Pervious Asphalt Pavement Pilot Project
Joseph White Road

January 2015
Benefits

- Environmentally Responsible
- Filtration
- Groundwater Recharge
- Reduction in runoff
- EPA approved BMP
Potential Disadvantages

• Cost
• Weight and traffic volumes
• Longevity
• Maintenance
Why Pervious Pavement in Charleston?
Benefits to Charleston County

- **380 earth roads** located within Charleston County
- Efforts underway to improve / pave for improved access to citizens
- Reduce earth road maintenance costs
Conducive Conditions

- Sandy Well-draining Soils
- Warm Climate
- Low Volume Rural Roads
- Limited Right-of-way
Save Time and Money

- Simplify storm water PERMITTING, no runoff
- Eliminates need for roadside ditching
  - Reduces width of ROW needed ($)
  - Reduces utility impacts ($)
- Reduces design efforts ($)
- Potential to expedite construction, numerous roads in one contract similar to resurfacing contract
Previous Efforts

• Judge Road – 2012
• Caw Lane – 2013
• Joseph White, Pilot Project – 2014
Judge Road
375 LF
Judge Road

8-in #57, 2-in #789 by CCPW
Judge Road

2-in Surface by Banks Const.
Judge Road

$310 / ton, procured as small purchase
Standard SCDOT OGFC Mix – PG 76-22
Caw Lane

430 LF, 10-in #57, 8-in #789
Caw Lane

175psy Surface by Banks Const.
Spec’d Standard SCDOT OGFC Mix, 76-22 CO Modified to use Evotherm - Warm Mix (275 F)
Caw Lane

$1,100 / ton, competitive bid
• 2,100 LF

• Competitive Bid by PW Dept
  • 1st Bid = $1.1mil, approx. $550/ton
  • 2nd Bid = $740k, approx. $350/ton

• Why?
  • Constructability risks assumed by contractors?
  • PG 76-22?
  • Fiber?
Solution

• Reach out to contractors
• Develop cost effective Mix and Specifications for Low Volume Road
• Reach out to technology industry and contractors for assistance
• Resulted in Pilot Project with MeadWestvaco and Sanders Bros both located in North Charleston
County Pervious Mix – low volume roads

- Decrease binder strength from 76-22 to 64-22 at 5.5%
- Adjust aggregate gradation to locally available, slightly more course
- Use Evotherm (0.5%) Warm Mix Technology (approx. 250 F)
  - Remove Fibers = Draindown controlled through lower production temps
  - Remove Lime (anti-strip agent)
## Gradation Comparison

<table>
<thead>
<tr>
<th>Mechanical Analysis</th>
<th>Current DOT (Interstate)</th>
<th>Proposed (Rural)</th>
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<tr>
<td>1”</td>
<td>100</td>
<td>100</td>
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<tr>
<td>¾”</td>
<td>100</td>
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<td>½”</td>
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Lab Testing by MWV

- Maximum Specific Gravity (MSG) ASTM D2041
- Draindown AASHTO T305 - *Used SC requirement of draindown based off total binder weight not total mix weight.*
- Visual Determination of Draindown (OBC) SC-T-91 - *Used to determine optimum binder content*
- Specimen Compaction ASTM D6925
- Specific Gravity & Porosity ASTM D7063
- Cantabro Abrasion ASTM D7064
OBC Determination

5.0%  5.5%  6.0%
Joseph White

2,100 LF
$154 / ton, negotiated for pilot project
Pilot Project demonstrated a cost effective pervious asphalt roadway can be constructed.
What’s Next

• Develop Maintenance Plan
  • Sweep / Vacuum
  • Rejuvenators
• Evaluate Life Cycle Costs
• Upcoming Projects
  • Ben Road – Advertise for Construction
  • Jeffery and Lemontree Lane – Design / Permitting
Thank You!

Roads.charlestoncounty.org
charlestonCTC.org
www.charlestoncounty.org