

SUPPLEMENTAL INFORMATION

HORIZONTAL SURFACES / EXTERIOR PAVING SYSTEMS

SECTION 1. PRODUCT DESCRIPTION

- 1.01 Basic Use.** Exterior paving for plazas, promenades, and similar applications.
- 1.02 Fabrication.** Stone paving units are precut and prefinished to dimensions specified on shop drawings, and are delivered to the job site ready to install.
- 1.03 Abrasion Resistance.** See Section in Introduction.
- 1.04 Finishes.** Abrasive, natural cleft, thermal, and rough sawn finishes are recommended for exterior paving.
- 1.05 Colors.** Any of the commercially available varieties are suitable.
- 1.06 Sizes.** Size and thickness should be based on:
1. Flexural Strength (Ref: ASTM C880) of the stone
 2. The unsupported span or anticipated deformation of the bedding system.
 3. The anticipated load. 1.6.4 Standard thicknesses of 1-1/4", 1-5/8", and 2" or greater may be required.
- 1.07 Movement Joints.** All stone paving systems shall include adequate movement joints. Refer to ANSI 108.1 and TCNA EJ 171 for movement joint location and design.
- 1.08 Traffic after Installation.** After the stone paving has been installed, the General Contractor must keep all traffic off the floors for at least 48 hours. No rolling or heavy (greater than pedestrian) traffic should be permitted on newly installed stone surfaces for at least two weeks after the floor has been grouted or caulked.

SECTION 2. INSTALLATION

2.01 Mortar Bed Bonded to Concrete Subsurface

1. **Preparatory Work.** Concrete slabs to receive bonded mortar beds, shall fulfill the following requirements:
2. **Slope** as required shall occur in the slab so as to maintain an even depth or thickness of the mortar bed.
3. **Concrete Slab** shall have a textured surface similar to a fine broom finish and shall be free of curing compounds or any other foreign materials that would inhibit an adequate bond of the mortar bed to the slab.
4. **Concrete Slabs** that require additional work to achieve these requirements such as grinding, feathering, patching or scarifying are considered as non-compliant with Industry Standards for stonework until remedial work has been completed by others.
5. **Method.** Stone paving should be installed in a full mortar bed consisting of one part portland cement and from four to five parts sand. Minimum thickness of a mortar bed is 1-1/4". The recommended thickness is 2". A bond coat of portland cement paste or other approved material (slurry) is recommended.
6. **Joints.** The joints may be pointed with suitable mortar or grout, or left entirely open to receive a resilient filler strip and approved sealant.
7. **Reinforcing.** Reinforcing of the mortar bed is recommended for beds of 2" depth or greater and shall be specified by the design professional. See TCNA F121 and NOTE for exterior uses.

2.02 Mortar bed separated from concrete slab. This method is used where the concrete slab may be problematic such as anticipated differential movement between the slab and the stone assembly. Other factors which favor selection of this installation method include:

1. Cracks in the slab that may transfer through a bonded system.
2. Contamination of the slab that may be impractical to remove.
3. Capillary moisture issues exist.
4. Where cold or control joints in slab do not align with stone grid modules.
5. Where an unbondable membrane
6. In these situations, the slab will require remedial treatment commensurate with the severity of the problem. These options usually involve a membrane of some type and as such the mortar bed cannot be bonded to the substrate. As with the bonded mortar bed systems, slope and tolerance of the slab shall be such as to maintain an even thickness of the bed. Movement joint requirements will also remain the same; however, the membrane may remain continuous.
7. The mortar bed must be reinforced in any unbonded installation system as specified by the design professional.

2.03 Pedestal Supported Systems

1. **Preparatory Work.** Adequate slope for surface drainage must be provided in rough concrete slab. Before being installed, all stone must be clean and free of foreign matter of any kind.
2. **Method.** Stone slabs (pavers) shall be set on bricks, plastic pods, or mortar spots of one part portland cement and from three to five parts sand, at or near the corners with the joints left open for drainage (see illustration at the close of this section).
3. **Flexural Strength.** In a pedestal supported pavement system, the stone unit is a structural member that carries the live and dead loads back to the pedestals. Paver thickness, span, flexural strength, and appropriate safety factors must be considered in the design.
4. **Open Joints.** The joints in this system are left open, allowing water to flow below the stone units to be collected by the drainage system.
5. **Advantages** of this system include the elimination of the requirement to slope the stone surface to a drain, since the drainage is accomplished below the pedestrian deck, and the ease of removal and replacement of the pavers to facilitate servicing of the drainage system below.

2.04 Sand Bed Method

1. **Preparatory Work.** Excavate unsuitable, unstable, or unconsolidated subgrade material and compact the area that has been cleared. Fill and level with densely graded crushed stone aggregate suitable for subbase material, or as otherwise directed by Specifying Authority.
2. **Method.** Place bedding course of sharp, normal weight

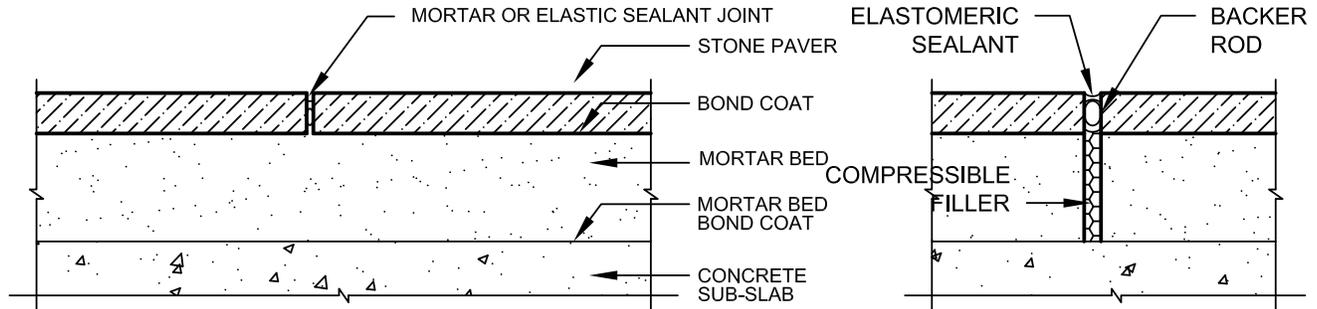
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limestone screening or concrete sand to a depth of approximately 1-1/2" leveled to grade. Compact bedding course parallel to finish grade and tamp.

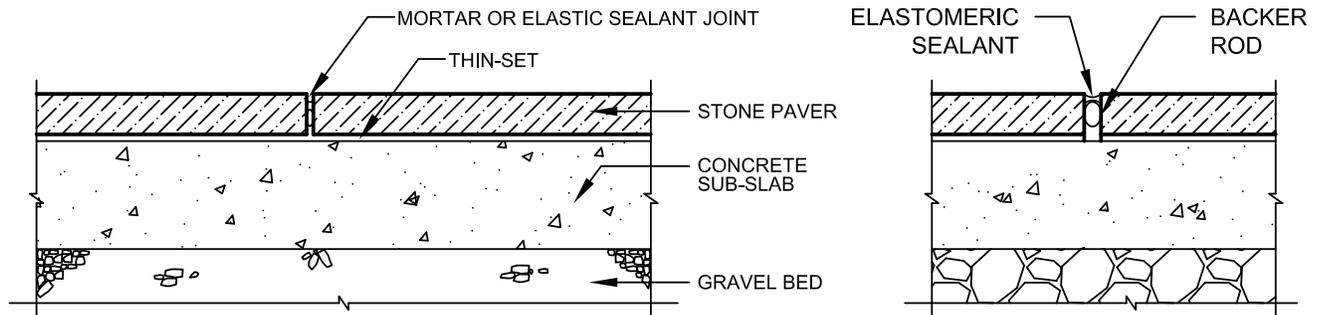
- 3. Stone pavers** shall be laid upon the bedding course in successive courses. Every course of pavers shall be laid true and even and brought to grade by the use of wood mallets or similar tools, and shall be laid parallel to the base line. After the pavers are laid, the surface shall be swept and inspected. Cover surface with a wood board approximately 3" thick, 12" wide, and 6' long, and tamp with an approved tamper. Do all tamping immediately after laying pavers and do not allow tamper to come in contact with pavers. Broom sand into joints, tamping sand in joints to ensure full bedding around perimeter of stone.

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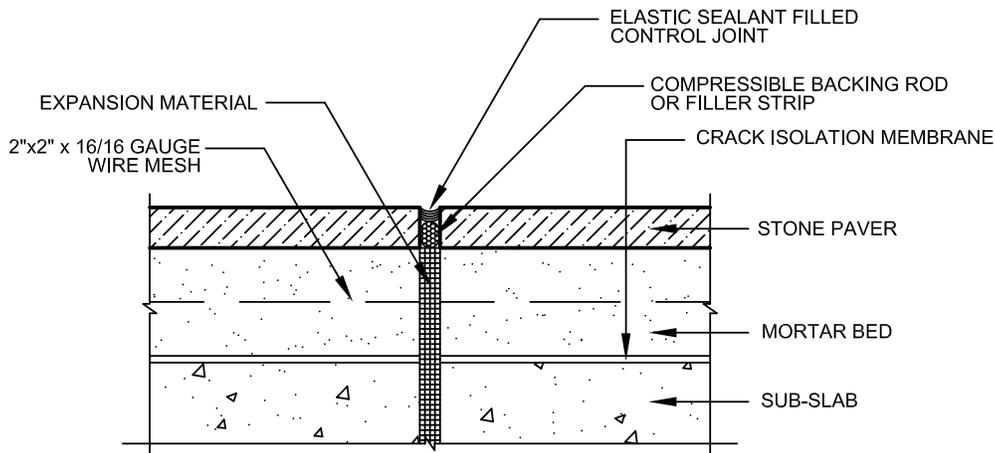
1 MORTAR BED WITH BOND COAT

1A MOVEMENT JOINT



2 MORTAR BED WITH THINSET

2A MOVEMENT JOINT



3 FULL MORTAR BED WITH MEMBRANE AND EXPANSION JOINT

NOTE: IT IS NOT THE INTENT OF THIS MANUAL TO MAKE EXPANSION, CONTROL, OR MOVEMENT JOINT RECOMMENDATIONS FOR A SPECIFIC PROJECT. THE SPECIFYING AUTHORITY MUST DESIGN AND LOCATE EXPANSION, CONTROL, AND MOVEMENT JOINTS ON THE CONSTRUCTION DOCUMENTS.



MARBLE INSTITUTE of AMERICA
28901 Clemens Road - Suite 100
Cleveland, OH 44145
Tel: (440) 250-9222
Fax: (440) 250-9223
www.marble-institute.com

REV	DATE
0	Aug 2006
1	Oct 2006
2	Dec 2009

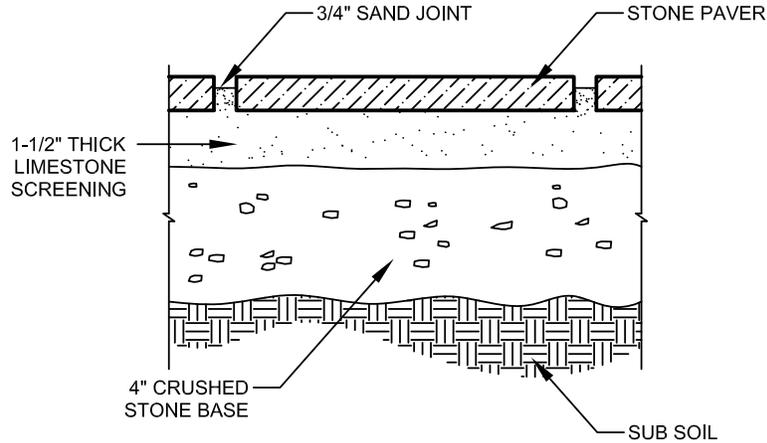
EXTERIOR STONE PAVING

MIA DIMENSION STONE DESIGN MANUAL VII

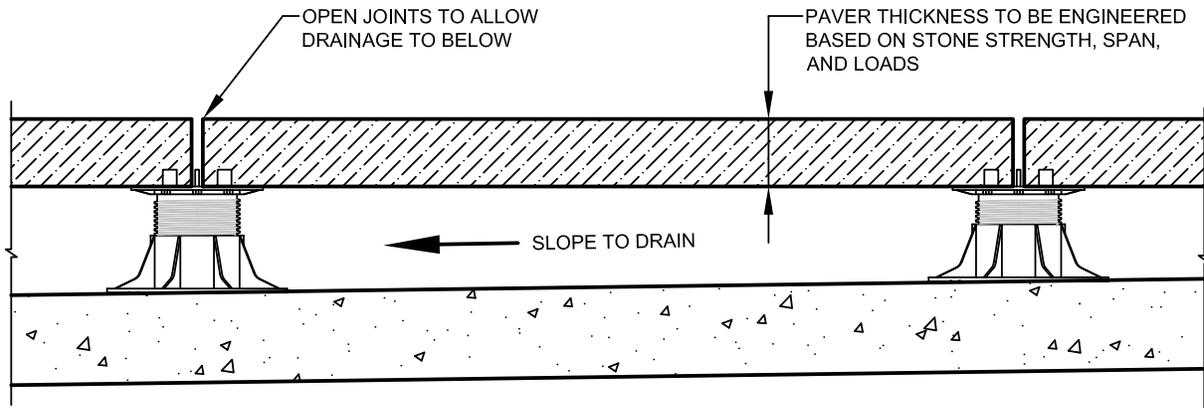
DRWG NO: 14-D-1

SCALE:
3" = 1'-0"

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1 STONE PAVERS SET IN SAND BED
Scale: 3" = 1'-0"



2 PEDESTAL SUPPORTED STONE PAVERS
Scale: 1 1/2" = 1'-0"



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EXTERIOR STONE PAVING	
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DRWG NO: 14-D-2	SCALE: As Noted