LIZARD

Landscape Design and Ecology

ECE PLANNING

THE COTTAGE

SHRIPNEY ROAD, BOGNOR REGIS, WEST SUSSEX

Hard and Soft Landscape Specification

Prepared by	TT
Approved by	KM
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ARUN DISTRICT COUNCIL BE/137/19/RES

1.0 SECTION A PRELIMINARIES

A10 Project Particulars

110 The Project

- Name: The Cottage
- Nature: Hard and Soft Landscape Works
- Location: Shripney Road, Bognor Regis, West Sussex
- Timescale for completion of the 'Construction Work': To be advised

120 Client

- Name: ECE Planning
- Address: Brooklyn Chambers, 11 Goring Road, Worthing, West Sussex, BN12 4AP
- Contact: Ben Daines

140 Landscape Architect

- Name: Lizard Landscape Design & Ecology
- Address: 34 South Street, Tarring, Worthing, West Sussex, BN14 7LH.
- Contact: Joe Jackson / Tomasz Tandecki
- Telephone: 01903 216033
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A13 Description of the Work

120 The Work

- The Work Consists of the following elements of works:

1.0 SECTION A PRELIMINARIES 1
A10 Project Particulars 1
A13 Description of the Work 2
A33 Quality Standards / Control 3
A34 Security / Safety / Protection 5
A36 Facilities / Temporary Work / Services 10
2.0 SECTION C DEMOLITION / ALTERATION / RENOVATION 11
C20 Demolition 11
3.0 SECTION D GROUNDWORK 11
D20 Excavating and Filling 11
4.0 SECTION E – INSITU CONCRETE / LARGE PRE-CAST CONCRETE 21
E10 Mixing / Casting / Curing In Situ Concrete 21
E20 Formwork for In-situ Concrete 24
E30 Reinforcement for In-situ Concrete 25
E40 Designed Joints in In-situ Concrete 26
E41 Worked Finishes to In-situ Concrete 26
5.0 SECTION Q PAVING / PLANTING / FENCING / SITE FURNITURE 27
Q10 Kerbs / Edgings / Channels / Paving Accessories 27
Q20 Granular Sub-Bases to Roads / Pavings 30
Q22 Asphalt Roads / Pavings 33
Q24 Interlocking Brick / Block Roads / Pavings 35
Q28 Topsoil and Soil Ameliorants 42
Q30 Seeding / Turfing 48
Q31 External Planting 52
Q35 Landscape Maintenance 59
Q40 Fencing 68
Q50 Site/ Street Furniture/ Equipment 71

125 Drawings and Documents

The Hard and Soft Landscape Scheme Package includes the following drawings and documents:

LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement

LLD1851-LAN-DWG-200 - Soft Landscape Layout

LLD1851-LAN-DWG-201/207 - Detailed Planting Plans; Drawings 1 to 7

LLD1851-LAN-SCH-001 - Detailed Plant Schedule and Specification

LLD1851-LAN-SPE-001 - NBS Hard and Soft Landscape Specification

LLD1851-LAN-REP-001 - Landscape Management Plan

A33 Quality Standards / Control

Accuracy / Setting Out Generally:

320 Setting Out

- General: Submit details of methods and equipment to be used in setting out the Works.
- Levels and dimensions: Check and record the results on a copy of drawings. Notify discrepancies and obtain instructions before proceeding.
- Inform: When complete and before commencing construction.

330 Appearance and Fit

- Tolerances and dimensions: If likely to be critical to execution or difficult to achieve, as early as possible either:
  - Submit proposals; or
  - Arrange for inspection of appearance of relevant aspects of partially finished work.
- General tolerances (maximum): To *BS 5606:1990 'Guide to Accuracy in Building'*, tables 1 and 2.

340 Critical Dimensions

- Critical dimensions: Set out and construct the Works to ensure compliance with the tolerances stated.
- Location: Detailed on drawings.

360 Record Drawings

- Site setting out drawing: Record details of all grid lines, setting-out stations, benchmarks and profiles. Retain on site throughout the contract and hand over on completion.

Supervision / Inspection / Defective Work:

525 Access

- Extent: Provide at all reasonable times access to the Works and to other places of the Contractor or subcontractors where work is being prepared for the Contract.
- Designate: Project Manager.

540 Defects in Existing Work

- Undocumented defects: When discovered, immediately give notice. Do not proceed with affected related work until response has been received.
- Documented remedial work: Do not execute work which may:
  - Hinder access to defective products or work; or
  - Be rendered abortive by remedial work.

560 Tests and Inspections

- Timing: Agree and record dates and times of tests and inspections to enable all affected parties to be represented.
- Confirmation: One working day prior to each such test or inspection. If sample or test is not ready, agree a new date and time.
- Records: Submit a copy of test certificates and retain copies on site.

610 Defective Products / Executions

- Proposals: Immediately any work or product is known, or appears, to be not in accordance with the Contract, submit proposals for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution.
- Acceptability: Such proposals may be unacceptable and contrary instructions may be issued.

Work at or After Completion:

710 Work Before Completion

- General: Make good all damage consequent upon the Works.
- Temporary markings, coverings and protective wrappings: Remove unless otherwise instructed.
- Cleaning: Clean the Works thoroughly inside and out, including all accessible ducts and voids. Remove all splashes, deposits, efflorescence, rubbish and surplus materials.
- Cleaning materials and methods: As recommended by manufacturers of products being cleaned and must not damage or disfigure other materials or construction.
- COSHH dated data sheets: Obtain for all materials used for cleaning and ensure they are used only as recommended by their manufacturers.
- Minor faults: Touch up in newly painted work, carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.
- Moving parts of new work: Adjust, ease and lubricate as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.

720 Security at Completion

- General: Leave the Works secure with, where appropriate, all accesses closed and locked.
- Keys: Account for and adequately label all keys and hand over to Employer with itemized schedule, retaining duplicate schedule signed by Employer as a receipt.

730 Making Good Defects

- Remedial work: Arrange access with Project Manager.
- Rectification: Give reasonable notice for access to the various parts of the Works.
- Completion: Notify when remedial works have been completed.

A34 Security / Safety / Protection

150 Security

- Protection: Safeguard the site, the Works, products, materials, and any existing buildings affected by the Works from damage and theft.
- Access: Take all reasonable precautions to prevent unauthorized access to the site, the Works and adjoining property.

170 Occupied Premises

- Works: Carry out without undue inconvenience and nuisance and without danger to occupants and users.
- Overtime: If compliance with this clause requires certain operations to be carried out during overtime, and such overtime is not required for any other reason, the extra cost will be paid to the Contractor, provided that such overtime is authorized in advance.

Protect Against the Following:

330 Noise Control

- Standard: Comply with the recommendations of BS 5228-1, in particular clause 7.3, to minimize noise levels during the execution of the Works.
- Equipment: Fit compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
- Restrictions: Do not use radios or other audio equipment or permit employees to use in ways or at times that may cause nuisance.

340 Pollution

- Prevention: Protect the site, the Works and the general environment including the atmosphere, land, streams and waterways against pollution.
- Contamination: If pollution occurs inform immediately, including to the appropriate Authorities and provide relevant information.

345 Fuel, Lubricants and Hydraulic Fluids

Restrictions:

- Storing, handling and refuelling: On hard standing or other approved areas. Keep away from watercourses, drains, soil, planting and grassed areas.
- Vehicles and equipment: Ensure there is no leakage or spillage. If spillage occurs, inform immediately and take appropriate emergency action.

350 *Pesticides*

- Use: Only where specified or approved, and then only suitable products listed on www.pesticides.gov.uk.
- Containers: Comply with manufacturer's disposal recommendations. Remove from site immediately empty or no longer required;
- Competence: Operatives must hold a BASIS Certificate of Competence, or work under supervision of a Certificate holder.

360 *Nuisance*

- Duty: Prevent nuisance from smoke, dust, rubbish, vermin and other causes;
- Surface water: Prevent hazardous build up on site, in excavations and to surrounding areas and roads.

390 *Smoking on site*

- Smoking on site: Not permitted.

400 *Burning on site*

- Burning on site: Not permitted.

415 *Surface Water*

- Duty: Prevent hazardous build up including temporary conveyance and disposal from existing structures and the site during the course of the Works.

410 *Moisture*

- Wetness or dampness: Prevent, where this may cause damage to the works.
- Drying out: Control humidity and the application of heat to prevent:
  - Blistering and failure of adhesion.
  - Damage due to trapped moisture.
  - Excessive movement.

430 *Waste*

- Includes: Rubbish, debris, spoil, containers and surplus material.
- General: Minimize production. Prevent accumulations. Keep the site and Works clean and tidy.
- Handling: Collect and store in suitable containers. Remove frequently and dispose off site in a safe and competent manner:
  - Non-hazardous material: In a manner approved by the Waste Regulation Authority.
- - Hazardous material: As directed by the Waste Regulation Authority and in accordance with relevant regulations.
- Recyclable material: Sort and dispose at a Materials Recycling Facility approved by the Waste Regulation Authority.
- Voids and cavities in the construction: Remove rubbish, dirt and residues before closing in.
- Waste transfer documentation: Retain on site.

450 *Laser Equipment*

- Construction laser equipment: Install, use and store in accordance with BS EN 60825-1 and the manufacturer's instructions.
- Class 1 or Class 2 laser equipment: Ensure laser beam is not set at eye level and is terminated at the end of its useful path.
- Class 3A and Class 3B laser equipment: Do not use without approval and subject to submission of a method statement on its safe use.

470 Invasive Species

- General: Prevent the spread of species (e.g. plants or animals) that may adversely affect the site or Works economically, environmentally or ecologically.
- Duty: Report immediately any suspected invasive species discovered during execution of the Works.
  - Do not disturb.
  - Agree methods for safe eradication or removal.

Protect the Following:

510 Existing Services

- Confirmation: Notify all service authorities, statutory undertakers and/ or adjacent owners of proposed works not less than one week before commencing site operations.
- Before starting work: Check and mark positions of mains / services. Where positions are not shown on drawings obtain relevant details from service authorities, statutory undertakers or other owners.
- Work adjacent to services:
  - Comply with service authorities / statutory undertakers recommendations.
  - Adequately protect, and prevent damage to services: Do not interfere with their operation without consent of service authorities / statutory undertakers or other owners.
- Identifying services:
  - Below ground with signboards, giving type and depth, and overhead with headroom markers.
  - If disturbed during site operations replace marker tapes or protective covers to service authority's / statutory undertakers recommendations.
- Damage to services: If any results from execution of the Works:
  - Immediately give notice and notify appropriate service authority/ statutory undertaker.
  - Make arrangements for the work to be made good without delay to the satisfaction of service authority / statutory undertakers or other owner as appropriate.
  - Make arrangements for the work to be made good without delay to the satisfaction of service authority/ statutory undertaker or other owner as appropriate.
  - Any measures taken to deal with an emergency will not affect the extent of the Contractor's liability.
  - Marker tapes or protective covers: Replace, if disturbed during site operations, to service authority's/ statutory undertakers recommendations.

530 Existing Topsoil / Subsoil

- Duty: Prevent over compaction of existing topsoil and subsoil in those areas, which may be damaged by construction traffic, parking of vehicles, temporary site accommodation or storage of materials and which will require reinstatement prior to completion of the Works.
- Protection: Before starting work submit proposals for protective measures.

531 Protection and Retention of Existing Vegetation

- The Contractor shall exercise extreme care when performing operations beneath the canopy of existing mature trees and vegetation and within the specified Root Protection Areas designated for protection and avoid at all times damage to the roots, trunk and branches.
- All excavations, cultivation and grading beneath the canopy of existing mature trees; 1.0 m outside the canopy and within the Root Protection Areas (as calculated in accordance with *BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'*) of the trees and vegetation shall be carried out using hand tools, taking care not to damage or disturb any existing tree roots.
- All trees to be retained on site shall be protected with fencing erected around the area of mature vegetation in accordance with *BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'*. The fencing shall be installed, protected and maintained during the main works by the Contractor who shall be responsible for protecting any area beneath the canopy of the existing trees; and 1.0 metres outside the canopy and within Root Protection Areas.
- The fencing is to be erected prior to the commencement of all works on site and retained in place throughout construction. The fencing is to comprise of a minimum 2.0 m high scaffolding framework, with uprights at maximum 3.0m spacing's, braced to the ground with 45 degree supporting standard anti-climb 'Heras' welded mesh fence panels secured with anti-lift devices to concrete or plastic bases pinned to the ground by scaffold uprights sunk to a minimum depth of 600mm; individual panels fixed to each other with at least 2 clamps and to scaffolding with heavy-duty cable ties. 'Tree Protection Zone – Keep Out' or similar notices to be attached to every fifth panel.
- Fencing to be fixed to fences, walls, knee rails where possible to provide a complete protected area.
- Day-Glo ribbons shall be maintained during the main works by the Main Contractor attached to the top of the fencing to ensure that the fencing is clearly visible during the works. Fencing shall be used to enclose the full canopy spread of any tree; 1.0m outside the canopy of the trees with 1.5m on either side of any hedge, and to the edge of tree Root Protection Areas.
- All such fencing shall be maintained for the full contract period. All necessary excavations, earthworks and cultivation beneath the canopy spread of any existing tree; shrub or hedge shall be undertaken by hand. Repositioning of the protective fencing during the course of the contract as the contract works progress shall need to be agreed on site with the Landscape Architect.
- At the end of the contract period the Contractor shall remove protective fencing from site. All retained vegetation shall be healthy and thriving at the handover date;
- Within the protected area the following activities must not take place.
  - No vehicles are to be used in the fenced off areas.
  - No materials are to be stockpiled or stored.
  - No chemicals are to be stored.
  - No excavation or increase in the soil level shall occur.
  - No fires shall be lit on site.

532 Removal of Existing Vegetation

- All tree work and removal shall be carried out in accordance with *BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'* and *BS 3998: 2010; 'Tree Work – Recommendations'*. Trees designated for removal and felling shall be marked on site with white paint. Prior to the removal and felling of trees, the required work and tree positions shall be agreed on site with the Landscape Architect. Trees shall be felled prior to the erection of the tree protective fencing. Care should be taken to avoid damage to trees, which are designated to be retained.
- Stumps shall be removed and cut away so that the top of the stump shall be at least 450mm below the final topsoil level in order that the site can be levelled and grassed over. Stumps are to be treated with an approved herbicide to be agreed with the Landscape Architect. Where the depth is greater than 450mm the areas backfill areas with topsoil to the required level.

533 Tree Surgery

- Any significant defects found in the trees during the course of the scheduled work shall be reported to the Landscape Architect. All work shall be undertaken by an approved and qualified Tree Surgeon in accordance with *BS 3998: 2010; 'Tree Work – Recommendations'*.
- Care should be taken to avoid damage to neighbouring trees to be retained. Branches in confined spaces shall be removed and taken down in sections. All arising's shall be transported and disposed of away from site to the Contractor's tip.

540 Retained Trees / Shrubs / Grassed Areas

- Protection: Prevent damage and preserve, except those not required;
- Replacement: Mature trees and shrubs if uprooted, destroyed, or damaged beyond reasonable chance of survival in their original shape, as a consequence of the Contractor's negligence, must be replaced with those of a similar type and age at the Contractor's expense.

550 Retained Trees

- Protected area: Unless agreed otherwise do not:
  - Dump spoil or rubbish, excavate or disturb topsoil, park vehicles or plant, store materials or place temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk, and within the specified Root Protection Areas.
  - Sever roots exceeding 25mm in diameter. If unintentionally, severed give notice and seek advice.
  - Change level of ground within an area 3.0 m beyond branch spread.

555 Wildlife Species and Habitats

- Protected habitats and species: Upon discovery immediately advise. Do not proceed until instruction is received.
- Education: Ensure employees and visitors to the site receive suitable instruction and awareness training.

560 Existing Features

- Protection: Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features, which are to remain in position during execution of the Works.
- Protect: Existing trees, existing hedges, and existing fence lines.

570 Existing Work

- Protection: Prevent damage to existing work, structure or other property during the course of the work.
- Removal: Minimum amount necessary.
- Replacement Work: To match existing.

620 Adjoining Property

- Precautions: Prevent trespass of work people and take precautions to prevent damage to adjoining property.
- Precautions:
  - Prevent trespass of workpeople and take precautions to prevent damage to adjoining property.
  - Pay all charges.
  - Remove and make good on completion or when directed.
- Damage: Bear cost of repairing damage arising from execution of the Works.

A36 Facilities / Temporary Work / Services

110 Spoil Heaps, Temporary Works and Services

- Location: Give notice of intended siting.
- Maintenance: Alter, adapt and move as necessary. Remove when no longer required and make good.

Temporary Works:

330 Temporary Protective Fencing to Existing Trees / Vegetation

- Temporary Protective Fencing: Erect before starting work in accordance with BS 5837: 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations'*.
  - Type of fencing: 'Heras' Welded Wire Mesh Panels.
  - Height of fencing: 2.0 metres minimum height.
- The fencing is to be erected prior to the commencement of all works on site and retained in place throughout construction. The fencing is to comprise of a 2.0m high (minimum) scaffolding framework, with uprights at maximum 3.0m spacings, braced to the ground with 45 degree struts; supporting standard anti-climb 'Heras' welded mesh fence panels secured with anti-lift devices to concrete or plastic bases pinned to the ground by scaffold uprights sunk to a minimum depth of 600mm; individual panels fixed to each other with at least 2 clamps and to scaffolding with heavy-duty cable ties. 'TREE PROTECTION ZONE – KEEP OUT' or similar notices to be attached to every fifth panel.
- All trees to be retained on site shall be protected with fencing erected around the area of mature vegetation in accordance with BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'.
- The fencing is to be positioned to the outside edge of the Tree Root Protection Areas specified. All tree protection to be in accordance with BS 5837:2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'.
- All such fencing shall be maintained for the full contract period. Repositioning of the protective fencing during the course of the contract as the contract works progress shall need to be agreed with the Landscape Architect.
- Protected area: Locate fencing in accordance with the specified Root Protection Areas.

- Integrity of fencing: Maintain for the duration of the works.
- On the completion of the works: remove fencing and make good disturbed area.

2.0 SECTION C DEMOLITION / ALTERATION / RENOVATION

C20 Demolition

To be read with Preliminaries / General Conditions.

General Requirements

150 Features to be retained

- General: Keep in place and protect the following: Trees noted on drawings; protect in accordance with BS 5837.

Services Affected by Deconstruction / Demolition

210 Services Regulations:

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

220 Location of Services:

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

270 Services to be Retained:

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

3.0 SECTION D GROUNDWORK

D20 Excavating and Filling

To be read with Preliminaries / General Conditions.

Generally / The Site

145 Variations in Ground Water Level

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

Clearance / Excavating

164 Tree Roots

- Protected area: Do not cut roots within the calculated tree Root Protection Area (RPA) in accordance with *BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations'.*

- Outside protected area: Give notice of roots exceeding 25mm and do not cut without approval.
- Excavation in protected area:
  - Method: By hand.
  - Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
- Cutting:
  - Make clean smooth cuts with no ragged edges.
  - Pare cut surfaces smooth with a sharp knife.
- Backfill: Imported topsoil to BS 3882:2015 *'Specification for Topsoil and Requirements for Use'*; Multi-purpose Topsoil.

168 Site Clearance

- Timing: Before topsoil stripping, if any.
- General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.
- Treatment: Apply a suitable non-residual herbicide to areas to receive planting.

170 Removing Small Trees, Shrubs, Hedges and Roots

- Identification: Clearly mark trees to be removed;
- Small trees, shrubs and hedges: Cut down
- Roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

175 Felling Large Trees

- Definition: Girth over 600mm.
- Identification: Clearly mark trees to be removed.
- Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.
- Felling: As close to the ground as possible.
- Stumps: Remove mechanically to a minimum depth of 300mm below ground level.
- Work near retained trees: Take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained, where tree canopies overlap and in confined spaces generally.

180 Chipping and Shredding

- General: Permitted, remove arisings from site.

220 Stripping Topsoil

- General: Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings / roads and other areas shown on drawings.
- Depth:
  - Remove to an average depth of between 100mm and 250mm where possible and keep separate from excavated subsoil.
  - Give notice where the depth of topsoil is difficult to determine.
  - Depth of existing topsoil to be agreed on site with the Landscape Architect prior to topsoil stripping.
- Handling: Handle topsoil for reuse or sale in accordance with clause 225.
- Around trees: Do not remove topsoil from below the spread of trees to be retained.
- Site storage: Keep separate from excavated sub-soil.

221 Treating Topsoil

- Treatment: Apply a suitable translocated non-residual herbicide.
- Timing: Not less than two weeks before excavating topsoil.

225 Handling Topsoil

- Standard: To *BS 3882:2015 'Specification for Topsoil and Requirements of Use'*.
- Aggressive weeds:
  - Species: Included in the Weeds Act, section 2 or the Wildlife and Countryside Act, Schedule 9, part II.
  - Give notice: Obtain instructions before moving topsoil.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other soil or material containing aggressive weeds, sharps, plastics and non-soil forming materials and notifiable animal or plant diseases.
  - Oil, fuel, cement or other substances harmful to plant growth.
  - Other classifications of topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit as defined by *BS 3882:2015 'Specification for Topsoil and Requirements of Use'.*

240 Adjacent Excavations

- Requirement: Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto, must be completed before the higher excavation is made.
- Angle of line below horizontal: 45°
- Backfill material: Compacted general filling as clause 626.

250 Permissible Deviations from Formation Levels

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

255 Accuracy - Linear Dimensions

- Permissible deviations from linear dimensions generally: ±5mm.

260 *Inspecting Formations*

- Give notice: Make advance arrangements for inspection of formations for foundations and road / pavings.
  - Notice (minimum): 3 days.
- Preparation: Just before inspection remove the last 150mm of excavation.
- Trim to required profiles and levels, and remove loose material.
- Seal: Within 4 hours of inspection, seal formations with Concrete / Type 1 Granular Fill.

270 *Foundations Generally*

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

275 *Foundation Bearing*

- Requirement: Foundations are designed to bear on:
  - Safe bearing capacity (minimum): To civil engineer's design and specification.
- Give notice: If the material at the design depth of the foundation does not comply with this description, or contains soft or hard spots or highly variable material.

280 *Trench Fill Foundations*

- Excavation: Form trench down to formation in one operation.
- Safety: Prepare formation from ground level.
- Inspection of formations: Give notice 48 hours before commencing excavation.
- Shoring: Where inspection of formation is required, provide localised shoring to suit ground conditions.
- Concrete fill: Place concrete immediately after inspection and no more than four hours after exposing the formation.

290 *Foundations in Made Up Ground*

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

310 *Unstable Ground*

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

320 *Recorded Features*

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

330 *Unrecorded Features*

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

335 New Foundations Crossing Old Foundations or Walls

- Break out: The old foundation / wall where it crosses the new foundation / wall:
  - Length of breaking out: Width of the new foundation / wall plus 150mm on either side of new foundation.
  - Depth of breaking out: As necessary to permit the construction of the new foundation to its design cross section.
- Disturbed/ softened soil: When the formation for the old foundation/ wall is deeper than the formation of the new foundation.
  - Excavate: Soil that has been disturbed and/ or softened on either side of the old wall/ foundation, and for 150mm into undisturbed ground on either side.
- Step up: The formation for the new foundation as necessary on either side of the old foundation/ wall until the formation is at its design level.
- Backfilling beneath design formation level: Fill with concrete as foundation is cast.

337 Old Foundations or Walls beneath New Ground Supported Slab

- Break out: The old foundation / wall to a depth below the slab formation level of at least 300mm.
  - Excavate: Soil that has softened on either side of the old wall/ foundation.
- Backfill: Obtain instructions if depth of fill will be greater than 600mm, otherwise backfill with compacted hardcore.

360 Excess Excavation

- Excavation taken wider than required: Backfill with hardcore as Clause 710.
- Excavation taken deeper than required: Backfill: Underground bearing slabs as Clause 710.

370 Underground Structures in Landscape Areas

- Generally: Remove walls, roads, foundations, disused services, drains, manholes and the like to minimum depth.
- Minimum depth below finished levels:
  - Grass, ground cover and perennial planting: 500mm.
  - Shrub planting: 750mm.
  - Within 2.0 m of tree planting: 1000mm.

Disposal of Materials

410 Excavated Topsoil Storage

- Storage: Stockpile in temporary spoil heaps. Topsoil storage location to be agreed on site with the Landscape Architect.

415 Excavated Topsoil Removal

- General: Remove from site.

420 Topsoil Storage Heaps

- Location: Topsoil heaps to be agreed on site with the Landscape Architect;
- Standard: To BS 3882:2015 *'Specification for Topsoil and Requirements of Use'.*
- Height (maximum): 1.0m height.
- Width (maximum): to be agreed on site with the Landscape Architect.
- Protection:
  - Do not place any other material on top of storage heaps.
  - Do not allow construction plant to pass over storage heaps.
  - Prevent compaction and contamination.

421 Topsoil Storage Heap Treatment

- Treatment: Apply a suitable herbicide at appropriate times to prevent seeding of weeds.

441 Surplus Subsoil

- Excavated material: Stockpile in temporary storage heaps.
- Retained material: Spread and level surplus subsoil on site.
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.
- Remaining material: Remove from site.

450 Water

- Generally: Keep all excavations free from water until:
  - Formations are covered.
  - Below ground constructions are completed.
  - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary.

454 Ground Water Level, Spring or Running Water

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

457 Pumping

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

Filling

500 Proposed Fill Materials

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

510 Hazardous, Aggressive or Unstable Materials

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

512 Limitation of Sulfate Content in Fill Materials

- Test specification to *BS 1377-3:1990 'Methods of test for soils for civil engineering purposes. Chemical and electro-chemical tests'.*
- Refer to *BS EN 13285:2010 'Unbound Mixtures – Specifications'. Volume 1 Specification for Highway Works. '801 General Requirements for Unbound Mixtures', clauses 1, 2 and 3.*
- Sulfate content: Expressed as SO4
  - Water soluble sulfate (maximum): 1500mg/L in 2:1 water/ soil extract.
- Certificates of test result: Submit.

520 Frost Susceptibility

- General: Except as allowed below, fill must be non-frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.8.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non-frost- susceptible:
  - Fine grained soil with a plasticity index less than 20%.
  - Coarse grained soil or crushed granite with more than 10% retained on a 0.063mm sieve.
  - Crushed chalk.
  - Crushed limestone fill with average saturation moisture content in excess of 3%.
  - Burnt colliery shale.
- Frost-susceptible fill: May only be used: *Where frost heave will not affect structural elements.*
  - At depths below the finished ground surface greater than 300mm.
  - Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
  - Where frost heave will not affect structural elements.

525 *Testing of Suitability of Fill Materials before Start of Filling*

- Laboratory: UKAS/ NAMAS accredited laboratory.
- Submit report to: Civil Engineer (two copies).
  - Timing: 21 days before starting filling.
- Samples: Deliver to laboratory as required.
  - Additional requirements: Also deliver 25 kg samples to offices of structural engineer. On request, collect and dispose.
- Tests: As directed.
- Frequency: Submit with tender proposed rate and frequency of testing to demonstrate continuing compliance of imported or reprocessed fill with specified properties.

530 *Placing Fill*

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

535 *Compaction Generally*

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

540 *Benching Infill*

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

550 Geo-textile Sheet

- Manufacturer: Geo-textile to be 'Terram 1000' or equal and approved; Fiberweb Geosynthetics Ltd, Blackwater Trading Estate, The Causeway, Maldon, Essex, CM9 4GG; Tel: 01621 874200; Fax: 01621 874299.
- Product reference: 'Standard Filter/Separator: T1000' or equal and approved.
- Jointing: overlapping joints 300mm ensuring that sufficient geo-textile protrudes beyond the anticipated pit excavation to allow for final trimming.
- Protect from:
  - Exposure to light, except for five hours (maximum) during laying.
  - Contaminants.
  - Materials listed as potentially deleterious by geo-textile manufacturer.
  - Protect from damage until fully covered by fill.
  - Wind uplift, by laying not more than 15.0m before covering with fill.
- Preparation: take care not to puncture the underlying geo-textile membrane whilst installing the sub-base design.
- Preparation of subgrade: Before laying sheet, remove humps and sharp projections. Fill hollows.

610 Compacted Filling for Landscape Areas

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

615 Loose Tip Filling for Landscape Areas

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

617 Highways Agency Type 1 Bound Mixture

- Fill: *To Highways Agency 'Specification for highway works', clauses 801 and 803:*
- Amendments to requirements in Highways *Agency 'Specification for highway works'.*
- Filling: To Highways *Agency 'Specification for Highway Works', Clause 802*

619 Highways Agency Type 3 Unbound Mixture

- Quality: Free from excessive dust, well graded, all pieces less than 75mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to *BS EN 1097-2:2010 'Tests for Mechanical & Physical Properties of Aggregates'*
- Filling: Spread and level in 75mm and 150mm maximum layers. Thoroughly compact each layer.

620 Subgrade Improvement Layer (Capping)

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

626 *Compacted General Fill*

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

710 *Hardcore Filling*

- Fill: Granular material, free from excessive dust, well graded, all pieces less than 75mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to *BS EN 1097-2:2010 'Tests for Mechanical and Physical Properties of Aggregates'*, and
- In any one layer only one of the following:
  - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
  - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - Crushed non-expansive slag.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Well-burned non-plastic colliery shale.
  - Natural gravel.
  - Natural sand.
- Filling: Spread and level in 150mm maximum layers. Thoroughly compact each layer.

715 *Venting Hardcore Layer*

- Fill: Clean granular material, well graded, passing a 75mm BS sieve but retained on a 20mm BS sieve. In each layer only one of the following:
  - Crushed hard rock.
  - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - Gravel.
- Filling: Spread and level in 150mm maximum layers. Thoroughly compact each layer whilst maintaining enough voids to allow efficient venting.

730 *Blinding*

- Surfaces to receive sheet overlays or concrete: Blind with:
  - Concrete where shown on drawings; or
  - Sand, fine gravel or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
- Sand for blinding: To *BS EN 12620:2002+A1:2008 'Aggregates For Concrete'*, grade 0/4 or 0/2 (MP).
- Permissible deviations on surface level: +0 -25mm.

4.0 SECTION E – INSITU CONCRETE / LARGE PRE-CAST CONCRETE

E10 Mixing / Casting / Curing In Situ Concrete

To be read with Preliminaries / General Conditions.

Concrete Mixes:

101 Specification.

- Concrete generally: To *BS 8500-2:2006+A1:2012 'Concrete'.*
- Exchange of information: Provide concrete producer with information required by *BS 8500-1:2006+A1:2012 'Concrete'*, clauses 4 and 5.

105 Designated Concrete Mix for Haunchings and Hard Landscape Foundations.

- Mix: GEN 0 / S1 or GEN 1 / ST2 to *BS 8500: 2006+A1 : 2012 'Concrete';*
- The concrete will be unreinforced.
- Nominal maximum size of aggregate: 20mm.
- Admixtures: An accelerator or retarder may be used.

106 Mixes for Sundry Types of In Situ Work

- Are specified in other sections of this specification as follows; Q10 Kerbs / Edgings / Channels; Q50 Street Furniture.
- Mixes specified in this section, which are equivalent to or better than the above, may be used in lieu, subject to approval.

125 Substitution of Standardized Prescribed Concrete for Designated Concrete

- General: Conform to BS 8500-2:2006+A1:2012 'Concrete', clause 9.
- Substitution: In accordance with BS 8500-1:2006+2012 'Concrete', table A.13.
- Proposals: Submit for each substitution, stating reasons.

Materials, Batching and Mixing

218 Site Mixed Concrete

- Batching by mass:
  - Restrictions: None.
  - *Accuracy of measuring devices: To BS EN 206-1:2000, clause 9.6.2.2 Tolerances for quantity of constituent material: To BS EN 206-1:2000, table 21.*
- Batching by volume:
  - Restrictions: None.
- Mixing: To BS 8000-2.1:1990, subsections 2, 3 and 4.
- Frequency: Submit with tender proposed rate and frequency of testing to demonstrate continuing compliance of imported or reprocessed fill with specified properties.

315 Aggregates for Exposed Visual Concrete

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

415 Admixtures

- Calcium chloride and admixtures containing calcium chloride: Do not use.

Project Testing / Certification

505 Project Testing of Concrete - General

- Testing: *BS EN 12390 – 5: 2009*.
  - Nonconformity: Obtain instructions immediately.
- Recording: Maintain complete correlated records including:
  - Concrete designation.
  - Sampling, site tests, and identification numbers of specimens tested in the laboratory.
  - Location of the parts of the structure represented by each sample.
  - Location in the structure of the batch from which each sample is taken

530 Test Results

- Submission of reports: Within one day of completion of each test.
  - Number of copies: Three.
- Reports on site: A complete set, available for inspection.

Placing/Compaction/ Curing and Protection

630 Premature Water Loss

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

650 Surfaces to Receive Concrete

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

680 Placing

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

690 *Compacting*

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

810 *Curing Generally*

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

811 *Coverings for Curing*

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

817 *Curing Periods Generally*

- Standard: To *BS EN 13670:2009* Curing class 1.

818 *Curing Periods Generally*

- Minimum periods: When not otherwise indicated, to *BS EN 13670:2009 'Execution of Concrete Structures', Annex F.8.5.*

840 *Protection*

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

E20 Formwork for In-situ Concrete

To be read with Preliminaries / General Conditions.

Generally / Preparation:

110 Loadings

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

178 Formation of Openings in Composite Action Slabs

- Generally: Except as otherwise agreed, box out for openings in concrete.
- Forming holes in profiled steel sheet:

- Timing: Obtain instructions.
- Method: Contractor's choice.

Construction:

310 Accuracy

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

315 Substructure Formwork and Underslab Insulation

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

320 Joints in Forms

- Requirements including joints in form linings and between forms and completed work:

- Prevent loss of grout, using seals where necessary.
- Prevent formation of steps. Secure formwork tight against adjacent concrete.

330 Inserts, Holes and Chases

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

Striking:

510 Striking Formwork

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

Formed Finishes:

630 Special Finish

- Location: Surfaces to be tool finished.
- Finish: Smooth and even. Formwork panels as large as practicable. Arrange in a regular pattern as a feature of the surface.
  - Special requirements: None.
- Permissible deviation of surfaces:
  - Sudden irregularities (maximum): 3mm.
  - Gradual irregularities (maximum): 3mm when measured from the underside of a 1 m straightedge, placed anywhere on surface.
- Variations in colour:
  - Permitted: Those caused by impermeable formwork linings.
  - Not permitted: Those caused by contamination, grout leakage and replacement of formwork panels.
- Cover spacers: Submit proposals.
- Surface blemishes:
  - Permitted: Blowholes less than 5mm in diameter and at an agreed frequency.
  - Not permitted: Voids, honeycombing, segregation and other defects.
- Formwork tie holes: In a regular pattern and filled with matching mortar.

E30 Reinforcement for In-situ Concrete

To Structural Engineers Specifications.

120 Quality Assurance of Reinforcement

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

E40 Designed Joints in In-situ Concrete

To Structural Engineers Specifications.

120 Construction / Movement Joints Generally

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

210 Formed Joints

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

230 Preparation of Construction Joints

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

E41 Worked Finishes to In-situ Concrete

To be read with Preliminaries / General Conditions.

150 Finishing

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

310 Smooth Floated Finish

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

5.0 SECTION Q PAVING / PLANTING / FENCING / SITE FURNITURE

Q10 Kerbs / Edgings / Channels / Paving Accessories

To be read with Preliminaries / General Conditions.

Types of Kerbs / Edgings and Channels

110 K1 - Precast Concrete Highway Kerb

- Standard: To *BS EN 1340.*
- Manufacturer: Marshalls; or equal and approved:
  Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702;
  Technical Tel: 08704 113 344; Email: marshallskerb@marshalls.co.uk Web: http://www.marshalls.co.uk/kerb
  - Product reference: *255 x 205 x 915 Conservation Kerb.*
- Recycled content: As manufactured.
- Size (width x height x length): 255 x 205 x 915mm.
- Special shapes: Transition kerbs Left Hand and Right Hand to footway.
- Upstand: Laid with 125mm upstand.
- Finish: as manufactured.
- Colour: *Silver Grey.*
- Bedding: Cement mortar.
- Joints: Dry, 2-3mm gap.
- Sealant movement joints: Not required.
- Other requirements: Concrete foundations and haunching as clause 530. Kerbs set out to suit layout, angles, curves and radii, junctions.
- Location*:* Refer to *Hard and Soft Landscape General Arrangement Drawing LLD1851-LAN-DWG-100.*

112 K2 - Precast Concrete Highway Kerb.

- Standard: To *BS 1340;*
- Manufacturer: Marshalls; or equal and approved:
  Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702;
  Technical Tel: 08704 113 344; Email: marshallskerb@marshalls.co.uk Web: http://www.marshalls.co.uk/kerb
  - *Product reference: 145 x 145 Conservation Kerb.*
- Size (width x height x length): 145 x 145 x 915mm.
- Finish: as manufactured.
- Colour: *Silver Grey.*
- Joints: Dry 2-3mm gap.
- Other requirements: Concrete foundations and haunching as clause 530. Kerbs set out to suit layout, angles, curves and radii, junctions, as indicated on *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement Drawing.*

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115 K3 - Pre-cast Concrete Kerb Edging.

- Standard: To *BS 1340;*
- Manufacturer: Marshalls; or equal and approved:
  Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702;
  Technical Tel: 08704 113 344; Email: marshallskerb@marshalls.co.uk Web: http://www.marshalls.co.uk/kerb
  - *Product reference:* Conservation Edging 63 x 150 x 915.
- Size (width x height x length): 63 x 150 x 915mm.
- Finish: as manufactured.
- Colour: *Silver Grey.*
- Joints: Dry 2mm gap.
- Other requirements: Concrete foundations and haunching as clause 530. Kerbs set out to suit layout, angles, curves and radii, junctions, as indicated on *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement Drawing.*

250 Material Samples

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

Laying

510 Laying Kerbs, Edgings and Channels

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

520 Adverse Weather

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

530 Concrete for Foundations, Races and Haunching

- Standard: To BS 8500-2:2006+A1:2012 'Concrete'.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

540 Cement Mortar Bedding

- General: To section Z21.
- Mix: (Portland cement: sand): 1:3.
  - Portland cement: Class CEM I 42.5 to BS EN 197-1:2011.
  - Sand: To BS EN 12620:2002+A1:2008, grade 0/4 or 0/2 (MP).
- Bed thickness: 12 - 40mm.

547 Bedding / Backing of Units on Fresh Concrete Races:

- Standard: To BS 7533-6.

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600 Radius Kerbs / Channels

- Usage: Radii of 15m or less.

610 Angle Kerbs

- Usage: Internal and external 90° changes of direction.
- Cutting of Mitres: Not Permitted.

620 Accuracy

- Deviations (maximum):
  - Level: ± 6mm.
  - Horizontal and vertical alignment: 3mm in 3.0m.

625 Regularity of Paved Surfaces

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

630 Narrow Mortar Joints

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

640 Tooled Mortar Joints

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

641 Tooled Coloured Mortar Joints

- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and raked out to a depth of 10mm for pointing.
  - Joint width: 6mm.
- Pointing: Joints refilled and tooled to a neat flush profile.
  - Pointing mortar: 1:3 cement: sand.
  - Pigment colour: Natural.

650 Sealant Movement Joints

- Joint filler: Compressible cellular rubber or plastics compatible with specified sealant.
- Filler installation: Built in as work proceeds, extending through haunching and foundation. Filler positioned accurately to fully support sealant at the recommended depth below exposed faces of units.
- Joint width:
- Sealant: Contractor's choice.
  - Colour: Natural.
- Sealant application: As section Z22.

Q20 Granular Sub-Bases to Roads / Pavings

To be read with Preliminaries / General Conditions.

130 Herbicide

- Herbicide: Non-Residual, non-selective.
- Application: To subgrade of all hard landscape surface treatment areas.

140 Excavation of Subgrades

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

145 Preparation and Compaction of Subgrades

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

150 Sub-Grade for Vehicular Areas

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

170 Geotextile Filter / Separator Membrane

- Manufacturer: Maccaferri; or equal and approved.
  - Product reference: Mactex W1 4S.
- Jointing: To manufacturers specification.
- Protect from:
  - Exposure to light, except during laying (maximum five hours).
  - Contaminants.
  - Materials listed as potentially deleterious by geotextile manufacturer.
  - Damage, until fully covered by fill.
  - Wind uplift, by laying not more than 15 m before covering with fill. Preparation: Remove humps and sharp projections and fill hollows before laying.

180 Notice

Give notice: After preparation and compaction of subgrades.
- Period of notice: 5 working days.

200 Subgrade Improvement Layer (Capping)

- Material: To Highways Agency 'Specification for highway works', table 6/1, Class 6F4 or 6F5.
- Standard: Placed and compacted to Highways Agency 'Specification for highway works', table 6/1, clauses 612 and 613.3, 613.8, 613.9, 613.10 and 613.13.

209 Highways Agency Type 3 Unbound Mixture for Sub-Base

- Material: Type 3 unbound mixture to Highways Agency 'Specification for highway works', clause 805.

210 Highways Agency Type 1 Unbound Mixture for Sub-Base

- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clauses 801 and 803.

211 Granular Material

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

213 Blinding Protection for Membranes

- Location: Above impermeable membrane.
- Material: Approved fine material.
- Thickness (minimum): Sufficient to fill interstices and cover all stones.
- Compaction: Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
- Permissible deviations on surface level: +0 -25mm.

220 Frost Susceptible Granular Material

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

230 Placing Granular Material Generally

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

240 Laying Granular Sub-Bases for Vehicular Areas

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

241 Laying Granular Sub-Bases for Vehicular Areas

- Proposals: Well in advance of starting work submit details of:
  - Maximum depth of each compacted layer.
  - Type of plant.
  - Minimum number of passes per layer.
- General: Spread and leveled in layers. As soon as possible thereafter compact each layer.
- At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.
- Defective areas: Remove loose, segregated or otherwise defective areas to the full thickness of the layer and lay and compact new material.
- Sub-base surface after compaction and immediately before overlaying: Uniformly well closed and free from loose material, cracks, ruts or hollows.

250 Laying Granular Sub-Bases for Pedestrian Areas

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

310 Accuracy

- Permissible deviation from required levels, falls and cambers (maximum):
- Compaction:
  - Subgrades:
  - Roads and parking areas: +20 -30mm.
  - Footways and recreation areas: ± 20mm.
  - Sub-bases: Roads and parking areas: ± 20mm. Footways and recreation areas: ± 12mm.

330 Cold Weather Working

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

340 Protection

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

Q22 Asphalt Roads / Pavings

To be read with Preliminaries / General Conditions.

Types of Paving:

125 Proposed PV1 – Vehicular Asphalt Surface Treatment

- Proposed Vehicular Asphalt Surface Treatment; refer to engineers specification.

175 Proposed - Gravel Surface Treatment

- Specification of the gravel to be 40mm depth of *Dove Grey Derbyshire Peakstone 20mm* supplied by Gravelmaster; or equal and approved
- Colour / Finish: Grey / Angular aggreates;
- Sub-base min. 150mm to enginner specification.

220 Bituminous Materials Generally

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

230 Samples

- Submit: Representative samples of coated chippings.

240 Acceptance of Surfaces

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

250 Abutments

- Vertical edges of manholes, gullies, kerbs and other abutments: Clean and paint with a thin uniform coating of hot applied 40/60 paving grade bitumen.
- Finishing: Tamp surface around projections.
  - Level: Flush or not more than 3mm above projections.

Laying:

***310 Laying Gener*ally**

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

320 Adverse Weather

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

330 Levels

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

340 Flatness/ Surface Regularity

- Deviation of surface: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge placed anywhere on the surface to be not more than:
  - Base: Machine laid, 25mm.
  - Binder Course: Machine laid, 13mm.
  - Surface Course: Machine Laid, 7mm.
  - 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

- Preparation for Final Surfacing:
  - Timing: Defer laying until as late as practicable.
  - Immediately before laying final surfacing: Clean and make good the base/ binder course. Allow to dry.
  - Adhesion: Contractor's choice.
    Application rate: As manufacturer's recommendation.
    Accuracy: Uniform, without puddles.
  - Finishing: Allow emulsion to break completely before applying surface.

360 Uncoated Chippings for Surface Treatment

- Chippings: Clean aggregate to *BS EN 13043* and PD 6682-2, size 2.8/6.3, grading category Gc85/15.
  - Type/ Source: Contractor's choice.
  - Colour: Contractor's choice.
- Binder:
  - Cutback bitumen to *BS EN 12591* or bitumen emulsion to *BS 434-1:2011.*
  - Do not use cut-back bitumen at temperatures below 15°C.
  - Do not use modified binders without prior approval.
- Application:
  - Binder application rate: In accordance with TRL Road Note 39. Adjust rate for modified binders in accordance with manufacturer's instructions.
  - Coverage: 100–105% shoulder to shoulder to *BS 598-1:2011.*
  - Compaction: Roll. Do not crush chippings.
- Completion:
  - Before trafficking, remove excess chippings.
  - Carry out further removal of loose chippings disturbed by traffic as necessary.

Completion

390 Documentation

- Standard: *BS EN 13108-1:2006.*
  - Declaration of conformity: Submit.
- Number of Copies: 2
- Submission: Two weeks prior to date when Contractor expects work to be complete.

395 Slip Resistance Testing

- Surfaces to be tested: Permeable access roads.
  - Surface condition: Dry and wet.
- Timing: Post final clean, prior to handover.
- Period of notice (minimum) 3 working days.
- Test standard: To BS 7976-2.
  - Testing authority: An approved laboratory.
  - Witnessing/ certification: Arrange for tests to be witnessed/ certified by: Project manager.
  - Report: Submit.
  - Format: As required under BS 7976.

Q24 Interlocking Brick / Block Roads / Pavings

To be read with Preliminaries / General Conditions.

Types of Paving

110 Pre-cast Concrete Block Paving Surface Treatment PV2 to Pedestrian Permeable Block Paving Areas.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Manufacturer: Marshalls; or equal and approved: *Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;*
  - Product reference: *Myriad Priora Permeable Block* or equal and approved;
- Infill:
  - Sizes: 320x200x80mm, 200x200x80mm and 100x200x80mm.
  - Colour: Moonlight.
  - Pattern: 3 Size Random Course.

- Edge Course / Banding:
  - Sizes: 100x200x80mm;
  - Colour: Moonlight.
  - Pattern: 200mm Soldier Course.
- Jointing:
  - Joint width: 5mm.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.

110a Pre-cast Concrete Block Paving Surface Treatment PV3 to Vehicular Permeable Block Parking Bays.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Manufacturer: Marshalls; or equal and approved: *Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;*
  - Product reference: *Myriad Priora Permeable Block* or equal and approved.
- Infill:
  - Sizes: 320x200x80mm, 200x200x80mm and 100x200x80mm.
  - Colour: Morning Light.
  - Pattern: 3 Size Random Course.
- Edge Course / Banding:
  - Sizes: 100x200x80mm;
  - Colour: Moonlight.
  - Pattern: 200mm Soldier Course.
- Jointing:
  - Joint width: 5mm.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.

110b Pre-cast Concrete Block Paving Surface Treatment PV4 to Vehicular Permeable Block Areas.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Manufacturer: Marshalls; or equal and approved:
  Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;
  - Product reference: *Myriad Priora Permeable Block* or equal and approved.
- Infill:
  - Sizes: 320x200x80mm, 200x200x80mm and 100x200x80mm.
  - Colour: Twilight.
  - Pattern: 3 Size Random Course.
- Edge Course / Banding:
  - Sizes: 100x200x80mm;
  - Colour: Moonlight.
  - Pattern: 200mm Soldier Course.
- Jointing:
  - Joint width: 5mm.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.

110c Pre-cast Concrete Block Paving Surface Treatment PV5 to Vehicular Permeable Block Turning Junctions.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Manufacturer: Marshalls; or equal and approved:

Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;
  - Product reference: *Myriad Priora Permeable Block* or equal and approved.
- Infill:
  - Sizes: 320x200x80mm, 200x200x80mm and 100x200x80mm.
  - Colour: Twilight.
  - Pattern: 3 Size Random Course.
- Edge Course / Banding:
  - Sizes: 100x200x80mm;
  - Colour: Midnight.
  - Pattern: 200mm Soldier Course.
- Jointing:
  - Joint width: 5mm.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.

110d Pre-cast Concrete Block Paving Banding PV6 to Block Paved Turning Junction.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Marshalls; or equal and approved:
  Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;
  - Product reference: *Myriad Priora Permeable Block* or equal and approved.
- Edge Course / Banding:
  - Sizes: 100x200x80mm;
  - Colour: Midnight.
  - Pattern: 2 no. 200mm Soldier Course followed by Single Stretcher.
- Jointing:
  - Joint width: 5mm.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.

110e Pre-cast Concrete Block Paving Rumble Strips PV7 to Access Road.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Marshalls; or equal and approved:
  Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;
  - Product reference: *Keycheck Deterrent Paving*.
  - Sizes: 200x200x60mm plus 15mm hump;
  - Colour: Charcoal.
  - Pattern: 3 bands of stretcher-Deterrent-stretcher sets; each of these sets to be separated with a 200mm soldier course.
- Jointing:
  - Joint width: 5mm.
- Edge Course / Banding:
  - Product reference: Myriad Priora Permeable Block or equal and approved.
  - Sizes: 100x200x80mm;
  - Colour: Twilight.
  - Pattern: 200mm soldier course.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.

115 Proposed – PV8 - Textured Flag Paving to Dwelling Entrance Pathways and Patios.

- Subgrade improvement layer: Highways Agency Type 1 unbound mixture, as section Q20.
  - Compacted Thickness: To Civil Engineer's Specifications.
- Granular sub-base: Highways Agency Type 1 unbound mixture, as section Q20.
  Thickness: To Civil Engineer's Specifications.
  Sub-base design to Civil Engineer's specification.
- Geotextile: refer to D20/550.
- Laying course:
  - Material: In accordance with BS 7533-3: 2005+A1:2009. Category: IV
  - Method of screeding, in accordance with BS 7533-3: 2005+A1:2009: Compaction.
  - Nominal thickness after compaction: 30mm.
- Blocks: To *BS EN 1338: 2003.*
- Manufacturer: Manufacturer: Marshalls; or equal and approved:

Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Sales Tel: 0870 4427702; Technical Tel: 08704 113 344;
  - Product reference: *Conservation Textured Flags* or equal and approved;
- Infill:
  - Sizes: 450x450x50mm.
  - Colour: Heather Grey.
  - Pattern: Stack Bond.
- Jointing:
  - Joint width: 5mm.
- Edging:
  - Flag Paving to be edged with K3 Kerb.
- Other requirements: Refer to Drawings *LLD1851-LAN-DWG-100 - Hard and Soft Landscape General Arrangement* for layout.
- Other requirements: Flags to be close jointed and filled with fine dry sand. Blocks to be cut to suit all curves, angles and junctions.

Execution:

200 Execution Generally – Concrete Block

- Standard: In accordance with *BS 7533-3.*

211 Colour Banding

- General: Unless premixed by manufacturer, select blocks/ pavers/ setts vertically from at least 3-5 separate packs in rotation to avoid colour banding.

220 Samples

- General: Before ordering, submit samples of all blocks/ pavers/ setts that are representative of colour and appearance.

240 Adverse Weather

- General: Do not use frozen materials or lay bedding on frozen or frost covered sub-bases.

450 Laying Geotextile Sheet for Conventional Paving

- Location: Immediately below laying course.
- Jointing: Lap by 300mm.
- Laying: Fit neatly at edge restraints and other features that interrupt the sand laying course, e.g. drainage fittings, channels, manholes and kerbs.
  - Edge detail: Turn sheet up to form an upstand against features. Height (minimum): Thickness of sand laying course.

485 Laying Blocks/ Pavers/ Setts

- Setting out: Start from an edge restraint.
- Cutting: Cleanly, accurately and vertically, without spalling. Do not mark or damage visible surfaces.
- Cut edges: Turn inwards where possible; do not position against edge restraints or other features.
- In situ mortar or concrete infill: 1:3 cement: sand as section Z21, coloured to match pavers, in areas up to 65 cm².
- Compaction: Vibrate to produce thoroughly interlocked paving of even overall appearance with regular joints and accurate to line, level and profile. Do not mark or damage paving units, kerbs and adjacent work.
  - Concrete blocks and clay pavers: In accordance with *BS 7533-3:2005+A1:2009*, Annex F, to site category required for laying course.

495 In Situ Surrounds to Obstructions

- Locations: At circular street furniture bases.
- Material: C35 air entrained concrete or 3:1 mix of coarse aggregate and mortar in accordance with BS 7533-3:2005+A1:2009, clause 5.4.3.2.
- Shape and size: Rectangular, 100mm (minimum) all round obstruction.
- Thickness (min.): Combined depth - blocks/ pavers/ setts / sand laying course.
- Colour: To match paving units.
- Timing: Lay and allow to cure in advance of laying blocks/ pavers/ setts.

505 Regularity of Paved Surfaces

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

Completion:

615 Completion of Paving

- Final compaction of the surface course: In accordance with BS 7533-3:2005+A1:2009.
- Vacuum cleaning machines: Not allowed.

Q28 Topsoil and Soil Ameliorants

To be read with Preliminaries / General Conditions.

System Outline:

135 Planting Bed Soil System: For Flowering Shrubs

- Composition:
  - Soil: Site sourced topsoil and imported topsoil to *BS 3882:2015*; multi-purpose topsoil.
  - Ameliorants: Submit design and cost proposals.
  - Accessories: None.

135 Planting Bed Soil System: For Tree and Shrub Planting

- Composition:
  - Soil: Site sourced topsoil and imported topsoil to *BS 3882:2015*; multi-purpose topsoil.
  - Ameliorants: None.
  - Accessories: None.
- Other requirements: No ameliorants or fertilizers to be used within the native tree and shrub planting / woodland buffer planting areas.

145 Plant Pit Backfilling Soil System: For Tree Pits

- Composition:
  - Soil: Site sourced topsoil and imported topsoil to *BS 3882:2015*; multi-purpose topsoil.
  - Ameliorants: Mycorrhizal fungi - granules to be sprinkled into the bottom of planting holes or mixed with prepared soil prior to planting *(as per manufactures specification).*
  - Ameliorants: Organic materials.
  - Accessories: None.

155 Mulching and Top-Dressing System: For Hedges and Feature Planting Areas

- Composition:
  - Material: 75mm depth Ornamental Bark Mulch; 5 - 35mm nominal particle size; BS4970:1987.

156 Mulching and Top-Dressing System: For Tree and Shrub Planting

- Composition:
  - Material: 75mm depth Ornamental Bark Mulch; 5 - 35mm nominal particle size; BS4970:1987.

Products:

300 Preparation Materials Generally

- Purity: Free of pests and disease.
- 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.
- Contamination: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.

- Subsoil: In areas to receive topsoil or planting media, do not use subsoil contaminated with the above materials.
- Objectionable Odour: None.
- 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

- Materials: Composted green waste, wood waste.
- Give notice: before ordering or using.
- Declaration of compliance in accordance with *BS EN 13650*: Required.

310 Materials Not Permitted

- Materials: Products containing peat.

315 Imported Topsoil to BS 3882:2015 – For Feature Planting Beds

- Quantity: Provide as necessary to make up any deficiency of topsoil existing on site and to complete the work.
- Standard *to BS 3882:2015 'Specification for topsoil and requirements for use'.*
- Classification: Multi-purpose.
  - Grade: Within the parameters of 'sandy loam' textural class.
  - Maximum size of stones in any dimension: 20mm;
  - Sand Content between 65 and 70 % of volume.
- Source: Submit proposals.
  - Product reference: Submit proposals.

401 Organic Fertilizers: For Feature Planting Beds & Tree Pits

- Manufacturer/ source: Farmura Ltd, Stone Hill, Egerton, Ashford, Kent, TN 27 9DU; Tel. 01233 756211; Fax. 01233 756419.
  - Product reference: Farmsea 10.
- Standard: In accordance with the Fertiliser Industry Assurance Scheme (FIAS)
- Purpose: General purpose fertilizer.
- Type: Seaweed extract.
- Availability to plants: Slow release.

Execution

605 Site Investigation

- Report: See section D20.

610 Topsoil Analysis

- Soil to be analysed: All existing, imported topsoil.
- Soil analyst*: Tim O'Hare Associates, Howbery Park, Wallingford, Oxfordshire, OX10 8BA; Tel. 01491 822653; email. info@toha.co.uk*
- Samples: Collect in accordance with *BS 3882:2015 'Specification for Topsoil and Requirements for Use'.*
- Submit:
  - Declaration of analysis: Chemical analysis and contaminants.
  - Report detailing soil analyst's recommendations.

625 Sample Load: For Imported Topsoil

- Deliver to site a sample load: of not less than 5 m³.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
  - Notice period: 2 days.

630 Documentation for Imported Topsoil – For Feature Planting Areas

- Timing: Submit at handover.
- Contents:
  - Full description of all soil components.
  - Record of source for all soil components.
  - Record drawings showing the location and depth of all soils by type and grade.
  - Declaration of analysis: in accordance with *BS 3882*, Annex E.
- Number of copies: 1.

630 Documentation for Imported Topsoil – For Native Tree and Shrub Planting /

Timing: Submit at handover.

- Contents:
  - Full description of all soil components.
  - Record of source for all soil components.
  - Record drawings showing the location and depth of all soils by type and grade.
  - Declaration of analysis: in accordance with *BS 3882*, Annex E.
- Number of copies: 1.

630 Documentation for Preparation Materials: For Organic Materials

- Timing: Submit at handover.
- Contents:
  - Full description of all components.
  - Record of source for all components.
  - Analyst's report for each test carried out.
  - Supplier's declaration of compliance with BSI PD CR 13456.
- Number of copies: 1.

650 Notice

- Giving notice before:
  - Setting out.
  - Spreading topsoil.
  - Applying herbicide.
  - Applying fertilizer.
  - Visiting site during maintenance period.
- Period of notice: Two working days.

655 Mechanical Tools

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

660 Grading Subsoil

- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Loosening:
  - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Areas of thicker topsoil: Excavate locally.
- Avoid over compaction.

665 *Subsoil Surface Preparation*

- General: Excavate and/ or place fill to required profiles and levels, as section D20.
- Loosening:
  - Light and non-cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 300mm.
  - Stiff clay and cohesive subsoils: When ground conditions are reasonably dry, loosen thoroughly to a depth of 450mm.
  - Rock and chalk subgrades: Lightly scarify to promote free drainage.
- Stones: Immediately before spreading topsoil, remove stones larger than 75mm.
- Remove from site: Arisings, contaminants and debris.

670 *Inspecting Formations*

- Give notice: Before spreading topsoil for all planting beds.
- Notice period: 2 days.

675 *Preparation of Undisturbed Topsoil*

- Standard in accordance with *BS 4428:1989*.
- Grading and cultivation: Prepare areas to receive soft landscaping as necessary to ensure that the topsoil is in a suitable state for cultivation operations specified in sections Q30 and Q31.
- Hard ground: Break up thoroughly.
- Clearing: Remove visible roots and large stones with a diameter greater than 50mm.
- Areas covered with turf or thick sward: Plough or dig over to full depth of topsoil.
- Fallow period:
  - After preparation leave for not less than 2 months.
  - Weed control: At appropriate times treat with a suitable translocated non-residual herbicide.

680 *Surplus Topsoil to be Retained*

- Generally: Spread and level on site:
  - Locations: Any areas where topsoil is required for new planting.
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.

685 *Surplus Topsoil to be Removed*

- Topsoil: Remove from site topsoil remaining after completion of all landscaping work.
- Subsoil, stones, debris, wrapping material, canes, ties, temporary labeling, rubbish, prunings and other arisings: Remove.

690 Topsoil Storage Heaps

- Location: Temporary topsoil location to be agreed on site with the Landscape Architect;
- Height (maximum): 1.0 m;
- Width (maximum): To be agreed on site with the Landscape Architect.
  - Formation: Loose tip and shape from the side only, without running machinery on the heap at any time.
- Protection:
  - Do not place any other material on top of storage heaps;
  - Do not allow construction plant to pass over storage heaps;
  - Prevent compaction and contamination, by fencing and covering as appropriate.

700 Grading of Topsoil

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
  - Hollows and ridges: Not permitted.
- Finished levels after settlement: 25mm above adjoining paving, kerbs, manholes etc.
- Give notice: If required levels cannot be achieved by movement of existing soil.

705 Handling Topsoil

- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2:1990.

710 Spreading Topsoil

- Temporary roads / surfacing: Remove before spreading topsoil.
- Layers:
  - Depth (maximum): 150mm.
  - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum): Planting Areas: 450mm depth.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

715 Loose Tipping of Topsoil

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

718 Final Cultivation: For Planting Beds

- Compacted topsoil: Break up to full depth.
- Tilth: Loosen, aerate and break up topsoil to a tilth suitable for blade grading.
- Depth: 300mm.
- Particle size (maximum): 2 – 8mm.
- Timing: Within a few days before planting.
- Weather and ground conditions: Suitably dry.
- Surface: Leave regular and even.
- Levels: 25mm above adjoining paving or kerbs.
- Undesirable material brought to the surface:
  - Remove visible weeds.
  - Remove roots and large stones with any dimension exceeding 50mm.

720 Finished Levels of Topsoil after Settlement

- above adjoining paving or kerbs: 25mm.
- Below dpc of adjoining buildings: Not less than 150mm.
- Planting areas: Higher than adjoining grass areas by 50mm.
- Seeded areas: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
- Within root spread of existing trees and shrubs to be retained: Do not dig or cultivate.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

810 Applying Compost: For Flowering Shrubs

- Application rate for trees and shrubs: 50mm thick.
  - Timing: Apply prior to cultivation.
- Application rate for grass: 1.2m³/100 m².
  - Timing: Apply prior to cultivation.
- Application rate for planters: 50mm thick layer.
  - Timing: Apply prior to cultivation.
- Other Requirements: Submit 5kg sample before ordering.

820 Applying General Fertilizer: Slow Release

- Application: Spread evenly, carefully incorporating below mulch materials.
  - Timing: Immediately before cultivation.
  - Application rate: 100 litres per hectare.
  - Apply 5 litres per 500 m², water ratio: 1:5.

845 Applying Loose Mulch: Planting Areas (Except Bund and Sloped Planting Areas)

- Timing: Immediately after planting.
- Preparation: Ensure that soil is thoroughly moistened, applying water where necessary.
- Coverage of mulch (minimum):
  - Planting beds (depth): 75mm depth Ornamental Bark Mulch; 5 - 35mm nominal particle size; BS4970:1987.
  - Trees: In a circular area of 500mm radius measured from the tree stem.
- Finished level of mulch: flush with adjacent grassed or paved areas.

Completion:

905 Applying Maintenance Fertilizer: To Tree Pits and Feature Planting Beds

- Time of year: March or April.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Rate: To manufacturer's recommendations.

Q30 Seeding / Turfing

To Be Read with Preliminaries / General Conditions.

General Information / Requirements

115 Seeded and Turfed Areas

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

120 Climatic Conditions

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

145 Watering

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

150 Water Restrictions

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

160 Notice

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

170 Setting Out

- Boundaries of wildflower seeding areas: Mark clearly.
- Delineation: In straight lines or smoothly flowing curves as shown on drawings.

Preparation

210 Herbicide: for Wildflower Meadows & Native Tree, Shrub and Hedge Planting

- Type: Suitable for suppressing perennial weeds.
- Timing: Allow fallow period before cultivation.
  - Duration: As manufacturer's recommendation.

212 Seed Bed Cleaning Before Sowing: Wild Flower Grassland

- Operations: As seed supplier's recommendations.

250 Soil Requirements:

- Type:
  - Seeded areas: Existing topsoil.
  - Turfed areas: Existing topsoil.

Seeding:

312 Seed Mixture: Wildflower Meadow Areas – '*EH1 - Hedgerow Mixture*'

- Supplier: Emorsgate Seeds (or equal and approved)
  - Contact: Limes Farm, Tilney All Saints, King's Lynn, Norfolk, PE34 4RT; Email: enquiries@emorsgateseeds.com
    Web: https://wildseed.co.uk/home
    Mixture Reference: *'EH1 - Hedgerow Mixture'*
- Origin (as defined in the National Plant Specification): Native UK.
- Application rate: 4g/m²
- Other requirements:
  - Wildflower grass seeded areas shall not be subject to any soil additives, ameliorants or conditioners.
  - Ground should not be highly fertile for this wildflower seed mix.

  For designated wildflower grassland seeded areas refer to Detailed Planting Plan drawings *LLD1851-LAN-DWG-201 - Detail Planting Plan 1 of 7.*

312b Seed Mixture: Shade Tolerant Grass Seeded Area to Open Spaces

- Supplier: Emorsgate Seeds (or equal and approved)
  - Contact: Camp Road, Witham St. Hughs, Lincoln, LN6 9QJ;
    Tel: 01522 868714; Email: expert@germinalamenity.com
    Web: https://germinalamenity.com
    Mixture Reference: *'A6 (Supreme Shade)'*
- Application rate: 40g/m²
  For designated grassland seeded areas refer to Detailed Planting Plan drawings *LLD1851-LAN-DWG-201 - Detail Planting Plan 1 of 7.*

319 Quality of Seed: For Wildflower Grassland Seeded Areas

- Freshness: Produced for the current growing season.
- Certification: Blue label certified varieties.
  - Standard: EC purity and germination regulations.
  - Official Seed Testing Station certificate of germination, purity and composition: Submit when requested.
- Samples of mixtures: Submit when requested.

330 Sowing

- General: Establish good seed contact with the root zone.
- Method: To suit soil type, proposed usage, location and weather conditions during and after sowing.
  - Distribution: Surface sown by machine or broadcast by hand with 2 equal sowings at right angles to each other in overlapping sections.
  - Do not incorporate or cover the seed but firm in with a roll, or by treading, to give good soil/seed contact.
- Preparation: Aim to control weeds and produce a good seed bed before sowing using repeated cultivation or a herbicide; keeping disturbance to the minimum required to expose fresh soil.

336 Wildflower Sowing Season

- Wildflower seed generally: March to May or August to October.
- Note: can be sown at other times of the year if there is sufficient warmth and moisture.
- Note: Bulk up the seed with inert carrier e.g. sand to make distribution easier.

340 Pre-Emergent Herbicide: For Wildflower Meadows

- Standard: Pesticide Safety Directorate approved.
- Application rate: In accordance with manufacturer's written recommendation.
- Timing: Immediately after sowing.

Turfing:

312 Turf: Grassland Areas Shade Tolerant Turf - *County Shade Turf*

- Supplier: Bourne Amenity Limited (or equal and approved)
  - Contact: Rye Road, Newenden, Kent, TN18 5QG; Email: info@bourneamenity.co.uk
    Web: https://bourneamenity.co.uk/
    Product Reference: *'Shade Tolerant Turf - County Shade Turf'*
- Application rate: N/A
- Other requirements:
  For designated grassland turfed areas refer to *LLD1851-LAN-DWG-100 – Hard and Soft Landscape General Arrangement Drawing.*

Protecting / Cutting:

590 Cleanliness

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

Maintenance:

610 Failures of Seeding / Turfing

- Duration: Carry out the following operations from completion of seeding/ turfing until: Practical completion.
- Defective materials or workmanship: Areas that have failed to thrive.
  - Exclusions: Theft or malicious damage.
- Method of making good: Recultivation and reseeding/ returfing.
- Timing of making good: The next suitable planting season.

650 Maintaining: Grassed Areas with Perennial Wildflowers

- Duration: Carry out the following operations from completion of seeding/ turfing until: Practical completion.
- Preparation: Before each cut remove all litter and debris.
- Height and frequency of cut in first growing season:
  - Time of first cut: March/April
  - Height of first cut: 40 mm.
  - Height of growth permitted (maximum): 150 mm.
- Height and Frequency of Cut in Second Growing Season:
  - Time of cut: One or two cuts to the end of summer on shallow soils. On areas of deeper soil a single cut in October.
  - Height of first cut: 75 mm.
- The sown mixture will be slow to germinate and will not usually flower in the first growing season. There will often be a flush of annual weeds from the soil in the first growing season, which can be controlled by topping or mowing.
- In the first year of growth avoid cutting in the spring and early summer. Cut back before the annuals die back, set seed and collapse.
- Management once established: In the second and subsequent years the wildflower grassland can be managed in a number of ways depending on the soil fertility.
  - Poor Shallow Soils: On poor shallow soils the wildflower grassland can be managed through one or two cuts towards the end of summer to help maintain diversity and interest.
  - Deeper Soils: Wildflower grassland seeded on deeper soils should be managed through a main summer hay cut in combination with autumn and spring mowing. The wildflower grassland seeded areas are not to be cut from spring through to late July/ August to allow the sown species to flower. After July/August a 'hay cut' with a petrol strimmer to 50 mm height should be undertaken with the hay left to dry and shed seed for 1 – 7 days before being removed from site. Regrowth should be mowed through to late autumn / winter to 50 mm height and again in spring if required.
- Trimming: All edges.
  - Arisings: Remove.
- Watering: When instructed.
- Defects: All Wildflower Grassland areas which failed within the first two years of establishment should be re-cultivated and re-seeded with wildflower seed mix
- Other Requirements: No soil ameliorant / conditioner or fertilizer to be applied to the wildflower grassland.

Q31 External Planting

To be read with Preliminaries / General Conditions.

General Information / Requirements

112 Site Clearance

- General: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
- Stones: Remove those with any dimension exceeding 50mm.
- Contamination: Remove material containing toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Vegetation: Clear surface vegetation in areas shown on drawings using suitable non-residual herbicide.
- Large roots: Grub up and dispose of without undue disturbance of soil and adjacent areas.

118 Soil Conditions

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

120 Climatic Conditions

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

125 Times of Year for Planting

- Rootballed Deciduous Trees and Shrubs: Late October to Late March;
- Bare-rooted Trees and Shrubs / Whips and Transplants: Late October to Late March.
- Conifers and evergreens: September / October or April / May.
- Herbaceous plants *(including aquatic and marginal):* September / October or March / April.
- Container grown plants: At any time if ground and weather conditions are favorable.
  - Watering and weed control: Provide as necessary.

130 Mechanical Tools

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

145 Watering

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

150 Water Restrictions

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

160 Notice

- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Delivery of plants / trees.
  - Planting shrubs.
  - Planting trees into previously dug pits.
  - Watering.
  - Visiting site during maintenance period.
- Period of notice: 2 days.

170 Soil Requirements

- Type:
  - Planted bed: Existing topsoil and imported multi-purpose topsoil to BS 3882:2015.
  - Tree pits, shrub pits and other backfilling: Existing topsoil and imported multi-purpose topsoil to BS 3882:2015.
  - External container planting: Existing topsoil and imported multi-purpose topsoil to BS 3882:2015.
  - Mulch applied after planting: Mulching and top dressing system, as section Q28.

200 Plants / Trees - General

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

215 Plants / Trees - Specification Criteria

- Name, Forms, Dimensions, Provenance and Other Criteria: As scheduled and defined in the *National Plant Specification*.

235 Container Grown Plants / Trees

- Growing medium: With adequate nutrients for plants to thrive until permanently planted.
- Plants: Centred in containers, firmed and well watered.
- Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
- Hardiness: Grown in the open for at least two months before being supplied.
- Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

245 *Labelling and Information*

- General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labeling for delivery to site, showing:
  - Full botanical name.
  - Total number.
  - Number of bundles.
  - Part bundles.
  - Supplier's name.
  - Employer's name and project reference.
  - Plant specification, in accordance with scheduled *National Plant Specification* categories.
- Additional information: Submit on request: Type of container.

255 *Plants / Trees Reserved at Supplier's Premises*

- Types/ Species: As plant schedule.
- Predelivery Inspection: Give notice.
- Labeling: Identify inspected plants/ trees as reserved for use on this project.

256 *Native and Ornamental Tree Planting*

- Types/ Species: As *LLD1851-LAN-DWG-200 series Detailed Planting Plans.*
- Stock: Standard and Multi-stem Tree Planting.
  - Supplier: Submit proposals.

260 *Plant / Tree Substitution*

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

265 *Plant Handling, Storage Transport and Planting*

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

280 *Treatment of Tree Wounds*

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

290 *Surplus Material*

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

Preparation of Planting Beds / Planting Materials:

300 Herbicide: To Clear Overgrown Beds

- Locations: All planting areas.
- Type: Suitable for suppressing perennial weeds.
- Timing: Allow fallow period before cultivation.
  - Duration (minimum): As manufacturer's recommendation.

305 Weed Control: For Invasive Non-Native Weeds

- Location: All planting areas.
- General: Prevent weeds from seeding and perennial weeds from becoming established, by hand weeding.

Planting Native and Ornamental Shrubs / Herbaceous Plants / Bulbs

401 Regular Plant Layout: To All Planting Areas

- Spacing: As drawings *LLD1851-LAN-DWG-200 Detailed Planting Plan.*
- Density: As *LLD1851-LAN-SCH-001 Detailed Plant Schedule and Planting Specification.*

405 Shrub Planting Pits

- Timing: Excavate 1-2 days (maximum) before planting.
- Sizes: twice as large as and no deeper than the containers/ root balls.
- Pit bottom improvement: Break up to a depth of 150mm, incorporating soil ameliorant/ conditioner at 50 g/m².
- Backfilling material: Reuse excavated material.

470 Formal Hedges

- Shrubs for hedges: Consistent in species, cultivar and clone to ensure a uniform hedge.
- Planting: In trenches large enough to take full spread of roots. Set out plants evenly.

471 Naturalized Hedges

- Planting: In trenches large enough to take full spread of roots. Set out plants evenly.

472 Fencing Support for New Hedges

- Type: Timber post and general pattern wire mesh.
- Timing: Before planting hedge.
- Support: Lightly secure hedge plants to fence wires at appropriate intervals.

480 After Planting

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- 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.
- Top dressing: Mulching and top dressing system, as section Q28.
  - Depth: 75mm.

486 Shrub Protection

- Manufacturer: Acorn Planting Products Limited, Fiberweb Geosynthetics Ltd, Blackwater Trading Estate, The Causeway, Maldon, Essex, CM9 4GG, Tel. 01621 874201. sales@acorn-p-p.co.uk
  - Product reference: 'Shelterguard Shrub Shelters - Tubes'.
- Type: Round
- Material: Polyethylene,
- Size: supplied in nests of 4 tubes of similar diameter; 60 cm height; 130 – 160mm diameter; 150 – 180mm diameter; 170 – 200mm diameter.
- Colour: Green.
- Pre-fitted ties; 2 pre-fitted nylon ties for timber stakes;
- Support: Single timber stake. Stakes to be sourced from well-managed sustained forestry source.
- General: Ensure that protection methods do not impede natural movement of shrubs or restrict growth.
- Note: Provide shrub protection to native understorey shrub planting areas and hedge line planting.

Planting Trees

500 Antidessicant for Conifers / Evergreens

- Application: Dip in or thoroughly spray with anti-desiccant before delivering to site. Spray again soon after planting.
  - Do not apply in wet or frosty weather.
  - Ensure full coverage of underside of foliage.

505 Tree Pits

- Soft Landscape - Sizes:
  - Extra Heavy Standard and Multi-stem Stock: square in plan; planting pit excavation: 150mm-300mm greater than rootball size.
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 150mm.
  - Treatment: Soil ameliorant worked into pit bottoms.
- Pit sides: Scarify.
- Backfilling material: Plant pit backfilling soil system, as section Q28.
- Backfilling:

- Backfill to be gently compacted in layers of 150mm-230mm depth ensuring tree remains upright throughout planting.

512 Tree Pit Accessories - Irrigation

- Locations: To Proposed Tree Planting.
- Manufacturer: GreenBlue Urban, Haywood Way, Hastings, East Sussex, TN35 4PL; Tel: 01424 717797; Fax: 01424 533003; Web: www.greenblueurban.com
  - Product reference: RootRain Metro – Tree Pit Irrigation, Plastic with Chain; Code: RRPC3A.
- Type: Perforated plastics irrigation pipe, 75mm diameter, in circle above and around sides of rootball, with plastics cap; 2.5 m length.

515 Tree Pit Drainage

- Depth of excavation: Increase from specified size to allow for aggregate layer, with base slightly falling to outlet.
- Aggregate layer: Clean gravel or broken stone, with no fines, graded 40 to 20mm.
  - Depth: 200mm.
- Geotextile filter:
  - Manufacturer: Fiberweb Geosynthetics Ltd – A PGI Business, Blackwater Trading Estate, The Causeway, Maldon, Essex, CM9 4GG; Tel: 01621 874200; Fax: 01621 874299; Email: info@terram.com; Web: www.terram.com
  - Product reference: Terram – Standard Geotextiles – T1000.
  - Position: Lay over aggregate before installing tree or backfill.
- Completed pits: Test for free drainage before planting.

546 Staking Generally

- Stakes: Softwood, peeled chestnut, larch or oak, straight, free from projections and large or edge knots and with pointed lower end.
  - Preservative treatment: To provide a 20 year service life.
- Nails: To BS 1202-1, galvanized, minimum 25mm long and with 10mm diameter heads.
- Minimum stake sizes: 75mm diameter.

550 Short Single Staking for Specimen Shrubs and Whips

- Staking: Position stake close to tree on windward side and drive vertically at least 300mm into bottom of pit before planting.
  - Backfilling: Consolidate material around stake.
- Height of stakes: Cut to approximately 600mm above ground level.
- Ties: Adjustable ties.
- Tying: Secure tree firmly but not rigidly to stake with at least one tie within 25mm of top of stake.

565 Long Double Staking For: Extra Heavy Standard Stock Trees (14-16cm and 16-18cm Girth)

- Staking: Drive stakes vertically at least 300mm into bottom of pit on either side of tree position before planting.
  - Backfilling: Consolidate material around stakes.
- Height of stakes: The stakes shall extend to a maximum of 600mm above ground level.
- Cross bar: Wood, as stake.
  - Firmly fix on windward side of tree and as close as possible to stem.
- Ties: Adjustable ties.
- Tying: Secure tree firmly but not rigidly to cross bar.

Protecting / Maintaining / Making Good Defects

710 Maintenance

- Duration: Carry out the operations in the following clauses from completion of planting until the end of the rectification period.
- Frequency of maintenance visits: Monthly during growing season.

720 Failures of Planting

- Defects due to materials or workmanship not in accordance with the Contract: Plants/ trees/ shrubs that have failed to thrive.
  - Exclusions: Theft or malicious damage after completion.
  - Rectification: Replace with equivalent plants/ trees/ shrubs.
- Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
- Timing of making good: During the next suitable planting season.

730 Protective Fencing

- Fencing type: Chestnut Pale Fencing to *BS 1722-4:1986.*
  - Height: 1200mm.
- Erection: On completion of planting.
- Removal: Fencing will remain the property of the Contractor. Remove and refill post holes following acceptance of rectified defects.

740 Cleanliness

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

750 Planting Maintenance Generally

- Weed control: Maintain weed free area around each tree and shrub.
  - Diameter (minimum): The larger of 1 m or the surface of original planting pit.
  - Keep planting beds clear of weeds: By use of approved non-residual herbicides and by maintaining full thickness of mulch cover.
- 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.
- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools.
- Staking: Check condition of stakes, ties, guys and guards.
  - Broken or missing items: Replace.
  - Rubbing: Prevent.
  - Ties: Adjust to accommodate growth.
  - Damage to bark: Cut back neatly with sharp knife. Prevent further damage.
  - Frequency of checks: Every two weeks.
- Firming up: Gently firm loosened soil around trees / shrubs. Straighten leaning trees / shrubs.
- Trees: Spray crown when in leaf during warm weather.
  - Timing: Carry out in the evening.
- Watering: When instructed.

755 Planting Maintenance - Fertilizer

- Time of year: March or April.
- Fertilizer: Seaweed extract.
  - Manufacturer: Farmura Ltd, Stone Hill, Egerton, Ashford, Kent, TN 27 9DU; Tel. 01233 756211; Fax. 01233 756419.
  - Product reference: Farmsea 10.
- Application: Evenly spread, carefully incorporating below mulch materials.
- Application rate: Spread evenly at 5 litres per 500m²; water ratio 1:5.
- Fertilizer not to be applied to wildflower grassland seeded areas.

760 Planting Maintenance - Pruning

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

770 Woodland Planting Maintenance

- Watering: Only as necessary to prevent plants wilting.
- Loose plants: Refirm surrounding soil, without compacting.
- Weed control: Cot down and remove weeds prior to setting seed in a 1 m diameter around each tree.
- Ditches and drains: Keep clear.
- Watering: When instructed.

780 Maintenance Instructions

- 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 details of any special procedures to be carried out.

790 Final Mulching

- Timing: At end of the maintenance period.
- Watering: Ensure that soil is thoroughly moistened prior to remulching, applying water where necessary.
- Planting beds: Remulch.
  - Depth (minimum): 40mm.
- Trees: Remulch.
  - Depth (minimum): 40mm.

Q35 Landscape Maintenance

To be read with Preliminaries / General Conditions.

Generally

110 Notice

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

130 Reinstatement

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

155 Watering

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

160 Water Restrictions

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

170 Disposal of Arisings

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

180 Chipping or Shredding on Site

- General: Not permitted on site.

190 Litter

- Extraneous rubbish not arising from the Contract Work: Collect and remove from site.

195 Protection of Existing Grass

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

197 Cleanliness

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

Flower Beds / Seasonal Beddings

470 Flower Beds Generally

- Operations:
  - Remove: Dead flower heads, fallen leaves, litter and debris.
  - Weeds: Thoroughly hand weed.
  - Cultivate: Lightly hoe.
  - Trim: Clip grass edges.
- Fungicide: Contractor's choice.
- Insecticide: Contractor's choice.

Shrubs / Trees / Hedges

500 Establishment of New Planting

- Duration: 12 months maintenance period.
- Weed control:
  - Method: Keep planting beds clear of weeds by use of suitable herbicides; maintaining full thickness of mulch and hand weeding.
  - Area: Maintain a weed free area around each tree and shrub, minimum diameter the larger of 1 m or the surface of the original planting pit.
- Soil condition: Fork over beds to keep soil loose, with gentle cambers and no hollows. Do not reduce depth or effect of mulch.
- Watering: When instructed.

502 Establishment of New Planting - Fertilizer

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

510 Tree Stakes and Ties

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

520 Refirming of Trees and Shrubs

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

525 Tree Guards

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

530 Tree Shelters

- Loose or defective shelters: Adjust, refix or replace to original specification and to prevent chafing.
- Removal: During spring when no longer required to protect the hedge planting.

540 Pruning Generally

- Pruning: In accordance with good horticultural and arboricultural practice.
  - Removing branches: Do not damage or tear the stem or bark.
  - Wounds: Keep as small as possible and cut cleanly back to sound wood.
  - Cutting: Make cuts above and sloping away from an outward facing healthy bud, angled so that water will not collect on cut area.

ARUN DISTRICT COUNCIL BE/137/19/RES

  - Larger branches: Prune neither flush nor leaving a stub, but using the branch bark ridge or branch collar as a pruning guide.
- Appearance: Thin, trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
- Tools: Use clean sharp secateurs, hand saws or other approved tools. Trim off ragged edges of bark or wood with a sharp knife.
- Disease or fungus: Give notice if detected.
- Growth retardants, fungicide or pruning sealant: Do not use unless instructed.

545 Pruning of Excessive Overhang

- Timing: annually or as instructed by the Landscape Architect.
- Operations: Remove growth encroaching onto grassed areas, paths, roads, signs, sightlines and road lighting luminaires.
- Special requirements: Allow ground cover plants to partially overlap paths and lawns.

550 Pruning of Excessive Height

- Timing: annually or as instructed by the Landscape Architect.
- Operations: Remove excessive height as instructed.

555 Pruning Trees and Shrubs

- Standard: To *BS 7370-4.*
- Special requirements: None.

570 Formative Pruning of Young Trees

- Standard: Type and timing of pruning operations to suit the plant species.
- Time of year: Do not prune during the late winter/ early spring sap flow period.
- Young trees up to 4 m high:
  - 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.
  - Remove duplicated branches and potentially weak or tight forks. In each case cut back to live wood.
- Whips or feathered trees: Do not prune.
- Operatives: Extensive pruning of young trees and any surgery to larger trees must be carried out by an approved member of the Arboricultural Association or other approved specialist.

575 Pruning Ornamental Shrubs

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

580 Pruning Flowering Species of Shrubs and Roses

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

600 *Trimming Rapidly Establishing Hedges*

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

605 *Trimming Slowly Establishing Hedges*

- Operations:
- Timing: Cut back hard in June and September to encourage bushy growth down to ground level.
  - Form: Allow to reach planned dimensions only by gradual degrees, depending on growth rate and habit.

611 *Trimming Non-Tapering Established Hedges*

- Time of year: Regular trimming from June to September.
- Operations:
  - Form: Trim carefully and neatly to regular line and shape with vertical sides.
  - Trim: Remove current growth rather than old wood.
- Tools / Cutting: Shears or suitable mechanical cutters.

620 *Removal of Dead Plant Material*

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

630 *Dead and Diseased Plants*

- Removal: As soon as possible.
- Replacement: In the next suitable planting season.

635 *Reinstatement of Shrub / Herbaceous Areas*

- Dead and damaged plants: Remove.
- Mulch / matting materials:
  - Carefully move to one side and dig over the soil, fit for replanting.
  - Do not disturb roots of adjacent plants.
- Replacement plants:
  - Use pits and plants to original specification or to match the size of adjacent or nearby plants of the same species, whichever is the greater.
  - Additional requirements: Submit details and cost of plants before ordering.
- Dressing: Slow release fertilizer:
  - Type: Organic.
  - Application rate: As manufacturer's recommendations.

640 *Thinning by Removal of Surplus Plants*

- Plants to be thinned: as instructed by the Landscape Architect;
- Standard: *BS 7370-4:1991.*
- Timing: as instructed by the Landscape Architect;
- Roots:
  - Disturbance to adjacent plants: Minimise.
  - Soil: Refill holes with topsoil to leave an even graded surface.
  - Mulch: Maintain mulch as original specification.
  - Adjacent plants: Make good any minor damage immediately.
- Plants for retention: Select plants with a strong healthy habit.
- Mature planting density: As schedule.

645 *Weed Control Generally*

- Weed tolerance: Weed to clear ground every two weeks.
- Adjacent plants, trees and grass: Do not damage.

650 *Hand Weeding*

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

657 *Herbicide to Kill Regrowth*

- Type: Suitable foliar acting herbicide to kill regrowth.
- Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

665 *Weed Control with Winter Herbicide*

- Type: Suitable residual soil acting herbicide.
- Time of year: Unless otherwise agreed, complete before end of March.
- Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

670 *Weed Control with Summer Herbicide*

- Type: Suitable foliar acting herbicide.
- Timing: Allow recommended period for herbicide to take effect before clearing dead weeds.

675 *Digging Over*

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

680 *Soil Aeration*

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

685 *Soil Level Adjustment*

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

690 *Maintenance of Loose Mulch*

- Thickness (minimum): 40mm consistent depth.
  - Top up: Every three months.
- Mulch spill on adjacent areas: Remove weeds and rubbish and return to planted area.
- Weeding: Remove weeds growing on or in mulch by non-residual herbicide treatment and / or hand weeding.

695 Fertilizing Established Trees and Shrubs

- Time of year: During April or May.
- Type of fertilizer: Slow release.
- Application: Spread evenly.
  - Rate: As manufacturer's recommendations.

700 Snow Removal from Shrubs/ Trees

- Standard: To *BS 7370-4.*
- Plants Subject to Snow Removal: As instructed.
- Timing: When instructed.

705 Winter Leaf Removal

- Operations: Take down temporary leaf fences. Collect accumulations of drifted leaves from the vicinity and from planting beds.
- Arisings: remove to a Local Authority Green Waste Recycling Facility.

710 Woodland Planting Maintenance

- Watering: In exceptional circumstances to prevent plants dying.
- Loose plants: Refirm surrounding soil, without compacting.
- Ditches and drains: Keep clear.

Tree Work

810 Tree Work Generally

- Identification: Before starting work agree which trees, shrubs and hedges are to be removed or pruned.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Standards: To *BS 3998:2010 'Tree Work. Recommendations' and Health & Safety Executive (HSE) 'Forestry and Arboriculture Safety Leaflets'.*
- Removing branches: Cut as Arboricultural Association Leaflet 'Mature tree management'. Cut vertical branches similarly, with no more slope on the cut surface than is necessary to shed rainwater.
- Appearance: Leave trees with a well-balanced natural appearance.
- Chain saw work: Operatives must hold a Certificate of Competence.
- Tree work: To be carried out by an approved member of the Arboricultural Association.

815 Additional Work

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

820 Prevention of Wound Bleeding

- Standard: To *BS 3998:2010, Clause 8.*

825 Prevention of Disease Transmission

- Standard: To *BS 3998:2010, Clause 9 and Appendix B.*

830 *Cleaning Out and Deadwooding*

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

835 *Cutting and Pruning Generally*

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

840 *Crown Reduction / Shaping*

- General: Cut back selectively to lateral or sub-lateral buds or branches to retain flowing branch lines without leaving stumps.
- Operations: as instructed by the Landscape Architect.

845 *Crown Lifting*

- Clearances: Remove branch systems to give clearance.
  - Height: As recommended by *BS 7370-4*, *clause 3.7.2.3*.
- Removing branches: Remove whole branches back to the stem, or cut lower portions of branches back to lateral or sub-lateral buds or branches. Do not leave stumps.

850 *Crown Thinning*

- Removing branches: Remove inward growing, crossing, rubbing, dead and damaged branches.
- Thinning: Selectively remove secondary and small live branch growth evenly throughout the crown, as instructed by the Landscape Architect.
- Cutting:
  - Branches: Cut back to lateral or sublateral buds or branches without leaving stumps.
- Appearance: Leave a uniform and well balanced structure of branches and foliage.

855 *Cutting Tree Roots*

- Excavating: Use hand tools only.
  - Protected area: Do not cut roots within the calculated tree Root Protection Area (RPA) in accordance with *BS 5837:2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'.*
- Outside protected area: Give notice of roots exceeding 50mm in diameter. Do not cut without approval.
- Cutting:
  - Cutting: Make clean smooth cuts with a hand saw.
  - Wounds: Minimize. Avoid ragged edges.
  - Finishing: Pare cut surfaces smooth with a sharp knife.
- Backfilling:
  - Protection: Cover cut roots with clean sharp sand.
  - Material: Backfill with original topsoil.

860 *Removing Trees, Shrubs and Hedges*

- Standards: To *BS 3998:2010*, Appendix A and Health & Safety Executive (HSE)/ Arboricultural and 'Forestry Advisory Group Safety Leaflets'.
- Existing Services: Check for below and above ground services. Give notice if they may be affected.
- Shrubs and Smaller Trees: Cut down and grub up roots.
- Tree stumps:
  - Removal: Remove mechanically to a minimum depth of 300mm below ground level.
  - Removal by winching: Give notice. Do not use other trees as supports or anchors.
- Protection: Avoid damage to neighbouring trees, plants and property.
- Work near Retained Trees: Where tree canopies overlap and in confined spaces generally, take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained.
- Filling holes:
  - Material: Use as-dug material and/ or imported soil as required.
  - Finishing: Consolidate and grade to marry in with surrounding ground level.

865 *Bark Damage*

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

870 *Cavities in Trees*

- Investigation: Remove rubbish and rotten wood. Probe the cavity to find the extent of any decay, and give notice.
- Water filled cavities: Do not drain.
- Sound wood inside cavities: Do not remove.
- Cavity Openings: Do not cover.

Hard Landscape Areas / Fencing

900 Snow Clearance

- Clearance: On reaching a depth of 5mm.
- Deicing: To footpaths and car park.
  - Material: Grit.
  - Timing: When freezing precipitation is forecast.
  - Application Rate: Spread evenly to manufacturer's recommendations.

910 Hard Surfaces and Gravel Areas

- Herbicide: Apply a suitable foliar acting or residual herbicide. Allow recommended period for herbicide to take effect before clearing arisings.
- Hard surfaces: Remove litter, leaves and other debris.
- Surface gutters and channels: Remove mud, silt and debris.
- Drainage gullies: Empty traps and flush clean.
- Gravel areas: Rake over. Remove weeds, litter, leaves and debris, and level off.
- Repairs to flexible bituminous pavings: In accordance with the original paving specification or *BS 7370-2:1994 'Grounds maintenance. Recommendations for the maintenance of hard areas (excluding sports surfaces)', clause 4.12.*
- Stain removal: In accordance with *BS 7370-2:1994, table 4.*

920 Fencing

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

930 Graffiti Removal

- Method: Pressure wash.
- *Subsequent Treatment: Not required.*

Q40 Fencing

To be read with Preliminaries / General Conditions:

Fencing Systems:

200 F1 - Featherboard Fencing; 1.8m Height

- Manufacturer: Jacksons Fencing or equal and approved.
  Stowting Common, Ashford, Kent, TN25 6BN. Tel.: 01233 750393,
- E-mail: sales@jacksons-fencing.co.uk, Web: www.jacksons-fencing.co.uk
  - Product reference: *Flat Top Featherboard Fence Panels.*
- Standard: To *BS 1722-7.*
- Height: 1800mm.
  - Treatment: Pre-Treated Timber.
- Fence Panels: 1.65m high x 1.83m wide x 50mm thickness;
- Posts: Heavy Duty Slotted Fence Posts (2.7mx120x124mm) and topped with 150mm Chamfered Post Cap;
- Capping: Panels to be fitted with Heavy Duty Capping Rails (1900x145x35mm) and Gravel Boards (1.83mx150x28mm).
- Method of setting posts: in accordance with manufacturers recommendations.
- Conformity: Submit manufacturer's and installer's certificates, to *BS 1722-7.*
- Additional requirements: to be installed with Capping Rail to match existing fencing.

210 ***F2 -*** Timber Fencing – 0.45m Chestnut Cleft Fencing

- Manufacturer: Torry Hill Chestnut Fencing LTD, The Chalk Pit, Lade wood Hill, Doddington, Kent, ME9 0ED,
  Tel: 01795 886020, Web: https://www.torryhill.co.uk
  - Product reference: *Knee Rail Fencing*.
- Standard: To *BS 1722-7.*
- Height: 450mm.
- Post distance: 1000mm.
- Method of setting posts: in accordance with manufacturers recommendations.
- Conformity: Submit manufacturer's and installer's certificates, to *BS 1722-7.*

210a ***F3 -*** Timber Fencing – 1.0m Chestnut Cleft Fencing

- Manufacturer: Torry Hill Chestnut Fencing LTD, The Chalk Pit, Lade wood Hill, Doddington, Kent, ME9 0ED,
  Tel: 01795 886020, Web: https://www.torryhill.co.uk
  - Product reference: *Knee Rail Fencing*.
- Standard: To *BS 1722-7.*
- Height: 1000mm.
- Post distance: 1000mm.
- Method of setting posts: in accordance with manufacturers recommendations.
- Conformity: Submit manufacturer's and installer's certificates, to *BS 1722-7.*

Gates, Posts and Stiles

570 ***G1:*** Timber Single Gates***: 1.8m Height***

- Manufacturer: Jacksons Fencing or equal and approved.
  Stowting Common, Ashford, Kent, TN25 6BN. Tel.: 01233 750393,
- E-mail: sales@jacksons-fencing.co.uk, Web: www.jacksons-fencing.co.uk
  - Product Reference: *15 no. (7 no. LHH & 8 no. RHH) Featherboard gates* matching F1 fencing.
- G1 Single Leaf Gates;
  - Type: Swing.
  - Operation: Manual.
  - Finish/Colour: Planed finish Jackured softwood;
  - Height: 1.75m; Width: 0.9m Clear opening.
  - Posts: Heavy Duty Jackposts square section: 125mm x 125mm and 2.4m height.
- Accessories: Brenton Bolts, galvanised.
- Installation: In accordance to manufacturer's instructions.
- Further Information: For G1 gate locations refer to *LLD1851-LAN-DWG-100 – Hard and Soft Landscape General Arrangement Drawing.*

710 ***Installation Generally***

- Set Out and Erect:
  - Alignment: Straight lines or smoothly flowing curves.
  - Tops of Posts: Following profile of the ground.
  - Setting Posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
  - Fixings: All components securely fixed.

ARUN DISTRICT COUNCIL BE/137/19/RES

715 Competence

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
  - NHSS Sector Scheme 2A Sub Categories: (a) and (b).
  - NHSS Sector Scheme 2C Sub Categories: (a).

720 Setting Posts in Concrete

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

730 Exposed Concrete Foundations

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

740 Setting Posts in Earth

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

750 Driven Posts

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

760 Nailed Wood Rails

- Length (minimum): Two bays, with joints in adjacent rails staggered.
- Fixing: Nail each length of rail to each post with two 100mm galvanized nails.
- Rails with Split Ends: Replace.

765 Cleft Wood Rails

- Length (maximum): 3.05 m.
- Fixing: Rail end section shaped to adequately fill the post mortice. Nail each rail to each prick post with two galvanized nails.
- Rails With Split Ends: Replace.

766 Arris Rails

- Fixing:
  - Rail End Section: Shaped to adequately fill the post mortice or recess.
  - Recessed Posts: Rails bolted to each post.
  - Top Rails: Fixed at both ends using one 12mm diameter wooden peg.
- Rails with Split Ends: Replace.

ARUN DISTRICT COUNCIL BE/137/19/RES

770 Site Cutting of Wood

- General: Kept to a minimum.
- Below or Near Ground Level: Cutting prohibited.
- Treatment of Surfaces Exposed by Minor Cutting and Drilling: Two flood coats of solution recommended for the purpose by main treatment solution manufacturer.

780 Making Good Galvanized Surfaces

- Treatment of minor damage (including on fasteners and fittings): 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.*
- Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

790 Site Painting

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

Completion:

910 Cleaning

- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.

920 Fixings

- All Components: Tighten.
  - Timing: Before handover.

930 Gates

- Hinges, Latches and Closers: Adjust to provide a smooth operation. Lubricate where necessary.
  - Timing: Before handover.

Q50 Site/ Street Furniture/ Equipment

To be read with Preliminaries / General Conditions:

Site and Street Furniture:

210 Cycle Storage (Semi-Vertical Bike Rack)

- Manufacturer: 3rd Floor, 20 Farringdon Street, London, EC4A 4BL; Tel: *0800 246 5484*; Email: *info@turvec.com*
- Product Reference Semi-Vertical Bike Rack.
  Material: Steel.
  - Finish: Hot dipped galvanized.
- Size: 3.1 x 1.2 x 1.78m.
- Fixture: Cycle Shelters to be surface mounted using base plates onto insitu cast concrete foundations, in accordance with manufacturer's specification.
- Cycle Capacity: Total 10 bikes.
- For cycle storage locations refer to drawings *LLD1851-LAN-DWG-100 General Arrangement Drawing.*
- Concrete foundation to BS 5328; Mix Gen 1 or Standard Mix ST2

Installation:

510 Concrete Foundations Generally

- Standard: To BS 8500-2.
- Concrete: As section E10.
- Admixtures: Do not use.
- Foundation Holes: Neat vertical sides.
- Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

515 Setting Components in Concrete

- Holes: 250 x 250 x minimum 300mm deep.
- Components: Accurately positioned and securely supported.
- Concrete fill: Fully compacted as filling proceeds.
- Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
- Temporary component support: Maintain undisturbed for minimum 48 hours.

520 Setting in Earth

- Holes: As small as practicable.
- Components: Accurately positioned and securely supported.
- Buried Depth (minimum): 200mm.
- Earth Refill: Well rammed as filling proceeds.

530 Preservative Treated Timber

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

540 Building in to Masonry Walls

- Components being built in: Accurately positioned and securely supported. Set in mortar and pointed neatly to match adjacent walling.
- Temporary support: Maintain for 48 hours (minimum) and prevent disturbance.

545 Erection of Timber and Prefabricated Structures

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

550 Damage to Galvanized Surfaces

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

560 Site Painting

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