7 STONE FLOORING

7.1 GENERAL REQUIREMENTS

7.1.1 Scope

1 This Part specifies requirements for interior stone flooring, set in mortar on a rigid base.

2 Related Parts and Sections are as follows:

This Section

Part 1..... General
Part 5..... Tiles
Part 8..... Unit Masonry Flooring
Part 9..... Flooring Screeds and Treatments
Part 10..... Joint Caulking and Sealants

Section 1 General
Section 5 Concrete

7.1.2 References

1 The following standards are referred to in this Part:

ASTM C150/C150M ...Standard Specification for Portland Cement

ASTM C472.....Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete

ASTM C503/C503M ...Standard Specification for Marble Dimension Stone

ASTM C568/C568M ...Standard Specification for Limestone Dimension Stone

ASTM C615/C615M ...Standard Specification for Granite Dimension Stone

ASTM C616/C616M ...Standard Specification for Quartz-Based Dimension Stone

ASTM C629/C629M ...Standard Specification for Slate Dimension Stone

ASTM C1063 .....Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster

ASDTM C1242 .....Standard Guide for Selection, Design, and Installation of Dimension Stone Attachment Systems

ASTM C1526.....Standard Specification for Serpentine Dimension Stone

ASTM C1527/C1527M Standard Specification for Travertine Dimension Stone

ASTM C1528/C1528M Standard Guide for Selection of Dimension Stone

ASTM C897.....Standard Specification for Aggregate for Job-Mixed Portland Cement-Based Plasters

ASTM C926.....Standard Specification for Application of Portland Cement-Based Plaster

ASTM F710 .....Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

ASTM STP1499 .....Dimension Stone Use in Building Construction

ASTM STP1394 .....Dimension Stone Cladding: Design, Construction, Evaluation, and Repair

BS 405.....Specification for uncoated expanded metal carbon steel sheets for general purposes

BS 476.....Fire tests on building materials and structures

BS 882.....Specification for aggregates from natural sources for concrete; (EN 12620 Aggregates for concrete; BSI PD 6682-1 Aggregates - Aggregates for concrete. Guidance on the use of BS EN 12620; EN 13139 Aggregates for mortar; EN 13242 Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction; BSI PD 6682-6 Aggregates - Aggregates for unbound and hydraulically bound materials for use in civil engineering works and road construction. Guidance on the use of BS EN 13242; EN 13055 Lightweight aggregates; BSI PD 6682-4 Aggregates - Lightweight aggregates for concrete, mortar and grout. Guidance on the use of BS EN 13055-1)

BS 1199 and BS 1200 Specifications for building sands from natural sources; (EN 13139 Aggregates for mortar)

BS 1202 .....Specification for nails

BS 1449 .....Steel plate, sheet and strip.

BS 1494 .....Specification for fixing accessories for building purposes

BS 4551 .....Mortar. Methods of test for mortar and screed. Chemical analysis and physical testing.

BS 5224 .....Specification for masonry cement; (EN 413-1 Masonry cement - Part 1: Composition, specifications and conformity criteria)

BS 5270-1 .....Bonding agents for use with gypsum plasters and cement - Specification for polyvinyl acetate (PVAC) emulsion bonding agents for indoor use with gypsum building plasters

BS 5390 .....Code of practice for stone masonry; (EN 1996-1-2 Eurocode 6. Design of masonry structures - General rules. Structural fire design; EN 1996-2 Eurocode 6. Design of masonry structures - Design considerations, selection of materials and execution of masonry; EN 1996-3 Eurocode 6. Design of masonry structures - Simplified calculation methods for unreinforced masonry structures; BSI PD 6697 Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2)

BS 8000 .....Workmanship on construction sites

BS 8000-11 .....Workmanship on building sites - Internal and external wall and floor tiling. Ceramic and agglomerated stone tiles, natural stone and terrazzo tiles and slabs, and mosaics. Code of practice

BS 8204 .....Screeds, bases and in situ floorings

BS 8298-1 .....Code of practice for the design and installation of natural stone cladding and lining – General; (BS 8298-2 Design and installation of natural stone cladding and lining - Traditional handset external cladding. Code of practice; BS 8298-3 Design and installation of natural stone cladding and lining - Stone-faced precast concrete cladding systems. Code of practice; BS 8298-4 Design and installation of natural stone cladding and lining - Stone cladding on rainscreen support systems. Code of practice)

EN 197-1 .....Cement - Part 1: Composition, specifications and conformity criteria for common cements

EN 413-1 .....Masonry cement - Part 1: Composition, specifications and conformity criteria

EN 459-1 .....Building lime - Part 1: Definitions, specifications and conformity criteria

EN 998-1 .....Specification for mortar for masonry. Rendering and plastering mortar

EN 1008 .....Mixing water for concrete - Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete

EN 1745 .....Masonry and masonry products - Methods for determining thermal properties

EN 10142 .....Continuously hot-dip zinc coated low carbon steels strip and sheet for cold forming - Technical delivery conditions; (EN 10346 Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions)

EN 10143 .....Continuously hot-dip coated steel sheet and strip - Tolerances on dimensions and shape

EN 12057 .....Natural stone products - Modular tiles - Requirements

EN 12058 .....Natural stone products - Slabs for floors and stairs - Requirement

EN 12440 .....Natural stone - Denomination criteria

EN 12878 .....Pigments for the colouring of building materials based on cement and/or lime - Specifications and methods of test

EN 13139 .....Aggregates for mortar

EN 15285 .....Agglomerated stone - Modular tiles for flooring and stairs (internal and external)

The Tile Council of America TCA Handbook for Ceramic Tile Installation (The Tile Council of North America TCNA Handbook for Ceramic, Glass, and Stone Tile Installation)

7.1.3 Allowable Tolerances

1 Floor surface shall be true to plane within 3 mm in 3 m not cumulative.

2 Joint width deviation shall not be greater than 10 % of dimension shown on drawings.

7.1.4 Submittals

1 In accordance the with procedures in Section 1 the Contractor is to furnish the following:

(a) samples : minimum of five individual samples of stone showing range of extreme variations in colour and texture.

(b) shop drawings : showing special stone shapes or patterns to be constructed.

7.1.5 Product Delivery, Storage and Handling

1 Deliver materials in original sealed containers marked with name of manufacturer and identification of contents.

2 Store materials under waterproof on covering planking clear of ground, and protect from handling damage, dirt stain, water and wind.

7.2 MATERIALS

7.2.1 General

1 Stone slabs to be uniform in quality and texture, free from shale, excess mica, seams, sealing and disintegration to BS 5390.

2 Stone tiles shall be to BS 8000, Part 11 unless otherwise specified and detailed in the drawings.

3 Rigid base of concrete in-situ floor to BS 8204 or as otherwise detailed in the drawings shall be provided.

4 Provision and application of materials shall comply with the relevant provisions of BS 5390.

7.2.2 Other Materials

1 Sand to be used for setting beds and mortar or grout mixtures shall be to BS 1199, BS 1200, and BS 882 as applicable.

2 Cement shall be to EN 197-1.

3 Colouring pigments shall be pure mineral pigments. They shall be lime proof and non-fading and shall be added to grout or mortar by the manufacturer. In-situ coloured grout or mortar is not acceptable unless otherwise agreed by the Engineer.

7.2.3 Mortar

1 Mortar shall comply with the relevant provisions of BS 5224.

7.2.4 Grout

1 Grout shall consist of one part cement to three parts sand by volume, mixed with enough water for flowability.

7.3 EXECUTION OF WORK

7.3.1 Inspection

1 Ensure that substrate is without voids or projections that would interfere with installation of stone paving.

7.3.2 Application

1 General: Do not use stone slabs with chips, cracks, discoloration or other visible defects.

2 Installation with Portland cement grout.

(a) spread and screed the mortar setting bed mixture 12mm to 25mm in thickness true to plane to BS 8000 Part 9

(b) limit the setting bed to minimum amount which can be covered with stone before initial setting

(c) apply 0.75 mm layer of neat cement paste over the setting bed. Set and level each unit immediately. Tamp the stone brick to completely contact the setting bed

(d) grout the joints as soon as initial set is achieved. Place the grout in joints, strike flush and tool slightly concave

(e) cure the grout by maintaining in a damp condition for seven days.

3 Installation with Portland cement mortar:

(a) install the stone in a full mortar bed. Remove excess mortar. Strike the joints flush with the top surface of stone and tool slightly concave

(b) cure the mortar by maintaining in a damp condition for seven days.

END OF PART