

POROUS ASPHALT PAVEMENT BASE COURSE

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PAPB.01 Description. This work shall consist of constructing a Porous Asphalt Pavement Base (PAPB) course comprised of aggregate, polymer-modified asphalt binder and fiber stabilizer mixed in a central plant and spread and compacted on a prepared surface.

All numbered specification references in this document refer to Ohio Department of Transportation (ODOT), Construction and Materials Specifications.

Provide a Field Quality Control Supervisor (FQCS), holding Supplement 1041 Field Quality Control Supervisor approval with endorsement for porous asphalt construction and who is a company employee, who is at the paving site during placement of any non-temporary porous asphalt concrete pavement. Ensure personnel obtaining and handling cores at the project site are approved Level 2 technicians, FQCS or personnel approved by OMM.

Comply with the requirements of Item 401 except as modified below.

PAPB.02 Composition.

Furnish materials conforming to:

Asphalt binder	702.01, PG 64-22 Modified with 5-percent SBR Latex ¹ , or PG76-22M(ER80) (ER80 denotes Elastic Recovery to be 80 min.)
Aggregates	703.05
Coarse aggregate angularity, percent fractured (two or more faces), ASTM D5821.....	100%
Mineral filler	703.07
Rubber compound	702.14

Notes:

1. Provide a quantity of asphalt binder and Styrene Butadiene Rubber (SBR) in latex form as required to produce a composition of 95 ±0.3 percent asphalt binder to 5±0.3 percent by weight SBR solids and meeting the requirements of PG 76-22.

Fiber Stabilizer: Use cellulose fiber in loose or pellet form meeting the properties shown in Table 1. Provide the fiber manufacturer's most recent actual test data and a certification of compliance with the JMF submittal. Protect the fiber stabilizer from moisture or other contamination. Add the fiber at a dosage rate of 0.3 - 0.4% by weight of the total mix to control draindown in production.

Property Description	Specification
Fiber length (max):	0.25 inch (6.35 mm)
Sieve Analysis - Alpine Sieve Method	
• Passing No. 100 (150 µm) sieve	60-80%
Sieve Analysis - Ro-Tap Sieve Method	
• Passing No. 20 (850 µm) sieve:	80-95%
• Passing No. 40 (425 µm) sieve:	45-85%
• Passing No. 100 (150 µm) sieve:	5-40%
Ash Content:	18% non-volatiles (5%)
pH:	7.5 (1.0)
Oil Absorption:(times fiber weight)	5.0 (1.0)
Moisture Content (max):	5.0%

Cellulose Pellets. Cellulose pellets consist of cellulose fiber and may be blended with 0 - 20% asphalt binder. Meet the cellulose fiber requirements above. If no asphalt binder is used, add the pellet at a dosage rate of 0.3 - 0.4% by weight of the total mix to control draindown in production. Adjust the fiber dosage to maintain the desired fiber amount when fiber is pre-blended with binder.

1. Pellet size: 1/4 cubic inch (maximum)
2. Binder: 25 - 80 pen.

Do not use reclaimed asphalt concrete pavement.

Combine asphalt binder with no. 57 or 67 size aggregate such that its content is 3.5 percent by weight of the mix.

PAPB.03 Design Verification. A minimum of 3 weeks before the production of the mixture, submit for approval a computed blend of aggregate and asphalt binder, and production temperature range. Use ODOT JMF forms for this submittal. Final design acceptance is subject to field verification and actual performance. Field verification may include additional testing by the owner.

PAPB.04 Mixing. Mix the aggregate, asphalt binder material and fiber stabilizer within the established temperature range until all the aggregate is coated. Establish the mixing temperature at a binder viscosity of 800 ± 100 cSt. Provide a mixture that does not show draindown of the asphalt binder, is shiny, completely coated, and is not dull or brown in appearance; a sign of excessive absorption or low asphalt binder content.

PAPB.05 Weather Limitations. Spread the mixture only when the atmospheric temperature is at least 45 °F (7 °C) and rising. Do not place the mixture when rain is imminent. Cease all operations if rain occurs during placement. Do not place the mixture during any weather conditions that would cause its degradation, segregation, or contamination.

PAPB.06 Spreading and Compacting. Spread the mixture in a method that produces a smooth, uniform layer before compacting. Take measures to ensure the surface over which the PAPB is being placed is not displaced or damaged during the paving process. Using a rubber-tired paver is permitted unless it displaces or damages the underlying layer; otherwise, use a track-mounted paver. Compact the mixture using a ballasted static tandem steel wheel roller having a minimum weight of 8 tons. Initiate rolling immediately upon placement while the mat surface is at the compaction temperature. The compaction temperature is established at a binder viscosity of 1400 ± 200 cSt. Failure to initiate rolling at the compaction temperature is cause for rejecting pavement installation. [Note: Porous asphalt mixtures cool rapidly. Failure to roll the mixture at the compaction temperature compromises the asphalt mixture cohesiveness and places the pavement at risk of raveling.] Use a minimum of two (2) passes of a static tandem steel wheel roller, completely seating the aggregate particles without crushing., a pass being coverage of the area in one direction.. If breakup at the edge of the mat occurs during compaction provide lateral support using forms or other methods approved by the owner. Do not contaminate the mixture with this lateral support. Form transverse construction joints by cutting back into the completed work to form a vertical face.

PAPB.07 Thickness Tolerances. Ensure the placed PAPB conforms to the specified thickness by randomly checking the thickness during construction. Remove and replace all sections varying from the specified thickness by more than $\pm 1/2$ -inch (± 12 mm).

PAPB.08 Surface Tolerance. Ensure that the finished surface is uniform and varies no more than 1/4 inch (6 mm) from a 10-foot (3 m) straightedge applied longitudinally to the asphalt mat. Remove and replace any section found to be out of tolerance.

PAPB.09 Quality Control Testing. Each day before the start of production, obtain two separate samples of the aggregate stockpile and test the samples for gradation. If both samples fall within the gradation bands for the aggregate size, the Contractor may produce mix all day. If one or both of the samples fail the gradation test, do not begin production until the owner's representative is satisfied that the stockpile conforms to requirements. Record results. If any material is added to the stockpile, immediately take another sample and test it.

Test the mix according to 441.09 for asphalt binder content and gradation. Control the mixture production as follows:

- A. If a single asphalt binder content is more than ± 0.5 percent beyond the JMF, immediately take and test an additional sample.
- B. If two consecutive asphalt binder content tests are more than ± 0.5 percent beyond the JMF, notify the owner's representative and cease production until the problem is corrected.
- C. If the Range difference in any three consecutive asphalt binder content tests is greater than 0.6 percent immediately notify the owner's representative.
- D. If the Range difference in any three consecutive gradation tests for the No. 4 (4.75 mm) sieve is greater than 10.0 percent, immediately notify the owner's representative.
- E. If Range deviations as specified continue, cease production.

Range is defined as the difference between the largest and the smallest acceptance test result within an acceptance period (production day or lot).

PAPB.10 Acceptance. Acceptance of the asphalt binder content will be based on the field inspection of the coating on the aggregate. To be accepted, the mixture should be coated with shiny black coating of asphalt binder and not be brown or dull in appearance. If the delivered mix is brown or dull in appearance, increase the asphalt binder content to the satisfaction of the owner.

PAPB.11 Protection of the PAPB. Do not haul over the mixture. Additional layers may be constructed over the pavement once a temperature probe indicates the pavement has reached ambient temperature. Protect the mixture at all times from contamination by soil or other fine material.

PAPB.12 Method of Measurement. The Owner will measure the accepted quantities of PAPB by the number of square yards (square meters) of the specified thickness directed to be placed.

PAPB.13 Basis of Payment. The Owner will pay for accepted quantities, complete in place, at the contract price as follows:

Item	Unit	Description
PAPB	Square Yard	Porous Asphalt Pavement Base