

621.07. POROUS FLEXIBLE PAVEMENT

(A) DESCRIPTION

This work shall consist of furnishing and placing the items specified to construct porous flexible pavement, as shown in the contract documents, or as directed by the Engineer. Except as herein stated, the requirements specified in the Standard Specifications are applicable to this specification.

(B) REFERENCES

ASTM C 33 - Standard Specification for Concrete Aggregates

ASTM D3385 - Standard Test Method for Infiltration Rate of Soils in Field Using Double-Ring Infiltrometer

AASHTO T-180 - Standard Method of Test for Moisture-Density Relations of Soils

(C) MATERIALS

All materials shall meet the requirements set forth in the Standard Specifications or modified in the contract documents.

1. SUBBASE

- a. Base aggregates shall be #57 coarse aggregate (3/4" to 1 1/2") with no fines and shall meet the durability requirements of ASTM C 33.

2. POROUS FLEXIBLE PAVEMENT

- a. Bonding: Have the capacity to bond with: wood; steel; concrete; aluminum; compacted aggregate; enamel tile, or; fiberglass.
- b. Resistance to degradation: Resistant to: chlorine; ozone; bromine; muriatic acid; salt water; oil; transmission oil, and; hydraulic oil.
- c. Aggregate: Triple-washed coarse chipped granite aggregate (3/8 to 1/2 inch) per ASTM C 33.
 - i. Nominal maximum aggregate size shall not exceed 1/3 of the specified paving thickness.
- d. Rubber: Recycled passenger tires ground to 3/8" nominal with the wire remnants removed. Colorizing performed at the factory as tested and certified by Manufacturer.
- e. Binding agent: urethane liquid prepolymer based upon Diphenylmethane-Diisocyanate as tested and certified by the Porous Flexible Pavement Manufacturer.
- f. Air Entraining Agents: Prohibited.

- g. Mix Design: Using materials acceptable to the Manufacturer design a tentative mix and test for the consistency intended for use on the work and specified.
 - i. The volume by weight of aggregate per cu. yd. shall be 50% of the total dry mix.
 - ii. The volume by weight of the rubber product per cu. yd. shall be 50% of the total dry mix.
 - iii. Permeability: Pervious infiltration rate of 2,000 gallons/square foot/hour.
 - h. Color: As specified in Contract Documents.
3. ROOT BARRIER FABRIC: material that is used to prevent infiltration of plant and tree roots into porous flexible pavement.

(D) SUBMITTALS

1. Manufacturer Qualifications - Within seven (7) days after notice to proceed, the Contractor shall furnish the name and location of the manufacturer, and:
 - a. Submit a list of materials proposed for work under this Section including the name and address of all material sources and all bituminous mixing plants.
 - b. Submit certificates, signed by the material sources and the relevant subcontractors, stating that the materials meet or exceed the specified requirements.
2. Installer Qualifications
 - a. Porous Flexible Pavement installer shall be currently certified by the Manufacturer and have successfully installed a minimum of 10,000 square feet.
 - b. Porous Flexible Pavement installer shall employ no less than two Manufacturer-certified Porous Flexible Pavement technicians on staff who directly oversee and perform the installations during all Porous Rubber Pavement placement, unless otherwise specified.
 - c. Installer must provide a list of successful Porous Flexible Pavement projects, including the address, square footage and photographs for each project. Manufacturer's certifications must be presented.
3. Proposed Mix Design
4. Samples for Verification: Provide two 6" diameter samples, in specified color, full thickness
5. Root barrier fabric manufacturer and properties

(E) CONSTRUCTION REQUIREMENTS

1. PROJECT SITE CONDITIONS
 - a. Minimize exposure to wind and heat before curing materials are applied.
 - b. Avoid placing if rain, snow, or frost is forecast within 24 hours unless measures are taken as described later. Always protect fresh paving from moisture and freezing.

2. SUBGRADE PREPARATION

- a. Prepare subgrade as specified in the contract documents.
- b. Construct subgrade to ensure that the required paving thickness is obtained in all locations.
- c. Keep all traffic off of the subgrade during construction to the maximum extent practical. Regrade subgrade disturbed by delivery vehicles or other construction traffic, as needed.
- d. Compact the material added to obtain final subgrade elevation.
- e. Determine subgrade permeability in accordance with ASTM D3385 before porous paving placement. Confirm that subgrade permeability meets requirements of Contract Documents.

3. SUBBASE

- a. Prepare subbase in accordance with contract documents, with 95% compaction per AASHTO T-180, installed over a Type 1 Geotextile.
- b. Install root barrier fabric where called for on Contract Documents.

4. SETTING FORMWORK

- a. Set, align, and brace forms so that the hardened paving meets the tolerances specified herein. Forms shall be clean and free of debris of any kind, rust, and hardened concrete.
- b. Apply form release agent, either bio-diesel or vegetable oil coating to the form face which will be in contact with porous paving, immediately before placing paving.
- c. The vertical face of previously placed concrete may be used as a form.
 1. Protect previously placed paving from damage.
 2. Do not apply form release agent to previously placed concrete.
 3. Apply bonding agent to face of surfaces when adhesion is desired.

5. BATCHING, MIXING, AND DELIVERY

- a. Batch and mix on site in compliance with Manufacturer's written specifications, except that discharge shall be completed within 5 minutes of the introduction of urethane to the dry products.

6. PLACING AND FINISHING PAVING

- a. Do not place porous paving on frozen or wet subgrade or subbase.
- b. Deposit porous paving either directly onto the subgrade or subbase by wheelbarrow or by material handler onto the subgrade or subbase, unless otherwise specified.
- c. Porous paving has a thickness of 2", over Clean Coarse Aggregate (#57 stone) with 95% compaction per AASHTO T-180, with a minimum thickness of 4 inches or over other approved types of structural soil, over stabilized sub-base.

- d. Deposit porous paving between the forms to an approximately uniform height.
- e. Spread the porous paving using a come-along, short-handle, square-ended shovel or rake.
- f. Use steel trowels to finish to the elevations and thickness specified in Contract Documents.

7. FINAL SURFACE TEXTURE

- a. Final surface of porous paving shall be smoothed with bull float and magnesium trowels.

8. EDGING

- a. When forms are not used, bevel the edge of the top surface to a 45° slope.

9. CURING

- a. Begin curing within 20 minutes of paving discharge, unless longer working time is accepted by the Manufacturer.
- b. Completely cover the paving surface with a minimum 4 mil thick polyethylene sheet only if rain or sprinklers are imminent within 20 minutes. Cut sheeting to a minimum of a full placement width.
 1. Cover all exposed edges of paving with polyethylene sheet.
 2. Secure curing cover material without using dirt.
- c. Cure paving for a minimum of 24 uninterrupted hours, unless otherwise specified.

10. HOT AND COLD-WEATHER CONSTRUCTION

- a. In cold weather when temperatures may fall below freezing just after an installation, utilize a fan to maintain airflow over porous paving during the curing process.
- b. Porous flexible pavement may be installed in warm weather with temperatures up to 95 degrees Fahrenheit without any special procedures.
- c. Do not open the paving to light vehicular or pedestrian traffic until the porous flexible pavement has cured for at least 24 hours during warm weather, and 48 hours during very cold temperatures at or near freezing.

(F) MEASURE AND PAYMENT

The unit of measure for porous flexible pavement will be the square yard. Payment for porous flexible pavement will be made at the Contract unit price per square yard which will include, backfill, compaction, porous flexible pavement, root barrier fabric and all labor, materials, tools, equipment and incidentals needed to complete work specified.

Geotextile and aggregate subbase will be measured and paid for separately.