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# SECTION 09 63 40

## Natural Stone Flooring

Spec. writers note:

**Part 1 – General:** This section describes administrative, procedural and temporary requirements specific to this section of specifications. Below draft specification does not include specific project information. Mainly this part will be completed by architect (or engineer) considering administrative, procedural and temporary specific of project.

**Part 2 – Products:** This section describes, in detail, the materials, products, equipment, systems or assemblies to be used in the project. Below product data (Based on Natural Stone Produced by Aegean Stones....) are subject to revisions of the architect.

Note for 2.05: Delete article below if cleaners and sealers are not specified.

**Part 3 – Execution:** This section describes, in detail, any preparatory actions and how the products shall be incorporated into the project. Below information for execution of Natural Stone Flooring is subject to revisions of the architect.

## PART 1 - GENERAL

### 1.1. DESCRIPTION:

- A. This section includes requirements for interior stone flooring, set on concrete substrates.

### 1.2. RELATED WORK:

(to be defined by architect or authorized others)

Sample:

- A. Concrete Subfloors: Section 03 30 00, CAST-IN-PLACE CONCRETE
- B. Joint sealants for sealing control and expansion joints in stonework:

Section 07 92 00, JOINT SEALANTS.

### 1.3. REFERENCES:

(to be defined by architect or authorized others)

Sample:

Refer to;

- A. American National Standards Institute. (ANSI)
- B. American Society for Testing and Materials

(ASTM or similar other national standards.)

### 1.4. SUBMITTAL:

(to be reviewed or revised by architect or authorized others)

- A. Shop Drawings: Show fabrication and installation details. Include dimensions and profiles of stone units including special stone shapes.
- B. Mortar Samples: Full range of exposed color and texture.

- C. Grout Samples: Full range of exposed color and texture.
- D. Sealant Samples: For each type and color of joint sealant required.
- E. Material Test Reports: From a qualified independent testing agency for each stone type.

## 1.5. PRODUCT DELIVERY, STORAGE AND HANDLING:

### Delivery:

Deliver materials in manufacturer's original, unopened, undamaged containers packaging with identification labels intact.

Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

Deliver materials to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.

Unload pavers at job site in such a manner that no damage occurs to the product.

### Storage and Protection:

Store materials protected such that they are kept free from mud, dirt, and other foreign materials. [Store concrete paver cleaners and sealers per manufacturer's instructions.]

- a. Cover mortar sand with waterproof covering if needed to prevent exposure to rainfall or removal by wind. Secure the covering in place.
- b. Protect materials from moisture and freezing temperatures.

## 1.6. QUALITY ASSURANCE:

### A. Installer Qualifications:

Engage an installer experienced with stone installations similar in material, design, and extent to that indicated for the Project. Submit installer's qualifications.

### B. Mockups:

Build mockup of typical areas as shown on the construction documents:

- a. Size: 500x500mm.
- b. Include sealant joints.
- c. Subject to acceptance by owner, mock-up may be retained as part of finished work.
- d. If mock-up is not retained, remove and properly dispose of mock-up.

#### 1.7. PROJECT CONDITIONS:

- A. Maintain air and material temperatures to comply with requirements of installation material manufacturers.
- B. Environmental Requirements:
  - a. Do not install in rain or snow.
  - b. Do not install over when outside temperature is below 45° F (5° C).

## PART 2 - PRODUCTS:

### 2.1. MANUFACTURER / PRODUCT:

#### A. Manufacturer:



Komurcuoglu Marble Co.

Aegean Stone Collection

[www.traverten.com.tr](http://www.traverten.com.tr)

#### B. Stone Materials:

##### a. Natural Stone



Type 1 – Olympos Pavers

500 X 500 X 30 mm travertine floor stone

Manufacturer: Komurcuoglu Marble Co. / Aegean Stone Collection.

Natural Stone Paving Units, including the following:

- 500 X 500 X 30 mm.
- Average Compressive Strength (C 140): 8000 psi(55 MPa) with no individual unit under 7200 psi(50 MPa).
- Average Water Absorption (ASTM C 140): 5% with no unit greater than 7%.
- Travertine: Comply with QA Technic CE.PR.042, TS EN 1469
- Hardness (MOHS) 4
- Compressive Strength (kg cm<sup>2</sup>)570
- Compressive strength after freezing (kg/cm<sup>2</sup>)582

## 2.2. PRODUCT SUBSTITUTIONS

Substitutions: No substitutions permitted.

## 2.3. MORTAR

Verify the compatibility of the selected mortar with the manufacturers before proceeding with mortaring. Submit for approval.

## 2.4. GROUT

Verify the compatibility of the selected pigmented grout with manufacturers before proceeding with the grouting. Consult with the grout manufacturer's representative for recommendations. Submit for approval.

## 2.5. ACCESSORIES

- A. Water: Potable and free from minerals or other materials that are detrimental to mortar and grout mixes.
- B. Primer: As recommended by the mortar material manufacturer.
- C. Mixes: Prepare pre-mix materials in accordance with manufacturer's written instructions.

## 2.6. PERFORMANCE REQUIREMENTS:

- A. Slip Resistance: Coefficient of friction to be equal to or greater than 0.42 for level interior stone floors that will be walked on when wet.

- B. Abrasion Resistance: Minimum value of // 8 // // 10 // based on testing according to ASTM C241/C241M or ASTM C1353/C1353M. //

2.7. MORTAR MATERIALS:

(To be recommended by manufacturer or defined by architect.)

2.8. GROUT MATERIALS:

(To be recommended by manufacturer or defined by architect.)

2.9. STONE FABRICATION:

- A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function. Do not use stone with discoloration or other visible defects.
- B. Cut stone to produce pieces of thickness, size, and shape as specified in Section 09 06 00, SCHEDULE FOR FINISHES.

## PART 3 - EXECUTION

(Sample method statement advised by supplier. To be reviewed and revised by architect)

### 3.1. EXAMINATION:

- A. Inspect areas and conditions under which work is to be performed and notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.
- B. Verify that concrete base is sloped for drainage and is free of standing water, dust, oil, grease, paint, wax, curing compounds, primer, sealers, form release agents, or any deleterious substances and debris which may prevent or reduce bonding. Verify that grout materials can be cleaned from pavers, or provide coating to pavers to facilitate removal of grout materials.
- C. Do not proceed with the work until unsatisfactory conditions have been corrected by the General Contractor or designated subcontractor to the satisfaction of the installer [and surfaces and conditions comply with the applicable requirements].

### 3.2. PREPARATION:

- A. Completely remove loose particles and debris from surface of concrete base. This may require mechanical grinding and scarifying of the surface.
- B. Neutralize any trace of strong acid or alkali from the substrate prior to mortar application.
- C. If leveling of the concrete surface is necessary, apply latex Portland cement mortar surface leveling materials to the surface of the substrate to bring the surface to a true, even plane. Allow mortar-leveling materials to set prior to installation.
- D. Surface to receive [slurry coat and] mortar shall have a tolerance of  $\pm 1/4$  in. (6 mm) over 10 ft (3 m) for normal mortar setting bed applications



and  $\pm 1/8$  in. (3 mm) over 10 ft (3 m) for thin set mortar setting bed applications.

### 3.3. INSTALLATION:

#### A. INSTALLATION GENERAL:

- a. Moisten concrete base and apply slurry bond coat to concrete base per manufacturer's directions.
- b. Mix and apply mortar setting bed material in accordance with the manufacturer's instructions. Spread mortar in quantities that will remain plastic and workable during installation of pavers.
- c. Moisten the bottoms of the pavers prior to placing on mortar or thin-set materials.
- d. Lay pavers in pattern(s) on mortar bed as indicated on the drawings. Saw cut pavers as required with a masonry saw. Cut perimeter units no less than  $[1/4]$  of full size units. Do not install stained, chipped, cracked, or broken pavers.  
Note: Maximum recommended joint width is  $3/8$  in. (10 mm).
- e. Maintain  $[3/8]$  in. ([10 mm]) wide joints.
- f. Joints shall be uniform and straight in all both directions as indicated on the drawings.
- g. Lippage: maintain no greater than  $1/16$  in. (1.5 mm) height difference between adjacent pavers.
- h. Follow manufacturer's recommended times for setting mortar to cure before grouting.
- i. Maintain clean surfaces and joints prior to applying grout.
- j. Grout joints in accordance with ANSI A108.10.

#### B. INSTALLATION OF STONE DIRECTLY OVER CONCRETE:

- a. Saturate concrete with clean water several hours before placing setting bed. Remove surface water about one (1) hour before placing setting bed.
- b. Apply mortar bed bond coat to damp concrete and broom to provide an even coating that completely covers the concrete. Limit area of mortar-bed bond coat to avoid its drying out before placing setting bed.
- c. Apply mortar bed immediately after applying mortar bed bond coat. Spread, tamp and screed to uniform thickness at elevations required for setting stone to finished elevations and indicated on drawings.
- d. Mix and place only that amount of mortar bed that can be covered with stone before initial set. Cut back, bevel edge, and discard material that has reached initial set before stone can be placed.
- e. Place stone before initial set of mortar occurs. Immediately before placing stone on setting bed, apply uniform 1.5 mm (1/16 inch) thick bond coat to bed or to back of each stone unit.
- f. Tamp and beat stone with a wooden block or rubber mallet. Set each unit in a single operation before initial set of mortar; do not return to areas already set.
- g. Rake out joints to depth required to receive grout or pointing mortar as units are set.
- h. Point joints after setting.

C. GROUTING:

- a. Grout stone joints to comply with ANSI A108.10 and with manufacturer's written instructions.
  - Do not use sanded grout for polished stone.
  - Grout joints as soon as possible after initial set of setting bed. Finish joints by tooling to produce a slightly concave polished joint, free of drying cracks.
  - Maintain grout in damp condition for seven (7) days.

### 3.4. EXPANSION AND CONTROL JOINTS

- A. Locate and obtain the approval of the Architect before commencing the installation.
- B. In accordance with TCA Detail No. EJ171, Handbook for Ceramic Tile Installation.
  - a. Provide [at maximum 12 ft (3.6 m) on center in each direction] [as indicated on the drawings].
  - b. Provide where dissimilar materials contact the pavers including walls, columns, and curbs.
  - c. Carry completely through the assembly to surface.
  - d. Keep clear of mortar setting materials and grout.
  - e. Apply backer materials and sealant in joints as specified in Section [ ].

### 3.5. ADJUSTING AND CLEANING:

- A. Remove and replace damaged stone.
- B. Remove and replace defective joints.
- C. Remove and replace stone not matching final samples // and mockups.
- D. Replacement stone is not to show evidence of replacement.
- E. In-Progress Cleaning: Clean stone as work progresses. Remove mortar and stains before tooling joints.
- F. Final Cleaning: Clean stone as recommended by fabricator or stone producer.

### 3.6. FIELD QUALITY CONTROL:

Note: Surface tolerances on flat slopes should be measured with a rigid straightedge. Tolerances on complex contoured slopes should be measured with a flexible straightedge capable of conforming to the complex curves on the pavement surface.

- A. The final surface tolerance from grade elevations shall not deviate more than  $\pm 1/4$  in. ( $\pm 10$  mm) under a 10 ft (3 m) straightedge.
- B. Check final surface elevations for conformance to drawings.

### 3.7. PROTECTION:

- A. Protect finished work against weather, freezing and immersion in water for [at least 21 days after installation] [per mortar and grout manufacturer's recommendations].
- B. Protect pavers from construction-related foot traffic [for at least 24 hours after completion of the installation] and general foot traffic [for at least 72 hours after installation] [per the mortar and grout manufacturer's recommendations].
- C. Protect textured material during installation and afterwards. [Seal architectural finishes of pavers immediately after the grout is dry.] Cover and protect the textured surface from vehicular traffic during the construction period.
- D. After work in this section is complete, the General Contractor shall be responsible for protecting work from damage due to subsequent construction activity on the site.

END OF SECTION

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