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C

Demolition/ Alteration/ Renovation

C20
Demolition

C20 Demolition

To be read with Preliminaries/General conditions

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION

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.

232 SERVICES DISCONNECTION ARRANGED BY EMPLOYER AND CONTRACTOR

- Responsibility: The Employer will arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to deconstruction/ demolition, as follows: Refer to Schedule and drawings provided by M&E Consultant.
- Disconnection of remaining services: Arrange with the appropriate authorities. Remove fittings and equipment not owned by those authorities.
- Timing: Do not start deconstruction/ demolition until disconnections are completed.

240 DISCONNECTION OF DRAINS

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

270 SERVICES TO BE RETAINED

- Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.
- Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner.

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.
- 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.
- 511 EMPLOYER'S PROPERTY
- Components and materials to remain the property of the Employer: The existing hoarding located on the beach around the existing cast iron columns. Contractor is required to visit the site to assess the current access arrangements as part of the tender stage. Working area around the columns can be assessed from the topographical survey.
 - Protection: Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.
 - Special requirements: The contractor will be provided a key to access within the existing hoarding which surrounds the columns. The contractor must seek consent from the Project Manager for any alterations to the hoarding. Any costs arising from changes to the hoarding will be borne by the main contractor. This includes, but not limited to, changes to increase working area and additional access points..
- 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.

C41

Repairing/ Renovating/ Conserving masonry

C41 Repairing/ Renovating/ Conserving masonry

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION

125 REMOVAL OF FITTINGS/ FIXTURES

- Items to be removed, and reinstated on completion of repair work: All existing cramps, dowels and other structural metalwork embedded within the masonry wall.
 - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe refixing instructions, where applicable.
 - Treatment following removal: To be agreed onsite following inspection by Architect and Project Manager. For tendering and pricing purposes, allow to replace all existing with new as C41/281. The site inspection may confirm if some of the existing metalwork can be reused..
 - Storage: Protect against damage, and store until required.
Storage location: On site. Contractor to submit proposals for Project Manager approval..
 - Reinstatement: Refit in original locations using original installation methods.
- Items unsuitable or not required for reuse: Iron cramps or dowels, replace with new grade 316 stainless steel. Decorate all visible fixings as section NBS section M60. Colour to be agreed..
 - Disposal: Contractor permitted to dispose of any redundant fixings from the masonry..
- Masonry fabric and surfaces: Do not damage during removal and replacement of fittings/ fixtures.

130 REMOVAL OF PLANT GROWTHS FROM MASONRY

- Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
- Removal of roots: Where growths cannot be removed completely without disturbing masonry seek instructions.
- 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: Record locations of masonry being dismantled so that they can be accurately reinstated.
- Documentation: Submit on completion of the work.
 - Number of sets: Contractor to provide a photographic elevation, or other drawn surveys with masonry units numbered and correlating to those onsite. Masonry units being dismantled should be clearly, but not indelibly, marked on the rear or top of the masonry unit..

WORKMANSHIP GENERALLY

150 POWER TOOLS

- Usage for removal of mortar: 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.

180 WORKMANSHIP

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

185 ADVERSE WEATHER

- 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.

MATERIALS/ PRODUCTION/ ACCESSORIES

215 MATERIAL SAMPLES

- Representative samples of designated materials: Submit before placing orders.
 - Designated materials: Sands for bedding and pointing.
- 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.

240A STONE

- Supplier: To be confirmed.
- Type: Limestone to match existing.
- 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 existing. Allow to tool the face of the masonry to replicate the border and picked panel of the existing coping stones. Tooling height and number per inch to match existing.
- Samples: Contractor to provide 5no. limestone samples for Architect and Project Manager approval.

245 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.

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.

281 FIXINGS New fixings to masonry wall

- Type: Submit proposals.
- Material: Austenitic stainless steel.
- Size, strength and number: As necessary to resist loads likely to occur during the life of the building, and to prevent 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 markings to drawings/ photographs.

- 320 REBUILDING Masonry Wall - Bedding mortar (Repointing covered in C41/820A)
- Replacement materials: Stone as clause 240.
 - Mortar: As section Z21.
 - Mix: Exact binder to aggregate ratio to be agreed onsite. Assume 1 part (binder) to 2:5.
 - Sand source/ type: As section Z21.
 - Fixings: Cramps and dowels as clause 281.
 - 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: Joint sizes to match existing. Refer to C41/820A for repointing specification.
 - Other requirements: Refer to C41/820A for repointing specification..
- 405 BONDED DOWELS For replacement dowels if required
- Dowels: Austenitic stainless steel.
 - Adhesive: Epoxy resin.
 - 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.
- 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.

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 twice joint thickness
 - - 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.
- 820A POINTING STONework GENERALLY
- Preparation of joints: As C41/801. Dampen joints, as necessary, to control suction.
 - Mortar: As section Z21.
 - Mix: Exact binder to be agreed following inspection of onsite trials. 1 part (binder) to 2:5 (aggregated or sand).
 - Binder type: St Astier NHL 3.5
 - Sand source/ type: As Section Z21 generally. Allow for 2 part Bryncir sand to 1/2 part of Bangor sand. Exact mix to be confirmed following samples..
 - Joints profile/ finish: Flush and as C41/860A.
 - Other requirements:
 - Pointing to be cured and protected as Z21/410.
 - Contractor to provide a minimum of 5no. pointing samples (minimum size to be 350mm x 350mm) for Architect approval.
 - Allow sufficient time for bedding mortar to cure/set prior to repointing. Due to the wall being retaining and the presence of moisture behind the wall, lime leaching on the face of the masonry could occur if the bedding or pointing mortar has not sufficiently cured..

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.

860A BRUSHED FINISH TO JOINTS

- Timing: the mortar is ready for finishing when it is still damp but has attained a semi-hard, leathery consistency; at this stage it can be marked with a thumbnail, but a thumb pressed into the surface leaves barely any impression. The time taken for mortar to reach this stage varies and the work programme must be adjusted to take account of this.
- Finish: To form a sympathetic finish to match adjacent weathered mortar the work should be hit firmly using a stiff bristled churn brush to compact the mortar and remove laitance and expose the aggregate.

D

Groundwork

D20

Excavating and filling

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

145 VARIATIONS IN GROUND WATER LEVEL

- Give notice: If levels encountered are significantly different from levels in the site investigation report or previously measured.

CLEARANCE/EXCAVATING

250 PERMISSIBLE DEVIATIONS FROM FORMATION LEVELS

- Beneath mass concrete foundations: ± 25 mm.
- Beneath ground bearing slabs and r.c. foundations: ± 15 mm.
- Embankments and cuttings: ± 50 mm.
- Ground abutting external walls: ± 50 mm, but such as to ensure that finished level is not less than 150 mm below dpc.

310 UNSTABLE GROUND

- Generally: Ensure that the excavation remains stable at all times.
- Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
- Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

330 UNRECORDED FEATURES

- Give notice: If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.

DISPOSAL OF MATERIALS

450 WATER

- Generally: Keep all excavations free from water until:
 - Formations are covered.
 - Below ground constructions are completed.
 - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

457 PUMPING

- General: Do not disturb excavated faces or stability of adjacent ground or structures.
- Pumped water: Discharge without flooding the site or adjoining property.
- Sumps: Construct clear of excavations. Fill on completion.
 - Locations: Submit proposals .

460 PERMANENT DRAINAGE SYSTEM

- Disposal of water from the excavations through system: Not permitted.

FILLING

500 PROPOSED FILL MATERIALS

- Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
 - Type and source of imported fill.
 - Proposals for processing and reuse of material excavated on site.
 - Test reports as required elsewhere.
- Timing: At least 21 days before starting filling.

510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS

- General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
 - Frozen or containing ice.
 - Organic.
 - Contaminated or noxious.
 - Susceptible to spontaneous combustion.
 - Likely to erode or decay and cause voids.
 - With excessive moisture content, slurry, mud or from marshes or bogs.
 - Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
 - Unacceptable, class U2 as defined in the Highways Agency 'Specification for highway works', clause 601.

520 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.8.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
 - Fine grained soil with a plasticity index less than 20%.
 - Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
 - Crushed chalk.
 - Crushed limestone fill with average saturation moisture content in excess of 3%.
 - Burnt colliery shale.
- Frost-susceptible fill: May only be used:
 - At depths below the finished ground surface greater than: 450 mm.
 - Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
 - Where frost heave will not affect structural elements.

530 PLACING FILL

- Surfaces of excavations and areas to be filled: Free from loose soil, topsoil, organic material, rubbish and standing water.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
- Adjacent structures, membranes and buried services:
 - Do not overload, destabilise or damage.
 - Submit proposals for temporary support necessary to ensure stability during filling.
 - Allow 14 days (minimum) before backfilling against in situ concrete structures.
- Layers: Place so that only one type of material occurs in each layer.
- Earthmoving equipment: Vary route to avoid rutting.

535 COMPACTION GENERALLY

- General: Compact fill not specified to be left loose as soon as possible after placing.
- After compaction: Surface of each layer must be well closed, showing no movement under compaction plant, and without cracks, holes, ridges, loose material and the like.
- Defective areas: Remove and recompact to full thickness of layer using new material.

540 BENCHING IN FILL

- Adjacent areas: If, during filling the difference in level between adjacent areas of filling exceeds 600 mm, cut into edge of higher filling to form benches 600 mm minimum width and height equivalent to depth of a layer of compacted filling.
- New filling: Spread and compact to ensure maximum continuity with previous filling.

610 COMPACTED FILLING FOR LANDSCAPE AREAS

- Fill: Material capable of compaction by light earthmoving plant.
- Filling: Layers not more than 200 mm thick. Lightly compact each layer to produce a stable soil structure.

615 LOOSE TIP FILLING FOR LANDSCAPE AREAS

- Filling: Do not firm, consolidate or compact when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.

617 HIGHWAYS AGENCY TYPE 1 UNBOUND MIXTURE

- Fill: To Highways Agency 'Specification for highway works', clauses 801 and 803:
 - Crushed rock (other than argillaceous rock).
 - Crushed concrete.
 - Recycled aggregates.
 - Crushed non-expansive slag.
 - Well-burned non-plastic colliery shale.
- Amendments to requirements in Highways Agency 'Specification for highway works': None.
- Filling: To Highways Agency 'Specification for highway works', clause 802.

618 HIGHWAYS AGENCY TYPE 2 UNBOUND MIXTURE

- Fill: To Highways Agency 'Specification for highway works', clauses 801 and 804:
 - Crushed rock (other than argillaceous rock).
 - Crushed concrete.
 - Crushed non-expansive slag.
 - Well-burned non-plastic colliery shale.
 - Natural gravel.
 - Natural sand.
- Amendments to requirements in Highways Agency 'Specification for highway works': None.
- Filling: To Highways Agency 'Specification for highway works', clause 802.

620 SUBGRADE IMPROVEMENT LAYER (CAPPING)

- Fill: To Highways Agency 'Specification for highway works', Table 6/1, Class 6F1 or 6F2.
- Filling: Place and compact to Highways Agency Specification for highway works, Table 6/1, clause 612 and clause 613.3, 613.9 and 613.10.

E

In situ concrete/Large precast concrete

E10

Mixing/casting/curing in situ concrete

E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

MATERIALS, BATCHING AND MIXING

314 REQUIRED SOURCE / SPECIAL TYPE OF AGGREGATE

- Exposed aggregate finish to CCBC approval. Rounded glacial gravel from Cefn Grainiog quarry or similar approved by CCBC. Strength and abrasion requirements in accordance with structural engineers details.
- To be read in accordance with E10/315.

315 AGGREGATES FOR EXPOSED VISUAL CONCRETE

- Limitations on contaminants: Free from absorbent particles which may cause 'popouts', and other particles such as coal and iron sulfide which may be unsightly or cause unacceptable staining .
- Colour: Consistent .
- Supply: From a single source and maintained throughout the contract .
- Samples: Submit on request .

325 MATERIALS FOR EXPOSED VISUAL CONCRETE

- Alterations to sources, types and proportions: Submit proposals .

418A PROPRIETARY ADMIXTURE

- Standard: To BS EN 12878 .
- Required Admixture: Citrus coloured pigment by SLP Colourtone to match Phase 1b promenade RC slab to CCBC approval. Contractor to submit other proposed admixtures for approval. Admixtures must not contain calcium chloride and must be compliant with BS EN 934. Each constituent materials to be obtained from a single consistent source.
- Samples: Contractor to provide a minimum of 5no. samples of the finished concrete slab for CCBC approval.

G

Structural/Carcassing metal/timber

G20

Carpentry/ timber framing/ first fixing

G20 Carpentry/ timber framing/ first fixing

To be read with Preliminaries/ General conditions.

GENERAL

105 TIMBER PROCUREMENT

- Timber (including timber for wood based products): Obtained from well managed forests/ 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, or
 - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

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) Timber fascia boards

- 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: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
Design service life: 20 years.
 - Fire retardant treatment: None required.

275A WOOD TRIM Along fascia

- Manufacturer: WRP
- Contact: 01799 543997
- Product: Architrave A894 (75mm tall by 44mm wide).
- Species: Accoya.
- Standard: To BS 1186-3.
- Fixing: Minimum of 3no. 50mm stainless steel screws per linear meter. Screw heads to be recessed into the face of the timber and filled before decoration.
- Delivered primed as M60.
- Jointing: 45 degree mitred jointing at board ends.

WORKMANSHIP GENERALLY

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.

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.

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%.

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.

520 EXPOSED END GRAIN PROTECTION

- Components: Seal exposed end grain of the following before delivery to site:
 - Timber fascias and mouldings..
- Sealer: An extra coat of primer.

530 PAINTED FINISHES

- Structural timber to be painted: Primed as specified before delivery to site.

JOINTING TIMBER

M

Surface finishes

M60

Painting/clear finishing

M60 Painting/clear finishing

To be read with Preliminaries/General conditions.

COATING SYSTEMS

- 130 GLOSS PAINT TO EXTERNAL SOFTWOOD
- Manufacturer: Dulux Trade, brand of AkzoNobel.
 - Product reference: 3 Part System. Weathershield Exterior High Gloss.
 - Surfaces: Uncoated timber.
 - Preparation: Degrease and provide key.
 - Initial coats: Dulux Trade - Aquatech Preservative Basecoat+ (BP).
 - Number of coats: 2.
 - Undercoats: Dulux Trade - Exterior Flexible undercoat.
 - Number of coats: 2.
 - Finishing coats: Weathershield Exterior High Gloss. RAL Colour TBC.
 - Number of coats: Minimum of 2 coats.

175A COATING To cleaned, repaired and galvanised cast iron details

- Manufacturer: Sherwin Williams.
 - Contact: Paula Williams, Technical Advisor Customer Support, 01204 556429
 - Email: paula.williams@sherwin.com
- Use/location: External exposed cast iron in a C5-M Marine Environment/Buried/Subject to Immersion.
 - Preparation: Clean and degrease with diluted Degreaser W500, fresh water rinse and allow to dry before applying Mordant Wash L703 by brush. Special requirements: The L703, which is blue, will turn grey / black overall and remain on the substrate as an integral part of the system. If no reaction occurs, repeat the preparation procedure..
- Primer Coat: Macropoxy K267 MIO
 - Number of coats: 1
 - Dry film thickness: 150* microns nominal as defined in BS EN ISO 12944-5.
 - Colour: Light Grey (R8051)
- Top coats: Acrolon C237 Sheen Finish
 - Number of coats: Minimum of 2. coats. Depending on method of application/shade , multiple coats may be required to achieve dft/shade.
 - Dry film thickness 50-75* microns nominal as defined in BS EN ISO 12944-5. (per coat).
 - Colour: RAL colour to be confirmed.
- Product Information: Refer to Product Information Sheet. Allow works undertake in strict accordance with manufacturers recommendation.
- Notes on specification:
 - a) Dry film thicknesses (d.f.t.) quoted are NOMINAL as defined by BS EN ISO 12944-5.
 - b) Where break-down has occurred in galvanizing and the underlying steel is corroding, any rust areas must be prepared by mechanically cleaning to a minimum St3. The edges of surrounding galvanizing should be feathered off, and the prepared area primed with Macropoxy M902 Epoxy Aluminium Primer, overlapping on to the feathered edges.
 - c) Stripe coat all edges, welds and areas of difficult access, to ensure full film thickness.
 - d) Coated steelwork should be protected to prevent the ponding of water.
 - e) Finish /Topcoat is available in a full range of colours
 - f) Subject to shade, 2 coats of the finish coat may be required for full colour obliteration
 - g) All materials should be obtained from Sherwin-Williams and must be applied in accordance with our Technical Data Sheets
 - h) The same material is used for site touch up following suitable cleaning and re-preparation of affected areas.

175B COATING To refurbished cast iron columns

- Manufacturer: Sherwin Williams.
 - Contact: Paula Williams, Technical Advisor Customer Support, 01204 556429
 - Email: paula.williams@sherwin.com
- Use/location: External exposed cast iron in a C5-M Marine Environment/Buried/Subject to Immersion.
 - Preparation: Provide temporary protection as M60/451A. Blast clean as M60/531..
- Site Primer: Macropoxy L425 Zinc Phosphate Primer
 - Number of coats: 1
 - Dry film thickness: 50 microns nominal as defined in BS EN ISO 12955-5.
 - Special requirements: Stipple on by brush.
- Initial coats: Macropoxy C123 Epoxy Glass Flake.
 - Number of coats: 2.
 - Dry film thickness: 250 microns nominal as defined in BS EN ISO 12944-5.
- Finishing coats: Acrolon C137V2 Gloss or Acrolon C237 Sheen Finish.
 - Number of coats: To be confirmed onsite. Project Manager to inspect after each coat. Allow 2 number of coats.
 - Dry film thickness (per coat): 50-75 microns nominal as defined in BS EN ISO 12944-5.
 - Colour: RAL colour to be confirmed.
- Product Information: Refer to Product Information Sheet. Allow works undertake in strict accordance with manufacturers recommendation.

176A GALVANIZING COATING To Galvanized coatings

- Manufacturer: Sherwin Williams.
 - Product: NEW GALVANIZING PLUS TWO PACK EPOXY MIO WITH A URETHANE FINISH
 - Contact: Paula Williams, Technical Advisor Customer Support, 01204 556429
 - Email: paula.williams@sherwin.com
- Use/location: External exposed cast iron in a C5-M Marine Environment/Buried/Subject to Immersion.
 - Preparation: Flash Blast with non-metallic abrasive - average surface profile in the range 20 - 30 microns.
- Primer Coat: Macropoxy K267 MIO
 - Number of coats: 1
 - Dry film thickness: 150 microns nominal as defined in BS EN ISO 12944-5.
 - Colour: Light Grey (R8051)
 - Special requirements: Stipple on by brush.
- Top Coat: Acrolon C137V2 Gloss or Acrolon C237 Sheen Finish.
 - Number of coats: To be confirmed onsite. Project Manager to inspect after each coat. Allow 2 number of coats.
 - Dry film thickness (per coat): 50-75 microns nominal as defined in BS EN ISO 12944-5.
 - Colour: RAL colour to be confirmed.
- Product Information: Refer to Product Information Sheet. Allow works undertake in strict accordance with manufacturers recommendation.

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.

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.
- Refer to any pre-existing CDM Health and Safety File.
- Refer to CDM Construction Phase Plan where applicable.
- 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.

451A PREVIOUSLY COATED SURFACES - BLAST CLEANING

- Blast clean to BS EN ISO 8501-1
- Trials: Undertake cleaning trials for Project Manager approval prior to wholesale cleaning.
- Operatives:
 - Trained/ experienced in blast cleaning.
 - Submit evidence of training/ experience on request.
- Dust and nuisance: Minimize. Contractor to construct temporary timber partitions and temporary protection around each of the existing cast iron columns to protect the surface of the cast iron from the marine environment prior to the application of the primer and decoration. The contractor must also ensure that the "aggregate" used during the cleaning process is collected and taken offsite and does not escape onto the beach.

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.

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 2.5.
- Primer: Apply as soon as possible and within four hours of blast cleaning.

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: Underside of timber sole plate.
 - Additional coatings: One undercoat.

Q

Paving/Planting/Fencing/Site furniture

Q10

Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

TYPES OF KERBS/EDGINGS AND CHANNELS

112A PRECAST KERB Kerbs

- Standard: To BS EN 1340.
- Manufacturer: Marshalls plc..
- Contact:
www.marshalls.co.uk
info@marshalls.co.uk
T: +44 (0)330 0574472
F: +44 (0)870 2414165
- Product: Half Battered Kerb.
- Size (width x height x length): 150 x 305 x 915.
- Special shapes:
 - (a) Drop kerb (transition Kerb)
 - (b) flush kerbs to suit crossing where required and stipulated on drawings.
- Colour: Natural - To match adjacent on recent promenade work
- Bending strength: Contractor Choice: To be in accordance with BS EN 1340.
- Bedding: As NBS Q10/530 & NBS Q10/540 .
- Laying: As NBS Q10/510.
- Joints generally: Tooled coloured mortar.
- Sealant movement joints: Contractor to consult with manufacturer and determine if sealant movement joints are required.

LAYING

510 LAYING KERBS, EDGINGS AND CHANNELS

- Cutting: Neat, accurate and without spalling. Form neat junctions.
 - Long units (450 mm and over) minimum length after cutting: 300 mm.
 - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
- Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
- Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.

520 ADVERSE WEATHER

- Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

540 CEMENT MORTAR BEDDING

- General: To section Z21.
- Mix (Portland cement:sand): 1:3.
 - Portland cement: Class CEM I 42.5 to BS EN 197-1.
 - Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
- Bed thickness: 12-40 mm.

620 ACCURACY

- Deviations (maximum):
 - Level: ± 6 mm.
 - Horizontal and vertical alignment: 3 mm in 3 m.

625 REGULARITY OF PAVED SURFACES

- Maximum undulation of (non-tactile) paving surface: 3 mm.
 - Method of measurement: Under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface).
- Difference in level between adjacent units (maximum):
 - Joints flush with the surface: Twice the joint width (with 5 mm max difference in level).
 - Recessed, filled joints: 2 mm.
 - Recess depth (maximum): 5 mm.
 - Unfilled joints: 2 mm.
- Sudden irregularities: Not permitted.

630 NARROW MORTAR JOINTS

- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
 - Joint width: 3 mm.

650A IMPLEMENTATION OF PAVING DESIGN

- Design Intent: Paving design to be in accordance with design intent shown on Donald Insall Drawing CBVP.01. 2010.
- Technical Design and implmenetation: Main contractor to responsibilities to allow for and advise on technical design including but not limited to the requirements of any movement joints, ensuring suitable sub-base to paving and borders and compliance with the standards set out in BS 7533 Series.
- Setting out: Contractor to providing setting out drawing for project manager approval.

Q20

Granular sub-bases to roads/ pavings

Q20 Granular sub-bases to roads/ pavings

To be read with Preliminaries/ General conditions.

110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS

- Thicknesses: See sections:
 - Q21 In situ concrete roads/pavings/bases;
 - Q22 Coated macadam/asphalt roads/pavings;
 - Q24 Interlocking brick/block roads/pavings; and
 - Q25 Slab/brick/sett/cobble pavings.

130 HERBICIDES

- Type: Contractor's choice.
- Application: To subgrade of footpath.

140 EXCAVATION OF SUBGRADES

- Final excavation to formation or subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Excavate to remove soft or damaged material, then backfill with specified granular sub-base material and compact..
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION AND COMPACTION OF SUBGRADES

- Timing: Immediately before placing sub-base.
- Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers 300 mm (maximum) thick.
- Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

150 SUBGRADES FOR VEHICULAR AREAS

- Preparation and treatment: To Highways Agency 'Specification for highway works', clauses 616 and 617.

205 HIGHWAYS AGENCY TYPE 2 UNBOUND MIXTURE FOR SUB-BASE

- Material: Type 2 unbound mixture to Highways Agency 'Specification for highway works', clauses 801 and 804.
 - Recycled aggregate: Not permitted.
 - CBR (minimum): 20%.

210 HIGHWAYS AGENCY TYPE 1 UNBOUND MIXTURE FOR SUB-BASE

- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clauses 801 and 803.
 - Recycled aggregate: Not permitted.

211 GRANULAR MATERIAL

- Quality: Of a known suitability for use in sub-bases, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA50 for the Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
 - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
 - Gravel or hoggins with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - Natural gravel.
 - Natural sand.
- Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.

220 FROST SUSCEPTIBLE GRANULAR MATERIAL

- Definition (non frost susceptible material): To Highways Agency 'Specification for highway works' clause 801.8.
- Depth of frost susceptible material below final surface of paving (minimum): 450 mm.
- Testing: Test materials used if required and supply certificates.

225 PLACING OF MATERIAL WITH HIGH SULFATE CONTENT

- Standard: To Highways Agency 'Specification for highway works', clauses 801.2 and 801.3.
 - Separation distance (minimum): 500 mm.

230 PLACING GRANULAR MATERIAL GENERALLY

- Preparation: Loose soil, rubbish and standing water removed.
- Structures, membranes and buried services: Ensure stability and avoid damage.

240 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS

- General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
- Standard: To Highways Agency 'Specification for highway works' clause 802.
- At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.

250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS

- General: Spread and levelled.
- Compaction:
 - Timing: As soon as possible after laying.
 - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

310 ACCURACY

- Permissible deviation from required levels, falls and cambers (maximum):
 - Subgrades:
 - Roads and parking areas: +20 -30 mm.
 - Footways and recreation areas: $\pm$ 20 mm.
 - Sub-bases:
 - Roads and parking areas: +10 -10 mm.
 - Footways and recreation areas: +5 -10 mm.

330 COLD WEATHER WORKING

- Frozen materials: Do not use.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

340 PROTECTION

- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
- Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

Q25

Slab/ brick/ sett/ cobble pavings

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

SYSTEM PERFORMANCE

PRODUCTS

315A CONCRETE PAVING

- Manufacturer: Hardscape Products Ltd.
 - Web: www.hardscape.co.uk.
 - Email: enq@hardscape.co.uk.
 - Product reference: Lavaró.
- Size: 400x600mm.
- Thickness: 60mm.
- Bond: Brick
- Colour/ Finish: Wit 540. Contractor to provide sample for Project Manager approval prior to order.
- Sub Base: 30mm sand bedding as NBS Q25/390 on 220mm Type 1 sub-base as NBS Q20/210 and Q20 generally. 6mm mortar 40/mn2) joints.

315B CONCRETE PAVING

- Manufacturer: Hardscape Products Ltd.
 - Web: www.hardscape.co.uk.
 - Email: enq@hardscape.co.uk.
 - Product reference: Lavaró.
- Size: 100x300mm.
- Thickness: 100mm.
- Colour/ Finish: Wit 540. Contractor to provide sample for Project Manager approval prior to order.
- Sub Base: 30mm sand bedding as NBS Q25/390 on 100mm pavement grade concrete (32/40) on 220mm Type 1 sub-base as NBS Q20/210 and Q20 generally. 6mm mortar 40/mn2) joints.

320A TACTILE FLAGS AND SLABS As specified

- Standard: To BS EN 1342.
- Material: Natural Granite.
 - Manufacturer: Hardscape.
 - Address: 107 High St, West Bromwich B70 6NY
 - Product reference: Allow for Royal White Granite.
- Nominal sizes: 450 x 450 mm. 75mm thick..
- Colour: Natural.
- Finish: Coarse textured.
- Type of surface: Rib – type R1.
- Samples: Contractor to provide samples of 'Mist', 'Royal White', 'Classic, and 'Darton' for Project Manager to review and confirm.

330A NATURAL STONE SETTS Transition onto pier

- Standard: To BS EN 1342.
- Supplier: Hardscape.
 - Address: 107 High St, West Bromwich B70 6NY
 - Product reference: Natural Granite.
 - Finish: Coarse textured.
- Sizes: Sectional dimensions to match drawing. Minimum lengths as specified by Structural Engineer.
- Slip resistance: PTV to BS 7976-2 of 40.
- Samples: Contractor to provide samples of 'Mist', 'Royal White', 'Classic, and 'Darton' for Project Manager to review and confirm.

390 SAND FOR FLEXIBLE LAYING COURSE AND JOINTING OF CONCRETE FLAG PAVING

- Standard: To BS 7533-4, unbound construction laying course and jointing material.
- Purity: Free from deleterious salts, contaminants, lime and cement.
- Procurement: Obtain from one source and ensure consistent grading.

EXECUTION

610 MATERIAL SAMPLES

- Samples representative of colour and appearance of designated materials: Submit before placing orders.
 - Designated materials: Concrete slab paving .

620 ADVERSE WEATHER

- General:
 - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
 - Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
- Paving with mortar joints and/ or bedding:
 - Protect from frost damage, rapid drying out and saturation until mortar has hardened.
- Paving laid and jointed in sand:
 - Stockpiled bedding sand: Protect from saturation.
 - Exposed areas of sand bedding and uncompacted areas of sand bedded paving: Protect from heavy rainfall.
 - Saturated sand bedding: Remove and replace, or allow to dry before proceeding.
 - Laying dry-sand jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

625 LAYING PAVINGS - GENERAL

- Appearance: Smooth and even with regular joints and accurate to line, level and profile.
- Falls: To prevent ponding.
- Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
 - Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
- Slopes: Lay paving units upwards from the bottom of slopes.
- Paving units: Free of mortar and sand stains.
- Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.

630 LEVELS OF PAVING

- Permissible deviation from specified levels:
 - Generally: ± 6 mm.
- Height of finished paving above features:
 - At gullies: +6 to +10 mm.
 - At drainage channels and kerbs: +3 to +6 mm.

637 REGULARITY OF PAVED SURFACES

- Maximum undulations in the surface of pavings (except tactile paving surfaces) under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface): 3 mm.
- Joints between paving units or utility access covers:
 - Joints flush with the surface: difference in level between adjacent units to be no more than twice the joint width (with a 5 mm max difference in level).
 - Recessed, filled joints: difference in level between adjacent units to be no greater than 2 mm; the recess to be no deeper than 5 mm.
 - Unfilled joints: difference in level between adjacent units to be no greater than 2 mm.
- Sudden irregularities: Not permitted.

650 CEMENTITIOUS BASES AND SUB-BASES

- General: Protect from moisture loss, if not covered by another pavement course within 2 hours of completion.

655 CONDITION OF SUB-BASES/ BASES BEFORE SPREADING LAYING COURSE

- Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
- Granular surfaces: Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
- Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
- Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
- Levels and falls: Accurate and within the specified tolerances.
- Drainage outlets: Within 0-10 mm of the required finished level.
- Features in sand bedded paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
- Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS 7533-4.

COMPLETION

915 COMPLETION OF PAVING WITH DRY SAND OR FINE AGGREGATE FILLED JOINTS

- Sand dressing: Leave a thin layer of dry jointing sand over the paving, sweep clean before practical completion.
- Final compaction of the surface course: In accordance with BS 7533-3.
- Vacuum cleaning machines: Not allowed.

Q41

Barriers/ guardrails

Q41 Barriers/ guardrails

To be read with Preliminaries/ General conditions.

TYPES OF BARRIERS/ GUARDRAILS

110A POST AND RAIL SYSTEM

- Manufacturer: Marshalls plc.
 - Web: www.marshalls.co.uk.
 - Email: info@marshalls.co.uk.
 - Product reference: Ferrocast® Harbour 3 Rail Post and Rail System (Root Fixing)
- Layout: As Donald Insall drawing 2010.
- Colour: RAL 1013 Oyster White.
- Finish: Matt.
- Fixing Details: Upper promenade: Root fixing
Lower promenade: Base fixing.
Drawing to be read in conjunction with structural engineers details
- Other Requirements: Contractor to procure the services Marshalls to undertake a full site survey and provide fabrication designs to suit the curvature and site levels. Drawings to be provided to Project Manager for approval prior to commencement. .

110B PEDESTRIAN RESTRAINT SYSTEMS IN METAL

- Standard: To BS 7818.
- Manufacturer: Submit proposals for Project Manager approval.
 - Product reference: Visi Rail to match adjacent.
- Height above datum (minimum): 1000 mm.
- Rails and posts:
 - Material/ Protection: Steel, galvanized to BS EN ISO 1461 after fabrication.
- Infill:
 - Class B.
 - Type: To match existing.
 - Material/ Protection: Steel, galvanized to BS EN ISO 1461 after fabrication.
- Surface finish: To match adjacent.
- Foundations: In accordance with structural engineer details.
- Performance verification: Submit a certificate of the restraint system's conformity to BS 7818, issued by a United Kingdom Accreditation Service (UKAS) independent laboratory, prior to ordering materials.

240A HANDRAIL SYSTEMS New handrail to balustrade

- System manufacturer: Contractor's choice.
- Material: Galvanised steel round tube as BS 1387 .
 - Cross section: 48.8mm diameter.
 - Thickness: Minimum of 3.2mm.
 - Finish: Undercoat, primer and paint, as section M60/176A.
- Straight Joint: Fittings - Straight Crimp. Finish- Galvanised. Decorated all visible areas as M60/176. Fixings as manufacturers recommendations.
- Corner Joint Fittings: 90 degree elbow crimp connector. Finish - Galvanised. Decorated all visible areas as M60/176. Fixings as manufacturers recommendations.
- Special requirements: The tubular handrail must span over a minimum of 3no posts.
- Accesories: Provide galvanised steel cap to 2no. ends (at apron) to terminate the handrail. Caps to be approximetely 54mm in diameter and have rounded edges (Sharp edges must be avoided).
- Priovide 1no. Nitrile Rubber seal at each post (concealed with post void) to provide a tighter fix between handrail and post. Inner and Outer diameter to suit handrail and existing void within posts.

INSTALLATION

410 WORK ON OR ADJACENT TO HIGHWAYS

- Requirement: Comply with the Department for Transport's 'Safety at street works and road works. A code of practice'. Retain a copy of this document on site at all times during the course of the works.

420 ALIGNMENT

- Erection: Fences/ barriers to present a flowing alignment. Tops of posts to follow ground profile.
- Tolerance: ± 30 mm of prescribed alignment and, within any 10 m length, ± 15 mm from the straight or required radius.

480 CONCRETE FOUNDATIONS FOR POSTS

- Excavations: To have vertical sides. Dispose of all arisings. Blind excavation bottoms with a 50 mm layer of concrete.
- Concrete mix: To BS 8500-2, Designated mix not less than GEN 4 or Standard mix not less than ST5. Do not use admixtures.
- Placing concrete: Fill holes to not less than the specified depth and fully compact. Do not backfill for at least four days.
- Temporary support to posts: Provide for at least four days after placing concrete.

Q50

Site/ street furniture/ equipment

Q50 Site/ street furniture/ equipment

To be read with Preliminaries/ General conditions.

GATES, BARRIERS AND PARKING CONTROLS

190A BOLLARD

- Manufacturer: Marshalls plc.
 - Web: www.marshalls.co.uk.
 - Email: info@marshalls.co.uk.
 - Product reference: BL228 Ferrocast® Cornwall Bollard, Anti Ram.
- Colour: Oyster White.
- Finish: Matt.
- Additional finishing: Not required.
- Fixing: Root fixing. Refer to Marshalls drawing PS-FE-BL-10109.
- Accessories: Not required.

196A BOLLARD

- Manufacturer: Marshalls plc.
 - Web: www.marshalls.co.uk.
 - Email: info@marshalls.co.uk.
 - Product reference: BL228 Ferrocast® Cornwall Bollard, Anti Ram.
- Colour: Oyster White.
- Finish: Matt.
- Additional finishing: Not required.
- Fixing: Removable. Please refer to Marshall drawing PS-FE-BL-10832.
- Accessories: Locking socket.

INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Concrete: As specified by Structural Engineer.
- Admixtures: Do not use.
- Foundation holes: Neat vertical sides.
- Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

Q55

External decks, boardwalks and bridges

Q55 External decks, boardwalks and bridges

To be read with Preliminaries/ General conditions.

TENDERING

10 INFORMATION TO BE PROVIDED WITH TENDER

- General structural requirements in accordance with clause B50/15.

GENERAL

110A DECK Procurement

- Procurement: The timber for the decking and joists will be procured directly by the local authority and made freely available for use by the main contractor.
- Contractor Responsibility: The contractor will be required to liaise, take delivery and suitably store the timber onsite prior to installation. The contractor will be responsible for carting offsite all waste material following the completion of the work..

PRODUCTS

305 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: Forest Stewardship Council (FSC).
- Other evidence: Provide evidence of compliance.

310A STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS) For timber sole plate

- Grading standard: To BS 4978, BS EN 14081-1, -2, -3 and -4, or other national equivalent and so marked.
- Strength class to BS EN 338: C24.
- Treatment: To WPA Commodity Specification C12, to provide a 30 year service life.
- Finish: Sand down surface of timber to remove visible saw marks prior to decoration.
- Procurement: As NBS Q55/305.

FABRICATION

EXECUTION

610 LOADING

- Site activities: Restrict, to ensure that design loads are not exceeded, or submit proposals for temporary supports.

660 PRESERVATIVE TREATED TIMBER

- Surfaces exposed by minor cutting and drilling: Treated by immersion or with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.
- Heavily worked sections: Re-treat.

680 SITE PAINTING AND STAINING

- Timing: Prepare surfaces and apply finishes as soon as possible after installing components.

Z

Building fabric reference specification

Z21
Mortars

Z21 Mortars

To be read with Preliminaries/ General conditions.

LIME:SAND MORTARS

305 WATER

- Clean and uncontaminated. Obtain approval for other than mains supply. Test to BS3148 if instructed.

320A SAND FOR LIME: SAND MASONRY MORTARS

- Type: Sharp, well graded and conforming to the methods of sampling and testing and quality requirements of BS EN 13139.
- Sand for facework mortar to be from consistent sources, different loads to be mixed may be necessary to ensure consistency of colour and texture.
- Sands for mortars generally to be well graded and to an approved sample.
- Generally, for historic building work an analysis should be done of existing materials

350A STORAGE OF LIME:SAND MORTAR MATERIALS

- Store different sands and aggregates in different stockpiles on hard clean bases that allow free drainage.
- Store bags of hydrated hydraulic lime powder in dry conditions, raised off the ground and not touching damp surfaces. Do not use hydrated hydraulic lime affected by damp.
- Store ready prepared nonhydraulic lime putty in conditions that prevent drying out and protect from frost.
- Store nonhydraulic lime:sand mortar either on clean bases or in clean containers that allow free drainage. Keep covered to prevent drying out or wetting and protect from frost.
- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

360 MAKING LIME:SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: Prevent intermixing with other materials, including cement.

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.

400A 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.
- Working time: Within limits recommended by the hydraulic lime manufacturer.
- Protection & Curing: As Z21/ 410.

410 PROTECTION AND CURING

- All lime work should be protected against wind, rain and strong sunlight to ensure rapid drying, shrinkage, cracking or damage to the mortar. Rapid loss of water from fresh mortars is the greatest hazard in warm weather. Sunlight and high temperatures encourage water evaporation and drying is accelerated due to wind.
- Regular water misting: Contractor must ensure lime mortars are lightly sprayed to keep damp (not wet) for a minimum of 7 days following the application of the mortar. Provisions must be made for dampening down over weekend periods.
- Protection: Adequate provisions for protection the mortars must be undertaken. Provide a single hessian or thin cotton sheet approx 100mm from the surface of the masonry. Hessian sheeting should also be dampened down using a light water spray. An outer plastic sheet may also be required to prevent the hessian or cotton sheet drying out in windy, sunny or exposed locations. A 100mm air flow void should be maintained between the surface of the lime mortars and the sheeting.
- Fixings and support: Contractor to allow for providing any temporary support to sheeting and weights to secure sheeting.
- The need for ongoing protection beyond the 7 days will depend upon the environmental conditions. Experienced craftspersons undertaking the work should be experienced in the use and protection of lime mortars.