

**Materials and Workmanship Clauses
For
External Repairs
At
Sovereign House, 212-224 Shaftesbury Avenue,
London, WC2H 8EB**

**For and on behalf of
SL Heron Investments Ltd
C/O Lee Baron
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October 2015

Commercial in Confidence

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F10 BRICK/ BLOCK WALLING

To be read with Preliminaries/ General Conditions.

51 BASIC WORKMANSHIP

- Bond where not specified: Half lap stretcher.
- Mortar joints: Fill all vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- Quoins and advance work: Rack back.
- Locations for equal levelling of cavity wall leaves:
 - 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.
- 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.

55 FACEWORK

- Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.
- 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.
- Coursing: Evenly spaced using gauge rods. To produce satisfactory junctions and joints with built-in elements and components.

60 ALTERATIONS/ EXTENSIONS

- Coursing: Line up with existing work.
- Block bonding new walls to existing: Unless agreed otherwise cut pocket requirements as follows:
 - Width: Full thickness of new wall.
 - Depth (minimum): 100 mm.
 - Vertical spacing: As follows:
 - Brick to brick: 4 courses high at 8 course centres.
 - Block to block: Every other course.
 - Pocket joints: Fully filled with mortar.
- New and existing facework in the same plane: Bonded together at every course to achieve continuity of bond and coursing.
- Support of existing work: Fully consolidate joint above inserted lintel or masonry with semidry mortar to support existing structure.

90 CRACKED BRICKS IN EXISTING FACEWORK

- Replacement: Prior to repointing adjacent cracked joints, cut out and replace with matching sound bricks to approval.
- Jointing mortar: As section Z21.
 - Standard: BS 5628 part 3: 2001
 - Mix: NHL mortar 3.5, ratio 1.2.5.

91 CRACKED JOINTS IN EXISTING FACEWORK WHICH IS NOT TO BE REPOINTED

- Crack width determining need for joint remedial work: 2mm.
- Preparation: Cut out joints to form a rectangular recess of 15-20 mm depth. Clean and dampen joints sufficiently to control suction.

- Joint profile: To match existing.
- Repointing mortar: As section Z21.
 - Standard: BS 5628 part 3: 2001
 - Mix: NHL mortar 3.5, ratio 1.2.5

95 REPOINTING

- Preparation: Cut out joints to form a rectangular recess of 15-20 mm depth. Clean and dampen joints sufficiently to control suction.
- Joint profile: bucket handle.
- Mortar: As section Z21.
 - Standard: BS 5628 part 3: 2001
 - Mix: NHL mortar 3.5, ratio 1.2.5.

F31 PRECAST CONCRETE SILLS/ LINTELS/ COPINGS/ FEATURES

- 5 DESIGNATED CONCRETE PRECAST SILLS
- Concrete: Designated to BS 8500-2: Submit proposals.
 - Reinforcement: Stainless steel ribbed bar. Grade 500.
 - Cover to reinforcement (nominal): Minimum cover 30 mm plus 10mm fixing tolerance.
 - Finish to visible faces: To match existing.
 - Other requirements: None .
- 20 MOULDS
- Permissible fabrication and operating tolerances: Length 0 to +6 mm, other dimensions ± 3 mm.
- 25 REINFORCEMENT
- Carbon steel reinforcement: As appropriate to BS 4449, BS 4482 and BS 4483.
 - Cutting and bending: To BS 8666.
 - Fixing: Accurate and secure.
 - Method: Wire tying, approved steel clips or tack welding if permitted.
 - Concrete cover: Maintain free of tying wire or clips.
 - Cover spacers on visible faces: Not permitted.
- 30 CASTING AND CURING
- Placement of concrete: Thoroughly compact.
 - Immature components: Avoid movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
 - Protection from weather: Do not expose panels to direct sunlight and drying winds until at least five days after casting.
- 32 CUTTING
- Cutting of precast concrete components: Not permitted.
- 35 CONDITIONS FOR SEPARATE FACING AND BACKING MIXES
- Difference in cement content: Not greater than 80 kg/m^3 .
 - Thickness of facing mix (minimum): 10 mm greater than nominal maximum aggregate size, and not less than 25 mm.
 - Location of reinforcement: Not less than 20 mm away from the interface between mixes.
 - Compaction of facing and backing mix: Carry out to create monolithic construction.
- 40 LAYING
- Mortar for bedding and jointing: As section Z21.
 - Type: Site made hydraulic lime.
 - Mix: 1:1:6 cement:lime:sand.
 - Bedding components: On full bed of mortar.
 - Bedding one piece sills/ thresholds: Leave clear of mortar except at end bearings and beneath masonry mullions. On completion: Point with mortar to match adjacent work

H62 NATURAL SLATING

- 20 REMOVING EXISTING SLATING
- General: Carefully remove slates, battens, underlay, etc. with minimum disturbance of adjacent retained slating.
 - Undamaged slates: Set aside for reuse.
- 25 UNDERLAY
- Laying: Maintain consistent tautness.
 - Vertical laps (minimum): 100 mm wide, coinciding with supports.
 - 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 neatly.
- 30 BATTENS/ COUNTERBATTENS
- Timber: Sawn softwood.
 - Standard: To BS 5534.
 - Moisture content at time of fixing and covering (maximum): 22%.
 - Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
 - Type: Organic solvent.
- 32 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: 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.
- 35 SLATE FIXING
- General: Fix slating and accessories to make the whole sound and weather tight at earliest opportunity.
 - Setting out: To true lines and regular appearance. Lay slates 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 150 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 aluminium clout to BS 1202-3.
 - Nail dimensions: Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.
- 52 BEDDED VERGES WITH BEDDED UNDERCLOAK
- Underlay: Carry 50 mm onto outer leaf of gable wall and bed on mortar.
 - Undercloak: Slates, sloping towards verge and projecting 38-50 mm beyond face of wall.
 - Bedding: On mortar identical to that used in gable walling.
 - Slating battens: Carry onto undercloak and finish 100 mm from verge edge.
 - Verge slates: Bed flush with undercloak on 75 mm wide bed of mortar. Point with flush profile.

70 SIDE ABUTMENTS

- Underlay: Turn up not less than 100 mm at abutments.
- Abutment slates: Cut as necessary. Fix close to abutments.
- Soakers: Interleave and turn down over head of abutment slates.

71 TOP EDGE ABUTMENTS

- Underlay: Turn up not less than 100 mm at abutments.
- Top slate courses: Fix close to abutments.

77 MORTAR BEDDED TILE RIDGES

- Underlay: Lay courses over ridge. Overlap (minimum) 150 mm.
- Ridge tiles:
 - Manufacturer: Contractor's choice.
Product reference: Contractor's choice.
 - Bedding: On mortar, continuous to edges and solid to joints.
 - Fixing: Where rigid masonry walls support or abut ridge, secure ridge tiles within 900 mm of such walls with nails/ wire ties or screws.
 - Gable end ridge tiles: Fill ends with mortar and slips of tiles finished flush.
- Ridge terminals:
 - Manufacturer: Contractor's choice.
Product reference: Contractor's choice.

H71 LEAD SHEET COVERINGS/ FLASHINGS

- 05 DORMERS
- Underlay: Proprietary geotextile (See Clause 76).
 - Lead:
 - Thickness: Code 5.
 - Joints in top/ sill: welted.
 - Joints in cheeks: welted.
 - Intermediate fixings in cheeks: n/a.
 - Other requirements: n/a.
- 10 GUTTER LININGS
- Underlay: Waterproof building paper to BS 1521, class A.
 - Lead:
 - Thickness: Code 5 or Code 8 (depends on option instructed).
 - Cross joints: 600mm.
 - Spacing: 2,000mm.
 - Outlets: Chute outlet through parapet wall to hopper head.
 - Other requirements: n/a.
- 30 APRON FLASHINGS TO JUNCTION BETWEEN MANSARD & PITCHED ROOFS
- Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
 - Dimensions:
 - Lengths: Not more than 1500 mm.
 - End to end joints: Laps not less than 100 mm.
 - Upstand not less than 75 mm.
 - Cover to abutment: Not less than 150mm (in accordance with LSA guidelines).
 - Fixing:
 - Top edge: Lead wedges into bed joint.
 - Bottom edge: Clips.
 - Material: Stainless steel or aluminium.
 - Spacing: 300mm – 500mm
- 35 COVER FLASHINGS TO FLUES, CHIMNEY PENETRATIONS & JUNCTION BETWEEN MANSARD & PITCHED ROOFS
- Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
 - Dimensions:
 - Lengths: Not more than 1500 mm.
 - End to end joints: Laps of not less than 100 mm.
 - Cover: Overlap to upstand not less than 75 mm.
 - Fixing:
 - Top edge: Lead wedges into bed joint.
 - Bottom edge: Clips.
 - Material: Stainless steel or aluminium.
 - Spacing: 300mm – 500mm

41 SOAKERS & STEP FLASHINGS TO RAKING PARAPETS & FLUE & CHIMNEY PENETRATIONS

- Lead soakers:
 - Lead:
 - Thickness: 1.25 or 1.32 mm (Code 3).
 - Dimensions:
 - Length: Slate/ tile gauge + lap + 25 mm.
 - Upstand: Not less than 75 mm.
 - Underlap: Not less than 100 mm.
- Lead step flashings:
 - Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
 - Dimensions:
 - Lengths: Not more than 1,500mm (in accordance with LSA guidelines)
 - End to end joints: Laps not less than 100 mm.
 - Cover: Overlap to soaker upstands of not less than 65 mm.
 - Fixing: Lead wedges at every course.

45 STEP AND COVER FLASHINGS TO FLUE & CHIMNEY PENETRATIONS ETC

- Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
- Dimensions:
 - Lengths: Not more than 1500 mm.
 - End to end joints: Laps not less than 100 mm.
 - Upstand: Not less than 85 mm.
 - Cover to roof: Not less than 150 mm.
- Fixing:
 - Top edge: Lead wedges at every course.
 - Bottom edge: Clips.
 - Material: Stainless steel or aluminium.
 - Spacing: 300mm – 500mm

52 CHIMNEY FLASHINGS

- Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
- Front apron:
 - Dimensions:
 - Length: Width of chimney plus not less than 150 mm underlap to each side flashing.
 - Upstand: Not less than 75 mm.
 - Cover to roof: Not less than Code 6.
 - Fixing: Lead wedges into bed joint.
- Back gutter:
 - Dimensions:
 - Length: Width of chimney plus not less than 100 mm overlap to each side flashing.
 - Upstand: Not less than 100 mm.
 - Gutter Sole: Not less than 150 mm.
 - Cover up roof: Not less than 225 mm.
- Back gutter cover flashing:
 - Dimensions:

Length: Width of chimney plus not less than 100 mm overlap to each side flashing.

Cover: Overlap to back gutter upstand not less than 75 mm.

- Fixing: Lead wedges into bed joint.

60 MATERIALS AND WORKMANSHIP GENERALLY

- Lead production method:
 - Rolled, to BS EN 12588.
 - Machine cast: Agrément certified.
- Identification: Colour marked for thickness/ code, weight and type.
- Workmanship standard: To BS 6915 and latest editions of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
- Fabrication and fixing: To provide a secure, free draining and weathertight installation.
- Marking out: Do not use scribes or other sharp instruments to mark out lead without approval.
- Solder: Use only where specified.
- Finished leadwork: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
- Patination oil: Apply smear coating to all visible lead, evenly in one direction and in dry conditions.

62 LEADWELDING

- In situ leadwelding: Not permitted.

64 NEEDLE PUNCHED NONWOVEN POLYESTER GEOTEXTILE UNDERLAY

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice submit conformity.
- Recycled content: None permitted.

75 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.

76 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.
 - Turn up at abutments.
- Wood core rolls: Fixed over underlay.
- Protection: Keep dry and cover with lead at the earliest opportunity.

78 FIXING LEAD SHEET

- Top edge: Secured with two rows of fixings, 25 and 50 mm from edge.
- 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.
 - Length: Not less than 20 mm or equal to substrate thickness.

- Screws to concrete or masonry substrates: Brass or stainless steel to BS 1210.
Diameter: Not less than 3.35 mm.
Length: Not less than 19 mm.
Washers and plastics plugs: Compatible with screws.

80 CLIPS

- Material:
 - Lead clips: Cut from sheets of the same thickness/ code as sheet being secured.
 - Copper clips: Cut from 0.70 mm thick sheet to BS EN 1172, temper R220 (soft) or R240 (half hard) depending on position, dipped in solder if exposed to view.
 - Stainless steel: Cut from 0.38 mm sheet to BS EN 10088, grade 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.

83 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: Non acidic flexible lead sealant.
 - Application: As section Z22.

85 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 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: Non acidic flexible lead sealant.
 - Application: As section Z22.

92 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 screws at 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.

94 DRIPS WITH SPLASH LAPS

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

96 DRIPS WITH SPLASH LAPS

- Underlap: Dress up full height of drip upstand.
 - Fixing: Two rows of nails to lower level substrate. 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 at bay centres.

98 WELTED JOINTS

- Joint allowance: 50 mm overlap, 25 mm underlap.
- Copper or stainless steel clips: Fix to substrate at 450 mm centres.
- Overlap: Welt around underlap and clips and lightly dress down.

J21 MASTIC ASPHALT ROOFING / INSULATION/ FINISHES

30 REMOVING EXISTING MASTIC ASPHALT

- Areas to be removed: To parapet gulley, secret valley and central valley.
- Existing roof: Do not damage.
- Timing: Only remove sufficient mastic asphalt as will be replaced and made weathertight on same day.

35 MAKING GOOD EXISTING MASTIC ASPHALT

- Existing items to be removed: As above.
- Defective areas of mastic asphalt: Soften and carefully cut out.
 - Hammers, chisels, etc: Do not use to cut cold mastic asphalt.
 - Substrate: Clean and dry.
 - Separating membrane: Make good.
 - Mastic asphalt: Patch level with existing surface in two coats, the top coat lapped minimum 75 mm on to existing asphalt and to half its depth.

M60 PAINTING/ CLEAR FINISHING

- 12 GLOSS PAINT TO EXTERNAL JOINERY
- Manufacturer: Contractor's choice.
 - Surfaces: Previously painted external joinery and ironmongery.
 - Preparation: as Clauses 30 and 32.
 - Undercoats: 2 (two).
 - Finishing coats: 2 (two).
- 30 PREPARATION GENERALLY
- Standard: In accordance with BS 6150.
 - Risk assessment and method statement for hazardous materials: Prepare for 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, dirt, grease and oil: Remove.
 - Surface irregularities: Provide smooth finish.
 - Organic growths and infected coatings:
 - Remove with assistance of biocidal solution.
 - Apply residual effect biocidal solution to inhibit regrowth.
 - Joints, cracks, holes and other depressions: Fill with stoppers/ fillers. Provide smooth finish.
 - Dust, particles and residues from preparation: Remove and dispose of safely.
 - Doors, opening windows and other moving parts:
 - Ease, if necessary, before coating.
 - Prime resulting bare areas.
- 32 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.
 - Significant rot, corrosion or other degradation of substrates.
 - Risk assessment and method statement for hazardous materials: Prepare for 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.
 - Gloss coated surfaces: Provide key.
 - Partly removed coatings: Apply additional preparatory coats.
 - Completely stripped surfaces: Prepare as for uncoated surfaces.
- 35 FIXTURES AND FITTINGS
- Risk assessment and method statement for hazardous materials: Prepare for operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.

- Removal: Before commencing work remove: Galvanised railing system inclusive of all plates and the like.
 - Replacement: Refurbish as necessary, refit when coating is dry.
- 37 WOOD PREPARATION
- General: Provide smooth, even finish with lightly rounded arrises.
 - Degraded or weathered surface wood: Take back surface to provide suitable substrate.
 - Degraded substrate wood: Repair with sound material of same species.
 - Heads of fasteners: Countersink sufficient to hold stoppers/ fillers.
 - Resinous areas and knots: Apply two coats of knotting.
 - Defective primer: Take back to bare wood and reprime.
- 39 STEEL PREPARATION
- 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.
- 41 MASONRY AND RENDERING PREPARATION
- Loose and flaking material: Remove.
- 45 PREVIOUSLY PAINTED WINDOW 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.
- 50 EXTERNAL POINTING TO EXISTING FRAMES
- Defective sealant pointing: Remove.
 - Joint depth: Approximately half joint width; adjust with backing strip if necessary.
 - Sealant:
 - Manufacturer: Contractor's choice .
- 55 EXISTING GUTTERS
- Dirt and debris: Remove from inside of gutters.
 - Defective joints: Clean and seal with suitable jointing material.
 - Suspected hazardous materials: submit method statement.
- 61 COATING GENERALLY
- Application: In accordance with BS 6150, clause 9.
 - Conditions: Maintain suitable temperature, humidity and air quality.
 - Surfaces: Clean and dry at time of application.
 - Thinning and intermixing: Not permitted unless recommended by manufacturer.
 - Priming coats: Apply 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.
- 65 CONCEALED JOINERY SURFACES
- General: After priming, apply additional coatings to surfaces that will be concealed when component is fixed in place.
- 66 CONCEALED METAL SURFACES
- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.
- 70 EXTERNAL DOORS
- Bottom edges: Prime and coat before hanging.

M40 STONE/ CONCRETE/ QUARRY/ CERAMIC TILING/ MOSAIC

30 FIXING GENERALLY

- Colour/ shade: Avoid unintended variations within tiles for use in each area/ room.
 - Variegated tiles: Mix thoroughly.
- Adhesive: Compatible with background/ base.
- 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.
- 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/ mosaics and no gap should be greater than 6 mm, i.e. a tolerance of ± 3 mm.
- Surplus bedding material: Clean from joints and face of tiles/ mosaics.

32 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.

35 SETTING OUT

- Joints: True to line, continuous and without steps.
 - Joints on walls: Horizontal, vertical and aligned round corners.
 - Joints in floors: Parallel to main axis of space or specified features.
- Cut tiles: Minimise number, maximise size and locate unobtrusively.
- Joints in adjoining floors and walls: Align.
- Joints in adjoining floors and skirtings: Align.

70 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.
- Polishing: When grout is hard, polish tiling with dry cloth.

R11 ABOVE GROUND FOUL DRAINAGE SYSTEMS

50 INSTALLATION GENERALLY

- Standards: To BS EN 12056-1, BS EN 12056-2 (including National Annexes NA-NG) and BS EN 12056-5.
- Drainage from appliances: Quick, quiet and complete, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
- Components: From same manufacturer for each type of pipework.
- Access: Provide access fittings in convenient locations to permit cleaning and testing of pipework.
- Thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Fixings: Allow the pipe to slide.
 - Finish: Plated, sherardized, galvanized or other nonferrous.
 - Compatibility: Suitable for the purpose, material being fixed and substrate.

60 PIPEWORK

- Fixing: Securely plumb and/ or true to line. Fix lengths of discharge stack pipes at or just below socket collar or coupling.
 - Additional supports: Provide as necessary at junctions and changes in direction.
- Cut ends of pipes: Clean and square with burrs and swarf removed.

70 PIPEWORK TEST

- Preparation: Temporarily seal open ends of pipework using plugs.
- Testing: Connect a 'U' tube water gauge and pump air into pipework until gauge registers 38 mm.
- Required performance: Allow a period for temperature stabilisation, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.

Z10 PURPOSE MADE JOINERY

- 10 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. Heads of countersunk screws sunk at least 2 mm below surfaces visible in completed work.
 - Adhesives: Compatible with wood preservatives applied and end uses of timber.

- 210 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.
 - Hardwood sections: To BS EN 1313-2.

- 30 PRESERVATIVE TREATED WOOD
 - Cutting and machining: Completed as far as possible before treatment.
 - Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
 - Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

- 410 MOISTURE CONTENT
 - Wood and wood based products: Maintained within range specified for the component during manufacture and storage.

- 510 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

31 METAL PRODUCTS

- Grades of metals, section dimensions and properties: To the appropriate British Standards and suitable for the purpose.
- Fasteners: Generally, same metal as component, with matching coating and finish.

50 PREPARATION FOR APPLICATION OF COATINGS

- General: Fabrication complete, and fixing holes drilled before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Removed.

51 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.
- Prefinished metals: Do not damage or alter appearance of finish.

Z12 PRESERVATIVE/ FIRE RETARDANT TREATMENT

10 TREATMENT APPLICATION

- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

20 COMMODITY SPECIFICATIONS

- Standard: Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

25 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES

- General: Select to achieve specified service life and to suit treatability of specified wood species.

70 MAKING GOOD TO PROTECTION TREATMENT ON SITE

- Fire retardant/ preservative solution: Compatible with off-site treatment.
- Application: In accordance with preservative manufacturer's recommendations.

Z20 FIXINGS AND ADHESIVES

10 FIXINGS AND FASTENERS 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 or sleeves to avoid bimetallic corrosion.
- General usage: To recommendations of fastener manufacturers and/ or manufacturers of components, products or materials fixed and fixed to.
- Fixings: To be in straight lines, at regular centres.

25 FASTENER DURABILITY

- Materials: To have:
 - Bimetallic corrosion resistance appropriate to items being fixed.
 - Atmospheric corrosion resistance appropriate to fixing location.
- Appearance: Submit samples on request.

30 FIXINGS THROUGH FINISHES

- Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

35 PACKINGS

- Materials: Noncompressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

40 CRAMP FIXINGS

- Fasteners: Fix cramps to frames with screws of same material as cramps.
- Fixings in masonry work: Fully bed in mortar.

50 PELLETTED COUNTERSUNK SCREW FIXINGS

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, grain matched, glued in to full depth of hole.
- Finished level of pellets: Flush with surface.

55 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.

60 APPLYING ADHESIVES

- Surfaces: Clean. 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

- 10 MORTAR MIXES
 - Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

- 20 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 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.

- 25 SAND FOR LIME:SAND MASONRY MORTARS
 - Type: Sharp, well graded.
 - Quality, sampling and testing: To BS EN 13139.
 - Grading/ Source: As specified elsewhere.

- 30 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
 - Standard: To BS EN 998-2.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.

- 40 CEMENTS FOR MORTARS
 - Cement: To BS EN 197-1 and CE marked.
 - Types: Portland cement, CEM I.
 - Portland limestone cement, CEM II/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:
 - Types: To BS 4027 and Kitemarked.
 - To BS EN 197-1 fly ash cement, CEM II/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.

- 50 ADMIXTURES FOR SITE MADE 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.

- 60 MAKING MORTARS GENERALLY
 - 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.
- Contamination: Prevent intermixing with other materials.

70 MAKING HYDRAULIC LIME:SAND MORTARS

- Mixing hydrated hydraulic lime: sand: Follow the lime manufacturer's recommendations for each stage of the mix.
 - Water quantity: Only sufficient to produce a workable mix.

Z22 SEALANTS

PRODUCTS

31 JOINTS TO MOVEMENT JOINTS

- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION

61 SUITABILITY OF JOINTS

- Presealing checks:
 - Joint dimensions: Within limits specified for the sealant.
 - Substrate quality: Surfaces regular, undamaged and stable.

62 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.

63 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.