M580

MeiLoci Ltd

Kerrier Way

KERRIER WAY_EXTERNAL WORKS SPECIFICATION

Tender

09-02-2024

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C20
Demolition

General requirements

120 Extent of deconstruction/ demolition

1. General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to Levels or required excavation, as shown on on excavation plan M580-DR-L-1003.

150 Features to be retained

1. General: Keep in place and protect the following: All adjacent pavements (including services and features within them), boundary walls and fences, all buried services, utilities and access chambers within site (including SWW attenuation tank), BT junction box and CCTV camera/ column.

Services affected by deconstruction and demolition

210 Services regulations

1. Work carried out to or affecting new and/ or existing services: Carry out in accordance with the by-laws and regulations of the relevant statutory authority

220 Location and marking of services

1. Services affected by deconstruction/ demolition work: Locate and mark positions
2. Mains services marking: Arrange with the appropriate authorities for services to be located and marked
    2.1. Marking standard: In accordance with Street Works UK publication 'Guidance on the Positioning and Colour Coding of Underground Utilities' Apparatus'.

250 Live foul and surface water drains

1. Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings: Protect and maintain normal flow during deconstruction or demolition. Make good any damage arising from deconstruction or demolition work
2. Other requirements: n/a

270 Services to be retained

1. Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction or demolition. Making good will be the contractors responsibility.
2. Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner

Deconstruction and demolition work

310 Workmanship

1. Standard: Demolish structures in accordance with BS 6187.
2. Operatives
    2.1. Appropriately skilled and experienced for the type of work.
    2.2. Holding, or in training to obtain, relevant Construction Skills certification of competence.
3. Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction and demolition to be used.

320 Gas and vapour risks

1. Precautions: Prevent fire or explosion caused by gas and vapour from tanks, pipes, etc.

330 Dust control

1. General: Minimize airborne dust by periodically spraying deconstruction and demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris. Special consideration and measures are required due to the contamination onsite (as per phase 3 remediation strategy.
2. Lead dust: Submit method statement for control, containment and clean-up regimes.

340 Health hazards

1. Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the works. Special consideration and measures are required due to the contamination onsite (as per phase 3 remediation strategy.

350 Adjoining property

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

380 Dangerous openings

1. General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
2. Access: Prevent access by unauthorized persons.

390 Asbestos-containing materials – known occurrences

1. General: Materials containing asbestos are known to be present in: Buried asbestos was recorded in 1 location during site investigations.
2. Treatment: As per general site remediation measures set out in phase 3 remediation strategy

391 Asbestos-containing materials – unknown occurrences

1. Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction and demolition work. Avoid disturbing such materials.
2. Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

410 Unforeseen hazards

1. Discovery: Give notice immediately when hazards such as unrecorded voids, tanks, chemicals, are discovered during deconstruction or demolition.
2. Removal: Submit details of proposed methods for filling, removal, etc.

420 Open basements, etc

1. Temporary support: Leave adequate buttress walls or provide temporary support to basement retaining walls up to ground level
2. Safety: Make remaining sections of retaining and buttress walls safe and secure
3. Water movement: Make adequate holes in basement floors to allow water drainage or penetration (depending on water table)

430 Filling of basements, etc

1. Temporary support: Leave adequate buttress walls or provide temporary support to basement retaining walls up to ground level
2. Safety: Make remaining sections of retaining and buttress walls safe and secure
3. Water movement: Make adequate holes in basement floors to allow water drainage or penetration (depending on water table)
4. Filling: Remove organic material and soil from basements and other voids. Fill and consolidate with suitable fill material (arising from site or imported).

Materials arising

510 Contractor's property

1. Components and materials arising from the deconstruction and demolition work: Property of the contractor, except for designated items which remain the property of the employer
2. Action: Remove from site as work proceeds, where not to be reused or recycled for site use

520 Recycled materials

1. Materials arising from deconstruction and demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan and the phase 3 remediation strategy
2. Evidence of compliance: Submit full details and supporting documentation.
    2.1. Verification: Allow adequate time in programme for verification of compliance.

Ω End of Section

D20
Excavating and filling

Generally/the site

110 Site investigation

1. Report: For Available info on site investigation see:
    - Pell Frishner Phase 1 and 2 site investigation (ref RE70076G001A, oct 2017)
    - Wheal Jane Phase 2 ground investigation (ref S120931/PH1, March 2022)
    - Groundsure site investigation summary report (ref: GEO1740158135, August 2023)
    - Groundsure risk assessment (ref: GEO1740158135, oct 2023)

145 Variations in ground water level

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

150 Existing services, features and structures

1. Services: See section A12 for locations.
2. Site features to be retained: See section A12 for details.
3. Structures: See section A34 for details of protection.

Clearance/excavating

164 Tree roots

1. Protected area: Construction exclusion zone - as per arboriculturalist's proposals
    1.1. Size of area: As shown in Tree Protection Plan
2. Excavation in protected area
    2.1. Method: Not permitted - see Tree Survey Document and arboricultural Impact assessment
    2.2. Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
3. Outside protected area: Give notice of roots exceeding 25 mm and do not cut without approval.
4. Cutting
    4.1. Make clean smooth cuts with no ragged edges.
    4.2. Pare cut surfaces smooth with a sharp knife.
    4.3. Treatment of cut roots: Not required
5. Backfill: As dug material, enriched with amelioration as section Q31

168 Site clearance

1. Timing: Before initial earthworks
2. General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.
3. Treatment: n/a

170 Removing small trees, shrubs, hedges and roots

1. Identification: Clearly mark trees to be removed.
2. Small trees, shrubs and hedges: Cut down.
3. Roots: *Remove mechanically to a minimum depth of 300 mm below ground level.*

4. Safety: Comply with Forest Industry Safety Accord safety leaflets and measures set out in Phase 3 Remediation Strategy

180 Chipping and shredding

1. General: Permitted, remove arisings from site

225 Handling topsoil

1. Standard: To BS 3882.
2. Aggressive weeds
   - 2.1. Species: Notify the presence of species included in the Weeds Act, section 2, or the appropriate Wildlife and Countryside Act for the relevant jurisdiction.
   - 2.2. Give notice: Obtain instructions before moving topsoil.
3. Contamination: Do not mix topsoil with:
   - 3.1. Subsoil, stone, hardcore, rubbish or material from demolition work.
   - 3.2. Other soil or material containing aggressive weeds, sharps, plastics and non soil forming materials and notifiable animal or plant diseases.
   - 3.3. Oil, fuel, cement or other substances harmful to plant growth.
   - 3.4. Other classifications of topsoil.
4. Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.

240 Adjacent excavations

1. 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.
2. Angle of line below horizontal: 45°
3. Backfill material: As clause 248 when upper excavation will contain a foundation, otherwise compacted general filling as clause 626.

242 Excavations adjacent to existing backfilled trenches

1. Proximity: When width of undisturbed ground between the two excavations will be less than 900mm.
2. Action: Assume that the ground between the trenches is unstable and provide side support accordingly.

244 Excavations adjacent to existing foundations

1. Prior to commencing excavation
   - 1.1. Excavate trial pits adjacent to existing foundations to determine extent and formation levels.
   - 1.2. Allow for inspection of trial pits.
   - 1.3. Allow time for amendment of details if required.
     - 1.3.1. Time period: 5 working days
2. Backfill material to new excavation: As clause 248.

248 Backfill to excavations lower than foundation formation level

1. Critical level
   - 1.1. Distance between near faces of foundation and lower excavation less than 1 m: 150 mm above foundation formation level
   - 1.2. Otherwise: 150 mm above level at which line defined in clause 240 cuts near face of lower excavation

2. Backfill material
   2.1. Below critical level: Lean mix concrete
   2.2. Above critical level: Compacted general filling as clause 626

250 Permissible deviations from formation levels

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

255 Accuracy – linear dimensions

1. Permissible deviations from linear dimensions generally: 25mm

260 Inspecting formations

1. Give notice: Make advance arrangements for inspection of formations for groundform - prior to placement of geotextile membrane (as per remediation requirements set out in phase 4 report.
   1.1. Notice (minimum): 4 days
2. Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels.
   2.1. Loose material: Minor compaction permitted
3. Seal: Within 4 hours of inspection, seal formations with High visibility geotextile membrane, e.g. Lorrak Alarm or similar (as per remediation requirements set out in phase 3 report).

270 Foundations generally

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

280 Trench fill foundations

1. Excavation: Form trench down to formation in one operation.
2. Safety: Prepare formation from ground level.
3. Inspection of formations: Give notice before commencing excavation.
   3.1. Period of notice: Four working days
4. Shoring: Where inspection of formation is required, provide localised shoring to suit ground conditions.
5. Concrete fill: Place concrete immediately after inspection and no more than four hours after exposing the formation.

290 Foundations in made up ground

1. Depth: Excavate down to a natural formation of undisturbed subsoil.
2. Discrepancy: Give notice if this is greater or less than depth given.

310 Unstable ground

1. Generally: Ensure that the excavation remains stable at all times.
2. Give notice: Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.

3. Take action: If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

320 Recorded features

1. Recorded foundations, beds, drains, manholes, etc.: Retain and protect - unless proposed for demolition
2. Contaminated earth: Remove to suitable waste facility (as per remediation requirements set out in phase 3 report)

330 Unrecorded features

1. 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

1. Excavation taken wider than required
    1.1. Backfill: As instructed
2. Excavation taken deeper than required
    2.1. Backfill: With well graded granular material or lean mix concrete

Disposal of materials

415 Excavated arisings removal

1. General: Treat as contaminated material (as per measures set out in phase 3 report). Where appropriate use as fill material to achieve required levels beneath geotextile membrane. Remove excess to suitable waste facility (as per remediation requirements set out in phase 3 report)

420 Topsoil storage heaps

1. Location: To be agreed with the CA
2. Standard: To BS 3882.
3. Height (maximum): 1.5m
4. Protection
    4.1. Do not place any other material on top of storage heaps.
    4.2. Do not allow construction plant to pass over storage heaps.
    4.3. Prevent compaction and contamination.

441 Surplus subsoil

1. Excavated material: Spread where required to locally raise levels, or remove from site as soon as practical (treat as contaminated material, as per phase 3 remediation strategy)
2. Retained material: Use where required to locally raise levels of formation prior to laying of geotextile across site (as per remediation requirements set out in phase 4 report)
    2.1. Protected areas: Do not raise soil level within construction exclusion zones (as set out in Tree Protection Plan)
3. Remaining material: Treat as contaminated material and remove from site to suitable waste facility (as per requirements set out in phase 3 remediation strategy)

450 Water

1. Generally: Keep all excavations free from water until:
    1.1. Formations are covered.
    1.2. Below ground constructions are completed.

2. Drainage: Form surfaces of excavations and fill to provide adequate falls.
3. 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

1. Give notice: If it is considered that the excavations are below the water table.
2. Springs/ Running water: Give notice immediately if encountered.

457 Pumping

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

Filling

500 Proposed fill materials

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

510 Hazardous, aggressive or unstable materials Type A

1. 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 (other than in line with measures set out in phase 3 remediation strategy), damage to building structures or instability in the filling, including material that is:
    1.1. Frozen or containing ice.
    1.2. Organic.
    1.3. Contaminated or noxious (other than in line with measures set out in phase 3 remediation strategy).
    1.4. Susceptible to spontaneous combustion.
    1.5. Likely to erode or decay and cause voids.
    1.6. With excessive moisture content, slurry, mud or from marshes or bogs.
    1.7. Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
    1.8. Unacceptable, class U2 as defined in the 'Specification for highway works', clause 601.

530 Placing fill

1. Surfaces of excavations and areas to be filled: Free from loose soil, topsoil, organic material, rubbish and standing water.
2. Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
3. Adjacent structures, membranes and buried services
    3.1. Do not overload, destabilise or damage.
    3.2. Submit proposals for temporary support necessary to ensure stability during filling.
    3.3. Allow 14 days (minimum) before backfilling against in situ concrete structures.

4. Layers: Place so that only one type of material occurs in each layer.
5. Earthmoving equipment: Vary route to avoid rutting.

535 Compaction generally

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

540 Benching in fill

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

550 Geotextile sheet

1. Manufacturer: Don and Low Ltd (or equal approved)
    1.1. Product reference: Lotrak Alarm (or equal approved)
2. Type: High visibility geotextile
3. Polymer type: as supplied
4. Recycled content: as supplied
5. Jointing: As per manufacturers recommendations
6. Preparation of subgrade: Achieve required formation levels and compact material. Before laying sheet, remove humps and sharp projections.
7. Protect from
    7.1. Exposure to light.
    7.2. Contaminants.
    7.3. Materials listed as potentially deleterious by geotextile manufacturer.
    7.4. Wind uplift.

610 Compacted filling for landscape areas

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

617 Type 1 unbound mixture

1. Fill: To 'Specification for highway works', clauses 801 and 803:
    1.1. Crushed rock (other than argillaceous rock).
    1.2. Coarse crushed concrete aggregate.
    1.3. Recycled aggregates.
    1.4. Crushed non-expansive slag to clause 801.2.
    1.5. Well-burned non-plastic colliery shale.
2. Amendments to requirements in the 'Specification for highway works': None
3. Filling: To 'Specification for highway works', clause 802.

626 Compacted general fill - beneath geotextile required as per remediation proposals

1. Suitable material: Any inorganic material excavated on the site
2. Excavated material: Select suitable material and keep separate.
3. Filling: Spread and level material in layers. As soon as possible thoroughly compact each layer.
4. Required compaction: To suit use of fill
5. Proposals: Well in advance of starting work submit details of proposed:
   5.1. Materials to be used, including quantities of each type.
   5.2. Type of plant.
   5.3. Maximum depth of each compacted layer.
   5.4. Minimum number of passes per layer.

650 Protection of compacted filling

1. Temporary protective filling: Before allowing construction traffic, raise level of compacted cohesive soil filling at least 150 mm above formation level using properly compacted temporary filling.
2. Removal: Remove temporary protective filling from site before permanent construction.

700 Backfilling around foundations

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

Bioremediation - Not Used

'specification for highway works: earthworks specification' appendices - Not Used

Ω End of Section

E10
Mixing/casting/curing in situ concrete

Concrete

101 Specification

1. Concrete generally: To BS 8500-2.
2. Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.

110 Basic designated concrete

1. Designation: GEN1
2. Coarse recycled aggregates: As permitted by BS 8500-1
3. Consistence class: S3
4. Additional requirements: Submit proposals.

Materials, batching and mixing

215 Ready-mixed concrete

1. Production plant: Currently certified by a body accredited by UKAS to BS EN ISO/IEC 17065 for product conformity certification of ready-mixed concrete.
2. Source of ready-mixed concrete: Obtain from one source if possible . Otherwise, submit proposals.
   2.1. Name and address of depot: Submit before any concrete is delivered.
   2.2. Delivery notes: Retain for inspection.
3. Declarations of nonconformity from concrete producer: Notify immediately.

230 Interruption of supply during concreting

1. Elements without joints: Where elements are detailed to be cast in a single pour without joints, make prior arrangements for a back-up supply of concrete.
2. Elsewhere
   2.1. Preparation: Manage pour to have a full face, and have materials available to form an emergency construction joint while concrete can still be worked.
   2.2. Before pour is completed: Submit location and details of joint, make proposals for joint preparation.

490 Properties of fresh concrete

1. Adjustments to suit construction process: Determine with concrete producer . Maintain conformity to the specification.

Project testing/ certification - Not Used

Placing/ compacting/ curing and protecting

620 Temperature of concrete

1. Application: CONCRETE FOOTINGS/ BASES
2. Objective: Limit maximum temperature of concrete to minimize cracking during placing, compaction and curing. Take account of:

2.1. High temperatures and steep temperature gradients: Prevent build-up during first 24 hours after casting. Prevent coincidence of maximum heat gain from cement hydration with high air temperature and/ or solar gain.

2.2. Rapid changes in temperature: Prevent during the first seven days after casting.

3. Proposals for meeting objective: Submit.

630 Premature water loss

1. Requirement: Prevent water loss from concrete laid on absorbent substrates.
   1.1. Underlay: Select from:
      1.1.1. Polyethylene sheet: 250 micrometres thick.
      1.1.2. Building paper: To BS 1521, grade B1F.
   1.2. Installation: Lap edges 150 mm.

648 Adverse temperature conditions

1. Requirement: Submit proposals for protecting concrete when predicted ambient temperatures indicate risk of concrete freezing or overheating.

670 Transporting

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

680 Placing

1. Records: Maintain for time, date and location of all pours.
2. Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
3. Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum), unless otherwise specified. Do not place against frozen or frost covered surfaces.
4. Continuity of pours: Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
5. Discharging concrete: Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes.
6. Thickness of layers: To suit methods of compaction and achieve efficient amalgamation during compaction.
7. 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

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

720 Vibrators

1. General: Maintain sufficient numbers and types of vibrator to suit pouring rate, consistency and location of concrete.
2. External vibrators: Obtain approval for use .

730 Plastic settlement

1. 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.
    1.1. Timing: During the first few hours after placing and whilst concrete is still capable of being fluidized by the vibrator.
2. Removal of cracks: Revibrate concrete.

810 Curing generally

1. Requirement: Keep surface layers of concrete moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete.
    1.1. Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
    1.2. Top surfaces: Cover immediately after placing and compacting. If covering is removed for finishing operations, replace it immediately afterwards.
2. Surface temperature: Maintain above 5°C throughout the specified curing period or four days, whichever is longer.
3. 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

1. Sheet coverings: Suitable impervious material.
2. Curing compounds: Selection criteria:
    2.1. Curing efficiency: Not less than 75% or for surfaces exposed to abrasion 90%.
    2.2. Colouring: Fugitive dye.
    2.3. Application to concrete exposed in the finished work: Readily removable without disfiguring the surface.
    2.4. Application to concrete to receive bonded construction/ finish: No impediment to subsequent bonding.
3. 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

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

840 Protection

1. Prevent damage to concrete, including
    1.1. Surfaces generally: From rain, indentation and other physical damage.

1.2. Surfaces to exposed visual concrete: From dirt, staining, rust marks and other disfiguration.

1.3. Immature concrete: From thermal shock, physical shock, overloading, movement and vibration.

1.4. In cold weather: From entrapment and freezing expansion of water in pockets, etc.

Ω End of Section

E20
Formwork for in situ concrete

Generally/ preparation

110 Loadings

1. Requirement: Design and construct formwork to withstand the worst combination of the following:
   1.1. Total weight of formwork, reinforcement and concrete.
   1.2. Construction loads including dynamic effects of placing, compacting and construction traffic.
   1.3. Wind and snow loads.

170 Work below ground

1. Description: - BASES - FOOTINGS - FOUNDATIONS
2. Casting vertical faces against faces of excavation: Permitted provided face of excavation is stable
   2.1. Requirements: Prevent contamination of concrete by loose soil Submit proposals for maintaining stability of excavated faces and preventing contamination of concrete by loose soil Increase nominal cover to reinforcement to 75 mm

Construction

310 Accuracy

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

320 Joints in forms

1. Requirements including joints in form linings and between forms and completed work
   1.1. Prevent loss of grout, using seals where necessary.
   1.2. Prevent formation of steps. Secure formwork tight against adjacent concrete.

330 Inserts, holes and chases

1. Positions and details
   1.1. Dimensioned on drawings provided on behalf of the Employer: Do not change without consent.
   1.2. Undimensioned or from other sources: Submit proposals.
2. Positioning relative to reinforcement: Give notice of any conflicts well in advance of placing concrete.
3. Method of forming: Fix inserts or box out as required. Do not cut hardened concrete without approval.

Striking

510 Striking formwork

1. Timing: Prevent any disturbance, damage or overloading of the permanent structure.

521 Minimum period for retaining formwork/ temporary supports in position

1. Concrete strength at time of formwork removal (minimum): As per engineer's proposals

2. Assumptions: None
   2.1. Before removing formwork: Submit proposals if assumptions will not be realised.
3. Method to be used in assessing early age strength of concrete: Submit proposals

Formed finishes

605 Control samples (part of the finished work)

1. Quality of finish: Special finish E20/630
2. Location: Obtain instructions.
3. Area (minimum): 1m2
4. Features to be included: seek instructions
5. Viewing distance (maximum): 2m
6. Approval of appearance: Obtain before proceeding with remainder of the work.

610 Basic finish

1. Location: Faces below ground level
2. Finish: Faces fully compacted and cover to reinforcement provided.

630 Special finish

1. Location: Any concrete faces exposed to view/ above ground level (if applicable)
2. Finish: Smooth and even. Formwork panels as large as practicable. Arrange in a regular pattern as a feature of the surface.
   2.1. Special requirements: None
3. Permissible deviation of surfaces
   3.1. Sudden irregularities (maximum): 3 mm.
   3.2. Gradual irregularities (maximum): 3 mm when measured from the underside of a 1 m straightedge, placed anywhere on surface.
4. Variations in colour
   4.1. Permitted: Those caused by impermeable formwork linings.
   4.2. Not permitted: Those caused by contamination, grout leakage and replacement of formwork panels.
5. Cover spacers: Submit proposals
6. Surface blemishes
   6.1. Permitted: Blowholes less than 5 mm in diameter and at an agreed frequency.
   6.2. Not permitted: Voids, honeycombing, segregation and other defects.
7. Formwork tie holes: In a regular pattern and filled with matching mortar

Ω End of Section

E30
Reinforcement for in situ concrete

Reinforcement

110 Quality assurance of reinforcement

1. Standards
   1.1. Reinforcement: To BS 4449, BS 4482, BS 4483 or BS 6744.
   1.2. Cutting and bending: To BS 8666.
2. Source of reinforcement: Companies holding valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels (CARES).

210 Standard fabric reinforcement

1. Standard: To BS 4483.
2. Strength grade: B500B

Workmanship

310 Cutting and bending reinforcement

1. General: To schedules and to BS 8666.
2. Bending on site, including minor adjustments: Obtain instructions

320 Protection of reinforcement

1. Dropping from height, mechanical damage and shock loading: Prevent.
2. Cleanliness of reinforcement at time of pouring concrete: Free from corrosive pitting, loose mill scale, loose rust and contaminants which may adversely affect the reinforcement, concrete, or bond between the two.

451 Fixing reinforcement

1. Standard: To BS 7973-1 and -2.
2. Installation: In addition to any spacers and chairs shown on drawings or schedules, provide adequate support, tie securely and maintain the specified cover.
3. Tying
   3.1. Wire type: 16 gauge black annealed. Use stainless steel wire for stainless steel reinforcement.
4. Ends of tying wire: Prevent intrusion into the concrete cover. Remove loose ends.
5. Compatibility of metals: Prevent contact between ordinary carbon steel and stainless or galvanized reinforcement.

470 Tolerances on cover

1. Tolerance (maximum): 10mm
2. Checking specified cover dimensions: Before concreting check that cover dimensions will be achieved.

480 Nominal cover to reinforcement

1. Nominal cover: 75 mm

Ω End of Section

F20
Natural stone rubble walling

Structural requirements - Not Used

Types of walling

110 Rubble walling

1. Description: Stone facing to Cornish hedges
2. Stone: To BS EN 771-6.
    2.1. Name (traditional): Granite walling stone
    2.2. Petrological family: Granite
    2.3. Colour: Buff/ Silver Grey
    2.4. Origin: UK
    2.5. Supplier: Lantoom Quarry (or equal approved)
        2.5.1. Product reference: Dartmoor granite walling stone - cropped 100 - 200mm (or equal approved
    2.6. Size: Mix of sizes with a bed depth of 100 - 200mm
    2.7. Quality: Seasoned and free from vents, cracks, fissures or other defects deleterious to strength, durability or appearance.
3. Joints: Close butted joints - earth filled
4. Other requirements: Cornish hedging work to be undertaken by member of the Guild of Cornish Hedgers (Certified Craftsmen)

General requirements - Not Used

Laying and jointing

300 Reference panels

1. General: Complete section of Cornish hedging (location/ section to be agreed with the CA) and seek approval on appearance/ finish before progressing with further work
2. Walling type: Cornish hedging
    2.1. Location: In situ (to be agreed)
    2.2. Size: 4m length
    2.3. Features: to include wall end/ junction with precast seating

325 Laying generally

1. Absorbent stones: Not applicable
2. Orientation for natural bed of stones: horizontally laid for main / lower face, with top 2 courses laid vertically
3. Appearance and bonding: Consistent overall appearance and good bond.
    3.1. Random walling: Random coursed laying pattern, laid in horizontal coursing in informal diminishing rows (with larger stones to base of walls), and infill with smaller stones. As per sample panel onsite and shown on drawings. Top two rows to be similar sized smaller stones (approx 100 - 175mm face length) laid vertically
4. Accuracy
    4.1. Walling generally: Concave batter - as described and shown

4.2. Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.

5. Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains, not permitted.
6. Other requirements : Cornish hedging work to be undertaken by member of the Guild of Cornish Hedgers (Certified Craftsmen)

330 Walling below ground level

1. Extent of facework below finished level of adjoining ground or external works (minimum): Generally 150mm

380 Coursed work

1. Courses: True to line and level.

Ω End of Section

F31
Precast concrete sills/ lintels/ copings/ features

Types of component

112 Designated concrete for bespoke precast seating walls

1. Description: Concrete seating walls
2. Concrete: Designated to BS 8500-2: RC40/50 (CEM1).
3. Special requirements: Concrete colour to be white, Supplier/ manufacturer to provide colour reference chart for review prior to providing samples. Previous projects that can be used as a reference point include the V and A Museum and Penhaligan Star (CCP projects)
4. Finish to visible faces: Special finish in line with BS EN 13670
5. Manufacturer/ Supplier: Contractor's choice to approval (potential suppliers include Cornish Concrete Products and Amber Precast
6. Reinforcement type/ strength grade: As per engineer's proposals
   6.1. Cover to reinforcement (nominal): As per engineer's proposals
7. Aggregates
   7.1. Size (maximum): 20 mm
   7.2. Coarse recycled aggregate: RCA permitted
8. Matching sample for finish to visible faces: As per reference sample - to be produced by supplier and approved prior to production of precast units
9. Other requirements:

- Submit fabrication drawings for approval prior to to manufacture
- The precast unit surface to be free from air bubbles or open pockets. As struck surface to be have a smooth finish with an even and consistent colour, with no exposed aggregates showing.
- Concrete colour to be white, manufacturer to provide colour reference chart for review prior to providing reference sample.
- Sample of concrete colour and finish to be provided for review and approval by the landscape architect prior fabrication.
- Bespoke artwork finish to be included on specified units by feature entrances (based on bespoke designs/ artwork to be supplied to the contractor in a digital format suitable for lazer/ machine cutting, prior to order). The following following options are being explored (TBC with the art proposals)
  - Option 1 - embedded metal artwork using lazer cut stainless steel (Grade 316, bright polished finish 1P/2P), fixed flush with the concrete surface
  - Option 2 - Artwork in acid etched finish (to a roughness grade of CSP3)
  - Option 3 - Artwork in embossed/ debased finish (using cutouts to the inside of the mould)
- A separate sample of bespoke artwork finish is to be produced for approval by the Landscape Architect and as a reference for quality/ finish to be achieved throughout
- All vertical and top edges to receive 20mm fillet (with no fillet to abutting faces)
- All exposed faces to be of a high quality and free of any defects and inconsistencies.
- Invisible anti graffiti / staining sealer to used on all exposed surfaces COLORTEC ® MAX Protection coating for concrete and terrazzo by HEBAU GmbH, An der Eisenschmelze 13, D-87527 Sonthofen, Tel. +49 (0)8321/6736-0, Fax. +49/(0)8321/673636 email: mail@hebau.de website: www.hebau.de

- For walls (not stand alone units) anti skate studs (25mm grade 316 stainless steel half sphere by sportsmark.net - or equal approved) to be installed @ max 1m ctrs (equally spaced) along edge adjacent to pathway/ hard surfacing.

General requirements

210 Moulds

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

220 Concrete generally

1. Specification: To BS 8500-2 and BS EN 206.
2. Producer: Accredited to BS 8500-2 requirements where product conformity certification is required.

250 Reinforcement

1. Carbon steel reinforcement: As appropriate to BS 4449, BS 4482 and BS 4483.
   1.1. Cutting and bending: To BS 8666.
2. Condition at time of placement: Clean, free of corrosive pitting, loose materials and substances that adversely affect reinforcement, concrete, or bond between the two.
3. Fixing: Accurate and secure.
   3.1. Method: Wire tying, approved steel clips or tack welding if permitted.
   3.2. Concrete cover: Maintain free of all tying wire or clips.

260 Casting and curing

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

261 Cutting

1. Cutting of precast concrete components: Not permitted.

Fair faced components

310 Control samples

1. Required samples: After finalization of design, one each After finalization of design, one each of the following components:
   - 1nr sample to demonstrate general finish/ concrete colour
   - 1nr sample to demonstrate bespoke artwork (to be included on specified units)
2. Features to include: Colour and finish of concrete surface, fillet edge, bespoke artwork (on separate sample.
3. Approval of appearance: Obtain before manufacture of final piece

320 Details of samples

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

330 Mixes for visible faced components

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

350 Quality of finishes

1. Appearance standard: As established by samples.

390 Inspection

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

Installation

420 Laying

1. Mortar for bedding and jointing: If required - dependent on proposals for casting in sections
   1.1. Type: To match concrete colour/ finish - submit proposals
   1.2. Mix: To match concrete colour/ finish - submit proposals
   1.3. Packing: submit proposals
2. Bedding components: On full bed of mortar.
3. Removal of marks, stains and extraneous mortar on visible faces: Submit proposals

Ω End of Section

Q10
Kerbs/ edgings/ channels/ paving accessories

Types of kerbs/edgings and channels

200A Steel edge for bitmac path and paving - general areas

1. Description: EDGINGS
2. Manufacturer: Kinley Systems (or equal approved)
   2.1. Product reference: Everedge Fort (or equal approved)
3. Size: 75mm
4. Type/ Material: Steel
   4.1. Finish: Galvanised
5. Accessories: Staking eyes/ jointing plates as supplied with products
6. Fixing:: Secured by staking into MOT sub base as per manufacturer's recommendations
7. Joints: with connector plates as supplied for product. As per manufacturer's recommendations
8. Special requirements: Take care to avoid sharp edges at corners and joints. All curves tighter than 1.5m radius are to be supplied pre-bent (special orders)

200B Steel edge for sett paving

1. Description: EDGINGS
2. Manufacturer: Kinley Systems (or equal approved)
   2.1. Product reference: Everedge Fort (or equal approved)
3. Size: 100mm
4. Type/ Material: Steel
   4.1. Finish: Galvanised
5. Accessories: Staking eyes/ jointing plates as supplied with products
6. Fixing:: Secured by staking into MOT sub base as per manufacturer's recommendations
7. Joints: with connector plates as supplied for product. As per manufacturer's recommendations
8. Special requirements: Take care to avoid sharp edges at corners and joints.

200C Steel edge for path through amphitheatre terracing

1. Description: EDGINGS
2. Manufacturer: Kinley Systems (or equal approved)
   2.1. Product reference: Everedge Fort (or equal approved)
3. Size: 200mm
4. Type/ Material: Steel
   4.1. Finish: Galvanised
5. Accessories: Staking eyes/ jointing plates as supplied with products
6. Base/ footing:: GEN1 concrete footing 150 wide x 120 deep, profiled to tie in with terracing/ path edge and with chamfered outer edge. where. required (so as not to be visible above ground)
7. Fixing:: Secured into concrete footing using 70mm stainless steel screws, with additional 50mm concrete laid on top of base plate where path is elevated above surrounding levels
8. Joints: With connector plates as supplied for product. As per manufacturer's recommendations
9. Special requirements: Take care to avoid sharp edges at corners and joints. Allow for making suitable cuts in edging face so that top edge can be bent in line with grass terracing/ path surface, with junctions secured using connector plates.

Roads/paving accessories/ marking/ demarcation - Not Used

Laying

510 Laying kerbs, edgings and channels

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

520 Adverse weather

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

530 Concrete for foundations, races and haunching

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

600A Pre - bent steel edging

1. Usage: For of 1.5 m or less - arrange for factory bent section of edging, at appropriate radii

625 Regularity of paved surfaces

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

Ω End of Section

Q20
Granular sub-bases to roads/ pavings

To be read with preliminaries/ general conditions.

110 Thicknesses of sub-base/ subgrade improvement layers

1. Thicknesses: See sections:
    1.1. Q23 Gravel/hoggin/woodchip roads/pavings.

120 Checking of subgrades

1. Subgrade variation: If material appears to vary from anticipated conditions, or if there are extensive soft spots, report condition and submit proposals.
2. Submit: Results and obtain instructions before proceeding.

140 Excavation of subgrades

1. Final excavation to formation or subformation level: Carry out immediately before compaction of subgrade.
2. Soft spots and voids: Give notice.
3. Old drainage and service trenches: Give notice
4. Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 Preparation and compaction of subgrades

1. Timing: Immediately before placing sub-base.
2. Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers 300 mm (maximum) thick
3. 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 membrane

1. Description: Laid beneath sub base
2. Manufacturer: Terram (or equal approved)
    2.1. Product reference: 1000 - non woven (or equal approved)
3. Jointing: 300 mm overlap
4. Protect from
    4.1. Exposure to light, except during laying (maximum five hours).
    4.2. Contaminants.
    4.3. Materials listed as potentially deleterious by geotextile manufacturer.
    4.4. Damage, until fully covered by fill.
    4.5. Wind uplift, by laying not more than 15 m before covering with fill.
5. Preparation: Remove humps and sharp projections and fill hollows before laying.

210 Highways agency Type 1 unbound mixture for sub-base

1. Material: Type 1 unbound mixture to Highways Agency ‘Specification for highway works’, clauses 801 and 803.
    1.1. Recycled aggregate: Permitted

211 Granular material

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

230 Placing granular material generally

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

250 Laying granular sub-bases

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

310 Accuracy

1. Permissible deviation from required levels, falls and cambers (maximum)
   1.1. Subgrades
      1.1.1. Roads and parking areas: +20 -30 mm.
      1.1.2. Footways and recreation areas: ± 20 mm.
   1.2. Sub-bases
      1.2.1. Roads and parking areas: ± 20 mm
      1.2.2. Footways and recreation areas: ± 12 mm

330 Cold weather working

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

340 Protection

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

Ω End of Section

Q22
Asphalt roads/ pavings

Types of paving

115 Asphalt concrete paving

1. Description: TO FOOTWAYS
2. Standard: To BS EN 13108-1
3. Subgrade improvement layer: Contractor's choice (to provide well consolidated sub grade)
4. Geotextile: Sheet
   - 4.1. Manufacturer: Terram (or equal approved)
     - 4.1.1. Product reference: 1000 (or equal approved)
5. Granular sub-base: Type 1 unbound mixture, as section Q20
   - 5.1. Compacted thickness: 150 mm
6. Binder course: AC 20 dense bin
   - 6.1. Paving grade: 100/150
   - 6.2. Compacted thickness: 60 mm
7. Surface course: AC 6 dense surf
   - 7.1. Paving grade: 100/150
   - 7.2. Slip/ Skid resistance: No requirement
   - 7.3. Compacted thickness: 20-25 mm nominal, 15 mm minimum at any point
8. Reclaimed content
   - 8.1. Standard: To BS EN 13108-8.
   - 8.2. Value (maximum): Surface course 10%, other courses 20%
9. Surface treatment: Proprietary resin bonded chippings overlay, as section Q23
10. Other requirements:
    - Key entrances (4nr) to include embedded artwork set within surfacing (e.g. embedded laser cut steel or similar) to a design provided to the contractor in a format suitable for laser cutting (e.g. .dwg file). Undertake suitable masking to ensure that exposed surfaces remain clean of bitmac/ resin bonding and undamaged by construction. Ensure that embedded art is flush with surface and free of sharp protruding edged etc.
    - All manholes within surfacing to be replaced with recessed covers, as per engineer's requirements - adjust levels of covers/ chambers as required (for proposed levels of surfacing).

Preparatory work/ requirements

210 Steel edging Type A

1. Description: As per section Q25

220 Bituminous materials generally

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

240 Acceptance of surfaces

1. Surface: Sound, clean and suitably close textured.
2. Level tolerances: To BS 594987.
3. Kerbs and edgings: Complete, adequately bedded and haunched and to the required levels.

250 Abutments

1. Vertical edges of manholes, gullies, kerbs and other abutments: Clean and paint with a thin uniform coating of cold applied thixotropic bitumen emulsion.
2. Finishing: Tamp surface around projections.
   2.1. Level: Flush or not more than 3 mm above projections.

Laying

310 Laying generally

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

320 Adverse weather

1. Frozen materials: Do not use.
2. Suspend laying
   2.1. During freezing conditions
   2.2. If the air temperature reaches 0°C, or in calm dry conditions -3°C, on a falling thermometer.
   2.3. Hot rolled asphalt: During periods of continuous or heavy rain or if there is standing water on the base.

330 Levels

1. Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, clause 5.2.

340 Flatness/ Surface regularity

1. 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:
   1.1. Base: 25 mm
   1.2. Binder course: 13 mm
   1.3. Surface course: Machine laid, 7 mm
   1.4. 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

1. Preparation for final surfacing
    1.1. Timing: Defer laying until as late as practicable.
    1.2. Immediately before laying final surfacing: Clean and make good the base/ binder course. Allow to dry.
    1.3. Adhesion: Tack coat to BS 434-1 or BS EN 13808
        1.3.1. Application rate: As manufacturer's recommendation
        1.3.2. Accuracy: Uniform, without puddles.
    1.4. Finishing: Allow emulsion to break completely before applying surface.

Completion

390 Documentation

1. Standard: BS EN 13108-1
    1.1. Declaration of conformity: Submit.
2. Number of copies: 2
3. Submission: Two weeks prior to date when Contractor expects work to be complete

Ω End of Section

Q23
Gravel/ hoggin/ woodchip/ resin bound roads/ pavings/ overlays

Types of surfacing

150 Loose laid chippings

1. Description: For within RPAs/ CEZ of trees to be retained (as shown on tree protection plan)
2. Geotextile or geomembrane: Lain over existing ground
    2.1. Manufacturer: Lotrak (or equal approved)
        2.1.1. Product reference: Alarm (or equal approved)
3. Cellular confinement system : Lain over geotextile
    3.1. Manufacturer: Terram (or equal approved)
        3.1.1. Product reference: Geocell 25/15 (or equal approved)
4. Water collection: Not required
5. Surface course: Inert gravel (submit proposals
    5.1. Compacted thickness: 150 mm
6. Completion: Compact to produce a firm, regular surface, stable in use.

190 Bonded chippings for pedestrian areas

1. Description: To Bitmac Paths
2. Surface course
    2.1. Manufacturer/ supplier: Addagrip (or equal approved)
    2.2. Product/ system: Addastone plus (or equal approved)
    2.3. Slip/ skid resistance: PTV to BS 7976-2 of 45 (water) wet
    2.4. Chippings: To BS EN 13043, 1 -3 mm coastal quartz.
        2.4.1. Colour: Buff
    2.5. Preparation: As recommended by resin bounded system manufacturer. Undertake suitable masking to ensure that steel edging and artwork in surfacing remain free of resin bound finish.
    2.6. Application: As recommended by resin bounded system manufacturer. Uniformly spray/ spread binder at a rate recommended by supplier. Cover with clean chippings. Provide 100-105% shoulder to shoulder coverage to BS 598-1 and compact.
3. Compaction to all layers: As recommended by resin bounded system manufacturer. Do not crush chippings.
4. Completion: Before trafficking, remove excess chippings.

Laying - Not Used

Completion - Not Used

Ω End of Section

Q25
Slab/ brick/ sett/ cobble pavings

General

110 Natural stone slab paving system

1. Description: Stone Paving
2. Subgrade improvement layer: Not required
3. Granular sub-base: Type 1 unbound mixture, as section Q20
   3.1. Compacted thickness: 150 mm
4. Laying course: 50mm thick class IV general purpose mortar
   4.1. Accessories: As per engineer's proposals Primer for underside of flags or slabs
5. Paving units: Imperial granite paving slabs by CED (or equal approved) Mixed sizes and colours (all 25mm thick):
   - 900 x 600mm (forming 57% total area)
   - 600 x 600mm (forming 34% total area)
   - 600 x 300mm (forming 9% total area)
   - Silver grey granite - forming 80% of total area
   - Blue grey granite - forming 20% of total area
6. Laying pattern: Tessellated laying pattern as per drawing M580-DR-L-3001
7. Jointing: Site mixed mortar - 8 - 10mm tooled recessed joints
8. Accessories: None

140 Natural stone sett paving system

1. Description: Within amphitheatre (across chamber covers)
2. Granular sub-base: Type 1 unbound mixture, as section Q20
   2.1. Compacted thickness: 150 mm
3. Laying course: 50mm thick class IV general purpose mortar
   3.1. Accessories: Primer for underside of setts
4. Paving units: Temple granite setts by CED (or equal approved) 50mm thick x 100mm wide x 125 - 250mm long. Mixed colours:
   - Silver grey granite - forming 20% of total area
   - Blue grey granite - forming 80% of total area
5. Jointing: 8 mm tooled mortar joints - recessed using "Tufftop Jointing Mortar" by "Stientec" - mid grey (or equal approved)
   5.1. Bond: Random staggered laying pattern as per drawing M580-DR-L-3001
6. Accessories: Include for recessed covers over existing maholes (as per engineer's requirements), with laying pattern and granite colours continuing across cover

180 Plastics grass reinforcing paving system

1. Description: SERVICE ACCESS PATH
2. Subgrade improvement layer: Not required
3. Geomembrane: Underlay to sub-base
   3.1. Manufacturer: Lotrac (or equal approved)
      3.1.1. Product reference: Alarm (or equal approved)
4. Granular sub-base: As per engineer's proposals

5. Water collection: Not required
6. Laying course: As per engineer's proposals
7. Paving units: Bodpave 40 (or equal approved)
    7.1. Bond: In accordance with manufacturer's recommendations
    7.2. Filling: Topsoil mix in accordance with manufacturer's recommendations
    7.3. Accessories: none

System performance - Not Used

Products

310 Natural stone slabs

1. Description: For seating areas
2. Standard: To BS EN 1341.
3. Supplier: CED (or equal approved)
    3.1. Product reference: Imperial paving (25mm thick) mix of sizes and colours (80 silver grey, 20% blue grey)
4. Finish: Flame finished
5. Sizes: as per clause 110
    5.1. Plan dimension deviation class: P1
    5.2. Diagonal deviation class: D1
    5.3. Thickness deviation class: T1
6. Arrises: Square
7. Breaking strength: Pedestrian only areas - Class 1
8. Slip resistance: PTV to BS 7976-2 of 45
9. Skid resistance: PSV to HA DMRB 7.5.1 of 65
10. Surface treatment: Apply suitable sealant to protect from staining - submit proposals

330 Natural stone setts

1. Description: For amphitheatre stage area
2. Standard: To BS EN 1342.
3. Supplier: CED (or equal approved)
    3.1. Product reference: temple setts (or equal approved)
    3.2. Colour: mix of blue grey (80%) and silver grey (20%)
4. Finish: tumbled (as supplied)
5. Sizes: 50mm thick x 100mm wide x 125 - 250mm long
    5.1. Plan dimension and thickness deviation: Class 2
6. Slip resistance: PTV to BS 7976-2 of 45
7. Skid resistance: PSV to HA DMRB 7.5.1 of 65
8. Surface treatment: Apply suitable sealant to protect from staining - submit proposals

350 Plastics pavers

1. Description: For Reinforced Grass Access Track
2. Paving units
    2.1. Manufacturer: Terram (or equal approved)
        2.1.1. Product reference: Bodpave 40 - Black (or equal approved)

3. Size: 500 x 500 x 40mm

365 Geotextile sheet

1. Description: Below sub. base
2. Manufacturer: Lotrak (or equal approved)
   2.1. Product reference: Alarm (or equal approved)
3. Recycled content: As supplied

370 Cement for site mixed mortar

1. Description: For bedding and jointing
2. Standard: As section Z21.

375 Sand/ Fine aggregate for site mixed mortar

1. Description: For bedding and jointing
2. Standard: To BS EN 12620, designations:
   2.1. Flag and slab paving laying course: GF85 0/4 (MP).
   2.2. Flag and slab paving jointing: GF85 0/1 (MP).
   2.3. Precast concrete and grass or gravel paving: 0/4 or 0/2 (MP)

435 Primer for underside of flags and slabs

1. Description: For porcelain tiles
2. Manufacturer: Submit proposal for approval
   2.1. Product reference: Suitable for use on porcelain tiles - submit proposals

440 Ready-mixed mortar

1. Description: For jointing setts
2. Standard/ Performance requirements: In accordance with BS 7533-4
3. Manufacturer: Steintec (or equal approved)
   3.1. Product reference: Tufftop (or equal approved)
4. Consistency: as per manufacturer's recommendations

Execution

620 Adverse weather

1. General
   1.1. Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
   1.2. Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
2. Paving with mortar joints and/ or bedding
   2.1. Protect from frost damage, rapid drying out and saturation until mortar has hardened.
3. Paving laid and jointed in sand/ fine aggregate
   3.1. Stockpiled laying course sand/ fine aggregate: Protect from saturation.
   3.2. Exposed areas of unbound laying course and uncompacted areas of unbound paving: Protect from heavy rainfall.
   3.3. Saturated unbound laying course: Remove and replace, or allow to dry before proceeding.

3.4. Laying dry sand/ fine aggregate jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

625 Laying pavings – general

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

630 Levels of paving

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

635 Regularity of paved surfaces

1. Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface)
   1.1. Precast concrete paving blocks and clay pavers for flexible pavements: 10 mm.
   1.2. Precast concrete flags or natural stone slabs: 3 mm.
2. Difference in level between adjacent paving units (maximum): 2 mm.
3. Sudden irregularities: Not permitted.

640 Colour banding

1. General: Unless premixed by manufacturer, select from at least 3 separate packs in rotation to avoid colour banding.

645 Protection

1. Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
2. Materials storage: Do not overload pavings with stacks of materials.
3. Handling: Do not damage paving unit corners, arrises, or previously laid paving.
4. Mortar bedded pavings: Keep free from traffic after laying:
   4.1. Pedestrian traffic (minimum): 2 days
   4.2. Vehicular traffic (minimum): 8 days
5. Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 Cementitious bases and sub-bases

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

655 Condition of sub-bases/ bases before spreading laying course

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

685 Laying geotextile sheet overlays

1. Location: Generally beneath sub base (or as shown or described)
2. Laying: Fit neatly at edge restraints and other features that interrupt the laying course, e.g. drainage fittings, channels, manholes and kerbs.
3. Edge detail: Turn sheet up to form an upstand against features, height not less than thickness of the laying course.
4. Jointing: Lap by 300 mm.

695 Site mixed mortar For stone paved pedestrian areas

1. Description: - LAYING COURSE FOR NATURAL STONE SLAB PAVING
2. Mix: class IV general purpose
3. Consistency: Workable
4. Admixtures: None

705 Site mixed sand and soil for grass reinforcing plastics pavers

1. Description: For maintenance access track
2. Mix: As per manufacturer of paving system's recommendations

715 Laying flag and slab paving – mortar laying course and jointing

1. Standard generally: In accordance with BS 7533-4.
2. Laying course
   2.1. Nominal thickness: As per drawings
3. Laying and jointing: As per drawings
4. Joint width (nominal): 8-10 mm

765 Laying plastics grass reinforcing pavers

1. Laying: Tamp down into lightly compacted laying course Consolidate with vibrating plate compactor.
   1.1. Nominal thickness of laying course after compaction: 50 mm
2. Securing on slopes: Not required
3. Filling: Allow to settle and refill level with surface.

785 Tooled joints in mortar-bedded units Stone paving and setts

1. Joints: Completely filled with bedding mortar as work proceeds.
   1.1. Joint width: 8 - 10 (stone paving)
   1.2. Finish: Neat - recessed profile

Completion

920 Completion of grassed pavings

1. Protection: Protect from traffic for 6-8 weeks or until grass can tolerate traffic.

Ω End of Section

Q28
Topsoil and soil ameliorants

System outline

115 Soil system for turfing and seeding

1. Description: FOR ALL GRASSED AREAS
2. Composition
   2.1. Topsoil: Imported topsoil to BS 3882
   2.2. Ameliorants: None
   2.3. Accessories: None

115 Soil system for wildflower areas

1. Description: FOR WILDFLOWER MEADOWS
2. Composition
   2.1. Topsoil: Imported low fertility topsoil to BS3882:2015 for Low Fertility soils
   2.2. Ameliorants: None
   2.3. Accessories: None

135 Planting bed topsoil system

1. Description: FOR ALL AMENITY PLANTING BEDS
2. Composition
   2.1. Topsoil: Imported topsoil to BS 3882
   2.2. Ameliorants: Organic materials Sanitized and stabilized composted materials certified to PAS 100
   2.3. Accessories: None

145 Planting pit backfilling topsoil system

1. Description: FOR ALL TREE PITS
2. Composition
   2.1. Topsoil: Imported topsoil to BS 3882
   2.2. Ameliorants: Sanitized and stabilized composted materials certified to PAS 100
   2.3. Accessories: Mycorrhizal inoculant

155 Mulching and top dressing system

1. Description: FOR ALL AMENITY PLANTING BEDS AND TO TREE PIT AREAS
2. Composition
   2.1. Material: Thoroughly composted bark is a frequently favoured material

Products

300 Preparation materials generally

1. Purity: Free of pests and disease.
2. Foreign matter: On visual inspection, free of fragments and roots of aggressive weeds, sticks, straw, subsoil, pieces of brick, concrete, glass, wire, large lumps of clay or vegetation, and the like.
3. Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:

3.1. Corrosive, explosive or flammable.

3.2. Hazardous to human or animal life.

3.3. Detrimental to healthy plant growth.

4. Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
5. Objectionable odour: None.
6. Give notice: If any evidence or symptoms of soil contamination are discovered on the site or in topsoil or planting media to be imported.

305 Permitted materials

1. Materials: Composted green waste; Composted bark; Spent mushroom compost.
2. Give notice: before ordering or using.
3. Declaration of compliance in accordance with BS EN 13650: Required

310 Materials not permitted

1. Materials: Products containing peat

315 Imported topsoil to BS 3882

1. Description: FOR GRASS SEEDING; FOR PLANTING BEDS
2. Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
3. Standard: To BS 3882.
4. Classification: Multipurpose

4.1. Soil textural class to BS 3882, Figure 1: Sandy clay loam

5. Source: Submit proposals

5.1. Product reference: Submit proposals

5.2. Additional requirements : Provide results of soil pH testing

6. Samples: Submit 5kg sample for approval prior to ordering

315 Imported topsoil to BS 3882 Type A

1. Description: FOR WILDFLOWER AREAS
2. Quantity: As necessary for application of topsoil to wildflower areas
3. Standard: To BS 3882.
4. Classification: Specific purpose - Low fertility

4.1. Soil textural class to BS 3882, Figure 1: Any class

5. Source: Submit proposals

5.1. Product reference: Submit proposals

5.2. Additional requirements: Provide results of soil pH testing

6. Samples: Submit 5kg sample for approval prior to ordering

355 Organic materials

1. Description: FOR TOP DRESSING/ MULCHING
2. Type: Bark
3. Source: Contractor's choice

3.1. Product reference: Submit proposals

360 Sanitized and stabilized composted materials certified to PAS 100

1. Description: FOR PLANTING BEDS AND TREE PITS
2. Standard: In accordance with PAS 100
3. Source: Submit proposals
   3.1. Product reference: Submit proposals
4. Horticultural parameters
   4.1. pH (1:5 water extract): 7.0-8.7
   4.2. Electrical conductivity (maximum, 1:5 water extract): 200 mS/m
   4.3. Moisture content (m/m of fresh weight): 35-55%.
   4.4. Organic matter content (minimum): 25%
   4.5. Grading (air dried samples): 95% passing 25 mm and 90% passing 10 mm screen mesh apertures
   4.6. Carbon:Nitrogen ratio (maximum): 20:1.
5. Texture: Friable.
6. Objectionable odour: Not permitted.
7. Compost Certification Scheme certification: Not required
8. Declaration of analysis: Submit.
9. Additional analyses: Not required
10. Samples: Supply 5 kg sample before ordering

380 Mycorrhizal inoculant

1. Description: FOR TREE PITS
2. Manufacturer: Contractor's choice
   2.1. Product reference: Submit proposals

Execution

625 Sample loads

1. Description: FOR ALL IMPORTED TOPSOIL, SUBSOIL AND COMPOST
2. Deliver to site a sample load: of 5 kg
3. Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
   3.1. Notice period: 5 days

630 Documentation for imported topsoil

1. Description: TREE PITS AND PLANTING BEDS
2. Timing: Submit at handover.
3. Contents
   3.1. Full description of all soil components.
   3.2. Record of source for all soil components.
   3.3. Record drawings showing the location and depth of all soils by type and grade.
   3.4. Declaration of analysis: in accordance with BS 3882, clause 6 and Table 1.
4. Number of copies: Two

635 Documentation for compost and composted materials

1. Description: FOR COMPOST

2. Timing: Submit at handover.
3. Contents
    3.1. Full description of all compost components.
    3.2. Record of source for all compost components.
    3.3. Analyst's report for each test carried out.
    3.4. Declaration of compliance: in accordance with PAS 100 and BSI PD CR 13456.
    3.5. Quality Compost Protocol certification: Not required
4. Number of copies: Two

650 Notice

1. Give notice before
    1.1. Setting out.
    1.2. Spreading topsoil.
    1.3. Applying herbicide.
    1.4. Applying fertilizer.
    1.5. Visiting site during maintenance period.
2. Period of notice: 1 week

655 Mechanical tools

1. Restrictions: Do not use within 100 mm of tree and plant stems. Do not damage adjacent planting.

660 Grading subsoil for:

1. Description: ORNAMENTAL PLANTING BEDS; GRASSED AREAS
2. Standard: In accordance with BS 8601.
3. General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
4. Areas of thicker topsoil: Excavate locally.
5. Avoid compaction.
6. Excess subsoil: Use on site.

665 Subsoil surface preparation for:

1. Description: GRASSED AREAS; ORNAMENTAL PLANTING BEDS
2. Standard: In accordance with BS 3882.
3. General: Excavate and/ or place fill to required profiles and levels, as section D20.
4. Loosening
    4.1. When ground conditions are sufficiently dry to allow breaking up of soils, loosen thoroughly to specified depth
        4.1.1. Light and noncohesive subsoils: 150 mm
        4.1.2. Stiff clay and cohesive subsoils: 300 mm (or full depth of subsoil if shallower)
        4.1.3. Rock and chalk subgrades: Lightly scarify to promote free drainage.
    4.2. Wet conditions: Do not loosen subsoils.
5. Stones: Immediately before spreading topsoil, remove stones larger than 50 mm.
6. Remove from site: Arisings, contaminants and debris

670 Inspecting formations

1. Give notice: Before spreading topsoil for lawn areas planting beds.
2. Notice period: 7 days

685 Surplus materials to be removed

1. Topsoil removal from site: Not required
2. Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

690 Topsoil storage heaps

1. Location: TO BE AGREED WITH CA
2. Height (maximum): 1.5 m
3. Width (maximum): 5.0 m
   3.1. Formation: Loose tip and shape from the side only, without running machinery on the heap at any time.
4. Protection
   4.1. Do not place any other material on top of storage heaps.
   4.2. Do not allow construction plant to pass over storage heaps.
   4.3. Prevent compaction and contamination, by fencing and covering as appropriate.

700 Grading of topsoil

1. Topsoil condition: Reasonably dry and workable.
2. Contours: Smooth and flowing, with falls for adequate drainage.
   2.1. Hollows and ridges: Not permitted.
3. Give notice: If required levels cannot be achieved by movement of existing soil.

705 Handling topsoil

1. Standard: In accordance with BS 3882.
2. Aggressive weeds: Give notice and obtain instructions before moving topsoil.
3. Plant: Select and use plant to minimize disturbance, trafficking and compaction.
4. Contamination: Do not mix topsoil with:
   4.1. Subsoil, stone, hardcore, rubbish or material from demolition work.
   4.2. Other grades of topsoil.
5. Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
6. Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall, or when the moisture content is greater than the plastic limit.

710A Spreading subsoil/ topsoil on: Grass and wildflower areas

1. Description: GRASSED AREAS, WILDFLOWER AREAS
2. Standard: In accordance with BS 3882.
3. Preparation: Undertake groundworks (cut and fill) to achieve required formation levels, ensure material is well compacted (and free of soft spots, etc.) and overlay with high visibility geotextile (as per stage 3 remediation proposals)
4. Layers
   4.1. Depth (maximum): 150 mm.
   4.2. Gently firm each layer before spreading the next.
5. Subsoil depth after firming and settlement: 150 mm
6. Topsoil depth after firming and settlement: 150 mm
7. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

710B Spreading subsoil/ topsoil on: General amenity planting

1. Description: Amenity planting and sensory planting areas
2. Standard: In accordance with BS 3882.
3. Preparation: Undertake groundworks (cut and fill) to achieve required formation levels, ensure material is well compacted (and free of soft spots, etc.) and overlay with high visibility geotextile (as per stage 3 remediation ~~proposals~~)
4. Layers
    4.1. Depth (maximum): 150 mm.
    4.2. Gently firm each layer before spreading the next.
5. Subsoil depth after firming and settlement: 150 mm
6. Topsoil depth after firming and settlement: 300 mm
7. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

710C Spreading subsoil/ topsoil on: Edibles planting areas

1. Description: Foraging scrub planting
2. Standard: In accordance with BS 3882.
3. Preparation: Undertake groundworks (cut and fill) to achieve required formation levels, ensure material is well compacted (and free of soft spots, etc.) and overlay with high visibility geotextile (as per stage 3 remediation proposals)
4. Layers
    4.1. Depth (maximum): 150 mm.
    4.2. Gently firm each layer before spreading the next.
5. Subsoil depth after firming and settlement: 200 mm
6. Topsoil depth after firming and settlement: 400 mm
7. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

710D Spreading subsoil/ topsoil on: Tree planting areas

1. Description: Foraging scrub planting
2. Standard: In accordance with BS 3882.
3. Preparation: Undertake groundworks (cut and fill) to achieve required formation levels, ensure material is well compacted (and free of soft spots, etc.) and overlay with high visibility geotextile (as per stage 3 remediation proposals)
4. Layers
    4.1. Depth (maximum): 150 mm.
    4.2. Gently firm each layer before spreading the next.
5. Subsoil depth after firming and settlement: 600 mm
6. Topsoil depth after firming and settlement: 400 mm
7. Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

718 Final cultivation

1. Description: FOR GRASS SEEDING
2. Tilth: Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
3. Depth: 100 mm
4. Particle size (maximum): 15 mm

5. Timing: Within a few days before planting
6. Weather and ground conditions: Suitably dry.
7. Surface: Leave regular and even.
8. Levels: 50 mm above adjoining areas
9. Undesirable material brought to the surface
    9.1. Remove visible weeds.
    9.2. Remove roots and large stones with any dimension exceeding 30 mm.

718 Final cultivation Type A

1. Description: FOR PLANTING BEDS
2. Tilth: Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
3. Depth: 250 mm
4. Particle size (maximum): 15 mm
5. Timing: Within a few days before planting
6. Weather and ground conditions: Suitably dry.
7. Surface: Leave regular and even.
8. Levels: 25 mm above adjoining areas
9. Undesirable material brought to the surface
    9.1. Remove visible weeds.
    9.2. Remove roots and large stones with any dimension exceeding 50 mm.

720 Finished levels of soil after settlement

1. In relation to adjoining paving, kerbs or hard surfaces: 25 mm above or as shown on drawing
2. In relation to dpc of adjoining buildings: Not less than 150 mm below.
3. In relation to adjacent grass areas: 25 mm above or as shown on drawing
4. Seeded areas: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
5. Sportsfields: To even levels and within the following permitted deviations:
    5.1. From levels or gradients shown on drawings: ±75 mm.
6. Within root spread of existing trees and shrubs to be retained: Do not dig or cultivate.
7. Adjoining soil areas: Marry in.
8. Thickness of turf or mulch: Included.

805 Applying soil ameliorant

1. Description: TO SHRUB AND TREE PLANTING AREAS
2. Type: Organic materials
3. Fully incorporate into topsoil to a depth of 150 mm.
4. Application: Spread evenly.
    4.1. Timing: Apply prior to cultivation.
    4.2. Rate: 1.2 m^3/100 m^2
5. Timing: Prior to cultivation.
6. Other requirements: Submit 5 kg sample before ordering

845 Applying loose mulch

1. Description: FOR PLANTING BEDS

2. Timing: Immediately after planting
3. Preparation: Ensure that soil is thoroughly moistened, applying water where necessary
4. Coverage of mulch (minimum)
   4.1. Planting beds (depth): 50 mm depth
   4.2. Trees: 50 mm depth
5. Finished level of mulch: 50 mm below adjacent grassed or paved areas

Completion

920 Applying mulch

1. Timing: At end of the rectification period
2. Watering: Ensure that soil is thoroughly moistened prior to mulching, applying water where necessary.
3. Planting beds: Re-mulch.
   3.1. Depth (minimum): 50 mm
4. Trees: Remulch.
   4.1. Depth (minimum): 50 mm

Ω End of Section

Q30
Seeding/ turfing

General information/requirements

115 Seeded and turfed areas

1. Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
2. Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 Climatic conditions

1. General: Carry out the work while soil and weather conditions are suitable.

145 Watering

1. Quantity: Wet full depth of topsoil.
2. Application: Even and without displacing seed, seedlings or soil.
3. Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

150 Water restrictions

1. 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

1. Give notice before
    1.1. Setting out.
    1.2. Applying herbicide.
    1.3. Applying fertilizer.
    1.4. Preparing seed bed.
    1.5. Seeding or turfing.
    1.6. Visiting site during maintenance period.
2. Period of notice: 1 week

170 Setting out

1. Boundaries: Mark clearly.
2. Delineation: In straight lines or smoothly flowing curves as shown on drawings.

Preparation

212 Seed bed cleaning before sowing

1. Description: Wildflower and turfed areas
2. Operations: Remove weeds by hand weeding and hoeing.

250 Soil requirements

1. Type
    1.1. Seeded areas: Soil for grass swards, as section Q28
    1.2. Turfed areas: Soil for grass swards, as section Q28

1.3. Reinforced grass areas: Soil for grass swards, as section Q28

Seeding

310 Wildflower Seed

1. Description: FOR WILDFLOWER AREAS SURROUNDING AMPHITHEATRE
2. Mixture: Persian carpet PS06 by Pictorial Meadows (or equal approved)
3. Application rate: 4g / m2 or as per suppliers recommendations

310A Wildflower Seed Within Edible Sub Planting

1. Description: WITHIN EDIBLE SCRUB
2. Mixture: EH1 Hedgerow Mixture by Emorsgate (or equal approved)
3. Application rate: 4g / m2 or as per suppliers recommendations

310B Wildflower Seed Within Cornish Hedge Tops

1. Description: CORNISH HEDGE TOPS
2. Mixture: Persian carpet PS06 by Pictorial Meadows (or equal approved)
3. Application rate: 4g / m2 or as per suppliers recommendations

311 Grass seed

1. Description: FOR GENERAL AREAS
2. Supplier: Germinal Seeds (or equal approved)
   2.1. Mixture reference: Popular hardwearing (or equal approved)
3. Application rate: 35g / m2 or as per suppliers recommendations

311A Grass seed Swales

1. Description: FOR SWALES
2. Supplier: Hurrells Specialists Seeds (or equal approved)
   2.1. Mixture reference: RP11 Swales, Pond and Bankside Grass Mix (or equal approved)
3. Application rate: 35g / m2 or as per suppliers recommendations

319 Quality of seed

1. Description: FOR ALL GRASSED AREAS
2. Freshness: Produced for the current growing season.
3. Certification: Blue label certified varieties.
   3.1. Standard: EC purity and germination regulations.
   3.2. Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
4. Samples of mixtures: Submit when requested.

322 Quality of wildflower seed

1. Description: FOR WILDFLOWER MEADOWS
2. Standard: In accordance with Flora Locale's 'Code of practice for collectors, growers and suppliers of native flora'.
3. Germination testing: Not required
4. Freshness of seed: Produced for the current growing season
5. Samples: Submit when requested.

330 Sowing

1. General: Establish good seed contact with the root zone.
2. Method: To suit soil type, proposed usage, location and weather conditions during and after sowing
   2.1. Distribution: 2 equal sowings at right angles to each other and diagonally to main axis

335 Grass sowing season

1. Grass seed generally: April to June or August to October

336 Wildflower sowing season

1. Wildflower seed generally: August to October

361 Reinforced grass system

1. Description: FOR MAINTENANCE ACCESS TRACK
2. Manufacturer: Terram (or equal approved)
   2.1. Product reference: Bodpave 40 (or equal approved)
3. Subgrade/ Preparation: As section Q20, overlain with geotextile Terram 1000 (or equal approved)
4. Sub-base: MOT type 3
   4.1. Depth: 100mm compacted depth, overlain with geotextile Terram 1000 (or equal approved)
5. Reinforced root zone
   5.1. Composition: Suitable topsoil material to reinforcement system manufacturer's specification/ requirements
   5.2. Thickness: 50mm
   5.3. Consolidation: Level and lightly consolidate with vibrating roller
6. Topping layer: Following installation of reinforcement cell units
   6.1. Composition: Suitable topsoil material to reinforcement system manufacturer's specification/ requirements
   6.2. Thickness: Spread and consolidate to fill/ top dress cellular units
7. Fertilizer: Not required
8. Grass cover: Grass seed for lawns

Turfing

410 Turf to BS 3969

1. Description: If required/ instructed
2. Standard: To BS 3969, free from undesirable grasses and weeds.
   2.1. Grade: General purpose utility turf with perennial ryegrass
3. Source: Submit proposals.
4. Herbicide treatment: Apply not less than four weeks and not more than three months before lifting.
5. Dimensions: contractors choice

420 Delivery and storage

1. Timing: Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist.
2. Frosty weather or waterlogged ground: Do not lift turf.
3. Delivery: Arrange to avoid need for excessive stacking.

4. Stacking height (maximum): 1 m.
5. Dried out or deteriorated turf: Do not use.
6. Certification
    6.1. Standard: To BS 3969.
    6.2. Declaration: Sward species composition

430 Turfing generally

1. Time of year: To be agreed
2. Timing of laying
    2.1. Spring and summer: Within 18 hours of delivery.
    2.2. Autumn and winter: Within 24 hours of delivery.
3. Weather conditions: Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry.
4. Working access: Planks laid on previously laid turf. Do not walk on prepared bed or newly laid turf.
5. Jointing: Laid with broken joints, well butted up. Do not stretch turf.
6. Edges: Whole turfs, trimmed to a true line.
7. Adjusting levels: Remove high spots and fill hollows with fine soil.
8. Consolidating: Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers.
9. Dressing, brushed well in to completely fill all joints: Mulching and top dressing system, as section Q28
10. Watering: Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below.

Protecting/cutting

530 First cut of grassed areas

1. Timing: When grass is reasonably dry.
    1.1. Height of initial growth: 75 mm
2. Preparation
    2.1. Debris and litter: Remove.
    2.2. Stones and earth clods larger than 25 mm in any dimension: Remove
3. Height of first cut: 50 mm
4. Mower type: Contractor's choice
5. Arisings: Remove from site

590 Cleanliness

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

Maintenance

610 Failures of seeding/ turfing

1. Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
2. Defective materials or workmanship: Areas that have failed to thrive.
    2.1. Exclusions: Theft or malicious damage.

3. Method of making good: Recultivation and reseeding/ returfing.
4. Timing of making good: The next suitable planting season

620 Maintaining

1. Description: GENERAL GRASSED AREAS
2. Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
3. Maximum height of growth at any time: 100 mm
4. Preparation: Before each cut remove all litter and debris.
5. Cutting: As and when necessary to a height of 50 mm.
   5.1. Arisings: Remove
6. Bulb planting areas: Do not cut until bulb foliage has died down.
7. Trimming: All edges.
   7.1. Arisings: Remove.
8. Weed control: Substantially free of broad leaved weeds.
   8.1. Method: Application of a suitable selective herbicide.
9. Stones brought to the surface: Remove regularly.
   9.1. Size: Exceeding 25 mm in any dimension.
10. Areas of settlement: Make good.
11. Watering: When instructed

650 Maintaining grassed areas with perennial wildflowers

1. Duration: Carry out the following operations from completion of seeding/ turfing until: the end of the rectification period.
2. Preparation: Before each cut remove all litter and debris.
3. Height and frequency of cut in first growing season
   3.1. Time of first cut: March/ April
   3.2. Height of first cut: 100 mm
   3.3. Frequency of subsequent cutting (minimum): Every 6-8 weeks until autumn
   3.4. Height of growth permitted (maximum): 150 mm
4. Height and frequency of cut in second growing season
   4.1. Time of cut: Single cut in October
   4.2. Height of cut: 100 mm
5. Trimming: All edges.
   5.1. Arisings: Remove.
6. Watering: When instructed

Ω End of Section

Q31
External planting

General information/ requirements

118 Soil conditions

1. Soil for cultivating and planting: Moist, friable and (except in aquatic/ marginal planting) not waterlogged.
2. 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

1. General: Carry out the work while soil and weather conditions are suitable.
    1.1. Strong winds: Do not plant.

125 Times of year for planting

1. Deciduous trees and shrubs: Late October to late March.
2. Conifers and evergreens: September/ October or April/ May.
3. Herbaceous plants (including marginal): September/ October or March/ April.
4. Container grown plants: At any time if ground and weather conditions are favourable.
    4.1. Watering and weed control: Provide as necessary.
5. Dried bulbs, corms and tubers: September/ October.
6. Colchicum (crocus): July/ August.
7. Green bulbs: After flowering in spring.
8. Wildflower plugs: Late August to mid November or March/ April.

130 Mechanical tools

1. Restrictions: Do not use within 100 mm of tree and plant stems.

145 Watering

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

150 Water restrictions

1. 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

1. Give notice before
    1.1. Setting out.
    1.2. Applying herbicide.
    1.3. Applying fertilizer.
    1.4. Delivery of plants/ trees.
    1.5. Planting shrubs.
    1.6. Planting trees into previously dug pits.

1.7. Watering.
1.8. Visiting site during maintenance period.

2. Period of notice: Two weeks

170 Soil requirements

1. Type
   1.1. Planted beds: Planting bed soil system, as section Q28
   1.2. Tree pits, shrub pits and other backfilling: Plant pit backfilling soil system, as section Q28
   1.3. Mulch applied after planting: Mulching and top dressing system, as section Q28

200 Plants/ Trees – general

1. Condition: Materially undamaged, sturdy, healthy and vigorous.
2. Appearance: Of good shape and without elongated shoots.
3. Hardiness: Grown in a suitable environment and hardened off.
4. Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
5. Budded or grafted plants: Bottom worked.
6. Root system and condition: Balanced with branch system.
   6.1. Standard: The National Plant Specification The relevant parts of BS 3936
7. Species: True to name.
8. Origin/ Provenance: Grown in the United Kingdom for at least one growing season, unless otherwise approved Grown in the United Kingdom for at least one growing season, unless otherwise approved
9. Definition: Origin and Provenance have the meaning given in the National Plant Specification.

215 Plants/ Trees – specification criteria

1. Name, forms, dimensions, provenance and other criteria: As scheduled and defined in the National Plant Specification (available on CS Design Software Limited’s website).

225 Bulbs/ Corms/ Tubers

1. Condition: Firm, entire, not dried out or shrivelled.
2. Health: Free from pests, diseases and fungus.
3. Handling: Remove from packaging immediately.
4. Storage: Permitted only when necessary.
   4.1. Location: Well ventilated, dark, covered, rodent proof container, away from exhausts and fruit.
   4.2. Duration: Minimum period.
   4.3. Temperature: 18-21°C.

235 Container grown plants/ Trees

1. Growing medium: With adequate nutrients for plants to thrive until permanently planted.
2. Plants: Centred in containers, firmed and well watered.
3. Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
4. Hardiness: Grown in the open for at least two months before being supplied.

245 Labelling and information

1. General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
    1.1. Full botanical name.
    1.2. Total number.
    1.3. Number of bundles.
    1.4. Part bundles.
    1.5. Supplier's name.
    1.6. Employer's name and project reference.
    1.7. Plant specification, in accordance with scheduled National Plant Specification categories.
2. Additional information: Submit on request: Impact of pest/ disease Country of origin. UK plant passport or phytosanitary certificate.

260 Plant Substitution Plant substitution

1. Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
    1.1. Price.
    1.2. Difference from specified plants/ trees.
2. Approval: Obtain before making any substitution.

265 Plant handling, storage transport and planting

1. Standard: To CPSE 'Handling and establishing landscape plants'.
2. Frost: Protect plants from frost.
3. Handling: Handle plants with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
4. Plant packaging: Black polyethylene bags
5. Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped
6. Planting: Upright or well balanced with best side to front.

280 Treatment of tree wounds

1. Cutting: Keep wounds as small as possible.
    1.1. Cut cleanly back to sound wood using sharp, clean tools.
    1.2. Leave branch collars. Do not cut flush with stem or trunk.
    1.3. Set cuts so that water will not collect on cut area.
2. Fungicide/ Sealant: Do not apply unless instructed.

285 Protection of existing grass

1. General: Protect areas affected by planting operations using boards/ tarpaulins.
    1.1. Excavated or imported material: Do not place directly on grass.
    1.2. Duration: Minimum period.

290 Surplus material

1. Subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, rubbish, prunings and other arisings: Remove.

Plant containers

293 Precast Concrete Pipe Planter For fruit tree planting close to SWW buried tank

1. Manufacturer: Stanton Precast (or equal approved)
    1.1. Product reference: Manhole ring 2400 x 1000mm (product code 240100C)
    1.2. Standard: BS 5911-3
    1.3. Cladding/ finishing: Above ground portion of ring to be clad with 1.5mm Corten Steel sheeting (securely fixed to concrete and avoiding sharp edges - submit proposals) with top and inside visible bases painted graphite grey (RAL 7024).
2. Material: precast concrete
3. Dimensions/ Shape: round (rig segment) 2.4m dia, 1m long
4. Lining: Not required
5. Installation: Install level, laid directly onto geotextile (installed as part of phase 3 remediation strategy). Fill ring segment with subsoil (500mm) and then topsoil (500mm) consolidating material in layers. Raise soft landscape levels in adjacent soft landscape (to required levels) to embed planters

Preparation of planting beds/ planting materials

300 Herbicide

1. Description: Where Required to treat problematic weeds, prior to planting (obtain approval prior to use)
2. Locations: Planting areas (If required)
3. Type: Suitable for supressing perennial weeds.
4. Timing: Allow fallow period before cultivation.
    4.1. Duration (minimum): As manufacturer's recommendation

305 Weed control

1. Description: As general treatment for weed control
2. Locations: All planting areas
3. General: Prevent weeds from seeding and perennial weeds from becoming established, by hand weeding/ hoeing.

Planting shrubs/ herbaceous plants/ bulbs

400 Random plant layout

1. Description: TO ALL BEDS
2. Spacing: Evenly, avoiding straight lines Random groups of 3-11 plants of the same species.
3. Density: As plant schedule As plant schedule As plant schedule

405 Shrub planting pits

1. Timing: Excavate 1-2 days (maximum) before planting.
2. Sizes: As plant schedule
3. Pit bottom improvement Not required unless noted in drawing ???.

435 Climbing plants used as ground cover

1. Planting

1.1. Canes or other supports: Remove.

1.2. Arrangement: Spread stems.

2. Fixing: Pinned to ground to ensure good contact.

445 Planting bulbs/ Corms/ Tubers

1. Depth: Top of bulb/ corm/ tuber at a depth of approximately twice its height, base in contact with bottom of hole.
2. Backfilling: Finely broken soil. Lightly firm to existing ground level.
3. Naturalized planting in existing grassed areas

3.1. Scattering: Random. Plant bulbs/ corms/ tubers where they fall.

3.2. Planting: Neatly remove a plug of turf and replace after planting.

455 Planting wildflower plugs

1. Handling: Keep plants watered and in shade until planted. Do not allow to dry out.
2. Preparation: Remove brambles, coarse and invasive weeds from planting sites.
3. Planting in grass: Close mow to approximately 50 mm. Remove arisings.
4. Planting sites: As drawing ???
5. Planting: Into a hole to suit plug size and shape. Create a cleft at bottom of hole to improve rooting. Gently firm plant into hole.

471 Naturalized hedges Type A

1. Planting: In trenches large enough to take full spread of roots. Set out plants evenly.
2. For Boundary hedges in field to south: Form 500mm high bank, with planting into top of bank

472 Fencing support for new hedges

1. Type: Windbreak netting
2. Product/ system: Windbreak standard netting by Green-tech or equal approved
3. Timing: Prior to planting
4. Support: With timber driven posts, as per suppliers recommendations

480 After planting

1. Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
2. Firming: Lightly firm soil around plants and fork and/ or rake soil, without damaging roots, to a fine tilth with gentle cambers and no hollows.
3. Top dressing: Mulching and top dressing system, as section Q28

3.1. Depth: 50 mm

Planting trees

500 Tree planting

1. Standard: Prepare trees and transplant in accordance with BS 8545

505 Tree pits

1. Sizes: 75 mm wider than the root spread, and same depth as the rootball
2. Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
3. Excavated material: Separate topsoil and subsoil material and stockpile for backfilling Remove arisings

4. Pit bottoms: Excavate with slightly raised centre: Do not disturb base.
    4.1. Treatment: Soil ameliorant worked into pit bottoms
5. Pit sides: Scarify.
6. Backfilling material: Proprietary tree backfilling material, as section Q28

512 Tree pit irrigation and ventilation accessories

1. Locations: To all tree pits
2. Manufacturer: Green Blue Urban (or equal approved)
    2.1. Product reference: Rootrain civic system (or equal approved)
3. Type: Perforated plastics irrigation pipe with inlet
4. Pipe diameter: 60 mm
5. Ring diameter: 800 mm
6. Inlet: Black plastics, with cap
7. Installation
    7.1. Pipe: Lay in loop above root ball with slight fall away from inlet pipe. Trim length to ensure a close fit in the tree pit. Connect both ends of pipe securely into plastics tee junction on inlet.
    7.2. Top cap of inlet: Protruding slightly above finished surround level.
    7.3. Backfill material: Carefully compact in layers.

520 Cellular structural soil system

1. Locations: For Rooting area beneath concrete structure in courtyard
2. Manufacturer: Green blue urban (or equal approved)
    2.1. Product reference: Rootspace 600 (or equal approved)
3. Geotextile membrane: Twinwall geonet within drainage layer
4. Installation: As shown/ described in drawings and as per suppliers recommendations

526 Underground guying for:

1. Description: ALL TREES
2. Manufacturer: Greenblue Urban Arborguy Drive in Anchor
    2.1. Product reference: SASMCB
3. Anchoring system: 3 no drive-in anchors
4. Installation: Ensure tree is positioned correctly and vertically prior to tightening guy line tensioners.

Woodland/ matrix/ buffer zone planting - Not Used

Protecting/ maintaining/ making good defects

710 Maintenance

1. Duration: Carry out the operations in the following clauses from completion of planting until the end of the rectification period.
2. Frequency of maintenance visits: In accordance with the agreed maintenance schedule

720 Failures of planting

1. Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.
    1.1. Exclusions: Theft or malicious damage after completion.
    1.2. Rectification: Replace with equivalent plants/ trees/ shrubs.

2. Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
3. Timing of making good: During the next suitable planting season

740 Cleanliness

1. Soil and arisings: Remove from hard surfaces and grassed areas.
2. General: Leave the works in a clean tidy condition at completion and after any maintenance operations.

750 Planting maintenance generally

1. Weed control: Maintain weed free area around each tree and shrub.
   1.1. Diameter (minimum): The larger of 1 m or the surface of original planting pit.
   1.2. Keep planting beds clear of weeds: By maintaining full thickness of mulch
2. Planted areas: Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
3. Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
4. Firming up: Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs.
5. Trees: Spray crown when in leaf during warm weather.
   5.1. Timing: After dusk.
6. Tree accessories: Check condition of stakes, ties, guys, guards and irrigation and ventilation systems.
   6.1. Broken or missing items: Replace.
   6.2. Loose stakes: Re-firm in the ground or replace as necessary to provide support to the tree.
   6.3. Loose guys: Re-firm anchor points and adjust as necessary to provide support to the tree.
   6.4. Ties: Adjust to accommodate growth and prevent constriction or abrasion.
   6.5. Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
   6.6. Frequency of checks: At each scheduled maintenance visit
7. Watering: As required for healthy establishment, depending on weather conditions

760 Planting maintenance – pruning

1. General: Prune to promote healthy growth and natural shape.
   1.1. Dead, dying, diseased wood and suckers: Remove.
   1.2. Timing: As appropriate to the species
   1.3. Trees: Favour a single central leading shoot.
2. Arisings: Remove.

780 Maintenance instructions

1. General: Before end of the maintenance period, submit printed instructions recommending procedures to be established by the Employer for maintenance of the planting work for one full year: Provide a schedule of any ongoing maintenance problems experienced during the rectification period.

790 Final mulching

1. Timing: At end of the maintenance period.
2. Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
3. Planting beds: Remulch.

4. Depth (minimum): 50 mm
5. Trees: Remulch.
6. Depth (minimum): 50 mm

Ω End of Section

Q35
Landscape maintenance

Generally

105 Maintenance objectives

1. Location: Site wide - soft landscape
    1.1. Duration: One year
2. Aims: Maintain soft landscape as specified to provide amenity, habitat and good conditions for establishment
3. Restrictions: General conditions set out in the terms of contract
4. Results: Heathy establishment of planting, seeding and trees

110 Notice

1. Give notice before
    1.1. Application of herbicide.
    1.2. Application of fertilizer.
    1.3. Watering.
    1.4. Each site maintenance visit.
2. Period of notice: Two days

130 Reinstatement

1. Damage, disturbance or failure to soil structure, planting, grass, fencing, hard landscaping, structures or buildings: Reinstate to original condition (cost to be borne by the contractor)

155 Watering

1. Supply: No site supply available; submit proposals
2. Quantity: Wet full depth of topsoil
3. Application: Do not damage or loosen plants.
4. Compacted soil: Loosen or scoop out, to direct water to rootzone.
5. Frequency: As necessary for the continued thriving of all planting

170 Disposal of arisings

1. General: Unless specified otherwise, dispose of arisings as follows:
    1.1. Biodegradable arisings: Remove to recycling facility
    1.2. Grass cuttings: Remove to recycling facility
    1.3. Shrub and tree prunings: Remove to recycling facility
    1.4. Litter and nonbiodegradable arisings: Remove from site

181 Mechanical equipment

1. General: Minimize.

190 Litter

1. Extraneous rubbish not arising from the contract work: Collect and remove from site.

195 Protection of existing grass

1. General: Protect areas affected by maintenance operations using boards/tarpaulins. Do not place excavated or imported materials directly on grass.

197 Cleanliness

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

Grassed areas

210 Performance-based maintenance of grassed areas

1. General: Maintain turf in a manner appropriate to the intended use.
2. Soil and grass
    2.1. Condition: Maintain a healthy vigorous sward, free from disease, fungal growth, discolouration, scorch or wilt.
    2.2. Waterlogging and compaction: Prevent.
    2.3. Damage: Repair trampling, abrasion or scalping.
3. Ornamental lawns: Maintain reasonably free from moss, excessive thatch, weeds, frost heave, worm casts and mole hills.
    3.1. Edges: Neat and well defined, in clean, straight lines or smooth-flowing curves.
4. Litter and fallen leaves: Remove regularly to maintain a neat appearance.

220 Grass cutting generally

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

225 Tree stems

1. Precautions: Do not use mowing machinery closer than 100 mm to tree stems. Use nylon filament rotary cutters and other handheld mechanical tools carefully to avoid damage to bark

235 Bulbs and corms in grassed areas

1. Before flowering: Do not cut.
2. Interval between end of flowering and start of grass cutting (minimum): 6 weeks

250 Leaf removal

1. Operations: Collect fallen leaves.
2. Special requirements: Remove by hand raking
3. Disposal: Remove from site for recycling

260 Mowing lawns

1. Grass height: 100 mm maximum
2. Arisings: Remove

272 Maintaining grassed areas with perennial wildflowers

1. Preparation: Before each cut remove litter and debris.
2. Height and frequency of cut in first growing season
   2.1. Time of first cut: March/ April
   2.2. Height of first cut: 100 mm
   2.3. Frequency of subsequent cutting (minimum): Every six to eight weeks until autumn (unless area contains annual wildflowers - in which case matin as per clause 273 below)
   2.4. Height of growth permitted (maximum): 150 mm
3. Height and frequency of cut in second growing season
   3.1. Time of cut: Single cut in October
   3.2. Height of cut: 75 mm
4. Trimming: All edges.
   4.1. Arisings: Remove.
5. Watering: As necessary for successful establishment

273 Maintaining grassed areas with annual wildflowers

1. Preparation: Before each cut remove all litter and debris.
2. Timing of first cut: After flowers have set seed.
3. Height of first cut: 100mm
4. Subsequent cutting: Cut as necessary, so the height of growth does not exceed 150 mm.
   4.1. Height of cut: 75 mm
5. Trimming: All edges.
   5.1. Arisings: Remove
6. Watering: As necessary for successful establishment

309 Edges to seeded areas

1. Location: All edges
2. Timing: After seeded areas are well established.
3. Method: Cut to clean, straight lines or smooth curves. Draw back soil to permit edging.
4. Arisings: Remove.

320 Levelling hollows and bumps in turf

1. Standard: To BS 7370-3, clauses 12.4 and 12.5.

325 Relieving surface compaction in turf

1. Standard: To BS 7370-3.
2. Method: Submit proposals
3. Top dressing: Not required

380 Reinstatement of damaged lawns

1. Damaged turf: Remove to a depth of 30 mm.
2. Preparation: Cultivate substrate to a fine tilth.
3. Reinstatement: Contractor's choice of returfing or topsoiling and reseeding:
   3.1. Returfing: Quality and appearance to match existing.
   3.2. Reseeding: Fill with fine topsoil to BS 3882 multipurpose class, free from stones, debris and weeds. Reseed with a seed mix to match existing grass in quality and appearance.

4. 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

1. Gaps in planting: Refill by replanting.
2. Watering
    2.1. New plants: Before and after planting out.
    2.2. Ongoing: As necessary for the continued thriving of all planting.
3. Operations at end of growing season
    3.1. Trim: Older flowering stems of herbaceous perennials.
    3.2. Remove: Redundant plant supports, litter, debris and arisings.
    3.3. Cultivate: Fork over the soil, taking care not to cause undue disturbance to plants.

470 Flower beds generally

1. Operations
    1.1. Remove: Dead flower heads, fallen leaves, litter and debris.
    1.2. Weeds: Thoroughly hand-weed.
    1.3. Cultivate: Lightly hoe.
    1.4. Trim: Clip grass edges.

Shrubs/ trees/ hedges

500 Establishment of new planting

1. Duration: One year
2. Weed control
    2.1. Method: Keep planting beds clear of weeds by Hoeing and screefing or hand weeding.
    2.2. 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.
3. Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
4. Watering: As necessary for the continued thriving of planting

510 Tree stakes and ties

1. Inspection/ maintenance times: As scheduled and immediately after strong winds
2. Stakes
    2.1. Replace loose, broken or decayed stakes to original specification.
    2.2. 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.
3. Ties: Adjust, refix or replace loose or defective ties, allowing for growth and to prevent chafing.
    3.1. Where chafing has occurred, reposition or replace ties to prevent further chafing.

515 Tree guy wires

1. Inspection/ maintenance times: As scheduled and immediately after strong winds
2. Operations
    2.1. Replace or resecure loose or missing guy wires.

2.2. Adjust to suit stem growth and to provide correct and uniform tension.

520 Refirming of trees and shrubs

1. Timing: After strong winds, frost heave and other disturbances.
2. Refirming: Tread around the base until firmly bedded.
3. 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.

525 Tree guards

1. Loose or defective guards: Adjust, refix or replace to original specification and to prevent chafing.

530 Tree shelters

1. Loose or defective shelters: Adjust, refix or replace to original specification and to prevent chafing.

540 Pruning generally

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

570 Formative pruning of young trees

1. Standard: Type and timing of pruning operations to suit the plant species.
2. Time of year: Do not prune during the late winter/ early spring sap flow period.
3. Young trees up to 4 m high
   3.1. Crown prune by removing dead branches and reducing selected side branches by one third to preserve a well-balanced head and ensure the development of a single strong leader.
   3.2. Remove duplicated branches and potentially weak or tight forks. In each case, cut back to live wood.
4. Whips or feathered trees: Do not prune.
5. Operatives: Member of the Arboricultural Association

575 Pruning ornamental shrubs

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

620 Removal of dead plant material

1. 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

1. Removal: As soon as possible
2. Replacement: In the next suitable planting season - responsibility of the contractor

635 Reinstatement of shrub/ herbaceous areas

1. Dead and damaged plants: Remove.
2. Mulch/ matting materials
   2.1. Carefully move to one side and dig over the soil, leaving it fit for replanting.
3. Do not disturb roots of adjacent plants.
4. Replacement plants
   4.1. 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.
   4.2. Additional requirements: None

645 Weed control generally

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

650 Hand-weeding

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

675 Digging over

1. General: Dig over beds. Do not damage existing plants, bulbs and roots.
   1.1. Depth of dig (minimum): 100 mm

680 Soil aeration

1. Compacted soil surfaces
   1.1. Prick up: To aerate the soil of root areas and break surface crust.
   1.2. Size of lumps: Reduce to crumb and level off.
   1.3. Damage: Do not damage plants and their roots.

685 Soil level adjustment

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

690 Maintenance of loose mulch

1. Thickness (minimum): 50 mm
   1.1. Top up: Twice per year
2. Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
3. Weeding: Remove weeds growing on or in mulch by Hand-weeding.

Green walls - Not Used

Tree work

810 Tree work generally

1. Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
2. Protection: Avoid damage to neighbouring trees, plants and property
3. Standard: To BS 3998.
4. Removing branches: Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
5. Appearance: Leave trees with a well-balanced natural appearance.
6. Chain saw work: Operatives must hold a certificate of competence.
7. Tree work: To be carried out by an approved member of the Arboricultural Association.

815 Additional work

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

830 Cleaning out and deadwooding

1. Remove
    1.1. Dead, dying or diseased wood, broken branches and stubs.
    1.2. Fungal growths and fruiting bodies.
    1.3. Rubbish, windblown or accumulated in branch forks.
    1.4. Wires, clamps, boards and metal objects, if removable without causing further damage and not part of a support structure that is to be retained.
    1.5. Other unwanted objects, e.g. tree houses, swings.

835 Cutting and pruning generally

1. Tools: Appropriate, well maintained and sharp.
2. Final pruning cuts
    2.1. Chainsaws: Do not use on branches of less than 50 mm diameter.
    2.2. Hand saws: Form a smooth cut surface.
    2.3. Anvil type secateurs: Do not use.
3. Removing branches: Do not damage or tear the stem.
4. 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.
5. Cutting: Cut at a fork or at the main stem to avoid stumps wherever possible.
6. Large branches: Remove only if unavoidable
    6.1. Remove in small sections and lower to ground with ropes and slings.
7. Dead branches and stubs: When removing, do not cut into live wood.
8. Unsafe branches: Remove epicormic shoots and potentially weak forks that could fail in adverse weather conditions.
9. Disease or fungus: Give notice if detected. Do not apply fungicide or sealant unless instructed.

865 Bark damage

1. Wounds

1.1. Do not attempt to stop sap bleeding.
1.2. Bark: Remove ragged edges using a sharp knife.
1.3. Wood: Remove splintered wood from deep wounds.
1.4. Size: Keep wounds as small as possible.

2. Liquid or flux oozing from apparently healthy bark: Give notice.

Water areas - Not Used

Hard landscape areas/ fencing

910 Hard surfaces and gravel areas

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

930 Graffiti removal

1. Method: Submit proposals
2. Subsequent treatment: Transparent, two-part anti-graffiti coating
   2.1. Finish: Matt

Ω End of Section

Q50
Site/ street furniture/ equipment

Gates, barriers and parking controls

192 Collapsible/ Telescopic bollards

1. Description: For Maintenance Access Parking Bay
2. Manufacturer: Furniitubes (or equal approved)
   2.1. Product reference: Round Telescopic Bollard TPR700 (or equal approved)
3. Material: Stainless Steel Grade 316
   3.1. Finish as delivered: brushed/ satin
4. Height above ground: 670mm
5. Sectional size: 90mm dia
6. Special features: Padlock facility (as supplied)
7. Method of fixing: In concrete foundations - as per manufacturer's recommendations

Site and street furniture

212 Shade Structure/ Shelter

1. Description: Within western greenspace seating area
2. Manufacturer: Streetlife (or equal approved)
   2.1. Product reference: Ensemble Circle Shade Structure - Single ECS ø450 with open roof (or equal approved)
3. Material: Steel - corten
   3.1. Finish: Corten/ natural. Supplied pre-weathered.
4. Accessories: Roof panel with laser-cut pattern (Casul Dots)
5. Method of fixing: In concrete foundations, as per manufacturer's recommendations

220A Benches Baspoke Precast Seating/ Seating Walls

1. Description: Seating walls in western greenspace and by entrances (both greenspaces_
2. Manufacturer: Bespoke manufacture - submit proposals
3. Material: Precast concrete - as per section F31
   3.1. Finish: Special finish to BS EN 13670
   3.2. Colour: White - as per section F31
4. Size: Variety of sized elements, both straight and curved (to variety of radii) as shown and described in drawing M580-KRC-DR-L-3003
5. Accessories/ Special requirements: Some units to include bespoke art elements (details TBC). For walls (not stand alone units) anti skate studs (25mm grade 316 stainless steel half sphere by sportsmark.net - or equal approved) to be installed @ max 1m ctrs (equally spaced) along edge adjacent to pathway/ hard surfacing.
6. Method of fixing: Set on concrete foundations, as per engineer's proposals

220B Benches Precast Seating

1. Description: For seating areas (both east and west greenspaces)
2. Manufacturer: Marshalls (or equal approved)
   2.1. Product reference: Metrolinia (or equal approved)
3. Material: Precast concrete

3.1. Finish: Light etched finish - as supplied

3.2. Colour: Variety of colours, as shown and described on drawing

4. Size: Variety of sizes/ units:
    - Intermediate block - 600mm long
    - Seat (with timber top) - 1200mm long
    - Radius corner
    - Radius end - 600mm long
    - Planter - 600mm long
5. Accessories/ Special requirements: Radius corners to be supplied blanked off one side (1nr blanked off right side, 1nr blanked off left) to sit at end of run
6. Method of fixing: As per supplier recommendations

220C Benches Metal

1. Description: For seating area (both east and west greenspace)
2. Manufacturer: Mmcite (or equal approved)

2.1. Product reference:

- Intervera LVR 257
- Intervera LVR 256
- vera LVS 251
- vera solo LVS 211
- vera solo LVS 510

3. Material: steel frame, steel rounds

3.1. Finish: Polyester powder-coated, as section Z31

3.2. Colour: as shown and described in drawing M580-KRC-DR-L-3003:

- RAL7024 Graphite Grey
- RAL3012 Beige Red
- RAL6019 Pastel Green
- RAL6027 Light Green

4. Size: varies (as supplied)
5. Accessories/ Special requirements: None
6. Method of fixing: Root fixed, as per manufacturer's recommendations

230 Tables

1. Manufacturer: Mmcite (or equal approved)

1.1. Product reference:

- tably TBW 421
- tably TBW 421 (wheelchair accessible)

2. Material: steel frame, steel rounds

2.1. Finish: Polyester powder-coated, as section Z31

2.2. Colour: as shown and described in drawing M580-KRC-DR-L-3003:

- RAL3012 Beige Red
- RAL6019 Pastel Green
- RAL6027 Light Green

3. Size: 1.8 x 0,75m
4. Accessories/ Special requirements: None
5. Method of fixing: Root fixed, as per manufacturer's recommendations

322 Archway Structure

1. Description: Corten archway/ ring at key entrances
2. Manufacturer: Stark and Greensmith (or equal approved)
   2.1. Product reference: Corten Steel Moongate (or equivalent)
3. Height: to provide 2m ground clearance (for path) and min 2m height clearance above path surface (will require 2.8m internal dia/ approx. 3m external dia ring)
4. Material: Corten steel
   4.1. Finish: natural - to be supplied pre-weathered
5. Additional requirements:: manufacturer to submit production drawings for approval, prior to manufacture
6. Method of fixing: baseplate on concrete foundations, as per manufacturer's recommendations

340 Bespoke sculpture/ landscape art (to form separate commission)

1. Artist: TBC (to be delivered through a separate design and build contract)
2. Material: TBC
3. Approximate size: Max height 4.5m, as per planning submission
4. Delivery/ Handling/ Storage requirements: Contractor may need to provide lifting/ installation service (provisional sum to be included in tender sum)
5. Method of fixing: Contractor to install concrete foundations/ footing - dimensions TBC (provisional sum to be included in tender sum)

Installation

510 Concrete foundations generally

1. Standard: To BS 8500-2.
2. Concrete: Designated, not less than GEN 1
3. Admixtures: Do not use.
4. Foundation holes: Neat vertical sides.
5. Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

515 Setting components in concrete

1. Holes: As per manufacturer's recommendations
2. Components: Accurately positioned and securely supported.
3. Concrete fill: Fully compacted as filling proceeds.
4. Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
5. Temporary component support: Maintain undisturbed for minimum 48 hours.

530 Preservative treated timber

1. 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.
2. Heavily worked sections: Re-treat.

545 Erection of timber and prefabricated structures

1. Checking: 5 days (minimum) before proposed erection date, check foundations, holding down bolts, etc.

2. Inaccuracies or defects in prepared bases or supplied structures: Report immediately. Obtain instructions before proceeding.

550 Damage to galvanized surfaces

1. Minor damage in areas up to 40 mm² (including on fixings and fittings): Make good.
   1.1. Material: 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.
   1.2. Thickness: Sufficient to provide a zinc coating at least equal to the original layer.

Ω End of Section

Z21
Mortars

Cement gauged mortars

110 Cement gauged mortar mixes

1. Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

120 Sand for site made cement gauged masonry mortars

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

160 Cements for mortars

1. Cement: To BS EN 197-1 and CE marked.
    1.1. Types: Portland cement, CEM I.
        1.1.1. Portland limestone cement, CEM II/A-L or CEM II/A-LL.
2. Portland slag cement, CEM II/B-S.
3. Portland fly ash cement, CEM II/B-V.
    3.1. Strength class: 32.5, 42.5 or 52.5.
4. White cement: To BS EN 197-1 and CE marked.
    4.1. Type: Portland cement, CEM I.
    4.2. Strength class: 52.5.
5. Sulfate resisting Portland cement
    5.1. Type: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
6. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
    6.1. Strength class: 32.5, 42.5 or 52.5.
7. Masonry cement: To BS EN 413-1 and CE marked.
    7.1. Class: MC 12.5.

200 Storage of cement gauged mortar materials

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

210 Making cement gauged mortars

1. Batching: By volume. Use clean and accurate gauge boxes or buckets.
    1.1. Mix proportions: Based on dry sand. Allow for bulking of damp sand.
2. Mixing: Mix materials thoroughly to uniform consistency, free from lumps.

2.1. Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.

3. Working time (maximum): Two hours at normal temperatures.
4. Contamination: Prevent intermixing with other materials.

Lime:sand mortars - Not Used

Ω End of Section

Specification created using NBS Chorus