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Gloucester Gate Playground

NBS Landscape Specification

10335_LD_SCH_600

Implementation Stage
Prepared by LUC
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Project Title: Gloucester Gate Playground

Client: The Royal Parks

Project Ref: 10335_LD_SCH_600

Version	Date	Version Details	Prepared by	Checked by	Approved by
T1	27.02.19	First Issue	AM	JL	JEW
T2	15.03.19	Tender Issue	AM	JL	JEW

Table of Contents

B
Complete buildings/ structures/ units

B91
Buildings in the landscape

B91 Buildings in the landscape

To be read with Preliminaries/ General conditions.

SYSTEM OUTLINE

395A WATER PLAY BOOST-A-BREAK-PLANET ROOM / STORAGE UNIT Refer to Water Feature Specification document (By TFWL)
- For details regarding plant room size, wall/door specification, mechanical fit out, access and internal flooring/levels, refer to document above.
- For plant room excavation, floor slab break out and demolition work refer to document above.
- Exact levels for new plant room floor to be confirmed on-site at demolition phase, in accordance with document above.

EXECUTION/ ERECTION/ INSTALLATION

600A ERECTION/ INSTALLATION GENERALLY WATER PLAY BOOST-A-BREAK-PLANT ROOM / STORAGE UNIT: Refer to Water Feature Specification document (By TFWL)
- Frameworks: Refer to above document for installation.
- Contact between dissimilar metals: Avoid.
- Fixings: Fully bolt together. Tighten bolts.
- Temporary support: Do not subject members to non-design loadings.

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

610A CONCRETE FOUNDATIONS GENERALLY WATER PLAY BOOST-A-BREAK-PLANT ROOM / STORAGE UNIT: Refer to Water Feature Specification document (By TFWL)
- Concrete: To BS 8500-2.
- Mix: Designated concrete not less than GEN 1 or standard prescribed concrete not less than ST2.
- Admixtures: Do not use.
- Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.
- Allowance to be made for the making good of final surface layer type. Where soft landscape applies - allowance to be made for re-use/import of appropriate subsoil and topsoil depths to achieve final levels over new and adjusted foundations.
- Foundation holes: Neat vertical sides.
- Components: Accurately positioned and securely supported.
- Concrete fill: Compact as filling proceeds.
- Concrete foundations exposed to view: Compact until air bubbles cease to appear on the upper surface, then weather to shed water and trowel smooth.
- Temporary component support: Maintain undisturbed for minimum 48 hours.

630A ERECTION OF PREFABRICATED STRUCTURES WATER PLAY BOOST-A-BREAK-PLANT ROOM / STORAGE UNIT: Refer to Water Feature Specification document (By TFWL)
- Applicable to all off-site constructed items, including play equipment, site furniture and waterplay/plant room items.
- Checking: Five days (minimum) before proposed erection date, check foundations, holding down bolts, etc.
- Inaccuracies or defects in prepared bases or supplied structures: Report immediately. Obtain instructions before proceeding.

640 SITE PAINTING AND STAINING
- Timing: Prepare surfaces and apply finishes as soon as possible after installing components.

645A PROTECTING NEWLY LAID STONE PATHS FROM STAINING FROM WOOD TANNINS
- Provide temporary protection from staining wood tannins to new and existing surfaces under shade sail, benches and play equipment.

COMPLETION

910A INSPECTION OF STRUCTURES WATER PLAY BOOST-A-BREAK-PLANT ROOM / STORAGE UNIT: Refer to Water Feature Specification document (By TFWL)
- Standard: In accordance with BS EN 1990 and BS 5268-2.
- Timing: Give reasonable notice before covering up.
- Period of notice (minimum): Three working days.
- Maintenance inspection: Check and tighten fixings 6-8 weeks after completion of structure.

930 DOCUMENTATION
- Contents:
  - Copies of structural design calculations/ test reports.
  - General product information.
  - Installation information.
  - Inspection and maintenance reports.
- Number of copies: 1 issued as PDF to the CA/client.
- Submission: Submit proposals.

C
Demolition/ Alteration/ Renovation

C20
Demolition

C20 Demolition

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS

120 EXTENT OF DECONSTRUCTION/ DEMOLITION
- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to foundation level: Break up and dig out foundations.

130 GROUNDWORKS
- Old foundations, slabs and the like: Break out in locations and to the extents stated.
- Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.

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

150A FEATURES TO BE RETAINED
- General: Keep in place and protect the following: ALL retained items and trees/vegetation on-site, in accordance with the LUC Drgs 10335_LD_PLN_000-433.

SERVICES AFFECTED BY DECONSTRUCTION/DEMOLITION
- Refer to drawing: 10335-LD-PLN-135 + TRP Gloucester Gate Surface Drainage Drawings.
- Client/CA is to meet the contractor, and supply all known TRP information on services (inlcuding the above) prior to commencement of work on-site

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.

240A DISCONNECTION OF DRAINS Extents to be confirmed on-site with CA and engineer / client
- General: Locate, disconnect and seal disused foul and surface water drains.
- Sealing: Permanent, and within the site.
- Existing gullies withing soft and hard landscape to be investigated and cleaned out.

250 LIVE FOUL AND SURFACE WATER DRAINS
- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
  - Protect; maintain normal flow during deconstruction/ demolition.
  - Make good any damage arising from deconstruction/ demolition work.
  - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: Allowance to be made for repairs/relocation of existing surface drainage systems - to be confirmed with CA/client on-site prior to commencement of works.

260 SERVICE BYPASS CONNECTIONS
- General: Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction/ demolition is taking place and to adjoining sites/ properties.
- Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.

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
- Refer to LUC drg 10335_LD_PLN_120 + drg set 10335_LD_PLN_000-433.

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

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

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

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

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

360 STRUCTURES TO BE RETAINED
- Extent: Please refer to LUC drgs 10335_LD_PLN_221-223..
- Parts which are to be kept in place: Protect.
- Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

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

380A DANGEROUS OPENINGS
- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- Access: Prevent access by unauthorized persons.
- Observe: LUC report 10335-LD-REP-603

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.

420A OPEN EXCAVATIONS AND SUNKEN PIT CONSTRUCTION, ETC
[e.g. Drainage works by engineer]
- Temporary support: Leave adequate buttress walls or provide temporary support to basement retaining walls up to ground level.
- Safety: Make remaining sections of retaining and buttress walls safe and secure.
- Water movement: Make holes in basement floors to allow water drainage or penetration (depending on water table). Provide a hole for every 10 m², not less than 600 mm in diameter.
- Observe: LUC report 10335-LD-REP-603

430A FILLING OF EXCAVATIONS AND SUNKEN PITS, ETC
- Temporary support: Leave adequate buttress walls or provide temporary support to basement retaining walls up to ground level.
- Water movement: Make holes in basement floors to allow water drainage or penetration (depending on water table). Provide a hole for every 10 m², not less than 600 mm in diameter.
- Filling: Remove organic material and soil from basements and other voids. Fill and consolidate with granular material in accordance with local Highway Authority requirements.
- Observe: LUC report 10335-LD-REP-603

450 SITE CONDITION AT COMPLETION
- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: Extensive stone pick and cart off, for ALL planting, including grass areas and bedding.

460 SITE LEVELS AT COMPLETION
- Levels: Refer to levels and finishes as indicated in full drawing set, marrying into existing, (with special attention to LUC drgs 10335_LD_PLN_221-223, Water Play Performance Specification by TFWL, and Engineers drianage design and specification).

MATERIALS ARISING

510A CONTRACTOR'S PROPERTY
- Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided, see drawing 10335_LD_PLN_120 for further information on materials to be stored for re-use by the client (e.g. existing railings and picnic benches on-site).
- Action: Where permitted, as per drawing 10335_LD_PLN_120, remove from site as work proceeds where not to be reused or recycled for site use.

520A 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 as agreed with CA.
- Evidence of compliance: Submit full details and supporting documentation.
  - Verification: Allow adequate time in programme for verification of compliance.
- All recycled material to be used to be approved by the CA; contractor to allow for this process within their programme prior to commencement.

D
Groundwork

D20
Excavating and filling

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

150A EXISTING SERVICES, FEATURES AND STRUCTURES
- Services: 10335-LD-PLN-135 + TRP Gloucester Gate Surface Drainage Drawings. A clarification pre-meet with CA/client on services prior to commenement of any works on-site.
- Site features to be retained: See drawings 10335-LD-PLN-221-223 for details.
- Structures: See drawings 10335-LD-PLN-221-223 + 120 for details, adhering to all relevant and appropriate industry standards and regulations. Method statements to be provided where necessary (to be confirmed with CA).

CLEARANCE/EXCAVATING

164 TREE ROOTS
- Protected area: Do not cut roots within precautionary protection area.
  - Size of area: Branch spread of the tree, (BS:5837:2012).
- Excavation in protected area:
  - Method: By hand.
  - Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
- Outside protected area: Give notice of roots exceeding 25 mm and do not cut without approval.
- Cutting:
  - Make clean smooth cuts with no ragged edges.
  - Pare cut surfaces smooth with a sharp knife.
  - Treatment of cut roots: Not required.
- Backfill: As dug material, enriched with amelioration as section Q31.

168A SITE CLEARANCE
- Timing: Before topsoil stripping.
- General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.
- Treatment: Apply a suitable residual herbicide to areas to receive new proposed overlay - excluding areas where exisitng grass is to be retained in the proposed scheme.

170A REMOVING SMALL TREES, BRANCHES, SHRUBS, HEDGES AND ROOTS
- Identification: Clearly mark trees and branches to be removed and agree with CA.
- Small trees, shrubs and hedges:
  - Cut down.
  - Roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

180 CHIPPING AND SHREDDING
- Generally: Not permitted.

220A STRIPPING TOPSOIL Refer to LUC drawings 10335-LD-PLN-102 + 221-223 + 410
- Contractor to strip all topsoil on-site where re-use is possible within scheme, (excluding areas where exisitng grass is to be retained in the proposed scheme) General: Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings/ roads and other areas shown on drawings.
- Depth:
  - Remove to an average depth of 300mm and keep separate from excavated subsoil, (to be stored on site, as agreed with CA).
  - Give notice where the depth of topsoil is difficult to determine.
- Handling: Handle topsoil for reuse or sale in accordance with clause D20/225.
- Around trees: Do not remove topsoil from below the spread of trees to be retained.
- Site storage: Keep separate from excavated sub-soil.

221 TREATING TOPSOIL
- Treatment: Apply a suitable translocated nonresidual herbicide.
- Timing: Not less than two weeks before excavating topsoil.

225 HANDLING TOPSOIL
- Standard: To BS 3882.
- Aggressive weeds:
  - Species: Included in the Weeds Act, section 2 or the Wildlife and Countryside Act, Schedule 9, part II.
  - Give notice: Obtain instructions before moving topsoil.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other soil or material containing aggressive weeds, sharps, plastics and non soil forming materials and notifiable animal or plant diseases.
  - Oil, fuel, cement or other substances harmful to plant growth.
  - Other classifications of topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.

240 ADJACENT EXCAVATIONS
- Requirement: Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto must be completed before the higher excavation is made.
- Angle of line below horizontal: 45°.
- Backfill material: Hardcore filling as agreed with CA, where required.

244 EXCAVATIONS ADJACENT TO EXISTING FOUNDATIONS

- Prior to commencing excavation:
  - Excavate trial pits adjacent to existing foundations to determine extent and formation levels.
  - Allow for inspection of trial pits.
  - Allow time for amendment of details if required.
    Time period: 10 working days.
- Backfill material to new excavation: Hardcore filling as agreed with CA, where required.

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.

270 FOUNDATIONS GENERALLY

- Give notice if:
  - A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.
  - The formation contains soft or hard spots or highly variable material.

290A FOUNDATIONS IN MADE UP GROUND (i.e. to earth mounding - refer to drg 10335-LD-PLN-221-223 + SEC-610)

- Depth: Excavate down to a natural formation of undisturbed subsoil, (N.B. allowance to be made for increased foundation depth over and above construction detailing, as required in made ground).
- Discrepancy: Give notice if this is greater or lesser than depth given, before proceeding at contractor's risk.

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.

320 RECORDED FEATURES

- Recorded foundations, beds, drains, manholes, etc: Break out and seal drain ends.
- Contaminated earth: Remove and disinfect as required by local authority.

330A UNRECORDED FEATURES (e.g. underground air WWII raid shelters and services)

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

360 EXCESS EXCAVATION
- Excavation taken wider than required:
  - Backfill: As instructed.
- Excavation taken deeper than required:
  - Backfill: As per clause D20/700.

DISPOSAL OF MATERIALS

410A EXCAVATED TOPSOIL STORAGE
- Storage: On-site within compound, in a securely fenced area (1.8m Heras fencing), as agreed with CA on site.
- Height (maximum): 1000m
- Protection:
  - Do not place any other material on top of storage heaps.
  - Do not allow construction plant to pass over storage heaps.
  - Prevent compaction and contamination.

441A SURPLUS SUBSOIL
- Excavated material: Stockpile in temporary storage heaps.
- Retained material: For re-use in proposed earthwork mounds - subject to suitablitiy of material lifted. CA/engineer to approve re-use of subsoil prior to commencement.
  - Locations: On site, in a securely fenced area (1.8m Heras Fencing). Location within site compound, or as agreed with CA.
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.
- Remaining material: Remove from site.

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.

454 GROUND WATER LEVEL, SPRINGS OR RUNNING WATER
- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

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.

FILLING

500A PROPOSED FILL MATERIALS (e.g. to proposed earhtwork mound sub-base layer. Refer to drgs 10335-LD-PLN-221-223 + SEC-610)

- 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 14 days before starting filling.

510A 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 D20/601.

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 500 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.

525A TESTING OF SUITABILITY OF FILL MATERIALS BEFORE START OF FILLING
- Laboratory: UKAS accredited laboratory, or as agreed with structural engineer.
- Submit report to: Structural engineer (electronic copy).
  - Timing: 21 days before starting filling.
- Samples: Deliver to laboratory as required.
  - Additional requirements: Also deliver agreed sample (in grams) to offcie of CA/structural engineer. On request, collect and dispose.
- Tests: As directed.
- Frequency: Submit with tender proposed rate and frequency of testing to demonstrate continuing compliance of imported or reprocessed fill with specified properties.

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.

550A GEOTEXTILE SHEET
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Type: Contractor's choice.
- Polymer type: Contractor's choice.
- Recycled content: Submit proposals.
- Jointing: 300 mm overlap.
- Preparation of subgrade: Before laying sheet, remove humps and sharp projections. Fill hollows.
- Protect from:
  - Exposure to light.
  - Contaminants.
  - Materials listed as potentially deleterious by geotextile manufacturer.
  - Wind uplift.

610A COMPACTED FILLING FOR LANDSCAPE AREAS
- e.g. To new concrete surfaced waterplay area + hardworks (refer to drawing 10335-LD_PLN-221-223 + 255 + SEC-610)
- 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.

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 to clause 801.2.
  - 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.

626 COMPACTED GENERAL FILL

- Suitable material: Make up shortfall in excavated material with imported material of a similar type.
- Excavated material: Select suitable material and keep separate.
- Filling: Spread and level material in layers. As soon as possible thoroughly compact each layer.
- Required compaction: As agreed with CA, where required.
- Proposals: Well in advance of starting work submit details of proposed:
  - Materials to be used, including quantities of each type.
  - Type of plant.
  - Maximum depth of each compacted layer.
  - Minimum number of passes per layer.

700 BACKFILLING AROUND FOUNDATIONS

- Under oversite concrete and pavings: Hardcore.
- Under grassed or soil areas: Material excavated from the trench, laid and compacted in 300 mm maximum layers.

710 HARDCORE FILLING

- Fill: Granular material, 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, 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.
  - Crushed non-expansive slag.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Well-burned non-plastic colliery shale.
  - Natural gravel.
  - Natural sand.
- Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

730A BLINDING

- Application: in accordance with construction details 10335-LD-PLN-601-642. Use of blinding in addition to construction drawings to be identified by contractor and agreed with CA prior to installation.
- Surfaces to receive sheet overlays or concrete:
  Blind with:
  - Concrete where shown on drawings; or
  - Sand, fine gravel, or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
- Sand for blinding: To BS EN 12620, grade 0/4 or 0/2 (MP).
- Permissible deviations on surface level: +0 -25 mm.

D41
Crib walls, gabions and other gravity retaining walls

D41 Crib walls, gabions and other gravity retaining walls

To be read with Preliminaries/ General conditions.

210A GABIONS Refer to drg 10335-LD-DET-615 + 630

- Manufacturer: Enviromesh, or similar approved.
  Garner Street Business Park " Etruria " Stoke-on-Trent " Staffordshire ST4 7BH " United Kingdom 01782 692 319 Web: www.enviromeshgabions.co.uk
  - Product reference: Enviromesh Welded Mesh Gabion.
- Configuration: Refer to drg 10335-LD-DET-630, and engineer's detail layouts.
  - Sizes: Refer to drg 10335-LD-DET-630.
  - Mesh: 4mm diameter mild steel wire to BS EN 10218-2, electrically welded at every intersection. Wire to be Class A Galfan coated. (Ref BS EN ISO 1461 & BS EN 10244 –2), to all exposed panels. Mesh aperture to be 75mm x 75mm. (measured centre to centre of wires). .
  - Diaphragm: To manufacturer's recommendation.
- Fill to units:
  - Operations: Contractor to appoint artist Mel Chantry to oversee visual appearance of gabion faces for The Revetment. Gabion facing works to be undertaken by a creative operative, (under guidance of Mel Chantry) - allowance for operative to stack, arrange and fill stones and rubble by hand for each Revetment gabion.

- Revetment + Bench Facing Material - Stone_01, assume 75%: (drg 10335-LD-DET -615+630)
  - Sandstone stones (varying sizes) to be arranged as per the 4 No. conditions shown, with rublle infill, on drg 10335-LD-DET-630 (artist sketch). Extents of each condition type to be agreed on-site with CA and artist Mel Chantry.
  - Size/ grading: 50% bigger than gabion mesh aperture as a minimum - varying sizes to be procured, to create desired effect.
  - Supplier: Sandstone procurement and supply to be overseen by Mel Chantry.
  - Quarry: Sandstone boulders/rubble to be sourced from Hardscape Bolton-Woods quarry, (tel: 01204 590666).

- Revetment + Bench Facing Material - Stone_02 assume 25%: (drg 10335-LD-DET -615+630)
  - Re-claimed terracotta tiling and mixed brick rubble (predominately red in colour) to be arranged as per 4 No. conditions shown, with Sandstone fill, on drg 10335-LD-DET-630. Extents of each condition to be agreed on-site with CA and artist Mel Chantry.
  - Supplier: Contractor's choice. Sample bag to be submitted (or demonstrated on-site) for approval by CA/Mel Chantry prior to full procurement.
  - Size/ grading: 10% bigger than gabion mesh aperture as a minimum - varying sizes to be procured.

- Bench Facing Material - Bug Hotel: (drg 10335-LD-DET-615)
  - In the event of a TRP community engagement activity to create bug hotels, the contractor is to provide all materials.
  - Contents can be made from: wood logs (drilled), pallets, bamboo, reeds, stones (no fines), wire mesh, tiles and clay in all shapes and sizes.
  - Example section fo stacking ot be approved by CA prior to full commencement.
  - Drill into the logs holes of various sizes, from 3 to 10 mm, in a small oblique angle so that any moisture can run out. Vary hole depths for diversity but don't drill all the way through. With an open hole there is a chance off draft.
  - Cap the top of the hotel with a suitably sized timber board so that the material

below stay dry.
- Make sure the materials are well secured in regards to construction.
- Do not treat the wood, keep it natural. The use of chemicals will repel insects.

- Back Fill to ALL stone gabion units: (drg 10335-LD-DET-615+630)
  - Material: Crushed concrete - submit samples for approval of CA. It must conform to BS5390 for hardness, crush strength, resistance to weathering and frost susceptibility.
  - Size/ grading: grading to be in accordance with Highways agency specification, clause 6.2.6 Class G. Table 101. Sizing 100-150mm, with no greater than 6% < 100mm by weight.

- Substrate: To engineer's detail and specification.
- Batter of Revetment wall face, (seated gabions to be 90 degs. from surface level): o engineer's detail and specification.
- Geotextile: Contractor's choice - to be applied to submerged faces only. Not to be visible on completion.
- Other requirements:
  - Complete structural design in co-ordination with structural engineer, (including bridge tension cable details for Revetment), and submit proposals to structural engineer and CA for approval at least 2 weeks prior to manufacture.
  - Top lid/flat face at the top of ALL revetment gabions to be planted in accordance with planting plan palette + plans.
  - Allowance to be made for hand place selected fill with growing pockets to exposed face, (refer to planting palette + plans).
  - Contractor to seek manufacturer's recommendations for ALL planting to gabions, and seek CA approval prior to commencement.

240 GEOTEXTILE
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Permeability: To gabion manufacturer's recommendations.
- Recycled content: None permitted.
- Jointing:
  - End and side laps: Minimum 300 mm.
- Timing: Do not lay more textile than will be covered in the same day.

250A ASSEMBLING AND INSTALLING To the Revetment and Gabion seating - refer to drgs 10335-LD-DET-615 + 630

- Installation: according to design provided by the contractor, or by the supplier as applicable.
  Fixings as recommended by gabion manufacturer:
  - Lacing wire.
  - Optional additional joining coils.
  - Optional pre formed internal bracing ties.
- Assembly: (to manufacturer's recommendation)
  - To all free edges, starting from the corner edges of adjacent panels stitch in a continuous operation with lacing wire provided.
  - Alternatively connect with optional additional joining coils.
  - Join all units to adjacent units above and below and all sides.
  - Provide internal bracing wire with lacing wire provided or optional pre formed ties, at 1/3rd and 2/3rd unit height, spanning 2 meshes across the face mesh.
- Filling: (to manufacturer's recommentdation, overseen by artist Mel Chantry for facing detials)
  - Fill to full height carefully in sequence recommended by manufacturer.
  - Hand place stone to face of gabion for optimum finish.
  - Voids to be minimised and bridging of stone fill to be avoided.
  - Top mesh (lid) to bear down on fill.
  - Lid to be fixed securely with lacing wire as previously described.
- Backfill as recommneded by manufacturer in process with facing stone works, (overseen by artist Mel Chantry)
  Finishing: ALL fixing mesh, coils and lacing wire to be sufficient tied off and capped so that no sharp or dangerous protrusions of wiring, edgings or otherwise are present on the gabion facies in response to the sites' end use as a playground. All measures taken to ensure gabion faces are safe for human contact. CA to sign off gabion cages, with contractor to allow for removal of any hazardous protrusions/edges as identified by CA / RoSPA inspection, prior to PC.

E
In situ concrete/Large precast concrete

E05
In situ concrete construction generally

E05 In situ concrete construction generally

To be read with Preliminaries/General conditions.

210A CONTRACTOR'S STRUCTURAL DESIGN WATER PLAY SPECIALIST CONCRETE

- Design responsibility: Specialist concrete contractor - E.J. LazenbyContracts Limited - for concrete surface to water play area, see Appendix A: 10335-LD-REP-604 for specification document + drawing 10335-LD-PLN-255 + DET 602.
- Requirement:
  - Generally: As standard section B50.
    Modifications: None.
  - Structure: Complete the design and prepare reinforcement drawings and schedules in accordance with the designated code of practice and to satisfy the specified performance criteria.
  - Additional requirements: None.
- Design and production information: As preliminaries.
- Timing of submissions: Submit proposals.

E10
Mixing/casting/curing in situ concrete

E10 Mixing/casting/curing in situ concrete

To be read with Preliminaries/General conditions.

CONCRETE

101 SPECIFICATION
- Concrete generally: To BS EN 206-1 and BS 8500-2 .

105A DESIGNATED CONCRETE As noted on LUC drawings and Appendix A:10335-LD-REP-604 of this document and drgs 10335-LD-PLN-255 + DET 602
- Designated concrete: As noted on LUC drawings .
- Reinforcement/ embedded metal: As required by specialist contractor/Appendix A / DET 602 .
- Aggregates:
  - Size (maximum): 20 mm .
  - Recycled coarse aggregates: Do not use .
  - Other requirements: None .
- Other requirements for cement and combinations: None .
- Consistence class: Contractor's choice, as agreed with structural engineer .
- Chloride class: Cl 1.0 .
- Other requirements for admixtures: Concrete producer's choice / Appendix A: 10335-LD-REP-604 .
- Other requirements: None .
- Colour pigment: To be agreed with CA and specialist through trial sections (prior to main pour).

125A SUBSTITUTION OF STANDARDIZED PRESCRIBED CONCRETE FOR DESIGNATED CONCRETE (EXCLUDING 150mm surface layer to water play area)
- General: Conform to BS 8500-2, clause 8 .
- Substitution: In accordance with BS 8500-1, table A .7 .
  - Proposals: Submit for each substitution, stating reasons .
- Mixing: If standardized prescribed concretes are made on site conform to BS 8000 -2 .1, subsections 2, 3 and 4 .

315A AGGREGATES FOR EXPOSED VISUAL CONCRETE Refer to Appendix A:10335-LD-REP-604
- 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 .
- Slip/grip ratio to be agreed through testing with CA for Water Play Area
- Supply: From a single source and maintained throughout the contract .
- Samples: Submit on request .

490 PROPERTIES OF FRESH CONCRETE
- Adjustments to suit construction process: Determine with concrete producer . Maintain conformity to the specification .

650 SURFACES TO RECEIVE CONCRETE
- Cleanliness of surfaces immediately before placing concrete: Clean with no debris, tying wire clippings, fastenings or free water .

660 INSPECTION OF SURFACES
- Notice: Give notice to allow inspections of reinforcement and surfaces before each pour of concrete .
  - Period of notice: Obtain instructions .

670 TRANSPORTING
- General: Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability . Protect from heavy rain .
- Entrained air: Anticipate effects of transport and placing methods in order to achieve specified air content .

680 PLACING
- Records: Maintain for time, date and location of all pours .
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction .
- Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum) . Do not place against frozen or frost covered surfaces .
- Continuity of pours: Place in final position in one continuous operation up to construction joints . Avoid formation of cold joints .
- Discharging concrete: Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes .
- Thickness of layers: To suit methods of compaction and achieve efficient amalgamation during compaction .
- Poker vibrators: Do not use to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast-in accessories and at vertical joints .

690 COMPACTING
- General: Fully compact concrete to full depth to remove entrapped air . Continue until air bubbles cease to appear on the top surface .
  - Areas for particular attention: Around reinforcement, under void formers, cast-in accessories, into corners of formwork and at joints .
- Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete .
- Methods of compaction: To suit consistence class and use of concrete .

730 PLASTIC SETTLEMENT
- Settlement cracking: Inspect fresh concrete closely and continuously wherever cracking is likely to occur, including the top of deep sections and at significant changes in the depth of concrete sections .
  - Timing: During the first few hours after placing and whilst concrete is still capable of being fluidized by the vibrator .
- Removal of cracks: Revibrate concrete .

810 CURING GENERALLY

- Evaporation from surfaces of concrete: Prevent, including from perimeters and abutments, throughout curing period .
  - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking .
  - Top surfaces: Cover immediately after placing and compacting . If covering is removed for finishing operations, replace it immediately afterwards .
- Surface temperature: Maintain above 5°C throughout the specified curing period or four days, whichever is longer .
- Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings . Keep records on site, available for inspection .

811 COVERINGS FOR CURING

- Sheet coverings: Suitable impervious material .
- Curing compounds: Selection criteria:
  - Curing efficiency: Not less than 75% or for surfaces exposed to abrasion 90% .
  - Colouring: Fugitive dye .
  - Application to concrete exposed in the finished work: Readily removable without disfiguring the surface .
  - Application to concrete to receive bonded construction/ finish: No impediment to subsequent bonding .
- Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with impervious sheeting held clear of the surface and sealed against draughts at perimeters and junctions .

812 PREVENTING EARLY AGE THERMAL CRACKING

- Deep lifts or large volume pours: Submit proposals for curing to prevent early age thermal cracking, taking account of:
  - Temperature differentials across sections .
  - Coefficient of thermal expansion of the concrete .
  - Strain capacity of the concrete mix (aggregate dependent) .
  - Restraint .

815 ADDITIONAL CURING REQUIREMENT - WATER CURING

- Commencement of water curing: As soon as practicable after placing and compacting concrete .
  - Surfaces covered by formwork: Expose to water curing as soon as practicable .
  - Top surfaces: Cover immediately with impermeable sheeting to prevent evaporation before commencement of water curing .
- Water curing: Wet surfaces continuously throughout curing period .
  - Select methods from:
    Mist spray .
    Wet hessian covered with impermeable sheeting .

820 CURING PERIODS

- General: Curing periods are in days (minimum) .
  - Definition of 't': The average number of degrees Celsius air temperature during the curing period .
- Curing periods for concrete surfaces which, in the finished building, will be exposed to the elements; concrete wearing surface floors and pavements; water resistant concrete:

	Concrete made using CEM1; SRPC (BS 4027); IIA	Concrete made using IIB; IIIA; IIIB; IVB
Drying winds or dry, sunny weather	140 t+10	180 t+10
Intermediate conditions	100 t+10	140 t+10
Damp weather, protected from sun and wind	100 t+10	100 t+10

- Curing periods for other structural concrete surfaces (cements/ combinations as above):

Drying winds or dry, sunny weather	80 t+10	140 t+10
Intermediate conditions	60 t+10	80 t+10
Damp weather, protected from sun and wind	No special requirements	No special requirements

- Curing periods for concretes using admixtures or other types of cements/ combinations: Submit proposals .

840 PROTECTION

- Prevent damage to concrete, including:
  - Surfaces generally: From rain, indentation and other physical damage .
  - Surfaces to exposed visual concrete: From dirt, staining, rust marks and other disfiguration .
  - Immature concrete: From thermal shock, physical shock, overloading, movement and vibration .
  - In cold weather: From entrapment and freezing expansion of water in pockets, etc .

E20
Formwork for in situ concrete

E20 Formwork for in situ concrete

To be read with Preliminaries/General conditions.

GENERALLY/PREPARATION

110 LOADINGS Design and construct formwork to withstand the worst combination of:
- Total weight of formwork, reinforcement and concrete.
- Construction loads including dynamic effects of placing, compacting and construction traffic.
- Wind and snow loads.

120A DETAILS Formwork to observe interface and construction programe (of works) for:
- Setting out of boulders, drg 10335-LD-DET-619
- Adjacent Timber decking, drg 10335-LD-DET-604
- Adjacent sand pit and associated details, drg 10335-LD-DET-603
- Water play equipment, e.g. pumps and timber channels, see drg 10335-LD-PLN-255
- Tree pits in water play area, drg 10335-LD-DET-TP1

170 WORK BELOW GROUND
- Vertical faces of strip footings, bases and slabs may be cast against faces of excavation, provided:
  - Prior approval is obtained.
  - The faces are sufficiently accurate and stable.
  - Supports to faces are withdrawn progressively as concrete is placed.
  - Adequate measures are taken to prevent contamination of concrete.
- Faces of walls must be cast against formwork.

210 STEELWORK Remove all loose millscale and loose rust before encasing in concrete.

CONSTRUCTION

310 ACCURACY Construct formwork accurately and robustly with adequate supports to produce finished concrete to the required dimensions. Formed surfaces must be free from twist and bow (other than any required cambers), all intersections, lines and angles being square, plumb and true.

320 JOINTS IN FORMS Construct formwork, including joints in form linings and between forms and completed work, to prevent loss of grout, using seals when necessary. Secure formwork tight against adjacent concrete to prevent formation of steps.

330 INSERTS, HOLES AND CHASES
- Confirm positions and details to ensure that alterations to and decisions about their size and location are not made without the knowledge and approval of the CA.
- Fix inserts or box out as required in correct positions before placing concrete. Form all holes and chases; do not cut hardened concrete without approval.

350 FORM TIES No metal part of any device for securing forms is to remain within the specified concrete cover.

470 RELEASE AGENTS Type(s) which are suitable for use with the type(s) of formwork, formed finishes and specified applied finishes. Use the same type and make throughout the entire area of any one finish. Apply evenly to form faces, from top downwards, and to horizontal surfaces last. Use the minimum amount necessary to obtain a clean release and prevent excessive local collection. Prevent release agent touching the reinforcement, hardened concrete, other materials not part of the form face, and permanent forms.

480 SURFACE RETARDERS Do not use without approval. Prevent retarder from touching the reinforcement.

STRIKING

510 RESPONSIBILITY Strike formwork without disturbing, damaging or overloading structure, and without disturbing props. Notwithstanding other clauses in this specification and any checking or approvals by the CA, the responsibility for safe removal of any part of the formwork and any supports without damaging the structure rests with the Contractor.

520 MINIMUM PERIODS The following periods (in days) for retaining formwork in position before striking apply to class 42.5 or sulfate-resisting Portland cement concrete with no cement replacement materials or admixtures:

Type of formwork	Average mean of daily minimum and maximum air temperatures during the period		
	16 °C	7 °C	3 °C
Vertical formwork to columns, walls and beams	½	¾	1
Soffit forms to slabs	4	6	8
Props to slabs and soffit forms to beams	10	15	20
Props to beams	14	21	28

Submit details of proposed periods for mixes using admixtures or other types of cement.

521 MINIMUM PERIODS Alternative methods of determining minimum periods for retaining formwork in position may be submitted for approval. Accept responsibility for cost of checking of proposals by CA and for any testing.

FORMED FINISHES

610 BASIC FINISH no particular requirements, except those for tolerances and full compaction.

E30
Reinforcement for in situ concrete

E30 Reinforcement for in situ concrete

To be read with Preliminaries/General conditions.

REINFORCEMENT

110 QUALITY ASSURANCE All steel reinforcement specified to comply with BS 4449 or BS 4483 and cut and bent to BS 8666 is to be obtained from firm(s) holding a valid certificate of approval issued under a product certification scheme operated by a third party certification body with appropriate Category 2 accreditation from the United Kingdom Accreditation Service (UKAS).

140 PLAIN BAR REINFORCEMENT To BS 4449, Grade 250.

165 GALVANIZED REINFORCEMENT Type(s) as specified, galvanized to BS EN ISO 1461 after cutting but before bending

210 FABRIC REINFORCEMENT To BS 4483.

WORKMANSHIP

310 CUT AND BEND reinforcement to schedules and to BS 8666. Do not bend when below 5°C without approval. Steel may be warmed to not more than 100°C. Do not rebend bars without approval. Tag bundles of reinforcement with labels to BS 8666

311 CUT AND BEND stainless steel bars to BS 8666 as for high yield bars.

317 MECHANICAL DAMAGE Reinforcement must not be roughly handled, dropped from a height, or subjected to shock loading or mechanical damage.

325 CLEANLINESS At time of placing concrete, reinforcement to be clean and free of corrosive pitting, loose millscale, loose rust, ice, oil and other substances which may adversely affect the reinforcement, concrete, or bond between the two.

330 ADJUSTMENTS Provide on site facilities for hand bending to deal with approved minor adjustments.

360 PROJECTING REINFORCEMENT Grade 250 bars may be bent to radii not less than BS 8666, Table 3. Grade 460 bars must not be bent or straightened without approval

410 LAPS OR SPLICES Obtain instructions if details are not shown on drawings.

435 STRUCTURAL WELDED JOINTS will be permitted in accordance with BS 7123 if approved by the reinforcement manufacturer and subject to approval by the CA. Submit full details including joint type(s), location(s) and conditions of working. Accept responsibility for cost of checking by the CA and for any supervision and testing.

445 MECHANICAL JOINTS may be substituted for lapped joints subject to approval. Submit full details, including joint type(s) and location(s). Accept responsibility for cost of checking by the CA and for any supervision and testing.

451 FIXING GENERALLY

- Unless otherwise permitted fix reinforcement in position before placing concrete. In addition to any spacers and chairs shown on drawings or schedules, provide adequate support, tie securely and maintain the specified cover. Comply generally with Concrete Society Report CS 101 'Spacers for reinforced concrete'.
- Unless otherwise specified tie using 16 swg annealed tying wire. Ensure that tying wire does not intrude into the concrete cover. Do not tack weld unless authorised by the CA and recommended by the reinforcement manufacturer.
- Do not fix or place reinforcement in contact with nonferrous metals.

470 TOLERANCES ON COVER

- Not less than the nominal cover minus 5 mm.
- Where reinforcement is located in a particular direction in relation to only one face of a member, not more than the nominal cover plus:
  5 mm on bars up to and including 12 mm size.
  10 mm on bars over 12 mm up to and including 25 mm size.
  15 mm on bars over 25 mm size.
- Before concreting check thoroughly that the specified cover dimensions have been obtained.

500 DAMAGE Prevent damage to and disfigurement of forms, form linings and adjacent work.

520 CHECKING COVER Check the position of the reinforcement in the hardened concrete as soon as practicable after casting using a magnetic induction digital display type cover meter in accordance with manufacturer's recommendations and BS 1881-204. Pay particular attention to columns, beams, cantilevers, soffits of slabs and all faces which will be exposed to the weather in the finished building. Inform CA when such checking is to be carried out, confirm that it has been carried out and that the results were satisfactory.

E40
Designed joints in in situ concrete

E40 Designed joints in in situ concrete

To be read with Preliminaries/General conditions.

120 CONSTRUCTION/MOVEMENT JOINTS GENERALLY

- Accuracy: Position and form joints accurately, straight, well-aligned and truly vertical or horizontal or parallel with setting out lines of the building.
- Modifications to joint design or location: Submit proposals.
- Placing concrete to form movement joints:
  - Maintain effectiveness of joints. Prevent concrete entering joints or penetrating or impregnating compressible joint fillers.
  - Do not place concrete simultaneously on both sides of movement joints.

132 ADDITIONAL CONSTRUCTION JOINTS

- Joints additional to those required by designer:
  Not permitted in watertight concrete.
- Approval of additional joints: Submit proposals.

210 FORMED JOINTS

- Forms/ stop ends generally: Rigid and grout-tight.
- Forms/ stop ends for projecting continuity reinforcement: To accommodate bars or fabric without temporary bending or displacement.

230 PREPARATION OF CONSTRUCTION JOINTS

- Roughening of joint surfaces: Select from:
  - Brushing and spraying: Remove surface laitance and expose aggregate finish while concrete is still green.
  - Other methods: Submit proposals.
- Condition of joint surfaces immediately before placing fresh concrete: Clean and damp.

260 SAWN CRACK INDUCING GROOVES

- Groove dimensions:
  - Depth: Not less than one quarter the depth of the slab.
  - Width: As narrow as practicable.
- Sawing: Sufficiently early to prevent random cracking (within 24 hours of casting slab) and to produce strong, well defined arrises.
- Groove filling: Sealant.

530 SEALANT TO JOINTS & EXPANSION JOINTS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
  - Colour of surfaces exposed to view: to match concrete finish.
- Preparation and application: As section Z22.

E41
Worked finishes to in situ concrete

E41 Worked finishes to in situ concrete

To be read with Preliminaries/ General conditions.

110 MONOLITHIC CONCRETE WEARING SCREED Finish to Water play area - to be agreed with specialist concrete contractor. Refer to Appendix A: 10335-LD-REP-604 for specilaist performance specification

- Thickness:
  - Minimum: 10 mm.
  - Maximum: 20 mm.
- Abrasion resistance class to BS 8204-2: with specialist concrete contractor.
- Mix:
  - Cements/ Combinations: To BS EN 197-1 and BS 8500-2.
  - Fine aggregate: To BS EN 12620.
    Grading limit: To BS EN 12620.
  - Coarse aggregate: To BS EN 12620.
    Grading limit: 4/10 mm single size.
  - Proportions: with specialist concrete contractor.
- Construction:
  - Lay and compact within three hours of laying base (less in hot weather).
  - Bleed water on base surface: None.
- Tolerances:
  - Surface regularity: with specialist concrete contractor.
  - Level: Permissible deviation of wearing surface from datum (maximum): with specialist concrete contractor.
- Finish: with specialist concrete contractor.
  - Additional surface treatment: with specialist concrete contractor.
  - Slip resistance testing: with specialist concrete contractor.
- Curing: As section E10.

150 FINISHING

- Timing: Carry out at optimum times in relation to setting and hardening of concrete.
- Prohibited treatments to concrete surfaces:
  - Wetting to assist surface working.
  - Sprinkling cement.

230 BRUSHED FINISH

- Surface on completion: Light, even texture.

240 WOOD FLOATED FINISH

- Surface on completion: Slightly coarse, even texture with no ridges or steps.

310 SMOOTH FLOATED FINISH

- Surface on completion: Even, with no ridges or steps.

320 TROWELLED FINISH

- Surface on completion: Uniform, smooth but not polished, free from trowel marks and blemishes, and suitable to receive specified flooring material.

330 TROWELLED FINISH FOR WEARING SURFACES

- Surface on completion: Uniform and smooth, free from trowel marks and blemishes.

530A SLIP RESISTANCE TESTING OF WEARING SURFACES

- Test: To BS 7976-2 using a Transport Research Laboratory (TRL) Pendulum.
  - Timing: Give adequate notice.
- Test results: Submit, inclusive of slip resistance values (pendulum test value [PTV]), in the wet and dry states.
- Refer to compliance required for the water play area in Appendix A: 10335-LD-REP -604
- Slip/grip ratio to be agreed through testing (on-site panels etc.) with CA for waterplay area, to satisfy Health and Safety regulations.

E42
Accessories cast into in situ concrete

E42 Accessories cast into in situ concrete

To be read with Preliminaries/General conditions.

GENERAL

110 ACCESSORIES SPECIFIED ELSEWHERE
- Item/ location: ALL details drgs 10335-LD-DET-601-642. Water play items, as stated in Appendix A: 10335-LD-REP-604, the Water Feature Performance Specification documents by The Fountain Workshop Limited, and boulders detailed in drawing 10335-LD-DET-619, water play equipment (e.g. water pumps, timber channels); list not exhaustive.

110A PLAY BRIDGE
- Item/ location: Refer to engineers design and specification for play bridge instsallation and construction. LUC drg 10335-LD-DET-630 for information on gabions.

PRODUCTS

320 CAST-IN SOCKETS For water play items (as above clause item)
- Material: Stainless steel, or similar agreed with specialist/supplier.
  - Coating or treatment: Galvanized.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Cleanliness: Plug inside as necessary to prevent ingress of grout during concreting. Cap after concreting to exclude dust and dirt until fixings are installed.
- Temporary fixings to shutter/ temporary supports: Contractor's choice.

380 DUCTS THROUGH WATERTIGHT CONSTRUCTION
- Material: PVC-U to BS EN 1401-1.
- Shape: Generally circular, but rectangular in detailed locations.
  - Size: Submit proposals.
- Location: Submit proposals.
- Other requirements: None.

390 GALVANIZED COATINGS
- Standard: To BS 7371-6.
- Galvanizing: Applied and passivated by component manufacturer. Threaded items tapped after galvanizing.

EXECUTION

610 HOLLOW ACCESSORIES
- Filling/ sealing: Temporally fill or seal accessory to prevent ingress of grout during concreting. Leave filling/ seals in position until accessory is used.

620 TEMPORARY SUPPORTS

- Location: Provide to hold accessories for casting into unshuttered surface of concrete, set at a level that will not adversely affect finish of concrete surface remote from accessory.
- Position: Hold securely to prevent lateral movement or rotation of accessory during concreting.

630 PROTECTIVE COATINGS

- Inspect: Immediately prior to casting concrete.
- Damage to coatings:
  - Minor: Submit proposals for coating repair.
  - Significant: Replace accessory.

640 INSTALLATION

- Cleanliness: At time of casting, surfaces in contact with concrete to be free from contaminants which may adversely affect accessory, reinforcement, concrete, or bond between accessory and concrete.
- Position: Hold accessory firmly in position, preventing displacement during concreting.
- Other requirements: The day after casting, check that bolts in sockets are free to move.

M
Surface finishes

M60
Painting/ clear finishing

M60 Painting/ clear finishing

To be read with Preliminaries/ General conditions.

COATING SYSTEMS

130A PAINT TO EXISITNG METAL SURFACES To relocated abnd existing perimeter metal railings and gates / relocated picnic benches / litter bins
- Manufacturer: Metalwork paint to be TRP Invisible Green Refer to TRP list of approved paint types and suppliers..
  - Product reference: Submit proposals.
- Surfaces: Previously decorated.
  - Preparation: Sand and prime surface ready for new paint.
- Initial coats: As recommended by manufacturer.
  - Number of coats: 1.
- Undercoats: As recommended by manufacturer.
  - Number of coats: 1.
- Finishing coats: As recommended by manufacturer.
  - Number of coats: 2.

160 DECORATIVE WOODSTAIN VARNISH PRESERVATIVE To existing timber benches - picnic seating - to be refurbished. Refer to drawing 10335-LD-DET-617
- Manufacturer: Refer to TRP list of approved paint types and suppliers.
  - Product reference: Submit proposals.
- Surfaces: All bare faced/above ground surfaces of each bench to be refurbished.
  - Preparation: Contractor to consult original bench manufacturer (N.B. liaise with TRP for supplier) on preferred method of preparation.
- Initial coats: As recommended by manufacturer.
  - Number of coats: As recommended by manufacturer.
- Finishing coats: As recommended by manufacturer.
  - Number of coats: As recommended by manufacturer.

160A WOODSTAIN SAND PIT RETAINING WALL Refer to drg 10335-LD-DET-612
- Manufacturer: Woodscape.
  - Product reference: Woodscape FSC Retaining Wall System.
- Surfaces: All bare faced surfaces of retaining wall to be stained/protected - to manufacturer's recommendations: noting wall to be half submerged in sand.
  - Preparation: To manufacturer's recommendations.
- Initial coats: As recommended by manufacturer.
  - Number of coats: As recommended by manufacturer.
- Finishing coats: As recommended by manufacturer.
  - Number of coats: As recommended by manufacturer.

GENERAL

210 COATING MATERIALS
- Manufacturer: Obtain materials from any of the following:
  As stated on drgs 10335-LD-DET-601-042, or quality manufacturer approved by CA.
- Selected manufacturers: Submit names before commencement of any coating work.

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.

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.

PREPARATION

400 PREPARATION GENERALLY
- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, 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.

440 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos or other hazardous materials.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Significant rot, corrosion or other degradation of substrates.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Retained coatings:
  - Thoroughly clean to remove dirt, grease and contaminants.
  - Gloss coated surfaces: Provide key.
- Partly removed coatings:
  - Additional preparatory coats: Apply to restore original coating thicknesses.
  - Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

461A PREVIOUSLY COATED WOOD

- e.g. Picnic timber benches, refer to drawing 10335-LD-DET-617.
- Degraded or weathered surface wood: Take back to provide suitable substrate.
- Degraded substrate wood: Repair with sound material of same species.
- Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED WOOD

- Areas of defective primer: Take back to bare timber.

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.

500 PREPRIMED STEEL

- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.

622 ORGANIC GROWTHS

- Dead and loose growths and infected coatings: Scrape off and remove from site
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

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.

740 CONCEALED METAL SURFACES

- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.
  - Components: Underside of play equipment to be relocated, benches and street furniture, as required.
  - Additional coatings: Colour of paint to match exisitng or as agreed with CA, to BS 1070.

751A STAINING WOOD (e.g. to timber cube seating - to manufacturer's recommendations, see drg 10335-LD-DET-616. List non-exhaustive)

- Primer: Apply, if recommended by stain manufacturer.
- Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

760A VARNISHING WOOD (e.g. to timber cube seating - to manufacturer's recommendations, see drg 10335-LD-DET-616. List non-exhaustive)

- First coat: To manufacturer's recommendations - as required.
  - Brush well in and lay off avoiding aeration.
- Subsequent coats: Rub down lightly along the grain between coats.

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/CHANNELS

120A E02 - STONE SETT EDGING Granite Setts. Refer to drawing 10335-LD-DET-611 .
- Standard: To BS EN 1343.
- Supplier: Contractor's choice - sample required for approval by CA .
- Stone type: Granite .
- Freeze/ Thaw resistance: Class 1 (resistant) .
- Type: Tumbled .
- Size (width x height): 100mm x 100mm x 100mm .
- Special shapes: None .
- Finish: To match existing .
- Joints: 10mm width recessed mortar joints using a dark grey colour. Mortar to conform to BS 7533-4. Sample required for approval by CA .
- Other requirements: Concrete haunch as per LUC drg. 10335-LD-DET-611 .

180A DRAINAGE CHANNEL SYSTEMS: REFER TO CIVIL ENGINEERS DETAILS AND SPECIFICATION

200A E04 - SPECIAL KERBS/EDGINGS/CHANNELS Metal Path Edging - LUC drg 10335-LD-DET-613
- Manufacturer: Everedge .
  - Product reference: Titan, refer to LUC drg DET-613 .
- Type: As drawing .
- Size: 4mm thick x 150mm depth x 2500mm long .
- Special shapes: None .
- Finish: Galvanised steel .
- Colour: submit proposals - sample to be approved by CA .
- Accessories: n/a .
- Joints: As drawing .
- Other requirements: The interface between decking and edging needs to be precise with no obvious deviations away from radius. To be laid to smooth curves with no sharp changes in direction except where shown on layout drawings. If the CA deems a curve unacceptable it is the contractors responsibility to re-lay curve as directed .

202 E01 - TIMBER EDGING TO PATHS Timber edging to paths - LUC drg 10335-LD-DET -610

- Softwood board:
  - Size: 150 x 19 mm.
  - Fixing: Galvanized nails into softwood pegs.
- Softwood pegs:
  - Size: [50 x 50 x 600 mm] .
  - Fixing: Drive into ground.
  - Centres: [Maximum 1000 mm] .
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-Proofing Association Commodity Specification C4.
  - Type: CCA.
  - Desired service life: 20 years.
- Other requirements: To be laid to smooth curves with no sharp changes in direction excpet where shown on layout drawings. If the CA deems a curve unacceptable it is the contractors responsibility to re-lay curve as directed. .

202B E01 - TIMBER EDGING TO PATHS WITH VEHICLE OVERRUN Timber edging to paths - LUC drg 10335-LD-DET-610

- Softwood board:
  - Size: 150 x 38 mm.
  - Fixing: Galvanized nails into softwood pegs.
- Softwood pegs:
  - Size: [50 x 50 x 600 mm] .
  - Fixing: Drive into ground.
  - Centres: [Maximum 1000 mm] .
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-Proofing Association Commodity Specification C4.
  - Type: CCA.
  - Desired service life: 20 years.
- Other requirements: To be laid to smooth curves with no sharp changes in direction excpet where shown on layout drawings. If the CA deems a curve unacceptable it is the contractors responsibility to re-lay curve as directed. .

250 MATERIAL SAMPLES

- Samples representative of colour and appearance of designated materials: Submit before placing orders.
  - Designated materials: Stone edgings .

LAYING

510 LAYING GENERALLY

- Cutting: Neat, accurate and without spalling. Form neat junctions.
- Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or, where clause 547 applies, on a race of fresh concrete.
- Securing of units: After bedding has set, secured with a continuous haunching of concrete or, where clause 547 applies, backing concrete cast monolithically with fresh concrete race.

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.

531 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

- Standard: To BS 5328-1, 2, -3 and -4, or to BS 8500-1, -2, and BS EN 206-1.
- Designated mix: Not less than GEN3 or Standard mix ST1.
- Workability: Very low.

620 ACCURACY

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

Q20
Granular sub-bases to roads/ pavings

Q20 Granular sub-bases to roads/ pavings

To be read with Preliminaries/ General conditions.

120 CHECKING CALIFORNIA BEARING RATIO (CBR) OF SUBGRADES

- Subgrade variation: If material appears to vary from that stated in the site investigation report, or if there are extensive soft spots, test subgrade CBR to BS 1377-4 or BS 1377-9. Submit results and obtain instructions before proceeding.

140 EXCAVATION OF SUBGRADES

- Final excavation to formation/ subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION/ COMPACTION OF SUBGRADES

- Timing: Immediately before placing sub-base.
- 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.

170 GEOTEXTILE FILTER/ SEPARATOR MEMBRANES

- Manufacturer: Contractor's choice .
  - Product reference: Terram 1000 or similar .
- Jointing: 300 mm overlap .
- Protected from:
  - Exposure to light, except during laying (maximum five hours).
  - Contaminants.
  - Materials listed as potentially deleterious by geotextile manufacturer.
  - Damage, until fully covered by fill.
  - Wind uplift, by laying not more than 15 m before covering with fill.
- Preparation: Humps and sharp projections removed and hollows filled before laying.

210 HIGHWAYS AGENCY TYPE 1 GRANULAR MATERIAL

- Material: Highways Agency 'Specification for highway works', clause 803 (Type 1) or approved equivalent.
- Testing (if required): As clause 803.5.

211 GRANULAR MATERIAL

- Quality: 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, 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.
  - Crushed non-expansive slag.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Well-burned non-plastic colliery shale.
  - Natural gravel.
  - Natural sand.
- Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.

215 GRANULAR MATERIAL FOR PERMEABLE PAVING

- Material: Highways Agency 'Specification for highway works', clause 805 (Type 3) or approved equivalent. .
  - Grading: 40mm+ screened reduced fines aggregate .
- Testing: As clause 805.7 (if required) .
- Other requirements: n/a .
- Laying: To industry best practice .

220 FROST SUSCEPTIBLE GRANULAR MATERIAL

- Definition: To Highways Agency 'Specification for highway works' clause 801.17.
- Limitations: Do not use within 450 mm of the final surface of the paving.
- Testing: Test materials used if required and supply certificates.

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: Highways Agency 'Specification for highway works' clause 801.3-801.15.
- 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.

310A ACCURACY

- Permissible deviation (maximum) from required levels, falls and cambers:

	Footways Recreation areas
Subgrade	± 20 mm
Sub-base	± 30 mm

315A ACCURACY FOR SUB-BASES TO WATER PLAY AND PLAYGROUND

- Profile: Lay sub-base to levels shown on drawings and with a Longitudinal fall in a single plane .
- Maximum gradient in any direction: levels/falls to be agreed on-site with concrete specialists/CA and artist .
- Surface regularity: As specified by BS 7044-4 .
- Deviation from finished plane: No additional requirement .
- General accuracy: Sufficient to ensure that the surface will not cause a hazard or a ball to deflect from its true path.

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 damage from construction traffic, construction operations and inclement weather.

Q22
Coated macadam/asphalt roads/pavings

Q22 Coated macadam/asphalt roads/pavings

COATED MACADAM/ ASPHALT ROADS/ PAVINGS

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

124A S06 - RESIN BOUND GRAVEL Resin Bound Gravel , see LUC drg 10335-LD-DET-606

- Materials and workmanship: To BS 4987-1 and -2.
- Granular sub-base: As clause Q20/215.
  - Thickness: As shown on detail.
- Binder course: AC 14 AC 14 Open Surface asphalt concrete max 160/220 pen to BS EN 13108-1:2006 (Bituminous Macadam) .
  - Thickness: 50 mm , compacted.
- Surface course: 6mm Dorset Gold by Addaset - AS-SE-DO6.
  - Thickness: 18mm.
- Acrylic Sealer: ADDACRYL proprietary surface sealer is to be used to seal the Open Graded Macadam Surface Course . Mixing and application of the product must be carried out in accordance with the manufacturer's instructions (Supplier: Addagrip Surface Treatments UK Limited).
- Surface treatment: 18mm Addaset resin bound gravel surface - 6mm Dorset Gold .

124C S06 - FLEXI PAVE POROUS PAVING see LUC drg 10335-LD-DET-606

- Materials and workmanship: To BS 4987-1 and -2 and to manufacturers intallation guidance.
- Supplier: KBI UK Ltd
- Granular sub-base: As clause Q20/215.
  - Thickness: As shown on detail.
- Binder: N/A.
  - Thickness: N/A.
- Surface course: HD2000 Flexi Pave.
  - Thickness: 50mm.
- Colour: [TBC].

PREPARATORY WORK/ REQUIREMENTS

220 BITUMINOUS MATERIALS GENERALLY

- Suppliers names: Submit.
  - Timing (minimum): 2 weeks before starting work.
- Test certificates: At the time of delivery for each manufacturing batch submit certificate:
  - Confirming compliance with this specification and the relevant British Standard.
  - Stating full details of composition of mix.

230A SAMPLES
- Submit: Sample areas of any bonded surfaces such as Resin bound gravel, KBI Flexi-pave etc..

241 ACCEPTANCE OF SUB-BASE (REFER TO Q20)
- Surface: Sound, clean and suitably close textured.
- Levels and falls: To be within the specified tolerances:
  - Vehicular areas: +10 to -30 mm.
  - Pedestrian areas: ±12 mm.
  - Drainage outlets: 0 to -10 mm of the required finished level.
- Timber edging installed at per Q10 and to the required levels.

250 ABUTMENTS
- Edges of manholes, kerbs and other abutments: Clean and paint with a thin uniform coating of hot applied 40/60 paving grade bitumen.

LAYING

310 LAYING GENERALLY
- Preparation: Remove all loose material, rubbish and standing water.
- Adjacent work: Form neat junctions. Do not damage.
- Channels, kerbs, inspection covers etc: Keep clean.
- New paving:
  - Keep traffic free until it has cooled to prevailing atmospheric temperature.
  - Do not allow rollers to stand at any time.
  - Prevent damage.
  - Lines and levels: With regular falls to prevent ponding.
  - Overall texture: Smooth, even and free from dragging, tearing or segregation.
  - State on completion: Clean.

320 ADVERSE WEATHER
- Frozen materials: Do not use.
- Suspend laying:
  - During freezing conditions
  - If the air temperature reaches 0°C, or in calm dry conditions -3°C, on a falling thermometer.
  - Hot rolled asphalt: During periods of continuous or heavy rain.

330 LEVELS
- Permissible deviation from the required levels, falls and cambers (maximum):
  - Finished surface: ±6 mm.
  - Adjacent to gullies and manholes: 0 to +3 mm.

340 FLATNESS/ SURFACE REGULARITY

- Deviation of surface: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge placed anywhere on the surface to be not more than:
  - Base: Machine laid, 25 mm.
  - Binder course: Machine laid, 13 mm.
  - Surface course: Machine laid, 7 mm.
  - Where a straightedge cannot be used the surface must be of a comparable standard of accuracy when judged by eye.

351 CONTRACTOR'S USE OF PAVEMENTS

- Final surfacing:
  - Timing: Defer laying until as late as practicable.
  - Immediately before laying final surfacing: Clean and make good the base/ binder course. Allow to dry. Uniformly apply, without puddles, a tack coat of sprayed bitumen emulsion of a suitable grade to BS 434-1 at1.5-2.0 kg/m². Allow emulsion to break completely before applying surfacing.

Q25
Slab/ brick/ sett/ cobble pavings

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

140A S05 - NATURAL STONE SETT PAVING SYSTEM Granite Setts - refer to LUC drg 10335-LD-DET-605
- Supplier: Manufacturer's choice - sample to be approved by CA
- Colour: Silver Grey
- Size: 100x100x100mm
  Subgrade improvement layer: Not required.
  - Compacted thickness: Not applicable.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted thickness: 75mm.
- Base: ST3 Concrete Haunch .
  - Thickness: 150mm.
- Laying course: 1:3 cement:sand mortar.
  - Accessories: None.
- Paving units: Natural stone setts.
- Jointing: 10mm width recessed mortar joints using a dark grey colour.
  Mortar to conform to BS 7533-4.
  - Bond: Concentric arcs.
- Accessories: None.

PRODUCTS

365 GEOTEXTILE SHEET - BELOW LAYING COURSE
- Manufacturer: Terram.
  - Product reference: Terram 1000.
- Recycled content: n/a.

370 CEMENT FOR SITE MIXED MORTAR All
- Standard: As section Z21.

EXECUTION

610 MATERIAL SAMPLES
- Samples representative of colour and appearance of designated materials: Submit before placing orders.
  - Designated materials: All pavings.

615 CONTROL SAMPLES
- Sample areas: Complete as part of the finished work.
  - Types of paving: Natural stone sett paving.
  - Location: Radius and straight sections of new and relaid sections.
  - Size (minimum): 1.0 x 1.0 m.
  - Included features: N/A.
- Approval of appearance and surface: Obtain before proceeding.

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 - TO BS 8300

- 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 5mm 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.

645 PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- Mortar bedded pavings: Keep free from traffic after laying:
  - Pedestrian traffic (minimum): 4 days.
  - Vehicular traffic (minimum): 10 days.
- Access: Restrict access to paved areas to prevent damage from site traffic and plant.

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.

730 LAYING NATURAL STONE SETT PAVING

- Standard generally: In accordance with BS 7533-7.
- Laying type: Rigid.
  - Laying and jointing method: 10mm width recessed mortar joints using a dark grey colour. Mortar to conform to BS 7533-4 .
- Laying course:
  - Target thickness after compaction: 25 mm.
- Joint width (nominal): 10 mm.

Q26
Special surfacings/ pavings for sport/ general amenity

Q26 Special surfacings/ pavings for sport/ general amenity

To be read with Preliminaries/ General conditions.

IMPACT ABSORBING SURFACINGS FOR PLAY AREAS

301 EXTENT OF IMPACT ABSORBING SURFACING
- General: Lay impact absorbing surfacing as indicated on drawings.

310A S08 - BARK SURFACING
- Granular sub-base: As clause Q20/211.
  - Thickness: As shown on detail 10335-LD-DET-608 .
- Geotextile membrane: Lay over granular sub-base to prevent contamination of the surface course.
  - Manufacturer: Terram .
    Product reference: T1000 .
  - Jointing: 300mm overlaps .
- Surface course: Playground grade bark free from dust, pests, disease, weeds, coarse angular fragments and sharp pieces, with a well graded nominal particle size of 20-80 mm, maximum wood content of 5%, and complying with the ease of ignition test in BS 7188. The material must not be treated with additives, dyes or any substance harmful to humans or the environment.
  - Supplier: Melcourt .
    Product reference: Playbark 10/50 .
  - Minimum depth: 200 mm (overfilled to 300mm to allow for settlement)
  - Submit: Evidence of testing to BS 7188 for ease of ignition and BS EN 1177 for critical fall height.

331 S03 - SAND SURFACING Play sand - see LUC drg 10335_LD_PLN_230 and DET-603
- Drainage: Refer to engineers details .
  Geotextile membrane: Lay above and below drainage layer to prevent movement into subgrade and contamination of sand
  - Manufacturer: Terram .
    Product reference: Terram 1000 or similar approved .
  - Jointing: High strength adhesive. .
- Surface course: To TRP specification. White Stain Free Play Sand BS EN 1177. Clean washed silica sand of smooth rounded particles, free from artificially crushed material, shells or any substance harmful to humans or the environment.
- - Supplier: Construction Materials Limited, http://www.cmltd.net/ .
    Product reference: White Stain Free Play Sand BS EN 1177.
  - Minimum depth: min 300mm or as required to achieve critical fall heights of each individual piece of play equipment. Contractor to ensure that specified depth is sufficient to achieve the stated critical fall heights when tested to BS EN 1177 prior to installing sub-base.
  - Submit: Evidence of testing to BS EN 1177 for critical fall height.

341 S09 - 'SAFETY MATTA' RUBBER MAT/ TILE SAFETY SURFACING see LUC drgs 10335_LD_PLN_230 and DET_609

- Base: Established turf / new turf .
- Surface course: Impact absorbing rubber mats and/ or tiles to BS 7188.
  - Manufacturer: Matta Products (UK) Ltd. 19 Triumph Way, Woburn Road Industrial Estate, Kempston, Bedford, MK42 7QB Tel: 01234 848484 .
  - Product reference: 'Safety Matta' (or similar approved) modular interlocking UV protected safety surface manufactured from 97% recycled rubber & PVC, specially designed for use in play areas.
    - Mats to measure 500mm x 500mm x 25mm and have a shore hardness of 78A +/-2.
    - Product to carry a 10 year (minimum) product guarantee .
  - Colour: Natural green .
  - Critical fall height when tested to BS EN 1177: to be confirmed in accordance with the play equipment manufacturer, and critial fall heights .
  - Submit: Evidence of testing to BS 7188 for resistance to abrasive wear, slip resistance, and ease of ignition, and to BS EN 1177 for critical fall height.
- Installation:
  - Installation to be carried out by the manufacturer.
  - All mats to be locked together using a male & female lug system which have a lug every 110mm.
  - All mats to be glued together using Mattafix glue to form one continuous surface.
  - Perimeter edges are fastened down using 5 x 225mm pins per 500mm length which lock into recesses in the mats.
  - Non grass areas must be levelled with screened topsoil and seeded [Matta Products uses its own mix of ryegrass and fescues].
  - If installation is to take place on disturbed ground, areas of soil need to be compacted in 75-100mm layers to prevent subsidence using a 35 kg compactor taking care not to overcompact preventing growth of grass roots. Disturbed ground to be reseeded using amenity grass mix.

360A S01 - 'TIGERMULCH' IN SITU SYNTHETIC SURFACING (refer to 10335_LD_PLN_230 and DET_601)

- Sub-base: 75mm depth DOT Type 1 sub-base .
- Base: compacted subsoil .
- Surface course:
  - Manufacturer: Redlynch Leisure Ltd or similar approved .
    Product reference: Tigermulch.
  - Colour: Natural brown colours - sample to be approved by CA.
  - Critical fall height when tested to BS EN 1177: Varies dependent on play equipment.
  - Depth: Varies dependent on critical fall height, typically 50mm thick.
  - Health and safety: Surfaces must not contain any substance known to be toxic or carcinogenic when in contact with the skin, or released as vapour or dust during normal use.
  - Submit: Evidence of testing to BS 7188 for resistance to abrasive wear, slip resistance, resistance to indentation and ease of ignition, and to BS EN 1177 for critical fall height.

COMPLETION

470A DOCUMENTATION

- Submit: For all types of installed play surfacing, comprehensive written information as follows:
  - Name and contact details of installer.
  - Date of installation.
  - Name and contact details of manufacturer.
  - Type/ description/ reference of products used.
  - Manufacturer's recommended inspection and maintenance rocedures to maintain safety and impact absorbing performance.
  - Manufacturer's recommended cleaning and maintenance methods, where relevant.

Q28
Topsoiling

Q28 Topsoiling

To be read with Preliminaries/ General conditions.

TO BE READ WITH: Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORKS

100A TOPSOIL TO PLANTING

- Please read specification section Q28 in conjunction with documents:
  - 10335 _LUC_Gloucester Gate Playground_Outline Technical Specification - Soft Works
  - 10335_LD-PLN-431-433 - Planting Plans
  - 10335_LD-SCH-601 - Planting Schedule
  - 10335_LD_PLN-410 - Soft Landscape Plan
  - 10335_LD_DET-640-642 - Softworks Details

200 GRADING SUBSOIL

- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.

250 SUBSOIL SURFACE PREPARATION

- General: Excavate and/ or place fill to required profiles and levels, as section D20.
- Loosening:
  - Light and noncohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300 mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450 mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
- Other items: Remove arisings, contaminants and debris including builders rubble .

260 INSPECTING FORMATIONS

- Give notice: Before spreading topsoil for planting beds,grass areas and earthworks .
- Notice period: 7 days days.

300 TOPSOIL ANALYSIS

- Soil to be analysed: Imported topsoil.
- Soil analyst: Mayer Environmental Ltd or Similar Approved .
- Samples: Collect in accordance with BS 3882, Annex A.
- Submit originals of:
  - Declaration of analysis of soil in accordance with BS 3882 figure 3.
  - Report detailing soil analyst's recommendations.

335A SURPLUS TOPSOIL TO BE REMOVED
- Generally: To be offered to client ofr re-use elsehwere in the parks, only topsoil remaining after completion of all landscaping work.
- No topsoil shall be removed from the site (as indicated by estimations) unless agreed with CA.

340 IMPORTED TOPSOIL (TO BS 3882)
- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Grade: To BS 3882, Premium.
- Source: To approval of CA (local source preferred).
- Submit: Declaration of analysis including information detailing each of the relevant parameters given in BS 3882, clause 6 and table 2.
- Additional analyses: Phytotoxic elements.
- Other requirements: Subit a report outlining the soil analyst's recommendations for the local area.

360 NOTICE OF IMPORTING TOPSOIL
- Give notice: Before stripping topsoil for transfer to site.
  - Notice period: 7 days.

370 SAMPLE LOAD OF IMPORTED TOPSOIL
- General: Deliver to site a sample load of not less than 5 m^3.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
  - Notice period: 14 days.

380 CONTAMINATION
- General: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil, do not use subsoil contaminated with the above materials.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported.

410 HANDLING TOPSOIL
- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit as defined by BS 3882, Annex N2.

420A SPREADING TOPSOIL

- Temporary roads/surfacing: Remove and cultivate existing ground conditions before spreading topsoil.
- Layers:
  - Depth (maximum): 150 mm.
  - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum): 450 mm to planting areas (areas of previous hardstanding), 150mm to grass areas.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

450A FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Final levels to be achieved as required, with existing excavation to meet levels as necessary (any arisings to be stored on site and re-use as agreed with CA)
- Above adjoining paving or kerbs: 25 mm
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 50 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included, to final height

Q30
Seeding/turfing

Q30 Seeding/turfing

To be read with Preliminaries/General conditions.

TO BE READ WITH: Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORKS

GENERAL INFORMATION/REQUIREMENTS

115 SEEDED AND TURFED AREAS
- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable.

145A WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: Allowance to be made to water as necessary to ensure the establishment and continued thriving of all seeding/turfing. Contractor responsible for the allowance of additional watering, as necessary, during the summer/hot months.

145B WATER SUPPLY
- Contractor to assume no water available on-site.

150 WATER RESTRICTIONS
- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE
- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Preparing seed bed.
  - Seeding or turfing.
  - Visiting site during maintenance period.
- Period of notice: 2 weeks.

170A SETTING OUT
- Boundaries of seeding/turfing areas: Mark clearly prior to seeding for CA approval.

PREPARATION

205 PREPARATION MATERIALS
- General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Certification: Submit certificate giving supply source, content analysis, confirmation of suitability for purpose and confirmation of absence of harmful substances:
  - Certified materials: sanitized and stabilized compost .
  - Give notice before ordering or using.

210 HERBICIDE FOR ALL GRASSED AREAS EXCEPT WILDFLOWER AREAS
- Type: Suitable for suppressing perennial weeds.

225A SOIL AMELIORANT/CONDITIONER FOR
Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORKS

231 PEAT
- Peat or products containing peat: Do not use.

250A CULTIVATION
- Compacted topsoil: Break up to full depth.
- Soil ameliorant/ Conditioner/ Fertilizer: Fully incorporate into topsoil to a depth of 1 00 mm .
- Tilth: Reduce top 150 mm of topsoil to a tilth suitable for blade grading, particle size 10 mm (maximum).
- Material brought to the surface: Remove stones and clay balls larger than 50 mm in any dimension, roots, tufts of grass, rubbish and debris - remove at laying and again at Practical Completion; removed items to be carted off site.

260A GRADING
- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage. Remove minor hollows and ridges. Special consideration to land grading around new hub building - on site direction and inspection from CA prior during and after works to assess correct grades and later settlement. Contractor to allow for re-grading works.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 300mm .
- Give notice: If required levels cannot be achieved by movement of existing soil.

270 FERTILIZER FOR FOR SEEDED AREAS **EXCEPT** WILDFLOWER AREAS
- Types: Apply both:
  - Superphosphate with a minimum of 18% water soluble phosphoric acid.
  - A sulfate of ammonia with a minimum of 20% nitrogen.
- Application: Before final cultivation and three to five days before seeding/turfing.
- Coverage: Spread evenly, each type at 70 g/m², in transverse directions.

280A FINAL CULTIVATION
- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
  - Depth: 25 mm.
  - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
  - Remove surface stones/earth clods exceeding:
    All areas: 25mm .
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

314A GRASS SEED FOR Amenity Areas
- Supplier: Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORK.

316 TURF FOR For Matta Areas
Supplier: [Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORK & 10335-LD-PLN-410]

316A TURF FOR For high traffic areas
Supplier: [Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORK

319B QUALITY OF SEED FOR ALL SEEDED AREAS
- Supplier: [Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORKS]
- Freshness: Produced for the current growing season.
- Certification: Blue label certified varieties to EC purity and germination regulations. When requested, submit an Official Seed Testing Station certificate of germination, purity and composition.
- Samples of mixtures: Submit when requested.

320A QUALITY OF SEED FOR Wildflower areas
- Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORK
- Freshness: Produced for the current growing season.
- Certification: Blue label certified varieties to EC purity and germination regulations and the Department for Environment, Food and Rural Affairs Higher Voluntary Standard. When requested, submit an Official Seed Testing Station certificate of germination, purity and composition.
- Samples of mixtures: Submit when requested.

330 SOWING
- General: Establish good seed contact with the root zone to promote healthy, consistent growth.
- Method: To suit soil type, proposed usage of grassed area, location and weather conditions during and after sowing.

331 SOWING WILDFLOWER AREAS
- General: Establish good seed contact with the root zone to promote healthy, consistent growth.
- Method: To suit weather conditions during and after sowing, by hand broadcasting, seed fiddle, spinner hydraseeding or seed drill.
- To ensure even sowing bulk with an inert carrier such as sand and sow at half rate in two directions.
- Sow on surface and do not rake or harrow it.
- One or two passes with a Cambridge roll will firm and level the surface and create good soil contact.

335 SOWING SEASON
- Grass seed generally: September to October - where feasible areas to be cultivated and sown at beginning of contract to ensure maximum growth time before completion.

340A PRE-EMERGENT HERBICIDE FOR (ALL SEEDED AREAS)
- General: Where soil has not been allowed to lie fallow apply a suitable pre-emergent herbicide immediately after sowing.
- Application to be agreed with the client prior to commencement. Any herbicide to be approved for suitability in playground setting prior to use.

361A REINFORCED GRASS SYSTEMRefer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORK

450A NEWLY PLANTED TREES
- Please refer to documents:
  - to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS
  - 10335-LD-DET-640 & 641 - Tree pit details

PROTECTING/CUTTING

510A PROTECTIVE FENCING
- Please refer to documents:
  - 10335-LD-DET-410 Soft Landscape

530 FIRST CUT OF GRASSED AREAS
- Timing: When grass reaches 30 mm high and is reasonably dry.
- Preparation: Before cutting, remove debris, litter, and stones and earth clods larger than 25 mm in any dimension.
- Height of first cut: 35mm .
- Arisings: Remove from site .

590 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at Completion and after any maintenance operations.

MAINTENANCE

605A MAINTENANCE
- Please refer to documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical SpecificationSOFT WORKS

610A FAILURES OF SEEDING/TURFING
- General: Grassed areas that have failed to thrive (unless due to theft or malicious damage), during the period stated in clause 605A, will be regarded as defects due to materials or workmanship not in accordance with the Contract. Make good by recultivation and reseeding/returfing.
- Timing of making good: Submit proposals.

620A MAINTAINING Lawn Areas
- Please read in conjunction with documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS
- Maximum height of growth at any time: 40mm once a well-established cover is achieved, initial establishment period 60 days .
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 25mm .
  - Arisings: Remove .
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: At the time of each cut, trim all grass edges, including round the base of trees, manholes, etc. and remove arisings.
- Weed control: Keep the sward substantially free of broad leaved weeds by applying a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
- Areas of settlement: Make good.
- Watering: As clause 145 .

680A FERTILIZER FOR FOR ALL GRASSED AREAS
- ALL applications to be agreed with the client prior to commencement.
  March application: 15:10:10 Spring turf fertilizer at 35 g/m².
- September application: 5:10:10 Autumn turf fertilizer at 50 g/m².

Q31
External planting

Q31 External planting

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/ REQUIREMENTS

FOR ALL EXTERNAL PLANTING
Please read in conjunction with documents:
Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

112 SITE CLEARANCE GENERALLY
- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with largest dimension exceeding 50 mm.
- Contamination: Substances injurious to plant growth including subsoil, rubble, fuel, and lubricants.
- Vegetation: Clear surface vegetation in areas shown on drawings using suitable nonresidual herbicide.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Additional requirements: NA.

118 SOIL CONDITIONS
- Soil for cultivating and planting: Moist, friable and (excepting aquatic/ marginal planting) not waterlogged.
- Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable. Do not plant during periods of frost or strong winds.

126 TIMES OF YEAR FOR PLANTING
- Deciduous trees and shrubs: Late October to late March.
- Conifers and evergreens: September/ October or April/ May.
- Herbaceous plants: September/ October or March/ April.
- Container grown plants: At any time if ground and weather conditions are favourable. Ensure that adequate watering and weed control is provided.
- Dried bulbs, corms and tubers: September/ October.
- Colchicum (crocus): July/ August.
- Green bulbs: After flowering in spring.

130 MECHANICAL TOOLS
- Restrictions: Do not use within 100 mm of tree and plant stems.

145 WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting.

145B WATER SUPPLY
Contractor to assume no water available on-site.

150 WATER RESTRICTIONS
- General: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160 NOTICE
- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Delivery of plants/ trees.
  - Planting shrubs.
  - Planting trees into previously dug pits.
  - Watering.
  - Visiting site during maintenance period.
- Period of notice: 14 days.

165A PREPARATION, PLANTING AND MULCHING MATERIALS
- Please refer to documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

200A PLANTS/ TREES - GENERAL
- Please refer to documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

218A PLANTS/ TREES - SPECIFICATION CRITERIA FOR WILLOW
- Please refer to works by Jim Buchanan:
  - 10335_LD_DET_635

- Please read in conjunction with documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

246 LABELLING AND INFORMATION
- Standard: To BS 3936.

250 SUPPLY OF PLANTS/ TREES
- Suppliers: Members of the Horticultural Trades Association Nursery Certification Scheme.

260 PLANT/ TREE SUBSTITUTION

- Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
  - Price.
  - Difference from specified plants/ trees.
- Further alternatives: Proposed substitutions may not be acceptable and submission of further alternatives may be required.
- Approval: Obtain before making any substitution.

290 SURPLUS MATERIAL

- General: Remove subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, prunings and other arisings/ rubbish.

PREPARATION OF PLANTING BEDS/ PLANTING MATERIALS

Please refer to documents:
Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

341 PEAT

- Peat or products containing peat: Do not use.

PLANTING TREES

Please refer to documents:
Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS
Tree Pits - refer to drawing 10335-LD-DET-640 & 641

599 TREE PROTECTION

- Please refer to documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

PROTECTING/ MAINTAINING/ MAKING GOOD DEFECTS

Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

Q35
Landscape maintenance

Q35 Landscape maintenance

To be read with Preliminaries/General conditions.

GENERALLY

- Please read in conjunction with documents:
  Refer to Gloucester Gate Play Landscape Works Outline Technical Specification SOFT WORKS

110 NOTICE

- Give notice before:
  - Application of herbicide.
  - Application of fertilizer.
  - Watering.
  - Each site maintenance visit.
- Period of notice: 2 weeks.

130 REINSTATEMENT

- Damage or disturbance to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstate to original condition.

140 CONTROL OF MAMMALIAN PESTS

- Specialist firms/Methods: Submit proposals.

155 WATERING

- Supply: Potable mains water.
- Quantity: Wet full depth of topsoil .
- Application: Do not damage or loosen plants.
- Compacted soil: Loosen or scoop out, to direct water to rootzone.
- Frequency: As necessary for the continued thriving of all planting.

155A WATER SUPPLY

- Contractor to assume no water available on-site.

160 WATER RESTRICTIONS

- General: If water supply is, or is likely to be, restricted by emergency legislation, submit proposals for an alternative suitable source of water. Obtain instructions before proceeding.

170 DISPOSAL OF ARISINGS

- General: Unless specified otherwise, dispose of arisings as follows:
  - Biodegradable arisings: Remove to recycling facility at contractors cost .
  - Grass cuttings: Remove to recycling facility at contractors cost .
  - Tree roots and stumps: Remove from site at contractors cost .
  - Shrub and tree prunings: Remove from site at contractors cost .
  - Litter and nonbiodegradable arisings: Remove from site at contractors cost .

180 CHIPPING OR SHREDDING ON SITE

- General: Not permitted on site.

181 MECHANICAL EQUIPMENT
- General: Minimize.
- Prohibited equipment: N/A .
- Timing: Use of mechanical equipment allowed between the hours of 10:00 am and 4:00 pm only .

190 LITTER
- Extraneous rubbish not arising from the contract work: Collect and remove from site.

195 PROTECTION OF EXISTING GRASS
- General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

197 CLEANLINESS
- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at completion and after any maintenance operations.

GRASSED AREAS

210 MAINTENANCE OF GRASSED AREAS
- General: Maintain turf in a manner appropriate to the intended use.
- Grass height: Maintain within range specified in clauses 260 to 280.
- Soil and grass condition:
  - Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
  - Waterlogging and compaction: Prevent.
  - Damage: Repair trampling, abrasion or scalping caused by mowing.
- Ornamental turf and lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
  - Edges: Neat and well defined, in clean straight lines or smooth flowing curves.
- Litter and fallen leaves: Remove regularly to maintain a neat appearance.

220 GRASS CUTTING GENERALLY
- Before mowing: Remove litter, rubbish and debris.
- Finish: Neat and even, without surface rutting, compaction or damage to grass.
- Edges: Leave neat and well defined. Neatly trim around obstructions.
- Adjoining hard areas: Sweep clear and remove arisings.
- Drought or wet conditions: Obtain instructions.

225 TREE STEMS
- Precautions: Do not use mowing machinery closer than 100 mm to tree stems. Use nylon filament rotary cutters and other hand held mechanical tools carefully to avoid damage to bark.

226 TREE STEMS
- Precautions: Do not allow nylon filament rotary cutters and other mechanical tools closer than 100 mm to the stem of any tree.
  - Operations close to stems: Complete using hand tools.

235 BULBS AND CORMS IN GRASSED AREAS
- Before flowering: Do not cut.
- Interval between end of flowering and start of grass cutting (minimum): 6 weeks.

250A LEAF REMOVAL
- Operations: Remove fallen leaves to all areas (hard surfacing, grass, shrubs and base of trees), unless otherwise stated.
- Special requirements: (Remove at contractors cost).

260A MOWING LAWNS Lawns/amenity grass areas
- Grass height: Maintain between 25 and 50 mm .
- Arisings: As clause 170 .

272A MAINTAINING GRASSED AREAS WITH PERENNIAL WILD FLOWERS
- Preparation: Before each cut remove litter and debris.
- Height and frequency of cut in first growing season:
  - Time of first cut: March/ April.
  - Height of first cut: 75 mm .
  - Frequency of subsequent cutting (minimum): Every 6 to 8 weeks until autumn.
  - Height of growth permitted (maximum): 100 mm .
- Height and frequency of cut in second growing season:
  - Time of cut: October, March and August.
  - Height of cut: 75 mm .
- Trimming: At the time of each cut, trim all grass edges, including round the base of trees, manholes, etc.
- Arisings: Remove at contractors cost.
- Watering: As clause 155.

285 TOP DRESSING
- Type: Dry sand.
- Coverage/ Depth: 1 kg/m².

290 ROLLING
- Operations: Consolidate turf and reduce frost heave.

307 HOLLOW TINING
- Depth: 75 mm .

309 EDGES TO SEEDED AREAS
- Location: Planting beds and around newly planted trees.
- Timing: After seeded areas are well established.
- Edges: Cut to clean straight lines or smooth curves. Draw back soil to permit edging.
- Arisings: Remove.

310 RE-FORMING GRASS EDGES
- Location: Planting beds, paths, manhole covers and the like.
- Edges: Draw back soil and re-form edges to clean straight lines or smooth flowing curves, sloping slightly back from vertical.

320 LEVELLING HOLLOWS AND BUMPS IN TURF
- Standard: To BS 7370-3, clauses 12.4 and 12.5.

325 RELIEVING SURFACE COMPACTION IN TURF
- Standard: To BS 7370-3, clause 13.5.

330 SELECTIVE HERBICIDE
- Type: Selective herbicide suitable for suppressing perennial weeds.
- Areas not to be sprayed: Wild flower or bulb and corm planted areas.

340 SPOT WEEDKILLING IN ROUGH GRASS AREAS
- Operations: Spot treat with a suitable herbicide all broad leaved weeds.

350 FERTILIZER - SPRING APPLICATION
- Type: Slow release to CA approval.
- Coverage: To manufacturers recommendations.

360 FERTILIZER - AUTUMN APPLICATION
- Type: Slow release to CA approval.
- Coverage: To manufacturers recommendations.

380 REINSTATEMENT OF DAMAGED LAWNS
- Damaged turf: Remove to a depth of 125mm .
- Preparation: Cultivate substrate to a fine tilth.
- Reinstatement: Contractor's choice of returfing or topsoiling and reseeding:
  - Returfing: Quality and appearance to match existing.
  - Reseeding: Fill with fine topsoil to BS 3882 general purpose grade, free from stones, debris and weeds. Reseed with a seed mix to match existing grass in quality and appearance.
- Protection and watering: Provide as necessary to promote successful germination and/ or establishment.

FLOWER BEDS/ SEASONAL BEDDINGS

460 BEDS OF PERENNIALS OR PERENNIALS AND ANNUALS
- Plant supports: Stake and tie plants using: bamboo canes as agreed with CA .
  - Length: 1000 mm .
  - Maintain throughout the growing season.
- Gaps in planting: Refil by replanting.
- Watering new plants: Before and after planting out.
- Operations at end of growing season:
  - Trim: Older flowering stems of herbaceous perennials.
  - Remove: Redundant plant supports, litter, debris and arisings.
  - Cultivate: Fork over the soil, taking care not to cause undue disturbance to plants.
  - Top dress: Apply well rotted manure at a rate of 1 m3 per 15 m2 .

470 FLOWER BEDS GENERALLY

- Operations:
  - Remove: Dead flower heads, fallen leaves, litter and debris.
  - Weeds: Thoroughly hand weed.
  - Cultivate: Lightly hoe.
  - Trim: Clip grass edges.
- Fungicide: Not required .
- Insecticide: apply during summer as instructedl .

490 THINNING BY REMOVAL OF SURPLUS PLANTS

- Plants to be thinned: Perennials .
- Standard: BS 7370-4, clause 3.5.17.1.
- Timing: Thin when foliage of adjacent plants has begun to touch.
- Roots:
  - Disturbance to adjacent plants: Minimise.
  - Soil: Refill holes with topsoil to leave an even graded surface.
  - Mulch: Maintain mulch as original specification and in accordance with clause 69 0 .
- Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.
- Mature planting density: As agreed with CA .

SHRUBS/TREES/HEDGES

500 ESTABLISHMENT OF NEW PLANTING

- Duration: For 12 months following Practical Completion.
- Weed control:
  - Method: Keep planting beds clear of weeds by application of selective non-residual translocated herbicide and large weeds by hand weeding.
  - Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Trees: When in leaf, spray crowns in the evening during warm weather.

502 ESTABLISHMENT OF NEW PLANTING - FERTILIZER

- Time of year: March or April.
- Type: Slow release.
- Spreading: Spread evenly. Carefully lift and replace any mulch materials.
  - Coverage: As manufacturer's recommendations.

510 TREE STAKES AND TIES

- Inspection/ maintenance times: Once per month and immediately after strong winds.
- Stakes:
  - Replace loose, broken or decayed stakes to original specification.
  - If longer than half of clear tree stem height, cut to this height in spring. Retie to tree firmly but not tightly with a single tie.
- Ties: Adjust, refix or replace loose or defective ties, allowing for growth and to prevent chafing.
  - Where chafing has occurred, reposition or replace ties to prevent further chafing.
- Removal of stakes and ties: N/A.
  - Fill stake holes with lightly compacted soil.

520 REFIRMING OF TREES AND SHRUBS

- Timing: After strong winds, frost heave and other disturbances.
- Refirming: Tread around the base until firmly bedded.
- Collars in soil at base of tree stems, created by tree movement: Break up by fork, avoiding damage to roots. Backfill with topsoil and refirm.

540 PRUNING GENERALLY

- Pruning: In accordance with good horticultural and arboricultural practice.
  - Removing branches: Do not damage or tear the stem.
  - Wounds: Keep as small as possible and cut cleanly back to sound wood.
  - Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.
  - Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Disease or infection: Give notice if detected.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

575 PRUNING ORNAMENTAL SHRUBS

- General: Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour.
- Suckers: Remove by cutting back level with the source stem or root.

580 PRUNING FLOWERING SPECIES OF SHRUBS AND ROSES

- Time of year:
  - Winter flowering shrubs: Spring.
  - Shrubs flowering between March and July: Immediately after the flowering period.
  - Shrubs flowering between July and October: Back to old wood in winter.
  - Rose bushes: Early spring to encourage basal growths and a balanced, compact habit.

600 TRIMMING RAPIDLY ESTABLISHING HEDGES

- General: Allow to reach planned height as rapidly as possible. Trim back lateral branches moderately to establish required shape.

620 REMOVAL OF DEAD PLANT MATERIAL
- Operations: At the end of the growing season, check all shrubs and remove all dead foliage, dead wood, and broken or damaged branches and stems.

630 DEAD AND DISEASED PLANTS
- Removal: As soon as possible or within one week of notification.
- Replacement: In the next suitable planting season.

635 REINSTATEMENT OF SHRUB/ HERBACEOUS AREAS
- Dead and damaged plants: Remove.
- Mulch/ matting materials:
  - Carefully move to one side and dig over the soil, leaving it fit for replanting.
- - Do not disturb roots of adjacent plants.
- Replacement plants:
  - Use pits and plants to original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
  - Additional requirements: n/a.
- Dressing: Slow release fertilizer:
  - Type: slow release fertiliser to approval of CA.
  - Coverage: to manufacturer's recommendations .

645 WEED CONTROL GENERALLY
- Weed tolerance: At all times, weed cover less than 5% and no weed to exceed 100 mm high.
- Adjacent plants, trees and grass: Do not damage.

650 HAND WEEDING
- General: Remove weeds entirely, including roots.
- Disturbance: Remove the minimum quantity of soil, and disturb plants, bulbs and mulched surfaces as little as possible.
- Completion: Rake area to a neat, clean condition.
- Mulch: Reinstate to original depth.

655 WEED CUTTING BY HAND OR MACHINE
- Undesirable grass, brambles and herbaceous growth: Cut down cleanly to a maximum height of 75 mm .
- Herbicides: Give notice before use.

657 HERBICIDE TO KILL REGROWTH
- Type: Suitable foliar acting herbicide to kill regrowth.
- Timing: Allow recommended period for herbicide to take effect before clearing arisings.

665 WEED CONTROL WITH WINTER HERBICIDE
- Type: Suitable residual soil acting herbicide.
- Time of year: Unless otherwise agreed, complete before end of March.
- Timing: Allow recommended period for herbicide to take effect before clearing arisings.

670 WEED CONTROL WITH SUMMER HERBICIDE
- Type: Suitable foliar acting herbicide.
- Timing: Allow recommended period for herbicide to take effect before clearing arisings.

675 DIGGING OVER
- General: Dig over beds. Do not damage existing plants, bulbs and roots.
  - Depth of dig (minimum): 150 mm.

680 SOIL AERATION
- Compacted soil surfaces:
  - Prick up: To aerate the soil of root areas and break surface crust.
  - Size of lumps: Reduce to crumb and level off.
  - Damage: Do not damage plants and their roots.

685 SOIL LEVEL ADJUSTMENT
- Level of soil/mulch at edges of beds: Reduce to 50 mm below adjacent grass or hard surface.
  - Arisings (if any): Spread evenly over the bed.

690 MAINTENANCE OF LOOSE MULCH
- Thickness (minimum): 50 mm .
  - Top up: Every 3 months.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by herbicide or if in excess of 100mm by hand.

TREE WORK

810 TREE WORK GENERALLY
- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property .
- Standards: To BS 3998 and Health & Safety Executive (HSE) 'Forestry and arboriculture safety leaflets'.
- Removing branches: Cut as shown in Arboricultural Association Leaflet No 8 'Mature tree maintenance'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

815 ADDITIONAL WORK
- Defective, diseased, unsafe or weak parts of trees additional to those scheduled for attention: Give notice if detected.

820 PREVENTION OF WOUND BLEEDING
- Standard: To BS 3998, clause 8.

825 PREVENTION OF DISEASE TRANSMISSION
- Standard: To BS 3998, clause 9 and Appendix B.

830 CLEANING OUT AND DEADWOODING
- Remove:
  - Dead, dying, or diseased wood, broken branches and stubs.
  - Fungal growths and fruiting bodies.
  - Rubbish, wind blown or accumulated in branch forks.
  - Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
  - Other unwanted objects, e.g. tree houses, swings.
  - Climbing plants as instructed

835 CUTTING AND PRUNING GENERALLY
- Tools: Appropriate, well maintained and sharp.
- Final pruning cuts:
  - Chainsaws: Do not use on branches of less than 50 mm diameter.
  - Hand saws: Cut in one continuous operation to form a smooth cut surface.
  - Anvil type secateurs: Do not use.
- Removing branches: Do not damage or tear the stem.
- Wounds: Keep as small as possible, cut cleanly back to sound wood leaving a smooth surface, and angled so that water will not collect on the cut area.
- Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible. Large branches: Remove only with prior approval .
  - Remove in small sections and lower to ground with ropes and slings.
- Dead branches and stubs: When removing, do not cut into live wood.
- Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
- Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

840 CROWN REDUCTION/ SHAPING
- General: Cut back selectively to lateral or sublateral buds or branches to retain flowing branch lines without leaving stumps.
- Operations: As schedule.

845 CROWN LIFTING
- Clearances: Remove branch systems to give clearance.
  - Height: As scheduled .
- Removing branches: Remove whole branches back to the stem, or cut lower portions of branches back to lateral or sublateral buds or branches. Do not leave stumps.

855 CUTTING TREE ROOTS

- Excavating: Use hand tools only.
- Protected area: Do not cut roots within an area which is the larger of:
  - The branch spread of the tree.
  - An area with a radius of half the tree's height, measured from the trunk.
- Outside protected area: Give notice of roots exceeding 50 mm in diameter. Do not cut without approval.
- Cutting:
  - Cutting: Make clean smooth cuts with a hand saw.
  - Wounds: Minimize. Avoid ragged edges.
  - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
  - Protection: Cover cut roots with clean sharp sand.
  - Material: Backfill with original topsoil.

860 REMOVING TREES, SHRUBS AND HEDGES

- Standards: To BS 3998, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and Forestry Advisory Group Safety Leaflets.
- Existing services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and smaller trees: Cut down and grub up roots.
- Tree stumps:
  - Removal: Remove mechanically to a minimum depth of 300 mm below ground level .
  - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property .
- Work near retained trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
  - Material: Use as-dug material and/ or imported soil as required.
  - Finishing: Grade to marry in with surrounding ground level.

865 BARK DAMAGE

- Wounds:
  - Do not attempt to stop sap bleeding.
  - Bark: Gently remove ragged edges using a sharp knife.
  - Wood: Remove splintered wood from deep wounds.
  - Size: Keep wounds as small as possible.
- Liquid or flux oozing from apparently healthy bark: Give notice.

HARD LANDSCAPE AREAS/FENCING

910 HARD SURFACES AND GRAVEL AREAS

- Herbicide: Apply a suitable foliar acting or residual herbicide. Allow recommended period for herbicide to take effect before clearing arisings.
- Hard surfaces: Remove litter, leaves and other debris.
- Surface gutters and channels: Remove mud, silt and debris.
- Drainage gullies: Empty traps and flush clean.
- Gravel areas: Rake over. Remove weeds, litter, leaves and debris, and level off.
- Flexible bituminous pavings: In accordance with the original paving specification or BS 7370-2, clause 4.12.
- Stain removal: In accordance with BS 7370-2, table 4.

920 FENCING

- Fences: Inspect and repair to maintain protection against intruders.

930 WATERPLAY AREA

- To specialist contractor's specification, as required in the performance specification document.

Q40
Fencing

Q40 Fencing

To be read with Preliminaries/ General conditions.

150A BT01 - GENERAL PATTERN STRAINED WIRE FENCING
- Standard: To BS 1722-2, refer to drawing 10335-LD-DET-622.
- Height: 1200 mm above ground.
- Wire: High tensile steel wire, 2.5 mm diameter.
- Posts and struts: Round wood.
  - Treatment: To provide a 20 year service life.
- Maximum centres of posts:
  - Straining posts: 150 m in straight runs and at all ends, corners, changes of direction and acute variations in level.
  - Intermediate posts: 3.5 m.
- Method of setting posts and struts:
  - Straining posts: 450 mm square or 300 mm diameter holes, 900 mm deep filled to two thirds depth with concrete.
  - Struts: 300 x 450 mm holes, 450 mm deep filled with excavated material, well rammed as filling proceeds.
  - Intermediate posts: Driven to a minimum depth of 750 mm.
- Other requirements: Additional mesh - wildlife netting, refer to drawing.

210A W02 - BESPOKE WILLOW FENCING (refer to drg 10335_LD_DET_635 & PLN_240)
- Designed and built by Jim Buchanan (Willow Artist).
- Installation: Jim Buchanan, with ground prepared by main contractor (to be agreed prior to commencment on-site).
- Height: 400mm .
- Wood: Woven Willow.
  - Preservative treatment: Maintenence recommendations to be made by J.B..
- Maximum centres of posts: as designed by J.B.
- Method of setting posts: To be confirmed with Jim Buchanan prior to commencment on-site.

370A BT02 - RECLAIMED METAL RAILINGS Refer to drawing 10335-LD-DET-623 & PLN-240.
- Site-won railings to carefully broken out where instructed and stored for re-use in the playground scheme.
- Method of fixing: As per existing.
- Treatment: To be retouched with matching paint in 'TRP invisible green' as clause M60/130A.
- Other requirements: To be carefully broken out and stored for re-use (concrete hauching to be disposed of off-site). Ground to be made good and prepared for grass/planting (if applicable).

570A BT03 - SELF-CLOSING GATES refer to drawing 10335-LD-DET-624

- Manufacturer: Prosafe hydraulic self-closing gate by IAE, or similar approved .
  - Product reference: Prosafe hydraulic self-closing gate .

- Sizes: 1m height, width to suit paths drawing .
- Posts: As supplied .
- Finish as delivered: Black (RAL no 9005) coloured polyester powder coated finish .
- Fittings: In-built hydraulic unit which is shielded to prevent vandalism and is impossible to slam shut, and an anti-trap mechanism that cannot swing beyond its stop point. .
- Method of fixing: As per manufacturers recommendation .
- Other requirements: Foam pad to closing interfaces.

570B BT04 - SITE-WON MAINTENANCE GATES (DOUBLE LEAF) refer to drawing 10335-LD-DET-624

- Manufacturer: Site-won refer to drawing 10335-LD-DET-624
- Sizes: 1m height, width to suit paths drawing .
- Posts: As current .
- Finish: To be retouched with matching black paint (Hammerite or equal approved) where necessary .
- Fittings: n/a .
- Method of fixing: To be re-set into the ground with concrete footings (to match existing installation) at support posts intervals, to ensure straight and stable construction. .
- Other requirements: To be carefully broken out and stored for re-use (concrete hauching to be disposed of off-site). Ground to be made good and prepared for grass/planting (if applicable).
- Final setting out to be agreed on site with CA, and programmed in accordingly with associated hedge planting works.

610 INSTALLATION

- Set out and erect:
  - In straight lines or smoothly flowing curves as shown on drawings.
  - With tops of posts following profile of the ground.
  - With posts set rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
  - With correct fasteners and all components securely fixed.

615 COMPETENCE

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
  - Sector Scheme: 2A.
  - Categories: 1 .

620 SETTING POSTS IN CONCRETE

- Mix: To BS 8500-1 and -2 and BS EN 206-1, Designated mix not less than GEN1 or Standard mix not less than ST2.
- Alternative mix for small quantities: 50 kg Portland cement to 150 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability.
- Admixtures: Do not use.
- Holes: Excavate neatly and with vertical sides.
- Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
- Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

630 EXPOSED CONCRETE FOUNDATIONS

- Filling: Compact until air bubbles cease to appear on the upper surface.
- Finishing: Weathered to shed water and trowelled smooth.

640 SETTING POSTS IN EARTH

- Holes: Excavated neatly, with vertical sides and as small as practicable to allow refilling.
- Filling: Position posts/ struts and replace excavated material, well rammed as filling proceeds.

650 DRIVEN POSTS

- Damage to heads: Minimize.
  - Repair: Neatly finish post tops after installation.

670 SITE CUTTING OF WOOD

- General: Kept to a minimum.
- Below or near ground level: Cutting prohibited.
- Treatment of surfaces exposed by minor cutting and drilling: Two flood coats of solution recommended for the purpose by main treatment solution manufacturer.

Q50
Site/ street furniture/ equipment

Q50 Site/ street furniture/ equipment

To be read with Preliminaries/ General conditions.

SITE AND STREET FURNITURE

222 F01 - BENCHES/SEATS Logic Ulswater Bench - drg 10335-LD-DET-614 & PLN-240
- Manufacturer: Logic 01642 373400 .
  - Product reference: Ulswater Straight Bench .
- Material/ Finish/ Colour: FSC durable hardwood .
- Size: 1950mm width x 390mm deep x 450mm high when fitted into ground .
- Accessories/ Special requirements: To be supplied with full FSC Chain of Custody certification. If timber type is to be varied, the CA should be informed. Timber may not be changed to a non-FSC product . No Logic Branding to appear.
- Method of fixing: Root fixed .

223A F04 - EXISTING PICNIC BENCHES RELOCATED Existing Picnic Benches refurbished and relocated - see drg 10335_LD_PLN_240 & DET-617
- Relocation: see PLN_240, exact location to be agreed, and set out with CA on-site

224 F03 - CUBE SEATS Oak Cube seating to willow den - LUC drgs 10335_LD_PLN_240 and DET_616
- Manufacturer: Round Wood of Mayfield .
  - Product reference: 450mm Oak Cube .
- Material/ Finish/ Colour: Seasoned Oak .
- Size: 450 x 450 x 450mm .
- Accessories/ Special requirements: To be thorougly sanded with no splinters .
- Method of fixing: refer to DET-616 .

224A F05 - SKY SEATS Sculptural Seats by Touchwood - LUC drgs 10335_LD_PLN_240 and DET_618
- Manufacturer: Touchwood .
  - Product reference: Sky Seats .
- Material/ Finish/ Colour: Seasoned Oak .
- Size: as supplied .
- Accessories/ Special requirements: To be thorougly sanded with no splinters .
- Method of fixing: none .

225 F02 - GABION BENCHES Timber seat capped gabion walls - LUC drgs 10335_LD_PLN_240 and DET_615.
- Manufacturer: Refer to Clause D41/210A .
  - Product reference: n/a .
- Material/ Finish/ Colour: Facing - Refer to Clause D41/210A, Capping - Naturally durable FSC hardwood timber .
- Size: Length varies, height ~400-450mm from top to GL .
- Accessories/ Special requirements: Seating slats to array radially with curves in the gabion wall .
- Method of fixing: Refer to DET-615 .

225A F06 - BOULDERS Boulders to sand & waterplay - LUC drgs 10335_LD_PLN_255 and DET_619.

- Supplier: Direct from quarry - To be confirmed by Fountain Workshop .
  - Product reference: n/a .
- Material/ Finish/ Colour: Refer to DET-619 .
- Size: Schedule of boulders by Fountain Workshop .
- Accessories/ Special requirements: .
- Method of fixing: Set into C20 concrete
  - Depth of concrete: 200mm
  - Sub-base: MOT type 1 hardcore, to 100mm compacted depth.

240 LITTER BINS

- Manufacturer: Sit- won litter bins .
  - Product reference: n/a .
- Material/ Finish/ Colour: n/a .
- Accessories/ Special requirements: To be carefull broken and stored for relocation & re-use in the new playground .
- Method of fixing: root fixed .

PLAY AND SPORTS EQUIPMENT

350A PLAYGROUND EQUIPMENT

- Refer to drawings:
  - 10335-LD-PLN-221 to 223 Hard Landsacpe
  - 10335-LD-PLN-250 Catalogue + Bespoke Play Equipment
  - 10335-LD-PLN-255 Water Play Area Plan
  - 10335-LD-DET-625 to 635 Play equipment details

- Standard: To the relevant parts of BS EN 1176.
- Manufacturer: As Sheduled .
  - Product reference: As Sheduled .
- Intended age range: As Sheduled .
- Material/ Finish: As Sheduled .
- Method of fixing: To manufacturers recommendations .
  - Fixing: Secure, and to correct heights above finished ground level.
- Manufacturer's information and level mark to BS EN 1176-1, clause 7: Clearly visible.
- Post installation inspection:
  - Timing: Before first use of equipment.
  - Period of notice: 8 Weeks .

350B PLAYGROUND EQUIPMENT Bespoke Play Elements
Refer to: REP-606 Bridge Performance Specification-Artistic Elements

355A DOCUMENTATION FOR PLAYGROUND EQUIPMENT
- Standard: To BS EN 1176-1, clause 6.4.
- Information: To include:
  - Date of manufacture and installation
  - Source/Species/Class of Timber.
  - Name and contact details of manufacturer and installer.
  - Type/ Description/ Reference/As built drawings of equipment installed.
  - Manufacturer's recommended inspection and maintenance procedures.
  - Warranties associated with each piece of play equipment
- Submission: Before completion.

355B WARRANTIES GENERALLY FOR PLAYGROUND EQUIPMENT
Warranties generally as follows (unless otherwise agreed with CA):
- Structural timber - 10yrs min.
- Ropes/nets - 5yrs min.
- Moving parts - 2yrs min.
- 3rd party components - 2yrs min.

WATER FEATURES

356A WATER FEATURES Water play area:
Refer to:
- Gloucester Gate Playground-Water Play Performance Specification v1 (by The Fountain Workshop Limited)
- Drawing - PA814-A1-101revP1 (by The Fountain Workshop Limited)
- Water Play Concrete Performance Specification - February 2019

360A WATERPLAY EQUIPMENT
Refer to drawings:
- 10335-LD-PLN-221 to 223 Hard Landsacpe
- 10335-LD-PLN-255 Water Play Area Plan
- Pumps and play equipment manufactured and installed by Timber Play (Richter Spielgeräte GmbH) with assistance in setting out from The Fountain Workshop & LUC.
- Water treatment, supply and control mechanisms, all to The Fountain Workshop Performance Specification

MISCELLANEOUS

470A SCULPTURE/ LANDSCAPE ART WILLOW DEN / TUNNELS / FENCING
- Refer to drawings:
  - 10335_LD_DET_635: Willow Elements
  - 10335_LD_PLN_240
- Artist/ Supplier: Jim Buchanan .
- Material: As per drawings 10335_LD_DET_635.
- Approximate weight: To be confirmed by supplier .
- Approximate size: To be confirmed by supplier .
- Delivery/ Handling/ Storage requirements: To be confirmed by supplier .
- Method of fixing: To suppliers recommendations .

INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY
- Standard: To BS 5328-1, -2, -3 and -4, or to BS 8500-1, -2 and BS EN 206-1.
- Mix: Designated mix not less than GEN 1 or Standard mix not less than ST2.
- Admixtures: Do not use.

515 SETTING COMPONENTS IN CONCRETE
- Foundation holes: Neat vertical sides; bottom covered with a 50 mm layer of concrete.
- Components: Accurately positioned and securely supported.
- Depth of foundations, bedding and haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.
- Concrete fill: Fully compacted as filling proceeds.
- Temporary support: Maintain for 48 hours (minimum) and prevent disturbance.
- Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.

520 SETTING IN EARTH
- Holes: As small as practicable to allow refilling.
- Components being fixed: Accurately positioned and securely supported.
- Earth refilling: Well rammed as filling proceeds.

530 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.

545 ERECTION OF TIMBER AND PREFABRICATED STRUCTURES
- Checking: 5 days (minimum) before proposed erection date, check foundations, holding down bolts, etc.
  - Inaccuracies or defects in prepared bases or supplied structures: Report immediately. Obtain instructions before proceeding.

550 DAMAGE TO GALVANIZED SURFACES
- Minor damage in areas up to 40 mm² (including on fixings and fittings): Make good using low melting point zinc alloy repair rods or powders made for this purpose, or at least two coats of zinc-rich paint to BS 4652. Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

560 SITE PAINTING
- Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

Q55
External decks, boardwalks and bridges

Q55 External decks, boardwalks and bridges

To be read with Preliminaries/ General conditions.

GENERAL

110A S04 - TIMBER DECK Refer to drawing 10335-LD-DET-604
- Base preparation: Decking to sit flush with adjacent proposed surfaces. After excavtion and pouring of concrete footings. Remove projections and debris and lay 1000 gauge polyethylene sheet with slits for drainage; cover with 75 mm depth of 10 mm single size gravel.
- Structure, other than surfacing: Hardwood.
  - Fasteners: As supplied by Woodscape.
- Foundations: To Q55/620 + 630 - mounded concrete footings at no more than 2m intervals - refer to detail.
- Subframing: Hardwood Timber.
- Surfacing: As drawing 10335-LD-DET-604.
  - Method of attachment: As supplied by Woodscape.
- Guarding: Not required.
- Accessories: N/A.

120A E03 - TIMBER WALL TO SAND PIT Refer to draiwng 10335-LD-DET-230 & DET-612
- Proprietory wall system by Woodscape to enclose the sand pit.
- For all information refer to drawing 10335-LD-DET-612

130A BR01 - FOOTBRIDGE Bridge to Waterplay Area - Refer to Drg. 10335-LD-DET-621
- Width: As drawing.
- Span: As drawing.
- Structure, other than surfacing: As drawing.
  - Fasteners: As supplied by Woodscape.
- Post setting: Not required.
- Surfacing: Deck boards as supplied by Woodscape.
  - Method of attachment: As per manufacturers guidance.
- Guarding: Not required.
- Edge protection: Not required.
- Accessories: Applied slip resistant rebated inserts [refer to drawing].

130B REVETMENT FOOTBRIDGE Refer to Civic Engineers drawing package 1096-01

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: None.

FABRICATION

510A FABRICATION GENERALLY

- Approval: Obtain approval from 'CA and Client'
- Design: Complete the detailed design and obtain approval prior to commencing fabrication.
- Shop drawings: Submit for approval.
- Structural calculations: Submit.
- Frameworks: Assemble and brace, including temporary members required for installation.
- Contact between dissimilar metals: Avoid.
- Fixings: Fully bolt together. Tighten bolts.
- Temporary support: Do not subject members to non-design loadings.

EXECUTION

610 LOADING

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

620 CONCRETE FOUNDATIONS GENERALLY

- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN 1 or standard prescribed concrete not less than ST2.
- 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.

630 SETTING COMPONENTS IN CONCRETE
- Holes: 250 x 250 x minimum 300 mm deep.
- Components: Accurately positioned and securely supported.
- Concrete fill: Compact as filling proceeds.
- Concrete foundations exposed to view: Finished to weathering profile to shed water and trowel smooth.
- Temporary component support: Maintain undisturbed for minimum 48 hours.

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.

665 INSTALLATION GENERALLY
- Fasteners and methods of fixing: As section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.

670 INSTALLATION OF SURFACING
- Heading joints: Kept to a minimum, and formed only as butt joints situated over joists.
- Length: Each board must span not less than two bays between joists with joints in adjacent boards staggered.
- Gaps between boards: 4-8 mm.

COMPLETION

950 DOCUMENTATION
- Contents:
  - General product information.
  - Installation information.
  - Inspection and maintenance reports.
- Number of copies: 1no. client & 1no. CA.
- Submission: 2 weeks after request by contract administrator.

S
Piped supply systems

S14
Irrigation

S14 Irrigation

To be read with Preliminaries/ General conditions.

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS AND (ARUP) M&E ENGINEERS SPECIFICATION AND RECOMMENDATIONS

GENERAL

612A PIPELINE INSTALLATION

- For ALL pipe work associated with the new water play feature - please refer to the 2 No. Water Feature Performance Specification documents by The Fountain Workshop Limited.

S90
Hot and cold water supply systems - domestic

S90 Hot and cold water supply systems - domestic

To be read with Preliminaries/ General conditions.

GENERAL

WATERPLAY ELEMENTS

110A MAINS COLD WATER SUPPLY CONNECTION/SPUR TO FUTURE CLIENT KIOSK LOCATION To future Kiosk location, (TRP to advise on proposed Kiosk requirements prior to commencement). Refer to drg 10335-LD-PLN-222

- Estimated daily consumption: Submit proposals for client consideration.
- Position of incoming mains water supply: Taken as spur from exisitng supply, refer to drg 10335-LD-PLN-135. ALL statutory permissions to be applied for by contractor prior to commencement of works.
- Drinking water outlets: Required.
- Water meters: Required.
- Water softener: Submit design and cost proposal.
- Pipelines: Submit design and cost proposals.
  - Accessories: Submit design and cost proposals.
- Valves: Submit design and cost proposals.
- Insulation: Submit design and cost proposals.
- Sanitary appliances: Submit design and cost proposals.
- Control: Submit design and cost proposals.
- Accessories: Submit design and cost proposals.
- Completion: Submit design and cost proposals.

SYSTEM PERFORMANCE

210 DESIGN OF MAINS COLD WATER SUPPLY

- Design: Complete the design of the hot and cold water supply system.
- Standard: To BS EN 806-2, BS 8558 and in accordance with HSE publication 'The control of legionella bacteria in water systems. Approved code of practice and guidance'.
- Proposals: Submit drawings (showing equipment positions and pipeline routes), technical information, calculations and manufacturers' literature.

220 COLD WATER SUPPLY

- Incoming mains water supply:
  - Location: Taken as spur from exisitng supply, refer to drg 10335-LD-PLN-135. ALL statutory permissions to be applied for by contractor prior to commencement of works.
  - Site factors: Submit proposals.
- Storage capacity: Not required.
- Drinking water outlets: Submit proposals.
- Pumped supply: Submit proposals.

250 PIPELINE SIZES
- Sizing: Calculate sizes to meet simultaneous demand for the building in accordance with BS 8558 or BS EN 806-3. Submit proposals.
- Performance:
  - Water velocity (maximum): 1.3 m/s for hot water and 2.0 m/s for cold water.
  - Filling time (maximum) for cold water storage cistern: TRP to advise on proposed Kiosk requirements prior to commencement.

PRODUCTS

520 POLYETHYLENE PIPELINES FOR UNDERGROUND USE
- Standard: To BS EN 12201-2 and -3.
- Jointing: Compression fittings.
- Colour: Blue.

570 INSULATION TO PIPELINES
- Material: Contractor's choice.
- Function: Protection from freezing.
- Thermal conductivity: Submit proposals.
- Emissivity: Submit proposals.
- Thickness (minimum): To BS 5422, Tables 19 and 20 and in accordance with 'TIMSA guidance for achieving compliance with Part L of the Building Regulations', Table 6.1.1.
- Fire performance (minimum): Submit proposals.

675 STOP VALVES, UNDERGROUND
- Standard: DZR copper alloy CZ 132 to BS 5433.

EXECUTION

715 INSTALLATION GENERALLY
- Installation: To BS EN 806-4.
- Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.
- Fixing of equipment, components and accessories: Fix securely, parallel or perpendicular to the structure of the building.
- Preparation: Immediately before installing tanks and cisterns on a floor or platform, clear the surface completely of debris and projections.
- Corrosion resistance: In locations where moisture is present or may occur, provide corrosion resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.

718 INSTALLING WATER METERS
- Standard: To BS EN ISO 4064-5.

790 PIPELINES INSTALLATION
- Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.
- Pipelines finish: Smooth, consistent bore, clean, free from defects, e.g. external scratching, toolmarks, distortion, wrinkling, and cracks.
- Concealment: Generally conceal pipelines within floor, ceiling and/ or roof voids.
- Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.
- Arrangement of hot and cold pipelines: Run hot pipelines above cold where routed together horizontally. Do not run cold water pipelines near to heating pipelines or through heated spaces.
- Electrical equipment: Install pipelines clear of electrical equipment. Do not run pipelines through electrical enclosures or above switch gear distribution boards or the like.
- Insulation allowance: Provide space around pipelines to fit insulation without compression.

800 PIPELINES FIXING
- Fixing: Secure and neat.
- Joints, bends and offsets: Minimize.
- Pipeline support: Prevent strain, e.g. from the operation of taps or valves.
- Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.
- Thermal expansion and contraction: Allow for thermal movement of pipelines. Isolate from structure. Prevent noise or abrasion of pipelines caused by movement. Sleeve pipelines passing through walls, floors or other building elements.
- Dirt, insects or rodents: Prevent ingress.

855 EXTERNAL SUPPLY PIPELINES
- Requirement: Insulate pipelines exposed to air less than 750 mm below finished ground level or more than 1350 mm below finished ground level.

860 INSTALLING INSULATION TO PIPELINES
- Standard: In accordance with BS 5970.
- Cold water pipelines: Insulate in unheated spaces. Insulate potable cold water pipelines.
- Hot water pipelines: Insulate, except for short lengths in prominent positions next to appliances.
- Appearance: Fix securely and neatly. Make continuous over fittings and at supports. Leave no gaps. Locate split on 'blind' side of pipeline.
- Timing: Fit insulation after testing.

COMPLETION

910 FLUSHING AND FILLING
- Standard: To BS EN 806-4.

920 SYSTEM DISINFECTION
- Disinfection: To BS EN 806-4.

940 COMMISSIONING
- Standard: To BS EN 806-4.
- Equipment: Check and adjust operation of equipment, controls and safety devices.
- Outlets: Check operation of outlets for satisfactory rate of flow and temperature.

950 TESTING SERVICE PIPELINES
- Test method: Disconnect from the mains, fill with potable water, exclude air, and apply at least twice the working pressure for 1 h.
- Test criterion: No leakage.

960 DOCUMENTATION
- Manufacturers' operating and maintenance instructions: Submit for equipment and controls.
- System operating and maintenance instructions: Submit for the system as a whole giving optimum settings for controls.
- Record drawings: Submit drawings showing the location of circuits and operating controls.

970 OPERATING TOOLS
- Tools: Supply tools for operation, maintenance and cleaning purposes.
- Valve keys: Supply keys for valves and vents.

980 LABELS
- Valve labels: Provide labels on isolating and regulating valves on primary circuits, stating their function.

V
Electrical supply/power/lighting systems

V91
Electrical systems - landscape

V91 Electrical systems - landscape

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS AND (ARUP) ENGINEERS DRAWINGS AND SPECIFICATION

To be read with Preliminaries/ General conditions.

GENERAL

110A POWER SUPPLY TO WATER PLAY EQUIPMENT Refer to Water Play Performance Specification by The Fountain Workshop Limited.
- Refer to documents by The Fountain Workshop Limited:
  - Gloucester Gate Playground-Water Play Performance Specification v1
  - PA814-A1-101revP1

120A POWER SUPPLY FEED/SPUR TO FUTURE KIOSK LOCATION Refer to drg 10335-LD-PLN-222 + 135, (for Kiosk location and services)
- Origin of supply: Refer to drg 10335-LD-PLN-135. TRP to advise on Kiosk specification and requirements to determine scope of connection. ALL necessary statutory permissions to be sought and granted prior to commencement on-site..
  - Type: Submit design and cost proposals for new electrical spur off existing park supply - to future proof site of proposed Kiosk.
- Cable identification and protection: Submit design and cost proposals.
- Accessories: Submit design and cost proposals.

SYSTEM PERFORMANCE

250 CONDUIT AND TRUNKING
- Standard: To BS 50086-1 or BS EN 61386-1.
- Type: Suitable for location and use.
- Sizes not shown: Submit proposals.

250A CONDUIT AND TRUNKING TO FUTURE KIOSK LOCATION + WATER PLAY EQUIPMENT Refer to drg 10335-LD-PLN-222 + 135, (for Kiosk location and services), and Water Play Performance Specification by The Fountain Workshop Limited.
Standard: To BS 50086-1 or BS EN 61386-1.
- Type: Suitable for location and use.
- Sizes not shown: Submit proposals.

260 CABLES GENERALLY
- Cable sizes not stated: Submit proposals and calculations.

PRODUCTS

303A PRODUCT STANDARDS AND APPROVALS GENERALLY FOR FUTURE KIOSK + WATER PLAY FEATURE Refer to drg 10335-LD-PLN-222 + 135, (for Kiosk location and services), and Water Play Performance Specification by The Fountain Workshop Limitied.

- For ALL electrical product specification and standards to water play items - please refer to the Water Play Performance Specification documents by The Fountain Workshop Limited.
  Standards: To BS 7671.
  - Cables:
    Approval: BASEC certified.

332 TRUNKING AND DUCTING To future Kiosk location - refer to drg 10335-LD-PLN-222 + 135, (for Kiosk location and services).

- Standard: To BS EN 50085-1.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material: Submit proposals.
- Shape and colour: Submit proposals.
- Fittings: Submit proposals.
- Resistance to impact: Very heavy.

425 UNDERGROUND CABLE MARKER TAPE

- Standard: To BS EN 12613.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material: Polyethylene.
- Size:
  - Width: 150 mm.
  - Thickness: 0.1 mm.
- Format:
  - Background colour: Yellow.
  - Text colour: Black.
- Labelling: "CAUTION ELECTRIC CABLE BELOW" continuous along the tape length.

430 UNDERGROUND PLASTICS CABLE PROTECTION COVERS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Material: Polyethylene.
- Size:
  - Width: 150 mm.
  - Thickness: Submit proposals.
- Jointing method: Peg.
- Identification: Laminate underground cable marker tape to top face.

EXECUTION

605A ELECTRICAL INSTALLATION GENERALLY FOR FUTURE KIOSK ELECTRICAL SUPPLY + WATER PLAY EQUIPMENT: Refer to drg 10335-LD-PLN-222 + 135, (for Kiosk location and services), and Water Play Performance Specification by The Fountain Workshop Limited

- For ALL electrical installation and specification to the water play - please refer to the Water Play Performance Specification documents by The Fountain Workshop Limited.
- Standard: To BS 7671.

COMPLETION

910 INSPECTION AND TESTING

- Standards: To BS 7671.
- Notice before commencing tests (minimum): 24 h.
- Certificates: Submit.
  - Number of copies: 2.

915 CLEANING

- Electrical equipment: Clean immediately before handover.

920 COMMISSIONING

- Setting for control devices: Submit proposals and commission.
- Operation of control devices: Verify.
- Orientation of adjustable luminaires: Adjust to give optimum performance.
- Additional requirements: na.

930 DOCUMENTATION

- Timing: Submit at completion.
- Contents:
  - Full technical description of each system installed.
  - Manufacturers' operating and maintenance instructions for fittings and apparatus including relamping instructions for luminaire types. Identify hazardous lamps that require specialist disposal.
  - Recommended frequency of testing and inspection, both for electrical safety, and for matters such as the corrosion and security of lighting columns and luminaire fixings.
  - Manufacturers' guarantees and warranties.
  - Record drawings showing circuits and their ratings, underground cable routes and locations of fittings and apparatus.
  - List of normal consumable items and their sources.

950 MAINTENANCE

- Servicing and maintenance: Undertake.
  - Duration: Until 12 months after Practical Completion.

Z
Building fabric reference specification

Z10
Purpose made joinery

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

110 FABRICATION
- Standard: To BS 1186-2.
- Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
  - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Joints: Tight and close fitting.
- Assembled components: Rigid. Free from distortion.
- Screws: Provide pilot holes.
  - Screws of 8 gauge or more and screws into hardwood: Provide clearance holes.
  - Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.

110A TIMBER FABRICATION TO BRIDGE
- By others. Refer to Engineer's detail and specification.

120 CROSS SECTION DIMENSIONS OF TIMBER
- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
  - Softwood sections: To BS EN 1313-1:-
    Clause 6 for sawn sections.
    Clause NA.2 for further processed sections.
  - Hardwood sections: To BS EN 1313-2:-
    Clause 6 for sawn sections.
    Clause NA.3 for further processed sections.

130 PRESERVATIVE TREATED WOOD
- Cutting and machining: Completed as far as possible before treatment.
- Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

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

250 FINISHING
- Joinery 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

Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

110 MATERIALS GENERALLY
- Grades of metals, section dimensions and properties: To the appropriate British Standard and suitable for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- Fasteners: To appropriate British Standard and, unless specified otherwise, of same metal as component, with matching coating or finish.

120 FABRICATION GENERALLY
- Contact between dissimilar metals in components that are to be fixed where moisture may be present or occur: Aviod.
- Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
  - Moving parts: Free moving without binding.
- Corner junctions of identical sections: Mitred unless specified otherwise

120A METAL FABRICATION TO BRIDGE
- By others. Refer to Engineer's detail and specification.

  Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
  - Moving parts: Free moving without binding.
- Corner junctions of identical sections: Mitred unless specified otherwise

140 ADHESIVE BONDING
- Surfaces of metals to receive adhesives: Prepare by degreasing and abrading mechanically or chemically.
- Adhesive bond: Form under pressure.

150 THERMAL CUTTING OF STAINLESS STEEL
- Carbonation in the heat affected zone: Remove, after cutting, by machining or acid pickling.

170 WELDING/ BRAZING GENERALLY
- Surfaces to be joined: Thoroughly cleaned.
- Tack welds: Use only for temporary attachment.
- Joints: made with parent and filler metal fully bonded throughout with no inclusions, holes, porosity or cracks.
- Surfaces of materials that will be self-finished and visible in completed work: Protect from weld spatter.
- Traces of flux residue, slag and weld spatter: Removed.

180 WELDING OF STEEL
- Preferred method: Metal arc welding to BS EN 1011-1 and -2.
  - Alternative methods: Submit proposals.

190 WELDING OF STAINLESS STEEL
- Preferred method: TIG welding to BS EN 1011-3.
  - Alternative methods: Submit proposals.
- Butt welds: Double bevel

250 FINISHING WELDED/ BRAZED JOINTS VISIBLE IN COMPLETE WORK
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neatly executed and ground smooth where specified.

310 PREPARATION FOR APPLICATION OF COATINGS
- General: Fabrication complete, and fixing holes drilled before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Removed.

360 GALVANIZING
- Standard: To BS EN ISO 1461.
- Vent and drain holes: Provide in approved locations and seal to approval after galvanizing.

Z12
Preservative/ fire retardant treatment

Z12 Preservative/ fire retardant treatment

To be read with Preliminaries/ General conditions.

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

120 COMMODITY SPECIFICATIONS
- Standard: Current edition of the British Wood Preserving and Damp-proofing Association (BWPDA) Manual.

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.

Z20
Fixings/ adhesives

Z20 Fixings/ adhesives

To be read with Preliminaries/ General conditions.

110 FIXINGS GENERALLY
- Integrity of supported components: Types, sizes and quantities of fasteners/ packings and spacings of fixings selected to retain supported components without distortion or loss of support.
- Components/ substrates/ fasteners of dissimilar metals: Fixed with isolating washers/ sleeves to avoid bimetallic corrosion.
- General usage: To recommendations of fastener manufacturers and/ or manufacturers of components, products or materials fixed and fixed to.
- Appearance: As approved samples.

120 FASTENER DURABILITY
- Fasteners in external construction: Of corrosion resistant material or with a corrosion resistant finish.

130 FASTENER DURABILITY
- Fasteners in external construction:
  - Fasteners not directly exposed to weather: Of corrosion resistant material or with a corrosion resistant finish.
  - Fasteners directly exposed to weather: Of corrosion resistant material.

140 FIXINGS THROUGH FINISHES
- Penetration of fasteners/ plugs into substrate: To achieve a secure fixing.

150 PACKINGS
- Function: To take up tolerances and prevent distortion of materials/ components.
- Materials: Noncompressible, noncorrodible, rot proof.
- Locations: Not within zones to be filled with sealant.

170 NAILED TIMBER FIXINGS
- Nails:
  - Steel: To BS 1202-1 or BS EN 10230-1
  - Copper: To BS EN 1202-2.
  - Aluminium: To BS 1202-3.
- Penetration: Fully driven in without splitting or crushing timber.
- Surfaces visible in completed work: Nail heads punched below surfaces.
- Nailed timber joints: Two nails per joint (minimum), opposed skew driven.

180 FIXINGS TO MASONRY
- Fasteners:
  - Light duty: Plugs and screws.
  - Heavy duty: Expansion anchors or chemical anchors.

210 PLUGS
- Type: Proprietary types suited to background, loads to be supported and conditions expected in use.

220 SCREW FIXINGS

- Screws: To BS 1210.
- Finished level of countersunk screw heads:
  - Exposed: Flush with timber surface.
  - Concealed (holes filled/ stopped): Sunk minimum 2 mm below surface.
- Washers and screw cups: Of same material as screw.

510 ADHESIVES

- Storage/ Usage: In accordance with manufacturer's and statutory requirements.
- Surfaces: Clean. Regularity and texture adjusted to suit bonding and gap filling characteristics of adhesive.
- Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Z21
Mortars

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

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

120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 13139.
- Grading: 0/2 (FP or MP).
  - Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):
    Lower proportion of sand: Use category 3 fines.
    Higher proportion of sand: Use category 2 fines.
- Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

131 READY-MIXED LIME/ SAND FOR CEMENT GAUGUED MASONRY MORTARS
- Standard: To BS 4721 or BS EN 998-2.
- Lime: Nonhydraulic to BS EN 459-1.
  - Type: CL 90S.
- Pigments for coloured mortars: To BS EN 12878.

135 SITE MADE LIME/ SAND FOR CEMENT GAUGED MASONRY MORTRS
- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
- Lime: Nonhydraulic to BS EN 459-1.
  - Type: CL 90S.
- Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.

160 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1 and CE marked.
  - Types: Portland cement, CEM I.
    Portland slag cement, CEM II-S.
    Portland fly ash cement, CEM II-V or W.
  - 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 cement: To BS 4027 and Kitemarked.
  - Strength class: 42.5.
- Masonry cement: To BS 5224 and Kitemarked.
  - Class: MC 12.5 (with air entraining agent).

180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS 4887-1 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.

200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS
- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
- Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
- Bagged cement/ hydrated lime: Store off the ground in dry conditions.

210 MAKING CEMENT GAUGED MORTARS
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on dry sand. Allow for bulking of damp sand.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
  - Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
- Working time (maximum): Two hours at normal temperatures.
- Contamination: Prevent intermixing with other materials.

LIME

310 LIME/ SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

320 SAND FOR LIME/ SAND MASONRY MORTARS
- Type: Sharp, well graded.
  - Quality, sampling and testing: To BS EN 13139.
  - Grading/ Source: As specified elsewhere in relevant mortar mix items.

350 STORAGE OF LIME/ SAND MORTAR MATERIALS
- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
- Ready prepared nonhydraulic lime putty: Prevent drying out and protect from frost.
- Nonhydraulic lime:sand mortar: Store on clean bases or in clean containers that allow free drainage. Prevent drying out or wetting and protect from frost.
- Bagged hydrated hydraulic lime: Store off the ground in dry conditions.

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.

370 SITE PREPARED NONHYDRAULIC LIMESAND MORTARS

- Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
  - Equipment: Roller pan mixer or submit proposals.
- Maturation period before use (maximum): Seven days.

390 KNOCKING UP NONHYDRAULIC LIMESAND 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.

400 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.

Z22
Sealants

Z22 Sealants

To be read with Preliminaries/General conditions.

120 SUITABILITY OF JOINTS

- Presealing checks:
  - Joint dimensions: Within limits specified for the sealant.
  - Substrate quality: Surfaces regular, undamaged and stable.
- Joints not fit to receive sealant: Submit proposals for rectification.

130 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.
- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.
  - 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.

160 APPLYING SEALANTS

- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
- Environmental conditions: Mix and apply primers and sealants within temperature and humidity ranges recommended by manufacturers. Do not dry or raise temperature of joints by heating.
- Sealant application: Unless specified otherwise, 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.