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POROUS PAVEMENT PARKING LOTS

GUIDE SPECIFICATIONS

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Carolina Asphalt Pavement Association

www.CarolinaAsphalt.org

WHAT IS A POROUS PAVEMENT?

As cities and counties across North Carolina continue to develop, storm water management is a challenge facing all our communities. The use of porous asphalt pavement systems offer an opportunity to address this challenge within the parking lot and other paved area applications. With proper design and installation, the system will allow infiltration of storm water into the pavement structure. Over time, the storm water can infiltrate into the native soils below or be collected by an underdrain system for a controlled discharge, thus reducing or even eliminating the need for detention basins that often require additional land.

The system is comprised of a porous (open-grade) hot mix asphalt surface placed over a granular working platform on top of a reservoir of large stone. The reservoir layer is designed to have the storage capacity to hold water from storm events. With proper design, traditional dense graded asphalt may be used as the surface material in heavy traffic areas. In this scenario, the system must be designed to allow storm water to infiltrate into the reservoir layer through open aggregate edges, drain tiles and pipes, or must sheet flow into porous areas.

GUIDE SPECIFICATIONS

This guide specification provides mixture design, quality control and acceptance testing requirements for use on porous asphalt mixtures for parking lots.

MATERIALS

The porous asphalt pavement structure shall meet the following requirements:

SITE GRADING

The existing soil subgrade under the porous asphalt pavement structure shall not be compacted or subject to excessive construction equipment traffic prior to stone bed placement. The bottom of the recharge bed shall remain flat and where elevation changes exist, consider a terrace approach rather than constructing steep slopes.

STONE RECHARGE BED

The aggregate reservoir layer shall be placed at a thickness as determined by the designer and utilize single-sized stone that has been washed and does not contain excessive dust or fine materials. Aggregates shall consist of either AASHTO gradation size No. 2 or No. 3 stone. The intent is to provide a single-size crushed large stone with about 40 percent voids.

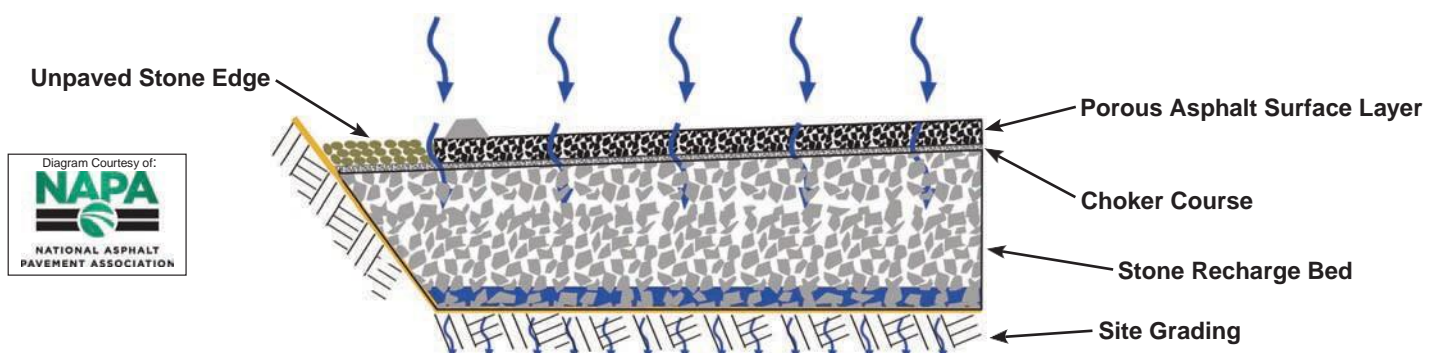
CHOKER COURSE

The working platform placed over the reservoir layer shall consist of a washed single-sized stone (typically a Size No. 57 stone). Dense Graded Aggregate (or any other impermeable material) shall NOT be used within the pavement structure.

POROUS ASPHALT SURFACE LAYER

The hot mix asphalt layers shall be at least four (4) inches thick and placed in two separate lifts. The asphalt mixture shall utilize a gradation consistent with an Open-Graded Friction Course (OGFC). The National Asphalt Pavement Association (NAPA) publication Information Series 131 (entitled: Porous Asphalt Pavements for Stormwater Management) also provides guidance on the gradation for this asphalt mixture.

TYPICAL POROUS PAVEMENT CROSS SECTION



ASPHALT MIXTURE REQUIREMENTS

CAPA recommends utilizing PG 76-22 liquid asphalt binder in these porous pavement applications. CAPA recommends utilizing an open graded friction course mixture in accordance with current NCDOT Specifications & NAPA IS 131. Laboratory air voids should be 16 percent or greater to assure permeability in the mix. The asphalt content shall be 6.0% or greater to provide the necessary coating of the aggregates for long term durability.

MEASUREMENT AND PAYMENT

Payment for porous asphalt pavement includes all materials, equipment, labor for furnishing and placing the porous asphalt mixture and complying with all requirements. Payment for aggregates and porous asphalt shall be on a per ton basis. Payment includes the placement of materials at a depth as specified in the plans.

CONSTRUCTION CONSIDERATIONS

Porous Asphalt Mixtures require some special construction considerations which are unique and different from convention asphalt paving practices:

Temperature Limitations: The NCDOT Standard Specifications require a minimum ambient air temperature of 60 degrees Fahrenheit for placement of Open-Graded Friction Course. Since draindown can occur with this mix type, CAPA recommends using polymer modified asphalt with a fiber stabilizing additive or recycled asphalt shingles to reduce draindown and improve the high temperature performance of the mix.

Mixture Placement: Utilize conventional paving equipment for placement of the porous asphalt layer. In order to seat the aggregates within the mixture, make two or three passes with a small roller immediately after placement. More frequent rolling tends to reduce the infiltration capabilities of the porous mixture. After final rolling, traffic should be restricted for the first 24 hours when the pavement tends to be tender. Care must be taken so that the porosity of the pavement is not compromised.

Special Maintenance Considerations:

- **Prevent Clogging of Pavement Surface**
 - Vacuum pavement annually
 - Promptly remove and clean areas where debris or soil has been deposited on pavement
 - Maintain landscape areas surrounding pavement areas to prevent debris and sediment run-on
 - Keep inlets clean
- **Snow Removal**
 - Never apply sand or salt with sand on pavement
 - When plowing, adjust plow blade higher than pavement
 - Consider environmentally friendly deicers
- **Repairing Pavement**
 - Never use a seal coat
 - Patch areas with approved porous asphalt

Cost Considerations:

- Porous Asphalt is generally higher in cost than standard asphalt on a per unit basis.
- Higher unit cost may be offset by a reduction in the required number inlets, pipes, earthwork and detention basins.
- With all factors considered, porous asphalt may be a less expensive approach and should be evaluated for any given site.

FOR YOUR NEXT PAVING PROJECT, CONTACT ONE OF THESE QUALIFIED CONTRACTORS:

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Kitty Hawk, NC 27949
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PO Box 2408,
Wilson, NC 27894-2408
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204 Base Leg Road
PO Box 35387
Greensboro, NC 27425
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