

PERMEABLE PAVER TREE WELL

****From Statewide STP SDWK(11)**

- xx. DESCRIPTION. This work shall consist of furnishing and installing concrete unit pavers (permeable and standard) and setting bed at sidewalk openings surrounding existing and proposed trees at the locations indicated in the Plans and as directed by the Engineer.
- xx. QUALIFICATIONS.
- (a) Permeable and standard concrete unit pavers shall be manufactured by an Interlocking Concrete Pavement Institute (ICPI) Certified Producer with a minimum of 5 years successful experience manufacturing concrete pavers.
 - (b) The installer shall provide to the Engineer their installation history, including installation of permeable concrete pavement systems.
 - (c) The installer's foreman shall have a minimum of 5 years of experience in the installation of unit paver systems of similar size and complexity.
- xx. MATERIALS.
- (a) Permeable Concrete Unit Pavers.
 - (1) Permeable pavers shall be 4" x 8" x 2-3/8".
 - (2) Permeable pavers shall meet the requirements of ASTM C936 and the following:
 - a. Pavers shall have a minimum compressive strength of 8500 psi with no individual unit less than 7200 psi.
 - b. Pavers shall have maximum water absorption of 5% with no unit greater than 7% when tested in accordance with ASTM C140.
 - c. Pavers shall have a freeze-thaw resistance according to CSA A231.2-95.
 - d. Pavers shall be ADA compliant.
 - (3) Color shall be a red brick colored blend. The Contractor shall submit a representative sample of the permeable pavers for approval by the Engineer. The Contractor shall not order the permeable pavers unit until the sample is approved by the Engineer.
 - (b) Standard Concrete Unit Pavers. Standard concrete pavers shall be 4" x 8" x 2-3/8" concrete unit pavers that match the material composition, specifications, and color of the permeable pavers.

(c) Setting Bed Aggregate.

- (1) Setting bed aggregate shall be crushed stone conforming to ASTM No. 8 and shall meet the following gradation. Stone shall be crusher run and washed.

ASTM No. 8 Gradation for Bedding Layer

| Sieve Size | Percent Passing |
|------------------|-----------------|
| 1/2" (12.5 mm) | 100 |
| 3/8" (9.5 mm) | 85-100 |
| No. 4 (4.75 mm) | 10-30 |
| No. 8 (2.36 mm) | 0-10 |
| No. 16 (1.16 mm) | |

- (2) Setting bed aggregate to fill joints shall be crushed stone conforming to ASTM No. 9 and shall meet the following gradation. Stone shall be crusher and run and washed.

ASTM No. 9 Gradation for Bedding Layer

| Sieve Size | Percent Passing |
|------------------|-----------------|
| 1/2" (12.5 mm) | 100 |
| 3/8" (9.5 mm) | 100 |
| No. 4 (4.75 mm) | 85-100 |
| No. 8 (2.36 mm) | 10-40 |
| No. 16 (1.16 mm) | 0-10 |
| No. 50 | 0-5 |

- (d) Paver Sealer. Paver sealer shall be a clear, non-film forming, penetrating sealer that chemically bonds to the pavers without locking the joints of the permeable pavers. The sealer shall protect against damage associated with water intrusion, acid rain, deicing chemicals, freeze/thaw exposure, and airborne dirt and be recommended for use with a permeable paver system. The sealer shall retain the original appearance of the paver and shall provide a non-yellowing UV resistant finish.
- (e) Masonry Adhesive. Shall be a premium grade flexible masonry adhesive. It shall cure with a clear appearance intended for bonding masonry products. The adhesive shall be non-toxic after full cure and shall be fully cured within 1 to 2 weeks after application.

xx. CONSTRUCTION REQUIREMENTS.

- (a) General. The Contractor shall perform all excavation as not to damage the three roots. Excavation shall be performed by hand as required and as directed by the Engineer.

The extent of hand excavation shall be determined by the size of the tree and location of the roots.

All work shall be performed with extreme care as to protect the existing tree roots and trunk, and to minimize compaction.

Where permeable paver tree well is to be installed at a new tree, CU Structural Soil shall be installed to a depth of 3 feet below the crushed stone setting bed.

The setting bed aggregate shall be spread evenly over the base course and screed to a minimum nominal 1-1/2 inch thickness.

For installation on compacted crushed stone base and soil subgrade, the installer should be aware that the top surface of the pavers shall be flush with the sidewalk after compaction.

The bedding material shall not be disturbed or pre-compacted after it has been screed.

Permeable pavers shall be free of foreign material before installation.

Permeable pavers shall be set in accordance with the patterns shown in the Plans. The permeable pavers shall be installed straight and true to the required lines. Straight pattern lines shall be maintained as shown.

Typical joints between the pavers shall be no less than 1/16 inch and no more than 3/16 inch wide.

Permeable pavers shall be cut as necessary to accommodate field conditions and to achieve an accurate and consistent fit to the pattern as shown in the Plans. Pavers shall be free from stain, dirt, or dust after cutting. Paver units shall not be cut to a size smaller than one-third of a whole paver.

Install a soldier course of standard concrete unit pavers as shown in the Plans.

Pavers shall not be installed during heavy rain or snowfall or over frozen base material.

- (b) Compaction. Pavers at existing trees shall be compacted by hand.
- (c) Masonry Adhesive Application. Following compaction, remove and reset standard concrete unit paver soldier course closest to the tree trunk. While resetting these pavers bond them together with masonry adhesive.

The adhesive shall be used between bricks. It shall not be visible on the surface of the pavers. Any adhesive on the top of the pavers or otherwise visible shall be removed at the Contractor's expense.

Follow the manufacturer's recommendation for applying the masonry adhesive. Pavers shall be clean and moisture free. Work shall be performed between 40 and 100°F. Avoid applying the adhesive if rain is forecasted within 12 hours. Adhesive should be applied in a thickness less than 3/8 inch. Allow 24 hours to dry or until the adhesive has set before area is subjected to normal traffic.

- (d) Paver Joint Filling and Compaction. Pavers broken or cracked shall be replaced with new pavers to match adjoining pavers. Pavers identified as damaged by the Engineer shall be removed and replaced with new pavers at no additional cost.

Setting bed aggregate (ASTM No. 9) shall be swept into the joints and apertures.

Compact the entire concrete unit pavement by hand.

Sweep additional 1/4" setting bed aggregate (ASTM No. 9) over pavement surfaces and compact until the joints and apertures are completely filled.

Excess setting bed aggregate (ASTM No. 9) shall be removed from the surface of the pavers. The final surface elevations shall not deviate more than a 1/4" under a 10 foot long straight edge.

- (e) Sealant Application. The Contractor shall apply paver sealant. Pavers shall be cleaned of dust and loose particles prior to application. Surface must be completely dry and no weather forecasted within 24 hours. Sealant shall not be applied below 50°F or above 80 °F. Follow manufacturer's instructions for preparing and applying sealer. Apply with a roller or squeegee until surface is saturated, but sealer is not running or pooling on the surface. Allow 24 hours to dry or until the adhesive has set before area is subjected to normal traffic.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Permeable Paver Tree Well) to be measured for payment will be the number of square meters (square feet) installed in the complete and accepted work.

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Permeable Paver Tree Well) will be paid for at the Contract unit price per square meter (square foot). Payment will be full compensation for performing the work specified and for furnishing all materials, labor, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

| <u>Pay Item</u> | <u>Pay Unit</u> |
|---|-----------------|
| 900.670 Special Provision (Permeable Paver Tree Well) | Square Foot |
| 900.675 Special Provision (Permeable Paver Tree Well) | Square Meter |