SPECIAL PROVISIONS  CONTRACT NO.  1 of 5

500 — PERMEABLE PAVEMENT SYSTEM

CATEGORY 500  PAVING

PERMEABLE PAVEMENT SYSTEM

DESCRIPTION. Construct a permeable pavement system (PPS) using pervious concrete as shown and as directed. The work may include excavation and removal of material, rotor tilling, placement of geotextile, stone base course, a leveling course, drainage pipe, and the construction of pervious concrete (PC) pavement per ACI 522 and as shown.

MATERIALS:

<table>
<thead>
<tr>
<th>Material</th>
<th>Code</th>
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<tbody>
<tr>
<td>Pervious Concrete</td>
<td>902</td>
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<tr>
<td>Leveling Course</td>
<td>M 43 - #8</td>
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<tr>
<td>Stone Base/Leveling Course</td>
<td>901 – #57</td>
</tr>
<tr>
<td>Stone Base</td>
<td>M 43 - #2</td>
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<tr>
<td>PCC Sand</td>
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<tr>
<td>Drainage Pipe</td>
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<td>Production Plants</td>
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<td>Water</td>
<td>921.01</td>
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<tr>
<td>Geotextile Class SE</td>
<td>921.09</td>
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Contractor Qualifications. The Contractor responsible for placing the PC shall have one employee at the project site with a National Ready Mixed Concrete Association (NRMCA) Craftsman certification or three employees with NRMCA certified Pervious Concrete Installers certification. Provide certification three weeks prior to placement of the test panels. These employees must remain on site throughout the day’s PPS construction operations. Failure to remain on site may be considered cause not to accept the PPS placed that day for payment. Alternative documentation of qualifications may be permitted as approved.

CONSTRUCTION. Do not begin construction until all contributing drainage areas are stabilized as shown and to the satisfaction of the Engineer. Do not use the PPS area as a sediment control facility. Do not construct the PPS in areas previously used for erosion and sediment control.

Pre-Construction Meeting. Conduct a pre-construction meeting to discuss the construction of the PPS and other construction needs. The following personnel shall be present: project designer, contractor performing the PPS work, project engineer and OMT personnel.

Test Panels. Construct two 12’ x 15’ or two 180 ft² test panels using the approved PC mix design, PPS components, equipment, construction, curing and protection methods specified at least 30 working days prior to construction. The test panels shall include one contraction joint, minimum. One NRMCA Craftsman or three NRMCA certified PC Installers shall be present during test panel construction. Acceptable test panels may be incorporated into the project as approved.

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Test panels must be free of debris and reflect final surface conditions in order to qualify for acceptance. The test panels shall meet the following:

(a) Measure the density of fresh concrete per C1688. The fresh density shall be ± 5 pcf of the approved mix design.

(b) Obtain three core samples from the compacted pavement and measure for thickness per C42. Cores shall be a minimum normal 4” diameter.

(c) The average thickness of the three cores shall have an average difference between -3/8” to 1 ½” of the specified thickness of the pavement. No core shall measure less than ¾” of the specified thickness. The average thickness shall not exceed the specified thickness by more than 1 ½”.

(d) Measure density in saturated condition per C 140.

(e) Measure the water infiltration rate at three locations in each panel per C1701. The minimum water infiltration rate of any single test shall be 400 in. per hour.

(f) Overall appearance of the test panels surface texture (even surface, smooth, sharp edges).

Unacceptable test panels shall be removed and disposed of in the proper manner at no additional cost. The same personnel placing the test panels shall also place the PPS.

**Excavation.** Excavate to the dimensions, side slopes, and elevations shown and as directed. Refer to the contract documents for the excavation depths in areas where the PPS is to be constructed in steps or a non-even surface. The bottom of the excavated area shall be flat for slope construction as needed. Remove any unsuitable soil at the bottom of excavation and backfill to the satisfaction of the Engineer.

Operate excavators and backhoes on the ground adjacent to the PP area when possible. Otherwise, use wide-track or marsh equipment within the PPS area if operating on the adjacent ground is not practical. The use of light equipment with turf tires within the PPS area is also acceptable. The use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires within the PPS area is prohibited.

The area will be inspected after the excavation is complete and before any material is placed.

After the excavation is inspected, rotor till the bottom of the excavation a minimum depth of 6 inches to alleviate compaction from excavation activities.

Substitute methods for rotor tilling must be approved prior to use. Remove any standing water from the bottom of the excavation and ensure the soil is friable before rotor tilling. Do not rotor till the excavation bottom if it is in a muddy or frozen condition.
Geotextile Placement. Refer to 921.09. After rotor tilling the bottom of the PP facility, place the geotextile along the sides as shown or as directed.

Sand Layer. Place a sand layer after any geotextile has been placed when specified, and as shown and as directed. Level out the sand layer to equal depth in all areas. Place the sand layer using a method that minimizes undue compaction of the rotor-tilled soil.

Drainage Pipes. Refer to the Contract Documents to determine when and where drainage pipes need to be placed.

Stone Bases. Place a stone base after rotor tilling and after the sand layer (when required) as follows:

(a) Place a base lift of No 2 or No 57 stone to the depth shown and as directed.

(b) The lift’s top elevation should be on the same slope as the final slope of the PC material.

(c) In areas where steps are to be constructed, the front side will be at a different depth than the back side.

(d) Lightly compact each layer with a plate compactor or with a single pass of a lightweight roller. Any material required over drainage pipe may be placed during compaction as shown.

Leveling Course. Place a leveling course of No 8 or No 57 stone and lightly compact when specified. Cease compaction once the leveling course is stable enough to support paving equipment.

Pervious Concrete Pavement. Construct as follows:

(a) Form up the PC area as needed before placement.

(b) Wet the area where the PC is to be placed to saturation, with no standing water.

(c) Placed, compact, and finish the pervious concrete following the procedures used to construct the approved test panels.

(d) Finish the pavement to the specified elevation to + 3/4”, - 0”.

(e) Construct contraction and isolation joints as shown. Contraction joint depth shall be ¼ of the pavement thickness ± ¼”.

(f) Extend isolation joints through the full depth of the pavement and fill with approved isolation material.
(g) Begin curing within 20 minutes of the discharge of the concrete, unless otherwise approved.

(h) Cure pavement by covering with a minimum 6 mil thick polyethylene sheeting. Cover all exposed edges with polyethylene sheeting.

(i) Cure pavement for a minimum of 7 uninterrupted days with no traffic allowed.

(j) Protect the PPS from water runoff and foreign material at all times until project construction is complete.

Joints. Joint spacing shall be as shown or directed.

Thickness, Density, and Infiltration rate. Conduct a minimum of one test for each day’s PC placement per C 172 and C1688. Measure the delivered fresh density per C1688. The fresh density shall be ± five pcf of the approved mix design.

(a) Take a minimum of three cores per C 42 for every 5,000 ft² or fraction thereof a minimum of seven days following the most recent placement.

(b) Cores shall be a minimum nominal four in. in diameter.

(c) Use untrimmed, hardened core samples to measure pavement thickness. The average thickness of the three cores shall have an average difference between -3/8” to 1 ½” of the specified pavement thickness. No core shall exceed ¾” less than the specified thickness.

(d) The average thickness shall not exceed the specified thickness by more than 1 ½”.

(e) Trim and measure the cores for density in the saturated condition per C 140 after determining the pavement thickness.

(f) Immerse the trimmed cores in water for 24 hours, allow to drain for one (1) minute, remove surface water with a damp cloth, then weigh immediately.

(g) The hardened density shall be within ± five percent of the approved hardened density from the test panels.

Measure the water infiltration per C 1701. The average infiltration rate shall be a minimum of 400 in. per hour.

Fill core holes with concrete meeting PCC mix #3 or other approved materials.

When the PPS section placed does not meet the above criteria for thickness, density, and infiltration, remove that section and replace with acceptable material at no additional cost.
ADA ramps. Do not place PC material in areas where ADA ramps are to be constructed. Construct ADA ramps using PCC mix #3.

MEASUREMENT AND PAYMENT. Permeable Pavement System will be paid for at the Contract unit price per square yard based on the depths shown. The square yard price shall include excavation and removal of material, rotor tilling, geotextile, drainage pipe, test panels, pervious concrete, Portland cement concrete, curing and covering, and for any other material, labor, equipment, tools, and incidentals necessary to complete the work.

Sand. The sand layer will be paid for at the contract unit price bid per ton complete and in place. Payment will include full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

No 2 Stone. No. 2 Stone will be paid for at the contract unit price bid per ton complete and in place. Payment will include full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

No 57 Stone. No. 57 Stone will be paid for at the contract unit price bid per ton complete and in place. Payment will include full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.

No 8 Stone. No. 8 Stone will be paid for at the contract unit price bid per ton complete and in place. Payment will include full compensation for furnishing, hauling, placing, and all material, labor, equipment, tools, and incidentals necessary to complete the item specified.