

DIVISION 2
SECTION 04200
BRICK PAVING

PART 1- GENERAL

1.01 SUMMARY

This section specifies requirements for the preparation aggregate base, supplying and installation of brick paving is shown on the drawings and include:

1. Hand tight joints, sand filled on 6" compacted limerock aggregate base.
2. See Paving Details

1.02 RELATED SERVICES

1. Preparation of subgrade
2. Supply of place base course materials
3. Applications of soil sterilant

SERVICES INCLUDED

1. Supply and place bedding course
2. Supply and install pavers of quality, shape, thickness and color as specified.
3. Supply and place all accessory items as required by the contract.

DESCRIPTION OF WORK

1. The extent of the paver work is as shown on the drawings and/or as specified herein.
2. Layout pattern shall be herringbone pattern, 45 degree with a single course border or as shown on the drawings.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. **Installer:** Subcontract brick paving work to a firm with not less than 3 years of successful experience in the required types of applications.
2. **Sample Installation:** Prior to the installation of brick paving work, fabricate sample panel using materials. Build panel at the site as directed, of full thickness and approximately 4'x3', in the completed work. Obtain Landscape Architect's acceptance of

visual qualities of the panel before start of brick paving work. Retain panel during construction as a standard judging completed brick paving work. Do not alter, move or destroy sample panel until work is completed. Provide a sample panel for each type of brick paving required. Do not change the source of brands of brick or related materials during progress of work.

1.04 SUBMITTALS

A. Product Data:

For information only, submit 2 copies of the manufacturer's technical data for each manufactured product, including certification that each product complies with the specified requirements. Include instructions for handling, storage, installation and protection of each product. Transmit copy of each instruction to the Installer.

B. Samples:

Submit 2 samples of each type of paving brick required. Include in each set the full range of exposed color and texture to be expected in the completed work. Landscape Architect's review will be for color and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

JOB CONDITIONS

Site requirements: No concrete pavers shall be laid on improperly prepared base.

Protection of Work: At the end of each work period, protect unrestrained edges with plywood or similar material.

PART 2 – PRODUCTS

2.01 MATERIALS

A. PRECAST CONCRETE BRICK PAVING UNITS:

The interlocking pavers shall follow the design criteria of ASTM C-936-82 with compressive strength minimum 8,000 psi. Base material to be designed and paver installation in accordance to the guidelines of National Concrete Masonry Association "Structural Design of Concrete Block Pavements." The aggregate length of chips on a single unit shall not exceed 10% of the perimeter of the exposed face of paver. Pavers with edge chips exceeding 5/16" and corner chips 1/2" are considered replaceable.

- 1. CEMENTIOUS MATERIALS:** Portland Cement shall conform to ASTM Specification C0150.

2. **AGGREGATES:** Aggregates shall conform to ASTM Specification C-33 for Normal Weight Concrete Aggregate (no expanded shall or lightweight aggregates) except that grading requirements shall not necessarily apply.
3. **OTHER CONSTITUENTS:** Color pigments, air-entraining agents integral water repellents, finely ground silica, etc., shall be previously established as applicable, or shall be previously established as suitable for use in concrete.
4. **PHYSICAL REQUIREMENTS:**
 - i. Compressive Strength- At the time of delivery of the work site, the average compressive strength of the paver units shall not be less than 8,000 psi, with no individual unit strength less than 7200 psi as per ASTM Specification C936-82. Testing procedures shall be in accordance with ASTM Specification C-140.
 - ii. Absorption- The average absorption shall not be greater than five percent (5%) with no individual absorption greater than seven percent (7%) as required by ASTM Specification C-936-82.
5. **SIZE:** 3 7/8" x 7 7/8" x 2 3/8", Klassic Interlocking Paver by Krehling or approved equal
6. **COLOR AND TEXTURE:** Earthtones or Color Blends Series Krehling or approved equal.
7. **APPROVED BRICK COLORS:** Paver color to be approved by Landscape Operations/Transportation Operations Department.

Border Brick: 1 course
Field Brick: Herringbone pattern, 45 degrees
8. **VISUAL INSPECTION:** All units shall be sound and free of defects that would interfere with the proper placing of the unit or impair the strength or permanence of the construction. Minor cracks incidental to the usual methods of handling in shipment and delivery, shall not be deemed grounds for rejection.
9. **BEDDING SAND:** In compliance with ASTM Specification C33, the bedding sand shall comprise clean, well-graded sand. The bedding sand shall be dry, sharp and free of organics and deleterious soluble salts or other contaminants likely to cause

efflorescence. The sand shall be of uniform moisture content when screeded and shall be protected against rain when stockpiled on site prior to screeding. The moisture content shall be in the range of 4-8%.

10. JOINTING SAND: In compliance with ASTM Specification C144-gradulation for 1/8" joints-the jointing sand shall be free of organics and soluble salts or contaminants likely to cause efflorescence.

11. GRANULAR BASE: The graded aggregate for the granular base shall comply with ASTM Specification 2940 or equivalent for base material.

PART 3 – EXECUTION

3.01 INSTALLATION GENERAL:

Do not use brick with chips, voids, discolorations, or other defects, which might be visible or cause staining in the finish work.

Cut brick with motor-driven saw equipment designed to cut masonry with clean, sharp unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. Where cutting is required, use the largest size brick units possible and avoid the use of small pieces of brick or large mortar or gapped areas.

Set Brick patterns with uniform joint widths as indicated.

- A. Immediately clean up sand on paved and finished surface areas.
- B. Remove debris and excess materials from project site daily.

3.02 SITE PREPARATION:

The site must be stripped of all topsoil, unstable or unconsolidated materials to the grades specified. Further construction will not proceed until the Owner or his representative has inspected the subgrade.

3.03 VERIFICATION OF SUBGRADE:

The Contractor shall ensure that the prepared subgrade is protected from damage from inundation by surface water and damage by other trades. No traffic shall be allowed to cross the prepared subgrade. Repair of any damage resulting shall be the responsibility of the Contractor and shall be repaired in a satisfactory manner.

Further construction will not proceed until the subgrade has been inspected by the Owner or his Consultant.

3.04 VERIFICATION OF GRANULAR BASE:

Place graded aggregate for base over compacted subgrade. Provide compacted thickness of base as indicated. Compacted base shall be 100% of maximum density achieved in accordance with ASTM Specification D.698 (100% Standard Protector maximum Dry Density). Base shall be spread in layers which, when compacted, will not exceed 4". Profile of base to be within an allowable local tolerance of ½" within 10 feet. The upper surface of the base shall be sufficiently well graded and compacted to prevent infiltration of the bedding sand into the base both during construction and throughout its service life.

Segregated areas of the granular base shall be "blinded" by the application of crushed fines that have been watered and compacted into the surface.

Further construction will not proceed until the base has been inspected and approved by the Owner or his representative.

3.05 GRANULAR BASE THICKNESS:

For roadway applications with well-drained consolidated subgrade or poorly drained unconsolidated subgrade the granular base thickness shall be six inches (6"). The base shall extend the full width of the pavement and edge restraints plus 4" minimum wherever edge restraints are to be constructed with the pavement. The 6" base shall be compacted to 95% compaction.

3.06 EDGE RESTRAINTS:

Adequate edge restraint shall be provided; curb and gutter, edge strips or established paving units, shall be installed vertically down to the granular base. All edge restraints specified shall be supported on a compacted base.

Install edge restraints prior to installation of pavers. See detail.

3.07 SURFACE DRAINAGE:

Gradients and crossfalls shall have a minimum value of 2% (1/4" per foot) and shall be channeled to appropriate drains away from any unrestrained edge.

3.08 SAND BEDDING COURSE:

Spreading: The bedding sand shall be spread loose in a uniform layer to give depth after compaction of the paving units, of between nominally 1"-1 ¼". Under no circumstances shall the bedding layer exceed 1 1/2" in thickness following compaction of the pavement.

Screeding: The spread sand shall be carefully maintained in a loose condition and protected against precompaction by traffic or rain both prior to and following screeding. Sand shall be lightly screeded in a loose condition to predetermined depth. Under no circumstances shall the sand be screeded in advance of laying face to an extent to which paving will not be completed on that day. Any screeded sand which is precompacted prior to laying of paving unit shall be brought back to profile in a loose condition. Neither pedestrian nor vehicular traffic shall be permitted on the screeded sand. The Contractor shall screed the bedding sand using either an approved mechanical spreader or by the use of screed guides and boards.

3.09 INSTALLATION OF PAVERS:

General: Pavers with excessive chips, cracks, voids, discolorations or other defects shall not be installed (See 2.01A).

Joints: In order to maintain the desired pattern joint spacing must be consistent. For maximum interlock, it is recommended that a joint spacing of approximately 1/8" be maintained. This spacing must also be provided for the first row abutting the edge restraint.

Alignment: String lines or chalk lines on bedding sand should be used to hold all pattern lines true.

Cutting: The gaps at the edge of the paving surface shall be filled with manufactured edge pavers or with pavers cut to fit. Cutting shall be accomplished to leave a clean edge to the traffic surface using a mechanical hydraulic or guillotine cutter or masonry saw. The use of infill concrete or discontinuities in patterns will not be permitted except along the outer pavement boundaries; adjacent to drains, manholes and edge restraints.

Sweeping Clean: Upon completion of cutting, the area must be swept clean of all debris to facilitate inspection and to ensure pavers are not damaged during compaction.

Inspection of Installed Pavers: After sweeping and prior to compaction, the paved area must be inspected to ensure satisfactory color blending. Pavers can be moved easily at this time to achieve good color distribution.

3.10 INITIAL COMPACTION OF PAVERS:

After inspection of the paving units, they shall be compacted to achieve consolidation of the sand bedding and brought to design levels and

profiles by not less than three passes of a suitable plate compactor. Compaction shall be accomplished by the use of a plate compactor capable of a minimum of 5000-pound compaction force. Initial compaction should proceed as closely as possible following installation of the paving units and prior to acceptance of any traffic or application of sweeping sand.

3.11 PAVER INSPECTION:

Any units, which are structurally damaged during compaction, shall be immediately removed and replaced.

3.12 JOINTING SAND:

The jointing sand shall be spread over the pavement after initial compaction has been completed. This jointing sand shall be spread as soon as is practical after initial compaction and prior to the termination of work on that day.

The jointing sand shall be broomed to fill the joints. Excess sand shall then be removed from the pavement surface and the pavers shall be compacted again to settle the jointing sand.

3.13 FINAL COMPACTION OF PAVERS:

After jointing sand has been installed and the pavement surface swept clean, final compaction shall be accomplished by not less than two passes of the place compactor.

Final compaction should proceed as closely as possible following installation of jointing sand and prior the acceptance of any traffic. Inspection by the Owner or his representative shall determine whether a second application or partial application of jointing sand is required.

3.14 CLEAN UP:

Sweep clean all paved areas of excess sand and dirt. Pick up and remove from the site all surplus materials, equipment and debris resulting from this section of the work.

3.15 TOLERANCE OF SURFACE PROFILE:

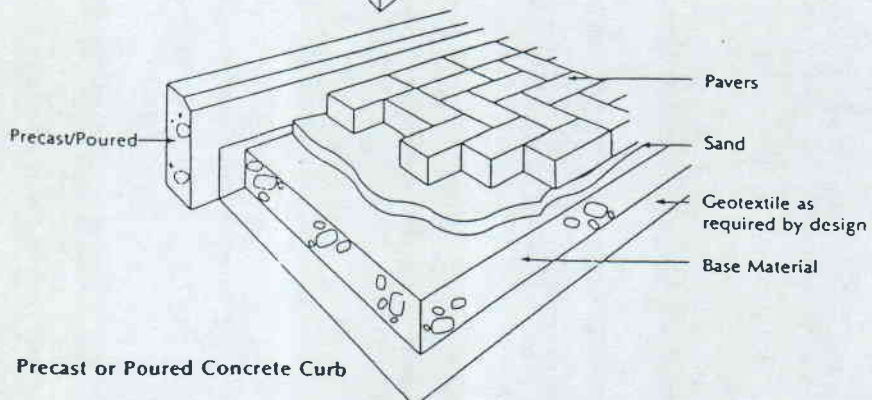
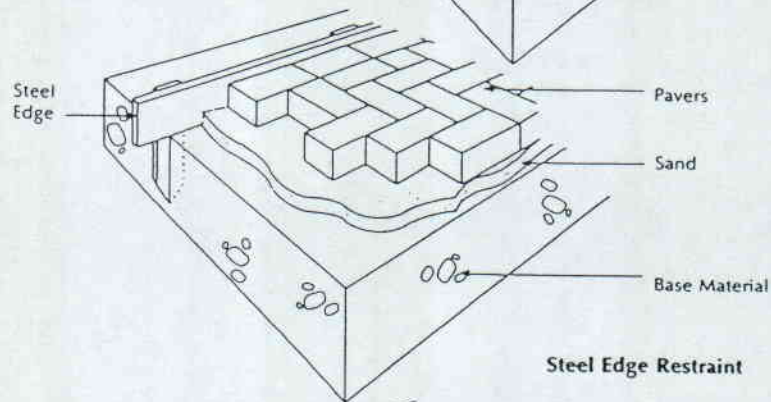
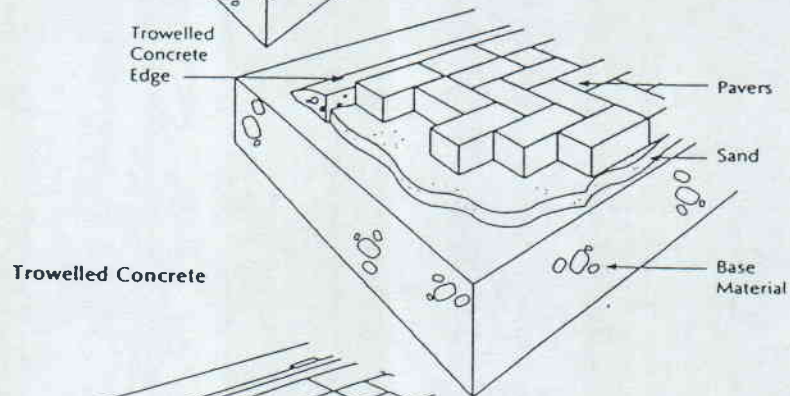
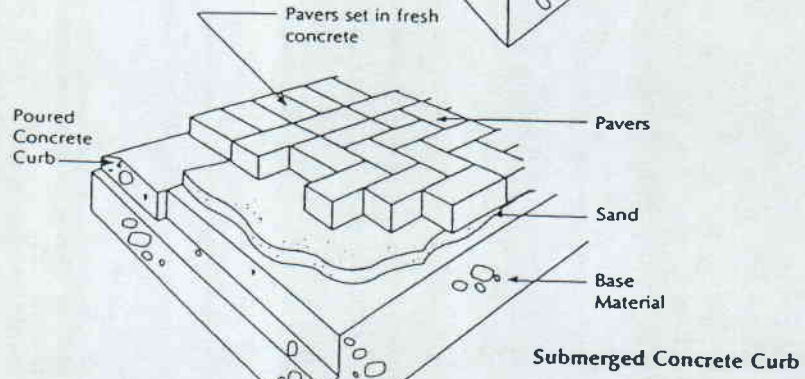
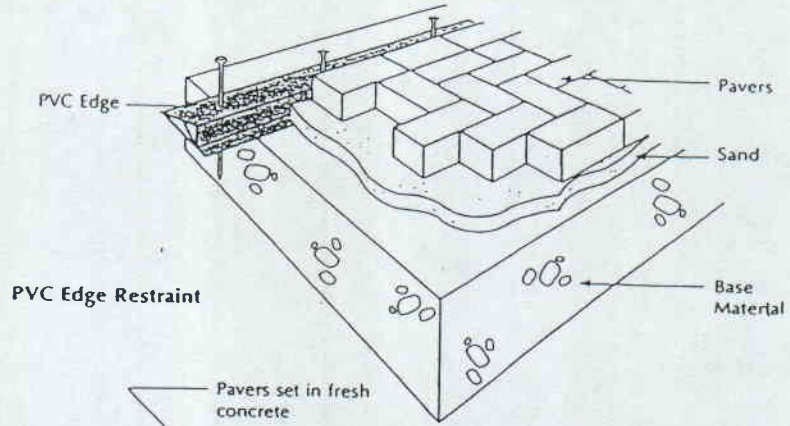
All surface and pavement structures shall be true to the lines, levels, grades, thickness and cross sections as shown on the drawings.

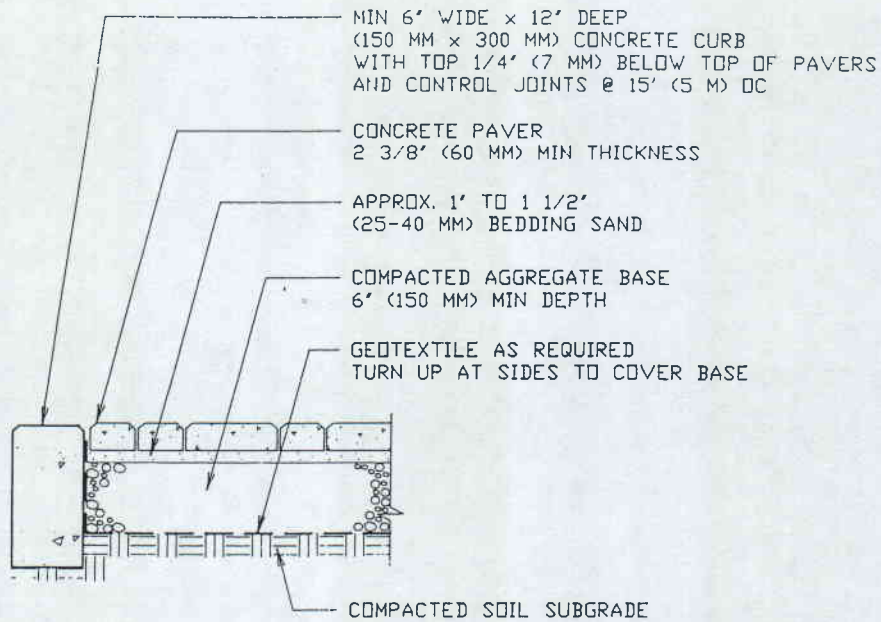
All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels. In no case shall the crossfall of any portion of the pavement be less than 2 percent (1/4" per foot).

The pavement surface shall not deviate by more than 1/2" in 10 feet from a straight edge laid in any direction.

END OF SECTION - 04200

TYPICAL EDGE RESTRAINTS



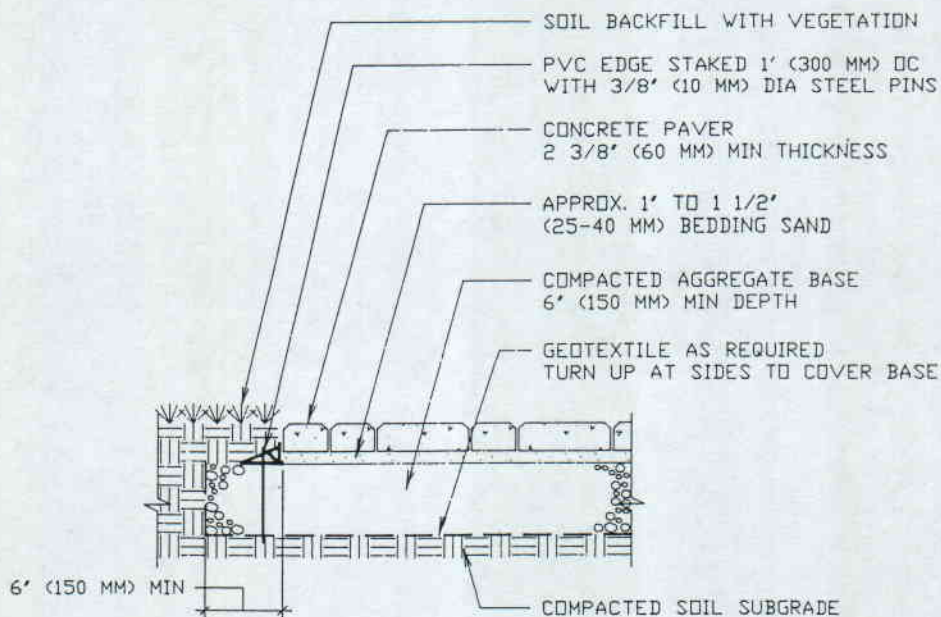


NOTE:

1. THICKNESS OF GRAVEL BASE WILL VARY WITH TYPE OF SOIL SUBGRADE AND CLIMATE.
2. CONCRETE PAVERS SHOULD BE PLACED ON A CEMENT TREATED BASE IF SOIL IS EXTREMELY WEAK OR CONSTANTLY SATURATED. PAVERS CAN BE OVERLAID OR INLAID ON EXISTING ASPHALT OR CONCRETE DRIVEWAYS.

RESIDENTIAL DRIVEWAY
CONCRETE EDGES

DRAWING NO. CPI-11
SCALE 1"=1'-0"



NOTE: THICKNESS OF GRAVEL BASE WILL VARY WITH TYPE OF SOIL SUBGRADE AND CLIMATE.

RESIDENTIAL DRIVEWAY
PVC EDGE

DRAWING NO. CPI-13
SCALE 1"=1'-0"