

Wall Type 04 - K10/133 - Light Weight Acoustic Partition - Common Areas and Apartments - 234mm (BG Quiet Wall 228mm) - 58 Rw + Ctr

PARTITION WALLS
Wall Type 05 - K10/134 - Light Weight Partition - Between rooms with-in an Apartment - 114mm - 48 Rw

SHAFTS
Wall Type 06 - K10/135 - Light Weight Shaft - Vent Shaft - 100mm - 44 Rw
Wall Type 07 - K10/136 - Light Weight Shaft - Refuse Chute Compartment - 300mm - >69 Rw+Ctr

130 METAL STUD PARTITION SYSTEM **WALL TYPE 1**

- Name of project: MURRAYS MILLS REDHILL STREET

British Gypsum reference TCE-4169670-SP01

Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816

E-Mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331

Product reference: GypWall STAGGERED, 92 / 148 Series.

Nominal thickness (excluding finishes): 208mm.

Performance criteria:

Fire resistance to BS 476: Part 22: 90 minutes.

Sound insulation: Rw 63 dB (Rw+Ctr 55dB).

Partition duty to BS 5234: Parts 1 and 2: Severe.

Maximum height based on limiting deflection of L/240 at 200Pa: 5800mm.

Timber sole plate: 38mm (nominal) x Gypframe channel width, if required.

Framing:

Studs: Two rows Gypframe 92 I 90 'I' studs alternately staggered in channel at 300mm centres.

Studs at abutments/openings/junctions: Gypframe 146 S 50.

Floor channel: Gypframe 148 FEC 50 (height up to 4200mm), 148 DC 60 (heights up to 8000mm), 148 EDC 80 (heights over 8000mm).

Head channel: As floor channel or as determined by deflection criteria.

Clips: Gypframe SC2 at the top and bottom of each I stud.

Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.

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.

Head condition: Suitably fixed up to structural soffit.

Deflection allowance: 50mm as determined by the Structural Engineer.

Lining: Two layers 15mm Gyproc SoundBloc (ACTIVair option available), sheet width 1200mm, to both sides of framing.

Fixing: As clause 591A.

Screws: 25mm & 41mm British Gypsum Jack-Point Screws to I studs and 25mm & 42mm British Gypsum Drywall Screws elsewhere.

Cavity insulation: 50mm Isover Acoustic Partition Roll (APR 1200).

Recycled content: Up to 86%.

Gyproc Sealant: As clause 516A.

Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D

Accessories: Gyproc Profilex access panels as clause 531A – if required.

131 WALL LINING SYSTEM (METAL STUDS) **WALL TYPE 2**

- British Gypsum reference TCE-4169670-SP02
  Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
  Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816 E-Mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331
  Product reference: GypLyner IWL.
  Background: Masonry (1850kg/m3). Sand face render to one side
  Performance criteria:
  Fire resistance to BS 476: Part 22: n/a.
  Fire protection to BS 476: Part 21: n/a.
  Sound insulation (including background): Rw 75 dB (Rw+Ctr 67 dB) estimated.
  Duty Rating to BS 5234: Parts 1 and 2: Severe
  Maximum unbraced height based on limiting deflection of L/240 at 200Pa: 4300mm.
  Clear cavity width: Min. 10mm.
  Timber sole plate: 38mm (nominal) x Gypframe channel width, if required.
  Framing:
  Studs: Gypframe 70 I 70 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
  Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), 72 DC 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
  Head channel: As floor channel or as determined by deflection criteria.
  Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
  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.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Cavity insulation: 2 x 50mm Isover Steel Frame Infill Batts. 1 positioned between the concrete block and the Gypframe IWL and the other between the Gypframe I studs.
  Recycled content: Up to 86%.
  Lining: 2 x 15mm Gyproc SoundBloc boards, sheet width 1200mm.
  Fixings: As clause 591A.
  Screws: 25mm and 35mm British Gypsum Jack-Point Screws to I studs and 25mm and 36mm British Gypsum Drywall Screws elsewhere.
  Thermal sealant: As clause 331A, if required.
  Gyproc Sealant: As clause 516A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D (or)
  Accessories: Gyproc Profilex access panels as clause 531A – if required.

132 WALL LINING SYSTEM (METAL STUDS) **WALL TYPE 3**

- British Gypsum reference TCE-4169670-SP03
  Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
  Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816 E-mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331
  Product reference: GypWall QUIET IWL.
  Nominal thickness (excluding finishes): 250mm.
  Performance criteria:
  Fire resistance to BS 476: Part 22: 90 minutes.
  Sound insulation: Rw 70 dB (Rw+Ctr 62dB).
  Partition duty to BS 5234: Parts 1 and 2: Severe.
  Maximum height based on limiting deflection of L/240 at 200Pa: 4300mm.
  Timber sole plate: 38mm (nominal) x Gypframe channel width, if required.
  Framing: Two independent Gypframe metal stud frames.
  Studs: Gypframe 70 I 70 located in pairs at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
  Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), 72 DC 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
  Head channel: As floor channel or as determined by deflection criteria.
  Fixing strap: Gypframe GFS1 to support horizontal joints in face layer boards.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Lining: Two layers 15mm Gyproc SoundBloc board (ACTIVair option available), sheet width 1200mm, to both sides of framing.
  Fixing: As clause 591A.
  Screws: 25mm & 41mm British Gypsum Jack Point Drywall Screws for fixing to I studs 25mm and 42mm Drywall screws elsewhere.
  Cavity insulation: 3 x 50mm Isover Acoustic Partition Roll (APR 1200).
  Recycled content: Up to 86%.
  Gyproc Sealant: As clause 516A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D
  Accessories: Gyproc Profilex access panels as clause 531A – if required.

133 WALL LINING SYSTEM (METAL STUDS) **WALL TYPE 4**

- British Gypsum reference TCE-4169670-SP04
  Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
  Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816 E-Mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331
  Product reference: GypWall QUIET SF.
  Nominal thickness (excluding finishes): 223mm.
  Performance criteria:
  Fire resistance to BS 476: Part 22: 90 minutes.
  Sound insulation: Rw 62 dB (Rw+Ctr 58dB) estimated.
  Partition duty to BS 5234: Parts 1 and 2: Severe.
  Maximum height based on limiting deflection of L/240 at 200Pa: 6900mm.
  Timber sole plate: 38mm (nominal) x Gypframe channel width, if required.
  Framing:
  Studs: Gypframe 146 S 50 at 600mm centres and at abutments, openings and junctions.
  Resilient bar: Gypframe RB1 fixed horizontally across metal studs at 600mm centres on one side of framing using British Gypsum Wafer Head Drywall Screws.
  Floor channel: Gypframe 148 FEC 50 (height up to 4200mm), 148 DC 60 (heights up to 8000mm), 148 EDC 80 (heights over 8000mm).
  Head channel: As floor channel or as determined by deflection criteria.
  Fixing strap: Gypframe GFS1 to support horizontal joints in face layer boards to side without resilient bars.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Lining: Two layers of 15mm Gyproc SoundBloc (ACTIVair option available), sheet width 1200mm, to both sides of framing.
  Fixing: As clause 591A.
  Screws: 25mm & 42mm British Gypsum Drywall Screws.
  Cavity insulation: 1 x 100mm and 1 x 50mm Isover Acoustic Partition Roll (APR 1200).
  Recycled content: Up to 86%.
  Gyproc Sealant: As clause 516A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D
  Accessories: Gyproc Profilex access panels as clause 531A – if required.

134 WALL LINING SYSTEM (METAL STUDS) **WALL TYPE 5**

- British Gypsum reference TCE-4169670-SP05
  Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
  Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816 E-mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331
  Product reference: GypWall CLASSIC.
  Nominal thickness (excluding finishes): 114mm.
  Performance criteria:
  Fire resistance to BS 476: Part 22: 30 minutes.
  Sound insulation: Rw 48 dB estimated.
  Partition duty to BS 5234: Parts 1 and 2: Heavy estimated
  Maximum height based on limiting deflection of L/240 at 200Pa: 4200mm estimated.
  Timber sole plate: 38mm (nominal) x channel width, if required.
  Framing:
  Studs: Gypframe 70 I 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
  Stud boxing: n/a.
  Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), 72 DC 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
  Head channel: As floor channel or as determined by deflection criteria.
  Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
  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.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Lining: Two layers 9.5mm Gyproc WallBoard, sheet width 1200mm, to both sides of framing.
  Fixing: As clause 591A.
  Screws: 25mm & 35mm British Gypsum Jack Point Drywall Screws.
  Cavity insulation: 50mm Isover Acoustic Slab
  Recycled content: 86%
  Gyproc Sealant: As clause 516A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D
  Accessories: Gyproc Profilex access panels as clause 531A – if required.

135 WALL LINING SYSTEM (METAL STUDS) **WALL TYPE 6**

- British Gypsum reference TCE-4169670-SP06
  Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
  Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816 E-mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331

  Product reference: ShaftWall.
  Nominal thickness (excluding finishes): 97mm.

  Performance criteria:
  Fire resistance to BS 476: Part 22: (shaft to room) 90 mins Integrity, 90 mins Insulation. (room to shaft) 90 mins Integrity, 60 mins Insulation.
  Sound insulation: Rw 45 dB estimated (sealed structure as clause 521A).
  Partition duty to BS 5234: Parts 1 and 2: Severe.
  Maximum height based on limiting deflection of L/240 at 200Pa: 4400mm.
  Framing:
  Studs: Gypframe 70 I 70 at 600mm centres.
  Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), Gypframe 72 DC 60 (height over 4200 - 8000mm).
  Head/opening channel: Gypframe 72 EDC 80.
  Abutment channel: Gypframe 70 SC 70.
  Retaining channel: Gypframe G110.
  Fixing T: Gypframe GFT1 to support horizontal board joints of single layer plasterboard linings.
  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.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Core: 19mm Gyproc CoreBoard.
  Horizontal joints: Gypframe GA3 angle and 122mm high strip of 19mm Gyproc CoreBoard.
  Lining: Two layers 12.5mm Gyproc FireLine on one side of framing, sheet width 1200mm.
  Fixing: As clause 591B.
  Screws: 25mm and 35mm British Gypsum Jack-Point Screws to I studs and 25mm and 36mm British Gypsum Drywall Screws elsewhere.
  Cavity insulation: 50mm Isover Acoustic Partition Roll (APR 1200).
  Recycled content: Up to 86%.
  Gyproc Sealant: As clause 521A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D.
  Accessories: Gyproc Profilex access panels as clause 531A – if required.

136 WALL LINING SYSTEM (METAL STUDS) **WALL TYPE 7**

- British Gypsum reference TCE-4169670-SP07
  Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
  Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816
  E-mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matthew Sherry. Mobile 07824 834331

  Product reference: ShaftWall.
  Nominal thickness (excluding finishes): 173mm.

  Performance criteria:
  Fire resistance to BS 476: Part 22: (shaft to room) 90 mins Integrity, 90 mins Insulation. (room to shaft) 90 mins Integrity, 60 mins Insulation.
  Sound insulation: Rw 64 dB estimated in conjunction with GypLyner IWL below (sealed structure as clause 521A).
  Partition duty to BS 5234: Parts 1 and 2: Severe.
  Maximum height based on limiting deflection of L/240 at 200Pa: 7900mm.
  Framing:
  Studs: Gypframe 146 TI 90 at 600mm centres.
  Floor channel: Gypframe 148 FEC 50 (height up to 4200mm), Gypframe 148 DC 60 (height over 4200 - 8000mm).
  Head/opening channel: Gypframe 148 EDC 80.
  Abutment channel: Gypframe 146 TSC 90.
  Retaining channel: Gypframe G102.
  Fixing T: Gypframe GFT1 to support horizontal board joints of single layer plasterboard linings.
  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.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Core: 19mm Gyproc CoreBoard.
  Horizontal joints: Gypframe GA3 angle and 122mm high strip of 19mm Gyproc CoreBoard.
  Lining: Two layers 12.5 mm Gyproc FireLine on one side of framing, sheet width 1200mm.
  Fixing: As clause 591B.
  Screws: 25mm and 35mm British Gypsum Jack-Point Screws to I studs and 25mm and 36mm British Gypsum Drywall Screws elsewhere.
  Cavity insulation: 25mm Isover Acoustic Partition Roll (APR 1200).
  Recycled content: Up to 86%.
  Gyproc Sealant: As clause 521A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D
  Accessories: Gyproc Profilex access panels as clause 531A – if required.
  Other requirements: Install a GypLyner IWL system on the corridor side as clause 156 below:

156 WALL LINING SYSTEM (METAL STUDS) TO FORM SECONDARY PARTITION OVER PRIMARY COMPARTMENT PARTITION
(i.e. Wall Type 7, Lower Ground Blockwork Leaf to Outer Walls and others)

- Product reference: GypLyner IWL.
  Background: Steel Clad External Wall.

  Performance criteria:
  Fire resistance n/a
  Fire protection n/a
  Duty Rating to BS 5234: Parts 1 and 2: Severe.
  Maximum unbraced height based on limiting deflection of L/240 at 200Pa: 4300mm.
  Clear cavity width: Min. 24mm.
  Timber sole plate: 38mm (nominal) x Gypframe channel width, if required.
  Framing:
  Studs: Gypframe 70 I 70 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.
  Floor channel: Gypframe 72 FEC 50 (height up to 4200mm), 72 DC 60 (heights up to 8000mm), 72 EDC 80 (heights over 8000mm).
  Head channel: As floor channel or as determined by deflection criteria.
  Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.
  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.
  Head condition: Suitably fixed up to structural soffit.
  Deflection allowance: 50mm as determined by the Structural Engineer.
  Cavity insulation: 50mm Isover Steel Frame Infill Batts.
  Recycled content: Up to 86%.
  Lining: Two layers of 15mm Gyproc SoundBloc (ACTIVair option available), sheet width 1200mm.
  Fixings: As clause 591A.
  Screws: 25mm & 41mm British Gypsum Jack-Point Screws to I studs and 25mm & 42mm British Gypsum Drywall Screws elsewhere.
  Thermal sealant: As clause 331A, if required.
  Gyproc Sealant: As clause 516A.
  Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or)
  2mm Thistle Skim coat plaster (VOC absorbing finish) as clause 681B (or)
  2mm Thistle Skim coat plaster (Plasterboard) as clause 681C (or)
  2mm Thistle Skim coat plaster (Increased surface resistance) as clause 681D.

210 LINING BOARDS BATHROOMS & KITCHENS

- Background: MF Studs at approx. 400mm centres.
- Metal resilient (acoustic) bars: Not required.
- Linings: Two layers - Lower 12.5mm Soundblock by BG and Upper - 6mm Wedi Building Board where all walls are lined (Bathrooms and En-Suite) 15mm Wedi Building Board where the wall abuts a gypsum lined wall (Kitchens).
  - Fixing: SS - Screws.
- Finishing: Skim coat plaster to manufacturers specification in untiled areas and tiles in all other areas.
  - Primer/ Sealer: As recommended by board manufacturer for suction control.
  - Accessories: Wedi 610 adhesive, jointing tape, sealing tape, all to the manufacturers recommendations for a complete installation.
- Other requirements: Fire stopping around service penetrations as section P12. Refer to Wedi standard details for assembly and transition from wedi to gypsum surfaces.

214 CEILING TYPES To All Buildings

Ceiling Type 1 - K10/215A - Apartments - 57mm Suspended Gypliner

Ceiling Type 2 - K10/216 - Apartments - Protected Entrance Lobby and Rooms adjacent to Risers - Approx 145mm Gypliner Depth to suit service void

Ceiling Type 3 - K10/217 - Common Corridors - Acoustic Class C - 85mm Suspended Gypliner

Ceiling Type 4 - K10/218A - Entrance Lobby & Circulation Core - Acoustic Class C

Ceiling Type 5 - K10/218B - Entrance Lobby & Circulation Core - Acoustic Class A

215A SUSPENDED CEILING SYSTEM TYPE 1 - OVER LIVING ROOMS / BEDROOMS / BATHROOMS / KITCHENS - also plant rooms within the roof
Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816
E-Mail: bgtechnical.enquiries@bpb.com.
British Gypsum contact: Matt Sherry 07824834331
Product reference: GypLyner UNIVERSAL.
Hangers: Gypframe GL6 Timber Connectors at 600mm centres.
Grid: Gypframe GL1 lining channels at 450mm centres (max.), suspended from hangers at 600mm centres.
Channel connectors: Gypframe GL2.
Perimeters: Gypframe GL8 track.
Lining board: Two Layers of 15mm sound block minimum to provide 28Kg/m2 (Bathrooms to have 2x layers Cement Board K10/414 .
- Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A .
  Primer/ Sealer: Not required .
- Accessories: Metal beads/ stops recommended by lining board manufacturer .

- Structural soffit: Double Layer 12mm ply boarding over existing timber joists approx 75mm x 155mm at 450mm centres.
  Insulation: Rock mineral wool to BS EN 13162; density (minimum) 33kg/m³ .
  - Recycled content: Not applicable .
  - Thickness: 100mm minimum .
- Access units: Not required .
- Integrated services fittings: Protective covers of sprinkler heads flush with ceiling and recessed lights .
- Other requirements: Refer to the drawn details - where the ceiling abuts the external wall the detail for the completion of the junction to provide adequate fire protection and acoustic separation is described. Where packing and localised lining is required to the external wall a cement board must be used. Knauf - Exterior Aquapanel - 12.5mm. .
- System performance:
  - Standard: To BS EN 13964.
  - Structural: The ceiling system must safely support all anticipated loads including services fittings.
    Fire resistance to BS 476: Part 21: 60 minutes Integrity, 60 minutes Insulation.
    Reaction to fire: To BS 476-7, class 1 .
  - Fire resistance: To BS 476-22, 60 minutes integrity and insulation .
  - Airborne sound insulation (complete floor and ceiling assembly):
    Weighted sound reduction index, Rw (minimum), to BS EN ISO 717-1: refer to the Acoustic Engineers Specification for dB level .
    Other requirements: Ceiling formation to be reviewed within the context of the work on site that will have developed informed by the site conditions and in response to the existing building fabric .

216 SUSPENDED CEILING SYSTEM TYPE 2 - PROTECTED ENTRANCE LOBBY and BIN ROOMS and SERVICE SPACES of MILL BUILDINGS
Ceiling build-up used where a fire barrier is required above ventilation duct work that is located below the timber strucutre of the floor above.
Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816
E-Mail: bgtechnical.enquiries@bpb.com.
British Gypsum contact: Matt Sherry 07824834331
Product reference: GypLyner UNIVERSAL.
Hangers: Gypframe GL6 Timber Connectors at 450mm centres.
Grid: Gypframe GL1 lining channels at 450mm centres (max.), suspended from hangers at 600mm centres.
Channel connectors: Gypframe GL2.
Perimeters: Gypframe GL8 track.
Lining board: Two Layers of 15mm sound block minimum to provide 28Kg/m2 .
- Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A .
  Primer/ Sealer: Not required .
- Accessories: Metal beads/ stops recommended by lining board manufacturer .

- Structural soffit: One layer 15mm Fireline fixed to underside of timber joists. Double Layer 12mm ply boarding over new timber joists 75mm x 175mm at 450mm centres.
  Insulation: Above Fireline two layers 100mm rockwool - P10/250 .
  - Recycled content: Not applicable .
    Access units: Not required .
- Integrated services fittings: None - no ceiling recessed fitting permitted .
- Other requirements: Refer to the drawn details - where the ceiling abuts the external wall the detail for the completion of the junction to provide adequate fire protection and acoustic separation is described. Where packing and localised lining is required to the external wall a cement board must be used. Knauf - Exterior Aquapanel - 12.5mm. .
- System performance:
  - Standard: To BS EN 13964.
  - Structural: The ceiling system must safely support all anticipated loads including services fittings.
    Fire resistance to BS 476: Part 21: 60 minutes Integrity, 60 minutes Insulation.
    Reaction to fire: To BS 476-7, class 1 .
  - Fire resistance: To BS 476-22, 60 minutes integrity and insulation .
  - Airborne sound insulation (complete floor and ceiling assembly):
    Weighted sound reduction index, Rw (minimum), to BS EN ISO 717-1: refer to the Acoustic Engineers Specification for dB level .
    Other requirements: Ceiling formation to be reviewed within the context of the work on site that will have developed informed by the site conditions and in response to the existing building fabric .

217 SUSPENDED CEILING SYSTEM TYPE 3 - OVER COMMON CORRIDORS - ACOUSTIC CLASS C
Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX
Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816
E-Mail: bgtechnical.enquiries@bpb.com.
British Gypsum contact: Matt Sherry 07824834331
Product reference: GypLyner UNIVERSAL.
Hangers: Gypframe GL6 Timber Connectors at 450mm centres.
Grid: Gypframe GL1 lining channels at 450mm centres (max.), suspended from hangers at 600mm centres.
Channel connectors: Gypframe GL2.
Perimeters: Gypframe GL8 track.
Lining board: One Layers of 12.5mm Rigitone 8/18Q .
- Finishing: Seamless jointing .
  Primer/ Sealer: Not required .
- Accessories: Metal beads/ stops recommended by lining board manufacturer .

- Structural soffit: One layer 15mm Fireline fixed to underside of timber joists. Double Layer 12mm ply boarding over existing timber joists approx 75mm x 155mm at 450mm centres.
  Insulation:
  Above Fireline - 100mm Rock mineral wool to BS EN 13162; density (minimum) 33kg/m³
  Above Rigitone - 35mm Isover RD35 .
  - Recycled content: Not applicable .
    Access units: Not required .
- Integrated services fittings: None - no ceiling recessed fitting permitted .
- Other requirements: Refer to the drawn details - where the ceiling abuts the external wall the detail for the completion of the junction to provide adequate fire protection and acoustic separation is described. Where packing and localised lining is required to the external wall a cement board must be used. Knauf - Exterior Aquapanel - 12.5mm. .
- System performance:
  - Standard: To BS EN 13964.
  - Structural: The ceiling system must safely support all anticipated loads including services fittings.
    Fire resistance to BS 476: Part 21: 60 minutes Integrity, 60 minutes Insulation.
    Reaction to fire: To BS 476-7, class 1 .
  - Fire resistance: To BS 476-22, 60 minutes integrity and insulation .
  - Airborne sound insulation (complete floor and ceiling assembly):
    Weighted sound reduction index, Rw (minimum), to BS EN ISO 717-1: refer to the Acoustic Engineers Specification for dB level .
    Other requirements: Ceiling formation to be reviewed within the context of the work on site that will have developed informed by the site conditions and in response to the existing building fabric .

218A SUSPENDED CEILING SYSTEM TYPE 4 - OVER WING MILL LOBBY and RECEPTION - CLASS C ACOUSTIC ABSORPTION

- Lining board: Gyptone Quattro 4 as part of a series of surface treatements to achieve a CLASS C environment.
  - Finishing: Seamless jointing.
    Primer/ Sealer: Not required.
  - Accessories: Metal beads/ stops recommended by lining board manufacturer.
- Suspension system: As recommended by lining manufacturer to complete the ceiling system and achieve specified performance.
  - Grid type: British Gypsum - CasoLine - Suspended directly from soffit and fitted between stud formed bulkehead - refer to drawings.
  - Hangers: Type recommended by board manufacturer.
    Length: To give ceiling soffit height as defined on the section drawings.
  - Top fixing: To suit structural soffit of steel deck permanent formwork of concrete slab above.
- Insulation: Mineral wool to BS EN 13162; density (minimum) 33kg/m³.
  - Recycled content: Not applicable.
  - Thickness: 100 mm.
- Access units: Required to corridor.
- Integrated services fittings: Protective covers of sprinkler heads flush with ceiling.
- Other requirements: Refer to the drawn details - where the ceiling abuts the external wall the detail is for a bulkhead stepping back from the glazed envelope.
- System performance:
  - Standard: To BS EN 13964.
  - Structural: The ceiling system must safely support all anticipated loads including services fittings.
    Uniformly distributed load (maximum): 0.6 kN/m².
    Additional loads/ pressures: Luminaires - Refer to Electrical Engineer drawings and specification.
    Deflection of grid between points of support (maximum): 0.0025 x span.
  - Fire performance:
    Reaction to fire: To BS 476-7, class 1.
  - Fire resistance: To BS 476-22, 30 minutes integrity and insulation.
  - Airborne sound insulation (complete floor and ceiling assembly):
    Weighted sound reduction index, Rw (minimum), to BS EN ISO 717-1: refer to the Acoustic Engineers Specification for dB level.
    Other requirements: Drawn Details to be provided by the Dry Lining sub-contractor.

218B SUSPENDED CEILING SYSTEM TYPE 5 - OVER WING MILL LOBBY and RECEPTION - CLASS A ACOUSTIC ABSORPTION

- Lining board: Casoline MF with general board to carry a spray applied product to achieve a CLASS A environment.
  - Finishing: Refer to M22/120.
    Primer/ Sealer: As required to receive the spray applied finish.
  - Accessories: Metal beads/ stops recommended by lining board manufacturer.
- Suspension system: As recommended by lining manufacturer to complete the ceiling system and achieve specified performance.
  - Grid type: British Gypsum - CasoLine - Suspended directly from soffit and fitted between stud formed bulkehead - refer to drawings.
  - Hangers: Type recommended by board manufacturer.
    Length: To give ceiling soffit height as defined on the section drawings.
  - Top fixing: To suit structural soffit of steel deck permanent formwork of concrete slab above.
- Insulation: Mineral wool to BS EN 13162; density (minimum) 33kg/m³.
  - Recycled content: Not applicable.
  - Thickness: 100 mm.
- Access units: Required to corridor.
- Integrated services fittings: Protective covers for ceiling mounted lighting and other services.
- Other requirements: Refer to the drawn details - where the ceiling abuts the external wall the detail is for a bulkhead stepping back from the glazed envelope.
- System performance:
  - Standard: To BS EN 13964.
  - Structural: The ceiling system must safely support all anticipated loads including services fittings.
    Uniformly distributed load (maximum): 1 kN/m².
    Additional loads/ pressures: Luminaires - Refer to Electrical Engineer drawings and specification.
    Deflection of grid between points of support (maximum): 0.0025 x span.
  - Fire performance:
    Reaction to fire: To BS 476-7, class 1.
  - Fire resistance: To BS 476-22, 30 minutes integrity and insulation.
  - Airborne sound insulation (complete floor and ceiling assembly):
    Weighted sound reduction index, Rw (minimum), to BS EN ISO 717-1: refer to the Acoustic Engineers Specification for dB level.
    Other requirements: Drawn Details to be provided by the Dry Lining sub-contractor.

275 ENCASEMENT ON TIMBER FRAMING TO VENTILATION DUCTS

- Timber framework: 44 x 44 mm with noggings at 600 mm maximum centres..
- Linings: Two layers 12.5 mm plasterboard to match the room ceiling.
  - Fixing: Screws.
- Finishing: Seamless jointing.
  - Primer/ Sealer: Not required.
  - Accessories: none.
- Other requirements: Encasement to provide a discrete enclosure to the ventilation duct within the ceilings. To achieve 60mins protections. Refer to drawn details.

GENERAL/ PREPARATION

300 ENVIRONMENT – ISO14001

- British Gypsum has ISO 14001 certification across the entire business including: mining, manufacture, distribution, and all ancillary services to support the business function.

315 EXISTING FIXTURES, SERVICES, ETC

- Ensure that surface mounted pipework, conduit, cables, electrical outlets, fixtures, appliances, fixing brackets, clips, skirtings, architraves, etc., are removed from existing backgrounds which are to be lined.

325 PREPARATION OF MASONRY TO RECEIVE WALL LININGS

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

326A PARGE COATS

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.

331A THERMAL SEALS FOR GYPROC LININGS

Manufacturer and reference: British Gypsum, Gyproc Dri-Wall Adhesive or Gyproc Sealant.
Before/during 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.
Apply as a continuous fillet, leaving no gaps.

335 ADDITIONAL SUPPORTS

- Framing: Accurately position and securely fix to give full support to:
  - Partition heads running parallel with, but offset from main structural supports.
  - Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
  - Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

355 ADDITIONAL SUPPORTS FOR FIXTURES AND FITTINGS

Provide or ensure provision of accurately positioned and securely fixed framing to support fixtures, fittings and services. After fixing boards, mark positions of framing for following trades.

365 ADDITIONAL SUPPORTS FOR BOARD EDGES AND PERIMETERS

Provide or ensure provision of additional framing, accurately positioned and securely fixed, to give full support to board edges and lining perimeters in accordance with board manufacturer's recommendations.

375 NEW WET LAID BASES
- Dpcs: Install under full width of partitions/ freestanding wall linings.
  - Material: Bituminous sheet or plastics.

385 SERVICE PENETRATIONS
The dry lining contractor must liaise with the Main Contractor and other contractors to ensure that fire resistance and other specified performance requirements are not impaired by service penetrations.
In particular:
- Form framed openings accurately for grouped services, ducts, etc. allowing for associated fire barriers.
- Provide insulation backings to recessed electrical outlets and switches as recommended by the plasterboard manufacturer

395 CONTROL SAMPLES
- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Type of dry lining: Ceiling K10 and Partition K10/130 - 136.
  - Location/ Size: within each building as the works progress.

COMPONENTS

401 GYPSUM PLASTERBOARD
- Type: To BS EN 520, type A .
- Core density (minimum): 650 kg/m³.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Clean and undamaged.

404 GYPSUM PLASTERBOARD (IMPROVED FIRE PROTECTION)
- Type: To BS EN 520, type F.
- Core: Including fibres and/ or other additives for improved cohesion.
  - Density (minimum): 800 kg/m³.
- Recycled content: 36% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Clean and undamaged.

409 GYPSUM PLASTERBOARD (IMPROVED SOUND INSULATION)
- Type: To BS EN 520, type D.
- Core density (minimum): 820 kg/m³.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Clean and undamaged.

410 GYPSUM PLASTERBOARD (IMPROVED SOUND INSULATION AND MOISTURE RESISTANT)
- Type: To BS EN 520, type H1.
- Core: Moisture resistant.
  - Density (minimum): 820 kg/m³.
- Paper facings: Moisture resistant.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Clean and undamaged.

411 GYPSUM BOARD WITH MAT REINFORCEMENT (GLASROC F FIRECASE):
- Type: To EN 15283: Part 1, Types GM-F & H2 (Moisture Resistant)..
- Core density (minimum): 650 kg/m³.
- Exposed surface and edge profiles: Clean and undamaged.

412 GYPSUM BOARD WITH MAT REINFORCEMENT (GLASROC F MULTIBOARD):
- Type: a) 6mm thick to EN 15283: Part 1, Types GM-F & H1(Moisture Resistant)
  b) 10mm/ 12.5mm thick to EN 15283: Part 1, Types GM-F..
- Core: Moisture resistant.
  - Density (minimum): 820 kg/m³.
- Paper facings: Moisture resistant.
- Exposed surface and edge profiles: Clean and undamaged.

413 GYPSUM FIBRE BOARD (RIGIDUR H)
- Type: To EN 15283: Part 2, Types GF, C1, I & W2..
  Exposed surface and edge profiles: Clean and undamaged.

414 CEMENT BOARD WITH MAT REINFORCEMENT
Manufacturer: Knauf
Product: Aquapanel
Thickness: 12.5mm
Type: BS EN 634 Parts 1 & 2.
- Core: Moisture resistant.
  - Density (minimum): 1150 kg/m³.
- Cement bonded boards for use in suspended ceillings, out door applications and for walls and facades.
  Exposed surface and edge profiles: Clean and undamaged.
  Additional Information: Refer to Kanuf Literature for fixing details. Board preparation for surface treatment is to be allowed for in accordance with Knaufs requirements.

430A ACCESS PANELS SHAFTWALL
- - Manufacturer and reference: British Gypsum, Gyproc Profilex FR2 Performance Panel.
  Facing: Flush metal.
  Frame profile: Beaded.
  Locking arrangement: Three point lock – single entry.
  - Finish as delivered: Etch primed white.
  - Form framed and lined openings and install access panels as recommended by panel manufacturer.

INSTALLATION

435 DRY LININGS GENERALLY

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Cutting plasterboards: Neatly and accurately without damaging core or tearing paper facing.
  - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
- Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 CEILINGS

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

455A METAL FRAMING FOR PARTITIONS/ WALL LININGS

- Install using components, accessories and methods recommended by the board manufacturer.
- Set out floor/head channels and perimeter studs to give a framework which is accurately aligned with a true vertical plane. Fix securely at all perimeters at not more than 600mm centres.
- Position studs at equal centres to suit specified linings, maintaining sequence across openings. Provide additional studs as necessary to ensure support to all vertical edges of boards.
- Accurately form openings to receive door sets using Gypframe metal studs and suitable timber framing or Gypframe metal studs sleeved with Gypframe channel as necessary to achieve the strength grade requirements of the framing assembly and adequately support the weight of the door.

465A STAGGERED STUD PARTITIONS

- Ensure that additional noggings, bearers, etc. are fixed between alternate studs and do not touch adjacent offset studs. Do not fix boards to adjacent offset studs. Ensure that acoustic isolation between each side of partition is maintained at corners.

467A BRITISH GYPSUM METAL STUD PARTITIONS:

- Fix Gypframe 94 and 148mm wide floor/head channels, and Gypframe 92 and 146mm perimeter abutment studs using two rows of staggered fixings, each at 600mm centres.

468A BRITISH GYPSUM SHAFTWALL

- Notwithstanding clause 455A, fix head channel securely at not more than 300mm centres, incorporating Gyproc FireStrip.

475A METAL FURRINGS FOR WALL LININGS

- Install using components, accessories and methods recommended by the board manufacturer.
- Set out furrings vertically, at specified centres and adjacent to angles, openings, movement joints, etc. Maintain centres of furrings 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 boards.
- Accurately align all furrings to a true, vertical plane.
- 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.

476B JUNCTIONS

- Junctions between partitions and GypLyner IWL independent wall linings: Where board linings are installed prior to partitions, install additional Gypframe I studs at each partition abutment (number of additional I studs subject to width of partition).

481A METAL FRAMING FOR GYPLYNER UNIVERSAL WALL LINING

- Securely fix Gypframe GL8 floor/ceiling track at 600mm centres.
- 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.
- 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 necessary to ensure support to all vertical edges of boards. Fix Gypframe GL1 lining channels to Gypframe GL2/GL9 brackets using Wafer Head Screws.
- Provide additional Gypframe GL1/GL8 sections at wall abutments and corners as recommended by board manufacturer.
- 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 channel joints.

485 SUSPENDED CEILING GRIDS

- Setting out: Accurately aligned and level.
  - Grid members and hangers: Centres to suit specified linings and imposed loads.
  - Additional grid members: Provide bracing and stiffening at upstands, partition heads, access hatches, etc.
- Fixing: Securely at perimeters, grid joints, top and bottom hanger fixings.

495 MINERAL WOOL INSULATION TO METAL STUD PARTITIONS/LININGS

- Fit securely with closely butted joints, leaving no gaps. Unless the insulation is of a self supporting slab type fitted between studs, fix at head of frame using short sections Gypframe angles or proprietary clips by others.

500 MINERAL WOOL INSULATION ACROSS METAL SUSPENDED CEILING FRAMING

- Use widest practical widths of insulation. Fit securely with closely butted joints, leaving no gaps.
- Cut and fit neatly around any electrical fittings, etc. Do not cover electrical cables (unless they have been sized accordingly).

505 INSTALLING MINERAL WOOL INSULATION

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

510 SEALING GAPS AND AIR PATHS

- Location of sealant: To perimeter abutments and around openings.
  - Pressurized shafts and ducts: At board-to-board and board-to-metal frame junctions.
- Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.
  - Gaps greater than 6 mm between floor and underside of plasterboard: After sealing, fill with jointing compound.

516A ACOUSTIC SEALANT

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

521A AIR PRESSURE SEALANT (SHAFTWALL)

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

526A CAVITY BARRIERS (SINGLE FRAME PARTITION)

- - Maintain continuity of fire barrier formed by perimeter channels using short lengths of close fitting plasterboard screwed into the web across joints in channel sections and around service holes, except where:
  - The partitions abut plasterboard linings or masonry.
  - Timber sole or head plates are fitted.
  - Form continuous vertical barriers using lengths of close fitting plasterboard screwed into the web of individual studs or channels.

526B CAVITY BARRIERS (SHAFTWALL)

- Maintain continuity of fire barrier formed by perimeter channels using short lengths of close fitting plasterboard screwed into the web across joints in channel sections and around service holes, except where partitions abut plasterboard linings or masonry.
- Form continuous vertical barriers using stone mineral wool strip cut neatly to fit across the stud cavity.

526C CAVITY BARRIERS (GYPWALL STAGGERED)

Form continuous vertical barriers using stone wool strip cut neatly to fit across stud cavity.

526D CAVITY BARRIERS (TWIN FRAME PARTITION)

- Maintain continuity of fire barrier formed by perimeter channels using short lengths of close fitting Gyproc plasterboard screwed into the web across joints in channel sections and around service holes, except where:
- The partitions abut plasterboard linings or masonry.
- Timber sole or head plates are fitted.
- Form continuous vertical barriers using 12.5mm Gyproc plasterboard cut to a good fit and screw fixed to each of a pair of studs, and spanning the whole cavity width.

545 CAVITY FIRE BARRIERS WITHIN SUSPENDED CEILINGS

- Type: 100mm mineral wool reinforced mattress with foil face to two sides.
- Fire resistance: To BS EN 13501-2, EI 60.
- Ceiling void subdivision: Fix barriers not more than 20 m apart in any direction.
- Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
- Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.
- Ceiling systems for fire protection: Do not impair fire resisting performance of ceiling system.

551A MOVEMENT JOINTS (DRILYNER MF)

- Manufacturer and reference: British Gypsum, Gyproc Control Joint.
  Width of gap: 12mm
- Fix through each flange using 13mm corrosion resistant staples at 150mm centres. Seal ends with Gyproc Sealant or acrylic caulk.
- Support edges of plasterboard on each side of joint with Gypframe MF channel.

551B MOVEMENT JOINTS (DRILYNER RF):

- Manufacturer and reference: British Gypsum, Gyproc Control Joint.
  Width of gap: 12mm
- Fix through each flange using 13mm corrosion resistant staples at 150mm centres. Seal ends with Gyproc Sealant or acrylic caulk.

551C MOVEMENT JOINTS (DRILYNER BASIC, TL AND SI)

- Manufacturer and reference: British Gypsum, Gyproc Control Joint.
  Width of gap: 12mm
- Fix through each flange using 13mm corrosion resistant staples at 150mm centres. Seal ends with Gyproc Sealant or acrylic caulk.
- Support edges of plasterboard either side of joint with a continuous vertical line of adhesive dabs.

551D MOVEMENT JOINTS (GYPLYNER IWL)

- Manufacturer and reference: British Gypsum, Gyproc Control Joint.
  Width of gap: 12mm
- Fix through each flange using 13mm corrosion resistant staples at 150mm centres. Seal ends with Gyproc Sealant or acrylic caulk.
- Support edges of plasterboard on each side of joint with Gypframe I studs.

551E MOVEMENT JOINTS (GYPLYNER UNIVERSAL WALL LINING)

- \- Manufacturer and reference: British Gypsum, Gyproc Control Joint.
  Width of gap: 12mm
  \- Fix through each flange using 13mm corrosion resistant staples at 150mm centres. Seal ends with Gyproc Sealant or acrylic caulk.
  \- Support edges of plasterboard on each side of joint with Gypframe GL1 lining channel sections.

555 FIRE STOPPING AT PERIMETERS OF DRY LINING SYSTEMS

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

560A JOINTS BETWEEN BOARDS

- \- Gyproc plasterboards: Lightly butt boards together.
  \- Square edged Gyproc plasterboards to be finished with Artex textured compound: 3mm gap.
  \- Glasroc F fibre reinforced gypsum boards: Lightly butt boards together.

565 VERTICAL JOINTS

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

570 HORIZONTAL JOINTS

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

572A CEILING JOINTS
For multi layer boarding, stagger joints between layers by at least 600mm.

580 INSULATION BACKED PLASTERBOARD

- General: Do not damage or cut away insulation to accommodate services.
- 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.

591A FIXING PLASTERBOARD TO METAL SUPPORTS

- Partitions/linings/casings:
- Face layer: Fix securely to all supports at maximum 300mm centres (reduced to 200mm at external angles where recommended by the board manufacturer).
- Previous layer of plank plasterboard: Install with long edges at right angles to studs, and fix securely to each stud using two screws.
- Other previous layers: Fix securely to supports around the perimeter of each board at maximum 300mm centres.
- 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).
- 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.

591B FIXING PLASTERBOARD TO METAL SUPPORTS (SHAFTWALL AND STAIRWALL)

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

591C FIXING PLASTERBOARD TO METAL SUPPORTS (FIREWALL)

- Fix first and second layers securely to all supports at maximum 300mm centres.
- Where a third layer is specified, fix securely to previous layers at maximum 300mm centres around the perimeter and down the centre of each board.
- Fix working from the centre of each board. Position screws not less than 10mm from the edge of the board. Set heads in a depression; do not break paper or gypsum core.

591D FIXING PLASTERBOARD TO METAL SUPPORTS (GYPWALL CURVE)

- Install plasterboard with long edges at right angles to studs, and fix securely to all supports at maximum 300mm centres (reduced to 150mm at board ends).
- 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.

592A FIXING GYPROC SOUNDBLOC RAPID BOARD TO METAL SUPPORTS

- Fix securely to all supports at maximum 400mm centres 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.

592B BOARD END SUPPORTS (CASOLINE MF)

- - 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 a 24 hours.
  - Fix securely to all supports at maximum 230mm centres (reduced to 150mm at board ends).
  - 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.

593A BOARD END SUPPORTS (CASOLINE MF)

- The specified MF5 channel centres are the maximum permitted. Closer centres may be used for some board lengths to ensure end joints are fully supported; alternatively, cut boards to a co ordinating length.

593B BOARD END SUPPORTS (GYPLYNER UNIVERSAL CEILING)

- The specified GL1 lining channel centres are the maximum permitted. Closer centres may be used for some board lengths to ensure end joints are fully supported; alternatively, cut boards to a co ordinating length.

595 DEFLECTION HEADS

- Fixing boards: Do not fix to head channels.

597A SINGLE LAYER LININGS TO RECEIVE CERAMIC FINISHES (SHAFTWALL)

- Fix Gypframe 99 FC 50 Fixing Channel between studs at 1200mm vertical centres to support the back face of the plasterboard.

598A TWO LAYER LININGS TO RECEIVE CERAMIC FINISHES (SHAFTWALL)

- Bond the two layers together with a continuous bead of Gyproc Sealant applied midway between studs.

601A FIXING INSULATION BACKED PLASTERBOARD TO METAL FURRINGS

- \- Apply two continuous 6mm dia. beads of Gyproc Sealant to Gypframe MF10 channels where board joints occur and one bead to all other Gypframe MF10 channels.
  \- Fix to Gypframe MF10 channel at each vertical board edge using three Drywall Screws, at mid height and 600mm above and below. Where lining is to receive a ceramic finish fix using Drywall Screws at maximum 300mm centres.

620 FIXING PLASTERBOARD WITH ADHESIVE DABS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive dabs.
- Adhesive dab spacings for each board:
  - Horizontally: One row along top edge and one continuous dab along bottom edge.
  - Vertically: One row along each edge and thereafter at intermediate spacings to suit size of board:

Thickness (mm)	Width (mm)	Dab centres (mm)
9.5	1200	400
9.5/12.5	900	450
12.5	1200	600

- Adhesive dab dimensions (width x length): At least 50-75 mm x 250 mm.
  - Position of dabs from edges/ ends of boards (minimum): 25 mm.

626A FIXING DRILYNER BASIC

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

626B FIXING DRILYNER TL

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

626C FIXING GYPROC DRILYNER SI

- \- Apply dabs of Gyproc Dri-Wall Adhesive to the background for one board at a time, to achieve at least 20% contact with the surface area of the boards:
  - One row of horizontal dabs to coincide with the top edge of each board.
  - One continuous line of horizontal dabs to coincide with the bottom edge of each board.
  - One row of vertical dabs to coincide with the side edges of each board, and additional vertical row(s) at 450mm max centres.
  - Ensure dabs are at least 25mm from board edges.
  - Prime the rear surface of each board with a thin layer of Gyproc Dri Wall Adhesive, applied in 200mm wide bands to coincide with the position of adhesive dabs on the background.

631A FIXING DRILYNER RF (WITH GYPROC THERMALINE BOARD LININGS)

- \- Apply 25mm dia. blobs of Gyproc Sealant to the background in four vertical rows per board, and at 400mm centres in each row. Alternatively, apply blobs to the back of the laminate.
  \- Fix boards to the background using two Nailable Plugs per laminate located at mid point in height, 15mm from each vertical edge.
  \- Ensure plugs penetrate at least 25mm into the background excluding the thickness of any existing plaster finishes.
  \- Drive nail heads slightly below the paper surface; do not break paper or gypsum core.
  \- For boards to receive ceramic finishes, use a total of nine Nailable Plugs.
  \- Locate two Gypframe G106 Skirting Plates over the bottom edge of each board prior to fixing.
  \- Fix boards to the background using two Nailable Plugs per laminate, located 15mm from each of the side edges and 200mm from the top edge. Ensure plugs penetrate at least 25mm into the background excluding the thickness of any existing plaster finishes.
  \- Drive nail heads slightly below the paper surface; do not break paper or gypsum core.
  \- For linings to receive ceramic finishes, apply one additional row of dabs at mid storey height and an additional three Nailable Plugs per 1m 2.

631B FIXING DRILYNER RF (WITH GYPROC TRILINE BOARD LININGS)

- \- Apply 25mm dia. blobs of Gyproc Sealant to the back of the laminate in three vertical rows per board, and at 400mm centres in each row. Flatten and press firmly to prime surface of laminate. Apply an additional 25mm dia. blob of Gyproc Sealant over each primed area.
  \- Where skirting plates are specified, locate two Gypframe G106 Skirting Plates over the bottom edge of each board prior to fixing.
  \- Fix boards to the background using two Nailable Plugs per laminate located 200mm from the top edge of the board, 15mm from each vertical edge.
  \- Ensure plugs penetrate at least 25mm into the background excluding the thickness of any existing plaster finishes.
  \- Drive nail heads slightly below the paper surface; do not break paper or gypsum core.
  \- For boards to receive ceramic finishes, use Nailable Plugs located at 600mm centres along each vertical board edge.

631C FIXING DRILYNER RF (WITH GYPROC PLASTERBOARD LININGS)

- For Gyproc WallBoard, Gyproc SoundBloc and Gyproc DuraLine apply 25mm dia. blobs of Gyproc Sealant to the background in four vertical rows per board, and at 400mm centres in each row. Alternatively, apply blobs to the back of the board.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

- Sudden irregularities: Not permitted.
- 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.
  - Tapered edge joints:
    Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
  - External angles:
    Permissible deviation (maximum) for both faces: 4 mm.
  - Internal angles:
    Permissible deviation (maximum) for both faces: 5 mm.

671A TAPED SEAMLESS FINISH TO PLASTERBOARD

- Manufacturer: British Gypsum.

Joint compound: One or more of the following Gyproc products:

- Easi Fill
- Easi Fill 45
- Joint Filler
- Joint Cement
- Ready Mix Joint Cement
- ProMix LITE Joint Cement.

Joints/gaps/internal corners: Gyproc Joint Tape.
External corners: Gyproc Drywall Metal Angle Bead or Gyproc Corner Tape.
Shadow gaps: BGM105 Styletrim (25 x 10mm) or BGM106 Styletrim (12.5 x 10mm).
Board ends: Gyproc Drywall Plastic Edge Bead or Gyproc Drywall Metal Edge Bead
Primer/sealer: Two coats Gyproc Drywall Sealer where vapour control required (will provide vapour resistance only and does not meet performance requirements for moisture resistant grade boards as defined in BS EN520, type H1) and one coat Gyproc Drywall Primer elsewhere. 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.

- Lightly sand cut edges of boards to remove paper burrs.
- 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.
- When set, cover with joint compound, feathered out to give a flush, smooth, seamless surface.
- Spot nail/screw depressions with joint compound to give a flush surface.
- Fill minor indents. After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.
- 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

- Manufacturer: British Gypsum.
  Joint Compound: Gyproc Easi-Fill.
  Joints/gaps/internal corners: Gyproc Joint Tape
  External corners: Gyproc Drywall Metal Angle Bead or Gyproc Corner Tape.
  Shadow gaps: BGM105 Styletrim (25 x 10mm) or BGM106 Styletrim (12.5 x 10mm).
  Board ends: Gyproc Drywall Plastic Edge Bead or Gyproc Drywall Metal Edge Bead
  Primer/sealer: Two coats Gyproc Drywall Sealer where vapour control required (will provide vapour resistance only and does not meet performance requirements for moisture resistant grade boards as defined in BS/EN520, type H1) and one coat Gyproc Drywall Primer elsewhere. 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.
  - Reinforce external angles, etc. with the specified bead/corner tape.
  - Apply Gyproc Easi-Fill to the joint and bed in Gyproc Joint Tape. Allow to dry and lightly sand to remove any high spots. Gyproc Joint Tape should be used in internal angle joints. Trowel apply a second coat of Gyproc Easi-Fill and feather out to about 200mm width on each side of the joint. Allow to dry and lightly sand.
  - Spot nail/screw/staple depressions with two coats of joint compound to give a flush surface.
  - Fill minor indents with a single coat of joint compound to give a flush surface.
  - 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

- Manufacturer: British Gypsum.
  Joint Compound: Gyproc Joint Cement.
  Joints/gaps/internal corners: Gyproc Joint Tape or Thistle ProTape FT50
  External corners: Gyproc Drywall Metal Angle Bead (bedded onto Gyproc Joint Filler) or Gyproc Corner Tape.
  - 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 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.
  - Spot nail/screw/staple depressions with two coats of joint compound to give a flush surface.
  - Fill minor indents with a single coat of joint compound to give a flush surface.
  - After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.

676B SEAMLESS FINISH TO RIGITONE

- Cut edges of boards: Lightly sand to remove paper burrs.
  Joint filling: Cartridge gun apply Rigitone Vario 60 joint filler 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.
  Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
  Finishing: 24 hours after joint filling is completed finish board joints with an application of Gyproc Easi-Fill ensuring that board perforations remain clear. Lightly sand when dry to leave a smooth seamless surface.
  Screw depressions: Fill with Gyproc Easi-Fill to give a flush surface.
  Minor imperfections: Lightly sand jointing and spotting to remove any minor imperfections.

681A SKIM COAT PLASTER FINISH (HAND APPLIED ONLY)

- Plaster type British Gypsum, Thistle Board Finish or Thistle Multi-Finish..
  - Thickness: 2-3 mm.
- Joints: Fill and tape except where coincident with metal beads.
- Finish: Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.
  - Pre-Treatment: Thistle Bond-IT (Glasroc H TILEBACKER & Gyproc Moisture resistant grade plasterboards), Thistle GypPrime (required for Rigidur H boards to control suction).
  - Reinforcement:
    Joints/gaps/internal corners: Any gaps exceeding 3mm pre-filled and joints reinforced using Gyproc Joint Tape alternatively Thistle ProTape FT50 or FT100 may be used.
    External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
    Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
  - Fill and tape all joints except where coincident with metal beads.
  - Trowel/float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

681B SKIM COAT PLASTER FINISH (HAND APPLIED ONLY)

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

681C SKIM COAT PLASTER FINISH (HAND APPLIED ONLY)

- - Manufacturer and reference: British Gypsum, Thistle Spray Finish.
  Thickness: 2mm.
  - Pre-Treatment: Thistle Bond-IT (Glasroc H TILEBACKER & Gyproc Moisture resistant grade plasterboards), Thistle GypPrime (required for Rigidur H boards to control suction).
  - Machine spray application: Worm pump plastering machine e.g. M-Tec M100SC or PFT Ritmo.
  - Reinforcement:
    Joints/gaps: Gyproc Joint Tape or Thistle ProTape FT50/ FT100.
    Internal corners: Any gaps exceeding 3mm pre-filled and joints reinforced using Gyproc Joint Tape alternatively Thistle ProTape FT100 may be used.
    External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.
    Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
  - Fill and tape all joints except where coincident with metal beads.
  - Trowel/float to a tight, matt, smooth surface with no hollows, abrupt changes of level or

692 RIGID BEADS/STOPS

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

695 INSTALLING BEADS/ STOPS

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

K11
Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings
Revision A

Section Revision History

No.	Purpose	
-	TENDER ISSUE	18th Sep 2015
A	K11 – Titles of 115, 115A and 115B updated to clarify floor finish build-up	18th Sep 2015

Clauses amended in Revision A

No.	Clause	
115	BATTENED PLYWOOD FLOATING FLOOR	Revised
115A	BATTENED PLYWOOD FLOATING FLOOR	Revised
115B	BATTENED PLYWOOD FLOATING FLOOR	Revised

K11 Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings

To be read with Preliminaries/ General conditions.

TYPES OF FLOORING/ SHEATHING/ DECKING/ SARKING/ LINING/ CASINGS

110 WOOD-BASED SHEETS GENERALLY

- Standard: To BS EN 13986.
  - Evidence of compliance: Submit.

115 BATTENED PLYWOOD FLOATING FLOOR TO MILL BUILDINGS WHERE FLOORS ARE OF TIMBER CONSTRUCTION GENERALLY and FLOOR IS LARGELY UNEVEN / NOT LEVEL

- Substrate: Ply Deck laid over existing joists and timber firings.
  - Preparation: Existing Timber - Refer to detail drawings. Note that the existing buildings have floors with irregular levels. The proposals are for the floor to be brought level with the use of firings fixed over the joists prior to the fitting of the new ply deck. The levelling of the floor with the use of firings will address most of the levels issues although it will remain necessary for the acoustic battens to be shimmed level. The survey information indicates that the range of packing that must be expected will be between 0 - 150mm with final variation only being known once the firings and ply have been fitted. Further assessment of the floor level and extent of packing will be essential as part of the preparation of the existing floors. The batten manufacturers are to be consulted where packing seems excessive. The installer and contractor are to review the floor levels with the Architect during the installation of the battens and in advance of the fitting of the floating substrate.
- Resilient layer: 10mm thick open-cell, low resonance, recycled flexible polyurethane (Grade B1).
  - Recycled content: N/A.
- Loose laid battens: Product - DECKfon Cradles. Details - Plastic shoe to receive 65 x 45* mm *regularized softwood at 400 mm centres. - Manufacturer - Cellecta Ltd - 0845 671 7174.
  - Additional battens: At floor edges and as necessary to enable the floor to be constructed. Ensure that there is a sizable allowance for packing pieces available in 2mm, 3mm and 5mm. Installer to advise of alternative packing for substantial variation in level e.g. 20mm and above - Seek guidance from the product manufacturer and Acoustic Engineer on site to confirm adequacy of the installation.
- Thermal insulation between battens: Mineral wool batts 60 mm thick - Rockwool RW5.
  - Recycled content: Not applicable.
- Vapour control layer: Not required.
- Floating substrate: 12.5mm cement board, fibre reinforced with minimum density 13,5 Kg/m2.
- Flooring: Plywood to an approved national standard.
  - Bonding quality to BS EN 314-2: Class 2.
  - Appearance class to BS EN 635: Class IV.
  - Finish: Sanded.
  - Thickness: 18 mm.
  - Edges: Tongued and grooved all edges.
  - Other requirements: Also see clause 115A and 115B for variation on floor finishes and the build up of the floor over the cement board substrate.
    Perimeter Edge Strip - to be used at the wall abutments and to lap onto the floor surface - YELOfon available in 5mm and 10mm as roll, adhesive backed and equal angles - to be fitted to ensure complete barrier between floating floor and wall with lap under wall lining and skirting, e.g. ES10/150- Cellecta Ltd - 0845 671 7174.
- Installation:
  - Floors with no vapour control layer: Adhesive fixed to each batten.
  - Setting out of floating substrate (where specified): Long edges running across battens. End joints central over battens and staggered.
  - Setting out of flooring: Long edges running across battens. End joints central over battens and staggered. All joints glued.
    Flooring laid over floating substrate: Spot bonded to floating substrate. Joints must not coincide.

- Fixing flooring to each batten:
  Fasteners: 50 x 3.35 mm annular ringed shank nails - Stainless Steel .
  Fixing centres (maximum):
  Around floor perimeter and along short edges of each board: 150 mm.
  Along intermediate supports: 300 mm.
  Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.

• Bonding/ Jointing adhesive: Assume adhesive is required - location and type to be discussed with the installer .
• Expansion provision:
  - Clear expansion gap around perimeter of floor area and upstands: 1 mm per metre run of floor, with a minimum gap of 10 mm .
  - Intermediate expansion/ movement joints: As recommended by flooring manufacturer.

(Revised - K11 revision A - 18th Sep 2015)

115A BATTENED PLYWOOD FLOATING FLOOR
OVER CONCRETE i.e. LOWER GROUND FLOORS OF MILLS and WING MILL
ALSO
TO ALL BUILDINGS WHERE A NEW PLY DECK IS LAID IN PLACE OF THE EXISTING FLOOR BOARDS

- Substrate: Concrete / Ply deck.
  - Preparation: EConcrete - Laid level to within the required tolerances to enable the installation of the acoustic floating floor. Ply Deck requires no preparation save to seal all edges and penetrations.
- Resilient layer: 10mm thick open-cell, low resonance, recycled flexible polyurethane (Grade B1).
  - Recycled content: N/A.
- Loose laid battens: Product - DECKfon Batten 70. Details - 65 x 45* mm *regularized softwood at 400 mm centres. - Manufacturer - Cellecta Ltd - 0845 671 7174.
  - Additional battens: At floor edges and as necessary to enable the floor to be constructed - seek guidance from the product manufacturer and Acoustic Engineer on site.
- Thermal insulation between battens: Mineral wool batts 60 mm thick - Rockwool RW5.
  - Recycled content: Not applicable.
- Vapour control layer: Not required.
- Floating substrate: 12mm cement board, fibre reinforced with minimum density 13,5 Kg/m2.

- Flooring:
  OAK Board - Engineered Ply and Oak board - REFER TO K20/150 - Thickness: [18 mm].
  - Edges: Tongued and grooved all edges.
  TILE Ceramic - Bathroom Floor Tiles - REFER TO M40/110B and / 470 - 12mm tile on tile matt - Thickness: 22mm overall.
  CARPET - Woven carpet and underlay - REFER TO M50/170 - 9mm underlay, 8mm carpet - Thickness: 17mm overall.
  - Other requirements: Perimeter Edge Strip - to be used at the wall abutments and to lap onto the floor surface - YELOfon available in 5mm and 10mm as roll, adhesive backed and equal angles - to be fitted to ensure complete barrier between floating floor and wall with lap under wall lining and skirting, e.g. ES10/150- Cellecta Ltd - 0845 671 7174
    A minimum 15mm must be left at the perimeter for expansion in the floor finish. Refer to drawn details.
- Installation:
  - Floors with no vapour control layer: Adhesive / nail fixed to each batten.
  - Setting out of floating substrate (where specified): Long edges running across battens. End joints central over battens and staggered.
  - Setting out of flooring: Long edges running across battens. End joints central over battens and staggered. All joints glued.
    Flooring laid over floating substrate: Spot bonded to floating substrate. Joints must not coincide.
  - Fixing flooring to each batten:
    Fasteners: 50 x 3.35 mm annular ringed shank nails - Stainless Steel .
    Fixing centres (maximum):
    Around floor perimeter and along short edges of each board: 150 mm.
    Along intermediate supports: 300 mm.
    Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.
- Bonding/ Jointing adhesive: Assume adhesive is required - location and type to be discussed with the installer .
- Expansion provision:

- Clear expansion gap around perimeter of floor area and upstands: 1 mm per metre run of floor, with a minimum gap of 10 mm .
- Intermediate expansion/ movement joints: As recommended by flooring manufacturer.

(Revised - K11 revision A - 18th Sep 2015)

115B BATTENED PLYWOOD FLOATING FLOOR WHERE EXISTING FLOORS ARE OF TIMBER CONSTRUCTION - e.g. MURRAY ST and NEW MILL ENGINE HOUSE

- Substrate: Ply Deck laid over existing joists and timber firings.
  - Preparation: Existing Timber - Refer to detail drawings. Note that the existing buildings have floors with irregular levels. The proposals are for the floor to be brought level with the use of firings fixed over the joists prior to the fitting of the new ply deck. The levelling of the floor with the use of firings will address most of the levels issues although it will remain necessary for the acoustic battens to be shimmed level. The survey information indicates that the range of packing that must be expected will be between 0 - 150mm with final variation only being known once the firings and ply have been fitted. Further assessment of the floor level and extent of packing will be essential as part of the preparation of the existing floors. The batten manufacturers are to be consulted where packing seems excessive. The installer and contractor are to review the floor levels with the Architect during the installation of the battens and in advance of the fitting of the floating substrate.
- Resilient layer: 10mm thick open-cell, low resonance, recycled flexible polyurethane (Grade B1).
  - Recycled content: N/A.
- Loose laid battens: Product - DECKfon Cradles. Details - Plastic shoe to receive 65 x 45* mm *regularized softwood at 400 mm centres. - Manufacturer - Cellecta Ltd - 0845 671 7174.
  - Additional battens: At floor edges and as necessary to enable the floor to be constructed. Ensure that there is a sizable allowance for packing pieces available in 2mm, 3mm and 5mm. Installer to advise of alternative packing for substantial variation in level e.g. 20mm and above - Seek guidance from the product manufacturer and Acoustic Engineer on site to confirm adequacy of the installation.
- Thermal insulation between battens: Mineral wool batts 60 mm thick - Rockwool RW5.
  - Recycled content: Not applicable.
- Vapour control layer: Not required.
- Floating substrate: 12mm cement board, fibre reinforced with minimum density 13,5 Kg/m2.

  Flooring:
  OAK Board - Engineered Ply and Oak board - REFER TO K20/150 - Thickness: [18 mm].
  - Edges: Tongued and grooved all edges.

  TILE Ceramic - Bathroom Floor Tiles - REFER TO M40/110B and / 470 - 12mm tile on tile matt - Thickness: 22mm overall.
  CARPET - Woven carpet and underlay - REFER TO M50/170 - 9mm underlay, 8mm carpet - Thickness: 17mm overall.
  - Other requirements: Perimeter Edge Strip - to be used at the wall abutments and to lap onto the floor surface - YELOfon available in 5mm and 10mm as roll, adhesive backed and equal angles - to be fitted to ensure complete barrier between floating floor and wall with lap under wall lining and skirting, e.g. ES10/150- Cellecta Ltd - 0845 671 7174.
- Installation:
  - Floors with no vapour control layer: Adhesive fixed to each batten.
  - Setting out of floating substrate (where specified): Long edges running across battens. End joints central over battens and staggered.
  - Setting out of flooring: Long edges running across battens. End joints central over battens and staggered. All joints glued.
    Flooring laid over floating substrate: Spot bonded to floating substrate. Joints must not coincide.
  - Fixing flooring to each batten:
    Fasteners: 50 x 3.35 mm annular ringed shank nails - Stainless Steel .

Fixing centres (maximum):
Around floor perimeter and along short edges of each board: 150 mm.
Along intermediate supports: 300 mm.
Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.

- Bonding/ Jointing adhesive: Assume adhesive is required - location and type to be discussed with the installer .
- Expansion provision:
  - Clear expansion gap around perimeter of floor area and upstands: 1 mm per metre run of floor, with a minimum gap of 10 mm .
  - Intermediate expansion/ movement joints: As recommended by flooring manufacturer.

(Revised - K11 revision A - 18th Sep 2015)

315 PLYWOOD FLOORING TO MILL FLOORS

- Substrate: Existing and new timber joists.
  - Additional supports: To be provided where existing joists are missing or require replacement. Also over existing beams.
- Flooring: Plywood manufactured to the relevant standards and quality control procedures specified in BS EN 636, and so marked.
  - Type: BS636-2.
  - Grade: Humid Conditions.
  - Nominal thickness/ number of plies: as BS636-2.
  - Edges: Tongued and grooved all edges.
  - Other requirements: Refer to SE drawings.
- Setting out: Long edges running across joists. End joints central over joists and staggered.
- Fixing to joists:
  - Fasteners: 50 x 3.35 mm annular ringed shank nails to lower sheet and 75 x 3.75 for the upper sheet.
  - Fixing centres (maximum):
    Around floor perimeter and along short edges of each board: 150 mm.
    Along intermediate supports: 300 mm.
  - Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.
- Joint treatment: Abut.
- Expansion provision:
  - Clear expansion gap around perimeter of floor area and upstands: 1 mm per metre run of floor, with a minimum gap of 10 mm.
  - Intermediate expansion/ movement joints: As recommended by flooring manufacturer.

WORKMANSHIP

910 INSTALLATION GENERALLY

- Timing: Building to be weathertight before fixing boards internally.
- Moisture content of timber supports (maximum): 18%.
- Joints between boards: Accurately aligned, of constant width and parallel to perimeter edges.
- Methods of fixing, and fasteners: As section Z20 where not specified otherwise.

915 DRYNESS OF CONCRETE/ SCREED SUBSTRATES FOR FLOATING FLOORS

- Relative humidity above substrate when tested with a hygrometer to BS 8201, Appendix A (maximum): 75%.
  - Test points: All corners, around perimeter, and random points over area being tested.
  - Drying aids: Turned off for not less than 4 days before testing.

920 VAPOUR CONTROL LAYER IN FLOATING FLOOR CONSTRUCTION
- Location: Immediately below floating layer.
- Installation:
  - Joints: Overlapped by minimum 150 mm and sealed with vapour resistant tape.
  - Treatment of membrane at perimeter of flooring and upstands: Turned up and sealed to top face of flooring using a method approved by the board manufacturer.
- Excess material: Trimmed off neatly after fixing skirtings/ cover beads.
- Condition of membrane before laying flooring: Clean and dry.

925 BATTENS FOR FLOATING FLOORS
- Timber quality: Free from decay, insect attack (except ambrosia beetle damage) and with no knots wider than half the width of the section.
- Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
  - Type/ Desired service life: Boron/ 60 years.
- Moisture content at time of laying (maximum): 16%.

930 ADDITIONAL SUPPORTS
- Additional studs, noggings/ dwangs (Scot) and battens:
  - Provision: In accordance with board manufacturer's recommendations and as follows: Tongue and groove jointed rigid board areas: To all unsupported perimeter edges. Butt jointed rigid board areas: To all unsupported edges.
  - Size: Not less than 50 mm wide and of adequate thickness.
  - Quality of timber: As for adjacent timber supports.
  - Treatment (where required): As for adjacent timber supports.

940 BOARD MOISTURE CONTENT AND CONDITIONING
- Moisture content of boards at time of fixing: Appropriate to end use.
- Conditioning regime: Submit proposals.

950 MOISTURE CONTENT TESTING
- Test regime and equipment: Submit proposals.
- Test results: Submit record of tests and results.

960 FIXING GENERALLY
- Boards/ sheets: Fixed securely to each support without distortion and true to line and level.
- Fasteners: Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
  - Distance from edge of board/ sheet: Sufficient to prevent damage.
- Surplus adhesive: Removed as the work proceeds.

975 METAL WALL FRAMING
- Setting out: Framing accurately aligned, vertical and securely fixed to surrounding structure at maximum 600 mm centres. All board edges supported.

976 MINERAL WOOL INSULATION TO METAL FRAMING
- Installation: Neat and secure with close butted joints and no gaps. Where insulation is not self supporting, fixed at head of frame using clips or other suitable proprietary fixings.

980 OPEN JOINTS

- Perimeter joints, expansion joints and joints between boards: Free from plaster, mortar droppings and other debris.
- Temporary wedges and packings: Removed on completion of board fixing.

990 ACCESS PANELS

- Size and position: Agree before boards are fixed.
- Additional noggings/ dwangs (Scot), battens, etc: Provide and fix as necessary.

K20
Timber board flooring/ sarking/ linings/ casings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

K20 Timber board flooring/ sarking/ linings/ casings

To be read with Preliminaries/ General conditions.

150 BATTENED TIMBER BOARD FLOATING FLOOR TO ALL FLOORS

- Substrate: Acoustic Battens at 400mm centres.
  - Preparation:
    Concrete to receive a tanking system / ply deck to be formed level K11/115A.
    Retained existing floors to be brought level with acoustic cradles - K11/ 115B.
- Resilient layer: as K11/115A.
- Loose laid battens: as K11/115A.
- Thermal insulation between battens: Mineral wool batts/ slabs, 60mm thick.
- Recycled content of resilient layer and/ or thermal insulation: 0% (minimum) to BS EN ISO 14021.
- Vapour check: Not required.
- Boards:
  - Wood species: Engineered Plank - ply with Oak Face
    Product - Native Oak 18mm (4mm oak upper layer) - Pre-finished - UV sawn smoke matt lacquered
    Manufacturer - Elka
    Supplier - Unilin Distribution Ltd - 0844 8118228.
  - Quality: To BS 1297.
  - Finished face width (exposed width after fixing): 150mm.
  - Finished thickness: 18mm.
  - Edge profile: Tongued and grooved.
  - Moisture content at time of fixing: 9-13 % - Ambient Moisture within building to be assessed prior to the delivery, unwrapping and fixing of the boards.
- Fixing: Secret nailed with 40 mm lost head nails.

220 TIMBER BOARD SARKING

- Substrate: existing rafters at approx 400mm centres.
- Boards: Free from decay, insect attack (except ambrosia beetle damage) and wane.
  - Wood species: Douglas fir.
  - Quality: Blue stain, fissures, knot holes and loose or unsound knots not permitted on exposed face (underside) of boards.
  - Surface finish: Planed.
  - Edge profile: Tongued and grooved.
  - Finished face width (exposed width after fixing): to match existing. approx - 112 mm .
  - Finished thickness: 22 mm.
  - Moisture content at time of fixing: Not more than 19%.
- Treatment: Preservative impregnation.
  - Standard: To NBS section Z12 and Wood Protection Association Commodity Specification FR4.
  - Type: Copper-organic.
- Fixing: 65 mm x 3.35 mm stainless steel annular ringed shank nails, two per board to each rafter.
- Termination of sarking at roof edges and junctions: In accordance with drawings and specification for roof covering.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Protection during and after installation: Keep boards dry. Protect from dirt, stain and damage until Completion.
- Boards to be used internally: Do not install until building is watertight.
- Methods of fixing, and fasteners: As section Z20.
- Moisture content of timber supports at time of fixing boards: Not more than 18%.

320 MOISTURE CONTENT OF NEW CONCRETE/ SCREED SUBSTRATES FOR FLOATING FLOORS

- Test for moisture content:
  - Standard: To BS 8201, Annex A, using an accurately calibrated hygrometer.
  - Readings: Take in corners, along edges, and at random points over the area being tested.
- Acceptability: Do not lay flooring until all readings show 75% relative humidity or less.

330 MOISTURE CONTENT OF TIMBER

- Conditions during and after installation: Control ambient temperature and humidity conditions to maintain moisture content at average level specified in BS EN 942, table B.1 for the relevant service condition until Completion.
- Test for moisture content: When instructed, using an approved moisture meter.

350 TREATED TIMBER

- Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

370 FIXING BOARDS

- Environmental conditions: Do not fix boards when ambient temperature is at or below 0°C, or above 30°C.
- Generally: Fix boards securely to each support to give flat, true surfaces free from undulations, lipping, splits and protruding fasteners.
- Timber movement: Position boards and fixings to prevent cupping, springing, excessive opening of joints and other defects.
- Heading joints: Tightly butted, central over supports and at least two board widths apart on any one support.
- Edges: Plane off proud edges.
- Exposed nail heads: Neatly punch below surface.

L
Windows/Doors/Stairs

L10
Windows/ Rooflights/ Screens/ Louvres

Section Revision History

No.	Purpose	
-	TENDER ISSUE	18th Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

GENERAL

Refer to schedule:
FCB-1777-SCH-WS4-005 - Window Schedule A
FCB-1777-SCH-WS4-006 - Window Schedule B

Refer to Architects Drawings generally including:

External Wall Details -	**1777-A-*22** Series**
External Door Details -	**1777-A-*31** Series**
Including but no limited to -	
Portals – Elevations	1777-A-03101
Portals – Assembly Details	1777-A-03102
Wing Mill External Doors – Entrance Lobby Doors - Ele	1777-A-63103
Wing Mill External Doors – Main Entrance - Plan	1777-A-63104
Wing Mill External Doors – Stairwell Escape	1777-A-63105
Wing Mill External Doors – Section Outward Opening	1777-A-63106
Wing Mill External Doors – Section Inward Opening	1777-A-63107

Window Details -	**1777-A-*33** Series**
Including but no limited to -	
External Wall – Insulated - Window Fixing and Lining out - Old Mill	1777-A-03301
External Wall – Insulated - Window Fixing and Lining out – New Mill	1777-A-03302
External Wall – Uninsulated - Window Fixing and Lining out – Murray St	1777-A-03303
External Wall – Insulated - Window Fixing and Lining out – Murray St	1777-A-03304

Shutters Secondary Glazing -	**1777-A-*34** Series**
Including but no limited to -	
Secondary Glazing – Murray St	1777-A-03405
Secondary Glazing – Decker Mill	1777-A-03406

Wing Mill Envelope	**1777-A-621** Series**

110 EVIDENCE OF PERFORMANCE

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

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: All windows set into both existing and new openings.

140 CONTROL SAMPLES

- Procedure:
  - Finalise component details.
  - Fabricate one of each of the following designated items as part of the quantity required for the project.
  - Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.
- Designated items: WINDOWS UNITS to MILL BUILDINGS / WINDOW UNIT to WING MILL / SECONDARY GLAZING / SMOKE VENT WINDOW.

PRODUCTS

215 SLIDING SASH WOOD WINDOWS

- Manufacturer: A joinery manufacturer experienced in the fabrication of Sliding Sash Windows.
  Species: Douglas fir or Redwood rails, stiles and frame / cills of English Oak.
- Finish as delivered: M60/130.
- Glazing details: single glazed to match existing.
  - Beading: External putty to match existing.
- Ironmongery/ Accessories: P21/395.
- Fixing: Built in with cramps as clause 780.

315A STEEL WINDOWS - TO SERVE AS SECONDARY GLAZING TO ADDRESS LOW PERFORMANCE OF EXISTING WINDOWS - DECKER MILL AND MURRAY ST BLOCK

- Standard: To BS 6510.
  Manufacturer and reference: REA Metal Windows Ltd - 0151 2286373.
  REA W20 Series of Sections.
  Weathertightness: To BS 6375: Part 1
  For air permeability, water-tightness and wind resistance information please see Table 1, under
  Operation and strength characteristics: To BS 6375: Part 2
  Construction: All frames have welded corners and are flat and square within normal manufacturing dimensional tolerances of +/- 2 mm. Intermediate bars are welded into position.
  Weatherstripping: Gaskets complying with BS 4255: Part 1 manufactured from EPDM secured into grooves of opening frame with adhesive.
  Galvanising: All components including steel attachments, coupling members and ancillaries: hot-dipped after manufacture to BS EN ISO 1461:1999
  - Material: Hot rolled carbon steel.
  - Window section: W20.
- Exposure category to BS 6375-1/ Design wind load: 1200 Pa.
- Finish as delivered: Rust proofed by the hot dip galvanising process to BS EN ISO 1461: 1999 only or then followed by a matt stove polyester coating to BS6497 in a colour selected from our standard colour chart. Minimum paint thickness on significant surfaces 60 micrometres.
- Glazing details:
  Acoustic Insulating glass to Sash Window Secondary Glazing - Pilkington Optiphon - 8.8mm with an interstitial acoustic laminated to the internal layer of the unit and toughened glass leaf to apartment side = Rw+Ctr of 33
  Acoustic and Thermal Insulating glass to Steel Frame units where Secondary Glazing is required - Pilkington Optiphon - 4/6/6.8mm with an interstitial acoustic laminated to the internal layer of the unit and toughened glass leaf to apartment side = Rw+Ctr of 30 and Thermal performance of 0.2W/m2K.
  - Beading: Internal.
    Windows shall be designed for drained and ventilated glazing on site, from inside or outside, of insulating glass units up to 16mm thick, using factory finished beads and polymer rubber gaskets, in accordance with BS 8000-7.
    Ironmongery/ Accessories:
    - Hinged casements shall have rust proofed steel or brass hinges, face mounted and welded, screwed or riveted to the frame.
    - Casement stay;
    - Extension sill;
    - Handle;
    - Night latch; and
    - Pressed steel sill and window board.
- Fixing: Screwed to unrebated brick reveal as clause 781 - refer to drawn details.
  Windows shall be supplied with rust proofed screws, plugs, and/or lugs to suit specified openings.
  Composite assemblies will be delivered in separate units to be coupled together on site. When contracted to install, the manufacturer shall apply appropriate external perimeter sealants.

330A ALUMINIUM WINDOWS - AUTOMATED SMOKE VENTS
To be located in Wing Mill, Old & Decker Mill Stair Core and New Mill Stair Core.

- Manufacturer: RocBurn Ltd.
  - Product reference: Facade Casement Ventilator - NSHEV (Natural Smoke and Heat Exhaust Ventilators) and conforms to EN 12101-2 and NFS 61 937-1..
- Finish as delivered: Polyester powder coating in a colour and finish to match the adjacent windows.
- Glazing details: 35mm Fire Rated Double Glazed Unit to provide 60mins integrity and 15min insulation and / or as defined in the Fire Engineers Specification. Exposure category classification requirements shall be indicated in conformance with: DS/EN 12207 for air permeability. DS/EN 12208 for water tightness .
  - Beading: Internal.
    Bottom Hinged to open out and serve as smoke vent.
- Ironmongery/ Accessories: Electric actuated with pneumatic operation / fail safe open / integrated with fire alarm and fire detection system.
- Fixing: Screwed to masonry reveal as clause 782 - Refer to drawn details.
  Final specification to be resolved in consultation with the Window Supplier and Fire Detection and Alarm System Installer.

400A ALUMINIUM WINDOWS TO WING MILL and OTHER MILL BUILDINGS

- Manufacturer: IdealCombi A/S, Chancery Pavilion, Boycott Avenue, Oldbrook, Milton Keynes, MK6 2TA telephone:- 01582 860940 fax:- 01582 860949 www.idealcombi.com

  - Product reference: **FUTURA+ I - 53mm inward opening - Tilt & Turn & fixed window** .

- Materials:
- Exterior frame / sash cladding: Aluminium / Polyurethane / Aluminium inward opening sashes and fixed sashes.
  External and Internal Finish: Polyester Powder Coated – Standard RAL colours (High gloss)
  Interior frame section: Aluminium with 149mm overall depth of frame.
  Exposure category classification requirements shall be indicated in conformance with:
  DS/EN 12207 for air permeability
  DS/EN 12208 for water tightness
  DS/EN 12210 for wind load
  Glazing details:
  Generally - Courtyard Facing - 28mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8.4/16/4 = 33dB Rw+Ctr
  Wing Mill Ground Floor and Stair Core Glazing (Entrance Lobby Area and Stairwell) - 28mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8.4/16/4 = 33dB Rw+Ctr
  Wing Mill Common Areas above Ground Floor (i.e. Corridor Windows) - 28mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8.4/16/4 = 33dB Rw+Ctr
  Wing Mill Apartments - 48mm triple glazed unit (Medium G): Glazing 0.83 W/m2K / Gg 0.50 - 8.4/4/16/4/16/4 = 33dB Rw+Ctr - To DS/EN 1279 with black warm edge spacers, safety glass to BS EN12600:2002, below 800 mm above finished floor level and below 1500mm within 300mm of doors .
  - Beading: External .
- Ironmongery/ Accessories: To include: aluminium folded sill pressings by others. Sill Packer to be supplied loose by Idealcombi., aluminium ventilators to achieve 2500mm² EA if required.
  Futura + I inward opening window has a tilt & turn function.
  Both opening functions are controlled by the same espagnolette handle in the locking jamb. In the closed position the handle is vertically downwards. The tilt function is triggered by turning the handle 90° to the horizontal position. The turn operation is triggered by turning the handle in the upright vertical position. The tilt function can be locked with a key and only open as a Turn (side hung) function by using the key and turning the handle upwards. All windows with cills below 800mm over FFL are to have stainless steel window bars fitted as part of the window assembly .
- Fixing: Lug fixing and / or screw fixings as clause 784 .
  FIRE: Where the window is located in the following places it must achieve / provide 60minutes integrity and 15minutes insulation from both sides:
  - All windows and glazing to New Mill existing stair core.
  - All windows and glazing to Old & Decker Mill existing stair core.
  - All windows in bay 19 of New Mill where it has a close proximity to Wing Mill.
  - All glazing in the south elevation of Murray Street South or the façade of Old Mill directly facing Murray Street South not separated by at least 2.5m.

410A ALUMINIUM WINDOWS TO WING MILL and where required as Automatic Opening Vents

- Manufacturer: IdealCombi A/S, Chancery Pavilion, Boycott Avenue, Oldbrook, Milton Keynes, MK6 2TA telephone:- 01582 860940 fax:- 01582 860949 www.idealcombi.com
  Product Reference: **FUTURA+ range of products. Fixed & Side Hung windows & Spandrel panel**
  Materials:
  - Exterior frame / sash cladding: Aluminium / Polyurethane / Aluminium outward opening sashes and fixed sashes.
  - Finish: Polyester Powder Coated – Standard RAL colours (Matt or High gloss)
  - Interior frame section: Redwood timber (Pinus species) supplied from a renewable and managed supply chain. Quality optimised finger jointed timber with 149mm overall depth of frame.
  - Finish: Factory finished, 2 coat micro porous paint, or clear stain selected from standard colour range.
- Exposure category to BS 6375-1/ Design wind load: DS/EN 12207 for air permeability. DS/EN 12208 for water tightness .
- Operation and strength characteristics: To BS 6375-2.
- Glazing details: To DS/EN 1279 with black warm edge spacers, safety glass to BS EN12600:2002, below 800 mm above finished floor level and below 1500mm within 300mm of doors.
  Generally - 28mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8.4/16/4 = 33dB Rw+Ctr Wing Mill Apartments - 48mm triple glazed unit (Medium G): Glazing 0.83 W/m2K / Gg 0.50 - 8.4/4/16/4/16/4 = 33dB Rw+Ctr .
  - Beading: External .
- Ironmongery/ Accessories: To include: 18 x 119mm factory fitted sill packer by Idealcombi with aluminium folded sill pressings (by others), aluminium ventilators if required to achieve 2500mm² EA, opening handles to operate a fully concealed multi-point locking safety bolt mechanism with night vent position. Restrictors required to all windows to limit the opening to approximately 100mm.
  Where window motors required for AOV's:-
  AOV: - Window master WMX 803 (265mm chain) or 823 (500mm chain)
  1 amp
  24 volt D/C
  Concealed window/motor
  Supplier to Idealcombi: www.windowmaster.com
  WMX803: http://www.windowmaster.com/Products/SHOP/Actuators/Chain-actuators/Chain-actuator-1.aspx WMX 823:
  http://www.windowmaster.com/Products/SHOP/Actuators/Chain-actuators/Chain-actuator-3.aspx .
- Fixing: Lug fixing and / or screw fixings as clause 784 .
  FIRE: Where the window is located in the following places it must achieve / provide 60minutes integrity and 15minutes insulation from both sides:
  - All windows and glazing to New Mill existing stair core.
  - All windows and glazing to Old & Decker Mill existing stair core.
  - All windows in bay 19 of New Mill where it has a close proximity to Wing Mill.
  - All glazing in the south elevation of Murray Street South or the façade of Old Mill directly facing Murray Street South not separated by at least 2.5m.

410B ALUMINIUM WINDOWS TO ENGINE HOUSES

- Manufacturer: IdealCombi A/S, Chancery Pavilion, Boycott Avenue, Oldbrook, Milton Keynes, MK6 2TA telephone:- 01582 860940 fax:- 01582 860949 www.idealcombi.com
  Product Reference: **FRAME - Fixed Semi Circular or Radiused head windows**
- Materials:
  Exterior frame / sash cladding: Aluminium outward opening sashes and fixed lights.
  Finish: Polyester Powder Coated – Standard RAL colours (Matt or High gloss)
  Interior frame / sash section: Redwood timber (Pinus species) supplied from a renewable and managed supply chain. Quality optimised finger jointed timber with 122mm (or 149mm) overall depth of frame.
  Finish: Factory finished, 2 coat micro porous paint, selected from standard colour range.
  Exposure category to BS 6375-1/ Design wind load: DS/EN 12207 for air permeability. DS/EN 12208 for water tightness.
- Operation and strength characteristics: To BS 6375-2.
- Glazing details:
  Generally - 28mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8.4/16/4 = 33dB Rw+Ctr
  Safety glass to BS 6206 below 800 mm above finished floor level and below 1500mm within 300mm of doors..
  - Beading: External.
- Fixing: Lug fixing and / or screw fixings as clause 784
  All windows with cills below 800mm over FFL are to have stainless steel window bars fitted as part of the window assembly.
  FIRE : Where the window is located in the following places it must achieve / provide 60minutes integrity and 15minutes insulation from both sides:
  - All windows and glazing to New Mill existing stair core.
  - All windows and glazing to Old & Decker Mill existing stair core.
  - All windows in bay 19 of New Mill where it has a close proximity to Wing Mill.
  - All glazing in the south elevation of Murray Street South or the façade of Old Mill directly facing Murray Street South not separated by at least 2.5m.

415 COMPOSITE FIRE RATED WINDOWS as defined within the Fire Engineers Report Including:
STAIR TOWER of NEW MILL
STAIR TOWER of OLD & DECKER MILL
ALL WINDOWS in the END UNITS in WING MILL perpendicular to NEW MILL
WINDOWS in LG, UG, 1st. 2nd and 3rd of BAY 4 of OLD MILL

- Manufacturer:
  Generally - IdealCombi A/S, Chancery Pavilion, Boycott Avenue, Oldbrook, Milton Keynes, MK6 2TA telephone:- 01582 860940 fax:- 01582 860949 www.idealcombi.com

  Irregular Window Shapes - Known to include - Old & Decker Mill - W-LG.ST.B.W and New Mill - W-UG.ST.B.E

  Where the window shape or size is not available as part of the IdealCombi range the contractor is to source a fire rated window from a specialist fabricator.
  Gennaro Fire Rated Glazing Systems - 0141 843 4052 - Mr Kevin Beaty
  The windows is to be manufactured to match the apperance of the IdealCombi unit. The windows known to be affected are those with rounded top portions although the requirement for specialist fabrication will apply to all fire rated units not available from the specified manufacturers..

  - Product reference: FUTURA range of products - Fire rated fixed window. Window tested by the Danish Institute of Fire and Security Technology: File No: PG11719 SN:11100 to EN 1364-1 and achieved E60 / EW 60 / EI30 .
- Materials:
  - Exterior frame/ sash cladding: Exterior frame / sash cladding: Aluminium / Timber fixed light and has no opening functions. The specially designed construction offers a very robust window in fire situations..
    Finish: Polyester Powder Coated – Standard RAL colours High gloss .
  - Interior frame/ sash section: Redwood timber (Pinus species) supplied from a renewable and managed supply chain. Quality optimised finger jointed timber with 149mm overall depth of frame.
    Finish: Factory finished, 2 coat micro porous paint, or clear stain selected from standard colour range.
- Glazing details: 35mm Fire Rated Unit to provide 60mins integrity and 15min insulation and / or as defined in the Fire Engineers Specification.
  Exposure category classification requirements shall be indicated in conformance with: DS/EN 12207 for air permeability. DS/EN 12208 for water tightness .
  - Beading: External.
- Ironmongery/ Accessories: none.
- Fixing: Screw fixing as clause 784.

480 ROOF WINDOWS
- Manufacturer: TO MILL BUILDINGS.
  - Product reference: CR14 - 821mm x 1133mm or nearest standard size to suit the availalbe strucutral opening. Conservation Roof Light by The Rooflight Company - 01993 833108.
- Glazing details: 4 mm SGG PLANITHERM® Total + (Low E) toughened inner, 16 mm argon cavity, 4 mm SGG PLANILUX® Toughened outer producing a glass centre pane U value of 1.2 W/m² K..
  - Beading: External.
- Flashings: By window manufacturer to suit Full flashing kit to suit a slate roof.
- Accessories: Colour - Black. Kit - pole winder and winding crank.
- Fixing: Stainless Steel wood screws and or coach screws into timber roof structure.

EXECUTION

710 PROTECTION OF COMPONENTS
- General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
- 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
- Wood surfaces inaccessible after installation: Prime or seal as specified before fixing components.

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

760 REPLACEMENT WINDOW INSTALLATION
- Standard: To BS 8213-4.

765 WINDOW INSTALLATION GENERALLY
- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
  - Minimum: 9mm.
  - Maximum: 15mm.
- Distortion: Install windows without twist or diagonal racking.

770 DAMP PROOF COURSES IN PREPARED OPENINGS
- Location: Ensure correct positioning in relation to window frames. Do not displace during fixing operations.

780 FIXING OF WOOD FRAMES
- Standard: As section Z20.
- Fasteners: Stainless steel wood screws .
  - Spacing: When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.

781 FIXING OF STEEL FRAMES

- Standard: As section Z20.
- Fasteners: 10 mm phosphor bronze expanding bolts into masonry or in other substrates Stainless Steel screws sized and selected to suit the application.
  - Spacing: When not predrilled 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.

784 FIXING OF COMPOSITE FRAMES

- Standard: As section Z20.
- Fasteners: Stainless Steel screws and where necessary 10 mm phosphor bronze expanding bolts - *do not use mild steel, galvanized or aluminium fixings*.
  - Spacing: When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

790 FIRE RESISTING FRAMES

- Gap between back of frame and reveal: Completely fill with intumescent mastic or tape and mineral wool.

800 BACKFILLING OF STEEL FRAME SECTIONS

- Windows fixed direct into openings: After fixing, fill back of steel frame with waterproof cement fillet.

810A SEALANT JOINTS

- Sealant:
  - Manufacturer: Adshead Radcliffe - 01773 821867.
    Product reference: Arbokol 1000.
  - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.
    - Brush joints clean and free from all dust etc wipe the joint interface with an approved solvent wipe and allow for drying. Insert a foam backing strip or bond breaker tape to back of joint. Apply the Arbokol (joint size 10 to 15mm typically). Tool joint with a smooth stick to leave neat professional finish.
    - Colour: To compliment or match window colour.
    - External seal behind sealant
    - Manufacturer: Compriband
    - Range: Ilmol 600 tape,

    Colour: Anthracite/RAL7030 Grey or black
    Certification: BBA 96/3309
    Install windows into prepared opening, maintaining a 12m +/- 4mm gap. Tape is to be placed between the wooden frame and window reveal. (Where there is a brick reveal the joint needs to be flush to ensure a suitable weather tight seal.)

820 IRONMONGERY

- Fixing: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
- Checking/ Adjusting/ Lubricating: Carry out at Completion and ensure correct functioning.

L20
Doors/ shutters/ hatches
Revision A

Section Revision History

No.	Purpose	
-	TENDER ISSUE	18th Sep 2015
A	L20/413 - Apartment Entrance Door spec added. L20/480B - DX.10 moved to L20/480G	18th Sep 2015

Clauses amended in Revision A

No.	Clause	
413	WOOD DOORSETS	Revised
480B	DOORSETS	Revised
480G	DOORSETS	Revised

L20 Doors/ shutters/ hatches

To be read with Preliminaries/ General conditions.

GENERAL

Refer to schedule:
FCB-1777-SCH-WS4-001 - Door Schedule

Refer to Architects Drawings generally including:

External Wall Details	**1777-A-*22** Series**
External Door Details	**1777-A-*31** Series**
Internal Door Details	**1777-A-*32** Series**
Window Details	**1777-A-*33** Series**
Wing Mill Envelope	**1777-A-621** Series**
External Gates	**1777-A-*91** Series**

110A EVIDENCE OF PERFORMANCE

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

All doorsets must be DDA compliant.
Doorset manufacturer to provide sectional and elevation drawings together with door and ironmongery schedules for approval/inclusion upon design closure.

Door Thickness: 44mm, or 54mm depending on fire/acoustic performance.

Full-size doorset construction to have been independently tested to demonstrate achievable service life and durability based on the principles of prEN 12400 incorporating elements of DD171:1987, PAS 23:1999, EN1191, EN1192 and prEN12400:2002.
Doorsets to be Severe Duty.

112 TIMBER PROCUREMENT

- Timber (including timber for wood-based products): Obtained from well-managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
- Certification scheme: Programme for the Endorsement of Forest Certification (PEFC) and Sustainable Forestry Initiative (SFI), with Chain of Custody/ Programme for the Endorsement of Forest Certification (PEFC) .
  - Other evidence: None.

115 FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES

- 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/ doorset/ assembly supplied will comply with the specified requirements for fire resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

120 NON FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES

- Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each 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.

150 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: All Doors - Existing fabric dictates the available construction width and height. The proposals have sought to ensure there is a high degree of standardisation however the irregular nature of the buildings has meant that some doors will need to be sized to fit openings with widths and heights that are governed by the historic fabric.

170 CONTROL SAMPLES

- Procedure:
  - Finalize component details.
  - Fabricate one of each of the following designated items as part of the quantity required for the project.
  - Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.
- Designated items: Door Types:
  A1 - Standard Apartment Door - not fire rated.
  B1 - Apartment Entrance Door - FD.60
  C - Apartment Glazed Door and Side Panel
  D1 - Apartment Cupboard Doors
  Communal Circulation Doors - Timber FD.60 (if different from above)
  Circulation Core Doors - Schuco Janisol - Glazed
  Courtyard Entrance Doors - Schuco Janisol - Glazed and Solid
  Sliding Terrace Doors - IdealCombi Futura+.

PRODUCTS

405 CONCEALED RISER SINGLE FD60 DOOR TYPE 8 - INTERNAL - CIRCULATION CORES
Drawing reference(s): Refer to plans, door types and Door Schedule.

- Manufacturer: Aspex Doorsets, Novista Rise - Single in the Mill Landing Lobbies - Double in Murray St. and New Mill Engine House.
Sustainability: All timber products FSC certified chain of custody.
Security Requirements: None
Fire performance: FD60.
Smoke control: Required.
Acoustic performance: N/a.
Door leaf: 740mm Single / 1240mm Double
Core: Aspex 54mm Solidcore.
Duty: Severe to DD171.
Facings: MDO Pre-primed facing.
Lippings: Concealed hardwood to all 4 edges.
Finish as delivered: Pre-primed face.
Frame and architraves:
Frame: Novista
Material: Galvanised Steel
Architraves: Not required.
Moisture content on delivery: 10 to 12%.
Ironmongery:
Hinges: 3 Nos. concealed hinges, supplied and fixed by doorset manufacturer.
Locks: Factory fitted deadbolt, supplied and fixed by doorset manufacturer.
Fire seals: Intumescent seal arrangements in line with Aspex tested evidence supplied and fitted into the door.

410A WOOD DOORSETS INTERNAL DOORSETS; FLUSH NON-FIRE RATED

- Manufacturer: Doorsets supplied by Doorset Technology Ltd Contact Frank Gallagher 0781 2666733..
- Door leaf:
  - Facings: Kraft paper factory painted to RAL colour (TBC) with 10% sheen finish..
  - Lippings: 8mm hardwood to all four edges, concealed by face substrate. Lipping edge to be painted as door face..
  - Finish as delivered: Full factory finish.
    " Refer to detail drawings and door schedules.
    " Doorset are to be manufactured in accordance with BM TRADA Q-Mark registered quality scheme.
    " Door leaves: 44mm thick.
- Frame and architraves: The style of frame is to include loose architraves. All loose architraves are to be mitred at corners. Frames to be one-piece. Internal apartment door frames to be lining & stop detail.
  - Wood species: Softwood .
  - Finish as delivered: Full paint system in Factory, as section M60 .
- Preservative treatment: Not required .
- Glazing/ Infill details: As indicated on the schedules. Glazed in 6.4mm clear laminated glass set in Lorient FF1 glazing system. Secure with hardwood flush quirk beads supplied as part of the doorset. All beads to be pinned and filled. .
- Ironmongery: Hinges to be - Royde and Tucker H102 HI-LOAD butt hinges to BS1935 other Ironmongery to be As ironmongery schedule .
- Perimeter seals: Not required .
- Other requirements: 15mm thick MDF painted over panel to match door finish on both sides of doorset. Height varies to suit ceiling levels. .
- Fixing: With screws which are to be countersunk and concealed by loose stops. .

411 WOOD DOORSETS INTERNAL DOORSETS; FLUSH FD-30 - FIRE RATED

- Manufacturer: Doorsets supplied by Doorset Technology Ltd Contact Frank Gallagher 0781 2666733..
- Door leaf: 44mm thick
  - Facings: Kraft paper factory painted to RAL colour (TBC) with 10% sheen finish. .
  - Lippings: 8mm hardwood to all four edges, concealed by face substrate. Lipping edge to be painted as door face..
  - Finish as delivered: Full factory finish.
- Frame and architraves:
  - Wood species: Softwood. Class (to BS EN 942): J.40-50 and to BS 1186: Part 1 and 3: CSH.
  - Finish as delivered: Full factory finish - The style of frame is to include loose architraves All loose architraves are to be mitred at corners. Frames to be one-piece. Combined intumescent and cold smoke seals fitted to frames.
- Preservative treatment: Not required.
- Glazing/ Infill details: As indicated on the schedules. Glazed in 7mm Pyrobelite clear glass set in FF1 glazing system. Secure with hardwood cloaking beads supplied as part of the doorset. All beads to be pinned and filled. Internal apartment glazed door and screen assembly to be glazed using 7mm Pyrobelite clear laminated glass. Combined intumescent and cold smoke seals fitted to frames.
  - Manifestation: Not required.
  - Beading: Internal.
- Ironmongery: as section P21: Refer to Ironmongery Schedule -
  Hinges to be - Royde and Tucker H102 HI-LOAD butt hinges to BS1935.
- Perimeter seals: Lorient combined intumescent and smoke seals LP1504DS..
- Other requirements:
  15mm thick MDF painted over panel to match door finish on both sides of doorset. Height varies to suit ceiling levels.
  Apartment entrance door frame to be solid rebated section with solid core door blank infill factory painted to match adjacent door.
  Fixed solid door panel to be secured with flush quirk beading..
- Fixing: With screws which are to be countersunk and concealed by loose stops..

412 WOOD DOORSETS INTERNAL DOORSETS; FLUSH FD-60 - FIRE RATED

- Manufacturer: Doorsets supplied by Doorset Technology Ltd Contact Frank Gallagher 0781 2666733..
- Door leaf: 54mm thick
  - Facings: Kraft paper factory painted RAL colour (TBC) with 10% sheen finish.
  - Lippings: 8mm hardwood to all four edges, concealed by face substrate. Lipping edge to be painted as door face..
  - Finish as delivered: Full factory finish.
- Frame and architraves:
  - Wood species: CND Beech hardwood. Class (to BS EN 942): J.40-50 and to BS 1186: Part 1 and 3: CSH.
  - Finish as delivered: Full factory finish - The style of frame is to include loose architraves. All loose architraves are to be mitred at corners. Door frames to be lining & stop detail.Combined intumescent and cold smoke seals fitted to frames.
- Preservative treatment: Not required.
- Glazing/ Infill details: As indicated on the schedules. Glazed in 15mm Pyrobelite clear glass set in Therma-glaze 60 glazing system. Secure with hardwood cloaking beads supplied as part of the doorset. All beads to be pinned and filled.
  - Manifestation: Not required.
  - Beading: Internal.
- Ironmongery: as section P21: Refer to Ironmongery Schedule. The door and frame to be factory prepared and fitted with non-projecting ironmongery
  Hinges to be - Royde and Tucker H102 HI-LOAD butt hinges to BS1935.
- Perimeter seals: Lorient combined intumescent and smoke seals LP1504DS and LAS8001 si Drop Seal.
- Other requirements: Refer to drawn details.
- Fixing: With screws which are to be countersunk and concealed by loose stops..

413 WOOD DOORSETS INTERNAL DOORSETS; FLUSH FD-30 - FIRE RATED - APARTMENT ENTRANCE DOOR - PAS 24

- Manufacturer: Doorsets supplied by Doorset Technology Ltd Contact Frank Gallagher 0781 2666733..
- Door leaf: 54mm thick
  - Facings: Kraft paper factory painted to RAL colour (TBC) with 10% sheen finish. .
  - Lippings: 8mm hardwood to all four edges, concealed by face substrate. Lipping edge to be painted as door face..
  - Finish as delivered: Full factory finish.
- Frame and architraves:
  - Wood species: Softwood. Class (to BS EN 942): J.40-50 and to BS 1186: Part 1 and 3: CSH.
  - Finish as delivered: Full factory finish - The style of frame is to include loose architraves All loose architraves are to be mitred at corners. Frames to be one-piece. Combined intumescent and cold smoke seals fitted to frames.
- Preservative treatment: Not required.
- Glazing/ Infill details: As indicated on the schedules.
  - Manifestation: Not required.
  - Beading: Not required.
- Ironmongery: as section P21: Refer to Ironmongery Schedule -
  Hinges to be - Royde and Tucker H102 HI-LOAD butt hinges to BS1935 / door viewer.
- Perimeter seals: Lorient combined intumescent and smoke seals LP1504DS..
- Other requirements:
  Door to achieve PAS 24:2012 - Individual Apartment doors must comply with and be certified to BS PAS 24:2012.
  15mm thick MDF painted over panel to match door finish on both sides of doorset. Height varies to suit ceiling levels.
  Apartment entrance door frame to be solid rebated section with solid core door blank infill factory painted to match adjacent door.
  Fixed solid door panel to be secured with flush quirk beading..
- Fixing: With screws which are to be countersunk and concealed by loose stops..
  (Revised - L20 revision A - 18th Sep 2015)

420A WOOD DOORSETS FLUSH NON-FIRE RATED 35 Rw dB acoustic performance.

" Refer to detail drawings and door schedules
" Generally all as L20/410A with the following inclusions.
" Door leaf thickness 54mm
" Lorient drop down threshold seal IS8010 included.
" Lorient IS1212 Batwing perimeter seal included.

421 WOOD DOORSETS FLUSH FD30s FIRE RATED 35 Rw dB acoustic performance

" Refer to detail drawings and door schedules
" Generally all as L20/411 and 413 with the following inclusions.
" Door leaf thickness 54mm
" Lorient drop down threshold seal IS8010 included.
" Lorient IS1212 Batwing perimeter seal included.

422 WOOD DOORSETS FLUSH FD60s FIRE RATED 35 Rw dB acoustic performance
" Refer to detail drawings and door schedules
" Generally as L20/412 with the following inclusions
" Lorient drop down threshold seal IS8010 included.
" Lorient IS1212 Batwing perimeter seal included.

480A DOORSETS TYPE - DX2 and DX17 - INWARD OPENING - TO WING MILL CURTAIN WALL and MILL REFUSE ROOMS

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Janisol - Inward Opening thermally broken steel doors.
- Door leaf: Steel.
  - Finish as delivered: Galvanized and PPC.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Clear double glazing - To principle entrance - Insulated panel to Individual Apartments.
  - Manifestation: Not required.

  Ironmongery:
  - Doors to be fitted with Schuco Jansen Electric Strike.
  - Doors to be fitted with Schueco Jansen full height stainless steel handles internally.
  - Doors to be fitted with Schueco Jansen full height stainless steel handles externally.
  - Double doors to be fitted with Schueco Jansen reference 555.424 rebate lever bolt.
  - Doors fitted with overhead concealed closers. .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: Refer to H11 - Curtain Walling - Doors within Curtain Walling to form part of the Curtain Walling CDP Package .
- Fixing: The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .

480B DOORSETS TYPE - DX4, DX5, DX6, DX7, and DX11- INWARD OPENING - PRINCIPLE ENTRANCES

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Janisol - Inward Opening thermally broken steel door and screen system.
- Door leaf: Steel.
  - Finish as delivered: Galvanized and PPC.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Clear double glazing - To principle entrance - Insulated panel to Individual Apartments.
  - Manifestation: Not required.
    Ironmongery:
  - Doors to be fitted with Schuco Jansen RC3 Auto Lock.
  - Doors to be fitted with Schuco Jansen full height stainless steel handles internally.
  - Doors to be fitted with Schueco Jansen full height stainless steel handles externally.
  - Double doors to be fitted with Schueco Jansen reference 555.424 rebate lever bolt.
  - Doors fitted with overhead concealed closers. .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: Refer to H11 - Curtain Walling - System tested to BS EN 1627 Burglar resistance classification RC3 .
- Fixing: The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators. System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .
  (Revised - L20 revision A - 18th Sep 2015)

480C DOORSETS TYPE - No.10 INTERNAL - STEEL DOORSETS - TO CIRCULATION CORES

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Janisol Economy 60 E30/ E60 non-thermally broken Overclad steel door system .
- Door leaf: Steel.
  - Finish as delivered: Galvanized and PPC.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Doors to be fitted with internal square glazing bead glazed with wet seal silicone seal.
  Overclad panel description as L40.
  - Manifestation: Not required.
    Ironmongery:
  - Doors fitted with Schuco Jansen 3D Screw-on Hinges 555.660/555.661
  - Doors fitted with overhead closer .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: As Schuco details .
- Fixing: The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators. System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .

480D DOORSETS TYPE - DX1, DX3, DX15, DX16 - STEEL DOORSETS

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Jansen Janisol C4 EI60 bespoke overclad thermally broken fire rated steel door system with glazed fire panel.
- Door leaf: Steel.
  - Finish as delivered: Galvanized and finish to be liquid coating wash primer 20 micorns top coat 30 micorns to RAL (TBC) Gloss.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Doors to be fitted with internal square glazing bead glazed with dry seal EPDM gaskets.
  Panel description as L40 to comply with fire assessment
  Aluminium overclad as per Architects drawn detail..
  Ironmongery:
  - All ironmongery tested in full accordance with the European fire rating standard BS EN1634-2
  - Doors to be fitted with Schuco Jansen Electric Strike. - Doors fitted with overhead concealed closers .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: As Schuco details .
- Fixing:
  All fixing and sealing of the Schuco fire rated systems to be completed in full accordance with Schuco installation documents using the correct fixings and sealants.
  The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators. System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .

480E DOORSETS TYPE - DX12 - STEEL DOORSETS

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Jansen Janisol Economy 2 EI30 thermally broken fire rated steel door system.
    Door leaf: Steel.
  - Finish as delivered: Galvanized and PPC 50 micorns to RAL (TBC) Gloss.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Doors to be fitted with internal square glazing bead glazed with 17mm ceramic strip with fire resistant silicone.
  Glass description as L40 to comply with fire assessment
  Aluminium overclad as per Architects drawn detail..
  Ironmongery:
  - All ironmongery tested in full accordance with the European fire rating standard BS EN1634-2
  - Doors to be fitted with Schuco Jansen Electric Strike.
  - Doors fitted with overhead concealed closers - Doors to be fitted with Schuco lever handles .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: As Schuco details .
- Fixing:
  All fixing and sealing of the Schuco fire rated systems to be completed in full accordance with Schuco installation documents using the correct fixings and sealants.
  The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators. System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .

480F DOORSETS TYPE - DX18 - STEEL DOORSETS

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Jansen Janisol 2 EI30 thermally broken fire rated steel door system.
    Door leaf: Steel.
  - Finish as delivered: Galvanized and PPC 50 micorns to RAL (TBC) Gloss.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Doors to be fitted with internal square glazing bead glazed with 17mm ceramic strip with fire resistant silicone.
  Glass description as L40 to comply with fire assessment
  Aluminium overclad as per Architects drawn detail..
  Ironmongery:
  - All ironmongery tested in full accordance with the European fire rating standard BS EN1634-2
  - Doors to be fitted with Schuco Jansen Electric Strike.
  - Doors fitted with overhead concealed closers - Doors to be fitted with Schuco lever handles .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: As Schuco details .
- Fixing:
  All fixing and sealing of the Schuco fire rated systems to be completed in full accordance with Schuco installation documents using the correct fixings and sealants.
  The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators. System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .

480G DOORSETS TYPE - DX10 - OUTWARD OPENING - TO WING MILL CURTAIN WALL and MILL REFUSE ROOMS

- Manufacturer: Schuco UK Ltd. Tel: 01908 282 111.
  - Product reference: Schuco Janisol - Outward Opening thermally broken steel doors.
- Door leaf: Steel.
  - Finish as delivered: Galvanized and PPC.
- Frame and architraves: As door.
  - Finish as delivered: As door.
- Glazing/ Infill details: Clear double glazing - To Wing Mill stiar core entrance - Insulated panel to Individual Apartments.
  - Manifestation: Not required.
    Ironmongery:
  - Doors to be fitted with Schueco Jansen full height stainless steel handles internally.
  - Doors to be fitted with Schueco Jansen full height stainless steel handles externally.
  - Double doors to be fitted with Schueco Jansen crash bar escape ironmongery. .
- Perimeter seals: As Schuco Jansen details .
- Other requirements: Refer to H11 - Curtain Walling - Doors within Curtain Walling to form part of the Curtain Walling CDP Package .
- Fixing: The Janisol steel door shall be installed in complete accordance with the information published by Schuco Jansen, exclusively by Schuco UK authorised fabricators System to be fabricated, supplied and installed by a Schuco approved fabricator and installer / account holder .
  (Revised - L20 revision A - 18th Sep 2015)

520 SLIDING DOORS TO INSET DORMERS

- Manufacturer: Ideal Combi - 01582 860940.
  - Product reference: Futura+.
- Performance: Acoustic control: 31 Rw+Ctr and Thermal 1.39W/m2K.
- Arrangement: Two part system - Sliding door sash.
  - Track system: As part of the door system.
- Door leaf: Sized to suit opening - Structural Opening approx. W2050mm x H2100mm.
  - Finish as delivered: Exterior frame / sash cladding: Aluminium / Polyurethane / Aluminium outward opening sashes and fixed sashes.
    Finish: Polyester Powder Coated – Standard RAL colours (Matt or High gloss) - Interior frame section: Redwood timber (Pinus species) supplied from a renewable and managed supply chain. Quality optimised finger jointed timber with 149mm (or 175mm) overall depth of frame. Factory finished, 2 coat micro porous paint, or clear stain selected from standard colour range. .
  - Glazing/ Infill details: L10/400A *(28mm double glazed unit (Medium G): Glazing 1.39W/m2K / Gg 0.63 - 8/14/6 - 31 Rw+Ctr)*.
    Manifestation: Not applicable.
- Operation: Manual.
- Ironmongery: Standard locking and secure ironmongery as supplied by IdealCombi. To include: aluminium folded sill pressings, aluminium ventilators to achieve 2500mm² EA, opening handles to operate a fully concealed multi point locking safety bolt mechanism with night vent position. Restrictors required to all windows to limit the opening to approximately 100mm..
- Other requirements: Fixing Straps / Exposure category classification requirements shall be indicated in conformance with: DS/EN 12207 for air permeability. DS/EN 12208 for water tightness.
  INSTALLATION GENERALLY
  - Installation: Into prepared openings.
  - Gap between frame edge and surrounding construction:
  - Minimum: 9mm
  - Maximum: 15mm
  - Distortion: Install windows squarely without twist or diagonal racking.

  DAMP PROOF COURSES IN PREPARED OPENINGS - Location: Ensure correct positioning of DPC's, DPM's and/ or cavity closers in relation to window frames. Do not displace during fixing operation.
  SEALANT JOINTS:
  - Sealant manufacturer and reference: Adshead Ratcliffe Arbo LM low modulus silicone sealant or equivalent.
  - Brush joints clean and free from all dust etc wipe the joint interface with an approved solvent wipe and allow for drying. Insert a foam backing strip or bond breaker tape to back of joint. Apply the Arbo LM low modulus silicone mastic (joint size 10 to 15mm typically). Tool joint with a smooth stick to leave neat professional finish.
  - Colour: To compliment or match window colour.
  - External seal
  - Manufacturer: Compriband
  - Range: Ilmod 600 tape,

  Colour: Anthracite/RAL7030 Grey or black
  Certification: BBA 96/3309
  Install windows into prepared opening, maintaining a 12m +/- 4mm gap. Tape is to be placed between the wooden frame and window reveal..

630 HATCHES TO PLANT SPACES LOCATED within ROOFS

- Manufacturer: Submit proposals .
  - Product reference: N/A .
- Hatches to be manufactured to suit the access step system L30/421A .

690 INTUMESCENT, SMOKE AND ACOUSTIC SEALS GENERALLY

" Primarily these will be selected to achieve the required fire rating in compliance with global assessments.

" For most configurations, up to a leaf size of 2055 x 950mm, the seal arrangement will be 1 no 15 x 4mm seal fitted centrally to jambs, heads and meeting stiles for FD30s assemblies and 2 no 15 x 4mm seals (each positioned 5mm from centre line) for FD60s assemblies.

" Increased sizes and performances seal configurations as per fire engineering global assessments.To be provided to all doors identified as requiring fire and smoke performance.

Refer to the Fire Engineers strategy document and fire compartmentation plan.
Increased sizes and performances seal configurations as per fire engineering global assessments.

EXECUTION

710 PROTECTION OF COMPONENTS

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

730 PRIMING/ SEALING

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

750 FIXING DOORSETS

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

760 BUILDING IN

- General: Not permitted unless indicated on drawings.

770 DAMP PROOF COURSES ASSOCIATED WITH BUILT IN WOOD FRAMES

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

780 DAMP PROOF COURSES IN PREPARED OPENINGS

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

790 FIXING OF WOOD FRAMES

- 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

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

809 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS

- 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.

810 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS

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

820 SEALANT JOINTS

- Sealant:
  - Manufacturer: Adshead Ratcliffe - 01773 826661 .
    Product reference:
    Intumescent Tape -Arboseal Intumescent Tape - 15mm x 3mm (for FD30) internal use only)
    Intumescent Silicone - Arbosil 1070 (upto 4hrs - min 6mm wide bead max 25mm / min 10mm deep max 20mm)
    Frame Sealant (Timber to Timber) - Arbomast GP (min 6mm wide bead max 18mm / min 10mm deep max 20mm)
    Frame Sealant (Timber to Masonry) - Arbokol 1000 (min 6mm wide bead max 18mm / min 10mm deep max 20mm)
    Frame Sealant (PPC Frame and Masonry) - Arbomeric MP10 (min 6mm wide bead max 25mm / min 10mm deep max 18mm) .
  - Colour: Various - Black to external locations / white in bathrooms and kitchen - seek clarification on site .
  - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 FIXING IRONMONGERY GENERALLY

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

840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES

- 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.
- Holes for through fixings and components: Accurately cut.
  - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
  - Lock/ Latch cases for fire doors requiring $\geq$ 60 minutes integrity performance: Coated with intumescent paint or paste before installation.

850 LOCATION OF HINGES

- Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
- Third hinge: Where specified, positioned with centre line 250 mm below centre line of top hinge .
- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

860 INSTALLATION OF EMERGENCY EXIT DEVICES

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

L30
Stairs/ ladders/ walkways/ handrails/ balustrades

Section Revision History

No.	Purpose	
-	TENDER ISSUE	10th Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

L30 Stairs/ ladders/ walkways/ handrails/ balustrades

To be read with Preliminaries/ General conditions.

PRELIMINARY INFORMATION/ REQUIREMENTS

105A CONTRACTOR'S DESIGN BALUSTRADES, HANDRAILS, GUARDINGS

CDP EMPLOYER'S REQUIREMENTS
BALUSTRADES, HANDRAILS STAIRS
Design Responsibility, Appearance and Performance
The Contract Documents describe the Design Intent and define the performance criteria, the mandatory geometry of visible elements, dimensions positions and detail the required principle materials and visible finishes. The Sub-Contractor shall be responsible for developing and completing the design in accordance with the Contract Documents. Any suggested solutions described in the Contract Documents shall not in any way relieve the contractor from their responsibility for the design and construction of the Works.
Contractor is to develop and complete the design of all new internal balustrades and handrails to achieve visual criteria described on Architects drawings and achieve all necessary structural requirements defined by Structural Engineer, Building Control and relevant British Standards, and NBS Section L30 and H11.

Scope
In general the contractor is to design all concealed balustrade and handrail fixing brackets and fixings thereof back to primary structure.

a) Glass GUARDINGS and associated metalwork. (Lift shafts and Common stairs)
b) Steel Balustrades and handrails. (All stairs / Wing Mill Façade / Inset Dormer Terraces)
c) Concealed steel frame to balustrades. (Apartment Private Stairs)

Handrail fixing locations, handrail bracket profiles sizes and sizes and thicknesses of balustrades have been agreed with the Structural Engineer and indicated on Architectural drawings and these are mandatory requirements to avoid impact on adjacent materials etc.
The Contractor is to develop and complete the design in line with these drawings and provide calculations to demonstrate that all necessary codes and regulations are met.
Contractor is to design all concealed balustrade and handrail fixing brackets and fixings thereof back to primary structure.
Notwithstanding regulatory requirements new balustrades and handrails are to be designed such that they do not deflect more than 10mm under load requirements defined in the British Standards.
Balustrades and Handrails are to be in line with Architectural drawings and specification – including NBS specification Section L30 and H11.
Refer to Structural Engineers documentation for structural material and welding requirements of all secondary steelwork items.
Handrails and barriers are to be designed in accordance with BS 6180.
The Works shall sustain without damage, a static load of 500 N applied horizontally through a square of 100mm side on any part of the Works.

Finishes
Stainless Steel elements to be 316L grade.
Shot peening grade to be F174 by the Metal improvement Company Ltd.
Brush finish to be 1J for hot rolled materials and 2J for cold rolled materials as defined in BS EN 10088-2.
All Polyester Powder Coated metalwork is to be in accordance with NBS Specification Clause Z31.
Painted Architectural Metalwork is to be as NBS Specification Clause:

- Common Stairs and Lift Shafts - M60/175A
- External Steel Stair - M60/175A
- External Steel Stair Balustrades - M60/175A
- Apartment Stair Steel - M60/175
- Other New Steel – Internal - M60/195D

All materials to be utilised are to achieve anticipated life span, in accordance with clauses within the relevant British Standards.
All glass is to be procured from the same manufacturer and all glass is to have the same visual appearance.
Glass balustrades are to be designed for Type C3 horizontal and vertical imposed loads in accordance with BS 6399-1 clause 10.
Glass guardings shall be Laminated Safety Glass class 1 (BS EN 12600) and shall incorporate at least one sheet of heat strengthened glass.
The contractor is to design the fixing of the glass and the glass thickness to meet required safety requirements.
Laminated Glass & Laminated Safety Glass shall comply with BS EN ISO 12543. Heat strengthened glass shall comply with BS EN 1863.
No vents, creases, streaks, appearance of anisotropy ('leopard spots') will be acceptable. All edges of glass and external corners are to be ground smooth. Chips or shells to edges of glass will not be accepted. Glass edges are to be in accordance with Clause 8 BS EN ISO 12543-6. Stepped edges to laminated glass are not acceptable.

Samples
Mock-ups are defined elsewhere within the specification.
All bespoke items are to have samples of mocked up sections provided for comment and acceptance.

Tolerances
Balustrades and Handrails are to be constructed and installed in line with the tolerances specified in the Workmanship.

Movement and Deflection
The Contractor is to make an assessment of and incorporate all movement and deflection including thermal expansion and contraction and propose a build-up / details which accommodate this.

Design Life
60 years as required when working with Heritage Assets.

Warranties
The Contractor is to provide a 15 year warranty for both the materials, workmanship and installation of all handrails/balustrades.

Other
Contractors to use only recognised good practices and comply with all relevant British standards and Codes of Practice.

107 COMPLETION OF DESIGN TO ALL NEW STAIRS

- Requirement: Complete the detailed design to satisfy specified performance criteria and coordinate with the detailed design of related and adjacent work.
  - Standard:
    - External walkways to BS 8300;
    - Spiral stairs to BS 5395-2;
    - Straight stairs and winders to BS 5395-1; and
    - To Building Regulations (Eng) Approved Documents K and M.
- Structural requirements: As section B50.
- Additional requirements: Use the designs included within the stair package to lead and inform the fabrication design of the stair.
- Design and production information: As Preliminaries section A31.
- Timing of submissions: As Preliminaries section A31.

109 STRUCTURAL DESIGN PROVIDED

- Description: As Preliminaries section A13.
- Requirements:
  - Generally: As section B50.
  - Additional requirements: Complete the design within the parameters of the principles set out in the design drawings.

115 TIMBER PROCUREMENT

- Timber (including timber for wood based products): Obtained from well managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.
- Certification scheme: Sustainable Forestry Initiative (SFI), with Chain of Custody (Programme for the Endorsement of Forest Certification (PEFC).
  - Other evidence: None.

130 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
  - Designated items: All stairs to ensure their location within the structure and and abutment and fixing details to the historic fabric are fully understood.

COMPONENTS

230A INTERNAL WOOD STAIRS TO INDIVIDUAL APARTMENTS

- Components:
  - Treads: 19mm Oak to match the floor finish.
  - Risers: 18mm moisture resistant plywood - painted.
  - Strings: 30mm Douglas fir to receive facia - refer to drawn details.
  - Spindles: Painted Steel to form spindles, frame and handrail support - refer to drawn details.
  - Guarding: As spindles.
  - Handrails: Oak to match the treads and floor.
    Lower handrail: Not required.
- Timber: Generally to BS EN 942.
  - Appearance class: J5.
  - Moisture content at time of installation: 9-13%.
- Adhesive: PVAC to BS EN 204, class D4.
- Finish as delivered: Prepared and sealed, as section M60.
  - Colour of integral nosing: Not applicable.
- Workmanship: To section Z10.
- Other requirements: Matching balustrade to landing.
  FABRICATION DESIGN - The final design of the stair is to be provided by the fabricator. The Architectural drawings define the general construction and finish. The Fabrication design is to emulate the Architectural design with the sizes of structural members, depths of treads, heights of risers, fabrication and fixing of the balustrade, and anchoring of the stair described in drawn detail for submission to the Architect.

250A METAL STAIRS COMMON STAIRS

- Component materials/ grades:
  - Treads: Steel Plate - see note below.
    Slip resistance value of integral tread - water wet (minimum): PTV of 40 to BS 7976.
  - Risers: open between treads - cover provided by upturned rear and down turned nosing.
  - Strings: Steel structure of stair.
  - Guarding:
    Handrails: steel to match stair construction.
    Infill: steel bars.
- Finish as delivered: M60/195D.
- Workmanship: To section Z11.
- Other requirements: Refer to drawn details.

  Treads and Landing Plates by RIMG - 01925 839623
  Plates - RMIG Embossed Sheet DC01 - 2mm thick
  Treads - RMIG STYLE Treadplate
  Ref: LREM5X100Z16X125
  Embossed shape to provide texture for grip. Embossed profile to be 2-3mm.

  Alternative manufacturers for treads may be proposed. Samples to be provided to the Architect agreed before placing an order.

250B METAL STAIRS CLOSE METAL MESH DECKING to void between lifts and windows

- Manufacturer: Elefant Gratings - tel: 01732 884123Product - Type SP - steel close mesh grating. 9x30mm-30mm.
  Finish as delivered: M60/175A.
- Workmanship: To section Z11.
- Other requirements:
  Refer to drawn details
  Provide sample prior to proceeding with order and fabrication.

310A PROPRIETARY SPIRAL STAIR TO BS5395 PART 2

- Manufacturer: British Spirals and Castings - 01663 750716.
  - Product reference: Modern Art Deco 2083mm.
- Component material, finish as delivered and light reflectance value contrast where applicable:
  - Treads: Steel.
    Slip resistance value of integral tread – water wet (minimum): PTV of 40 to BS 7976.
    Slip resistance value of integral nosing – water wet (minimum): PTV of 40 to BS 7976.
    Colour of integral nosing: Black.
  - Risers: up to 220mm.
  - Going: Going Internal dim - 135mm / Going central dim - 210mm / Going outer dim - 285mm
  - Strings: formed as part of the step.
  - Guarding: Balusters with gaps not greater than 100mm.
  - Handrails: to suit the stair model.
    Lower handrail: Not required.
- Other requirements: To be manufacture to suit the context on site.

421A LOFT LADDERS TO SERVE PLANT SPACES

- Manufacturer: Wardworth Ltd - 01204 590230 or Gorter - 0031 224219860.
  - Product reference: Wardworth Ltd - ZigZag Ladder sized to suit. Gorter - Type XL.
- Standard: To BS EN 14975.
- Accessories: Insulated white painted hatch / Plenum 2, 3 or 4 to suit the difference in level of the ceiling soffit to the loft deck.
  The specification and design is to be reviewed once the design of the plant space is complete. It is essential that the ladder is adequate to enable the operator to manoeuvre in and out of the plant space for repair and maintenance purposes.

550A PURPOSE MADE BALUSTRADES STEEL

- Component material, grade and finish as delivered:
  - Guarding: Low carbon steel - galvanized to receive paint or M60/175A.
  - Handrails: Hardwood.
    Lower handrail: Not required.
- Workmanship:
  - Joinery: To section Z10.
  - Metalwork: To section Z11.
- Other requirements: Refer to drawn details.
-

570A PURPOSE MADE HANDRAILS TO ALL TIMBER STAIRS

- Component material, grade and finish as delivered:
  - Handrails: Hardwood - oiled and polished.
  - Brackets: fixed to balustrade and guarding.
- Workmanship:
  - Joinery: To section Z10.
  - Metalwork: To section Z11.
- Other requirements: Refer to drawn details.
-

INSTALLATION

610 MOISTURE CONTENT

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

620 PRIMING/SEALING/PAINTING

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

630 CORROSION PROTECTION OF DISSIMILAR MATERIALS

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

640 INSTALLATION GENERALLY

- Fasteners and methods of fixing: To section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
- 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.

L40
General glazing

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

111 PREGLAZING
- Preglazing of components: Permitted.
- Prevention of displacement: Submit details of precautions to be taken to protect glazing and compound/ seals during delivery and installation.
- Defective/ displaced glazing/ compound/ seals: Reglaze components in situ.

130 REMOVAL OF GLASS/ PLASTICS FOR REUSE
- Existing glass/ plastics and glazing compound, beads, etc: Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris.
- Deterioration of frame/ surround: Submit report on defects revealed by removal of glazing.
  - Affected areas: Do not reglaze until instructed.
- Reusable materials: Clean glass/ plastics, beads and other components that are to be reused.

150 WORKMANSHIP GENERALLY
- Glazing generally: To BS 6262.
- Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
- Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
- Materials:
  - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
  - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.

152 PREPARATION
- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.

155 GLASS GENERALLY

- Standards: To BS 952 and relevant parts of:
  - BS EN 572 for basic soda lime silicate glass.
  - BS EN 1096 for coated glass.
  - BS EN 1748-1 for borosilicate glass.
  - BS EN 1748-2 for ceramic glass.
  - BS EN 1863 for heat strengthened soda lime silicate glass.
  - BS EN 12150 for thermally toughened soda lime silicate safety glass.
  - BS EN 12337 for chemically strengthened soda lime silicate glass.
  - BS EN 13024 for thermally toughened borosilicate safety glass.
  - BS EN ISO 12543 for laminated glass and laminated safety glass.
- Panes/ sheets: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
  - Edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

165 HEAT SOAKING OF THERMALLY TOUGHENED GLASS

- Standard: To BS EN 14179.
  - Holding period (minimum): 8 hours.
  - Mean glass temperature: 290° ± 10°C.
- Certified evidence of treatment: Submit.
- Designated locations: Where windows require toughened glass to comply with the Approved Documents.

180 BEAD FIXING WITH PINS

- Pin spacing: Regular at maximum 150 mm centres, and within 50 mm of each corner.
- Exposed pin heads: Punched just below wood surface.

181 BEAD FIXING WITH SCREWS

- Screw spacing: Regular at maximum 225 mm centres, and within 75 mm of each corner.

195 GLASS TO GLASS JOINTING

- Sealant: Silicone Structural Glazing Adhesive.
- Manufacturer: Adshead Ratcliffe.
  - Product reference: SSG4000E UltraGlaze.
  - Colour: Clear.
- Joints:
  - Width: Consistent and suitable to receive sealant.
  - Gap between panes: Completely filled, leaving no voids or bubbles.
  - Surplus sealant: Removed to leave a clean, neatly finished weathertight joint.

TYPES OF GLAZING

210 PUTTY FRONTED SINGLE GLAZING SASH WINDOWS

- Pane material: 4 mm clear float glass and 4mm small pane toughened glass .
- Surround: Softwood .
  - Sealer: Paint primer .
- Type of putty: Linseed oil .
- Glass installation:
  - Glass: Located centrally in surround using setting and location blocks, and secured with glazing sprigs/ cleats/ clips at 300 mm centres.
  - Finished thickness of back bedding after inserting glazing (minimum): 1.5 mm.
  - Front putty: Finished to a smooth, neat triangular profile stopping 2 mm short of sight line. Surface lightly brushed to seal putty to glass and left smooth with no brush marks.
- Sealing putty: Seal as soon as sufficiently hard but not within 7 days of glazing. Within 28 days apply either:
  - The full final finish, suitably protected until completion and cleaned down and made good as necessary, or
  - Two coats of primer applied locally to the compound, to be followed nearer completion with the full specified finish.
- Opening lights: Keep in closed position until putty has set sufficiently to prevent displacement of glazing when opened.

370 BEAD FIXED INSULATING GLASS UNITS EXISTING and NEW STEEL WINDOWS

- Pane material: 16mm mm insulating glass units to BS EN 1279 and Kitemark certified .
  - Inner pane: 6mm clear toughened glass .
  - Outer pane: 4mm clear float glass .
  - Spacer: 6mm anodized aluminium, colour: Black .
  - Perimeter taping: Do not use.
- Surround/ bead: Galv Steel PPC as part of window manufacturers system .
  - Preparation: Paint primer .
  - Bead location: Outside .
  - Bead fixing: Proprietary clip and stud fixings .
- Glazing system: Preformed gasket sections supplied by window manufacturer .
- Glazing installation:
  - Insulating unit: Located centrally in surround using setting and location blocks.
  - Gaskets and beads: Installed as recommended by frame manufacturer.
    Gasket fit at corners: Tight, without gaps.
  - Drainage and ventilation holes: Unobstructed.

505 FIRE RESISTANT TAPE/ STRIP GLAZING TO ALL FIRE RATED GLAZED SCREENS and FIRE RATED TIMBER WINDOWS

- Fire resistance rating: 60 minutes integrity and 30 minutes insulation .
- Pane material: Intumescent laminated glass - external grade or modified toughened soda glass .
  - Orientation: Non fire glass glazed to the protected side .
- Frame/ Surround material: Hardwood frame .
- Beads:
  - Material: Hardwood .
  - Location: Outside .
  - Fixing: 38 mm long No 8 stainless steel screws and cups at maximum 200 mm centres .
- Glazing system:
  - Tape/ Strip: Intumescent strip .
  - Pointing sealant: Silicone mastic or putty .
- Installation: By a firm currently registered under a UKAS certified accreditation scheme for the installation of fire resistant glazing, in accordance with glazing manufacturer's recommendations.

506A FIRE RESISTANT TAPE/ STRIP GLAZING TO ALL FIRE RATED WINDOWS

- Fire resistance rating: 60 minutes integrity and 30 minutes insulation .
- Pane material: Intumescent laminated glass - external grade or modified toughened soda glass .
  - Orientation: Non fire glass glazed to the protected side .
- Frame/ Surround material: Rectangular hollow section steel frame .
- Beads:
  - Material: Steel angles with extruded aluminium snap-on capping .
  - Location: Outside .
  - Fixing: as designed by th window manufacturer .
- Glazing system:
  - Tape/ Strip: as designed by the window manufacturer .
  - Pointing sealant: as designed by the window manufacturer .
- Installation: By a firm currently registered under a UKAS certified accreditation scheme for the installation of fire resistant glazing, in accordance with glazing manufacturer's recommendations.

520 FIRE RATING

- Assessment of capability: Submit proposed construction details of designated items to a UKAS/ NAMAS accredited laboratory or other approved authority for assessment of capability of achieving specified fire ratings.
  - Test standard: To BS EN 1364-1.
- Assessment/ test results and reports: Submit immediately they are available, and before installing glazing.
- Designated items: ALL FIRE RATED GLASS and GLAZING UNITS.

550 GLASS MIRRORS TO BATHROOMS

- Mirror material: Float glass, silvered to give maximum reflection, free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions.
  - Thickness: 6 mm .
  - Backing: Anticorrosive paint .
  - Edge treatment: Polished bevel to be concealed by the sealant and vanity unit construction .
- Background: Plastered partition - do not fix over the insulated wall linings of the historic fabric .
- Fixing method: Double sided self-adhesive pads at 400 mm centres .
- Installation: Fixed accurately and securely without overtightening fasteners, to provide a flat surface giving a distortion free reflection.

M
Surface finishes

M10
Cement based levelling/ wearing screeds

Section Revision History

No.	Purpose	
-	TENDER ISSUE	11th Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

M10 Cement based levelling/ wearing screeds

To be read with Preliminaries/General conditions.

TYPES OF SCREED

110A BONDED CEMENT:SAND LEVELLING SCREEDS TO SLABS THAT ARE TO RECEIVE TERRAZZO and require making up to a common FFL

- Substrate: In situ concrete slab.
- Screed construction: Fully bonded.
- Thickness:
  - Nominal: 50mm.
  - Minimum: 40 mm.
  - Maximum: 70 mm.
- Mix:
  - Proportions (cement:sand): To BS 8204-1.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
- Flatness/ Surface regularity class: SR2.
- Finish: Wood floated, as clause 520.
  - To receive: 40mm terrazzo tiles on adhesive bed.
- Other requirements: Movement joints.

180A CONCRETE WEARING SCREEDS (GRANOLITHIC) TO BIN ROOMS and SERVICE SPACES AT GROUND LEVEL
Screed manufacturer: [Isocrete - 01270 753000].
- Product reference: [K-Screed].

- Substrate: In situ concrete slab.
- Screed construction: Floating over Acoustic Insulation.
- Thickness:
  - Nominal: 80mm.
  - Minimum: 75mm.
  - Maximum: 100mm.
- Mix:
- Flatness/ Surface regularity class: SR1.
- Abrasion resistance:
  - Standard: In accordance with BS 8204-2, Table 4.
  - Classification: AR1/ WS Heavy Duty.
- Finish: Trowelled, as clause 550.
- Other requirements: Preparation, laying, protection, curing and use all to be in accordance with manufacturers guidance.
  Acoustic Insulation - Regupol 6010BA - 17mm dimpled rubber heavy duty screed insulation layer.

Description
A semi-dry cementitious screed incorporating proprietary additives to produce an early drying, high strength screed. Heavy Duty Isocrete K-Screed to be floating (for sound insulation).
To be Isocrete K-Screed, reinforced throughout with steel fabric to BS4483 ref. D49 (or reinforced throughout with Isocrete PP Fibres with a strip of steel fabric to BS4483 ref. D49 across day joints) laid on and
including 10 mm Acoustic insulation - Regupol 6010 Acoustic Screed Underlay.
Curing: Polythene sheet
Standard/Heavy Duty Isocrete K-Screed weighs 135 kg/m2 @75mm thickness.
Detailed application instructions are available upon request.

Speed of Cure @ 10°C - Working time 2 - 3 hrs 2 - Light foot traffic 48 hrs - Full traffic 7 days - Curing under polythene 7 days 7 days
Drying time to receive finishes (BS8203) 1 week per 25mm in good drying conditions (20° C, 50% RH, good ventilation) from removal of the curing polythene sheet.

Residual Moisture content
Before floor finishes are laid, the moisture content of the screed should be checked by the Main Contractor. BS8203 recommends a maximum of 75% RH prior to the installation of sensitive finishes.

Moisture in the base will impede the drying of the screed. For unbonded and floating screeds, a dpm may be specified between the base slab and the screed. For bonded screeds, Isocrete M-Bond Extra epoxy resin
combined dpm and bonding agent may be used.

Standard and Heavy Duty Isocrete K-Screed
Standard Isocrete K-Screed is suitable for most commercial applications. Heavy Duty Isocrete K-Screed is recommended in areas requiring Category A soundness (heavy trafficking, e.g. airport terminals, hospital

streets, operating theatres and X-ray suites, stock rooms, lift lobbies, plant rooms, etc.) and areas in commercial buildings that will receive resin floor finishes. (For industrial screeds, consult Isocrete for appropriate screed specifications).

GENERALLY/ PREPARATION

210 SUITABILITY OF SUBSTRATES

- General:
  - Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
  - Sound and free from significant cracks and gaps.
- Concrete strength: In accordance with BS 8204-1, Table 2.
- Cleanliness: Remove plaster, debris and dirt.
- 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

- General: Substrates must restrain stresses that occur during setting and hardening of wearing screeds.
- Test for surface hardness: To BS EN 12504-2 using a rebound hammer with compliance values as follows:
  - Rebound hammer value (minimum):
    Screed thickness 15 mm or less: 25.
    Screed thickness greater than 15 mm: 30.
- Report: Submit details of areas where substrate surface hardness does not comply with these values.

251 CONDUITS CAST INTO OR UNDER SCREEDS

- Reinforcement: Overlay with reinforcement selected from:
  - 500 mm wide strip of steel fabric to BS 4483, reference D49, or
  - Welded mesh manufactured in rolls from mild steel wire minimum 1.5 mm diameter to BS 1052, mesh size 50 x 50 mm.
- Placing reinforcement: Mid depth between top of conduit and the screed surface.
  - Width of reinforcement (minimum): 300 mm.
- Screed cover over conduit (minimum): 50 mm.

255 PIPE DUCTS/ TRUNKING

- Preformed access ducts: Before laying screed, fix securely to substrates and level accurately in relation to finished floor surface.

260 FULLY BONDED CONSTRUCTION

- Preparation: Generally in accordance with BS 8204-1.
- Removing mortar matrix: Shortly before laying screed, expose coarse aggregate over entire area of hardened substrate.
- Texture of surface: Suitable to accept screed and achieve a full bond over complete area.
- Bonding coat: Manufacturer's standard.

BATCHING/ MIXING

302 CEMENTS
- Cement types: In accordance with BS 8204-1, clause 5.1.3.

305 AGGREGATES
- Sand: To BS EN 13139.
  - Grading limits: In accordance with BS 8204-1, Table B.1.
- Coarse aggregates for fine concrete levelling screeds:
  - Standard: To BS EN 12620.
  - Designation: 4/10.
- Lightweight aggregates: In accordance with BS 8204-1, Annex A.

330 MIXING
- Water content: Minimum necessary to achieve full compaction, low enough to prevent excessive water being brought to surface during compaction.
- 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.
- Consistency: Use while sufficiently plastic for full compaction.
- Ready-mixed retarded screed mortar: Use within working time and site temperatures recommended by manufacturer. Do not retemper.

335 IN SITU CRUSHING RESISTANCE (ISCR)
- Standards and category: In accordance with BS 8204-1, table 4.
  - Testing of bonded and unbonded screeds: To Annex D.
  - Testing of floating levelling screeds: To Annex E.

340 ADVERSE WEATHER
- Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
- Hot weather: Prevent premature setting or drying out.

LAYING

345 LEVEL OF SCREED SURFACES
- Permissible deviation: (allowing for thickness of coverings) SR2 - ±5 mm from datum.

355 FLATNESS/ SURFACE REGULARITY OF FLOOR SCREEDS
- Standard: In accordance with BS 8204-1, Table 5.
- Test: In accordance with BS 8204-1, Annex C.
- Sudden irregularities: Not permitted.

375 COMPACTION OF SCREEDS
- General: Compact thoroughly over entire area.
- Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

392 GENERAL REINFORCEMENT
- Steel fabric: To BS 4483.
  - Type: A98.
- Installation: In accordance with BS 8204-1.

405 JOINTS IN LEVELLING SCREEDS GENERALLY

- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
- Daywork joints: Form with vertical edge.

440 CRACK INDUCING GROOVES IN LEVELLING SCREEDS

- Groove depth: At least half the depth of screed.
- Cutting grooves: Straight, vertical and accurately positioned. Select from the following:
  - Trowel cut as screed is laid.
  - Saw cut sufficiently early after laying to prevent random cracking.

476 METAL SECTION MOVEMENT JOINTS GROUND FLOOR

- Manufacturer: Schluter.
  - Product reference: Submit proposals.
  - Colour of insert: Manufacturer's standard colour range.
- Bedding: 1:3 cement:sand.
- Installation: Centre over joint in substrate. Set to exact finished level of floor.
  - Secure fixing to substrate: To manufacturer's standard.

FINISHING/CURING

510 FINISHING GENERALLY

- Timing: Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
- Prohibited treatments to screed surfaces:
  - Wetting to assist surface working.
  - Sprinkling cement.

520 WOOD FLOATED FINISH

- Finish: Slightly coarse, even texture with no ridges or steps.

650 CURING

- 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.
- Curing period (minimum): Keep polyethylene sheeting in position for: seven days.
- 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.

M20
Plastered/ Rendered/ Roughcast coatings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	11th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

M20 Plastered/ Rendered/ Roughcast coatings

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

TYPES OF COATING

160 PROPRIETARY CEMENT GAUGED RENDER TO BLOCKWORK IN COMMON AREAS

- Substrate: dense concrete blockwork.
  - Preparation: The block should have a reasonable key to provided surface texture. The surface must be clean and free from any loose or friable material including paint, oil, soot, lichen and dust..
- Manufacturer: Kilwaughter Chemical Co..
- Undercoats:
  - Product reference: K Rend Standard UF Base.
  - Thickness (excluding dubbing out and keys): 10mm rule to line and level. Lightly scratch and allow to set.
- Final coat:
  - Product reference: K Rend Silicone FT - SCRAPED COAT texture (colour to be confirmed).
  - Thickness: 12mm applied by hand. Rule to line and level and allow to set.
  - Finish: Scraped, fine texture. Total thickness 18 to 20mm (finished).
- Accessories: plastic beads and stops by the same manufacturer (K Bead) as required, in matching colours.

210 LIGHTWEIGHT GYPSUM PLASTER TO BLOCKWORK WALLS

- Substrate: Concrete blockwork as section F10.
  - Preparation: Dampen dry undercoats accordingly to control background suction prior to skimming..
- Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX Website: www.british-gypsum.com Tel: 0844 800 1991 Fax: 0844 561 8816 E-mail: bgtechnical.enquiries@bpb.com. British Gypsum contact: Matt Sherry 07824834331.
- Undercoats: To BS EN 13279-1.
  - Product reference: British Gypsum, Thistle Hardwall.
  - Thickness (excluding dubbing out and keys): Two coat 11mm.
- Final coat: Finish plaster to BS EN 13279-1.
  - Product reference: British Gypsum, Thistle Plaster..
  - Thickness: 2-3 mm.
  - Finish: Smooth.
- Accessories: Beads and stops .

295A PROPRIETARY PARGE COAT TO AS PART OF WALL INSULATION SYSTEM - ALL EXISTING BRICK WALLS THAT ARE TO BE INSULATED

- Substrate: Brickwork.
  - Preparation: Brush clean.
- Render:
  - Manufacturer: NBT - 01844 338338.
    Product reference: Baumit RK70 base-coat. Seek confirmation from NBT of the preparation of the wall for use with Pavadentro Insulation.
  - Thickness: 7mm (nominal), 5 mm (minimum).
  - Finish: Same day application of Base coat and Finish - Apply RK70 to a thickness of 5-7mm, this can be achieved with a 6-7 mm toothed trowel to remove excess plaster. Embed reinforcing mesh into toothed surface with >100mm overlaps. Leave 1 - 1½ hours for RK70 to firm up slightly, and apply RK38 at between 4-6mm to cover original material.

295B PROPRIETARY FINISH COAT TO AS PART OF WALL INSULATION SYSTEM - ALL EXISTING BRICK WALLS THAT ARE TO BE INSULATED

- Substrate: Parged Brickwork.
  - Preparation: as described in 295A.
- Render:
  - Manufacturer: NBT - 01844 338338.
    Product reference: Baumit Baumit RK38 finish. Seek confirmation from NBT of the preparation of the wall for use with Pavadentro Insulation.
  - Thickness: 7mm (nominal), 5 mm (minimum).
  - Finish: Upon setting (either same day or next morning, depending on temperature and humidity conditions), the surface should be lightly rubbed over with a fine sponge float in tight circular motions to produce a finely coarse textured finish

335 PROPRIETARY INSULATION BOARD AS PART OF WALL INSULATION SYSTEM - ALL EXISTING BRICK WALLS THAT ARE TO BE INSULATED - Refer to M20/900s

- Substrate: New lime plaster as 295A and 295B.
  - Preparation: Brush clean.
- Manufacturer: NBT - 01844 338338.
  - Product reference/ Type: Pavatex SA - Pavadentro.
  - Product Description: Capillary active, hygroscopic, and vapour open woodfibre insulation board with mineral layer of moisture dependant vapour resistance
  - Thickness: 80mm to face of wall and 20mm to jambs and cills where space permits - refer to details and seek guidance on site.
  - Board Dimensions: 1020 x 600mm (1010 x 590mm w/o tongue)
  - Density: 175 kg/m3
  - Compressive Strength : 70 kPa @10% deformation according to EN 826
  - Tensile strength perpendicular to plane of board: 5 kPa
  - Thermal conductivity: 0.043 W/mK according to EN 12667
  - S-value: 0.65/0.75/0.85/0.95 m
  - S-value with RK70 lime plaster and two coats NBT emulsion: 0.837/0.937/1.037/1.137 m
  - Specific Heat Capacity: 2100 J/kgK
  - Fixing: 80mm board - Bonded (Baumit RK70) and mechanically fixed (Ejot H3 or STR-U) 20mm board - Bonded (Baumit RK70) and mechanically fixed (EJOT DDA 50/75).

    Other requirements: Form rounded external angles, without metal beads.
    REFER to the full SPECIFICATION for detail of mixing, preparation, application and protection
    Obtain NBT product literature and adhere to their system specification. Seek approval from NBT to ensure their warranty and insurance backed gurantee is put in place.
    Obtain NBT's WUFI Summary and Manitenance Specification for inclusion within the O&M Manual.

    GENERAL REQUIREMENTS
  - Installation to be carried out by a contractor approved by NBT: Natural Building Technologies undertakes Installer training for all NBT systems. Site foreman must be trained, in addition to operatives applying the system (min. one in three).
  - Insulation specification to be determined according to NBT condensation risk assessment: Calculation requirement determined according to NBT IWI Moisture Risk Analysis Protocol and undertaken, where necessary, according to BS EN 15026 with reference to NBT site specific WUFI checklist.

340A NATURALLY HYDRAULIC LIME:SAND PLASTER TO UNINSULATED BRICK WALLS
Specification resolved from mortar analysis undertaken by Heritage Project Management and assessment by Mark Womersley.

- Substrate: Existing brickwork.
  - Preparation: After cutting out, all dust, loosely adherent material, effluorescence and any organic growth must be thoroughly removed by bristle brushing and treatment with a biocide. The area to be re-rendered / plastered must be clean, firm and sterile.
    Hollows and depressions should be dubbed out in as many coats as necessary, no coat thickness exceeding 10mm. Before any rendering is applied to a surface, the background must be dampened to reduce and control suction, especially in hot weather. If the substrate is not sufficiently damp it will soak water from the render as it is applied and reduce the effectiveness of the bond and the strength of the render.
    Adequate key must be ensured by raking out the joints to 16 mm minimum depth or by hacking the background or scoring the preceding undercoat. Where changes in the backing occur, as, for instance, where there are timber frames flush with the infill of brick, or where concrete inserts shown on the face, the junction between materials must be bridged with nonferrous or stainless steel expanded metal, and covered with a 3 mm – 6 mm thick spatter-dash coat..
- Undercoats:
  - Mix: 2:5 lime putty:sand
    Scratch Coat - After the dubbing coat, the first and strongest coat should be 8 mm – 10 mm thick combed to provide a key for the succeeding coats, each of which should be thinner and of the same strength or weaker than the preceding.
    Under Coat – Over the scratch coat the under coat should be 6 mm – 10 mm thick.
    Undercoats should be left at least two days in summer and at least seven days in winter protected by ventilated covers to ensure that the initial shrinkage is over before the next coat is applied. These are minimum times and longer intervals are desirable. Tests for adhesion and strength must be made before a second coat is applied, and the surface lightly sprayed to reduce and control suction immediately before application. .
    Sand: 1 Nosterfield / 1.5 Leighton Buzzard - no aggregate greater than 2.36mm.
  - Thickness (excluding dubbing out and keys): First undercoat 8–10 mm. Second undercoat 6–8 mm.
- Final coat:
  - Mix: 3:2 feebly hydraulic lime putty and fine sand.
    Finish Coat - Finish to the surface must match exactly the previous pattern and be between 3 - 5mm. .
  - Lime putty: As for undercoats.
    Sand: Light Pink Silica Sand .
  - Thickness: 3 mm .
  - Finish: Wood Float .
- Accessories: Replacement cornices .
- Other requirements: Day-work Joints
  Day-work joints or working lift joints are difficult to disguise, even on painted work. Unlined work (i.e. not lined stucco) should, wherever possible, finish every day at some physical break on the building. Where this is not possible, true level lines should be struck off before continuing work, so that no ragged edges show on the finished work.
  Form rounded external angles, without metal beads.
  REFER to the full SPECIFICATION for detail of mixing, preparation, application and protection

  LIME FOR PLASTER - READY PREPARED LIME PUTTY:
  Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.

Maturation: In pits/ containers that allow excess water to drain away. Density of matured lime putty: 1.3-1.4 kg/litre. Maturation period before use (minimum): 90 days. Storage: Prevent drying out or wetting. Protect from frost. .

GENERAL

413 SAMPLES
- General: Provide representative samples of the following:
  - Replacement mouldings
  - Sand for lime plaster mix
  - Stippled plasted
  - Finished base plaster coats to be over insulated
  - Fixed insulation
  - Plastered insulation.

418 CONTROL SAMPLES
- Complete sample areas, being part of the finished work, in locations as follows:
  - Murray St Lime Plastered walls with cornice
  - Complete build up of insulated wall as described above..

421 SCAFFOLDING
- General: Prevent putlog holes and other breaks in coatings.

424 SPECIAL PROTECTION OF HISTORIC PLASTERWORK
- General: Prevent damage and disturbance to retained plasterwork.
- Protection methods: Submit proposals.

MATERIALS AND MARKING OF MORTAR

438 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1.
  - Types: Portland cement, CEM I.
    Portland slag cement, CEM II.
    Portland fly ash cement, CEM II.
  - Strength class: 32.5, 42.5 or 52.5.
- White cement: To BS EN 197-1.
  - Type: Portland cement, CEM1.
  - Strength class: 52.5.
- Sulfate resisting Portland cement: To BS EN 197-1.
  - Strength class: 42.5.
- Masonry cement: To BS EN 998-1 and Kitemarked.

440 SAND FOR CEMENT GAUGED MORTARS
- Standard: To BS EN 13139.
  - Grading: 0/2 or 0/4 (CP or MP); Category 2 fines.
- Colour and texture: Consistent. Obtain from one source.

443 LIME FOR CEMENT GAUGED MORTARS
- Standard: To BS EN 459-1.
  - Type: CL 90S.

449 ADMIXTURES FOR CEMENT GAUGED MORTARS

- Suitable admixtures: Select from:
  - Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
  - Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.

450 CHLORIDE CONTENT OF MORTARS

- Chloride content (maximum): 0.1% by dry mass.

478 HYDRAULIC LIME

- Standard: To BS EN 459-1.
  - Type: Natural hydraulic lime (NHL).

481 READY PREPARED LIME PUTTY

- Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.
  - Maturation: In pits/ containers that allow excess water to drain away.
  - Density of matured lime putty: 1.3-1.4 kg/L.
- Maturation period before use (minimum): 90 days.
- Storage: Prevent drying out or wetting: Protect from frost.

492 HAIR REINFORCEMENT

- Manufacturer/ Supplier: Womersleys - 01924 400651.
  - Product reference: Goat Hair.
- Proportions (approximate): 5 kg hair to 1 m^3 of coarse stuff.
- Condition: Clean, free from grease and other impurities. Well teased before adding to the mix.
- Distribution: Evenly throughout with no balling into lumps.
- Storage period for haired mortar (maximum): Four weeks.

495A MIXING - TRADITIONAL RENDERS AND PLASTERES

- Render mortars (site prepared):
  - Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on damp sand. Adjust for dry sand.
  - Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
- Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
- Contamination: Prevent intermixing with other materials. Do not prepare or store lime and cement in the same areas.
  Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases. To be kept in a dry store away from rain and water.
  Ready prepared naturally hydraulic lime putty: Prevent drying out and protect from frost.
  Nonhydraulic lime:sand mortar:
  Store on clean bases or in clean containers that allow free drainage.

497 COLD WEATHER

- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
- 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.
- 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
- Soundness: Free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

527 RAKING OUT FOR KEY
- Joints in existing masonry: Rake out to a depth of 13 mm (minimum).
  - Dust and debris: Remove from joints.

531A ROUGHENING FOR KEY
- Substrates: Brickwork - **Do not key the brick.**
  Where brickwork is deemed by the plasterer / proprietary render mancufacturer to be too smooth to recieve the render base coat an alternative method for providing a key will need to be agreed. The existing brick is typical of lime plastered brick of the period that is not keyed and as such it is considered unlikely that there will be a requirement to provide a key to the face of the brick.
  In the limited location that a key is required assume the use of Expamet SS render mesh '03-27SR' (1.4301 to BE EN 1088-2:2005) fixed into mortar joints with stainless steel screws and washers.

551 REMOVAL AND RENEWAL OF EXISTING PLASTER/ RENDER
- Location and extent: Agree, at least on a provisional basis, before work commences. Minimize extent of removal and renewal.

566 REMOVING DEFECTIVE EXISTING PLASTER
- Plaster for removal: Detached, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
  - Hollow, detached areas: Remove where area of detachment is more than 0.2m².
- Stained plaster: Leave in place.
- Removing defective plaster. Cut back to a square, sound edge.
- Faults in substrate (structural deficiencies, damp, etc.): Submit proposals.
- Cracks:
  - Fine hairline cracking/ crazing: Leave.
  - Other cracks: Cut out to a width of 75 mm (minimum).
- Dust and loose material: Remove from exposed substrates and edges.

568 EXISTING DAMP AFFECTED PLASTER/ RENDER

- Plaster affected by rising damp: Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.
- Perished and salt contaminated masonry:
  - Mortar joints: Rake out.
  - Masonry units: Submit proposals.
- Faults in substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.
- Drying out substrates: Establish drying conditions. Leave walls to dry for as long as possible before plastering.
- Dust and loose material: Remove from exposed substrates and edges.

584 RECORD CASTINGS

- Timing: Make castings before commencing repair work, to enable accurate reproductions to be made.
- Items for casting: Ceiling cornice of Murray St.
- Identification: Mark clearly to identify original location.

BACKINGS/ BEADS/ JOINTS

600 ADDITIONAL FRAMING SUPPORTS FOR BACKINGS

- Framing: Accurately position and securely fix to give full support to fixtures, fittings and service outlets.
- Support board edges and perimeters: As recommended by board manufacturer to suit type and performance of board.

605 GYPSUM PLASTERBOARD BACKINGS

- Type: To BS EN 520 Type I.
  - Core density (minimum): 650 kg/m^3.
- Exposed surface and edge profiles: Suitable to receive specified plaster finish.

610 FIXING PLASTERBOARD BACKINGS TO TIMBER

- Fixings, accessories and installation methods: As recommended by board manufacturer.
- Fixing: At the following centres (maximum):
  - Nails: 150 mm.
  - Screws to partitions/ walls: 300 mm. Reduce to 200 mm at external angles.
  - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
  - Bound edges: 10 mm.
  - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of supports (minimum): 6 mm.
- Nail/ screw heads: Set below surface. Do not break paper or gypsum core.

612 JOINTS IN PLASTERBOARD BACKINGS

- Ceilings:
  - Bound edges: At right angles to supports and with ends staggered in adjacent rows.
  - Two layer boarding: Stagger joints between layers.
- Partitions/ walls:
  - Vertical joints: Centre on studs. Stagger joints on opposite sides of studs.
    Two layer boarding: Stagger joints between layers.
  - Horizontal joints:
    Two layer boarding: Stagger joints between layers by at least 600 mm. Support edges of outer layer.
- Joint widths (maximum): 3 mm.

630 BEADS/ STOPS FOR INTERNAL USE

- Material: Galvanized steel to BS EN 13658-1.

636A BEADS/ STOPS FOR EXTERNAL USE AND WITH LINING TO EXTERNAL WALLS

- Material: Stainless steel to BS EN 10088-1, grade 1.4301.

640 BEADS/ STOPS GENERALLY

- Location: External angles and stop ends except where specified otherwise.
- Corners: Neat mitres at return angles.
- Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
  - Beads/ stops for external render: Fix mechanically.
- 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

- Locations: Where defined movement joints are not required. Where dissimilar solid substrate materials are in same plane and rigidly bonded or tied together.
- Crack control materials:
  - Isolating layer: Building paper to BS 1521.
  - Metal lathing: Externally: Stainless steel ribbed expanded metal.
- Installation: Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
- Width of installation over single junctions:
  - Isolating layer: 150 mm.
  - Lathing: 300 mm.
- Width of installation across face of dissimilar substrate material (column, beam, etc. with face width not greater than 450 mm):
  - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrate.
  - Lathing: 100 mm (minimum) beyond edges of isolating layer.

659 PLASTERBOARD JOINTS

- Joints and angles (except where coincident with metal beads). Reinforce with continuous lengths of jointing tape.

673 PLASTERING OVER CONDUITS/ SERVICE CHASES

- General: Prevent cracking over conduits and other services.
- Services chased into substrate: Isolate from coating by covering with galvanized metal lathing, fixed at staggered centres along both edges.

MOULDINGS/ DECORATIVE PLASTERWORK

680 FIBROUS PLASTER MOULDINGS TO MURRAY ST

- Type: Reproduction of existing.
- Noggings, bearers, etc. to support mouldings: Accurately position and securely fix.
- Installation: True to line and level.
  - Fixing: Cornices: To timber grounds on suspended metal framed ceiling and masonry walls.
  - Framing, fixing points and joints: Reinforce.
- Finishing: Smooth, to correct profile and with flush joints.

695 REPRODUCTION OF EXISTING PLASTER MOULDINGS

- Moulds and casts generally: Prepare moulds from original plaster face. Reproduce profiles and details accurately.
- Quantity of moulds: Sufficient to complete the required number of casts and maintain a consistent appearance.
- Casting material: Plaster of Paris.
- Inserts: As necessary to give strength and rigidity to the mouldings and provide secure fixings.

697 REPAIRING CRACKS/ STEPS IN PLASTER MOULDINGS

- Preparation: Remove applied ornament and keep for reuse. Cut back plasterwork each side of cracks. Replace defective timber laths. Remove dust.
  - Suction control: Dampen repair area or apply suitable sealer.
- Plaster: Follow, and finish flush with, existing moulding profile.
  - Undercoat: Gypsum gauged coarse stuff compatible with existing. Key to receive final coat.
  - Final coat: 1:1 gypsum:lime putty.
- Applied ornaments: Fix accurately using gypsum based adhesive.

INTERNAL PLASTERING

710 APPLICATION GENERALLY

- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  - 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.
- Drying out: Prevent excessively rapid or localized drying out.

715 FLATNESS/ SURFACE REGULARITY

- Sudden irregularities: Not permitted.
- Deviation of plaster surface: Measure from underside of a straight edge placed anywhere on surface.
  - 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

- New plasterwork: Finish flush with original face of existing plasterwork to form a seamless junction.

720 DUBBING OUT
- General: Correct substrate inaccuracies.
- New smooth dense concrete and similar surfaces: Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.
- Thickness of any one coat (maximum): 10 mm.
- Mix: As undercoat.
- Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each coat.

725 UNDERCOATS GENERALLY
- General: Rule to an even surface. Cross scratch to provide a key for the next coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.
- Undercoats gauged with Portland cement: Do not apply next coat until drying shrinkage is substantially complete.

742 THIN COAT PLASTER
- Preparation for plasters less than 2 mm thick: Fill holes, scratches and voids with finishing plaster.

777 SMOOTH FINISH
- 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
- Appearance: An even overall texture. Finish with a dry wood float as soon as wet sheen has disappeared.

782 TEXTURED/ PATTERNED FINISHES
- Appearance: Consistent and even. Carry out work on each surface as one continuous operation.

788A NATURALLY HYDRAULIC LIME PLASTER UNDERCOATS
- Suction control: Dampen substrate.
- 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.
  - Key for final coats: Lightly scratch using a wood 'devil' float.
- Curing coatings: Keep damp by light spraying with water until coating is sufficiently firm.

789A THREE LAYER NATURALLY HYDRAULIC LIME PLASTER FINAL COAT
- Suction control: Dampen undercoat.
- Application:
  - First layer: Use steel trowel.
  - Second layer: Use wood float in the opposite direction to the first layer.
  - Third layer: Use a steel trowel in the same direction as second layer.
- Consolidation/ scouring: As necessary to control shrinkage. Use a wood cross grain float.
- Finishing: Dampen with a stock brush. Polish with a steel trowel. Finish with a damp stock brush.
- Drying: Keep damp by light spraying with water until coating is sufficiently firm.

CIRCULATION CORE AND SERVICE SPACE BLOCKWORK RENDERING

810 APPLICATION GENERALLY
- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  - 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.
- Drying: Prevent excessively rapid or localized drying out.

830 ANCHORED MESH REINFORCEMENT
- Application of first undercoat: Through and round mesh to fully bond with solid substrate.

840 UNDERCOATS GENERALLY
- General: Rule to an even surface. Comb to provide a key for the next coat. Do not penetrate the coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.

856 FINAL COAT - PLAIN FLOATED FINISH
- Finish: Even, open texture free from laitance.

861 FINAL COAT - SCRAPED FINISH
- Finish: Scraped to expose aggregate and achieve an even texture.

880A CURING AND DRYING CEMENT RENDER
- General: Prevent premature setting and uneven drying of each coat.
- Curing coatings: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
  - Curing period (minimum): As the render manufacturer's recommendations - assume 6 days.
  - Final coat: Hang sheeting clear of the final coat.
- Drying: Allow each coat to dry thoroughly, with drying shrinkage substantially complete before applying next coat.
- Protection: Protect from frost and rain.

885A CURING AND DRYING OF NATURALLY HYDRAULIC LIME RENDER
- General: Prevent premature setting and uneven drying of each coat.
- Curing coatings: Keep each coat damp by covering with damp hessian hung clear of coating. Spray with water until sufficiently firm.
  - Sheeting: Damp hessian generally and additionally polyethylene sheeting over night.
- Shrinkage: Thoroughly consolidate/ scour each coat one or more times as necessary to control shrinkage.

INSULATION BOARDING

910 APPLICATION GENERALLY

Plan boarding to minimise wastage and do not use damaged/wet boards

- Start Pavadentro boarding above level of DPC (dedicated plinth boards for below DPC, where required - see 440)
- Cut boards to fit where required with handsaw, skill saw with extraction (to prevent clogging), or table saw with extraction. Take appropriate precautions according to Pavadentro COSHH sheet (NBT website)
- Apply RK70 lime bonding coat with 5mm toothed trowel, either to the rear face of the board - recommended for substrate with high suction, or to the wall: In sections as boarding progresses (quicker process). Comprehensive coverage (min.3mm) between wall and board is required - not dot and dab.
- Apply boards while bonding coat is wet, horizontally, with mineral layer towards the wall (T&G near front for boards >40mm thick), slide into position under pressure to eliminate air gaps between bonding and board. Butt boards closely together ensuring full engagement of T&G, with courses in a 1/2 bond pattern and minimum 200mm offset between courses.
- Fixing:
- Pre-drill through Pavadentro into substrate with sharp 8mm bit, 10mm beyond fixing embedment
- Minimum 4 fixings per board, 100mm from board edges (see image in Technical Manual for configuration). Additional fixings will be required around openings, external corners, and on undulating walls.
- Fix through boards into substrate with appropriate fixings while bonding coat is wet: H3 for most applications and STR-U where hammer fixings are inappropriate.
- Fixing length according to insulation and bonding coat thickness, plus original plaster thickness and/or dubbing out, plus embedment requirement (minimum embedment in substrate of 25mm)

920 CRACK CONTROL, JOINTS AND ADDITIONAL MESH

- Additional meshing: To reduce the risk of cracking, additional mesh reinforcement is required along all exposed board edges, around all openings (additional mesh patch at each window/door corner), chases and damaged areas. Bed the mesh in NBT base coat mortar and then apply the main meshed plaster layer.
- Joints: Apply expansion joints to ceiling, integrated beams and other structural elements (with Iso-bloco expanding foam tape, if required).

930 DETAILING

- Do not cut into or chase into the board. No services are to be sunk into the wall thickness where the insulation board is applied.
- Where conduit and fixtures (e.g. radiators) are fixed over the insulation lined wall use Spiral fixings for light loads (max. 8kg) and Fischer Thermax thermally broken fixings, fixed straight back to substrate for heavier loads – see separate Guidance for anchor installation.
- Seek guidance from NBT on the type and method of fixing.
- All fixings into the external wall **must** be stainless steel.
- Bathrooms: Extensive areas of tiling should not be applied onto Pavadentro.
- Returns / Jambs: IWI returns should be included where possible. Extending minimum 150mm along party/internal wall (can be of insulation of lesser thickness). For 100mm Pavadentro, block returns of only 100mm are suitable. Please refer to Pavadentro Detail Drawings for more information. Contact NBT if in doubt.
- Intermediate floor voids: Insulate where possible (raising floor boards usually simpler than cutting back ceilings for access).
  Embedded joists: Apply minimum 8mm of RK38 levelling coat to external wall in floor void if bare masonry, taking particular care to ensure joist ends are well mucked in. Install 50mm NBT Pavaflex insulation against external wall (stuck to parge coat and pinned in position with nails in joists).
  Parallel joists: Continue application of Pavadentro down into floor void (recommended minimum 8mm of RK38 levelling coat to external wall in floor void if bare masonry). Where minimal space exists between last joist and wall, the board can be delaminated to slide between joist and wall.
- Inset window reveals:
  Fixed window frame surround > 30mm: Apply 20/40mm Diffutherm reveal board cut to fit, with 3mm bonding coat on back of board, and fix through to substrate with 50/75mm DDA fixings prior to plastering. Airtightness can be addressed with Iso-Connect Vario Sd – Finish Fix (variable vapour permeability airtightness tape).
- Ceiling junction: Rebate internal surface of top edge of penultimate course and rear face of last course along lower edge, at corresponding lamination, to enable snug fitting of overlapped boards

940 INSPECTION OF INSTALLATION PRIOR TO PLASTERING

Carry out an inspection with the Architect to identify any defects or deficiencies in the installation. Report any defects immediately and consult NBT for suggested remedial action. Ensure airtightness is adequately addressed where required. Please contact NBT for advice.

950 COMPLETION

On completion of insulation and plastering works, clear the area of any redundant materials and tools and make sure it is tidy before leaving the area. Site supervisor to conduct inspection and photographic record of detailing prior to acceptance of work from NBT approved installer.

M22
Sprayed monolithic coatings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	6th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

M22 Sprayed monolithic coatings

To be read with Preliminaries/ General conditions.

TYPES OF COATING

120 SPRAYED SOUND ABSORBING COATING - WING MILL CEILING

- Survey: Carry out before installation commences.
- Preparation: Consult the supplier before installation to assess requirement for the priming of the substate.
- Barrier/ Bonding coat: As recommended by coating manufacturer.
- Coating material:
  - Manufacturer: Stil Acoustics, Tel: 0161 237 9139. Email: info@stilacoustics.co.uk Web: www.stil-acoustics.co.uk.
    Product reference: Acoplaster DC1.
  - Colour: TBC.
  - Surface finish: DC1: light texture.
  - Minimum applied thickness: 35 mm.
- Mechanical retention/ reinforcement: As required as part of teh preparation of the background.
- Finishing/ Sealing coat:
  Product description: Acoustic plaster (5mm DC1) applied made from recycled cellulose and water based
  adhesives applied to specialist mineral fibre panels to create a seamless acoustic absorber
  Acoustic performance: ?W - 1,00 NRC - 0,95 11654 - Class A
  Fire Performance: EN 13501-1:2007+A1:2009 B-s1.d0. European equivalent to BS 476: Part 6 & 7 Class O.
  Materials equipment and labour to be provided only by an Stil Acoustics approved installer.
  Services can be covered by DC1 unless otherwise specified. Electrical conduits should be at least 10mm
  thinner than the finished thickness of the Acoplaster.
  Preparation: Any clips, threaded rods or other attachments should be installed AFTER application. Examine
  surfaces to ensure that there are no areas such as untreated wood, oxidised metal or other condition which
  could result in migratory staining/damage of the Acoplaster
  Acoplaster edges need an L profile finishing detail, as do any expansion joints..
- Installer: BSI registered, BUFCA member or approved in accordance with the British Board of Agrément Surveillance Scheme.

PERFORMANCE REQUIREMENTS

180 ACOUSTIC PERFORMANCE

- Standard: To BS EN ISO 354.
- Location: LOBBY CEILING and STAIR WELL CEILING.
  - Frequencies and minimum coating sound absorption coefficients: Refer to the Acoustic Engineers Specification.

Frequency (Hz)	Coefficient
TBC	TBC

GENERAL REQUIREMENTS

210 SURFACES TO BE COATED
- Condition: Structurally sound, dry, frost free, free from contamination by dirt, dust, efflorescence or other deleterious substances, and in a suitable condition to receive specified coatings.

220 ENVIRONMENTAL CONDITIONS
- General: Do not start work specified in this section before building is weathertight.
- Surface temperature: Minimum 4°C above the dew point temperature with conditions stable or improving.

240 SEQUENCE OF WORK
- Hangers, supports, clips, sleeves and other attachments: Securely fixed before application of coating.
- Sprayed coating and sealer coats: Applied and cured before:
  - Installation of ductwork, piping, conduit and other suspended equipment.
  - Application of finishes to adjacent surfaces.

250 DIFFICULT ACCESS AREAS
- Requirement: Identify areas where difficulty of access may prejudice achievement of complete integrity of the coating or application of the specified coating thickness and submit proposals for applying coating to these areas. If necessary, seek advice from the coating manufacturer.

260 PROTECTION FROM OVERSPRAY
- Adjacent areas not to be coated: Protect using suitable shielding/ masking materials that will not damage the surface when removed.

270 HEALTH AND SAFETY
- Dust, vapour and fumes: Prevent exposure in excess of occupational limits set in the current Health and Safety Executive (HSE) document EH40.

290 INSPECTIONS
- Surface preparation and coating: Notify proposed starting dates.
- Coating manufacturer: Permit to:
  - Inspect the work in progress.
  - Inspect all quality control records.
  - Take dry coating thickness measurements and samples of coating products.
- Coating manufacturer's directions or requests: Submit proposals.
- Coating manufacturer's inspection reports: Submit copies without delay.

300 FINISHED COATING APPEARANCE
- Standard: Appropriate to the end use and position within the building.
- Decorative coatings: Free from surface crazing, unevenness, inconsistency in colour and other defects.

APPLICATION OF COATINGS

350 SPRAYED COATINGS GENERALLY
- Standard: In accordance with BS 8202-1.

380 CURING

- Ventilation: Sufficient and continuous.
- Newly coated surfaces: Prevent from drying out too rapidly.

430 COMPLETION

- Remove:
  - Masking tape and temporary coverings.
  - Overspray from adjacent exposed surfaces.

M40
Stone/ concrete/ quarry/ ceramic tiling/ mosaic

Section Revision History

No.	Purpose	
-	TENDER ISSUE	11th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic

To be read with Preliminaries/ General conditions.

TYPES OF TILING/ MOSAIC

110A TILING TO CEMENT BOARD (Wedi Baord / Knauf Aqua Panel)

- Tiles: To Walls.
  - Manufacturer/ Supplier: Johnson Tiles, Harewood Street, Tunstall, Stoke-on-Trent. ST6 5JZ. Tel: 01782 575575.
    Product reference: Vivid.
  - Colour: Refer to finishes schedule.
  - Finish: Gloss.
  - Size: 400mm x 150mm.
  - Thickness: 10mm.
- Background/ Base: Double layer of 9mm Cement Board.
  - Preparation: As 310 and 390A.
- Intermediate substrate: To floor tiles only.
- Bedding: As clause 651 – ensuring solid bed fixing is achieved..
  - Adhesive to BS EN 12004: Norcros One Part Flexible White Tile Adhesive..
- Joint width: 2mm.
- Grout: Norcros 4 into 1 Flexible Floor and Wall Tile Grout..
  - Type/ classification: BS EN 13888 CG2.
- Movement joints: Movement joints should coincide and be continuous with any existing structural movement joints. The recommendations contained within Section 3.5.2 'Location of Movement Joints' of British Standard BS 5385: Part 1; 2009, state that movement joints should be provided over existing and/or structural movement joints, where tiling abuts other materials, at junctions between different substrates, at vertical corner, at 3m to 4.5m centres both horizontally and vertically and in areas where stresses are likely to be concentrated such as at changes of alignment. An increase in the frequency of movement joints should be considered if large degrees of thermal movement or vibration are expected within an installation..
- Accessories: Tile lap onto shower tray and baths to be formed with Schluter - DILEX-AS with the necessary jointing and end pieces and any priming required to the tile backing board. To suit depth of tile. Colour samples to be provided. Refer to installation notes. M40/520.
  Fill perimeter movement joints with Norcros 4 into 1 Silicone Sealant, colour to match grout as clause 815.

110B TILING TO CEMENT BOARD (Wedi Baord / Knauf Aqua Panel)

- Tiles: To Floors.
  - Manufacturer/ Supplier: MOSA (CERAMIC OR PORCELAIN)
    - Product reference: Terra Maestricht
    - Colour: 206V & 216V
    - Finish:Matt
    - Size: 45 x 45cm
    - Thickness: 12mm .

    Background/ Base: 12mm Cement Board .
  - Preparation: As M40/206 / 310 / 390A / 470 .
- Intermediate substrate: To floor tiles only .
- Bedding: As clause 651 – ensuring solid bed fixing is achieved. .
  - Adhesive to BS EN 12004: M40/205 .
- Joint width: 2mm .
- Grout: Norcros 4 into 1 Flexible Floor and Wall Tile Grout. .
  - Type/ classification: BS EN 13888 CG2 .
- Movement joints: Movement joints should coincide and be continuous with any existing structural movement joints. The recommendations contained within Section 3.5.2 'Location of Movement Joints' of British Standard BS 5385: Part 1; 2009, state that movement joints should be provided over existing and/or structural movement joints, where tiling abuts other materials, at junctions between different substrates, at vertical corner, at 3m to 4.5m centres both horizontally and vertically and in areas where stresses are likely to be concentrated such as at changes of alignment. An increase in the frequency of movement joints should be considered if large degrees of thermal movement or vibration are expected within an installation. .
- Accessories: Tile lap onto shower tray and baths to be formed with Schluter - DILEX-AS with the necessary jointing and end pieces and any priming required to the tile backing board. To suit depth of tile. Colour samples to be provided. Refer to installation notes. M40/520. Fill perimeter movement joints with Norcros 4 into 1 Silicone Sealant, colour to match grout as clause 815 .

GENERAL

200 NORCROS ADHESIVES PRODUCTS

To be applied in accordance with the site work instructions on the manufacturer's product data sheets. All Norcros products are covered with a Lifetime guarantee when used in accordance with the manufacturer's instructions.

204 USE OF ARDEX MATERIALS

The recommendations regarding the use of Ardex UK materials contained in this specification assumes that the products will be used in complete accordance with the instructions contained herein; or in the relevant data sheets.
Users must satisfy themselves regarding the completeness and suitability of these recommendations in the light of their own particular requirements.

205 WALL AND FLOOR TILE ADHESIVE

Ardex X77 and X77W - are grey or white, MICROTEC fibre reinforced, cement-based, floor and wall tile adhesives, with an extended open time of up to 60 minutes. Specifically formulated to have enhanced properties of adhesion and flexibility, the advanced slump resistance properties make ARDEX X 77 and ARDEX X 77 W ideal for fixing large format wall tiles.
USE - ARDEX X 77 is ideal for fixing ceramic or fully vitrified tiles and other tiles with low porosity, as well as glass and porcelain mosaics, and terrazzo.
Refer to product data sheet for all other data.

206 DITRA MATTING BONDING ADHESIVE

ARDEX AF 200 is a water-based, low odour, solvent free, high quality dispersion adhesive based on synthetic resin/rubber emulsion with mineral fillers. ARDEX AF 200 has excellent wet grab and an exceptionally long tack time, with very good early and long term adhesive strength and is odourless when dry.
Refer to product data sheet for all other data.

207 TILE GROUT

ARDEX-FLEX FL is a rapid setting cementbased grouting compound with excellent flexible and water repellent properties, without the need to add a separate admix. ARDEX-FLEX FL grout is suitable for grouting joints from 3mm to 15mm wide, between porcelain, ceramic, non-moisture sensitive natural stone and quarry tiles, as well as extruded tiles and glass blockwork.
Colour to be agreed on site. Samples to be provided.
Refer to product data sheet for all other data.

208 PRIMING COAT PRIOR TO TILING

ARDEX WPC consists of two components, one being a solvent free acrylic dispersion, the other a reactive cement-based powder. The two components are mixed together, the proportions being adjusted to provide either a non-flowing consistency for trowelling, filling holes, joints, etc., or a brushable consistency for painting and roller application. The cured ARDEX WPC coating is flexible, waterproof and causes no discolouration of the grouted tile joints.
USE: ARDEX WPC is used as a waterproof protection coat on backgrounds such as cement or gypsum plaster, plasterboard or wood-based materials prior to fixing ceramic tiles, etc., in domestic or commercial kitchens, showers and bathrooms.
Refer to product data sheet for all other data.

210 SUITABILITY OF BACKGROUNDS/ BASES

- Background/ base tolerances: To permit specified flatness/ regularity of finished surfaces given the permissible minimum and maximum thickness of bedding.
- New background drying times (minimum):
  - Concrete walls: 6 weeks.
  - Brick/ block walls: 6 weeks.
  - Rendering: 2 weeks.
  - Gypsum plaster: 4 weeks.
- New base drying times (minimum):
  - Concrete slabs: 6 weeks.
  - Cement:sand screeds: 3 weeks.

250 SAMPLES

- General: Submit representative samples of the following:
  - 1m2 of each tile type with examples of internal and exernal corners.
  - Floor movement joints between tiled floor and wooden floor.

  Colour Sealants.
  Colour trims e.g. Shluter DILEX-AS.

PREPARATION

310 EXISTING BACKGROUNDS/BASES GENERALLY

- Efflorescence, laitance, dirt and other loose material: Remove.
- Deposits of oil, grease and other materials incompatible with the bedding: Remove.
- Tile, paint and other nonporous surfaces: Clean.
- Wet backgrounds: Dry before tiling.

380A NEW PLASTER

- Plaster: Dry, solidly bedded, free from dust and friable matter.
- Plaster primer: Apply if recommended by adhesive manufacturer.
  Do not tile over external walls. Where tiling is required the external wall an additional lining board will be required. This is to be built off with a ventilated gap at the back face.

390A CEMENT BOARD BACKGROUNDS

- Boards: Dry, securely fixed and rigid with no protruding fixings and face to receive decorative finish exposed.

400A BACKGROUNDS GENERALLY

- Boards: Dry, securely fixed and rigid with no protruding fixings.
  Insulated Wall Lining - Do not tile over. Where tiling is required the vapour permiable wall lining will require lining out with a ventilated gap.
- Surfaces to be tiled: Seal or prime if recommended by adhesive manufacturer.

410A HACKING FOR KEY

- Do not damage or alter the historic masonry fabric in preparation to receive a tile finish. All tiles are to be applied over a new partition wall and not this historic fabric.

444 PREPARING CONCRETE BASES FOR PARTIALLY BONDED BEDDING

- Surface finish: Brushed, with no laitance.
- Surface preparation: Suitable to achieve a full bond with bedding. Select from:
  - Keep well wetted for several hours. Remove free water then brush in a slurry bonding coat.
    Slurry: SBR polymer modified cement.
  - Prepare, prime as necessary and apply a bonding agent.
    Bonding agent: BBA certified SBR bonding agent.

470 INTERMEDIATE SUBSTRATE

- Type: Tile matting.
  - Manufacturer: Schlüter-Systems Ltd, Units 4-5 Bardon 22, Beveridge Lane, Coalville, Leics. LE67 1TE. Tel: 01530 813396, Fax: 01530 813376.
    Product reference: Schlüter®-DITRA.
  - Thickness: 3mm.
- Fixing system: Thin bed adhesice.
  - Manufacturer: Ardex or as approved by Schluter.
    Product reference: Ardex AF200.
  - Application: refer to Ardex AF 200 product data sheet - Generally - Dry fit the matting to check accuracy prior to adhering to the subfloor. Using a B1 or 2mm x 6mm V-shaped notched serrated trowel, apply a ribbed adhesive bed of ARDEX AF 200 to the subfloor. Lay the matting into the wet/ tacky ARDEX AF 200 fleece side down, and press firmly into place using the straight edge of a steel trowel, abutting all edges. .
  - Substrate surface: Secure, true and even.
- Joints: Close butt.
  - Treatment: When the membrane is used for waterproofing applications (Showers and Baths) the mat joints, perimeters, drainage outlets and any service penetrations through the membrane must be sealed in accordance with the manufacturer's recommendations.

  Refer to Schlüter®-Systems - Technical Data Sheet 6.1..
- Penetrations: Seal.
- Accessories: Schlüter®-DITRA an uncoupling, waterproofing, crack bridging and vapour pressure equalisation membrane. The orange coloured polyethylene membrane has a grid structure of square cavities, each cut back in a dovetail configuration with an anchoring fleece laminated to its underside. Install in line with the manufacturer's recommendations.

  All of the following to enable a complete and robust installation:

  Schlüter®-KERDI-KEBA a polyethylene waterproofing band covered on both sides with a fleece for the sealing of mat joints and floor/wall junctions. The 12.5 cm wide band is used for mat joints and the 18.5 cm wide band for floor/wall junctions, ensure the bonding tile adhesive used, is water resistant and the band is solidly bedded.

  Schlüter®-KERDI-FLEX is a highly flexible polyethylene waterproofing band, covered on both sides with a fleece fabric and a 30 mm central fleece free movement zone. This is used to seal joints over movement joints within the substrate or at floor/wall junctions where movement may be anticipated.

  Schlüter®-KERDI-KERECK pre-cut sections for sealing internal and external corners.

  Schlüter®-KERDI-KM (pipe collar) a polyethylene pipe sleeve covered on both sides with an anchoring fleece.

  Schlüter®-KERDI-FIX an elastic adhesive for sealing Schlüter®-KERDI products to abutments or the central movement zone of Schlüter®-KERDI-FLEX.

  Schlüter®-KERDI-COLL a two component sealant adhesive for adhering the Schlüter®-KERDI-KEBA at mat joints and perimeter connections.

  Schlüter®-KERDI-Collar a pre-cut 50 x 50 cm sealing piece for the waterproof sealing and connection of the Schlüter®-DITRA to a suitable drainage outlet..

FIXING

510 FIXING GENERALLY

- Colour/ shade: Unintended variations within tiles for use in each area/ room are not permitted.
  - Variegated tiles: Mix thoroughly.
- Adhesive: Compatible with background/ base. Prime if recommended by adhesive manufacturer.
- Use of admixtures with cementitious adhesives: Only admixtures approved by adhesive manufacturer.
- Cut tiles: Neat and accurate.
- Fixing: Provide adhesion over entire background/ base and tile backs.
- Final appearance: Before bedding material sets, make adjustments necessary to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
- Surplus bedding material: Clean from joints and face of tiles without disturbing tiles.

520 SCHLUTER - DILEX-AS

- Installation
  1.Thoroughly clean the contact area on adjoining fixtures where Schluter-DILEX-AS will be positioned
  2.Using a notched trowel, apply thin-set mortar over the area where the trapezoid-perforated anchoring leg will be placed.
  3.Remove the paper from the selfadhesive tape. Apply silicone sealant parallel and adjacent to self-adhesive tape. Press the profile with self-adhesive tape against the fixture in such a way that the perforated anchoring leg can also be pressed into the applied thin-set mortar.
  4.Install inside corners and end caps with silicone prior to setting tiles.
  5.Trowel additional thin-set mortar over the perforated anchoring leg to ensure full coverage.
  6.A joint of approximately 1/16" - 1/8" (1.5 mm - 3 mm) should be left between the tile and the profile.
  7.Fill the joint completely with grout or setting material.

530A SETTING OUT

- Joints: True to line, continuous and without steps.
  - Joints on walls: Horizontal, vertical and aligned round corners.
  - Joints in floors: Parallel to the main axis of the space or specified features.
- Cut tiles: Minimize number, maximize size and locate unobtrusively.
- Joints in adjoining floors and walls: Align.
- Joints in adjoining floors and skirtings: Align.
- Movement joints: Where locations are not indicated, submit proposals.

550 FLATNESS/ REGULARITY OF TILING/ MOSAICS

- Sudden irregularities: Not permitted.
- 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 $\pm$ 3 mm.

560 LEVEL OF TILING ACROSS JOINTS

- Deviation (maximum) between tile surfaces either side of any type of joint:
  - 1 mm for joints less than 6 mm wide.
  - 2 mm for joints 6 mm or greater in width.

570 MORTAR BEDDING

- Bedding mix:
  - Cement: Portland to BS EN 197-1, type CEM I/42.5.
  - Sand for walls: To BS EN 13139.
    Grading designation: 0/2 (CP or MP) category 2 fines.
  - Sand for floors: To BS EN 13139.
    Grading designation: 0/4 (MP) category 1 fines and between 20%-66% passing a 0.5 sieve.
- Batching: Select from:
  - Batch by weight.
  - 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.
- Mixing: Mix materials thoroughly to uniform consistence. Use a suitable forced action mechanical mixer. Do not use a free fall type mixer.
- Application: At normal temperatures use within two hours. Do not use after initial set. Do not retemper.

580 POROUS TILES

- Tiles to be bedded in cement:sand: Soak in clean water for at least 30 minutes. Fix as soon as surface water has drained.

651 ADHESIVE BED - NOTCHED TROWEL AND BUTTERING METHOD (WALLS)

- Application: By floated coat of adhesive to dry background in areas of about 1 m^2. Comb surface.
- Tiling: Apply thin even coat of adhesive to backs of dry tiles. Fill any ribbed, deep keyed or button profiles. Press tiles firmly onto float coat.
- Finished adhesive thickness: 3 mm or within the range allowed by the adhesive manufacturer.

710 ADHESIVE BED - NOTCHED TROWEL AND BUTTERING METHOD (FLOORS)

- Application: Floated coat of adhesive to dry base and comb surface.
- Tiling: Apply coat of adhesive to backs of dry tiles. Fill any ribbed, deep keyed or button profiles. Press tiles firmly onto float coat.
- Finished adhesive thickness: Within range allowed by manufacturer.

MOVEMENT JOINTS/ GROUTING/ COMPLETION

805A SEALANT MOVEMENT JOINTS WITH METAL EDGINGS AT THRESHOLDS

- Edging material: Stainless steel angle.
  - Size: 22mm x 22mm x 3mm.
  - Bedding: Screw and adhesive
    Installation: Centre over joints in base. Set to exact finished level of floor.
  - Fixing to base: SS screws.
- Joint width: 10mm max.
- Sealant: Arbomeric MP20 - Adshead Ratcliffe.
  - Colour: Grey, Black and White to suit location - samples to be provided.
  - Preparation and application: As section Z22.

815 SEALANT MOVEMENT JOINTS Within the Tile Area as Required

- Joints: Extend through tiles and bedding to base/ background. Centre over joints in base/ background.
  - Width: minimim 6mm.
- Sealant: Norcros 4 into 1 Sealant.
  - Colour: Samples to be provided.
  - Preparation and application: As section Z22.

875 GROUTING

- Sequence: Grout when bed/adhesive has set sufficient to prevent disturbance of tiles.
- Joints: 6 mm deep (or depth of tile if less). Free from dust and debris.
- Grouting: Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.
  - Profile: Flush.
- Polishing: When grout is hard, polish tiling with a dry cloth.

885 COLOURED GROUT

- Staining of tiles: Not permitted
- 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.

M41
Terrazzo tiling/ in situ terrazzo

Section Revision History

No.	Purpose	
-	TENDER ISSUE	23rd Jul 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

M41 Terrazzo tiling/ in situ terrazzo

To be read with Preliminaries/ General conditions.

TYPES OF TERRAZZO

110 TERRAZZO TILING GROUND FLOOR ENTRANCE LOBBIES

- Antistatic requirements: none.
- Tiles:
  - To: BS EN 13748-1 for internal use.
  - To: BS EN 13748-2 for external use.
  - Manufacturer: Quiligotti.
    Product reference: tbc.
  - Recycled content: n/a.
  - Size: 597 x 597 x 40 mm.
- Substrate: concrete slab.
  - Preparation for bedding: scabbled or shot blast to remove laitance and expose coarse aggregate.
- Bedding:
  - Thickness (minimum): 60mm.
  - Mix (cement:sand): Semidry 1:4 fiber screed.
  - Attachment to substrate: Fully bonded. Wet in wet. Apply bonding coat of cement slurry with SBR additive below and above screed..
  - Reinforcement for crack control: As clause 395.
- Joint width: 1.5-3 mm.
- Movement joints:
  – Perimeter: As clause 440 at all perimeters, including door thresholds and around columns and stairs.
  – Intermediate: As clause 445 at not more than 30 m centres. As clause 440 at not more than 6 m centres.
  – Structural: As clause 465 to coincide with structural movement joints in substrate..
- Finishing:
  - Grinding: Grinding/Polishing as clause 520.
  - Finish: Slip resistance of 40, wet, to BS EN 13036-4.) .
- Other requirements: Grout to match body colour of tiles.

GENERALLY

210 SUITABILITY OF SUBSTRATES

- General: Suitably dry and clean for specified bedding method.
- Existing substrates: Free from loose areas and significant cracks and gaps.
- New in situ concrete substrates: Allow for initial shrinkage:
  - Air drying after curing: (minimum) 6 weeks .
  - Other methods: Submit proposals.

230 SAMPLES

- General: Submit representative samples of the following: Tiles of type M41/110.

235 CONTROL SAMPLES
- General: Complete sample areas, being part of the finished work, and obtain approval of appearance before proceeding.
- Terrazzo type: Tiles type M41/110. .
  - Location/ Size: tbc .

242 CEMENT
- Standard: To BS EN 197-1.
  - Types: Portland cement, CEM I or Portland slag cement, CEM II/ B-S.
  - Strength class: 42.5.
- Certification for all cements: BSI Kitemark scheme.

245 SAND
- Standard: To BS EN 13139.

248 ADMIXTURES
- Water reducing and set retarding admixtures: To BS EN 934-2 and compatible with other mortar constituents.

LAYING

305 LAYING GENERALLY
- Tiles: Fully adhered to bedding.
- Cut tiles: Neat and accurate.
- Joints: True to line, continuous and without steps.
  - Joints in floors: Parallel to main axis of the space or specified features.
- Dividing strips/ Movement joints: If locations are not indicated, submit proposals.
- Special setting out: whole tile on centreline rather than joint on centreline.

330 LEVEL OF FINISHED FLOOR
- Permissible deviations from datum: ±10 mm .
  - Locations: generally.

340 FLATNESS/ SURFACE REGULARITY OF FINISHED FLOOR
- Sudden irregularities: Not permitted.
- Deviation (maximum) of surface measured from underside of a 2 m straightedge, between points of contact, and placed anywhere on the surface: 3 mm.

345 LEVEL OF UNGROUND TILING ACROSS JOINTS
- Deviations (maximum) between surfaces either side of any type of joint:
  - Joints less than 6 mm wide: 1 mm.
  - Joints 6 mm wide or greater: 2 mm.

390 MIXING BEDDING MORTAR
- Batching: Select from:
  - Batch by weight.
  - Batch by volume: Permitted on the basis of previously established weight:volume relationships of the particular materials. Allow for bulking of damp sand.
- Water content: Minimum necessary to achieve full compaction.
- Mixes: Of uniform consistence, free from lumps. Do not retemper or reconstitute mixes.

395 CRACK CONTROL REINFORCEMENT
- Standard: To BS 4483.
  - Fabric reinforcement type: D49 wrapping mesh.
- Location: Centrally in depth of bed.
  - Laps (minimum): 100 mm and tied with steel wire.

405 TILING ON MORTAR BEDDING
- Compaction of bedding: Compact thorough.
- Tiling: Lay tiles on layer of wet slurry and beat tiles firmly into position.
  - Timing: Before bedding sets and to achieve effective bond between bedding and tiles.
  - Slurry type: 1:1 cement:fine sand.
- Grouting: Fill joints. Remove surplus and allow grout to cure before finishing.
  - Grout colour: To match tile/ tile matrix.

440 DIVIDING STRIPS
- Material: Stainless Steel.
  - Thickness: 6 mm.
- Installation: Set to required finished floor level.

445 STRIP MOVEMENT JOINTS AT THRESHOLDS and BETWEEN BAYS
- Manufacturer: Schluter Systems - 01530 813396.
  - Product reference: Dilex-EMP - where horizontal movement occurs - Width 12mm - Hight to suit, subject to special order for heights over 65mm.
  - Colour: stainless steel.
- Joint width: 12 mm.
- Installation: Extend through terrazzo and bedding to base. Set to required finished floor level.
  - Fixing: Integral anchors formed of profiled shape of joint.

520 GRINDING
- Mechanical grinding: Use wet process. Dry process permitted only where it is not practicable to use wet process.
- Coarse grinding: Remove all surface grout, correct unevenness and remove lipping between tiles/ slabs.
  - Residue and dust: Remove. Wash and rinse surface.
- Fill with matching grout.
- Polishing: Use wet process.
  - Residue and dust: Remove. Wash and rinse surface and leave to dry naturally.
- Protection: Cover flooring and keep free from traffic for at least two days.

COMPLETION

540 CHEMICAL FLOOR HARDENER
- Manufacturer: Type recommended by the tile manufacturer..
  - Product reference: as above.
- Excess hardener: Prevent drying out on the surface of terrazzo. Remove with clean water.

M50
Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting
Revision A

Section Revision History

No.	Purpose	
-	TENDER ISSUE	18th Sep 2015
A	M50/170 Carpet Spec added	18th Sep 2015

Clauses amended in Revision A

No.	Clause	
170	CARPETING	Revised

M50 Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting

To be read with Preliminaries/ General conditions.

TYPES OF COVERING

135 THRESHOLD MATTING

- Location: Individual Ground Floor Apartments.
- Base: M10/110A as with Terrazzo.
  - Preparation: seal surface.
- Fabricated underlay: Plywood as clause H71/630A - roofing grade ply.
- Carpet tiles:
  - Manufacturer: Jaymart - 01985 218994.
    Product reference: BRUSH-ZONE - 30mm.
  - Type: rubber backed coir matting for domestic applications.
  - BS EN 1307 classification:
  - Size: made to measure - approx 1200mm deep and to the width of the entrance space (1200mm x 2400mm approx). Final size to be resolved on site to ensure the matting, wooden floor and stair are well co-ordinated..
  - Colour/ pattern: Provide colour samples of the following for final approval: Natural / Grey / Charcoal / Rust.
- Method of laying: loose laid into a frame recommended by tile manufacturer.
- Accessories: stainless steel mat frame formed of 50 x 50 x 3mm SS angles.
- Other requirements: 30mm matt to be bonded to 18mm ply set within a stainless steel frame screw fixed into the screed.

170 CARPETING
- Location: Bedrooms.
- Base: Varies - K11/115, /115A and /115B.
  - Preparation: Seal, prime and apply adhesive all as Clause 410 to 536.
- Fabricated underlay: Cement board deck of floating floor to serve as basis for carpet and underlay.
- Carpet underlay to BS 5808 and BS EN 14499:
  - Manufacturer: Carpenters Ltd - 01457 861141 .
    Product reference: Richstep.
  - Type: Polyurethane Foam - 9mm - 100Kg/m3.
  - Class: Heavy Domestic Use (To match carpet class as a minimum).
  - Recycled content: 0% (minimum) to BS EN ISO 14021.
- Underlay adhesive (and primer if recommended by manufacturer): As clause 640.
- Carpet:
  - Manufacturer: Comar Carpets - lee.harris@cormarcarpets.co.uk.
    Product reference: Living Naturals Range - Ribbed - Elm.
  - Type: Loop pile carpet - From Roll.
  - BS EN 1307 classification:
    Category: Type 1.
    Level of use class: 23 - Heavy Domestic Use.
    Luxury rating class: LC3.
  - Recycled content: 0% (minimum) to BS EN ISO 14021.
  - Width: 4m and 5m available.
  - Colour/ pattern: Cream 'Elm' - 'Ribbed'.
- Carpet adhesive (and primer if recommended by manufacturer): As clause 640.
- Accessories: Edging strip at thresholds as clause 740.
- Other requirements: All as required to achieve a complete installation.
  (Revised - M50 revision A - 18th Sep 2015)

GENERAL REQUIREMENTS

210 WORKMANSHIP GENERALLY
- Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.
- Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

220 SAMPLES
- Covering samples: Before placing orders, submit representative sample of each type.

230 CONTROL SAMPLES
- General: Complete areas of finished work in approved locations as follows, and obtain approval of appearance before proceeding: Mock Apartments .

250 LAYOUT - ROLL MATERIALS
- Setting out of seams: Agree setting out for sheeting types M50/ 170 .

251 LAYOUT - SEAMS IN ROLL MATERIALS
- Setting out: Minimise occurrences of seams and cross seams.
- Cross seams: Not permitted in following locations: Where the rolls (4m and 5m wide) are wider than the room.

270 EXTRA MATERIAL

- Provision of extra material: At completion, hand to Employer extra material of each type of covering to extent of one roll carpet - confirm on site.

330 COMMENCEMENT

- Required condition of works prior to laying materials:
  - Building is weathertight and well dried out.
  - Wet trades have finished work.
  - Paintwork is finished and dry.
  - Conflicting overhead work is complete.
  - Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.
- Notification: Submit not less than 48 hours before commencing laying.

340 CONDITIONING

- 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.
- 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

- Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.
- Ventilation: Before during and after laying, maintain adequate provision.

PREPARING BASES

410 NEW BASES

- 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

- Base drying aids: Not used for at least four days prior to moisture content testing.
- Base moisture content test: Carry out in accordance with BS 5325, Annexe A or BS 8203, Annexe A.
  - Locations for readings: In all corners, along edges, and at various points over area being tested.
- Commencement of laying coverings: Not until all readings show 75% relative humidity or less.

470 BASES FROM WHICH EXISTING FLOOR COVERINGS HAVE BEEN REMOVED

- Substrate: Clear of covering and as much adhesive as possible. Skim with smoothing underlayment compound to give smooth, even surface.

480 EXISTING FLOOR COVERINGS TO BE OVERLAID

- Substrate: Make good by local resticking and patching or filling with smoothing underlayment compound to give smooth, even surface.

536 CEMENT BOARD FLOATING FLOORING
- Substrate: Boards securely fixed and free from surface sealers and contaminants.
- Level: Sand to remove areas raised more than 1 mm.
  - Gaps between boards: Not more than 1 mm.
  - Priming: As required by covering adhesive manufacturer. - Check adhesive to establish if the cement board requires priming. Undertake test.
- Equilibrium moisture content at time of laying covering: As in service conditions.

LAYING COVERINGS

620 COLOUR CONSISTENCY
- Finished work in any one area/ room: Free from banding or patchiness.

640 ADHESIVE FIXING GENERALLY
- Adhesive type: As specified, as recommended by covering/ underlay, manufacturer or as approved.
- Primer: Type and usage as recommended by adhesive manufacturer.
- Application: As necessary to achieve good bond.
- Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

690 SEAM BONDING CARPET
- Carpet types: M50/ 170 .
- Seaming adhesive application: Continuous bead to edges.
- Joints: Securely bonded, free of air bubbles.

720 DOORWAYS
- Joint location: On centre line of door leaf.

740 EDGINGS AND COVER STRIPS
- Manufacturer: Gradus - 01625 428922 .
  - Product reference: SCSM451 .
- Material/ finish: Brished SS - 30mm - screw fixed into the ply deck below with SS screws .
- Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view

COMPLETION

880 WASTE
- Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

M60
Painting/clear finishing

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

M60 Painting/clear finishing

To be read with Preliminaries/General conditions.

COATING SYSTEMS

110 EMULSION PAINT NEW GYPSUM PLASTER OR PLASTERBOARD PARTITION WALLS AND CEILINGS (except as clause 150

- Manufacturer: Dulux Trade (AkzoNobel).
  - Product reference: Diamond Matt.
- Surfaces: internal (as clause heading).
  - Preparation: as manufacturer's recommendations and clauses 400, 580 and 590.
- Initial coats: seal new or bare surfaces with a thinned first coat of up to 1 part clean water to 10 parts paint.
- - Number of coats: one.
- Undercoats: n/a.
  - Number of coats: n/a.
- Finishing coats: brush, roller, conventional spray or airless spray and in accordance with manufacture's recommendations.
  - Number of coats: two.

110A EMULSION PAINT NEW LIME PLASTER

- Manufacturer: Auro Paints.
  - Product reference: High-grade lime paint No. 344.
- Surfaces: internal (as clause heading).
  - Preparation: as manufacturer's recommendations and clauses 400 and 580.
- Initial coats: seal new or bare surfaces with a thinned first coat of up to 1 part clean water to 5 parts paint.
- - Number of coats: one.
- Undercoats: n/a.
  - Number of coats: n/a.
- Finishing coats: by brush or roller and in accordance with manufacture's recommendations.
  - Number of coats: two.

130 GLOSS PAINT EXTERNAL WOODWORK

- Manufacturer: Dulux Trade (AkzoNobel).
  - Product reference: Weathershield Exterior High Gloss.
- Surfaces: as clause heading.
  - Preparation: as manufacturer's recommendations and clauses 400, 461A, 471 and 481.
- Initial coats: Weathershield Preservative Primer by brush only and in accordance with manufacture's recommendations.
  - Number of coats: two.
- Undercoats: Weathershield Exterior Flexible Undercoat by brush only and in accordance with manufacture's recommendations.
  - Number of coats: two.
- Finishing coats: brush only and in accordance with manufacture's recommendations.
  - Number of coats: one.

150 EGGSHELL/ SATIN PAINT NEW PLASTER OR PLASTERBOARD WALLS TO KITCHENS AND BATHROOM

- Manufacturer: Dulux Trade (AkzoNobel).
  - Product reference: Diamond High Performance Eggshell .
- Surfaces: internal (as clause heading).
  - Preparation: as manufacturer's recommendations and clauses 400, 580 and 590.
- Initial coats: seal new or bare surfaces with a thinned first coat of up to 1 part clean water to 10 parts paint.
  - Number of coats: one.
- Undercoats: n/a.
  - Number of coats: n/a.
- Finishing coats: brush, roller, conventional spray or airless spray in accordance with manufacture's recommendations.
  - Number of coats: two.

175 PROTECTIVE COATING APARTMENT STEEL BALUSTRADES

- Manufacturer: ZINGA UK is a division of MG Duff International Ltd - 01406 701834.
  - Product reference: ZINGACERAM ZM PU.
- Surfaces: Carbon Steel.
  - Preparation: - REFER TO ZINGA CURRENT REQUIREMENTS (outlined below)
    - Degrease by steam-cleaning @ 80oC @ 150 bars or freshwater jetting @ 150 bars
    - Blast to Sa 2.5 (ISO 8501-1)
    - Surface Profile - Rz 60 – 80µm (ISO 8503-2)
    - Surface Roughness - Ra 12.5 – 15µm.
- Initial coats: ZINGA - Stripe Coat followed by Full Coat @ Dry Film of 80 microns and 3.62 m2/Kg - Wet Film of 140 microns..
  - Number of coats: 2.
- Undercoats: ZINGACERAM EP MIO - Stripe Coat followed by Mist Coat.
  - Number of coats: 2.
- Finishing coats: ZINGACERAM ZM PU - Full Coat - Undercoats and finish coat to achieve Dry Film of 60-80 microns and 8m2/Ltr - Wet Film of 120 - 160 microns
  NOTES - The Zingaceram PU must only be applied onto the Zingaceram EP MIO after it has cured for a minimum of 12 hours @ 20oC..
- Application: Airless spray.
  - Number of coats: 2 - Stripe Coat followed by Full Coat.
  - Slip resistance value - water wet (minimum): Not applicable .

175A PROTECTIVE COATING STEEL PANELS / RAILINGS / ENTRANCE PORTALS / EXTERNAL STEELWORK / ETC....

- Manufacturer: ZINGA UK is a division of MG Duff International Ltd - 01406 701834.
  - Product reference: ZINGACERAM ZM EP MIO HS.
- Surfaces: Carbon Steel.
  - Preparation:
    - Degrease by steam-cleaning @ 80oC @ 150 bars or freshwater jetting @ 150 bars
    - Blast to Sa 2.5 (ISO 8501-1)
    - Surface Profile - Rz 50 – 70µm (ISO 8503-2)
    - Surface Roughness - Ra 12.5 – 15µm.
- Initial coats: ZINGA - Stripe Coat followed by Full Coat @ Dry Film of 80 microns and 3.00 m2/Kg - Wet Film of 120-140 microns. (Thinner - Zingasolv).
  - Number of coats: 2.
- Undercoats: ZINGACERAM EP MIO - Stripe Coat followed by Mist Coat followed by Full Coat - to achieve Dry Film of 35 - 40 microns and 4.7 m2/Ltr - Wet Film of 50 - 60 microns (Thinner - EP Thinner).
  - Number of coats: 2.
- Finishing coats: ZINGACERAM EP MIO - Stripe Coat followed by Mist Coat followed by Full Coat - Undercoats and finish coat to achieve Dry Film of 80 - 120 microns and 16.0 m2/Ltr - Wet Film of 190 - 200 microns (Thinner - EP Thinner).
- Application: Airless spray.
  - Number of coats: 5.
  - Slip resistance value - water wet (minimum): Not applicable .

SEE DETAILED NOTES - M60/820 - 865

The Contractor and Applicator are to be mindful of the following and should seek approval of Zinga UK to confirm compliance with the products requirements.
The application of all the products mentioned in these documents must be done in strict accordance with the appropriate manufacturers instructions and specifications. Zinga UK accepts no liability for any failures resulting from incorrect application of any part of the recommended coating system.
· Zinga is sensitive to solvents and prolonged exposure can lead to the breakdown of the Zinga layer. Care should be taken when over-coating Zinga with solvent based products to ensure that the manufacturers recommended DFT's are not exceeded and curing times are adhered to. Tie-coats and top-coats which are applied too thickly can lead to solvent entrapment and subsequent cohesion failure within the top of the zinc layer.
· The information on these sheets is given to the best of our knowledge based on practical field experience and testing. However, as Zinga is often used under conditions beyond our control, Zinga UK cannot guarantee anything other than the quality of the product itself.
· All materials must be obtained from a registered Zinga distributor. Unless otherwise agreed.
· Before any work is carried out, Zinga UK must be consulted in order to clarify any points or concerns raised in this specification document or in any of the associated data, MSDS, application and any other relevant documents.
· For any mist-coating questions, this specification should be used in conjunction with Tech-sheet 25: Mist-coating Techniques

180 FLOOR COATING TO INTERNAL HARDWOOD FLOORS (unless pre-finished)

- Manufacturer: Dulux Trade (AkzoNobel).
  - Product reference: Diamond Glaze Varnish.
- Surfaces: as clause heading.
  - Preparation: as manufacturer's recommendations and clauses 400 and 481.
- Initial coats: n/a.
  - Number of coats: n/a.
- Finishing coats: brush or short pile mohair roller only and in accordance with manufacture's recommendations.
  - Number of coats: three.
  - Slip resistance value - water wet (minimum): n/a.

195 SPECIAL COATING INTUMESCENT COATING TO ALL STRUCTURAL IRON AND STEEL

- Manufacturer: LEIGHS PAINTS.
  - Product reference: FIRETEX range as below.
- Surfaces: Prepared Iron or Steel. Where intumescent coating is required the existing paint will need to be assessed and retained or removed accordingly.
  - Preparation: for use over a suitably prepared and primed substrate; ensure surfaces to be coated are clean, dry and free from all surface contamination..
- Initial coats: Epigrip L425 high build 2-pack epoxy zinc phosphate primer, brush applied.
  - Number of coats: one.
- Undercoats: Firetex intumescent water based base coat either FX5062 (up to 60 min), FX5090 (up to 90 min) or FX5120 (up to 120 min) depending on degree of protection required, by brush or airless spray.
  - Number of coats: as needed to achieve the required dry film thickness.
- Finishing coats: Firetex M71V2 solvent acrylic topcoat in group 2 red oxide colour, by brush or airless spray - SIX colour samples to be provided to guide confirmation of preferred colour with the Conservation Officer - sample colours:
  RAL 3009 Oxide Red
  BS4800 04 D 45 - Russet
  BS 4800 04D 44
  RAL 2001
  RAL 3001 - Signal Red
  RAL 3011 Brown Red.
  - Number of coats: one or two as needed to achieve to a minimum dry film thickness of 50 microns.
  - Slip resistance value - water wet (minimum): n/a.

195A SPECIAL COATING TO EXISTING GALVANIZED METALWORK

- Manufacturer: LEIGHS PAINTS.
  - Product reference: MULTI PART PAINT SYSTEM.
- Surfaces: Existing metal work to be cleaned and prepared - no corrosion residue is to be left.
  - Preparation: Wash down and degrease - Mordant Wash.
- Initial coats: EPIGRIP K267HS - Two Pack Epoxy High Solids Micaceous Iron Oxide (MIO).
  - Number of coats: ONE.
- Undercoats: Repeat Initial Coat.
  - Number of coats: ONE.
- Finishing coats: RESISTEX C137V2 - Two Pack Acrylic Urethane - Gloss Finish - FIVE colour samples to be provided to guide confirmation of preferred colour with the Conservation Officer.
  - Number of coats: ONE.
    REFER TO LEIGHTS PAINTS TO ENSURE THE APPLICATION IS CARRIED OUT IN ACCORDANCE WITH THEIR SPECIFICATION AT DETAILED ON THEIR DATA SHEETS.

195B SPECIAL COATING TO EXISTING CAST and WROUGHT IRON - Ref C90/290

- Manufacturer: LEIGHS PAINTS.
  - Product reference: MULTI PART PAINT SYSTEM.
- Surfaces: Existing ironwork.
  - Preparation: Remove all loose paint and surface corrosion - needle gun or blasting to SA 2 1/2.
- Initial coats: EPIGRIP L425 - Two Pack Epoxy Zinc Phosphate Primer.
  - Number of coats: ONE.
- Undercoats: EPIGRIP L653 - Two pack epoxy high build coating.
  - Number of coats: ONE internal - TWO eternal and where items are to be buried within new fabric.
- Finishing coats: RESISTEX C137V2 - FIVE colour samples to be provided to guide confirmation of preferred colour with the Conservation Officer.
  - Number of coats: ONE or as required to achieve the manufacturers recommended film thickness.

195C SPECIAL COATING CAST GOODS - Ref C90/290
Manufacturer: [LEIGHS PAINTS].
- Product reference: [MULTI PART PAINT SYSTEM].
  Surfaces: [Cast Iron].
- Preparation: [Seek application of proposed primer at the foundry in place of the basic iron oxide primer typically used by the iron foundry - If the cast goods are supplied with the iron fabricators primer it is to be removed and the specified primer applied].
  Initial coats: [EPIGRIP L425 - Two Pack Epoxy Zinc Phosphate Primer].
- Number of coats: [ONE - pipes to be dipped or paint applied to voids and hollows with a turks head brush].
  Undercoats: [EPIGRIP L653 - Two pack epoxy high build coating - pipes to be dipped or paint applied to voids and hollows with a turks head brush].
- Number of coats: [ONE internal - TWO eternal and where items are to be buried within new fabric].
  Finishing coats: [RESISTEX C137V2 - FIVE colour samples to be provided to guide confirmation of preferred colour with the Conservation Officer].
- Number of coats: [ONE or as required to achieve the manufacturers recommended film thickness].

195D SPECIAL COATING EXPOSED NEW INTERNAL STEEL NOT IDENTIFIED UNDER M60/175A
- Manufacturer: LEIGHS PAINTS.
  - Product reference: Micaceous Iron Oxide as below.
- Surfaces: prepared iron or steel.
  - Preparation: prepare substrate by blast cleaning to SA 2.5.
- Initial coats: M155 quick drying single pack solvent alkyd zinc phosphate primer, airless spray, roller or brush applied.
  - Number of coats: typically one if roller or spray applied, two if brush applied, to achieve dry film thickness of 75 microns.
- Undercoats: n/a.
  - Number of coats: n/a.
- Finishing coats: Metagrip L654 single pack quick drying solvent alkyd MIO topcoat, dark grey R8050, brush, roller, conventional spray or airless spray in accordance with manufacture's recommendations.
  - Number of coats: typically one if brush or spray applied, possibly two if roller applied, to achieve dry film thickness of 75 microns.
  - Slip resistance value - water wet (minimum): n/a.

GENERALLY

215 HANDLING AND STORAGE
- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
- Materials from more than one batch: Store separately. Allocate to distinct parts or areas of the work.

220 COMPATIBILITY

- Coating materials selected by contractor:
  - Recommended by their manufacturers for the particular surface and conditions of exposure.
  - Compatible with each other.
  - Compatible with and not inhibiting performance of preservative/fire retardant pretreatments.

280 PROTECTION

- 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

300A CONTROL SAMPLES

- Sample areas of finished work: Carry out, including preparation, as follows:
  Types of coating Location
  M60/ 175A . Sample in workshop .
  M60/ [195A - D]. [Sample in-situ - application method and protection of particular interest].
- Approval of appearance: Obtain before commencement of general coating work.

320 INSPECTION BY COATING MANUFACTURERS

- General: Permit manufacturers to inspect work in progress and take samples of their materials from site if requested.

PREPARATION

400 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, to provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
  - Apply before priming unless recommended otherwise by manufacturer.
  - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
  - Ease, if necessary, before coating.
  - Prime resulting bare areas.

425 IRONMONGERY

- Removal: Before commencing work: Remove ironmongery from surfaces to be coated.
- Hinges: Do not remove.
- Replacement: Refurbishment as necessary; refit when coating is dry.

440 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos or other hazardous materials.
  - Significant rot, corrosion or other degradation of substrates.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Retained coatings:
  - Thoroughly clean to remove dirt, grease and contaminants.
  - Gloss coated surfaces: Provide key.
- Partly removed coatings:
  - Additional preparatory coats: Apply to restore original coating thicknesses.
  - Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

451 PREVIOUSLY COATED SURFACES - BLAST CLEANING

- Operatives:
  - Trained/ experienced in blast cleaning.
  - Submit evidence of training/ experience on request.
- Dust and nuisance: Minimize.

461A PREVIOUSLY COATED WOOD

- Degraded or weathered surface wood: Take back to provide suitable substrate.
- Degraded substrate wood: Repair with sound material of same species. Do not use fillers to re-constitute rotten timber.
- Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED WOOD

- Areas of defective primer: Take back to bare wood and reprime.

481 UNCOATED WOOD

- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
- Resinous areas and knots: Apply two coats of knotting.

490 PREVIOUSLY COATED STEEL
- Defective paintwork: Remove to leave a firm edge and clean bright metal.
- Sound paintwork: Provide key for subsequent coats.
- Corrosion and loose scale: Take back to bare metal.
- Residual rust: Treat with a proprietary removal solution.
- Bare metal: Apply primer as soon as possible.
- Remaining areas: Degrease.

500A PREPRIMED STEEL
- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime within one hour.

511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL
- White rust: Remove.
- Pretreatment: Apply one of the following:
  - 'T wash'/ mordant solution to blacken whole surface.
  - Etching primer recommended by coating system manufacturer.

521 UNCOATED STEEL - MANUAL CLEANING
- Oil and grease: Remove.
- Corrosion, loose scale, welding slag and spatter: Remove.
- Residual rust: Treat with a proprietary removal solution.
- Primer: Apply as soon as possible.

531 UNCOATED STEEL - BLAST CLEANING
- Oil and grease: Remove.
- Blast cleaning:
  - Atmospheric conditions: Dry.
  - Abrasive: Suitable type and size, free from fines, moisture and oil.
  - Surface finish: To BS EN ISO 8501-1, preparation grade SA 2 1/2.
- Primer: Apply as soon as possible and within four hours of blast cleaning.

580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Key lightly.

590 UNCOATED PLASTERBOARD
- Depressions around fixings: Fill with stoppers/ fillers

622 ORGANIC GROWTHS
- Dead and loose growths and infected coatings: Scrape off and remove from site.
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

631 PREVIOUSLY PAINTED WINDOWS FRAMES

- Paint encroaching beyond glass sight line: Remove.
- Loose and defective putty: Remove.
- Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.
- Finishing:
  - Patch prime, reputty as necessary, and allow to harden.
  - Seal and coat as soon as sufficiently hard.

640 EXTERNAL POINTING TO EXISTING FRAMES

- Defective sealant pointing: Remove.
- Joint depth: Approximately half joint width; adjust with backing strip if necessary.
- Sealant:
  - Manufacturer: Adshead Ratcliffe.
    Product reference: ARBOKOL 1000.
  - Preparation and application: As section Z22.

645 SEALING OF INTERNAL MOVEMENT JOINTS

- General: To junctions of walls and ceilings with architraves, skirtings and other trims.
- Sealant: Water based acrylic.
  - Manufacturer: Adshead Ratcliffe.
    Product reference: ARBOKOL AG2.
  - Preparation and application: As section Z22.

645A SEALING OF INTERNAL MOVEMENT JOINTS - FIRE RESISTING

- General: To junctions of walls and ceilings with architraves, skirtings and other trims.
- Sealant: Water based acrylic.
  - Manufacturer: Adshead Ratcliffe.
    Product reference: ARBOSIL 1071.
  - Preparation and application: As section Z22.

651 EXISTING GUTTERS

- Dirt and debris: Remove from inside of gutters.
- Defective joints: Clean and seal with suitable jointing material.

APPLICATION

711 COATING GENERALLY

- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
  - Thickness: To suit surface porosity.
  - Application: As soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

720 PRIMING JOINERY

- Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
- End grain: Coat liberally allow to soak in, and recoat.

730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

- General: Apply coatings to all surfaces of components.

731 SITE COATING OF CONCEALED JOINERY SURFACES

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
  - Components: Built in window frames and door frames.
  - Additional coatings: One undercoat.

740 CONCEALED METAL SURFACES

- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.
  - Components: all types.
  - Additional coatings: as identified under M60/175A and M60/195A to M60/195D.

751 STAINING WOOD

- Primer: Apply if recommended by stain manufacturer.
- Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

770 EXTERNAL DOORS

- Bottom edges: Prime and coat before hanging doors.

780 BEAD GLAZING TO COATED WOOD

- Before glazing: Apply first two coats to rebates and beads.

790 PUTTY GLAZING

- Setting: Allow putty to set for seven days.
- Sealing:
  - Within a further 14 days, seal with an oil based primer.
  - Fully protect putty with coating system as soon as it is sufficiently hard.
  - Extend finishing coats on to glass up to sight line.

800 GLAZING

- Etched, sand blasted and ground glass: Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.

820 ZINGA - GENERAL

- General Requirements

1. Please use this specification in conjunction with the appropriate Technical Data Sheets and MSDS.
2. Application Conditions: please see the Technical Data Sheet for details of minimum temperatures, humidity etc. For optimum performance the surface should be completely dry and the Sa2.5 cleanliness standard strictly adhered to on the lower column sections.
3. Drying times will be affected by temperatures, humidity and ventilation conditions.
4. Measurements of DFT should only be taken when the zinc coating is fully cured, as false readings can be experienced up to 24 hours after application.

825 ZINGA - WELDS

5. All welds must be thoroughly inspected for blow-holes, undercutting etc and any flaws must be made good before proceeding.
6. All weld-spatter must be completely removed to avoid 'shadowing' during blasting and coating operations. Where necessary, these areas can be smoothed over with a P60 or P80 sanding-disc prior to commencing any blast-cleaning work.
7. If silicone anti-spatter spray has been used on any of the steelwork, these areas must be thoroughly cleaned off with acetone before proceeding with any other operations.

830 ZINGA - BLAST-CLEANING

8. All sharp edges and drilled-holes must be radiused to a minimum of 2 - 3mm. This is considered as 'best practise' on all steel work.
9. Attention must be paid to all welds, inside angles, drilled-hole circumferences, brackets, bolts and fittings plus all edges.
10. All blast-cleaned surfaces must be well blown-down or vacuumed before proceeding with the coating process.
11. Blast-cleaning must be done according to the 80/20 rule, with Rz 50µm as the absolute minimum blast-profile depth.

835 ZINGA - STRIME-COATING
Stripe-coating: Zinga
12. Stripe-coating shall be done to the standard SSPC - PAG 11.
13. All sharp edges, around brackets and fittings, drilled-hole circumferences and internals, inside angles, bolt-heads and weld seams must be stripe-coated by brush. Special attention must be paid to the welds along the rubbing strakes.
14. Outside angles and edges may be stripe-coated using a spray-gun, although a brush is preferable.
15. The Zinga stripe-coating must be allowed to flash-off for a minimum of 15 - 20 minutes @20oC before proceeding with application of the main coat onto adjacent surfaces.
16. During application of the main coating, the stripe-coats must be fully overlapped with the spray-fan.
17. Where the humidity is very high and there is a danger of flash-rusting occurring on any exposed areas of steel before application of the main coating of Zinga, then this should be carried out first and then the stripe-coatings applied after 20 - 30 minutes @20oC.

840 ZINGA - FULL-COATING
18. The steelwork can now be fully coated with Zinga as normal.
19. The Zinga layer must be allowed to dry and polymerise for one hour @ 20oC before application of the second coat.
20. The feathered-in areas must be coated while simultaneously coating the 40 – 50mm of TSZ to help blend-in the two zincs.
21. All coatings must be applied according to the 80/20 rule.

845 ZINGA - ZINGACERAM HS MIST-COATING
Zingaceram HS: Mist-coating:
22. Once the Zinga layer has cured for 24 hours, the first layer of Zingaceram can be applied as a mist-coat. This is the sealing layer for the Zinga, and it is the only crucial step in the whole coating process.
23. The Zingaceram HS epoxy must be diluted according to the spraying equipment (airless or conventional spray application).
24. The mist-coat must be applied at a maximum of 40 µm DFT, which necessitates a wet application of around 60µm.
25. This layer must be allowed to flash-off and cure for 24 hours. In warm weather above 20oC this can be reduced to 12 hours.

850 ZINGA - ZINGACERAM HS FULL COATING
26. Following a 24-hour cure, the second coat of Zingaceram HS can be applied in a single layer to obtain 80 - 120µm DFT

855 ZINGA - IMPORTANT NOTES

27. Stripe-coating must only be done on the Zinga layer. After three years of much discussion and debating, the Steel Paint Council (SSPC) has issued a statement that only the first layer of any coating system should be stripe-coated. This is because where successive layers are stripe-coated, it forms a 'fat edge' that can be broken off back to bare steel under a physical impact.
28. The Zinga + Zingaceram HS layers will form the 'working' component of the coating system. Any other coating applied on top of this for cosmetic purposes can only add another few years onto the protective system in place. There is no limit or restriction on what type or brand of finishing coat is used.
29. Zinga galvanises the steel surface and is a direct replacement for hot-dip galvanising. The Zingaceram HS is a very tough, hard-wearing barrier-coat with interlocking platelets that prevent the ingress of salts and salt solutions, no matter how fine the particle size.
30. The application of all the products mentioned in these documents must be done in strict accordance with the appropriate manufacturer's instructions and specifications. Zinga Norway accepts no liability for any failures resulting from incorrect application of any part of the recommended coating system.
31. The coverage rates shown are theoretical and are for guideline purposes only.
32. Zinga is sensitive to solvents and prolonged exposure can lead to the breakdown of the surface section of the Zinga layer. Care should be taken when over-coating Zinga with solvent based products to ensure that the manufacturers recommended DFT's are not exceeded and curing times are adhered to.
33. The information on these sheets is given to the best of our knowledge, based on practical field experience and testing. However, as Zinga is often used under conditions beyond our control, Zinga Norway cannot guarantee anything other than the quality of the product itself.
34. Before any work is carried out, the Zinga technical department must be consulted in order to clarify any points or concerns raised in this specification document or in any of the associated Technical Data Sheets, MSDS, and any other relevant documents.

860 ZINGA - 80/20 RULE

35. The 80/20 rule (ISO 19840 – 2004) states that 80% of all readings taken of both blast-profiles and of DFT's of the coating system must be greater than, or equal to, the absolute minimum of the specified figures. None of the remaining 20% of readings must be below a minimum of 80% of the specified figures.

865 ZINGA - INSPECTION

36. It is considered as 'best practise' to visually inspect the new coating system once every three months during the first year, and once per year every three years after that.

N
Furniture/Equipment

N10
General fixtures/ furnishings/ equipment

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

N10 General fixtures/ furnishings/ equipment

To be read with Preliminaries/General conditions.

PRODUCTS

115 REFUSE CHUTE TO NEW MILL AND OLD & DECKER MILL

- Manufacturer: HARDALL INTERNATIONAL LTD - 01582 500860.
- Standard: BS1703: 2005 and BS5906: 2005 .
- Hardall Refuse chutes fully factory fabricated and ready for immediate installation.

SIZE

- The Refuse Chute, which will have an internal diameter of 600mm, is made from 1.5mm thickness stainless steel.

ACOUSTIC

- The exterior surfaces of the Refuse Chute are factory-coated with a 1-2mm layer of Revac DC1010 sound-damping compound.
- Additionally the chute will be lagged with 50mm acoustic 'punf' foam insulation and 2mm barrier matt.
- Resilient anchors between chute and frame.
- Padding to prevent rattling between gallows brackets and blockwork walls.

ACCESS

- Hardall Refuse Hoppers, bottom-hinged, self-sealing, smoke-sealed with a 1½ hour certified fire rating and self-closing by hydraulic slow closing dampers for silent operation. One to each accessible level.

ASSEMBLY

- The chute is erected on site by a carefully designed mixture of angle rings and telescopic joints, to give maximum stability and yet still allowing working tolerance between individual floors.
- To be supported at every floor level, by wall mounted gallows brackets (design to be confirmed from site dimensions) with resilient anti-vibration pads & washers, including a clamp band with a 3mm-rubber insert.
- Gallows brackets to be secured to solid filled concrete block wall with expansion bolts suitable for fixing the masonry wall.

TERMINALS

- Chutes to terminate above the roof level with a weathering cowl, complete with bird and insect screen, together with a 150mm diameter vent pipe. All to be as close to the roof line as possible with the top maintained well below the building ridge line.
- Venting portion of chute stack is to be formed to step outside the line of the refuse shaft so that the chute vents remotely from the smoke vent at the top of the shaft.
- Chute to terminate at the bottom level within the refuse room. Termination to include an automatic fire cut-off door, a cut-off plate and a reinforced angled discharge.
- Review current plans to determine the requirement for a movable angle discharge. The central core in Old Mill will require the waste to be discharged to the side of the termination of the chute.

FACILITIES

- On the top floor of each chute supply 1 no. Automatic motorised chute cleaning system including a disinfectant and sanitising unit. The cleaning system is contained within its own housing mounted above the uppermost hopper, complete with flushing head spray and its own controls. A hinged and key locked access door is provided for inspection and maintenance purposes. (System requires a 415V, 3-phase power supply at bottom of

chute). Provision to me made for this within the Shaft Wall MF System.
- Contained within the vent pipe and accessible from the cleaning system housing is a continuously rated foul air exhaust fan capable of displacing 200m3 per hour.
- Each hopper door to be fitted with an electrical interlock mechanism, which provides automatic locking of all hopper doors when the cleaning system operates and full interlocking to allow only one user of the chute at any one time.
- Mounted on the chute above each bin position is a bin sensor, which will monitor the level of waste in each bin. At the bin full level the hopper door will automatically lock and bin full indicator LED will illuminate. System to be connected to the BMS.

SURVEY
- The shaft is to be formed up in advance of the manufacture of the chute. Each shaft is to be surveyed to determine the precise dimensions and condition into which the chutes are to fit.
- Consideration is to be afforded the sequencing of assembly to enable the ShaftWall MF system to be installed in parallel with the refuse chute.

160 SHELVING SYSTEM TO MANAGERS STORE ROOM and OFFICE

- Manufacturer: Boyco - 0161 4287077.
  - Product reference:
    1x - E2/E3(L)
    Wall / floor fixed unit.
    Two 600 mm deep shelves, with top shelf at 900 mm above ffl.
    Three 315 mm deep shelves above.
    Unit height: 1980 mm.

    3 x E5(T) Sports
    Wall / floor fixed five shelf unit with retainer rails.

    Heavy duty shelving units with fixed shelves.
    Wall bearing units are supported at the front on steel legs, and also fixed back to the wall. Free standing units should be wall
    fixed at one end.
    Shelving units available in single width, or with one or two wider shelves at the bottom.
    Units with MDF shelves are suitable for classrooms and general stores, whilst units with slatted hardwood shelves are
    intended for linen, baggage and sports stores.
    .
- Shelves:
  - Material: 25 x 25 mm steel frame with flat or tubular shelf bearers.
  - Finish/ Colour: White RAL 9010 - Hot-dip nylon coated.
- Other components: Shelves - White Laminate.

190A CYCLE RACKING TO CYCLE STORE

- Manufacturer: JOSTA - Supplier - Cycle-Works Ltd - 023 92815555.
  - Product reference: Josta Two Tier - for 40 bikes - final design is reliant upon the manufacturer being provided the dimensions of the room into which the racking is to be fitted.
- Dimensions: 2000mm long and requires between 450mm width per bike space. 300mm are required at each end to give space for the handlebars of the first bikes.
- Finish/ Colour: Galvanized.
- Other requirements:
  A level concrete slab (not screed). M6 ground anchor fixing bolts - seek confirmation of fixing requirements at time of order.
  A minimum of 2600mm headroom is required for maximum capacity.
  Leave 300mm to any adjoining side wall to give space for the handlebars of the first bikes on either side. The racks are to be spaced 450mm apart.
  The racks can also be installed at a headroom of 2400mm, but for this, the racks need to be spaced at 600mm minimum.
  Allow 2000mm for the rack itself. For access, the manufacturer's minimum requirement is 1700mm. However in practice 2000mm is recommended.
  The racks can also be installed from a central spine. For this option, please leave 1700mm -2000mm for access on both sides. The 2-sided unit is 3100m wide.
  Racks can also be installed at a 45 or 55 degree angle.

300A ENTRANCE MATTING TO ALL COMMON ENTRANCES

- Manufacturer: Jaymart Rubber & Plastics Ltd, Roman Way, Crusader Park, Warminster, Wiltshire, BA12 8SP. Tel:01985 218994 .
  - Product reference: Grime-Grabber Entrance Matting .
- Colour: Black, Slate or Grey, samples to be provided .
- Size: To suit threshold - refer to drawn details .

Grime-Grabber Entrance Matting
A matting consisting of strips of In-Genius rubber backed polypropylene carpet, secured between rigid sliver aluminium scraper bars. Designed for indoor use in shops, public buildings, schools, offices, hotels, leisure centres and hospitals. The matting can be supplied in virtually any size or shape but for reasons of safe handling it is recommended that mat sections, which can be butted together, do not exceed 2m².
Grime-Grabber is 17mm thick and available in a range of nine single or combined colours, with the option of designs or logos being incorporated.

350 MISCELLANEOUS FITTINGS

- Item: DRY RISER INLET.
- Manufacturer: Contractor to provide.
  - Product reference: Bronze cased dry riser inlet box.
- Size/ Capacity: approx 700mm x 450mm.
- Finish/ Colour: Bronze.
- Fixing: Secured into the masonry with SS fixings.
- Other requirements: Box to be part of a range from a supplier with knowledge and experience of the required standards - to meet the local Fire Authorities approval.

EXECUTION

770 TRIMS

- Lengths: Wherever possible, unjointed between angles or ends of runs.
- Running joints: Where unavoidable, obtain approval of location and method of jointing.
- Angle joints: Mitred.

COMPLETION

910 GENERAL

- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

920 APPLIANCES

- Test: Ensure that all functions and features work correctly.
- Documentation: Submit guarantees, instruction manuals, etc.

N11
Domestic kitchen fittings, furnishings and equipment

Section Revision History

No.	Purpose	
-	TENDER ISSUE	1st Sep 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

N11 Domestic kitchen fittings, furnishings and equipment

To be read with Preliminaries/ General conditions.

KITCHENS INTRODUCTION
The information below is intended to provide general information and design principles for the apartment kitchens. Read in conjunction with following detailed specification and Internal Finishes Schedule (IFS). Document ref: FCB-1777-SCH-WS4-003-Internal Finishes Schedule

KITCHEN LAYOUT PRINCIPLES
Kitchen layouts are described on drawing series:

Kitchens Layouts	**1777-C-*73****
Kitchen Layouts – Old & Decker Mill - Sheet 1	1777-C-17301
Kitchen Layouts – Old &Decker Mill - Sheet 2	1777-C-17302
Kitchen Layouts – New Mill - Sheet 1	1777-C-27303
Kitchen Layouts – New Mill - Sheet 2	1777-C-27304
Kitchen Layouts – Murray St	1777-C-37305
Kitchen Layouts – Old Mill Engine House	1777-C-47306
Kitchen Layouts – New Mill Engine House	1777-C-57307
Kitchen Layouts – Wing Mill	1777-C-67308
Kitchen Layouts – Typical Elevations – Sheet 1	1777-C-07309
Kitchen Layouts – Typical Elevations – Sheet 2	1777-C-07310

There are 4 varieties of kitchen layouts:
" Linear plan
" Linear plan with island (due to limited available wall space)
" Galley plan
" L-plan
All kitchens are composed of the following 7no base units and appliances unless shown otherwise:
" Integrated electric oven and electric hob, with carbon filter extract hood over
" Integrated fridge
" Integrated freezer (see below)
" Integrated dishwasher
" Sink and drainer, over base unit with waste separating facility
" Drawer unit, with two pan drawers and one shallow cutlery drawer
" Cupboard with adjustable shelf
A small number of apartments are provided with 6 no base units due to spatial constraints as shown on kitchen layout drawings (typically one bedroom apartments). In these instances, the cupboard unit is to be removable, and the location provided with a below counter socket to allow the purchaser to install a freezer at a later date.

L-plan kitchens are typically provided with 8 no base units, to allow for a corner twin cupboard unit, without loss of the above core functions. A small number of L-plan kitchens are provided with 7 no base unit; in these instances an optional freezer location is not viable. Where relevant this is noted on the kitchen layout drawings.

Larger apartment kitchens are equipped with one or two further cupboard base units. These are identified on the kitchen layout drawings.

The kitchen layout drawings identify a location for an optional purchaser free standing fridge/freezer.

COMPONENT PRINCIPLES
Refer to layout drawings and IFS for the following:

KITCHEN SUPPLIERS AND INSTALLERS
Omega PLC - Contact: Lisa McCormick
or
Moores Furniture Group PLC - Contact: Michael Barrett

Base Units
Refer to layout drawings and IFS for finish and colour. Colour may vary from building to building.

Base units are to be formed from 18mm MFC glued and dowelled with no visible form of fixings. Back of unit to be 15mm thick solid back panel. All panel edges to be edged to protect against moisture ingress.

Legs to be as standard adjustable plastic range as provided by Omega or Moores.

Base units are typically 600mm wide and standard height and depth, though narrower units have been used occasionally to manage site constraints. Refer to kitchen layout drawings.

Allow for end fascia panels to match doors where base units to not abut walls.

Allow for rear fascia panels where kitchens pass in front of low window sills.

Wall Units
Refer to layout drawings and 'FCB-1777-SCH-WS4-003-Internal Finishes Schedule' for finish and colour. Colour may vary from building to building.

Base units are to be formed from 18mm MFC glued and dowelled with no visible form of fixings. Back of unit to be 8mm thick solid back panel. All panel edges to be edged to protect against moisture ingress.

Wall units are located as shown on kitchen layout drawings. Wall units to align with base units.

There are three heights of wall unit (720, 576 and 450mm), to accommodate variety in apartment ceiling height. Refer to kitchen layout drawings. Site dimensions to be checked before fabrication. Units are to be 350 deep.

These are to contain one adjustable shelf (450 and 576 high units) or two adjustable shelves (720 high units)

The carbon filter extract hood is to be housed in a matching wall unit above the hob.

Allow for end fascia panels to match doors where wall units to not abut walls.

Allow for ribbon LED to soffit of wall units as Services Engineer's specification.

Tall Units
There are no tall units.

Handles
Typically D-handles to base units and wall units. Refer to typical detail drawings for setting-out standards. Handle to be Hettich Organic Asopus 204mm long stainless steel handle unless otherwise agreed with the C.A.

Skirting Fascia
Refer to IFS for finish and colour. Colour may vary from building to building.

Work counter
Standard 'Quadra' edged laminate worktop from the Formica Axiom range or equal approved. Refer to layout drawings and IFS for finish and colour. Colour may vary from building to building. Joints to be minimised, tightly butted and locations to be agreed with Architect prior to fabrication.

Backsplash
Large format, white or coloured paint-backed toughened glass bonded to 12mm WBP ply with anodized aluminium angle edge (to glass and ply); bevelled and polished glass edges; with flush 6mm clear silicone beading to perimeter between glass and aluminium frame. Maximum 2 no glass panels with clear silicone joint; glass joint to align with base unit joint, as shown on typical detail drawings. Allow for socket and switch cut-outs.

Sockets and Switches
Allow for three double sockets and one local light switch as Services Engineer's specification. There will be typically one socket to each end of the kitchen, and one socket to central location, as shown on typical detail drawings. Sockets typically cut into glass backsplash with aperture cut masked by socket front plate. For instances where wall area is not available, allow for lab-top housing to socket for installation on worktop. Refer to detail drawings for setting-out standards.

Lighting
Counter top lighting is to be provided by the kitchen supplier. The lights will be located on the underside of the wall units that sit over the worktop. Lights are to be linkable LEDs to provide an even wash of light.
Where there are no cupboards mounted over a work top allowance is to be made within the general lighting scheme.

Appliances
Refer to IFS specification. Fused or switched sockets to appliances to be located to rear of adjacent suitable base unit cupboard.

Sink, Drainer and Mixer Tap
Refer to brassware specification and layout drawings.

Island Units
Matching work top, with four finished edges, mounted on base units and PPC metal legs (colour tbc) as shown on kitchen layout drawings. Island to be located over floor socket; allow lab-top style double socket mounted on island counter.

Noggins
Main contractor to allow for all necessary noggins and pattress plates within wall build up to support/fix all kitchen items to. No noggins or pattress plates to be visible.

Drawings

Kitchen suppliers to provide detailed layout drawings for each kitchen and include all fixing points.

NOTE - Variation in the standard unit sizes from one manufacture to the next will need to be reviewed as part of the co-ordination of the final fabrication design

350 SINKS, TAPS, TRAPS AND WASTES GENERALLY

- Sinks:
  - Standard: To BS EN 13310.
  - Manufacturer: Blanco – or similar approved .
    Product reference: Blancorondo-U set or similar approved .
  - Configuration: Refer to layout drawings and manufacturers recommendations.
  - Overall size: Bowl 460mm diameter x 165mm deep drainer 460mm diameter x 33mm deep.
  - Material: Stainless steel.
    Colour and finish: n/a.
- Tap/ chainstay/ overflow holes: One tap hole, centre. and Overflow hole..
- Taps: HG Focus kitchen mix. Swivel spout chrome.
  - Manufacturer: Hansgrohe.
    Product reference: 31817000.
  - Operation: lever.
  - Material: Chromed steel.
- Wastes: Plug and chain - SS.
  - Standard: To BS EN 274-1, -2 and -3.
  - Manufacturer: Kitchen supplier to propose.
    Product reference: TBC.
  - Size: DN40.
  - Material: Chromed steel.
  - Tail: Slotted.
- Traps: TO Mechanical Engineers Specification.
  - Standard: To BS EN 274-1, -2 and -3.
  - Manufacturer: -.
    Product reference: -.
  - Size: -.
  - Material: -.
  - Depth of seal (minimum): 75 mm.
- Accessories: None.

365 APPLIANCES

- Refer to the Finishes Schedule - FCB-1777-SCH-WS4-003-Internal Finishes Schedule

EXECUTION

610 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS

- Control and monitoring:
  - Method statement: Submit.

620 INSTALLATION GENERALLY

- Fixings and adhesives: As section Z20.
- Services: As Engineering Services specification.

630 INSTALLING UNITS AND WORKTOPS
- General: Well fitting, stable and secure.

640 INSTALLING APPLIANCES
- Connections: Provide to electric, gas, and hot and cold water services.

650 INSTALLING SINKS, TAPS AND WASTES
- Water supply: To BS EN 806-2 and -4.
- Taps:
  - Fixing: Secure, watertight seal with the appliance.
  - Positioning: Hot tap to left of cold tap as viewed by the user of the appliance.
- Wastes:
  - Bedding: Waterproof jointing compound.
  - Fixing: With resilient washer between appliance and backnut.

660 SEALANT BEDDING AND POINTING
- Application: As section Z22.
- Bedding: Sink to top of worktop.
- Pointing: Between units and splash backs.

670 INSTALLING TRIMS AND MOULDINGS
- Lengths: Un-jointed between angles or ends of runs.
- Angle joints: Mitred.

COMPLETION

910 GENERAL
- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

920 APPLIANCE COMMISSIONING
- Appliance operation, functions and controls: Verify.
- Documentation: Submit guarantees, instruction manuals, etc.

N13
Sanitary appliances and fittings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

N13 Sanitary appliances and fittings

To be read with Preliminaries/ General conditions.

BATHROOMS INTRODUCTION
The information below is intended to provide general information and design principles for the apartment bathrooms, shower rooms and washrooms. Read in conjunction with following detailed specification and Internal Finishes Schedule (IFS).

BATHROOMS LAYOUT PRINCIPLES
Bathrooms, shower rooms and WC's will vary in size and layout due to the complexities of working within an existing building. However, repetition does occur over the middle floors of Old/Decker and New Mill.

Apartments are typically provided with one or two bathrooms subject to the brief and spatial constraints. Where only one bathroom is provided, this will typically compose a bath with shower, wash hand basin and WC. Where two bathrooms are provided, these will typically compose of a bathroom and shower room, each with a wash hand basin and WC.

Layout principles are described on drawing series:

Bathroom Layouts	**1777-C-*74****
Bathroom Layouts - Sheet 1	1777-C-07401
Bathroom Layouts - Sheet 2	1777-C-07402
Bathroom Layouts - Sheet 3	1777-C-07403
Bathroom Layouts - Sheet 4	1777-C-07404

These drawings describe the typical approach to setting-out, sanitary ware, fittings and finishes. Refer to General Arrangement drawings for bathroom layouts, and apply principles of detail drawings.

Heights of bathrooms will vary from apartment to apartment. Setting-out standards are to be applied from finished floor level. Allow for wall finishes, including tile, to full height of bathroom.

Setting-out of bathroom partitions must achieve minimum dimensions for baths, shower trays, vanity units, and Approved Document Part M WC access. Allow for tile and substrate thickness in wall build when setting out.

BATHROOMS FITTINGS PRINCIPLES
Refer to setting-out principles are described on drawing series:

Bathroom Layouts	1777-C-*74**
Bathroom Layouts - Sheet 1	1777-C-07401
Bathroom Layouts - Sheet 2	1777-C-07402
Bathroom Layouts - Sheet 3	1777-C-07403
Bathroom Layouts - Sheet 4	1777-C-07404

Setting-out of bathroom fittings to be agreed with architect on site.

All bathrooms have the following fittings:
" Pedestal WC, concealed cistern and dual flush.
" Wash hand basin, pop-up waste and mixer tap.
" Bath, bath panel, filler, thermostatic mixer, or,
" Bath, bath panel, filler, thermostatic mixer/diverter, shower hose kit and rail, glass shower screen, or,
" Shower tray, thermostatic mixer, shower rose, glass shower screen Vanity counter and mirror surround with inset LED ribbon down light to full length; counter to take wash hand basin, and provide access to concealed cistern.
" Mirror.
" Shaver unit.
" Heated towel rail.
" Towel hook.
" Toilet roll holder.
Refer to Architect and Services Engineer's specification for details of supplier and model. All sanitary ware and fittings are to be installed in accordance with manufacturer's recommendations.

Allow for secondary softwood and/or metal stud framing and pattresses as required.

Access panel design and setting-out are to be agreed with architect before construction.

BATHROOMS FINISHES PRINCIPLES
Refer to setting-out principles are described on drawing series:

Bathroom Layouts	1777-C-*74**
Bathroom Layouts - Sheet 1	1777-C-07401
Bathroom Layouts - Sheet 2	1777-C-07402
Bathroom Layouts - Sheet 3	1777-C-07403
Bathroom Layouts - Sheet 4	1777-C-07404

The contractor is responsible for the design of tile setting-out, based on the principles described within the tender documents; variations on these principles are to be agreed with the architect on site.

Bathroom finishes are composed of:

Floor Tiles
Type A Floor Tile to visitor bathrooms (M40/110B)
Type B Floor Tile to ensuite bathrooms (M40/110B)
" Matching 50mm high tile skirting to non-tiled walls and below bath panel or shower tray
" 600 x 300mm format with brick-style bond, running parallel to vanity unit
" Installed to Manufacturer's recommendations
" Substrate and grout as specification below
" Refer to setting-out drawings for first whole tile location
" Set out tiling to avoid end tiles less than 150mm
" Skirting tile joints to align with corresponding floor tile joint

Wall Tiles
Type A Wall Tile to wall areas surrounding bath, shower and riser (M40/110A)
Type B Wall Tile to wall area below vanity counter (M40/110A)
" 400 x 150mm format with brick-style bond
" Installed to Manufacturer's recommendations
" Substrate, stops, beads and grout as specification below
" Wall tiles to lap bath or shower tray
" Set out tiling from datum aligning with underside vanity counter
" Refer to setting-out drawings for first whole tile location
" Horizontal joints of Type A and B tiling must align
" Set out tiling to avoid end tiles less than 150mm horizontal length
" Set out tiling below vanity unit from centre of WC as show unless agreed otherwise
" Set out tiling to 700mm wide bath ends as shown on drawings (i.e. 400 + 300mm, rather than centred)
Other Wall Finishes
Wall areas not referred to above to be paint finish as specification below, with 50mm tile skirting.

Ceiling Finishes
Paint finish as specification below.

BATHROOMS JOINERY PRINCIPLES
Refer to setting-out principles are described on drawing series:

Bathroom Layouts	1777-C-*74**
Bathroom Layouts - Sheet 1	1777-C-07401
Bathroom Layouts - Sheet 2	1777-C-07402
Bathroom Layouts - Sheet 3	1777-C-07403
Bathroom Layouts - Sheet 4	1777-C-07404

Typically one unit per bathroom etc, to full length of wall over wash hand basin and WC, or two units where the wash hand basin are on separate walls.

Vanity Counter and Mirror Surround
" Solid oak hardwood to four sides, to appear as 32 x 380mm oak board
" Constructed of 8mm hardwood bonded to 24mm WBP ply substrate; mitred leading edge; min 90mm jointed staves acceptable
" Arrisses removed but no bevelled corners
" All oak to be shop spray finished with clear lacquer (non-yellowing) as specification below
" Full size mirror (i.e. no joints) to rear of unit, bonded to 12mm WBP ply; bevelled and polished edges; with flush 6mm clear silicone beading to perimeter
" Allow for secondary softwood and/or metal stud framing and pattresses as required
" Matching solid oak fascia panel above to site dimension; on split battens to allow access to lighting gear (no visible fixings)
" Allow for recessed 6mm ply-spacer shadow gap between outer edge of unit and adjacent tile finishes or bead stops
" Unit to typically be of standard height as detail drawings and variable length as general arrangement plans; non-typical sizes may be required subject to site dimensions
" Allow for removable lower board to allow service access to WC cistern and basin tap fixings; detail to be agreed with fabricator
" Allow for installation of recessed LED light ribbon to soffit board
" Allow for installation of shaver socket to side board

PRODUCTS
Refer to schedule:
FCB-1777-SCH-WS4-004 - Sanitaryware Schedule

GENERAL NOTE
The following has been prepared based on the schedule from Premier Contract Supplies (PCS) Unit 15 Park Court, Sherdley Business Park, St Helens, WA9 5GZ.
Refer to the PCS Project Specification dated 07/08/15 document version 4.

300A WCS AND CISTERNS TO BATHROOMS and EN-SUITE BATHROOMS

- Type: Back to wall, concealed cistern.
- Pan:
  - Manufacturer: Duravit.
    Product reference: D-Code - 211509 00 002.
    Seat and cover: D-Code 006731 00 00
  - Finish/ Colour: White.
- Pan connector:
  - Standard: To BS 5627. Refer to Mechanical Specification
- Cistern:
  - Manufacturer: Siamp.
    Product reference: Intraslim B Dual Flush - 31903210.
  - Material: Plastics.
  - Flushing arrangement: Plastics diaphragm type float operated valve and siphon, to BS 1212-3 and float to BS 2456.
  - Manufacturer: Siamp.
    Product reference: Button Dual Flush Chrome - 31014710.
  - Operating control: Push button, chrome plated.
  - Water supply connection: Side.
  - Flush volume: refer to Mechanical Engineers Specification.

311 UNISEX ACCESSIBLE CORNER WC EQUIPMENT PACKAGES (DOCUMENT M) TO MANAGERS OFFICE

- Manufacturer: Ideal Standard.
  - Product reference: Doc M Back to Wall.
- Type approval certificate: Submit.
- Finish/ Colour:
  - Pan: Vitreous china, white.
  - Cistern: Manufacturer's standard.
  - Seat: Plastics, blue,.
  - Basin: Vitreous china, white.
  - Handrails and grab bars: Coated steel, dark blue.
- Transfer handing: to be confirmed on site.
- Water supply fittings (basin): Lever operated thermostatic basin mixer tap.
  - Water supply temperature (maximum): 48°C & Refer to Mechanical Engineers Specification.
- Accessories:
  - Clothes hooks;
  - Hand drier;
  - Mirror; and
  - Sanitary towel disposal bin.

335 WASH BASINS TO BATHROOMS and EN-SUITE BATHROOMS

- Manufacturer: Duravit.
  - Product reference: D-Code - 033955 00 00 - Single Tap Hole Semi-Recessed Basin.
- Size: As Wash basins schedule.
- Material: Glazed fireclay, white.
- Tap/ Chainstay/ Overflow holes: One tap hole, centre.
- Water supply fittings: Basin mixer tap.
  - Water supply temperature (maximum): 48°C and as Mechanical Engineers Specification .
  - Flow rate (maximum): 6 L/ min. at 3 bar.
  - Manufacturer: Hansgrohe.
    Product reference: Logis 100 Cool Start, Chrome - 71103000.
  - Operation: Manual.
- Wastes: Pop up.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: Hansgrohe.
    Product reference: Slotted Push Open Basin Waste - Chrome - 50105000.
  - Size: As Wash basins schedule.
  - Material: Brass, chrome plated.
  - Tail: Slotted.
- Traps: as Mechanical Engineers Specification.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: as Mechanical Engineers Specification.
    Product reference: as Mechanical Engineers Specification.
  - Size: as Mechanical Engineers Specification.
  - Material: Brass, chrome plated.
  - Depth of seal (minimum): 75 mm.
- Accessories: Concealed support frame.

355 BATHS TO BATHROOMS

- Standard: Not applicable.
- Manufacturer: Duravit.
  - Product reference: D-Code - single ended bath - white - 700105 00 0 00 0000.
- Size: 1700mm x 700mm.
- Volume to overflow (maximum): Manufacturer's standard.
- Material: Enamelled pressed steel, white.
- Tap/ Chainstay/ Overflow holes: No tap holes.
- Water supply fittings: Wall mounted taps.
  - Water supply temperature (maximum): to Mechanical Engineers Specification.
  - Flow rate (maximum): 6 L/ minute at 3 bar.
  - Manufacturer: Hansgrohe.
    Product reference: Logis Wall Mounted Spout - Chrome - 71410000.
- Wastes: Pop up.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: Hansgrohe.
    Product reference: Flexaplus S Complete - White - 58150000.
  - Size: DN 40.
  - Material: Brass, chrome plated.
  - Tail: Unslotted.
- Traps: Tubular, S type.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: to mechanical engineers specification.
    Product reference: to mechanical engineers specification.
  - Size: DN 40.
  - Material: Plastics, self colour.
  - Depth of seal (minimum): 50 mm.
- Accessories: Side panels - Roper Rhodes -MPR3W
  Over bath shower screen (to apartments where there is no separate shower) Simpsons DBVSC1060.

375 SHOWER UNITS TO BATHROOMS and EN-SUITE BATHROOMS

- Tray: Arylic.
  - Manufacturer: Duravit.
    Product reference: D-Code - Level Access - 720094 00 0 00 0000.
  - Size: 1200 x 700 x 35mm.
  - Material: Acrylic resin, white.
- Shower fittings: Thermostatic shower mixer, concealed and Handspray and hose.
  - Manufacturer: Hansgrohe.
    Product reference: Option 1 - Croma Select S Vario 0.9m - 26573400. Option 2 - Chroma 160 EcoSmart Overhead - 2845000 with 230mm wall mounting..
  - Finish: Chrome plated.
  - Operating control: Lever and temperature ring - Hansgrohe - Universal iBox Consealed 01800180 and EcoStats S Thermostatic Outlet Valve Single - 15757000 Two - 15758000..
  - Water supply temperature (maximum): As Mechanical Engineers Specification.
  - Flow rate: 9 L/ min. at 37°C at 3 bar.
- Wastes: 90mm chrome outlet .
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: Duravit.
    Product reference: 791217 00 0 00 1000.
  - Size: DN 40.
  - Material: Plastics, chrome plated.
  - Tail: Unslotted.
- Traps: To mechanical engineers specification.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: to mechanical engineers specification.
    Product reference: to mechanical engineers specification.
  - Size: DN 40.
  - Material: Copper.
  - Depth of seal (minimum): 50 mm.
- Enclosure: Aluminium framed safety glazed screen, one side and Hinged door.
  - Manufacturer: Simpsons.
    Product reference: DHDSC1200.
- Accessories: Bath and Shower Tray Mounting Frame - Duravit - 790127 00 0 00 0000.

441A TOILET ROLL HOLDER

- Manufacturer: Hansgrohe.
  - Product reference: Logis Wall Mounted - 40526000.
- Material: crome brass.
  - Width: as defined above by product model.
  - Finish/ Colour: chrome.

456A ROBE HOOK TO ALL BATHROOMS

- Manufacturer: Hansgrohe.
  - Product reference: Logis - Wall Mounted - 40511000.
- Material: chrome brass.
- Finish/ Colour: chrome.

472 HAND DRIERS TO MANAGERS WC
- Standard: To BS EN 60335-2-23.
- Type: Warm air.
- Manufacturer: Warner Howard.
  - Product reference: A48/DA548.
- Operation: Manual push button.
- Heater power rating: 1.75 kW.
- Enclosure: Powder coated aluminium.
  - Colour: white.
- Fixing arrangement: Surface.
- Ingress protection to BS EN 60529: IPX5.
- Noise level at 1 m (maximum): 60 dB(A).
- Features: Hands only.

EXECUTION

610 INSTALLATION GENERALLY
- Assembly and fixing: Surfaces designed to falls to drain as intended.
- Fasteners: Nonferrous or stainless steel.
- Supply and discharge pipework: Fix before appliances.
- Fixing: Fix appliances securely to structure. Do not support on pipework.
- Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.
- Appliances: Do not use. Do not stand on appliances.
- On completion: Components and accessories working correctly with no leaks.
- Labels and stickers: Remove.

613 COMPATIBILITY OF COMPONENTS
- General: Each sanitary assembly must consist of functionally compatible components, preferably obtained from a single manufacturer.
  - Exceptions: Wastes and traps - adapters to be provided by product suppliers.

620 NOGGINGS AND BEARERS
- Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.

630 TILED BACKGROUNDS OTHER THAN SPLASHBACKS
- Timing: Complete before fixing appliances.
- Fixing appliances: Do not overstress tiles.

650 INSTALLING WC PANS
- Floor mounted pans: Screw fix and fit cover caps over screw heads. Do not use mortar or other beddings.
- Seat and cover: Stable when raised.

670 INSTALLING CISTERNS
- Cistern operating components: Obtain from cistern manufacturer.
  - Float operated valve: Matched to pressure of water supply.
- Overflow pipe: Fixed to falls and located to give visible warning of discharge.
  - Location: Agreed, where not shown on drawings.

710 INSTALLING TAPS
- Fixing: Secure against twisting.
- Seal with appliance: Watertight.
- Positioning: Hot tap to left of cold tap as viewed by user of appliance.

720 INSTALLING WASTES AND OVERFLOWS
- Bedding: Waterproof jointing compound.
- Fixing: With resilient washer between appliance and backnut.

755A SEALANT BEDDING AND POINTING
- Bedding: Bed and point basins to underside of vanity units. .
- Pointing: Joints between appliances and splashbacks. - Norcros - 4 into 1 Silicone .

P
Building fabric sundries

P10
Sundry insulation/ proofing work

Section Revision History

No.	Purpose	
-	TENDER ISSUE	10th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

P10 Sundry insulation/ proofing work

SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions.

TYPES OF INSULATION

135A INSULATION LAID ACROSS CEILING TO WING MILL GROUND FLOOR

- Manufacturer: Rockwool.
  - Product reference: RWA45 slab.
- Material: rock wool.
- Recycled content: Not applicable.
- Thickness: 30mm.
- Installation requirements:
  - Installation standard: To BS 5803-5.
  - Insulation widths: Widest practical.
  - Laid direction: At right angles to ties/ joists.
  - Joints: Butted, no gaps.
  - Insulation: Fitted neatly around rafter ends and extended over wall plates.
  - Service holes: Sealed, and debris removed before laying insulation.
  - Eaves ventilation: Unobstructed.
  - Electric cables overlaid by insulation: Sized accordingly.
  - Water cistern platforms: Not applicable.

140 INSULATION FITTED BETWEEN RAFTERS

- Manufacturer: Rockwool.
  - Product reference: Flexi.
- Material: Mineral wool to BS EN 13162.
- Facing: Not required.
- Recycled content: Not applicable.
- Thickness: 100 mm / as to suit to ensure minimum 50mm gap.
- Installation requirements:
  - General: Insulation to be friction fitted between rafters with no gaps.
  - Joints: Butted, no gaps.
  - Fasteners: Used where necessary to retain insulation and/ or prevent slumping.
  - Vapour control facing (if specified): Fit insulation with facing on warm side. Staple overlap (if provided) to underside of rafters; tape joints between adjacent overlaps using vapour impermeable adhesive tape.
  - Air space above insulation: Not restricted.
  - Eaves ventilation: Unobstructed.

148 INSULATION FIXED UNDER RAFTERS

- Manufacturer: Kingspan or Celotex.
  - Product reference: Kingspan TR26 or Celotex TA4000.
- Thickness: 100.
- Number of layers: One.
- Installation requirements:
  - Fixing: Secure to underside of rafters, with vapour control facing (if provided) on warm side.
  - Fasteners: from below with large head helical nail fixings to roof deck (e.g. Insofast-60).
  - Fixing centres: 600mm x 400mm.
  - Joints: Butt or overlap, as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape.
  - Air space above insulation: Not restricted.
  - Eaves ventilation: Unobstructed.

149A INSULATION FIXED ABOVE RAFTERS TO WING MILL

- Manufacturer: Metal Processors Ltd. (http://metalprocessors.ie).
  - Product reference: Metdeck.
- Thickness: 148mm (18mm WBP Ply bonded to 130mm rigid foil faced foam).
- Number of layers: One laid over underlayer of insulation as clause P10-149B.
- Installation requirements:
  - Fixing: Secure to top of rafters, with facing (if provided) on warm side.
  - Fixing centres: fixing arrangement to be determined by site specific wind uplift calculation.
  - Joints: Butt or overlap as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape.
  - Air space above insulation: None.
  - Eaves ventilation: None.

149B INSULATION FIXED ABOVE RAFTERS TO WING MILL

- Manufacturer: Kingspan.
  - Product reference: Kooltherm K7.
- Thickness: 75mm rigid foil faced foam.
- Number of layers: One laid as first layer beneath insulation as clause P10-149A.
- Installation requirements:
  - Fixing: Laid on top of rafters, with facing (if provided) on warm side, retained by fixings through upper layer.
  - Fixing centres: fixing arrangement to be determined by site specific wind uplift calculation.
  - Joints: Butt or overlap as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape.
  - Air space above insulation: None.
  - Eaves ventilation: None.

152 INSULATION FIXED BELOW RAFTERS

- Manufacturer: Kingspan.
  - Product reference: Kooltherm K7.
- Thickness: 150mm rigid foil faced foam.
- Number of layers: One.
- Installation requirements:
  - Fixing: Laid on top of rafters, with facing (if provided) on warm side, retained by fixings through upper layer.
  - Fixing centres: 300 mm.
  - Joints: Butt or overlap as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape.
  - Air space above insulation: None.
  - Eaves ventilation: None.

185A SOFFIT INSULATION BELOW SLAB TO WING MILL (INTERMEDIATE FLOORS)

- Manufacturer: Rockwool.
  - Product reference: Rainscreen Duo Slab.
- Material: rock wool.
- Thickness: 2 x 60mm.
- Facing: none.
  Installation requirements: fixed from below.
  - Joints: close butted.
  - Fixing: secure to underside of concrete slab.
    Fasteners: large head helical nail fixings (e.g. Insofast-60).

185B SOFFIT INSULATION BELOW SLAB TO WING MILL (FIRST FLOOR)

- Manufacturer: Kingspan or Celotex.
  - Product reference: Kingspan TR26 or Celotex TA4000.
- Material: rigid foil faced polyisocyanurate foam.
- Thickness: 125mm.
- Facing: metal foil laminate.
  Installation requirements: fixed from below.
  - Joints: close butted.
  - Fixing: secure to underside of concrete slab.
    Fasteners: large head helical nail fixings (e.g. Insofast-60).

190A INSULATION FITTED BETWEEN Z AND C PROFILE RAINSCREEN SUPPORTS TO WING MILL

- Manufacturer: Kingspan or Celotex.
  - Product reference: Kingspan TR26 or Celotex TA4000.
- Material: rigid foil faced polyisocyanurate foam.
  - Facing: metal foil laminate.
- Recycled content: not applicable.
- Thickness: 90mm.
- Installation requirements:
  - Joints: Butted, no gaps.
  - Fasteners: Use where necessary to retain insulation.

190B INSULATION FITTED BETWEEN COLUMN FLANGES TO WING MILL

- Manufacturer: Rockwool.
  - Product reference: HP Partial Fill Cavity Slab.
- Material: rock wool.
  - Facing: none.
- Recycled content: not applicable.
- Thickness: 120mm (x 227mm width cut from 1200x455mm slabs).
- Installation requirements:
  - Fixing: Fit snugly between flanges on both sides of column.
  - Joints: Butted, no gaps.
  - Fasteners: Use where necessary to retain insulation.

195A INSULATION FITTED BETWEEN STUDS - LOWER GROUND BLOCK WALL TO DRAINED MEMBRANE CAVITY WALL CONSTRUCTION

- Manufacturer: Rockwool.
  - Product reference: RW Semi Rigid and Rigid Slabs - Aluminium Foil Faced.
- Material: Mineral wool to BS EN 13162.
  - Facing: Metal foil laminate.
- Recycled content: Not applicable.
- Thickness: 50 mm.
- Installation requirements:
  - Joints: Butted, no gaps.
  - Fasteners: Use where necessary to retain insulation and/ or prevent slumping.

212A INSULATION FIXED ACROSS INNER FACE OF Z AND C PROFILE RAINSCREEN SUPPORTS TO WING MILL

- Manufacturer: Kingspan or Celotex.
  - Product reference: Kingspan TR26 or Celotex TA4000.
- Material: rigid foil faced polyisocyanurate foam.
- Thickness: 85mm.
- Number of layers: One.
- Installation requirements:
  - Fixing: Secure to inner face of studs.
  - Fasteners: stainless steel screws fixings for rainscreen support.
  - Fixing centres: as required for rainscreen, typically 600mm x 600mm.
  - Joints: butt with no gaps. Seal with weather proof adhesive tape.

212B INSULATION FIXED ACROSS INNER FACE OF STEEL COLUMNS TO WING MILL

- Manufacturer: Kingspan or Celotex.
  - Product reference: Kingspan TR26 or Celotex GA4000.
- Material: rigid foil faced polyisocyanurate foam.
- Thickness: 50mm.
- Number of layers: One.
- Installation requirements:
  - Fixing: tape to adjacent insulation boards.
  - Fasteners: aluminium foil weatherproof adhesive tape.
  - Fixing centres: continuous at each edge.
  - Joints: butt with no gaps, seal with tape.

220A SOUND INSULATION WITHIN METAL FRAMED STUD WALL

- Location: Between walls and floors.
- Manufacturer: Cellecta Ltd - 0845 6717174.
  - Product reference: YELOfon® ES10 - 10 mm thick, 50 m roll length. / YELOfon® FS30 - 6 mm thick, 2 m strip length. / YELOfon® FS50 - 6 mm thick, 2 m strip length..
- Material: Lightweight flexible extruded polyethylene strips installed around the floor perimeter to eliminate acoustic flanking with the wall and its treatments..
- Recycled content: Not applicable.
- Density (minimum): 10 kg/m³.
- Thickness: 10mm min.
- Width: To suit the junction and ensure complete installation without voids for building detritus to fill and block.
- Installation requirements:
  - Joints: Butted, no gaps.
  - Head fixing: Staples or large head nails.

240A INSULATION FITTED BETWEEN FLOOR BATTENS

- Manufacturer: Rockwool.
  - Product reference: Flexi.
- Material: Rock wool to BS EN 13162.
- Recycled content: Not applicable.
- Thickness: 60mm.
- Installation requirements:
  - Support: Not required.
  - Joints: Butted, no gaps.
  - Service holes: Sealed, and debris removed before laying insulation.

245 INSULATION TO FLOOR EDGE - LOAD BEARING

- Manufacturer: Kingspan.
  - Product reference: Thermafloor.
- Material: PIR.
- Recycled content: Not applicable.
- Thickness: 25mm.
- Board size: Length- 2.4m Width- 1.2m
  Facing: Faced both sides with a low emissivity composite foil autohesively bonded to the insulation core during manufacture. This reflective, low emissivity surface improves the thermal resistance of any unventilated cavity adjacent the board.
  Thermal conductivity: - For all insulation thicknesses- 0.022 W/m.K.
  Density of insulation: 32kg/m³.
  Fire Performance: Kingspan Thermafloor® TF70 achieves a class 1 designation under the Building Regulations when tested to BS 476-7: 1997.

250 INSULATION SUPPORTED BETWEEN FLOOR JOISTS

- Manufacturer: Rockwool.
  - Product reference: Rockwool Flexi.
- Material: Rock mineral wool slabs.
- Thickness: 100 mm.
- Supports: lining board to underside of joists.
- Installation requirements:
  - Joints: Boards butted, no gaps.

310 VAPOUR CONTROL LAYER TO METAL FRAMING

- Manufacturer: Icopal.
  - Product reference: Monofilament 250.
- Material: three layer high performance polyethylene reinforced membrane.
- Minimum vapour resistance: 500 MNsq-.
- Installation requirements:
  - Setting out: Joints minimized.
  - Method of fixing: Double sided sealant tape to metal framing.
  - Joints: At supports only, lapped 150 mm minimum.
  - Openings: Membrane fixed to reveals.
  - Joints and edges: Sealed with double sided tape with vapour resistivity not less than the vapour control layer.
- Penetrations: Sealed.
- Other requirements: n/a.

320 BREATHER MEMBRANE

- Manufacturer: A. Proctor Group Ltd..
  - Product reference: Roofshield.
- Installation requirements:
  - Setting out: Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
  - Method of fixing: taped at perimeter, clamped by rainscreen support rails.
  - Joints: Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
  - Openings: Membrane fixed to reveals.
  - Bottom edges: Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- Penetrations: Sealed.

420 SLEEVED MINERAL WOOL SMALL CAVITY BARRIERS

- Manufacturer: Rockwool.
  - Product reference: TCB.
- Material: Mineral wool sleeved in polyethylene with flanges.
- Fire resistance rating: To BS EN 1363, EI 30.
- Size: as required to match cavity to be filled.
- Installation requirements:
  - Fasteners: Staples at maximum 150 mm centres.
  - Vertical barriers: Fixed by both flanges.
  - Horizontal barriers: Fixed by upper flange only.
  - Joints and intersections: Butted, with barriers compressed along full length to give complete seal.

P12
Fire stopping systems

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

P12 Fire stopping systems

To be read with Preliminaries/ General conditions.

GENERAL
The details and strategies captured in the drawings and specification seek to define how the compartments are to be formed and how gaps, voids, spaces, etc& are to be managed.

The variability in the historic fabric is such that there will inevitably be spaces, zones and junctions that require further consideration to ensure the compartmentation strategy is delivered.

Close and detailed review is to be made of ARUP Engineers Fire documents. These set out the required standards.

The final design of the fire stopping systems is to be undertaken by the Contractor's specialist sub-contractor with due consideration of the drawings and specification.

The installation of all fire barrier products is to be undertaken by a specialist contractor with the appropriate training and certification in the use of the specified products.

105 FIRE STOPPING CDP

CDP EMPLOYER'S REQUIREMENTS
FIRE STOPPING
The Contract Documents describe the Design Intent and define the performance criteria, the mandatory geometry of visible elements, dimensions positions and detail the required principle materials and visible finishes. The Sub-Contractor shall be responsible for developing and completing the design in accordance with the Contract Documents. Any suggested solutions described in the Contract Documents shall not in any way relieve the contractor from their responsibility for the design and construction of the Works.

Contractor is to:
Develop and complete the design of, specify and install all fire stopping to all builders works and other openings through fire compartment walls and floors to ensure that all compartment lines defined in the Fire Consultant's documents are complete to meet Building Control requirements and accord with all relevant British Standards and Regulations.

Select, specify and install cavity barriers within hidden voids to meet Building Control requirements and British Standards. This includes cavity barriers at a maximum of 10m centres to the following:

a) Ceiling voids above the compartment lines defined by the ceilings of the buildings.
b) Ceiling void above Common Areas, principally Wing Mill.
c) Include for the requirement that cavity barriers will be required to close the compartment lines commonly at less than 10m centres with due consideration for service routes.

Refer to 'RIBA Stage 4 Fire Strategy Tender Report' by Arup Engineers for further requirements and compartment line locations.

Movement and Deflection
The Contractor is to make an assessment of all movement and deflection including thermal expansion and contraction and propose details which accommodate this

Design Life
Fire Stopping is to have a Design Life of a minimum of 60 years.

Warranties
The Contractor is to provide a 15 year warranty for the design and installation of the Fire-Stopping.

Other
Contractors to use only recognised good practices and comply with all relevant British Standards and Codes of Practice.

Refer Services Engineer's drawings for detail of extent of anticipated Builder's work.

Coordinate design & installation with Services Contractor's design of MEP services

Contractor is to provide independent verification that the design and installation meets Building
Regulation requirements

For clarity, this CDP does not include intumescent seals to new fire rated door frames.

130A FIRE STOPPING SYSTEM TO INDIVIDUAL SERVICES PENETRATIONS SOIL and OTHER PIPES IN CONCRETE
Rockwool Firepro - Cast-in sleeve.
Fire resistance: 2 Hours.

- Penetration seal: Pipe collar - insulated wrap.
  - Size: Outside dimension 160mm / Internal dimension 122mm - To receive 110mm PVC and or HDPE Plastic Pipe.
- Capping sealant: Foam Intumescent Sealant in the area of the proprietary sleeve only and not onto existing historic building fabric.
  - Colour: Not applicable.
    ROCKWOOL® Cast-In Device is designed for use in fire stopping plastic pipe penetrations in poured concrete floor applications. Tested to BS:EN:1366-3 standard. The device is manufactured from a high expansion intumescent material (150mm depth x 8mm thick), which is used to line the internal diameter of a 160mm diameter HDPE twin wall corrugated pipe.
    Cast-in device provides a fire rated engineered solution to channel plastic pipes through dedicated points in compartment floors, without the need to fit firestop collars or wraps. When cut flush with the proposed concrete floor level, the cap prevents the flow of site water from floor to floor and reduces the risk of site trip hazards.
    The unit has a standard length of 250mm long with a steel fixing plate at its base (190mm x 190mm) and a plastic/steel cap. The unit can be tailor made to suit specific project requirements.

130B FIRE STOPPING SYSTEM TO INDIVIDUAL SERVICES PENETRATIONS INSULATED PIPE WORK THROUGH LIGHTWEIGHT CONSTRUCTION
Rockwool Insulated Fire Sleeves
Fire resistance: 2 Hours.

- Penetration seal: Pipe collar - insulated wrap.
  - Size: To match wall thickness plus 300mm in Techwrap where space permits.

Applications
ROCKWOOL Insulated Fire Sleeves should be installed to the same thickness as the pipe insulation (min 25 mm thick). For un-insulated pipes, a thickness of 25 mm is required to maintain the fire resistance of the wall or floor.

Dimensions
ROCKWOOL Insulated Fire Sleeves are supplied 300 mm long. They are manufactured to fit a range of standard pipe sizes, from 17 mm to 169 mm O.D. and standard thicknesses of 25 mm to 100 mm. Other pipe sizes and thicknesses may be available to special order.

Service Temperature and Limiting Service Temperature
ROCKWOOL Insulated Fire Sleeves are used to fire stop pipe work operating at temperatures between 0°C and 180°C. At low temperatures, care should be taken to maintain the vapour barrier.

Acoustics
The use of ROCKWOOL Insulated Pipe Fire Sleeves can considerably reduce the noise emission from noisy pipework. For higher standards of acoustic insulation, it is recommended that an increased length of the pipe-work either side of the compartment wall or floor is insulated with Rockwool Techwrap 2 or Techtube.

Installation
Insulated Fire Sleeves should extend at least 25 mm from each face of the supporting wall or floor construction to allow for effective sealing against any thermal insulation, except when used with Rockwool Ablative Coated batts where a minimum of 50 mm protrusion is required from both faces.

The gap between the supporting construction and the Insulated Fire Sleeve should be kept as small as practical. If gaps exceed 15 mm around the sleeve or 8 mm between the service and the sleeve, these should be filled with Rockwool FirePro® Acoustic Intumescent Sealant or FirePro® Firestop Compound.

The installed length of any Insulated Fire Sleeve shall be at least 60 mm

ROCKWOOL Insulated Fire Sleeves are supplied 300 mm long and are simply cut to the desired length and as a minimum, can be cut flush with both faces of the wall/floor. When used in conjunction with PVC services or ROCKWOOL Ablative Coated Batts, they are required to extend beyond the face of the wall/floor.

To maintain thermal efficiency, the Insulated Fire Sleeves should tightly abut any existing pipe insulation and where this is foil faced, all joints must be sealed with self-adhesive foil tape.

No specialist tools or ancillary materials are required for the fitting of ROCKWOOL

Insulated Fire Sleeves. ROCKWOOL Insulated Fire Sleeves can accommodate irregularities in the division opening and the pipe O.D. of up to 15 mm.

Multiple pipe penetrations can be accommodated in conjunction with ROCKWOOL Ablative Coated Batts.

A minimum thickness of 25 mm is required for uninsulated pipes. Thicknesses of 25 to 100 mm available to match insulation on other pipes. Manufactured to fit pipe diameters of 15 to 169 mm.

130C FIRE STOPPING SYSTEM TO VENT and EXTRACT DUCTS - STEEL
3M Fire Barrier Duct Wrap 615+
Fire resistance: 1 Hour.
3M™ Fire Barrier Duct Wrap 615+:
- A flexible fire-resistant wrap consisting of an inorganic fibre blanket encapsulated with a scrim-reinforced foil.
- (96 kg/m3) and have a nominal 1-1/2" (38.1mm) thickness. Arup recommend a minimum thickness of 50mm
- used to fire rate ventilation ducts.
- a high-temperature fibrous thermal insulation blanket encapsulated in a fiberglass-reinforced aluminized polyesterfoil.
- a continuous use limit of 1000°C (1832°F).
- foil encapsulation bonded to the core blanket material.

Installation shall be in strict accordance with manufacture's written instructions. Shop drawings are to be obtained from the approved installer.

- Penetration seal: Refer to 3M standard details - Section 9 of the Technical Manual. Where vents pass through a partition the aperture is to be lined with plasterboard and the duct wrapped up to 150mm beyond the penetration..
  - Size: To suit the duct.

Approved Installer :
Phoenix (Leicester) Ltd
Phoenix House
Unit 16, Marlow Rd Industrial Estate
Marlow Road
Leicester
LE3 2BQ
Contact – Stefan Blyth
stef@phoenixleicester.com
Mob 07976 428278

Maintenance
No maintenance is expected when installed in accordance with the applicable Intertek, UL or other third-party listed system and in accordance with 3M™ Fire Barrier Duct Wrap 615+ Installation Guidelines. Once installed, if any section of the 3M™ Fire Barrier Duct Wrap 615+ is damaged such that the blanket requires repair, the following procedure will apply:
1. If the blanket has not been damaged but the foil has ripped, seal the rips with aluminium foil tape.
2. If the blanket has been damaged:
a. The damaged section should be removed by cutting the steel banding or removing the clips holding it in place.
b. A new section of the same dimension should be cut from a roll of 3M™ Fire Barrier Duct Wrap 615+, either 24" (60.9cm) or 48" (121cm) wide.
c. The new section should be placed and fitted ensuring the same overlap that existed previously (i.e. the original installation method).
d. The steel banding should be placed around the material and tensioned so as to sufficiently hold the 3M™ Fire Barrier Duct Wrap 615+ in place.

Availability

Registered Supplier: K-Flex
David Ward - Technical Sales Engineer
L'Isolante K-Flex (UK) Ltd / Bevex Ltd
david.ward@kflexbevex.co.uk
Tel: 01530 834888

3M™ Fire Barrier Duct Wrap 615+ is available from 3M Authorized Fire Protection Products Distributors and Dealers. 3M™ Fire Barrier Duct Wrap 615+ is available in 24" x 25 ft, Roll (1/case), 48" x 25 ft, Roll (1/case). 3M™ Fire Barrier Duct Wrap Collars 615+ are available in 1.5" x 6" x 25 ft, Rolls (4/case). For additional technical and purchasing information regarding this and other 3M™ Fire Protection Products, please call: 1-800-328-1687 or visit www.3M.com/firestop.

140 FIRE STOPPING SYSTEM TO MULTIPLE SERVICES PENETRATIONS TO SERVICE RISERS

- Fire resistance: As clause 240.
- Board barrier:
  - Material: Mineral wool intumescent coated rigid batts as clause P12/365.
    Thickness: 50 mm.
    Number of layers: Two.
  - Framing: 25 x 25 pressed steel at 150mm maximum centres to trim openings and support the batt.
  - Finish: Flush with the floor and ceiling and decorated to match.
- Capping sealant: Fire resisting silicone as clause P12/390.
  - Colour: White .

160A LINEAR GAP SEALING AT JUNCTIONS WITH EXISTING FABRIC / IRREGULAR SURFACES

Arbosil 1071 - Arbosil 1071 is a one part Low Modulus Fire Resisting and Acoustic Silicone Sealant which cures on exposure to moisture vapour to form a very elastic silicone rubber. Arbosil 1071 has good adhesion to concrete, brickwork, metals and many other common construction substrates. Not recommended for overpainting and for use against natural stone.

- Fire resistance: 4 HOURS.
- Gap width or height (nominal): 6 - 15mm.
- Gap filler: Mineral wool.
- Capping sealant: Not required - All areas where the sealant is used will be within the depth of the construction hidden from view behind a edge detail as described in the drawn information.
  - Colour: Grey.

Joint Preparation

The joint surfaces must be clean, dry and free from all contamination. The surfaces should be degreased using the appropriate Arbo Cleaner. Primers may be required on some substrates. It is recommended that Adshead Ratcliffe Technical Services Department should be consulted and advice obtained with regard to the choice of primer for specific purposes.

Joint Backing

Where applicable, appropriate joint filler e.g. mineral wool or closed
cell polyethylene foam, should be used to provide the correct joint depth (see chart for joint dimensions required for fire integrity and insulation values)

Application

All joint preparation, priming, and sealant application should be carried out in accordance with BS 8000 Part 16, the British Standard for the sealing of joints in buildings using sealants.
Arbosil 1071 is supplied in polyethylene 380ml cartridges and can be applied into the joint using an Arbo Caulking Gun

Joint Size Suitability

Joint Width - Minimum 6mm and Maximum 25mm (single application); for advice on multiple applications please contact Adshead Ratcliffe Technical Services Department.
Joint Depth - Minimum 10mm on porous substrates and Minimum 6mm on non-porous substrates. Maximum 25mm
Width: Depth ratio (within above min/max restrictions)
Generally, joints should be as narrow as possible minimize exposure to fire.

SYSTEM PERFORMANCE

210 DESIGN

- Design: Complete the design of the fire stopping system.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

240 FIRE PERFORMANCE OF COMPARTMENT FLOORS and COMPARTMENT WALLS
- Resistance to fire: To BS EN 13501-2, EI 60.
- Reaction to fire: In accordance with Building Regulations, Class 0.
- Smoke resistance:
  - Air leakage rate (maximum): 1 $m^3/m^2 \cdot hr$.

260 DESIGN LIFE
- Effective design life: 30 years.

PRODUCTS

305 PRODUCT CERTIFICATION
- Certification: For products specified generically, submit evidence of compliance with the specification.
- Acceptable evidence: Agrément certificate.

335A INTUMESCENT FOAM
- Avoid use - The nature of the existing building is such that the impact of foam products is not desirable. Seek alternative approach.

345 INTUMESCENT PILLOWS
- Manufacturer: Specialist Sub-Contractor's choice .
  - Product reference: Submit proposals.
- Composition: Sealed polyethylene bags containing graphite and vermiculite granules treated with fire activated chemicals.
- Integral reinforced eyelets: Required.
- Linking cable: Non-corrosive cotton-coated wire.

350 INTUMESCENT PUTTY
- Manufacturer: Specialist Sub-Contractor's choice.
  - Product reference: Submit proposals.

360 MINERAL WOOL RIGID BATTS
- Standard: To BS EN 13162.
- Manufacturer: Rockwool.
  - Product reference: Rockwool Flexi.
- Recycled content: None permitted.

365 MINERAL WOOL RIGID BATTS - ABLATIVE COATED
- Standard: To BS EN 13162.
- Manufacturer: Rockwool.
  - Product reference: 50mm Ablative Coated Batt.
- Recycled content: None permitted.

370 PIPE COLLAR - CONCEALED INTUMESCENT
- Manufacturer: Hilti.
  - Product reference: CP 648-E Pipe Wrap - to suit wall construction.

375 PIPE COLLAR - INSULATED WRAP
- Manufacturer: Rockwool .
  - Product reference: Insulated Fire Sleeve.

390 SEALANT - FIRE RESISTING SILICONE
- Manufacturer: Adshead Ratcliffe.
  - Product reference: Arbosil 1070.

EXECUTION

620 WORKMANSHIP GENERALLY
- Gaps: Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.
- Adjacent surfaces: Prevent overrun of sealant or mortar on to finished surfaces.

640 INSTALLING BOARDING
- Position of boarding: Within opening.
- Framing: Provide intermediate studs and rails at centres not exceeding 600mm and Provide trimming around openings.
- Bedding: Bed boarding on fire resisting silicone.
- Multiple board layers: Stagger joints between layers.
  - Joints: Seal with board adhesive to achieve a 60min enclosure.
- Fixing: Self tapping screws at 300mm centres and to suit.
- Other requirements: Boards to fire compartments to be used to line out the space to provide a complete 60min enclosure. Refer to board manufacturers recommendations and guidance.

660 APPLYING INTUMESCENT FOAM
- New joints: Remove builder's debris, mortar droppings, grease, and other contaminants.
- Old joints: Clean and remove existing sealant from each joint.
- Priming: Lightly moisten substrate with water.
- Application: Fill joint to approximately half its depth, and allow foam to expand to face of joint.
- Trimming: Trim excess foam to give a neat, flush appearance.

680 INSTALLING INTUMESCENT PILLOWS
- Number of pillows (per m^2 of opening): Number necessary to achieve fire resistance.
- Orientation of bags: Parallel to plane of construction element containing opening.

690 APPLYING INTUMESCENT PUTTY
- Sequence: Install putty after services are permanently installed.
- Loose dust and combustible materials: Remove from the opening.

730 FIXING PIPE COLLARS
- Collar fixing: Self-tapping screws, stainless steel.
- Gap around collar: Seal with gap filler and sealant.
- Length of wraps: Project 50 mm from each side of the element.

740 INSERTING SEALANT BACKING MATERIAL
- Preparation: Removed debris from service penetration.
- Installation: Insert joint filler to full depth of joint leaving sufficient depth to apply sealant.

745 APPLYING SEALANTS GENERALLY

- Application: As section Z22.

750 APPLYING CAPPING SEALANT

- Preparation: De-grease using cleaner recommended by sealant manufacturer.
- Priming: Primer recommended by sealant manufacturer.
- Depth of sealant: 15 mm.
- Temperature: Do not apply water based sealants when they could be damaged by frost.

COMPLETION

910 CLEANING

- Masking tapes: Remove.
- Cleaning: Clean off splashes and droppings. Wipe down finishes.

920 INSPECTION

- Notice for inspection (minimum): 5 working days.

P20
Unframed isolated trims/ skirtings/ sundry items

Section Revision History

No.	Purpose	
-	TENDER ISSUE	14th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

P20 Unframed isolated trims/ skirtings/ sundry items

To be read with Preliminaries/ General conditions

110 SOFTWOOD SKIRTINGS to DRYLINE PARTITIONS

- Quality of wood and fixing: To BS 1186-3.
  - Species: European whitewood.
  - Class: 2.
- Moisture content at time of fixing: 9-13%.
- Preservative treatment: Water-based microemulsion as section Z12, service life 30 years.
- Fire rating: Not applicable.
- Profile: Square.
  - Finished size: 15mm x 90mm.
- Finish as delivered: Prepared and primed, as section M60/130.
- Fixing: Plugged, screwed and pelleted at 450mm centres.

111 SOFTWOOD SKIRTINGS to LINED MASONRY WALLS

- Quality of wood and fixing: To BS 1186-3.
  - Species: Tropical hardwood.
  - Class: 1.
- Moisture content at time of fixing: 9-13%.
- Preservative treatment: Water-based microemulsion as section Z12, service life 30 years.
- Fire rating: Not applicable.
- Profile: Square.
  - Finished size: 15mm x 90mm.
- Finish as delivered: Prepared and primed, as section M60/130.
- Fixing: Plugged, screwed and pelleted at 450mm centres in accordance with fixing requirements described by NBT board suppliers M20/335.

112 SOFTWOOD SKIRTINGS to LIME PLASTERED WALLS i.e. MURRAY St

- Quality of wood and fixing: To BS 1186-3.
  - Species: close grained softwood.
  - Class: 1.
- Moisture content at time of fixing: 9-13%.
- Preservative treatment: Water-based microemulsion as section Z12, service life 30 years.
- Fire rating: Not applicable.
- Profile: To be machined to match the existing - two part skirting.
  - Finished size: each approx. 19mm x 160mm totalling a skirting of approx 36mm x 290mm.
- Finish as delivered: Prepared and primed, as section M60/130.
- Fixing: Plugged, screwed and pelleted at 450mm centres.

120 HARDWOOD SKIRTINGS to FLOORS ADDRESSING HISTORIC BRICK WALLS

- Quality of wood and fixing: To BS 1186-3.
  - Species: European Oak.
  - Class: 1.
- Moisture content at time of fixing: 10-14%.
- Preservative treatment: Not required.
- Fire rating: Not applicable.
- Profile: Bevelled and To match existing and emulate the fillet skirting to the edge of the mill floor.
  - Finished size: approx 90mm flat by 50mm high with a slight step at the leading edge of approx 6mm.
- Finish as delivered: One coat clear finish, as section M60/180.
- Fixing: Plugged, screwed and pelleted at 300mm centres into the floor.

121 HARDWOOD SKIRTINGS to FLOORS ADDRESSING NEW BRICK WALLS - WING MILL

- Quality of wood and fixing: To BS 1186-3.
  - Species: European Oak.
  - Class: 1.
- Moisture content at time of fixing: 10-14%.
- Preservative treatment: Not required.
- Fire rating: Not applicable.
- Profile: Square.
  - Finished size: 15mm x 90mm.
- Finish as delivered: One coat clear finish, as section M60/180.
- Fixing: Plugged, screwed and pelleted at 450mm centres into the wall.

445 DECORATIVE FACING TO SASH WINDOWS and DOORS IN HISTORIC WALLS of MURRAY St

- Material: Close Grained softwood - Class 1.
- Profile: To match existing
  Size: approx. 160mm x 19mm.
  Finish as delivered: [Prepared and primed, as section M60/130].
  Fixing: [Plugged, screwed and pelleted at 450mm centres in accordance with fixing requirements described by NBT board suppliers M20/335].

EXECUTION

510 INSTALLATION GENERALLY

- Joinery workmanship: As section Z10.
- Metal workmanship: As section Z11.
- Methods of fixing and fasteners: As section Z20 where not specified.
- Straight runs: To be in one piece, or in long lengths with as few joints as possible.
- Running joints: Location and method of forming to be agreed where not detailed.
- Joints at angles: Mitre, unless shown otherwise.
- Position and level: To be agreed where not detailed.

P21
Door/ window ironmongery

Section Revision History

No.	Purpose	
-	TENDER ISSUE	14th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

GENERAL

Refer to schedule:
FCB-1777-SCH-WS4-002 - Ironmongery Schedule

Refer to Architects Drawings generally including:
Internal Door Details Details - 1777-A-*32 Series**
External Door Details - 1777-A-*31 Series**
Window Details - 1777-A-*33 Series**
Shutters Secondary Glazing - 1777-A-*34 Series**

121 IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: Aspex Ironmongery, Unit E Winchester Avenue, Blaby, Leicester, LE8 4GZ T: 0116 278 3506 E: darren@aspex-uk.co.uk .
  - Product reference: Integra Satin Stainless Steel .
- Principal material/ finish: Satin Stainless Steel .
- Items unavailable within selected range: Submit proposals.

130A APPROVED SUPPLIERS

Internal Doors:
'Doorset Technologies' to be supply doors with hinges.
Obtain ironmongery from: Aspex - 0116 2783506 .
Refer to Aspex Ironmongery Schedule for Ironmongery to new Internal Doors.

Historic Doors (Reinstatement / Repair)
Ironmongery used in the repair and reinstatement of the Historic Doors is to be confirmed in consultation with the Conservation Officer.

External Doors - New Steel doors to have ironmongery supplied by the door manufacturer.

Windows - Steel - To be supplied with ironmongery by the window manufacturer.
Windows - Aluminium - To be supplied with ironmongery by the window manufacturer.

140 SAMPLES

- General: Before placing orders with suppliers submit labelled samples of the following: **All ironmongery items** .
  - Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

170 IRONMONGERY FOR FIRE DOORS

- Relevant products: Ironmongery fixed to, or morticed into, the component parts of a fire resisting door assembly.
- Compliance: Ironmongery included in successful tests to BS 476-22 or BS EN 1634-1 on door assemblies similar to those proposed.
  - Certification: Submit evidence of successful testing by UKAS accredited laboratory .
- Melting point of components (except decorative non functional parts): 800°C minimum.

180 CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Standard: To DD 171.
  - Category of duty of doors: Heavy duty .
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
  - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
    Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

190 STANDARDS AND PRODUCTS

- The following outlines the quality and standard that is to be achieved where ironmongery is not picked up elsewhere.

DOOR HANGING DEVICES

315 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES GENERALLY

- Standard: To BS EN 1935.
  - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Minimum classification grades:
  - Category of use: 3 .
  - Durability: 7 .
  - Test door mass: 80Kg Internal - 120Kg External and 60min Fire Doors .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
  - Security - Burglar resistance: 1 .
  - Hinge grade: 10 .
- Type: Plain bearing butt .
- Size: To Suit door leaf and frame .
- Material/ finish:
  Internal - Satin stainless steel, grade 1.4301 (304)
  External - Satin stainless steel, grade 1.4401 (316) .
- Other requirements: Refer to door schedule .

340 DOOR HINGES TO WARDROBES

- Manufacturer: Hafele - 0800 1712909 .
  - Product reference: Grass TIOMOS 95 degree - 348.42.801 and fixing plate - 348.38.511 .
- Type: cupboard flush .
- Size: 85mm x 24mm plus portion set into wardrobe door .
- Material/ finish: Steel and aluminium .
- Other requirements: all parts in a format to suit the design - e.g. 'inset mounting' .

350 DOOR TRACK AND RUNNING GEAR TO WARDROBES

- Standard: To BS EN 1527.
- Manufacturer: Hafele 0800 1712909 .
  - Product reference: PS10 Sliding Door System .
- Track type: Aluminium top track, integral hangers with nylon wheels .
- Category of door: Sliding .
- Opening dimensions: As drawings .
- Accessories: Pelmet, rubber buffer and recessed handles .
- Operation: Smooth and quiet.
  - Safety: Doors not able to come off track when in use.

360 PERFORMANCE SPECIFICATION FOR DOOR TRACK AND RUNNING GEAR TO TIMBER DOORS WHERE NOT IDENTIFIED WITHIN THE DOOR SCHEDULE and L20

- Standard: To BS EN 1527.
- Minimum classification grades:
  - Category of use: - (no classification).
  - Durability: 4 .
  - Door mass: 2 .
  - Fire resistance: 0 .
  - Safety: - (no classification).
  - Corrosion resistance: 2 .
  - Security: - (no classification).
  - Category of door: 1 - not categorised .
  - Initial friction: 1 .
- Opening dimensions: As drawings .
- Accessories: Pelmet, rubber buffer and recessed handles - refer to drawn details .
- Operation: Smooth and quiet.
  - Safety: Doors not able to come off track when in use.

WINDOW HANGING DEVICES

395 BOXED SASH HANGING FITTINGS TO NEW SASH WINDOWS MADE TO MATCH THE EXISTING

- Manufacturer: Carlisle Brass - 01228 511030 .
  - Product reference: Box Sash Range .
- Axle pulleys: AQ93-PB - 42 mm brass wheel, steel faceplate .
- Cords/ Chains: Waxed cotton sash cord .
- Weights: Steel - painted .
  - Matched to weights of glazed sashes.
- Other requirements:
  Sash Lift - AQ42-PB
  Flitch Fastener - AA40LCK-PB .

DOOR OPERATING DEVICES

412 PERFORMANCE SPECIFICATION FOR OVERHEAD DOOR CLOSERS GENERALLY

- Standard: To BS EN 1154.
  - Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades:
  - Category of use: 4 .
  - Durability: 8.
  - Door closer power size: Adjustable 2-4 .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
- Type: Concealed except on fire doors .
- Other functions: Back check and delayed closing .
- Casing finish: Stove enamelled, colour to match metalwork and or door ironmongery .
- Operational adjustment:
  - Variable power: Matched to the sizes and weights of doors.
  - Latched doors: Override latches and/ or door seals when fitted.
  - Unlatched doors: Hold shut under normal working conditions.
  - Closing against smoke seals of fire doors: Positive. No gaps.

452 PERFORMANCE SPECIFICATION FOR FLOOR SPRINGS GENERALLY

- Standard: To BS EN 1154.
  - Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades:
  - Category of use: 4 .
  - Durability: 8.
  - Door closer power size: Adjustable 1-4 .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
- Other functions: Delayed closing .
- Material/ finish: Satin stainless steel .
  Operational adjustment:
  - Variable power: Matched to size, weight and location of doors.
  - Latched doors: Override latches and/ or door seals when fitted.
  - Unlatched doors: Hold shut under normal working conditions.

472 PERFORMANCE SPECIFICATION FOR ELECTROMAGNETIC HOLD OPEN/ SWING-FREE DEVICES (24 V) GENERALLY

- Standard: To BS EN 1155.
  - Electromagnetic devices to fire/ smoke control doors: CE marked.
- Type: Hold open, separate closer .
- Minimum classification grades:
  - Category of use: 3.
  - Durability: 8 .
  - Hold open power size: 4 .
  - Suitability for use on fire/ smoke doors: 1.
  - Safety: 1.
  - Corrosion resistance: 4 .
- Material/ finish: Satin stainless steel .
- Means of release: Alarm system and/ or failure of power supply.
- Test switch: Located in a convenient position adjacent to door.
- Operational adjustment of integral closer:
  - Variable power: Matched to size, weight and location of doors.
  - Latched doors: Override latches and/ or door seals when fitted.
  - Unlatched doors: Hold shut under normal working conditions.

482 PERFORMANCE SPECIFICATION FOR DOOR COORDINATORS GENERALLY

- Standard: To BS EN 1158.
  - Door coordinators to fire/ smoke control doors: CE marked.
- Minimum classification grades:
  - Category of use: 3.
  - Durability: 8 .
  - Door coordinator size: 7 .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
- Material/ finish: Satin stainless steel .
- Application: To all single swing double doors with rebated meeting stiles and fitted with self closers.
- Selection criteria: Provide types that:
  - Require the minimum amount of material to be removed from the door and frame.
  - Are suitable for the size of rebates.

DOOR SECURING DEVICES

525 PERFORMANCE SPECIFICATION FOR DOOR LOCKS AND LATCHES GENERALLY

- Standard: To BS EN 12209.
- Minimum classification grades:
  - Category of use: 3.
  - Durability: R.
  - Door mass and closing force: 4.
  - Suitability for use on fire/ smoke doors: 1.
  - Safety: 0.
  - Corrosion resistance and temperature: E.
  - Security and drill resistance: 3.
  - Field of door application: TBC.
  - Type of key operation and locking: ALL APPLY - refer to door schedule.
  - Type of spindle operation: Refer to door schedule.
  - Key identification requirement: D.
- Backset: As schedule.
- Material/ finish: Stainless steel faceplate.
- Keying: As schedule.

540 DOOR LATCHES GENERALLY

- Standard: To BS EN 12209.
- Manufacturer: As Clause 121 .
  - Product reference: 30766R .
- Type: Short Travel Latch .
- Backset: 55mm .
- Material/ finish: SSS .
- Latch spring strength: Select to prevent unsprung lever handles drooping.

566 PERFORMANCE SPECIFICATION FOR PADLOCKS TO MURRAY ST RAILINGS and LARGE LEAF OF MURRAY St GATES

- Standard: To BS EN 12320.
- Minimum classification grades:
  - Category of use: – Grade 1.
  - Durability: 1
  - Corrosion resistance: 6 .
  - Security: 4 .
- Size: to suit the ironwork .
- Case: Chromium plated .
- Shackle: Hardened steel .
- Accessories: None .
- Keying: Not master keyed .

572 PERFORMANCE SPECIFICATION FOR EMERGENCY EXIT DEVICES GENERALLY

- Standard: To BS EN 179.
  - Emergency exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades:
  - Category of use: 3.
  - Durability: 7 .
  - Door mass: 5 .
  - Suitability for use on fire/ smoke doors: 1 .
  - Safety: 1.
  - Corrosion resistance: 4 .
  - Security: 3 .
  - Projection of operating element: 2 .
  - Type of operation: A & B .
- Material/ finish: Satin stainless steel .
- Additional requirements: External locking attachment to be suited with other locks .

584 PERFORMANCE SPECIFICATION FOR DOOR BOLTS GENERALLY

- Standard: To BS EN 12051.
- Minimum classification grades:
  - Category of use: 2 .
  - Number of test cycles: 2 .
  - Door mass: - (no classification).
  - Fire safety: 1 .
  - Safety in use: 1 .
  - Corrosion resistance: 2 .
  - Security: 3 .
- Type: Flush slide .
- Size: As schedule .
- Material/ finish:
  Internal - Satin stainless steel, grade 1.4301 (304)
  External - Satin stainless steel, grade 1.4401 (316) .
- Additional requirements: None .

WINDOW SECURING DEVICES

592 SASH FASTENERS TO ALL EXISTING SASH WINDOWS

- Manufacturer: Carlisle Brass .
  - Product reference: AA40LCK/PB .
- Type: Fitch .
- Size: 69 mm .
- Material/ finish: Polished brass .
- Additional requirements: Style to match existing .

DOOR FURNITURE

610 LEVER HANDLES to INTERNAL DOORS
- Standard: To BS EN 1906.
- Manufacturer: As clause 121 .
  - Product reference: Integra 13193 .
- Style: Straight Lever .
- Size: 19mm Diameter .
- Material/ finish: SSS .
- Mounting: sprung rose with bolt through fixings .
- Additional requirements: none .

622 PERFORMANCE SPECIFICATION FOR LEVER HANDLE SETS GENERALLY
- Standard: To BS EN 1906.
- Minimum classification grades:
  - Category of use: 2 .
  - Durability: 7 .
  - Door mass: - (no classification).
  - Fire resistance: B .
  - Safety: 1 .
  - Corrosion resistance: 4 .
  - Security: 3 .
  - Type of operation: B .
- Style: As schedule .
- Size: As schedule .
- Material/ finish: Satin stainless steel, grade 306 .
- Mounting: Sprung rose with bolt through fixing .
- Additional requirements: None .

641 PULL HANDLES GENERALLY
- Standard: To BS 8424.
- Manufacturer: As clause 121 .
  - Product reference: 18196 and 18194 .
- Shape: D Handle .
- Diameter: 19mm dia .
- Distance between centres: 600mm and 300mm respectively .
- Material/ finish: SSS .
- Mounting: bolt through fixing .
- Additional requirements: None .

642 FLUSH PULL GENERALLY
- Standard: To BS 8424.
- Manufacturer: As clause 121 .
  - Product reference: Integre 69800 .
- Shape: D Handle .
- Diameter: 45mm approx. .
- Material/ finish: SSS .
- Mounting: flush into door with screw fixings .
- Additional requirements: intumescent backing where doors are fire rated .

651 PERFORMANCE SPECIFICATION FOR PULL HANDLES GENERALLY

- Standard: To BS 8424.
- Minimum classification grades:
  - Category of use: 2.
  - Durability: 2.
  - Door mass: - (no classification).
  - Suitability for use on fire/ smoke doors: 1.
  - Safety: 1.
  - Corrosion resistance: 3.
- Shape: D handle.
- Diameter: 20 mm.
- Distance between centres: As schedule.
- Material/ finish: Satin stainless steel, grade 1.4401 (316).
- Mounting: Bolt through.
- Additional requirements refer to Ironmonger Schedule.

670 PUSH PLATES GENERALLY

- Manufacturer: As clause 121 .
  - Product reference: 66581 & 63381 .
- Size: 650x80x1.5mm & 330x80x1.5mm .
- Material/ finish: SSS .
- Mounting: Face fix .
- Additional requirements: Rounded edges and radius corners .

680 MIDRAIL PLATES GENERALLY - TO BIN ROOM DOORS - BOTH LEAFS

- Manufacturer: As clause 121 .
  - Product reference: 6900? .
- Size: 900x300mm – to suit door widths, site measured .
- Material/ finish: SSS .
- Mounting: Face fix .
- Additional requirements: Square Corners .

685 KICK PLATES GENERALLY

- Manufacturer: As clause 121 .
  - Product reference: 69001 .
- Size: 900x150mm – to suit door widths, site measured .
- Material/ finish: SSS .
- Mounting: Face fix .
- Additional requirements: Square Corners .

710 ESCUTCHEONS GENERALLY

- Manufacturer: As clause 121 .
  - Product reference: 19014 .
- Material/ finish: SSS .
- Keyhole type: Euro Profile .
- Usage: As schedule .

720 DOOR STOPS

- Manufacturer: As clause 121 .
  - Product reference: 60031 .
- Type: Floor Mounted Satin Stainless Steel .
- Usage: As Schedule – final positions to be reviewed on site. .

890 DOOR VIEWERS GENERALLY

- Manufacturer: As clause 121 .
  - Product reference: 60968 .
- Angle of vision: 200 degree .
- Material/ finish: Satin Chrome Plate .
- Viewer body diameter: 15mm .
- Door thickness: Up to 60mm thick .

R
Disposal systems

R10
Rainwater drainage systems

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

110A GRAVITY RAINWATER DRAINAGE SYSTEM TO WING MILL

- Rainwater outlets: fabricated Zinc hopper.
- Gutters: stainless steel as section H74.
- Pipework: Zinc.
- Below ground drainage: as M&E Engineer specification.
- Disposal: to below ground drainage system.
- Controls: n/a.
- Accessories: hopper, downpipes and all accessories (excluding brackets) in QUARTZ-ZINC or ANTHRA-ZINC to match roof of Wing Mill..

110B RAINWATER CAST IRON GOODS
Manufacturer: Hargreaves Foundry - 01422 330607

- Rainwater outlets: cast iron hoppers set below new SS chutes. The hopper is to be made to match the existing and is to be assumed to be Hargreaves RH14.
- Gutters: existing and new inset dormer terraces.
- Pipework: New cast iron to connect into existing cast Iron:

  New not connecting to existing is to be 100mm:
  100mm Eared Pipes - R4001E and at the necessary lengths to suit.
  100mm Bends - R4020 - to suit
  100mm Branches - R4030 to R4032 - to suit
  100mm Offsets - R4040 to R4048 - to suit
  100mm Shoes - 100mm R4051E

  New Forming part of the existing is to be assumed to be 150mm. For the above references replace the pre-fix '4***' with '6***'
  .
- Below ground drainage: as M&E Engineer specification.
- Disposal: to below ground drainage system - Refer to Arup Engineers designs.
- Controls: Not applicable.
- Accessories: all offsets, bends, connectors, fixings, bobbins, brackets, spacers and shoes as required to achieve a full and complete installation.

  Note: The alteration of the existing cast iron is to be undertaken in new cast to match the make and manufacture of the existing. Pipe profile, dimension, style are to match the existing.

SYSTEM PERFORMANCE

210 DESIGN
- Design: Complete the design of the rainwater drainage system.
- Standard:
  - To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
  - To BS EN 12056-5, clauses 3, 4, 6 and 11.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

221 COLLECTION AND DISTRIBUTION OF RAINWATER
- General: Complete, and without leakage or noise nuisance.

230 DESIGN PARAMETERS - GENERAL
- Roof and gutter construction and finish: VMZ QUARTZ-ZINC (not gutter).
- Design rate of rainfall: As BS EN 12056-3, National Annex NB.2.
  - Category: 4.
- Design life of building: 80 years.
- Available capacity of existing below ground drainage (maximum): to be determined by M&E Engineer.

PRODUCTS

380 CAST IRON PIPEWORK - SPIGOT AND SOCKET
- Standard: To BS 460, except for shape and dimensions .
- Manufacturer: Hargreaves - 01422 330607 .
  - Product reference: Premier - 4*** series for 100mm and 6*** ofr 150mm .
- Type: With projecting ears .
- Nominal size: DN 100 and DN 150 .
- Finish as supplied: M60/195C - Factory Primer must be removed or the specified primer applied at the factory .
  - Fixings: Stainless steel screws .
    Size: 50 x 5 mm .
- Accessories: Rainwater shoes .

437 ZINC PIPEWORK
- Standard: BS EN 988:.
- Manufacturer: VMZINC.
  - Product reference: downpipe.
- Shape: round, socketed (dry jointed).
- Thickness: as system components.
- Nominal size: 120 mm diameter.
- Finish: QUARTZ-ZINC or ANTHRA-ZINC to match roof of Wing Mill..
- Brackets: v-lock bracket and self-locking collar.
  - Fixings: integral screw studs to bracket.
    Size: standard component.
- Accessories: n/a.

EXECUTION

600 PREPARATION

- Work to be completed before commencing work specified in this section:
  - Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
  - Painting of surfaces which will be concealed or inaccessible.

605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Protection:
  - Fit purpose made temporary caps to prevent ingress of debris.
  - Fit access covers, cleaning eyes and blanking plates as the work proceeds.

630 INSTALLING RAINWATER OUTLETS

- Fixing: Secure. Fix before connecting pipework.
  - Method: hopper supported by aluminium facia plate and restrained by screws into softwood gutter support structure.
- Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 FIXING PIPEWORK

- Pipework: Fix securely, plumb and/ or true to line.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
- Vertical pipes:
  - Provide a loadbearing support at least at every storey level.
  - Tighten fixings as work proceeds so that every storey is self supporting.
  - Wedge joints in unsealed metal pipes to prevent rattling.
- Wall and floor penetrations: Isolate pipework from structure.
  - Pipe sleeves: As section P31.
  - Masking plates: Fix at penetrations if visible in the finished work.
- Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

640 FIXING VERTICAL PIPEWORK

- Bracket fixings: attached to fixing clips on rainscreen panels or plugged and screwed into masonry.
- Distance between bracket fixing centres (maximum): maximum 1000 mm.

650 JOINTING PIPEWORK AND GUTTERS

- General: Joint with materials and fittings that will make effective and durable connections.
- Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.
- Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove.

700 ACCESS FOR TESTING AND MAINTENANCE

- General: Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance, including painting where necessary.
- Access fittings and rodding eyes: Position so that they are not obstructed.

COMPLETION

900 TESTING GENERALLY

- Dates for testing: Give notice.
  - Period of notice (minimum): one week.
- Preparation:
  - Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.
- Testing:
  - Supply clean water, assistance and apparatus.
  - Do not use smoke to trace leaks.
- Records: Submit a record of tests.

910 GUTTER TEST

- Preparation: Temporarily block all outlets.
- Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

915 MAINTENANCE INSTRUCTIONS

- General: At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation, including full details of recommended inspection, cleaning and repair procedures.

920 IMMEDIATELY BEFORE HANDOVER

- Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system: Remove. Do not sweep or flush into the rainwater system.
- Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

R11
Above ground foul drainage systems

Section Revision History

No.	Purpose	
-	TENDER ISSUE	14th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

R11 Above ground foul drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

PRODUCTS

310A FLOOR CHANNELS TO SERVE AS COVERS BELOW PAVEMENT LIGHTS

- Manufacturer: BLUCHER - 01937 838000.
  - Product reference: LINE - Copenhagen - channel drain cover .
- Body type: Shower Channel - Waterline 700 - made to suit.
  - Material: Stainless steel.
- Sizes: 100 mm.
- Type of fall: Built in fall.
- Grating/ cover:
  - Loading: Pedestrian.
  - Material: Stainless steel, screw fixed.
- Accessories: The gully has been specified to suit the location within a light well exposed to penetrating moisture from the cast iron pavement light. The final co-ordination of the gully is to be resolved in discussion with the tanking sub-contractor to that the drainage of the channel behind the drained membrane can be resolved with due consideration for the membrane and below slab ground drainage..

EXECUTION

601 INSTALLATION GENERALLY

- Standard: To BS EN 12056-5.
- Components: From the same manufacturer for each type of pipework.
- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
- Protection:
  - Purpose made temporary caps: Fit to prevent ingress of debris.
  - Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.

Z
Building fabric reference specification

Z10
Purpose made joinery

Section Revision History

No.	Purpose	
-	TENDER ISSUE	11th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

80 INFORMATION REQUIRED FROM SPECIALIST/SUBCONTRACTOR
a) With Tender
Technical information and certification demonstrating compliance with the specification and drawings of the []specified including all accessories
Areas of non-compliance with the specification and drawings with an explanation of why compliance cannot be provided

b) After receipt of order
Full technical information including the specification of all []specified including all accessories
Submit the above to the Contractor for comment well in advance of construction.
Proposals to support outstanding applications for Building Regulation Consents.

90 DESKTOP SAMPLES/REFERENCE PANELS/LOOSE SAMPLES/CONTROL SAMPLES
Desktop Samples
Before placing orders submit for approval representative samples of []
Reference Samples
Complete sample area(s), being part of the finished work, in approved location(s) as follows, and obtain approval of appearance, before proceeding:

95 MAINTENANCE MANUAL
Provide full record drawings, technical information relating to [ ]used in the works and other information as described in the preliminaries.

110 FABRICATION
- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
  - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Screws: Provide pilot holes.
  - Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
  - Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
- Adhesives: Compatible with wood preservatives applied and end uses of timber.

120 CROSS SECTION DIMENSIONS OF TIMBER

- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
  - Softwood sections: To BS EN 1313-1:-
    Clause 6 for sawn sections.
  - Hardwood sections: To BS EN 1313-2:-
    Clause 6 for sawn sections.
    Clause NA.3 for further processed sections.

130 PRESERVATIVE TREATED WOOD

- Cutting and machining: Completed as far as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

140 MOISTURE CONTENT

- Wood and wood based products: Maintained within range specified for the component during manufacture and storage.

210 LAMINATED PLASTICS VENEERED BOARDS/ PANELS

- Fabrication: To British Laminated Plastics Fabricators Association Ltd (BLF) fabricating standards.
- Balancing veneer: From decorative veneer manufacturer and of similar composition. Applied to reverse side of core material.
- Finished components: Free from defects, including bow, twist, scratches, chipping, cracks, pimpling, indentations, glue marks, staining and variations in colour and pattern.
- Joints visible in completed work: Tight butted, true and flush.

220 WOOD VENEERED BOARDS/ PANELS

- Core material and veneers: Conditioned before bonding.
- Setting out: Veneer features and grain pattern aligned regularly and symmetrically unless instructed otherwise.
- Balancing veneer: Applied to reverse side of core material.
  - Moisture and temperature movement characteristics: As facing veneer.
- Veneer edges: Tight butted and flush, with no gaps.
- Tolerance of veneer thickness (maximum): ? 0.5 mm.
- Finished components: Free from defects, including bow, twist, scratches, chipping, splits, blebs, indentations, glue marks and staining.
- Surface finish: Fine, smooth, free from sanding marks.

250 FINISHING

- Surfaces: Smooth, even and suitable to receive finishes.
  - Arrises: Eased unless shown otherwise on drawings.
- End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry before assembly.

Z11
Purpose made metalwork
Revision A

Section Revision History

No.	Purpose	
-	TENDER ISSUE	18th Sep 2015
A	Z11/105 Scope clarified. Z11/510 Approved Fabricators - section number shown	18th Sep 2015

Clauses amended in Revision A

No.	Clause	
105	CDP EMPLOYER'S REQUIREMENTS	Revised
510	APPROVED FABRICATORS	Revised

Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

105 CDP EMPLOYER'S REQUIREMENTS

Design Responsibility, Appearance and Performance

The Contract Documents describe the Design Intent and define the performance criteria, the mandatory geometry of visible elements, dimensions positions and detail the required principle materials and visible finishes. The Sub-Contractor shall be responsible for developing and completing the design in accordance with the Contract Documents. Any suggested solutions described in the Contract Documents shall not in any way relieve the contractor from their responsibility for the design and construction of the Works.

Scope:

- Steel Portals
- Cast Aluminium Panels
- Steel Panels
- Steel balustrades
- Stair Panels
- Stair Decking
- Bespoke cover plates and panels as individual items or those that are detailed as element around doors and window.
- Steel protection frames to guard soil pipe boxing out to LG and UG of service spaces.
- Architectural Metalwork

Architectural Metalwork elements are to follow design intent as described on architectural drawings and specification - refer to Architectural Package generally with specific reference to:

Stairs	**1777-A-*24** Series**
External Door Details	1777-A-*31** Series
Portals – Elevations	1777-A-03101
Portals – Assembly Details	1777-A-03102
Window Details	**1777-A-*33** Series**
Wing Mill Envelope – External Wall	**1777-A-621** Series**
Brick and Rainscreen Cladding Systems - Elevation	1777-A-62109
Rainscreen Cladding Systems – Steel Panel	1777-A-62110
Façade Abutment with Existing Buildings – Ground Floor	1777-A-62111
Façade Abutment with Existing Buildings – Upper Floors	1777-A-62112
External Gates	**1777-A-*91** Series**

NBS specification Section H92 and Z11 and other sections referenced in F31.

The Architectural Metalwork contractor is to coordinate the design with the Rainscreen Cladding CDP contractor who is to provide / Co-ordinate the Cast Aluminium, Steel Panels, Steel balustrades (Architectural Metalwork).

Responsibility

Contractor to complete the design build up/construction of all metal elements including fixings.

Secondary Steelwork
The design and installation of all necessary secondary steelwork and fixing back to primary structure is to be included within primary CDP packages i.e. Rainscreen Cladding, Precast brickwork, Balustrades and Stairs CDP packages.
Contractor is responsible for sizing and specifying all necessary steelwork fixings to ensure that panels / elements remain in situ for the lifespan of the building and take into account all necessary dead, live and imposed loads as defined by Structural Engineer.
All fixings into primary structure are to be agreed with Structural Engineer. Any fixings cast into / welded / fixed to the primary structure are to be agreed with Structural Engineer and coordinated with relevant contractor.

Design Life
60 years.

Other
Contractors to use only recognised good practices and comply with all relevant British standards and Codes of Practice.

(Revised - Z11 revision A - 18th Sep 2015)

310 MATERIALS GENERALLY
- Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

320 STEEL LONG AND FLAT PRODUCTS
- Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 10025-1.
- Fine grain steels, including special steels: To BS EN 10025-3 and -4.
- Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.

330 STEEL PLATE, SHEET AND STRIP
- Plates and wide flats, high yield strength steel: To BS EN 10025-6.

340 HOT ROLLED STEEL PLATE, SHEET AND STRIP
- Flat products, high yield strength for cold forming: To BS EN 10149-1, -2 and -3.
- Carbon steel sheet and strip for cold forming: To BS EN 10111.
- 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
- Steel sections: To BS EN 10162.
- Flat products, high yield strength micro-alloyed steels for cold forming: To BS EN 10268.
- Carbon steel flat products for cold forming: To BS EN 10130 and BS EN 10131.
- Uncoated carbon steel narrow strip for cold forming: To BS EN 10139 and BS EN 10140.
- Narrow strip steel for general engineering purposes: To BS EN 10132-1, -2, and -3.
- Carbon steel flat products for vitreous enamelling: To BS EN 10209.

360 COATED STEEL FLAT PRODUCTS

- Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10346 and BS EN 10143.
- Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10346.
- Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10346.
- Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10346.
- Organic coated flat products: To BS EN 10169.

370 STEEL STRUCTURAL HOLLOW SECTIONS (SHS)

- Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
- Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
- Weather resistant steels, hot finished: To BS 7668.

380 OTHER STEEL SECTIONS

- Equal flange tees: To BS EN 10055.
- Equal and unequal angles: To BS EN 10056-1 and -2.
- Wire, carbon steel for general engineering purposes: To BS 1052.
- Wire and wire products, general: To BS EN 10218-2.
- Tubes:
  - Seamless circular: To BS EN 10297-1.
  - Seamless cold drawn: To BS EN 10305-1.
  - Welded and cold sized square and rectangular: To BS EN 10305-5.
  - Welded circular: To BS EN 10296-1.
  - Welded cold drawn: To BS EN 10305-2.
  - Welded cold sized: To BS EN 10305-3.

400 STAINLESS STEEL PRODUCTS

- Chemical composition and physical properties: To BS EN 10088-1.
- Sheet, strip and plate: To BS EN 10088-2.
- Semi-finished products bars, rods and sections: To BS EN 10088-3.
- Wire: To BS EN 1088-3.
- Tubes:
  - Welded circular: To BS EN 10296-2.
  - Seamless circular: To BS EN 10297-2.

410 ALUMINIUM ALLOY PRODUCTS

- Designations:
  - Designation system, chemical composition and forms: To BS EN 573-1, -2, -3 and -5.
  - Temper designations: To BS EN 515.
- Sheet, strip and plate: To BS EN 485-1 to -4.
- Cold drawn rods, bars and tubes: To BS EN 754-1 and -2.
- Extruded rods, bars, tubes and profiles: To BS EN 755-1 and -2.
- Drawn wire: To BS EN 1301-1, -2 and -3.
- Rivet, bolt and screw stock: To BS 1473.
- Structural sections: To BS 1161.

420 COPPER ALLOY PRODUCTS

- Sheet, strip, plate and circles for general purposes: To BS EN 1652.
- Sheet and strip for building purposes: To BS EN 1172.
- Rods: To BS EN 12163.
- Profiles and rectangular bars: To BS EN 12167.
- Wire: To BS EN 12166.
- Tubes: To BS EN 12449.

510 APPROVED FABRICATORS

The following Fabricators assisted in the resolution of the specification and design of the Architectural Metalwork.

STEEL:

TP ASPINALL & SONS LTD
unit 8 Eastgate,
White Lund Ind Est,
MORECAMBE LA3 3DY
Tel: 01524 840824

ALUMINIUM CASTING:

FSE Foundry Limited
11 Swinbourne Drive
Springwood Industrial Estate Braintree
Essex
CM7 2YP
Tel: 01376 321170

It is the recommendation of the Architect that these fabricators be engaged in the manufacture of the metal elements.
Alternative fabricators may be acceptable if they are shown to have the necessary ability to match the required design and quality.
Samples will be required from all specialist fabricators.
(Revised - Z11 revision A - 18th Sep 2015)

FABRICATION

515 FABRICATION GENERALLY

- Contact between dissimilar metals in components: Avoid.
- Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
  - Moving parts: Free moving without binding.
- Corner junctions of identical sections: Mitre.

520 COLD FORMED WORK

- Profiles: Accurate, with straight arrises.

525 ADHESIVE BONDING

- Preparation of surfaces of metals to receive adhesives:
  - Degrease.
  - Abrade mechanically or chemically etch.
  - Prime: To suit adhesive.
- Adhesive bond: Form under pressure.

527 WELDING TO NEW METAL WORK.

- Welding procedures:
  - Method and standard: Metal arc welding to BS EN 1011-1 and -2..
  - Welding Procedure Specification (WPS): Not required.
- Preparation:
  - Joint preparation: Clean thoroughly.
  - Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
- Jointing:
  - Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
  - Dissimilar metals: Welding not permitted.
  - Strength requirements: Welds to achieve design loads.
  - Heat straightening: Submit proposals.
  - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds
  - Tack welds: Use only for temporary attachment.
  - Jigs: Provide to support and restrain members during welding.
  - Filler plates: Not permitted.
  - Lap joints: Minimum 5 x metal thickness or 25 mm, which ever is greater.
  - Weld terminations: Clean and sound.

530 STAINLESS STEEL FABRICATION

- Guillotining or punching: Do not use for metal thicknesses greater that 10 mm.
- Thermal cutting:
  - Carbonation in the heat affected zone: Remove, after cutting.
- Bending:
  - Plates or bars: Cold ending radius not less than material thickness.
  - Tubes: Cold bending radius not less than 2 x tube diameter.
- Welding: In addition to general welding requirements:
  - Protect adjacent surfaces from weld spatter.
  - Pickle all welds before post fabrication treatments.
- Protection: Provide protection to fabricated components during transit and on site.

555 BRAZING

- Standard: To BS EN 14324.
- Testing:
  - Destructive testing: To BS EN 12797.
  - Nondestructive testing: To BS EN 12799.

FINISHING

710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK
- Standard: To BS EN ISO 8501-3.
  - Preparation grade: P2 and P3 relevant to item and location.
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat.
- Grinding: Grind smooth where indicated on drawings.

745 PREPARATION FOR APPLICATION OF COATINGS
- General: Complete fabrication, and drill fixing holes before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Remove.

770 CHROMIUM PLATING
- Standard: To BS EN 12540.

780 GALVANIZING
- Standard: To BS EN ISO 1461.
- Preparation:
  - Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
  - Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
  - Welding slag: Remove.
  - Component cleaning: To BS EN ISO 8501-3.
  - Grade: St 2½.

790 VITREOUS ENAMELLING
- Standard: To BS EN ISO 28722.
- Substrate metal: Steel to BS EN 10209.

COMPLETION

910 DOCUMENTATION
- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and log books.

920 COMPLETION
- Protection: Remove.
- Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

Z12
Preservative/ fire retardant treatment

Section Revision History

No.	Purpose	
-	TENDER ISSUE	16th Jul 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

Z12 Preservative/ fire retardant treatment

To be read with Preliminaries/ General conditions.

110 TREATMENT APPLICATION
- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
  - Operatives: WPA certified.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 COMMODITY SPECIFICATIONS
- Standard: Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.

140 COPPER-ORGANIC PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: Lonza Wood Protection.
    Product reference: Tanalith E.
  - Colour: natural pale green.
  - Application: High pressure impregnation.
- Moisture content of wood:
  - At time of treatment: Not more than 28%.
  - After treatment: Timber to be surface dry before using.

610 MAKING GOOD TO PRESERVATIVE TREATMENT ON SITE
- Preservative solution: Compatible with off-site treatment.
- Application: In accordance with preservative manufacturer's recommendations.

Z20
Fixings/ adhesives

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

Z20 Fixings/ adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

310 FASTENERS GENERALLY
- Materials: To have:
  - Bimetallic corrosion resistance appropriate to items being fixed.
  - Atmospheric corrosion resistance appropriate to fixing location.
- Appearance: Submit samples on request.

320 PACKINGS
- Materials: Noncompressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

330 NAILED TIMBER FASTENERS
- Nails:
  - Steel: To BS 1202-1 or BS EN 10230-1.
  - Copper: To BS EN 1202-2.
  - Aluminium: To BS 1202-3.

340 MASONRY FIXINGS
- Light duty: Plugs and screws.
- Heavy duty: Expansion anchors or chemical anchors.

350 PLUGS
- Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.

360 ANCHORS
- Types:
  - Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
  - Adhesive or chemical:
    For use in substrate where expansion of anchor would fracture substrate.
    For use in irregular substrate where expansion anchors cannot transfer load on anchor.
  - Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.

370 WOOD SCREWS
- Type:
  - Wood screws (traditional pattern).
    Standard: To BS 1210.
    - Wood screws.
    Pattern: Parallel, fully threaded shank or twin thread types.
- Washers and screw cups: Where required are to be of same material as screw.

380 MISCELLANEOUS SCREWS
- Type: To suit the fixing requirement of the components and substrate.
  - Pattern: Self-tapping, metallic drive screws, or power driven screws.
- Washers and screw cups: Where required to be of same material as screw.

390 ADHESIVES GENERALLY
- Standards:
  - Hot-setting phenolic and aminoplastic: To BS 1203.
  - Thermosetting wood adhesives: To BS EN 12765.
  - Polyvinyl acetate thermoplastic adhesive: To BS 4071.

410 POWDER ACTUATED FIXING SYSTEMS
- Types of fastener, accessories and consumables: As recommended by tool manufacturer.

EXECUTION

610 FIXING GENERALLY
- 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.
- Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/ sleeves to avoid bimetallic corrosion.
- Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES
- Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

630 FIXING PACKINGS
- Function: To take up tolerances and prevent distortion of materials and components.
- Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
- Locations: Not within zones to be filled with sealant.

640 FIXING CRAMPS
- Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
- Fasteners: Fix cramps to frames with screws of same material as cramps.
- Fixings in masonry work: Fully bed in mortar.

650 NAILED TIMBER FIXING
- Penetration: Drive fully in without splitting or crushing timber.
- Surfaces visible in completed work: Punch nail heads below wrot surfaces.
- Nailed timber joints: Two nails per joint (minimum), opposed skew driven.

660 SCREW FIXING
- Finished level of countersunk screw heads:
  - Exposed: Flush with timber surface.
  - Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

670 PELLETED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
- Finished level of pellets: Flush with surface.

680 PLUGGED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Plugs: Glue in to full depth of hole.
- Finished level of plugs: Projecting above surface.

690 USING POWDER ACTUATED FIXING SYSTEMS

- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

700 APPLYING ADHESIVES

- Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.
- Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.
- Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Z21
Mortars

Section Revision History

No.	Purpose	
-	TENDER ISSUE	23rd Jul 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS

- Standard: To BS EN 13139.
- Grading: 0/2 (FP or MP).
  - Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):
    Lower proportion of sand: Use category 3 fines.
    Higher proportion of sand: Use category 2 fines.
- Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

160 CEMENTS FOR MORTARS

- Cement: To BS EN 197-1 and CE marked.
  - Types: Portland cement, CEM I.
    Portland limestone cement, CEM ll/A-L or CEM ll/A-LL.
    Portland slag cement, CEM II/B-S.
    Portland fly ash cement, CEM II/B-V.
  - Strength class: 32.5, 42.5 or 52.5.
- White cement: To BS EN 197-1 and CE marked.
  - Type: Portland cement, CEM I.
  - Strength class: 52.5.
- Sulfate resisting Portland cement:
  - Type: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
    To BS EN 197-1 fly ash cement, CEM ll/B-V and CE marked.
  - Strength class: 32.5, 42.5 or 52.5.
- Masonry cement: To BS EN 413-1 and CE marked.
  - Class: MC 12.5.

180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS

- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS

- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
- Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
- Bagged cement/ hydrated lime: Store off the ground in dry conditions.

210 MAKING CEMENT GAUGED MORTARS

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on dry sand. Allow for bulking of damp sand.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
  - Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
- Working time (maximum): Two hours at normal temperatures.
- Contamination: Prevent intermixing with other materials.

LIME:SAND MORTARS

310A LIME:SAND MORTAR MIXES FOR BUILDING

" Lime : Sand mixed in a ration of 1 : 3

" Specification:

- Lime: Naturally Hydraulic Lime (NHL) grade 3.5. Hydrated lime must not be used .
- Sand: Sharp, mixed sized aggregate, sized 0-3mm for fine ashlar joints, 2-5mm for all others - sized to match existing aggregate on site. Use of a sieve may be required for finer joints. See 320A.

-Mixing: Refer to 360A. Mix up sand and lime dry, then add water sparingly. Mortar should be a sticky dense consistency for bedding.

310B LIME:SAND MORTAR MIXES FOR POINTING - OLD MILL

Specification resolved from mortar analysis undertaken by Heritage Project Management and assessment by Mark Womersley.

" Lime : Sand mixed in a ration of 1 : 2.5

" Specification:

- Lime: Naturally Hydraulic Lime (NHL) grade 2 for internal elevations / grade 3.5 for heavily exposed elevations, wall heads / grade 5 for coping joints and extreme harsh conditions. *Hydrated lime must not be used.*
- Sand: 1 Waddfell / 0.5 Nosterfield / 1 Leighton Buzzard / 0.1 Clinker Ash. - Refer to 320A.

-Mixing: Refer to 360A. Mix up sand and lime dry, then add water sparingly. Mortar should be stiff, dry, course mix for pointing.

Raking out is to be undertaken by hand or with an approved fein saw. The cleaned joint is to be flushed out with clean water and ironed in with a pointing iron, bringing the mortar out of the joint slightly. After the initial set has taken place the mortar face is to be knocked off, then hit back with a stiff bristle brush to compact the mortar within the joint thoroughly, while also exposing the aggregate.

310C LIME:SAND MORTAR MIXES FOR POINTING - DECKER MILL

Specification resolved from mortar analysis undertaken by Heritage Project Management and assessment by Mark Womersley.

- " Lime : Sand mixed in a ration of 1 : 3

" Specification:

- Lime: Naturally Hydraulic Lime (NHL) grade 2 for internal elevations / grade 3.5 for heavily exposed elevations, wall heads / grade 5 for coping joints and extreme harsh conditions. Hydrated lime must not be used.
- Sand: 1.5 Nosterfield / 1.5 Leighton Buzzard / 0.1 Clinker Ash. - Refer to 320A.

-Mixing: Refer to 360A. Mix up sand and lime dry, then add water sparingly. Mortar should be stiff, dry, course mix for pointing.

310D LIME:SAND MORTAR MIXES FOR POINTING - NEW MILL
Specification resolved from mortar analysis undertaken by Heritage Project Management and assessment by Mark Womersley.
" Lime : Sand mixed in a ration of 1 : 3.5
" Specification:
- Lime: Naturally Hydraulic Lime (NHL) grade 2 for internal elevations / grade 3.5 for heavily exposed elevations, wall heads / grade 5 for coping joints and extreme harsh conditions. Hydrated lime must not be used.
- Sand: 0.5 Waddfell / 1.5 Nosterfield / 1.5 Leighton Buzzard - Refer to 320A.
-Mixing: Refer to 360A. Mix up sand and lime dry, then add water sparingly. Mortar should be stiff, dry, course mix for pointing.

310E LIME:SAND MORTAR MIXES FOR POINTING - CHIMNEY
- *Specification resolved from mortar analysis undertaken by Heritage Project Management and assessment by Mark Womersley.*
" Lime : Sand mixed in a ration of 1 : 3
" Specification:
- Lime: Naturally Hydraulic Lime (NHL) grade 2 for internal elevations / grade 3.5 for heavily exposed elevations, wall heads / grade 5 for coping joints and extreme harsh conditions. Hydrated lime must not be used.
- Sand: 1 Nosterfield / 1 Leighton Buzzard / 1 Clinker Ash - Refer to 320A.
-Mixing: Refer to 360A. Mix up sand and lime dry, then add water sparingly. Mortar should be stiff, dry, course mix for pointing.

320A SAND FOR LIME:SAND MASONRY MORTARS
" Type: Sharp, well graded –
Waddfell Fine Sand - Fine graded sand with a slightly red apperance.
Nosterfield Sand - Widely graded sand with some large aggregate, grey brown in colour.
Leighton Buzzard Sand - Fine graded sand with a warm brown apperance.

Mix to include a blend of Leighton Buzzard and Nosterfield Washed River Sand to achieve a close match to the existing mortar determined from samples taken from site. Allow for sieving to achieve correct blend of aggregates. Waddfell to be used as the base fin sand.

NOTE – standard builder's sand should not be used as this is 'round sand'. Rough, sharp aggregate sand is to be used to ensure strength in binding of mortar. Grading in particles is also essential.
- Quality, sampling and testing: To BS EN 13139.
- Grading/ Source: To be achieved to match samples taken from the existing building.

330 READY PREPARED LIME PUTTY
- Type: Slaked directly from CL 90 quicklime to BS 890, using an excess of water.
- Maturation: In pits/ containers that allow excess water to drain away.
- Density of matured lime putty: 1.3 - 1.4 kg/litre.
- Maturation period before use (minimum): 90 days.

335 READY PREPARED LIME PUTTY
- Manufacturer: Womersley's - 01924 400651.
- Product reference: Lime Putty.
- Maturation period before use (minimum): 90 days.

350A STORAGE OF LIME:SAND MORTAR MATERIALS

- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases. To be kept in a dry store away from rain and water.
- Ready prepared nonhydraulic lime putty: Prevent drying out and protect from frost.
- Nonhydraulic lime:sand mortar: Store on clean bases or in clean containers that allow free drainage. Prevent drying out or wetting and protect from frost.

360A MAKING LIME:SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Use a pan mixer. Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: **Prevent** intermixing with other materials, including cement. Do not prepare or store lime and cement in the same areas.

Small mixers
1. Introduce 1/2 of the required sand
2. Add all of the lime.
Mix DRY (about 2 minutes until uniform colour is achieved)
3. Add remaining sand.
Mix well again (1-2 minutes)
4. Continue mixing until required workability is achieved adding water slowly. Time of last mix: approx. 10 minutes.

Larger mixers
Introduce equal parts of the required sand.
Add equal part of lime.
Add more sand (in equal parts).
Mix DRY for a couple of minutes to homogenize and then continue mixing adding water slowly until workability is achieved. approx. 12 minutes.

Note: The best results are achieved by adding water slowly. The mortar should be more like a dough than a slurry. The longer the final mixing time, the more workable (fatter) the mortar will be
A small addition of lime putty (max. 10% of the weight of the NHL binder) can be made. Do not add putty when working with NHL 2. This is to achieve immediate workability and reduce the mixing
time. The addition of Lime Putty is not necessary and it is left to the user's preference. If putty is added this should be done before the optimal level of water is added as putty contains water and adding it when the mix is complete would produce a mortar that is too wet and therefore unsatisfactory. The putty addition,
within the maximum stated, will reduce the strength of the mortar (see St Astier Mortar Tests).
Dosing: Use standard buckets, always leveled. Once full, tap on the side to ensure that contents settle and fill to level. Dose at the volumes agreed with the supplier (1:1.5, 1:2 etc./ NHL: Sand).
With the correct aggregates and dosages, mortars from Class II to Class IV are easily produced (from 10 to 2 N/mm2) by using NHL 5, NHL 3.5 and NHL 2 (see also individual products data sheets).
Reworking: All St. Astier Natural Hydraulic Lime mortar can be reworked for up to 24 hours (see individual products data sheets). This is due to the absence of cement or gypsum in the lime and to the minimal quantity of aluminates.
Reworking diminishes potential waste, and lime mortar can be prepared and left overnight so that a quick start can be made in the morning.
When preparing a natural hydraulic lime mortar for later use, place it on a board after mixing and wrap it to avoid contact with possible rain or sun and to prevent contact with the air. When re mixing lime mortar add the least possible water (in some cases it is not necessary to add any). The tradesmen's good judgment is required.

390 KNOCKING UP NONHYDRAULIC LIME:SAND MORTARS

- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water.
  - Equipment: Roller pan mixer or submit proposals.

Z22
Sealants

Section Revision History

No.	Purpose	
-	TENDER ISSUE	4th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

510 FRAME SEALANT (TIMBER TO TIMBER) **Arbomast GP Oil**
Sealant: Arbomast GP Oil based sealant
Joint Preparation: Surfaces need to be clean, dry, sound and free from contamination.
Joint Backing Material: Closed cell Polyethylene Foam, approximately 25% oversized.
Allow for a sealant depth of at least 10mm, or equal to half the width of the joint, whichever is the greater, up to a maximum depth of 20mm.
Applying Sealant: Apply Arbomast GP to solidly fill the joint and tool to a satisfactory finish.

515 FRAME SEALANT (Timber to Masonry) - Arbokol 1000
Sealant: Arbokol 1000 Polysulphide sealant.
Joint Preparation: Surfaces need to be clean, dry, sound and free from contamination.
Carefully prime joint faces of unpainted timber and masonry with a full coat of Arbo Primer 925 and allow to dry.
Joint Backing Material: Closed cell Polyethylene Foam, approximately 25% oversized.
Allow for a sealant depth of at least 10mm, or equal to half the width of the joint, whichever is the greater, up to a maximum depth of 20mm.
Applying Sealant: Apply Arbokol 1000 to solidly fill the joint and tool to a satisfactory finish.

520 FRAME SEALANT (PPC FRAME AND MASONRY) - **Arbomeric MP10**
Sealant: Arbomeric MP10 Modified Polymer sealant.
Joint Preparation: Surfaces need to be clean, dry, sound and free from contamination.
Carefully prime the joint face of the masonry with a full coat of Arbo Primer 2650 and allow to dry. Do not displace primer onto the PPC.
Joint Backing Material: Closed cell Polyethylene Foam, approximately 25% oversized.
Allow for a sealant depth of at least 10mm, or equal to half the width of the joint, whichever is the greater, up to a maximum depth of 20mm.
Applying Sealant: Apply Arbomeric MP10 to solidly fill the joint and tool to a satisfactory finish.

525 SEALANT - JUNCTIONS REQUIRING FIRE SEAL
Sealant: Arbosil 1070 Fire resistant silicone sealant.
Joint Preparation: Surfaces need to be clean, dry, sound and free from contamination.
Prime joint faces with appropriate Arbo Primer as required; concrete blockwork, Plasterboard and un-painted timber needs to be primed with Arbo Primer 2650. Joint sealing procedure as per AC17622.; for other surfaces, contact us for advice.
Joint Backing Material: 20mm thick (deep) tightly packed mineral wool.
For joints 6mm -10mm wide allow for a sealant depth of 10mm.
For joints 11mm – 25mm wide allow for a sealant depth of 15mm.
Applying Sealant: Apply Arbosil 1070 to solidly fill the joint and tool to a satisfactory finish.

530 BATHROOM SEALANT To Baths, Showers, Vanity Units and to Kitchens
Sealant: Norcros - 4 into 1 silicone.
Joint Preparation: Surfaces need to be clean, dry, sound and free from contamination.
Joint Backing Material: Solid / Rigid foam to fill gaps greater than 10mm.
For joints 4mm -10mm wide allow for a sealant depth of 10mm.
Applying Sealant: Fill deep gaps with a suitable expanding foam. When applying to plastic & acrylic baths, fill the bath half full with water until the sealant has dried and cured.
Apply using a standard sealant gun making sure that no air is trapped. Best results will be obtained by maintaining an even pressure on the gun trig-ger and keeping the gun at a constant angle to the surface being sealed.
Smooth down within 5 minutes of application using a spatula, piece of wood or close textured sponge wetted with a soap and water solution. An improved appearance can be achieved by placing masking tape to both sides of the joint and removing within 5 minutes of application.

EXECUTION

610 SUITABILITY OF JOINTS
- Presealing checks:
  - Joint dimensions: Within limits specified for the sealant.
  - Substrate quality: Surfaces regular, undamaged and stable.
- Joints not fit to receive sealant: Identift and report to Architect.

620 PREPARING JOINTS
- Surfaces to which sealant must adhere:
  - Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
  - Clean using materials and methods recommended by sealant manufacturer.
- Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
- Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
- Protection: Keep joints clean and protect from damage until sealant is applied.

630 APPLYING SEALANTS
- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
- Environmental conditions: Do not dry or raise temperature of joints by heating.
- Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
- Sealant profiles:
  - Butt and lap joints: Slightly concave.
  - Fillet joints: Flat or slightly convex.
- Protection: Protect finished joints from contamination or damage until sealant has cured.

Z31
Powder coatings

Section Revision History

No.	Purpose	
-	TENDER ISSUE	13th Aug 2015

Clauses amended in Revision -

This is the first revision stamp for this section. For all future revision stamps, details of all clauses amended at that revision will be included here.

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

210 WORKING PROCEDURES

- Comply with the follow following standards.
  - Aluminium components: To BS 6496 or BS EN 12206-1.
  - Steel components: To BS EN 13438.
  - Safety standards: To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

220 POWDER COATING APPLICATORS

- Applicator requirements:
  - Approved by powder coating manufacturer.
  - Currently certified to BS EN ISO 9001.
  - Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
  - Applicator to use only one plant.
  - Selected applicator: Submit details before commencement of powder coating including: Name and contact details.
    Details of accreditation schemes.

225 GUARANTEES

- Powder coating manufacturer and applicator guarantees:
  - Submit sample copies before commencement of powder coating.
  - Submit signed project specific copies on completion of work.

230 CONTROL SAMPLES

- Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
  - Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
  - Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
- Samples to include the following information:
  - Product reference.
  - Colour.
  - Reference number.
  - Name.
  - Gloss level.

250 COMPONENT DESIGN

- Condition of components to be powder coated:
  - To comply with relevant recommendations of BS 4479-1, -3, and -4.
  - Of suitable size to fit plant capacity.
  - Of suitable thickness to withstand oven curing.

310 PRETREATMENT OF ALUMINIUM COMPONENTS

- Condition of components to be pretreated:
  - Free from corrosion and damage.
  - All welding and jointing completed and finish off as specified.
  - Free from impurities including soil, grease, oil.
  - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements:
  - Chromate system: To BS 6496 or BS EN 12206-1.
  - Chromate-free system: To BS EN 12206-1. Submit details before using.
- Rinsing requirements: Use demineralized water. Drain and dry.

320 PRETREATMENT OF STEEL COMPONENTS

- Condition of components to be pretreated:
  - Free from corrosion and damage.
  - All welding and jointing completed and finish off as specified.
  - Free from impurities including soil, grease, oil.
  - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements: To BS EN 13438.
- Rinsing requirements: Use demineralized water. Drain and dry.

430 EXTENT OF POWDER COATINGS

- Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496 or BS EN 13438 performance requirements.

435 APPLICATION OF POWDER COATINGS

- Surfaces to receive powder coatings: Free from dust or powder deposits.
- Powder colours: Obtain from one batch of one manufacturer.
- Commencement of powder coating: To be continuous from pretreatment.
- Jig points: Not visible on coated components.
- Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
- Stripping and recoating of components: Only acceptable by prior agreement of powder coating manufacturer. Stripping, pretreatment and powder coating are to be in accordance with manufacturer's requirements.
- Overcoating of components: Not acceptable.

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

- For aluminium components:
  - Standard: To BS 6496 or BS EN 12206-1.
- For steel components:
  - Standard: To BS EN 13438.
- Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
- Colour and gloss levels: To conform with approved samples.

450 ALUMINIUM ALLOY FABRICATIONS

- Units may be assembled:
  - Before powder coating.
  - From components powder coated after cutting to size.
  - Where approved, from components powder coated before cutting to size.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

460 STEEL FABRICATIONS

- Unit assembly: Wherever practical, before powder coating.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

470 FIXINGS

- Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer?s recommendations.

480 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT

- Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
- Site damage: Submit proposals for repair or replacement.

510 PROTECTION

- Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
- Protective coverings: Must be:
  - Resistant to weather conditions.
  - Partially removable to suit building in and access to fixing points.
- Protective tapes in contact with powder coatings: Must be:
  - Low tack, self adhesive and light in colour.
  - Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.
- Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 DOCUMENTATION

- Submit the following information for each batch of powder coated components:
  - Supplier.
  - Trade name.
  - Colour.
  - Type of powder.
  - Method of application.
  - Batch and reference number.
  - Statutory requirements.
  - Test certificates.
  - Maintenance instructions.

540 COMPLETION

- Protection: Remove.
- Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.