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2 BLOCK PAVED AREAS

2.1 GENERAL

2.1.1 Scope

- 1 This Part specifies the requirements block paved areas surfaces not otherwise covered in Section 6, Roadworks.
- 2 Related Sections are as follows:
Section 6 Roadworks

2.1.2 References

- 1 The following standards are referred to in this Part:
ASTM C 97.....Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
ASTM C 99.....Test Method for Modulus of Rupture of Dimension Stone.
ASTM C 241.....Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.
ASTM C 880.....Test Method for Flexural Strength of Dimensional Stone.
ASTM C 936.....Specification for Solid Concrete Interlocking Paving Units

BS 1014.....Pigments for Portland cement and Portland cement products (EN 12878)
BS 3921.....Specification for clay bricks (EN 771-1, EN 772-3, EN 772-7)
BS 7263.....Precast concrete flags, kerbs, channels, edging and quadrants (EN 1339)
BS 6677.....Clay and calcium silicate pavers for flexible pavements – Specification for pavers (EN 1344)
EN 1338Precast concrete paving blocks
ISO 10545Ceramic Tiles

2.1.3 General Requirements

- 1 All items in this Part require approval by the Engineer.
- 2 The Contractor shall submit manufacturer's literature, drawings, samples or mock-up units for items covered in this Part for approval by the Engineer.
- 3 If external work items related to this Part are not specified or otherwise detailed within the Project Documentation, the Contractor shall submit appropriate specifications for approval by the Engineer.
- 4 Bedding requirements for paved surfaces shall be in accordance with Section 6, Roadworks.
- 5 Blocks supplied in accordance with this part shall be marked with the following particulars:
 - (a) identification of the manufacturer by name or logo
 - (b) date of production
 - (c) product name
 - (d) standards to which the block is manufactured.
- 6 The surface of paving blocks shall not exhibit any defects such as cracking, delamination or flaking.

2.1.4 Compliance

- 1 All paving works which are subject to public use or use by any governmental department or agency shall comply with all health and safety requirements of all applicable government departments and agencies.
- 2 The Contractor is responsible to obtain written approvals or documentation from all applicable government departments and agencies in connection with Clause 2.1.4-1.

2.1.5 Materials

- 1 The paving material shall be such that it does not develop a polished surface of low skid resistance when trafficked.
- 2 The colour of the paving units shall be as described in the Project Documentation.

2.2 PRECAST CONCRETE PAVING FLAGS

2.2.1 General Requirements

- 1 Precast concrete paving flags shall comply with the relevant provisions of Section 6, Roadworks, and as specified herein.

2.2.2 Precast Concrete Flags

- 1 Precast concrete flags shall be hydraulically pressed and shall comply with the relevant provisions of BS 7263: Part 1 and Section 5, Concrete. Unless otherwise described in the Project Documentation, flags shall be 50 mm thick.
- 2 Precast concrete paving blocks shall comply with the relevant provisions of EN 1338.
- 3 Pigments shall be inorganic, stable and shall comply with BS 1014. Pigments can be used in powder, liquid or granular form.

2.2.3 Laying Concrete Paving Flags

- 1 Precast concrete flags shall be laid to the required falls on sub-base material as described in the Project Documentation, bonded with joints at right angles to the kerb, and spot bedded with Class M4 mortar with no lipping of top surfaces.
- 2 Flags shall be cut to fit around surface boxes and other furniture and, on circular work where the radius is 12 m or less, shall be radially cut on both edges to the required lines.

2.3 INTERLOCKING CONCRETE PAVING BLOCKS

2.3.1 Materials

- 1 Materials for interlocking concrete paving blocks shall conform to EN 1338 and Section 5, Concrete.
- 2 Pigments shall be inorganic, stable and shall comply with BS 1014. Pigments can be used in powder, liquid or granular form.
- 3 The facing layer of composite blocks consisting of a facing layer and a backing layer shall not be less than 4 mm.
- 4 The thickness of interlocking concrete paving blocks shall be:
 - (a) 60mm on footpaths
 - (b) 80 mm on roads and parking areas unless otherwise detailed in the Project Documentation or instructed by the Engineer.
- 5 The strength of interlocking concrete paving blocks shall be as follows:

- (a) the average tensile splitting strength of 16 blocks shall be tested in accordance with EN 1338 and shall be not less than 3.6MPa and the failing load not lower than 250N/mm.
 - (b) the tensile splitting strength of any individual block shall be not less than 2.9MPa.
- 6 Water absorption of interlocking concrete paving blocks shall be as follows:
- (a) an average of 3 specimens tested in accordance with EN 1338 shall not be greater than 5%
 - (b) no individual result shall be greater than 6%.

2.4 CLAY PAVING BLOCKS

2.4.1 Materials

- 1 Clay paving blocks shall have chamfers, be colour resistant and without ribs.
- 2 The clay paving blocks shall be classified as follows:
 - (a) Type A : to be used in pedestrian/footpath areas.
 - (b) Type B : to be used in trafficked areas.
- 3 The clay paving blocks shall comply with the requirements given in the following Table:

Table 2.1
Requirements for clay paving blocks

Item No.	Requirement	Test Method	Specified Limits	
			Type A	Type B
1.	Work size thickness (tolerance)	BS 6677 : Part 1 : 1986	50 mm (± 3 mm)	65 mm (± 3 mm)
2.	Average Compressive Strength	BS 3921: 1985	50 N/mm ² min	75 N/mm ² min
3.	Individual Compressive Strength	BS 3921: 1985	47 N/mm ² min	70 N/mm ² min
4.	Average Transverse Breaking Load	BS 6677: Part 1: 1986	5.0 kN min	7.0 kN min
5.	Individual Transverse Breaking Load	BS 6677: Part 1: 1986	3.0 kN min	4.0 kN min
6.	Water Absorption	BS 3921: 1985	12 % max	7 % max
7.	Mean Wet Skid Resistance Value	BS 6677: Part 1: 1986	60 min	60 min
8.	Efflorescence	BS 3921: 1985	Nil to moderate	Nil to slight

2.5 GRANITE PAVING BLOCKS

2.5.1 Materials

- 1 Materials for granite paving blocks shall be of first quality natural granite.
- 2 Granite paving block thickness shall be 70 mm on roads and parking areas unless otherwise detailed in the Project Documentation.
- 3 The density of granite paving blocks shall be 2,560 kg/m³ or more when measured in accordance with ASTM C 97.
- 4 The water absorption of granite paving blocks shall be 0.40% (maximum) when measured in accordance with ASTM C 97.
- 5 The minimum compressive strength of granite paving blocks shall be 131 MPa when measured in accordance with ASTM C 170.
- 6 The modulus of rupture of granite paving blocks shall be 10.34 MPa or more when measured in accordance with ASTM C 99.
- 7 The abrasion resistance of granite paving blocks shall be H_A25 (minimum) when measured in accordance with to ASTM C 241 / C 1353.
- 8 The flexural strength of granite paving blocks shall be 8.27 MPa or more when measured in accordance with ASTM C 880.

2.5.2 Surface Finish

- 1 Edges shall be split in a straight line with a hydraulic guillotine. The resulting edge shall be straight, but broken along the natural grain structure of the stone with concave and convex areas along the edge.

2.5.3 Top Surface Finish

- 1 Granite paving blocks shall be finished with a thermal, highly slip resistant, rough textured surface.

2.6 INSTALLATION OF PAVING BLOCKS

2.6.1 General Requirements

- 1 These clauses are for the installation of interlocking concrete, clay and granite paving blocks.
- 2 Paving blocks shall be laid on the sand laying course in such a manner as not to disturb the blocks already laid.
- 3 Each block shall be placed firmly against its neighbour so that they fit closely together.
- 4 Joints between blocks shall not exceed 3 mm.
- 5 Laying of the paving blocks shall commence at right angles to the main pavement axis starting at one end of the area.
- 6 The blocks shall be laid in patterns as shown in the Project Documentation or instructed by the Engineer.
- 7 Where blocks do not fit the edge restraints or other obstructions such as manholes or upstands, the gaps shall be filled using cut blocks.
- 8 Blocks shall be cut using only a mechanical or hydraulic block splitter.

2.7 PLAYGROUNDS, PARKS AND OTHER AREAS

2.7.1 General Requirements

- 1 The Contractor shall provide test certificates for surfaces made specifically for outdoor playing areas, such as soft impact type paving, showing compliance with all pertinent health and safety requirements of the applicable government departments and agencies.
- 2 Surfaces made specifically for outdoor playing areas shall be installed by specialised sub-contractors experienced in such work unless otherwise approved by the Engineer.

2.8 SPORTS ACTIVITY PLAYING SURFACES

2.8.1 General Requirements

- 1 Outdoor sporting surfaces such as tennis courts, running tracks and the like shall be installed by specialised sub-contractors experienced in such work unless otherwise approved by the Engineer.

END OF PART