

CLAY PAVERS
SECTION _____

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clay paver units
- B. Sand setting bed and joint sand.

1.02 REFERENCES

- A. American Society of Testing Materials (ASTM):
 - 1. C902 Standard Specification for Pedestrian And Light Traffic Paving Brick
 - 2. C1272 Standard Specification for Heavy Vehicular Paving Brick
 - 3. C136 Method for Sieve Analysis for Fine and Coarse Aggregate.
 - 4. C67 Method of Sampling and Testing Brick and Structural Clay Tile.
 - 5. C33 Specification for Concrete Aggregates.

1.03 QUALITY ASSURANCE

- A. Installation shall be by an installer with at least two years experience and who has installed at least 200,000 sq. Ft. of sand set pavers in commercial projects.

1.04 SUBMITTALS

- A. Submit shop or product drawings and product data.
- B. Submit samples of brick paving units to indicate color and size selections. Color will be selected by Architect/Engineer/Landscape Architect from manufacturer's available colors.
- C. Submit sieve analysis for grading of bedding and joint sand.
- D. Submit test results for compliance of paving unit requirements to ASTM C 902 or ASTM C 1272 from and independent testing laboratory.
- E. Submit installer qualifications: provide satisfactory evidence that the installer complies with the qualifications set out in section 1.03.
- F. Schedule & Work Plan: submit a detailed schedule and work plan

1.05 MOCK UPS

- A. Install a 10 ft. x 10 ft. paver area. This area will be used to determine surcharge of the sand layer, joint sizes, lines, laying pattern(s), color(s), and texture of the job. This area shall be the standard from which the work will be judged.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver brick pavers to the site in steel banded, plastic banded, or plastic wrapped cubes or on pallets capable of transfer by fork lift or clamp lift. Unload pavers at job site in such a manner that no damage occurs to the product.
- B. Sand shall be covered with waterproof covering to prevent exposure to rainfall or removal by wind. The covering shall be secured in place.

1.07 ENVIRONMENTAL CONDITIONS

- A. Do not install sand or pavers during heavy rain or snowfall.
- B. Do not install frozen sand.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

Brick pavers may have spacer bars on each unit (if “English Edge” paver is specified). These insure a minimum joint width between each unit in which the sand is placed. Spacer bars help prevent contact of the edges with adjacent pavers and subsequent chipping. Manually installed pavers may be installed with or without spacer bars.

- A. Brick pavers shall be A Grade pavers manufactured/supplied by a member of the Brick Institute of America (BIA). The BIA manufacturer/supplier shall be:
Name: **PINE HALL BRICK**
Address: P. O. Box 11044
2701 Shorefair Drive
Winston-Salem, NC 27116-1044 Phone: (800) 334-8689
- B. Product name/shape, overall dimensions, and thickness of the paver(s) used shall be:

Thin Pavers:

4" x 8" x 1 3/8" thick or modular 3 5/8" X 7 5/8" x 1 3/8"

Standard Pavers:

4" x 8" x 2 1/4" thick or modular 3 5/8" x 7 5/8" x 2 1/4"
(available in straight edge only)

Heavy Vehicular pavers:

4" x 8" x 2 3/4" thick

**** NOTE: WHEN USING THESE SPECS IN YOUR BID PACKAGE, ELIMINATE THE SIZES OF PAVERS NOT SPECIFIED ON THE PROJECT AND INSERT YOUR PRODUCT CHOICE AND COLOR. i.e. English Edge Full Range 4"x 8"x 2-1/4" AFTER INSERTING THIS INFORMATION DELETE THIS NOTE.**

C. Pavers shall meet the following requirements set forth in ASTM C 902, Specification for Pedestrian and Light Traffic Paving Brick or C 1272 Specification for Heavy Vehicular Paving Brick and shall conform to the PX standard.

1. Minimum average compressive strength of 10,000 psi.
2. The average cold water absorption shall not be greater than 6 % with no individual unit testing greater than 7%. Absorption test results may not be achieved through the use of sealers or other products applied to the clay paver. (Sealer protection degrades over time requiring re-application after several years.)
3. Resistance of 50 freeze-thaw cycles, when tested in accordance with ASTM C67. In addition the clay paver must pass CSA-A231.2 freeze thaw test in saline solution without the use of sealers or other products applied to the paver. A test report must be submitted by the manufacturer. (Salt is the most common substance used for de-icing during the winter months.)
4. Dimensional tolerances should meet the PX standard. The dimensional tolerances around the mean values for length, width, and depth shall be 1/16". (Studies show that dimensional tolerances are directly linked to joint width size and proper interlock.)
5. The pavers should be solid units without core holes or other perforations.
6. The contractor shall ensure that the manufacturer conducts a test sampling of 24 pavers every 50,000 pavers manufactured to determine the pavers compliance with dimensional and water absorption characteristics. The 24 paver sample shall be representative of the color mix in the typical finished package and chosen on a consistent basis from one kiln car. (Proper control procedures and testing are standard operating procedure for high quality manufacturers.)

2.02 BEDDING AND JOINT SAND

The type of sand used for bedding is often called concrete sand. Sands vary regionally. Contact paver installers local to the project and confirm sand(s) successfully used in previous similar applications.

- A. Bedding and joint sand shall be clean, non-plastic, free from deleterious or foreign matter. The sand shall be naturally occurring and particle shape shall be a mix of sub-angular & sub-rounded. Grading of samples shall be done according to ASTM C136. The particles shall conform to the grading requirements of ASTM C33 with No. 200 sieve modification as detailed in Table 1. (*Note: For heavy vehicular traffic, reduce No. 200 sieve requirement to "less than .3%".*)

Sieve Size	Percent Passing
3/8 in.	100
No. 4	95 to 100
No. 8	80 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	5 to 30
No. 100	0 to 10
No. 200	Less than 1

Table 1: ASTM C33 Sand Gradation w/ No. 200 modification

2.03 EDGE RESTRAINTS

- A. Edge restraints are required on all installations. Edge restraints are to be pre-cast or cast-in-place concrete, plastic, or steel as specified in the drawings. Install as per manufacturer’s specifications.

2.04 JOINT SAND STABILIZERS (IF APPLICABLE)

Joint sand stabilizers prevent sand loss and maintain interlock which is critical in situations where sand loss could be a problem. Some situations typically requiring joint sand stabilizers are at the bottom of a grade, areas where rain water runoff is not caught by gutters, and crosswalks. Please consult the allied products section on our web site for information on joint sand stabilizers. Always follow the manufacturers recommendations for installation of these products.

****NOTE: ELIMINATE THE TEXT IN THIS SECTION (2.04) IF NO JOINT SAND STABILIZER IS SPECIFIED. CHANGE TITLE TO (NOT APPLICABLE). DELETE THIS NOTE AFTER MAKING THE APPROPRIATE CHANGES.**

2.05 FILTER GEOTEXTILE (IF APPLICABLE)

- A. The woven geotextile fabric shall be MIRAFLI 700X supplied by Mirafi, Inc., Charlotte, NC or equal

****NOTE: ELIMINATE THE TEXT IN THIS SECTION (2.05) IF NO FILTER GEOTEXTILE IS SPECIFIED. CHANGE TITLE TO (NOT APPLICABLE). DELETE THIS NOTE AFTER MAKING THE APPROPRIATE CHANGES.**

PART 3 EXECUTION

For installations on a compacted gravel base the subgrade shall be compacted to a minimum of 95% modified proctor density. Compacted aggregate shall be applied in even lifts of 4" and also compacted to a minimum of 95% modified proctor density. The specifier should be aware that the top surface of the pavers may be 1/8 to 1/4 inch above the final elevations after compaction. This difference in initial and final elevations is to compensate for possible minor settling.

3.01 EXAMINATION

- A. Verify that base is dry, uniform, even and ready to support sand, pavers and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Verify location, type, installation and elevations of edge restraints around the perimeter area to be paved.
- D. Beginning of installation means acceptance of base and edge restraints.

3.02 INSTALLATION

- A. Provide edge restraints as indicated - install edge restraints prior to placing unit pavers.
- B. Lay Filter Geotextile (if applicable) along edges where indicated in the drawings. Place geotextile over the compacted base course overlapping ends and edges at least 12 inches.

****NOTE: ELIMINATE THE TEXT IN SECTION B IF NO FILTER GEOTEXTILE IS SPECIFIED. CHANGE (IF APPLICABLE) TO (NOT APPLICABLE). DELETE THIS NOTE AFTER MAKING THE APPROPRIATE CHANGES.**

- C. Spread the sand evenly over the base course and screed to 1 - 1 ½ inches thickness. The screeded sand should not be disturbed. Sufficient sand shall be placed to ensure that no

delay occurs in laying pavers. The screeded bedding sand shall not be subjected to any traffic by either mechanical or pedestrian use.

- D. Ensure that pavers are free of foreign material before installation. The installer shall take the pavers from the pallet by row consisting of 18 pavers. Each row shall be installed together to ensure proper color mix.
- E. Lay the pavers in the pattern(s) as shown on the drawings. Full pavers are to be laid first. The pavers should be laid hand tight. Maintain straight pattern lines and adjust as necessary.
- F. Joints between the pavers shall be between 1/16 inch and 1/8 inch (2 to 3 mm) wide.
- G. Fill gaps at the edges of the paved area with cut pavers or edge units. Cut pavers to be placed along the edge using a masonry saw and in such a manner that no segment is smaller than one quarter of a full paver.
- H. Use a low amplitude, high frequency plate vibrator capable of 3000 to 5000 lbs. centrifugal compaction force to vibrate the pavers into the sand. Vibrate the pavers, sweeping dry sand into the joints and vibrating until they are full. This will require at least two or three passes with the vibrator. Do not vibrate within three feet of the unrestrained edges of the paving units. (A plate vibrator is not recommended for straight edge pavers, instead use a hand tamp and board method for compaction)
- I. All work to within three feet of the laying face must be left fully compacted with sand-filled joints at the completion of each day.
- J. Sweep off excess sand when the job is complete. Contractor shall return to the site one month after installation is complete to inspect sand in joints. Contractor is responsible for adding additional sand to fill joints where necessary.
- K. The final surface elevations shall not deviate more than 3/8 inch under a 10 foot long straightedge.
- L. The surface elevation of pavers shall be 1/8 to 1/4 inch above adjacent drainage inlets, concrete collars or channels.

3.03 JOINT SAND STABILIZER APPLICATION (if applicable)

- A. The surface shall be made clean and free from oil, dust from cutting and any loose material prior to the application of an epoxy joint sand stabilizer. (Any sand or dirt left on the pavers during sealing WILL BE SEALED TO THE PAVER. It is extremely difficult to correct this mistake!) The surface and joint sand shall be dry for its full depth prior to commencing work.

- B. The treated area shall be protected from rain or moisture and shall not be trafficked for 24 hours after the completion of the stabilizer application

Please consult the allied products section on our web site for information on joint sand stabilizers. Always follow the manufacturers recommendations for installation of these products.

****NOTE: ELIMINATE THE TEXT IN THIS SECTION (3.03) IF NO JOINT SAND STABILIZER IS SPECIFIED. CHANGE (IF APPLICABLE) TO (NOT APPLICABLE). DELETE THIS NOTE AFTER MAKING THE APPROPRIATE CHANGES.**

3.04 FIELD QUALITY CONTROL

- A. After removal of excess sand, check final elevations for conformance to the drawings.

3.05 PROTECTION AND CLEAN UP

A. Protection:

1. Protect work from damage, discoloration and theft.
2. All vehicles and equipment operating on the completed pavers before and after application of the joint sand stabilizer shall be maintained in a clean condition, so that oil, tar, rubber or other matter is not deposited on the surface of the pavers or adjacent paving and features.

B. Clean up:

1. All materials generated by construction work in this section shall be removed at the end of each section of the work and the site shall be left in a clean and safe condition.
2. After completion of any repair work, clean all exposed surfaces with clean water and stiff brushes until all stains and dirt are removed. Use cleaning solutions only that are recommended by the paver and stabilizer manufacturers and do not use wire brushes.

3.06 MAINTENANCE

A. Repairs:

1. Repair or replace any damaged work to the original specified condition prior to handover.

2. Where lateral displacement of the pavers has occurred adjacent to edge restraints the cut pavers shall be replaced with new pavers of the correct size to comply with the specified joint widths and the surface shall be re-established.

B. Maintenance: The installer shall return to the site at the Owners request over a period of one year from handover to rectify any problems in the work caused by its failure to adequately align the pavers, compact the bedding sand or fill the joints.

End of Section

**PLEASE NOTE BEFORE USING THESE SPECS:
THESE SPECIFICATIONS ARE BASED ON GENERALLY ACCEPTED
INDUSTRY STANDARDS FOR FLEXIBLE BASE INSTALLATIONS. NO
SINGLE SPECIFICATION CAN BE APPLIED TO EVERY PROJECT OR
COVER ALL APPLICATIONS OR CIRCUMSTANCES. AS A RESULT,
THESE SPECIFICATIONS ARE OFFERED TO THE DESIGNER AS A
GUIDELINE TOOL ONLY. IT IS UP TO THE DESIGNER TO
CUSTOMIZE AND APPLY THESE GENERAL PROCEDURES TO THE
INDIVIDUAL CIRCUMSTANCES OF THEIR INDIVIDUAL PROJECT.**