The future of asphalt is at Hooker Creek.....

POROUS ASPHALT

Presented By:
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February 24th, 2009
HC Commitment to Porous

• Hooker Creek committed to provide Porous Asphalt over a year ago.
  – The public started showing interest. Our local market needed an expert in porous.
  – Dry wells and DEQ UIC applications were becoming a major hurdle for commercial development.
  – It is “Green” and it is the right thing to do for the environment.
New Materials & Methods

- 3/8” – ¼” Asphalt Aggregates
- 2 ½” – ¾” Clean Crushed Drain Rock
- Dedicated Oil Storage Tank
- PG 70-22 ER Asphalt Oil
- Multiple Plant Silos
- Change the way we schedule and build
Conventional Storm Water Designs

- Catch Basins to Storm Pipes to river discharge.
- Catch Basins to Drywells
- Catch Basins to Detention Ponds
- 95% of the storm water is surface runoff or evaporation with virtually no infiltration.
- Or we concentrate pollution from large runoff areas.
Porous Pavements

- Storm water is retained on site in reservoir aggregate under the porous asphalt.
- Storm water slowly filters back into the earth and is cleaned by native soils.
- Vast majority of storm water is treated on-site and reintroduced into the Earth's aquifer as clean drinking water.
Advantages to Porous Asphalt

- Help get the LEED credits you need.
- No need for storm drainage structures, pipes or detention ponds.
- Eliminates the worry of tight drainage areas.
- Reduce runoff into area lakes and streams.
- Reduced winter ice and snow buildup.
- Promotes infiltration / reduces surface runoff.
- Eliminates the need for DEQ UIC permit.
Disadvantages to Conventional Dense Asphalt

- Expensive Drywells, Catch Basins, Storm Drain pipe.
- Storm water concentrates contaminates to centralized areas.
- Valuable land lost to detention ponds.
- Poor structural design = premature failures.
- Tight drainage areas create bird baths.
- Winter snow and Ice build up.
- Promotes runoff / reduces infiltration.
Hooker Creek Rental Store

• In Feb 2008 our building permit was approved, but we were waiting another 6-12 months for our UIC approval for the drywells.
• We saw the opportunity to build a porous parking lot and avoid the UIC application process altogether.
• It was a difficult site so we hired an environmental design consultant to help.
First Porous Commercial Project in Central Oregon!

New Hooker Creek Rental Store in Redmond.

- Civil Engineer – CA Rowles
- Geotechnical Engineer – Kleinfelder
- Porous Design Consultant – MGH Associates
Rental Store Site Restrictions

• 20,000 sf parking lot – subgrade comprised of
  – Impermeable structural fill
  – Native Soils
  – Bedrock close to the surface
  – Imported fill material would need to be compacted and reduce infiltration rates.

• Local agency had no knowledge of Porous Asphalt.

• “If we can do it here, we can do it anywhere”
First Large Scale test section was built in May 2007.

- Gain experience and further our knowledge of the product.
- Provide a demonstration site for engineers and owners to visit.
- Dispel myths surrounding porous.
  - Freeze / Thaw problems?
  - Sheet drainage?
  - Plugging problems?
  - Snow and Ice buildup performance?
  - Structural stability & Studded tire wear?
2 Test Projects

• Porous Parking area at Hooker Creek Office
  – Perc test on native soils
  – 14” of 2 ½” - ¾” Clean Crushed Drain Rock
  – 4” of 3/8” - 0 Open Grade Hot Mix Asphalt

• First Porous Driveway in Central Oregon – Karpstein Residence
  – Perc test on native soils
  – 6” of 3/4” - ½” Clean Crushed Drain Rock
  – 4” of 3/8” - 0 Open Grade Hot Mix Asphalt
• Excavate to native subgrade
• Minimize the amount of traffic on the subgrade to retain permeability.
Geotextile Fabric

- Place nonwoven geotextile fabric over uncompacted subgrade.
Reservoir Aggregate

- Place clean, washed 2 ½” – 0 reservoir aggregate.
- Fine grade and compact with a 10 ton steel roller.
Asphalt Paving

- Place 2 – 2” lifts of 3/8” open grade asphalt.
- Beautiful mix.
- Very workable.
- No segregation.
Test the Finished Product

- Result - Great looking finished product that performs well.
Performance

- Performs very well in thunderstorms.

- Performs even better under snow and ice.
Basic Construction Observations

• Temperature – “through paver” minimized to prevent drain down of asphalt not less than 225° F (delivery 260-280 common)
• Compact using steel wheel rollers on static mode 8 ton minimum - 3-4 complete coverage's, smaller roller to finish is ok.
• Choker course is expensive and not necessary.
• Paving directly over reservoir aggregate requires 2 lifts of asphalt.
The Hooker Creek Way

- 2 lifts of Porous Asphalt
  - 3/8” open graded wearing course (5.5% liquid).
  - ¾” ATPB base course (3.5% liquid).
- 2 ½” – ¾” reservoir aggregate depth varies
  - Design for structural strength or storage volume whichever is greater.
- Non-Woven Geotextile Fabric
- Uncompacted subgrade / filter media.
• **Existing fill** had low infiltration rates, but sufficient for pervious pavement treatment and infiltration.
• **Imported material** would need to be compacted, and therefore would not infiltrate.
• **Rock section** has excellent infiltration, but no treatment.
• **Subgrade** directs flow to rock section.
• A section of Hooker Creek filter media has been added to the bedrock area to provide water quality treatment.
• Drain rock edge treatment provides protection in case of future impervious overlay or sealcoat.
• After we reviewed the design with DEQ, they decided no UIC permit was required for this project.
Base Lift Paving Completed
Communication is Key

• Our project was delayed 3 months due to a miscommunication with the city.
• Communicate with your partners and document every phase of construction with pictures and engineer inspections.
• Communicate with your future customers.
Rental Facility - Cost Comparison

- Eliminate 3 drywells, 3 CB’s and piping
- Additional Aggregate Depth
- Additional 2” of Asphalt (total of 4”)
- Added structural strength = Longer Life
- Cost was essentially the same
- Eliminated DEQ’s UIC requirement – Saves valuable time and money.
Completion April 2009

• Base lift was paved with PG 70-22 oil on January 6th of this year. ER oil was not available at that time.
• Top lift will be placed in 3 weeks with PG 70-22 ER oil.
• Store will open the first week in April.
• Water feature is currently being constructed.
Maintenance

• Ensure that the construction schedule does not jeopardize the integrity of the porous system.
• Sweep with a vacuum truck or flush with water truck at least once a year, depending on use.
• **DO NOT** Seal Coat.
Hooker Creek Recommendations

• We will not sacrifice or jeopardize quality for price.
  - No wearing course pavement without ER designation.
  - Avoid single lift porous sections.
• Restrict traffic for 24 hrs after completion.
• Protect porous pavement from contamination.
  – Runoff sediment – Keep erosion control in place
  – Construction debris – Do not dump any stockpiles on it.
• We can help you design for any project application or site.
Help Us Protect our Natural Resources!

With Porous Asphalt......the Future of Asphalt.