

Tank Plinth – The National Army Museum, Chelsea
Specification of Works

Issue: Tender issue
Date: November 2019

C20 Demolition

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS

110 DESK STUDY/ SURVEY

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
 - the structure or structures to be deconstructed/ demolished,
 - the site on which the structure or structures stand, and
 - the surrounding area.
- Report and method statements: Submit, describing:
 - Form, condition and details of the structure or structures, the site, and the surrounding area.
- Extent: As drawing.
 - Type, location and condition of features of historical, archaeological, geological or ecological importance.
 - Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
 - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
 - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
 - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
 - Proposed programme of work, including sequence and methods of deconstruction/demolition.
 - Details of specific pre-weakening required.
 - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
 - Arrangements for control of site transport and traffic.
 - Special requirements: Results of tests to determine the precise nature of hazardous materials.
 - Format of report: Digital copy of report and site photographs.

130 GROUNDWORKS

- Old foundations, slabs and the like: Break out in locations and to the extents stated.
- Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.
- Paving cladding, landscape furniture & planter to be set aside and offer to the client to store & re-use. Make good using existing salvaged pavings from plinth area.

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.
- Contractor to get all the required licenses.

220 LOCATION OF SERVICES

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

230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

- General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

250 LIVE FOUL AND SURFACE WATER DRAINS

- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
 - Protect; maintain normal flow during deconstruction/ demolition.
 - Make good any damage arising from deconstruction/ demolition work.
 - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: Post completion camera survey.

270 SERVICES TO BE RETAINED

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

DECONSTRUCTION/ DEMOLITION WORK

310 WORKMANSHIP

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

320 GAS OR VAPOUR RISKS

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

330 DUST CONTROL

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

340 HEALTH HAZARDS

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

380 DANGEROUS OPENINGS

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

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

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

410 UNFORESEEN HAZARDS

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

450 SITE CONDITION AT COMPLETION

- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: n/a.

MATERIALS ARISING

510 CONTRACTOR'S PROPERTY

- Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided.
- Action: Remove from site as work proceeds where not to be reused or recycled for site use.

520 RECYCLED MATERIALS

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

D20 Excavating and filling

To be read with Preliminaries/General conditions

GENERALLY/THE SITE

110J SITE INVESTIGATION

- Scope: Before starting demolition work, examine available information, and carry out a survey of:
 - the structure or structures to be demolished,
 - the site on which the structure or structures stand, and
 - the surrounding area...

112J SITE INVESTIGATION REPORT

- Report and method statements: Submit, describing:
 - Form, condition and details of the structure or structures, the site, and the surrounding area.
- " Extent: As site clearance drawing.
 - Type, location and condition of features of historical, archaeological, geological or ecological importance.
 - Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
 - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
 - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
 - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
 - Proposed programme of work, including sequence and methods of deconstruction/demolition.
 - Details of specific pre-weakening required.
 - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
 - Arrangements for control of site transport and traffic.
- Special requirements: Site waste management plan development and proposals.
- " Format of report: 2 hard copies of the report and an electronic version including all photographs.

CLEARANCE/EXCAVATING

164J TREE ROOTS

- In accordance with BS 5837:2012
- Protected area:
 - Size of area: As Arboricultural Report by Tomlinson Tree Surgeons.
 - Do not cut roots within precautionary protection area unless otherwise instructed.
- Excavation in protected area:
 - Method: By hand.
 - Backfill as soon as possible or temporarily line with polyethylene sheet to reduce evaporation.
 - Where roots cutting is authorised, the roots shall be cut cleanly with a sharp knife and immediately painted with Arbtrex.
 - Where indicated, hand digging and tunnelling will be employed to avoid root cutting.
- Carefully backfill to eliminate voids.
 - Where trenches have to be dug under the branch spread, they should only be allowed to remain open for the shortest possible period before completion of backfilling or lined with plastic sheets to reduce evaporation.
 - Do not disturb existing ground levels under branch spread by either piling up material or cutting away soil. Any change of soil level needs to be done as instructed with agreement of an arboricultural consultant.
 - Do not compact the ground under branch spread of trees by storage of materials, passages of traffic, etc.
 - Prevent contamination by oil, paint, common salt or other materials toxic to plants.
 - Do not site cement silos or concrete mixers where dust could choke the breathing pores of leaves.
 - Do not interrupt natural drainage to cause water logging that could kill trees.
- Outside protected area: Give notice of roots exceeding 25 mm and do not cut without approval.
- Cutting:
 - Make clean smooth cuts with no ragged edges.
 - Pare cut surfaces smooth with a sharp knife.
 - Treatment of cut roots: proprietary sealer.
- Backfill: As dug material, enriched with phosphate fertilizer.

To sub-base foundations, concrete & ground works – see Ward Morgan Construction Consultants "Structural Drawings, Construction information & Specification" doc.

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

110J YORKSTONE SLAB PAVING SYSTEM

- Subgrade improvement layer: if required, Highways Agency Type 1 unbound mixture, as section Q20.
- Compacted thickness: refer to Ward Morgan Ltd. drawings
- Granular sub-base: Highways Agency Type 1 unbound mixture, refer to Ward Morgan Ltd. drawings
- Compacted thickness: As required refer to relevant details.
- Base: Concrete - refer to Ward Morgan Ltd. drawings
- Thickness: 150mm.
- Laying course: MORTAR BED AS Q25/715J & 716J.
- Accessories: Primer for underside of flags or slabs Q25/715J & 716J.
- Paving units: Natural stone slabs.
- Jointing: Q25/715J & 716J.
- Bond: As drawings
- Accessories: None.

310J NATURAL STONE SLABS P1

- Standard: To BS EN 1341.
- Supplier: Marshalls or equal and approved.
- Product reference: Scoutmoor.
- Quarry: Submit proposals.
- Petrographical description/ stone type: Natural sedimentary stone from the English Pennines.
- Finish: Sawn.
- Sizes: 908mm x 908mm x 70mm.
- Plan dimension deviation class: P2.
- Diagonal deviation class: D2.
- Thickness deviation class: T2.
- Arrises: Square.
- Strength: Min 20MPa.
- Skid resistance: 75USRV.

311J NATURAL STONE SLABS P2

- Standard: To BS EN 1341.
- Supplier: Marshalls or equal and approved.
- Product reference: [Scoutmoor].
- Quarry: [Submit proposals].
- Petrographical description/ stone type: [Natural sedimentary stone from the English Pennines].
- Finish: [Sawn].
- Sizes: [451mm x 451mm x 70mm].
- Plan dimension deviation class: [P2].
- Diagonal deviation class: [D2].
- Thickness deviation class: [T2].
- Arrises: [Square].
- Strength: [Min 20MPa].
- Skid resistance: [75USRV].

313J NATURAL STONE SLABS P3

- Standard: To BS EN 1341.
- Supplier: Marshalls or equal and approved.
- Product reference: [Scoutmoor].
- Quarry: [Submit proposals].
- Petrographical description/ stone type: [Natural sedimentary stone from the English Pennines].
- Finish: [Sawn].
- Sizes: 605mm x 451mm x 70mm.
- Plan dimension deviation class: [P2].

- Diagonal deviation class: [D2].
- Thickness deviation class: [T2].
- Arrises: [Square].
- Strength: [Min 20MPa].
- Skid resistance: [75USRV].

EXECUTION

610 MATERIAL SAMPLES

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

615J CONTROL SAMPLES

- Quality control procedure to be set in place
- Contractor to provide proforma for approval by CA prior to commencement of works
- Sample areas: Complete as part of the finished work.
- Types of paving: Natural stone slab paving.
- Location: As part of the finished work, obtain approval before proceeding.
- Included features: Yorkstone paving and mortar jointing, service cover and drainage features.
- Approval of appearance and surface: Obtain before proceeding.

620 ADVERSE WEATHER

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

625 LAYING PAVINGS - GENERAL

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

630 LEVELS OF PAVING

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

637 REGULARITY 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): 2 mm.
- Joints between paving units or utility access covers:

- Joints flush with the surface: difference in level between adjacent units to be no more than twice the joint width (with a 1 mm max difference in level).
- Recessed, filled joints: difference in level between adjacent units to be no greater than 1 mm; the recess to be no deeper than 5 mm.
- Unfilled joints: difference in level between adjacent units to be no greater than 1 mm.
- Sudden irregularities: Not permitted.

640 COLOUR BANDING

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

645J PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- Mortar bedded pavings: Keep free from traffic after laying:
- Pedestrian traffic (minimum): 24 hours.
- Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 CEMENTITIOUS BASES AND SUB-BASES

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

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

- Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
- Granular surfaces: Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
- Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
- Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
- Levels and falls: Accurate and within the specified tolerances.
- Drainage outlets: Within 0-10 mm of the required finished level.
- Features in sand bedded paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
- Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS7533-4.

715J LAYING FLAG AND SLAB PAVING - MORTAR LAYING COURSE AND JOINTING

- Standard generally: In accordance with BS 7533-4.

Timing: when the surface if the paving is dry and rain is not expected

Protection: protect from rain

Records of batches to be recorded and submitted as part of Quality Assurance Proforma.

Contractor to provide proforma for approval by CA prior to commencement of works.

- Laying:

Ensure concrete base is sound, clean and free from loose particles. Clean and wash with water prior to use.

Priming mortar: Tuffbond available from Steintec (tel 0203 598 9800) or equal and approved

Priming mortar to be mixed with water to form a liquid, pasty slurry.

Typical volume of water to add per 10 kg of Steintec Tuffbond is 2.5 litres.

Do not mix more than will be used within approximately 1 hour at an ambient 20°C

The top of the concrete slab should be coated with a layer of Tuffbond with a thickness of approximately 1.5 mm immediately prior to mortar bed being laid.

Bedding mortar should be laid immediately

Bedding mortar: to be Steintec tuffbed 2-pack bedding mortar, as available from Steintec (tel: 0203 598 9800) or equal and approved.

Steintec bedding mortar to be mixed with water to form a plastic consistency.

Typical volume of water to add per 10 kg of Steintec tuffbed 2-pack is 1 litre.

Do not mix more than will be used within approximately 4 hours at an ambient 20°C

Application, spreading and levelling: to achieve nominal thickness

Nominal thickness: 30mm - 60kg/m² – tuffbed 2-pack wet/dry mix

Flags to be thoroughly cleaned and washed with water prior to use.

The underside of flags should be coated with a layer of Tuffbond with a thickness of approximately 1.5 mm immediately prior to the flags being laid. This may be done using a brush or by dipping.

Flags should be laid immediately, set out and positioned firmly into place to levels.

After laying, the surface must be thoroughly cleaned to remove surplus mortar laying on the surface of the flags and to lower any bedding mortar which has risen up into the joints.

The surface should be quarantined to prevent access, including pedestrian access, for a period of at least one day in order to avoid disturbance and displacement of flags on the fresh bedding mortar.

Jointing material

Jointing mortar: SteinTec Tufftop as available from Steintec (tel: 0203 598 9800) or equal and approved.

Colour: to match yorkstone.

Joint width: (nominal): 6mm (7mm max, 5mm min).

Immediately prior to jointing ensure that joints are free of debris.

The paving surface should be very thoroughly wetted and must be kept wet until jointing has been completed.

Typical volume of water to add per 10 kg of SteinTec Tufftop is 2.25 litres to achieve the correct flow properties. No less than 1.75 litres should be added. Smaller or larger quantities pro rata.

Water should be added progressively to the batch as mixing proceeds.

Immediately after mixing is completed, the mortar is to be carefully forced into the joints using a suitable soft rubber squeegee and a zinc shield.

Apply the mortar as soon as possible, do not store liquid mortar other than in transit from mixer.

A quantity of mortar should be maintained upon and constantly moved over the surface in order to repeatedly top up joints in which the mortar may have slumped following initial placement.

When the joints are full and will accept no more jointing mortar a suitable squeegee should be employed to remove as much mortar as possible from the surface.

The surface must be kept constantly moist, using a soft spray or mist of water, as required.

The use of a proprietary cleaning machine employing power-driven sponge belts is essential and must be used to ensure that excess mortar is removed and that surfaces are clean and free from mortar staining. Cleaning must be undertaken before the mortar sets.

716J VERTICAL STONE CLADDING MORTAR & JOINTING

- Standard generally: In accordance with BS 7533-4.

Timing: when the surface if the paving is dry and rain is not expected

Protection: protect from rain

Records of batches to be recorded and submitted as part of Quality Assurance Proforma.

Contractor to provide proforma for approval by CA prior to commencement of works.

- Laying:

Ensure concrete base is sound, clean and free from loose particles. Clean and wash with water prior to use.

Vertical bedding mortar to be Tuffset 60 – High Performance repair mortar from Steintec (tel: 0203 598 9800) or equal and approved.

Tuffset 60 mortar to be mixed with water to consistency of a stiff brick mortar

Tuffset 60 is typically mixed with approximately 3L of water per 25 kg bag of dry mortar

Do not mix more than can be used within 10min. Do not re-mix or subsequently add water to a batch.

Consumption approximately 2kg/litre

Flags to be thoroughly cleaned and washed with water prior to use.

Any fresh mortar to be removed from surface of the flags with damp sponge immediately.

Flags should be laid immediately, set out and positioned firmly into place to levels.

After laying, the surface must be thoroughly cleaned to remove surplus mortar laying on the surface of the flags and to lower any bedding mortar which has risen up into the joints.

The surface should be quarantined to prevent access, including pedestrian access, for a period of at least one day in order to avoid disturbance and displacement of flags on the fresh bedding mortar.

Jointing material

Jointing mortar: SteinTec Tufftop as available from Steintec (tel: 0203 598 9800) or equal and approved.

Colour: to match yorkstone.

Joint width: (nominal): 6mm (7mm max, 5mm min) – ensure alignment with horizontal joints + or - 1mm.

Immediately prior to jointing ensure that joints are free of debris.

The paving surface should be very thoroughly wetted and must be kept wet until jointing has been completed.

Typical volume of water to add per 10 kg of SteinTec Tufftop is 2.25 litres to achieve the correct flow properties. No less than 1.75 litres should be added. Smaller or larger quantities pro rata.

Water should be added progressively to the batch as mixing proceeds.

Immediately after mixing is completed, the mortar is to be carefully forced into the joints using a suitable soft rubber squeegee and a zinc shield.

Apply the mortar as soon as possible, do not store liquid mortar other than in transit from mixer.

A quantity of mortar should be maintained upon and constantly moved over the surface in order to repeatedly top up joints in which the mortar may have slumped following initial placement.

When the joints are full and will accept no more jointing mortar a suitable squeegee should be employed to remove as much mortar as possible from the surface.

The surface must be kept constantly moist, using a soft spray or mist of water, as required.

The use of a proprietary cleaning machine employing power-driven sponge belts is essential and must be used to ensure that excess mortar is removed and that surfaces are clean and free from mortar staining. Cleaning must be undertaken before the mortar sets.

720J ANCON STONE CLADDING RESTRAINT FIXINGS

- Manufacturer: Ancon
- Web: www.ancon.co.uk
- Email: info@ancon.co.uk
- Tel: +44 (0)114 275 5224
- Fax: +44 (0)114 276 8543
- Address: President Way, President Park, Sheffield, South Yorkshire S4 7UR
- Product reference: Austenitic Stainless Steel Fixings
- Type: DPS into mortar with welded dowel to underside, 6 x 30mm. Tie length 140mm x 3mm, two per slab at ¼ points.

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

311J SEALANT TO EXPANSION JOINTS

Manufacture: Nufins or equal and approved

Product: Uniseal 280

- Colour: grey

- Finish: flush with adjacent paving

Application: To manufacturers guidance

- Contractor to test on stone in area nominated prior to full application.

EXECUTION

620 PREPARING JOINTS

- Surfaces to which sealant must adhere:
 - Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
 - Clean using materials and methods recommended by sealant manufacturer.
- Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
- Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
- Protection: Keep joints clean and protect from damage until sealant is applied.

630 APPLYING SEALANTS

- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
- Environmental conditions: Do not dry or raise temperature of joints by heating.
- Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
- Sealant profiles:
 - Butt and lap joints: Slightly concave.
 - Fillet joints: Flat or slightly convex.
- Protection: Protect finished joints from contamination or damage until sealant has cured.

