Designing Pavements With Interlayers

Presented By: Paul Schaus
There Are Many Things That Are Done To Stop Water From Entering A Road Bed!!
Effects of Water on Pavements

Interlayer Functionality

Loss of Base Load Bearing Capacity

- **Water intrusion through pavement into base:**
  - 33-67%
  - Federal Highway Admin. (FHWA) RD 73-14, states; “between 33 and 67% of storm water infiltrates through the pavement”
  - Asphalt from 33% - 50%
  - Concrete from 50% - 67%

- **Pavement cracks increase base degradation:**
  Cracks significantly increase water penetration and base degradation, leading to loss of load bearing capacity.
WHY WE NEED WATERPROOFING IN THE ROAD
Warm weather melts ice and snow filling pavement cracks with water.

As temperatures drop, the water freezes and expands breaking up the pavement.

Traffic further breaks up the surface, creating potholes.

EVOLUTION OF A POTHOLE
effects of water entering through joints deteriorating pavement joint and sub base coarse from the bottom up, accelerated by freeze thaw cycles
How Pavement Interlayers Are Installed
Providing a moisture barrier

Woodland Dr E
Saline
Michigan
United States
2013-10-10(Thu) 10:04(am)
AC saturated polypropylene able to elongate and maintain waterproofing qualities.
Belair- Byron’s Slurry Test Section
installed 2012

2-1-2016
Clay pumping up through untreated areas
Byron Il- Slurry seal over 4oz Fabric, water goes in crack travels through base and comes out down hill.
Installed 2013   Photo 2014
City of Wheaton, IL Senior Project Engineer Sarang Lagvankar
1st tested IL DOT state spec 4oz polypropylene system in 1994

He specified it on one of 2 roads that were 15 years old and receiving their first overlay.

After 9 years the road without fabric had base repairs and was resurfaced due to water damage which had violated the integrity of the road with both ride ability and base structural damage.

After 16 years the road that received the fabric interlayer was resurfaced not due to bumps, patches and base failures. But due to oxidation and salt damage while still maintaining ride and structural qualities.

A 7 year life extension

they now average 60,000 plus square yards of asphalt interlayers per year in their resurfacing program
Beaver Dam, Wi  Madison St- Wisconsin Bus Rt 151- Paved 2008- 4oz polypropylene 2012

- No Membrane on Return
- Concrete Road Milled with A 1 1/2 " Asphalt Overlay
- 4 oz Fabric On Mainline
Asphalt interlayers types

- MPV Polypropylene Non-Woven
- Fiberglass/ Polyester Non-Woven Hybrid mat
- Fiberglass / Polyester Grid Hybrid Mats
- Polymer Coated Fiberglass Grids
- Glass Filament Reinforced Paving Composite Systems
- Multi-Axial Glass Filament Reinforced Paving Composite Systems
Questions?