OUR TOWN HALL
MANCHESTER CITY COUNCIL
Specification for External Works to Courtyards

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C20
Demolition

C20 Demolition

To be read with Preliminaries/ General conditions

GENERAL REQUIREMENTS

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

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

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'.

230A SERVICES DISCONNECTIONS
- Consult with Building Services Engineer (Arup).
- Refer to Building Services Engineer's (Arup) drawing and specifcations.

240A DISCONNECTION OF DRAINS
- Consult with Drainage Engineer (Ramboll).
- Refer to Drainage Engineer's (Ramboll) drawing and specifcations.

250A LIVE FOUL AND SURFACE WATER DRAINS
- Consult with Drainage Engineer (Ramboll).
- Refer to Drainage Engineer's (Ramboll) drawing and specifcations.

270A SERVICES TO BE RETAINED
- Consult with Building Services Engineer (Arup).
- Refer to Building Services Engineer's (Arup) drawing and specifcations.

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.

370 PARTLY DEMOLISHED STRUCTURES

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

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.

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.

Q10
Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

120A NATURAL STONE REPLACEMENT KERBS FOR THOSE IN POOR CONDITION / DAMAGED TO COURTYARD - GATE RUNNER STONES

- This applies to all existing edging / channel kerb units within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Stone: Reclaimed to match existing.
- Requirements: Free from vents, cracks, fissures, or other defects which may adversely affect strength, durability or appearance. Discolouration in keeping with existing stone is acceptable, subject to agreement of samples.
- Finish: To match existing including profile and nosing detail. Existing damaged units to be used as a reference.
- Sizes: To match existing kerbs to be replaced. Measurements to be taken from existing damaged units.
- Releasing / Lifting (existing damaged units): Q10/126A
- Laying / Bonding (replacement units): Q10/621A
- Bedding: Q10/545A
- Jointing: Butt jointed as existing

120B YORKSTONE KERBS - RECLAIMED TO COURTYARD - ADJACENT TO NEW ACCESS COVERS IN YORKSTONE SLAB PAVING

- This applies to all edging kerb units within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Stone: Reclaimed Yorkstone to match existing.
- Requirements: Free from vents, cracks, fissures, or other defects which may adversely affect strength, durability or appearance. Discolouration in keeping with existing stone is acceptable, subject to agreement of samples.
- Finish: To match existing slabs including profile and nosing detail. Existing units to be used as a reference.
- Sizes: Bespoke plan dimensions to infill existing slabs to be replaced. Depth: 180mm
- Laying / Bonding (replacement units): Q10/621A
- Bedding: Q10/545A
- Jointing: Butt jointed

125A NATURAL STONE KERBS IN GOOD CONDITION TO COURTYARD

- This applies to all existing edging kerb units within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Stone: Existing - assumed Granite
- Sizes: Existing
- Releasing / Lifting: Q10/126A
- Cleaning and Preparation: Q25/475A
- Laying / Bonding: Q10/621A
- Bedding: Q10/545A
- Jointing: Butt jointed as existing

125B CAST IRON KERBS IN GOOD CONDITION TO COURTYARD - LLOYD STREET RAMP

- This applies to all existing cast iron kerb units within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Material: Existing - Cast Iron
- Sizes: Existing
- Releasing / Lifting: Q10/126A
- Cleaning and Preparation: Q25/475A
- Laying / Bonding: Q10/621A
- Bedding: Q10/545A
- Jointing: Butt jointed as existing

126A RELEASING / LIFTING EXISTING KERBS, CHANNELS AND OTHER EDGINGS TO COURTYARD

- This applies to all existing kerbs, channels and edgings within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8005 – 8018
- Release kerb / channel / edging by carefully cutting out jointing material and easing/levering individual units from their bedding, by adopting such methods necessary to prevent damage to stones being removed and the building façade:
  - use manual tools only, i.e. chasing chisels and hacksaws. Power tools will not be permitted;
  - Lay dust by adequate sprinkling with water;
- All kerbs / channels / edgings to be reinstated (individually catalogued):
  - Number / label individual stones / units on their underside as they are released.
  - Method of numbering / labelling to be agreed with Landscape Architect prior to commencement of work – refer to drawings for details of cataloguing. Method of labelling must be capable of withstanding any cleaning processes that are subsequently undertaken.
  - Set out kerbs on palettes in same order that they are positioned in the existing arrangement.

127A GATE RUNNERS IN STONE CHANNEL TO COURTYARD - EXISTING GATES

- This applies to all existing gate runners in stone channels within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Material: Existing - Cast Iron Runner in Stone Channel Unit
- Sizes: Existing
- Releasing / Lifting: Q10/126A
- Cleaning and Preparation: Q25/475A
- Laying / Bonding: Q10/621A
- Bedding: Q10/545A
- Jointing: Butt jointed as existing

250A MATERIAL SAMPLES

- Samples representative of colour and appearance of designated materials: Submit before placing orders.
  - Designated materials: All replacement kerbs, channels, and edging .

ROADS/PAVING ACCESSORIES/MARKING/DEMARCATION

312A EXISTING FOOTWAY GRATINGS TO RAMPED ENTRANCE TO CENTRAL BLOCK AT COOPER STREET END OF COURTYARD

- This applies to existing grating as noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Material: Existing - assumed galvanised steel
- Sizes: Existing
- Releasing / Lifting: Q10/126A
- Cleaning and Preparation: Q25/475A
- Laying / Bonding: Q10/621A
- Fixing: To replicate existing.

LAYING

510A LAYING KERBS, EDGINGS AND CHANNELS NEW / RECLAIMED UNITS

- Cutting: Neat, accurate and without spalling. Form neat junctions.
- Bedding of units: Positioned true to line and levelled along top and front faces.

520 ADVERSE WEATHER

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

530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING

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

545A BEDDING TO ALL KERBS / CHANNELS / EDGINGS

- Refer to engineer's (Ramboll) drawings and specification.

620 ACCURACY

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

621A LAYING / BONDING

- This applies to all kerb, channel and edging and other features within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8016
- Lay in the same bond and orientation as previously occupied by the (original) stones / units and as recorded.
- Where new (reclaimed) edging is introduced adjacent to service covers, the edging should tie into the existing layout as indicated on the drawings.
- Ensure that bond, joint size, fixings and any other special or unusual features are replicated as recorded and to match existing, unless described otherwise on the drawings.
- Kerbs, channels and edgings to be laid to the proposed levels as shown on drawing OTH-PLA-EE-ES-DWG-L-1012.

Q10

625 REGULARITY OF PAVED SURFACES

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

Q25
Slab/brick/sett/cobble pavings

Q25 Slab/brick/sett/cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

105A APPROVED OPERATIVES AND RAMS

- The work described in this section should be carried out by qualified operatives working for an approved contractor whose name shall be supplied to the CA and landscape architect for approval before putting the work in hand.
- All RAMS and technical product information to be submitted by the contractor for the approval of the CA and landscape architect prior to any work commencing on site.
- The contractor is to undertake all necessary steps to protect operatives and control waste.

NOTE
All structurally relevant items such as material thickness, detail/specification of ground preparation/sub-grade, sub-base, binding layers, reinforcement and structural meshes, bedding and jointing to engineer's details and specification.

110A LAYING AND BONDING OF PAVING – YORKSTONE SLABS AND SETTS TO COURTYARD

- This applies to all Yorkstone slab and sett paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8018
- Lay in the exact position as previously occupied by the (original) stones, and as recorded unless described otherwise on the drawings.
- Ensure that bond, joint size and any other special or unusual features are replicated as recorded and to match existing, unless described otherwise on the drawings.
- Where replacement units are to be used due to damaged existing stone or other infill, or where there were previously other features (e.g. service trenches), refer to the drawings for details of bond and position.
- If exact replacement material cannot be sourced, alternative material options to be submitted to Landscape Architect for approval. Locations for introduction of alternative material to be agreed.
- Paving to be laid to proposed levels as shown on drawing OTH-PLA-EE-ES-DWG-L-1012.

110B LAYING AND BONDING OF PAVING – GRANITE SETTS TO COURTYARD

- This applies to all Granite / Igneous Stone sett paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8016
- Lay in the same bond and orientation as previously occupied by the (original) stones and as recorded. Granite Setts do not need to be laid in exact position but should be re-laid in the same area of the Courtyard that they have been lifted from – refer to drawing OTH-PLA-EE-ES -DWG-L-8005 for details of these areas.
- Where new (reclaimed) sett paving is introduced in areas where there were previously other features (e.g. service trenches), the bond and orientation should tie into the existing layout with full rows spaced so as to ensure no cut units are required except where adjacent to Yorkstone Slab edges.
- If exact replacement material cannot be sourced, alternative material options to be submitted to Landscape Architect for approval. Locations for introduction of alternative material to be agreed.
- Ensure that bond, and any other special or unusual features are replicated as recorded and to match existing, unless described otherwise on the drawings.
- Joint size (subject to testing and approval of samples):
  Option 1) If setts are laid using unbound/flexible construction, they should be laid butt jointed and any apertures filled with jointing material to clause Q25/376A. Bedding for unbound/flexible construction to clause Q25/375A. Any additional setts material required to make up for a deficit due to narrower jointing should be to clause Q25/331B.
  Option 2) If setts are laid using bound/rigid construction, they should be laid with joints to match the existing arrangement as recorded, with jointing material to clause Q25/376B. Bedding for bound/rigid construction to clause Q25/370B
- Paving to be laid to proposed levels as shown on drawing OTH-PLA-EE-ES-DWG-L-1012.

111A RELEASING / LIFTING PAVING – SLABS AND SETTS TO COURTYARD

- This applies to all existing paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8005 – 8018
- Release paving material by carefully cutting out jointing material and easing/levering stones from their bedding, by adopting such methods necessary to prevent damage to stones being removed and the building façade:
  - use manual tools only, i.e. chasing chisels and hacksaws. Power tools will not be permitted;
  - Lay dust by adequate sprinkling with water;
- YORKSTONE SETTS AND SLABS to be reinstated (individually catalogued):
  - Number / label individual stones on their underside as they are released.
  - Method of numbering / labelling to be agreed with Landscape Architect prior to commencement of work – refer to drawings for details of cataloguing.
  - Method of labelling must be capable of withstanding any cleaning processes that are subsequently undertaken.
  - Set out in rows of setts on palettes in same order that they are positioned in the existing arrangement.
- GRANITE / IGNEOUS STONE SETTS to be reinstated (not individually catalogued):
  - Palettes to be labelled to identify the area of the Courtyard that they have been lifted from – refer to drawing OTH-PLA-EE-ES-DWG-L-8005 for details of these areas.
  - Set out in rows of setts on palettes in same order that they are positioned in the existing arrangement.
- All areas are to be fully recorded by the contractor using photography and marked up record drawings prior to commencement of physical works, noting and checking position of stones, the jointing, bonding and any special features, and the type of the bedding and jointing.
- All materials removed are to be are to be carefully handled, salvaged and safely stored (location to be agreed and confirmed with Manchester City Council). They will remain the property of MCC until such time as they are instructed specifically for disposal.

PRODUCTS

310A YORKSTONE SLABS IN GOOD CONDITION: REBUILD / REBED TO COURTYARD

- This applies to all existing slab paving within the Courtyard where noted on drawings OTH-PLA -EE-ES-DWG-L-8011 - 8016
- Stone: Existing
- Sizes: Existing, typical depth 120mm
- Releasing / Lifting: Q25/111A
- Cleaning and Preparation: Q25/475A, Q25/475B and Q25/475D
- Laying / Bonding: Q25/110A
- Bedding: Q25/370A and Q25/370B
- Jointing: Q25/376A and Q25/376B

310B YORKSTONE SLABS IN MODERATE CONDITION: REBUILD / REBED TO COURTYARD

- This applies to all existing slab paving within the Courtyard where noted on drawings OTH-PLA -EE-ES-DWG-L-8011 - 8016
- Stone: Existing
- Sizes: Existing, typical depth 120mm
- Releasing / Lifting: Q25/111A
- Cleaning and Preparation: Q25/475A, Q25/475B, Q25/475C and Q25/475D
- Laying / Bonding: Q25/110A
- Bedding: Q25/370A and Q25/370B
- Jointing: Q25/376A and Q25/376B

310C REPLACEMENT STONES FOR YORKSTONE SLABS IN POOR CONDITION / DAMAGED T O COURTYARD

- This applies to all existing slab paving within the Courtyard where noted on drawings OTH-PLA -EE-ES-DWG-L-8011 - 8016
- Stone: Reclaimed Yorkstone to match existing material. Samples to be provided for approval.
- If exact replacement material cannot be sourced, alternative material options to be submitted to Landscape Architect for approval. Locations for introduction of alternative material to be agreed.
- Requirements: Free from vents, cracks, fissures, or other defects which may adversely affect strength, durability or appearance. Discolouration in keeping with existing stone is acceptable, subject to agreement of samples.
- Samples to be provided to Landscape Architect for approval prior to commencement of works.
- Finish: To match existing. Existing damaged units to be used as reference. Profile and facing to be matched to existing units.
- Sizes: To match existing slabs to be replaced. Measurements to be taken from existing damaged units.
- Depth: To match existing slabs to be replaced (120mm typically)
- Releasing / Lifting (existing damaged units): Q25/111A
- Laying / Bonding (replacement units): Q25/110A
- Bedding: Q25/370A and Q25/370B
- Jointing: Q25/376A and Q25/376B
- All replacement material is to be washed with clean tap water prior to laying.

310D REPLACEMENT YORKSTONE SLABS FOR AREAS WHERE ORIGINAL STONE IS MISSING / REPLACED WITH CONCRETE OR OTHER INFILL TO COURTYARD

- This applies to all areas where concrete or other infill has been used to replace the original stone within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 - 8016
- Stone: Reclaimed Yorkstone Slabs to match existing material. Samples to be provided for approval.
- If exact replacement material cannot be sourced, alternative material options to be submitted to Landscape Architect for approval. Locations for introduction of alternative material to be agreed.
- Requirements: Free from vents, cracks, fissures, or other defects which may adversely affect strength, durability or appearance. Discolouration in keeping with existing stone is acceptable, subject to agreement of samples.
- Samples to be provided to Landscape Architect for approval prior to commencement of works.
- Finish: to match existing adjacent slabs including profile and nosing of edging units and other special or unusual features. Existing adjacent units to be used as reference.
- Sizes: To fit existing areas to be replaced. Measurements to be taken from existing areas prior to breaking out.
- Depth: To match existing slabs (120mm typically)
- Laying / Bonding: Q25/110A
- Bedding: Q25/370A and Q25/370B
- Jointing: Q25/376A and Q25/376B
- Special Units: New bespoke sandstone units to replace ramped concrete areas to the Central Block at Cooper Street end of the Courtyard. Measurements to be taken of these areas to establish dimensional requirements prior to breaking out.
- All replacement material is to be washed with clean tap water prior to laying.

330A YORKSTONE SETTS IN GOOD CONDITION: REBUILD / REBED TO COURTYARD

- This applies to all existing Yorkstone sett paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8020
- Stone: Existing
- Sizes: Existing, typical depth 120mm
- Releasing / Lifting: Q25/111A
- Cleaning and Preparation: Q25/475A, Q25/475B, Q25/475C and Q25/475D
- Laying / Bonding: Q25/110A
- Bedding: Q25/375A and Q25/370B
- Jointing: Q25/376A and Q25/376B

330B REPLACEMENT UNITS FOR YORKSTONE SETTS IN POOR CONDITION / MISSING TO COURTYARD

- This applies to all existing Yorkstone sett paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8020
- Stone: Reclaimed Yorkstone Setts to match existing material. Samples to be provided for approval.
- If exact replacement material cannot be sourced, alternative material options to be submitted to Landscape Architect for approval. Locations for introduction of alternative material to be agreed.
- Requirements: Free from vents, cracks, fissures, or other defects which may adversely affect strength, durability or appearance. Discolouration in keeping with existing stone is acceptable, subject to agreement of samples.
- Samples to be provided to Landscape Architect for approval prior to commencement of works.
- Finish: to match existing including surface and edge profile / nosing and other special or unusual features. Existing damaged units to be used as reference.
- Sizes: To match existing setts to be replaced. Measurements to be taken from existing damaged units.
- Depth: To match existing setts to be replaced (120mm typically)
- Releasing / Lifting (existing damaged units): Q25/111A
- Laying / Bonding (replacement units): Q25/110A
- Bedding: Q25/375A and Q25/370B
- Jointing: Q25/376A and Q25/376B
- All replacement material is to be washed with clean tap water prior to laying.

331A GRANITE SETTS IN GOOD CONDITION: REBUILD / REBED TO COURTYARD

- This applies to all existing Granite / Igneous Stone sett paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8018
- Stone: Existing, Assumed Granite or other Igneous Natural Stone
- Sizes: Existing, typical depth 120mm
- Releasing / Lifting: Q25/111A
- Cleaning and Preparation: Q25/475A and Q25/475D
- Laying / Bonding: Q25/110B
- Bedding: Q25/375A and Q25/370B
- Jointing: Q25/376A and Q25/376B

331B REPLACEMENT UNITS FOR GRANITE SETTS IN POOR CONDITION / MISSING / NEW INFILL AREAS TO COURTYARD

- This applies to Granite sett paving within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8016
- Stone: Reclaimed Granite / Igneous Stone Setts to match existing material including blend and ratio of colours. Samples to be provided for approval.
- If exact replacement material cannot be sourced, alternative material options to be submitted to Landscape Architect for approval. Locations for introduction of alternative material to be agreed.
- Requirements: Free from vents, cracks, fissures, or other defects which may adversely affect strength, durability or appearance. Discolouration in keeping with existing stone is acceptable, subject to agreement of samples.
- Samples to be provided to Landscape Architect for approval prior to commencement of works.
- Finish: to match existing including surface and edge profile / nosing and other special or unusual features.
- Sizes: To match existing setts to be replaced. Measurements to be taken from existing units.
- Depth: To match existing setts to be replaced (120mm typically)
- Releasing / Lifting (existing damaged units): Q25/111A
- Laying / Bonding (replacement units): Q25/110B
- Bedding: Q25/375A and Q25/370B
- Jointing: Q25/376A and Q25/376B
- All replacement material is to be washed with clean tap water prior to laying.

332A PAVING TO NEW RECESSED MANHOLE COVERS TO COURTYARD

- This applies to all proposed new manhole and service covers within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8018
- Refer to latest engineer's (Arup / Ramboll) drawings.
- Cover specification: Recessed to engineer's (Arup / Ramboll) specification.
- Infill material: Existing material lifted from location of new cover.
- Direction and bond of infill paving to tie in with adjacent paving and as indicated on the drawings.
- Full units to be used where possible, cut units to be kept to a minimum.
- Position and orientation of cover to be set out to align with paving orientation and joints to minimise cut units.
- Samples of typical arrangement of infill paving in each paving type to be agreed prior to commencement of works on site.

333A EXISTING MANHOLE / SERVICE COVERS TO COURTYARD

- This applies to all existing manhole and service covers to be retained within the Courtyard where noted on drawings OTH-PLA-EE-ES-DWG-L-8011 – 8018
- Refer to latest engineer's (Arup / Ramboll) drawings.
- Cover: Existing cast iron retained
- Sizes: Existing

Q25

370A MORTAR BEDDING AND PRIMER REINSTATEMENT OF YORKSTONE EDGING SLABS - OPTION 1

- SteinTec paving mortar system or similar approved
- To BS 7533-4 Cl 5.4.4.2
- Material:
  - "SteinTec tuffbed 2-pack" water permeable bedding mortar.
  - "SteinTec tuffbond" priming mortar.
- Contact:
  Steven Burton B.Eng (Hons)
  SteinTec, 730 London Road, West Thurrock, Essex, RM20 3NL
  phone: 01708 860 049
  mobile: 07748 652 206
  website: www.steintec.co.uk
- Requirements of bedding mortar:
  - Meets requirements of a Type B bedding mortar in accordance with BS 7533-7:2010
  - Impact resistance, Measured in accordance with BS EN 14158 after 28 days
    =3.5 J
    Vertical Permeability, Measured in accordance with BS EN 12697-19:2012
    =12 × 10-4 m/s
  - Horizontal Permeability, Measured in accordance with BS EN 12697-19:2012
    =6 × 10-4 m/s
  - Minimum Compressive Strength: 30 N/mm²
  - Minimum Adhesive Strength: 2 N/mm²
  - Modulus of Elasticity: 18,000 ± 3500 N/mm²
  - Shrinkage < 0.15 % Requirements of priming mortar (BS 7533-12:2006):
  - Minimum Adhesive Strength measured in accordance with BS EN 1015-12: 2 N/mm²
- Thickness of bedding mortar: Target depth to be 40 mm.
  - Thickness: Maximum range 20 mm minimum to 70 mm maximum.
  - Note: 30 mm is a useful minimum target depth, for it allows for errors in setting out of as much as ±10mm without compromising the thickness of the bedding mortar course. SteinTec bedding mortar may be laid at a greater nominal depth, if desired, typically when creating falls at the surface over a level roadbase.
  - A bedding depth greater than 70 mm is normally addressed by first laying a screed bed of tuffbed which is densified using a vibratory plate compactor, this may be overlaid the following working day.
  - Follow manufacturer's instructions for mixing and laying.
- Consistency of tuffbed 2-pack bedding mortar:
  - Add sufficient water to achieve a 150 mm slump
- Consistency of tuffbond priming mortar:
  - Mix to a free flowing liquid slurry
- Laying:
  - All work must be carried out on the side of the unlaid face, at no time shall operatives stand, work or rest materials on freshly laid paving.
  - The surface of the roadbase or supporting structure must be thoroughly cleaned.
  - The surface of the concrete roadbase or supporting structure is to be coated with "SteinTec tuffbond" PRIMING MORTAR to a minimum thickness of 1.5 mm immediately prior bedding mortar being laid. Priming mortar may be applied by brushing on.
  - Bedding mortar must not be laid in advance of more than 1 row of paving elements.
  - Bedding mortar must be laid to a surcharge height of not less than 6 mm.
  - The underside of paving elements is to be coated with "SteinTec tuffbond" priming mortar to a minimum thickness of 1.5 mm immediately prior to sett being placed on bedding mortar. Priming mortar may be applied by brushing on or by dipping the paving elements into a

shallow receptacle containing priming mortar.
- Priming mortar shall not be applied more than one minute prior to paving elements being laid upon bedding mortar.
- Paving elements to be positioned firmly to line and level immediately, thereafter not to be disturbed.

- Cleaning of paving elements during laying:
  - All mortar contamination must be removed from the surface of freshly laid paving immediately, using clean water and a sponge.
- Cleaning of areas of freshly laid paving following laying:
  - Areas of freshly laid paving to be thoroughly rinsed with clean water at the end of a working shift.
- JOINTING OF MORTAR BEDDED SLAB PAVING (BS 7533-12): Q25/376A
- ADVERSE WEATHER:
  - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 2°C on a rising thermometer.
  - Frozen roadbase: Do not lay upon a roadbase surface which has not been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen materials: Do not use. All materials must have been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen water: Do not use. All water used for mixing mortars must be at a temperature not less than 2°C.
  - Do not apply jointing mortars when ambient temperature exceeds 25°C and is rising.
  - Protect fresh bedding mortar from frost and rapid drying out until mortar has cured.

370B MORTAR BEDDING REINSTATEMENT OF YORKSTONE EDGING SLABS, YORKSTONE SETTS AND GRANITE SETTS - OPTION 2

- Sand / Cement mortar system
- To BS 7533-4 Cl 5.4.4.2
- Material:
  - Sand / cement bedding mortar
- Thickness of bedding mortar: Target depth to be 40 mm.
  - Thickness: Maximum range 20 mm minimum to 70 mm maximum.
  - Follow manufacturer's instructions for mixing and laying.
- Laying:
  - All work must be carried out on the side of the unlaid face, at no time shall operatives stand, work or rest materials on freshly laid paving.
  - The surface of the roadbase or supporting structure must be thoroughly cleaned.
  - Bedding mortar must not be laid in advance of more than 1 row of paving elements.
  - Paving elements to be positioned firmly to line and level immediately, thereafter not to be disturbed.
- Cleaning of paving elements during laying:
  - All mortar contamination must be removed from the surface of freshly laid paving immediately, using clean water and a sponge.
- Cleaning of areas of freshly laid paving following laying:
  - Areas of freshly laid paving to be thoroughly rinsed with clean water at the end of a working shift.
- JOINTING OF MORTAR BEDDED SLAB PAVING (BS 7533-12): Q25/376A
- ADVERSE WEATHER:
  - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 2°C on a rising thermometer.
  - Frozen roadbase: Do not lay upon a roadbase surface which has not been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen materials: Do not use. All materials must have been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen water: Do not use. All water used for mixing mortars must be at a temperature not less than 2°C.
  - Do not apply jointing mortars when ambient temperature exceeds 25°C and is rising.
  - Protect fresh bedding mortar from frost and rapid drying out until mortar has cured.

375A CRUSHED ROCK AGGREGATE BEDDING REINSTATEMENT OF YORKSTONE AND GRANITE SETTS - OPTION 1 - UNBOUND/FLEXIBLE CONSTRUCTION

- SteinTec paving flexible bedding system or similar approved
- BS 7533-7 Cl 5.1.1.2 and Annex C.1.4
- To seal the joint a filling material that conforms to Annex C.1.5 should be used, and topping material to Annex C.1.6
- Material:
  - "SteinTec tuffgrit" water permeable bedding aggregate for unbound pavement construction.
- Contact:
  Steven Burton B.Eng (Hons)
  SteinTec, 730 London Road, West Thurrock, Essex, RM20 3NL
  phone: 01708 860 049
  mobile: 07748 652 206
  website: www.steintec.co.uk
- Material: Crushed igneous rock bedding coarse aggregate for unbound modular pavement construction complying with the requirements of BS7533-13:2009 and technical specifications in accordance with BS EN 13242-2002+A1:2007.
- Water permeable crushed igneous rock aggregate suitable for bedding setts and slabs where unbound pavement construction methods are used.
- Aggregate to be graded and blended specifically to allow optimum interlocking of angular particles leading to extended surface life, enhanced durability and water permeability.
- Technical specification in accordance with BS EN 13242:2002+A1:2007
- Uncompacted bulk density: ~ 1.553 tonnes / m3
- Compacted bulk density: ~ 1.733 tonnes / m3
- Coarse aggregate conforming with BS7533-13 Table A2
- Grading Category in accordance with EN13242 GC85-15
- Crushed Particle Index in accordance with EN13242 C90/3
- Shape Index in accordance with EN13242 SI20
- Flakiness Index in accordance with EN13242 FI14
- LA Abrasion Coefficient in accordance with EN13242 LA20
- Resistance to Wear (Micro Deval) in accordance with EN13242 MDE15
- Water Absorption in accordance with EN13242 WA241
- Storage: Indefinite, no requirement to be kept dry.
- Packaging: 25 kg poly bags, 1 T FIBC BigBags
- Application:
  - Obtain and follow the supplier's method statement.
  - Laid in accordance with BS7533-4, compacting using a vibrating plate compactor of at least 200kg with a neoprene sole plate of at least 0.25m2 with a minimum of 2 passes". Paving elements should be laid on a bed of the bedding aggregate blend having a finished bedding depth between 40-50mm (30mm or 60mm to be the exception) and tamped to the required level. Additional vibrating Wacker plate compaction may be used.
  - For small paving units such as setts, the units may be tapped into the bed to approximately 10% higher than the desired level.
  - For large paving units such as slabs, the units may be placed on a screed of the bedding aggregate to approximately 10% higher than the desired level. It is important that the units are evenly supported the bedding aggregate and that there are no voids beneath the units.
- Jointing: for wide joints (>6mm) the bedding aggregate is brushed in to the joints.
  - The pavement should normally be compacted using a 200kg compactor plate with a neoprene sole plate with a 0.25m2 area with a minimum of 2 passes.
  - Where relevant, the joints should be topped up again with the bedding aggregate and compaction repeated until the paving is to level with a recessed joint to approximately 10mm.

Q25

- Follow manufacturer's instructions for mixing and laying.
- ADVERSE WEATHER:
  - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 2°C on a rising thermometer.
  - Frozen roadbase: Do not lay upon a roadbase surface which has not been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen materials: Do not use. All materials must have been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen water: Do not use. All water used must be at a temperature not less than 2°C.
  - Do not apply jointing when ambient temperature exceeds 25°C and is rising.

Q25

376A CRUSHED ROCK AGGREGATE JOINTING REINSTATEMENT OF YORKSTONE SETTS AND GRANITE SETTS - OPTION 1 - UNBOUND/FLEXIBLE CONSTRUCTION

- Flexible crushed rock aggregate jointing system or similar approved
- BS 7533-7 Cl 5.1.1.2 and Annex C.1.4
- To seal the joint a filling material that conforms to Annex C.1.5 should be used, and topping material to Annex C.1.6
- Material:
  High performance, stabilised jointing aggregate designed for use in for construction of unbound paving.
- Contacts:
  Steven Burton B.Eng (Hons)
  SteinTec, 730 London Road, West Thurrock, Essex, RM20 3NL
  phone: 01708 860 049
  mobile: 07748 652 206
  website: www.steintec.co.uk
  Michael Heap
  CED Ltd, 728 London Road West Thurrock Grays Essex RM20 3LU.
  T: 01708 867 237
  www.cedstone.co.uk
- Material: High performance, stabilised jointing aggregate designed for use in for construction of unbound paving.
  - Crushed igneous rock jointing aggregate 0-3mm with natural binder.
  - To permit the slight movement of paving elements; a necessity for the long-term health of all unbound pavement construction.
  - To swell on saturation with water to allow realignment of aggregate particles within the joints; to self-heal following the application of an overbearing load or fatigue caused by over-trafficking.
  - In its normal state, or once healed, the jointing aggregate provides significantly stiffer restraint of the paving elements than pavior sand.
- Aggregate type / colour: dark grey / black in appearance so as to match appearance of existing joints.
- Water permeability/absorbtion: To be water permeable but not free draining.
- Compressive strength: To be highly elastic in compression and in normal conditions.
- Abrasion: To be highly resistant to abrasion resulting from mechanical cleaning, however resistance can vary according to changes in ambient temperature and moisture levels.
- Storage: Up to 1 year, in dry conditions raised from the ground, from date stated on packaging.
- Application:
  - Obtain and follow the supplier's method statement.
  - Method 1: The jointing aggregate to be mixed with water and poured on to the pavement surface as a wet slurry, drawn repeatedly across the pavement surface to fill joints.
  - Method 2: The jointing aggregate is mixed with water to form a paste; applied to the pavement joints using a trowel.
- Workability:
  - 4 hours at 20 Celsius. Applied to the pavement surface as a wet slurry, the jointing aggregate remains workable for approximately 4 hours at 20°C ambient temperature if kept agitated and prevented from drying out. Do not apply at ambient temperatures below 5°C.
- Maintenance:
  - Where relevant, the joints should be topped up again as required with the bedding aggregate and compaction repeated until the paving is to level with a slightly recessed joint.
  - Topping up of joints should continue to be undertaken over initial 24 month period until the joint has become stabilised.

Q25

  - Joints eroded by extreme weathering, excessive mechanical cleaning or accidental damage to be topped up by repeat applications of the jointing aggregate in accordance with the method statement. excess material removed by drawing water across the surface
- PROTECTION AND QUARANTINE FOR FRESHLY JOINTED PAVING:
  - Freshly jointed areas must be protected from vehicular traffic until bedding has gained not less than 20 N/mm² compressive strength.
  - Non-HGV trafficking may be permitted after quarantine of one day following jointing, providing the minimum strength gain requirements for bedding have been passed.
  - Pedestrian trafficking may be permitted on the next day following jointing.
- Materials storage: Do not overload pavings with stacks of materials until the quarantine period for vehicular trafficking has passed.
- ADVERSE WEATHER:
  - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 2°C on a rising thermometer.
  - Frozen roadbase: Do not lay upon a roadbase surface which has not been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen materials: Do not use. All materials must have been protected from temperatures below 2°C for at least 24 hours prior to use.
  - Frozen water: Do not use. All water used must be at a temperature not less than 2°C.
  - Do not apply jointing when ambient temperature exceeds 25°C and is rising.

376B LIME MORTAR JOINTING REINSTATEMENT OF YORKSTONE SLABS, YORKSTONE SETTS AND GRANITE SETTS - OPTION 2 - BOUND/RIGID CONSTRUCTION

- Lime Mortar jointing system or similar approved
- BS 7533-4 Cl 5.4.4.4
- Material:
- Natural Hydraulic Lime NHL 5 (Chaux 100 naturelle Pure)
  Supplier: St Astier
- Conforms to European Norms EN 459 and BS 459
- Strength factor: 5 (Eminently hydraulic)
- Residue @ 0.09 mm: 7%
- Density (volumetric weight) typical: 700 gr. / litre
- Available (free) lime Ca(OH)2 after slaking: 20-22%
- Shelf life: 8-12 months kept sealed and dry Contains no additives.
- Whiteness index: 67
- Surface cover (cm2per gram): 8000
- Expansion : < 1mm
- Residue of quick lime after slaking: < 1%
- Packing: 25kg. Bags
- Mixing: can be mixed in cement mixers.
- Application by spray gun: Consult with supplier for advice.
- Working temperatures: not below 5°C or above 30°C. Make sure that high suction materials are thoroughly dampened before application. Avoid rapid drying due to high temperatures or strong winds by curing with a light water mist several times a day if necessary. See "Protecting Lime Mortar".
- Reworking: possible within 8 hours
- Depending on the conditions of the support/background, the fineness of the sand and the size of the joints, binder : sand ratio values vary between 1: 1.5 to 1: 2.5
- Choose well graded sands (3 or 4mm down to 75 microns).
- Consult with specialist suppliers for further details and recommendations of mix ratios to suit requirements and loading requirements.
- Colour matching: mortar to be colour matched, samples to be provided for approval by Landscape Architect.
- Bedding for paving laid using lime mortar jointing: to clause Q25/370B
- NOTE: Lime Mortar Jointing to be used to Building Perimeter Joint

376C PITCH JOINTING REINSTATEMENT OF YORKSTONE SETTS AND GRANITE SETTS - OPTION 3 - TRADITIONAL PITCH CONSTRUCTION

- Bitumen Pitch jointing system or similar approved
- Supplier: Specialist supplier with experience of supplying bitumen for pitch jointing to paving. Submit proposals.
- Installer: Specialist installer with experience of installing pitch jointing system on heritage projects. Examples of previous work to be submitted.
- Material: Bitumen Solution Pitch, specially modified (stiff) bitumen for purpose as a paving joint material, applied over 2-6mm graded crushed igneous rock aggregate.
- Preparation of setts: The surface of the setts must be clean and dry and any dirt or dust to be removed prior to installation.
- Application:
  - Aggregate Infill: Once the setts have been laid and checked for level/alignment, joints to be partially filled by sweeping in 2-6mm graded aggregate to 20mm below surface finish level. Any surplus aggregate that is 'proud' (ie above the heads of the setts) to be removed prior to application of molten pitch. Consult with specialist supplier/installer for advice.
  - Pitch Application: Following installation of 2-6mm graded aggregate into joint, a continous layer of molten pitch is to be carefully applied / poured into joints using special tar can with nozzle that allows accurate pouring. Pitch to be poured so as to flow in and around the aggregate, sealing the joint as it cools. Consult with specialist supplier/installer for advice.
- Level of tar joint: as close to the surface finish level as possible whilst sitting below the rounded arris / edge profile of the setts.
- Topping up: Joints to be topped up with molten tar if required to achieve the specified finished level and to provide a flat or convex profile.
- Finishing: Any over-fill or spillage to be trimmed with a sharp knife and removed once pitch has set.
- Temperature of heated bitumen pitch: 50°C to 55°C
- Heating Tar: Commercial scale tar boiler to be used capable of melting 100Kg or more at a time, or alternatively pitch to be delivered in a molten state by a heated tanker, ready to pour.
- Trafficking: Consult with specialist supplier/installer for advice.
- Working temperatures: not below 5°C or above 30°C. Dry weather application only.
- Consult with specialist supplier/installer for further details and recommendations on materials and installation to suit specific project requirements including loading requirements.
- Samples to be provided for approval by Landscape Architect.
- Bedding for paving laid using pitch jointing: to clause Q25/370B, Q25/375A

475A GENERAL CLEANING TO ALL AREAS OF PAVING: WATER WITH MILD DETERGENT TO COURTYARD

- This applies to all areas of paving, kerbs and other features to be retained / reinstated.
- Cleaning should be undertaken insitu, prior to release and lifting of existing material.
- If more intensive cleaning is required, refer to alternative cleaning methods: Q25/475B, Q25/475C
- Manufacturer: Weiss.
- Supplier: Steintec
- Product reference: Grundreiniger cleaner for natural stone paving or similar approved.
- Form: fluid
- Colour: slightly yellow
- Odour: mild
- pH Value: 7.5 at 1:20 dilution; ~8 undiluted
- Density: 1.05 g/cm³ at 20°C-
- Application: To dry paving.
- Method: To manufacturer's recommendations:
- Dilution: 1:50 dilution for routine cleaning, consult with supplier / manufacturer for recommendation.
- Apply liberally to surface of sett / block.
- Agitate with a non-metallic brush or pad, then rinse well with water.
- Final washing with clean tap water to be undertaken following mild detergent washing, ensure all detergent is fully removed.
- Do not allow Grundreiniger to dry on surface.
- Protection: Building facade to be protected during cleaning. Submit proposals for approval.

475B REMOVAL OF SOILINGS AND BRITTLE COATINGS FROM EXISTING SANDSTONE SLABS AND SETTS – JOS OR VORTECH CLEANING SYSTEM TO COURTYARD

- This applies to areas of paving identified as 'Good' or 'Moderate' condition, with light surface soiling and coatings.
- Cleaning method only to be undertaken if less intensive techniques have been unsuccessful.
- Cleaning should be undertaken insitu, prior to release and lifting of existing material.
- If more intensive cleaning is required, refer to alternative cleaning methods: Q25/475C
- Supplier: Restorative Techniques Ltd
- Product / system reference: 'Jos' or VorTech cleaning system for natural stone or similar approved.
- This system uses selected abrasive, carried by a flow of compressed air to a nozzle at which water is added. The air, abrasive and water combine in a vortex and exit the nozzle through a tapered ceramic sleeve. The aperture size and 'spread' of the sleeve can be changed, one sleeve for another, to direct the mixture toward the substrate in an appropriate concentration. The air pressure, the amount of abrasive in the air and the volume of water are all adjustable by the controls provided.
- Method: To supplier's recommendations.
- Final washing with clean tap water to be undertaken following removal of material.
- Protection: Building facade to be protected during cleaning. Submit proposals for approval.

475C REMOVAL OF HEAVY SOILINGS AND ENGRAINED SURFACE DEPOSITS FROM EXISTING SANDSTONE SLABS AND SETTS TO COURTYARD

- This applies to areas of paving identified as 'Moderate' condition, with heavy surface soiling and coatings.
- Cleaning method only to be undertaken if less intensive techniques have been unsuccessful.
- Cleaning should be undertaken insitu, prior to release and lifting of existing material.
- Method:
  - Remove as much of the cementitious or other material as possible by initially cleaning with a wire brush.
  - Following this use a bolster to scrape and chisel off the material that remains.
  - Extreme care is required to prevent accidental marking or scratching of the paving, and to prevent any long term damage.
  - Following the scraping / chiselling, further abrasive cleaning with a wire brush may remove most or all of any material remaining.
- Final washing with clean tap water to be undertaken following removal of material.
- Protection: Building facade to be protected during cleaning. Submit proposals for approval.
- If it is not possible to clean stone slabs and setts using this method combined with alternative cleaning methods (Q25/475A, Q25/475B) then stone should be replaced. Refer to clauses Q25/310C, Q25/330B, Q25/331B.

475D GENERAL CLEANING TO UNDERSIDE OF ALL AREAS OF PAVING FOLLOWING LIFTING T O COURTYARD

- This applies to all paving that has been lifted and is to be reinstated as part of the proposals.
- Cleaning should be undertaken away from site, following release and lifting of existing material.
- Method:
  - Remove as much of the mortar or other material as possible by initially cleaning with a wire brush.
  - Following this use a bolster to scrape and chisel off the material that remains.
  - Extreme care is required to prevent accidental marking or scratching of the paving, and to prevent any long term damage.
  - It is acceptable for a small amounts of existing mortar to be left on the Yorkstone and Granite setts as this will improve the interlocking properties of the setts when relaying.
- Final washing with clean tap water to be undertaken following removal of material.
- All material is to be kept clean prior to reinstatement. If required material is to be cleaned prior to reinstatement using clean tap water.

475E DISPOSAL OF WASH WATER AND DETRITUS TO COURTYARD FOLLOWING CLEANING

- Disposal: Safely. Obtain approvals from relevant Authority and Client FM Team.
- Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas and prevent transfer onto public/footpaths.
- Above and below ground drainage systems: Keep free from detritus and maintain normal operation.

EXECUTION

610 MATERIAL SAMPLES

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

615A CONTROL SAMPLES

- Sample areas: Samples of all paving types with bedding and jointing, including interfaces between paving types, to be provided to allow project team to agree materials and finishes for final construction.
  - Types of paving: All paving types including different bound and unbound jointing/bedding options..
  - Location: on site, location to be agreed.
  - Size (minimum): 1.5m x 1.5m.
  - Included features: surface texture, finish, profile, bedding, jointing and any other features shown on proposed drawings. Samples of infill manhole covers to be provided as Q25/332A.
- Approval of appearance and surface: Obtain approval of project team 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.

625J LAYING PAVINGS - GENERAL

- Appearance: Smooth and even with regular joints and accurate to line, level and profile.
- Falls: To prevent ponding and to match existing gradients. Ensure surface falls away from buildings and monuments.
- 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.
- 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.

Q25

637 REGULARITY OF PAVED SURFACES

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

645 PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- Mortar bedded pavings: Keep free from traffic after laying:
  - Pedestrian traffic (minimum): 24 hours.
  - Vehicular traffic (minimum): 7 days.
- Access: Restrict access to paved areas to prevent damage from site traffic and plant.