



Porous Pavement: Skeptic to Believer

- Kim Norley, Landscape Architect

Porous Asphalt Pavement Seminar
5 October 2011





New Concept Research

- Southern States vs Northern States
- Walden Pond State Reservation
- Studies

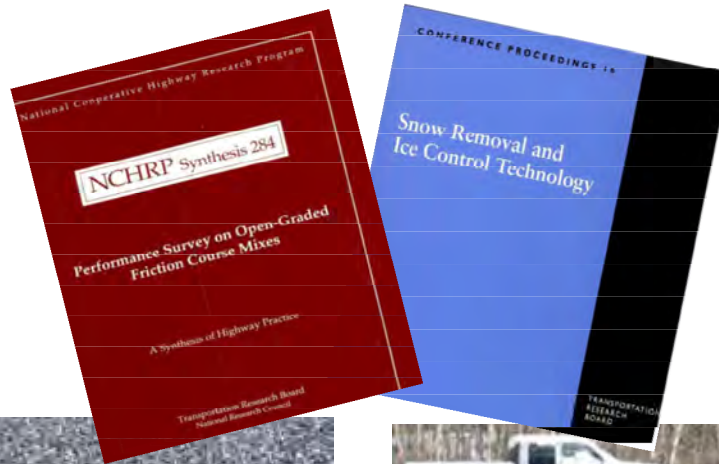


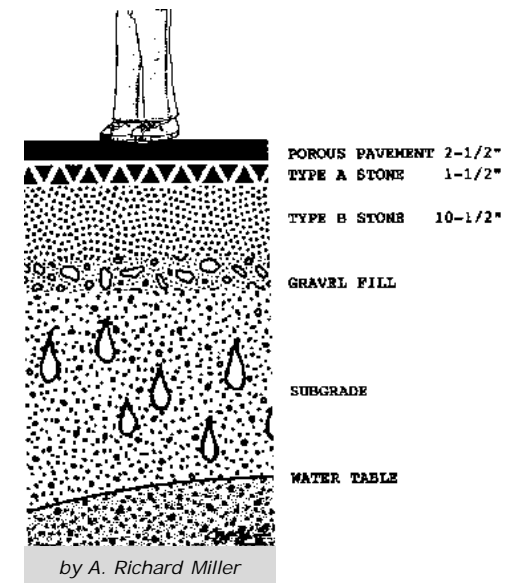
Figure 1. Porous asphalt allows water to flow through it. Photo courtesy of the National Asphalt Paving Association



Figure 5. Porous asphalt parking lot one hour after being plowed. Photo courtesy of the University of New Hampshire Stormwater Center



Photo by A. Richard Miller



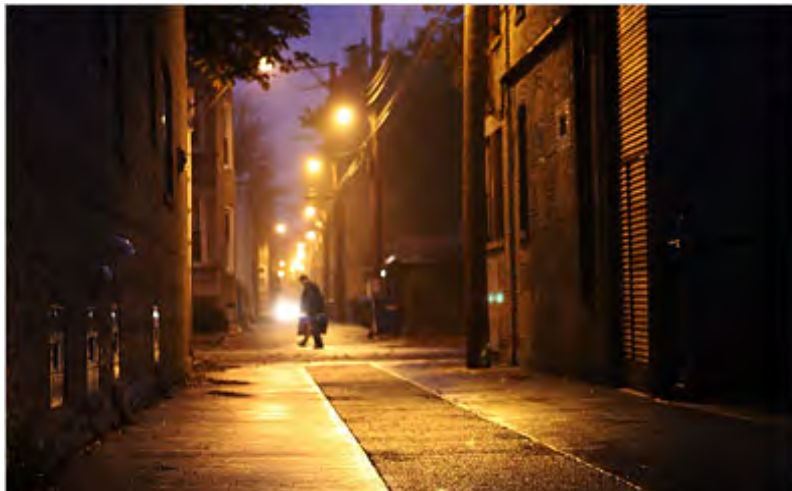


New Concept Research ... continued

- Ford Rouge Plant
- Chicago's green alleys
- Metro Parks, Serving Summit County



Photos from abrightgreenfuture.com Ford Rouge Plant



Permeable surfaces to reduce runoff are a feature of the refurbished alleys in Chicago 2007. (Photo by Peter Wynn Thompson for The New York Times)



Display from Ford Rouge Plant, MI



FLA sands vs OH clays

- Sandy soils allow percolation
- Slow Percolation, so what's the benefit?
- FILTRATION
- Before water enters streams & rivers
- Healthier waters



Photo from RI Future.org



Photo from Gas2.org

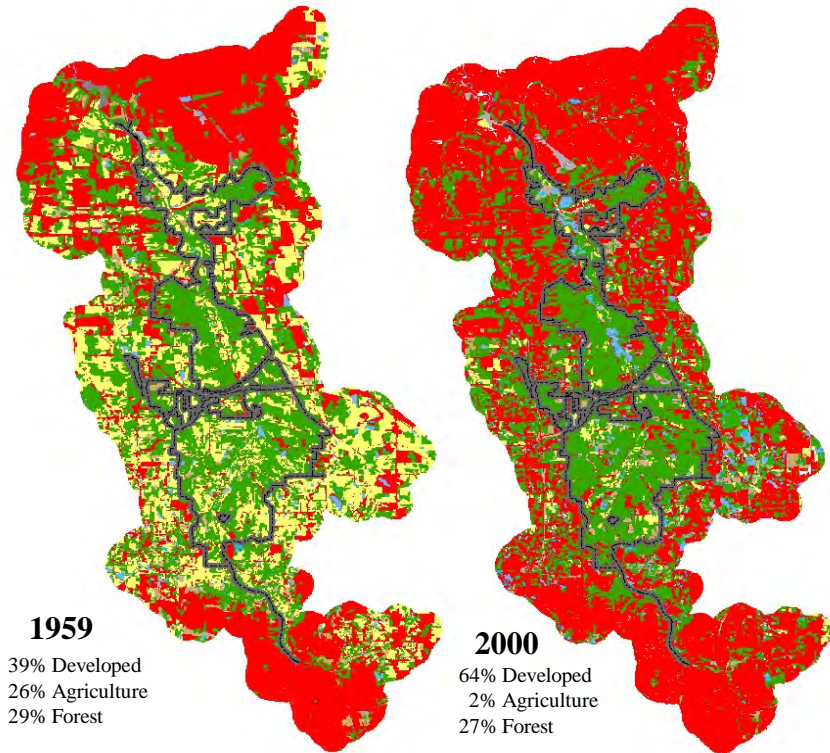


Photo by University of New Hampshire Stormwater Center



Filtration

- Valley Flooding more frequent
 - Manage water upstream
 - Slow water down
 - Reduce Erosion
 - BMP's for Stormwater
 - Every drop counts



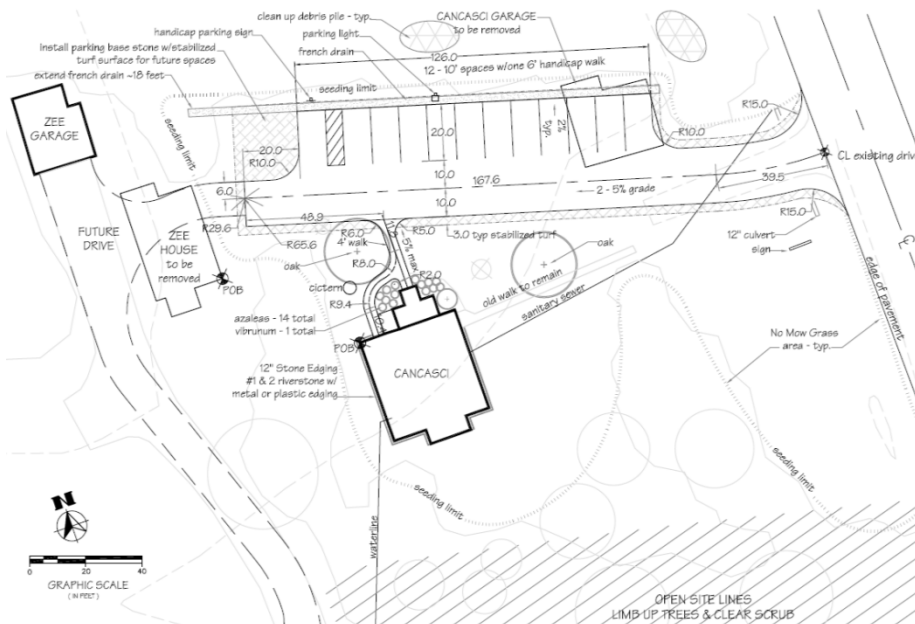
- **Historic Property**
- **Archeological Concerns**
- **Standing water in spring – no drainage**
- **Traditional Paving bigger runoff sheds water quickly**
- **Impacts to resource**



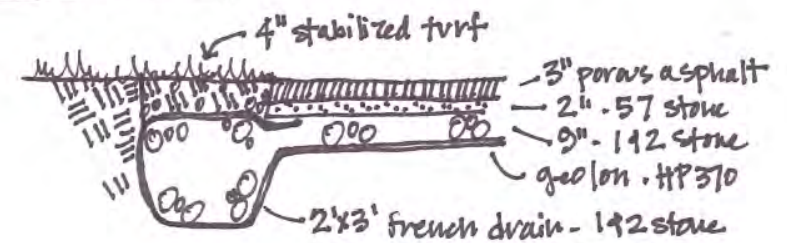


Design: *Cancasci*

- **French Drain System**
 - Minimum site impact
 - Filtration
 - Protect upland headwaters
 - Reduce runoff rates
 - Reduce erosion



PAVEMENT DETAIL





Construction: *Cancasci*

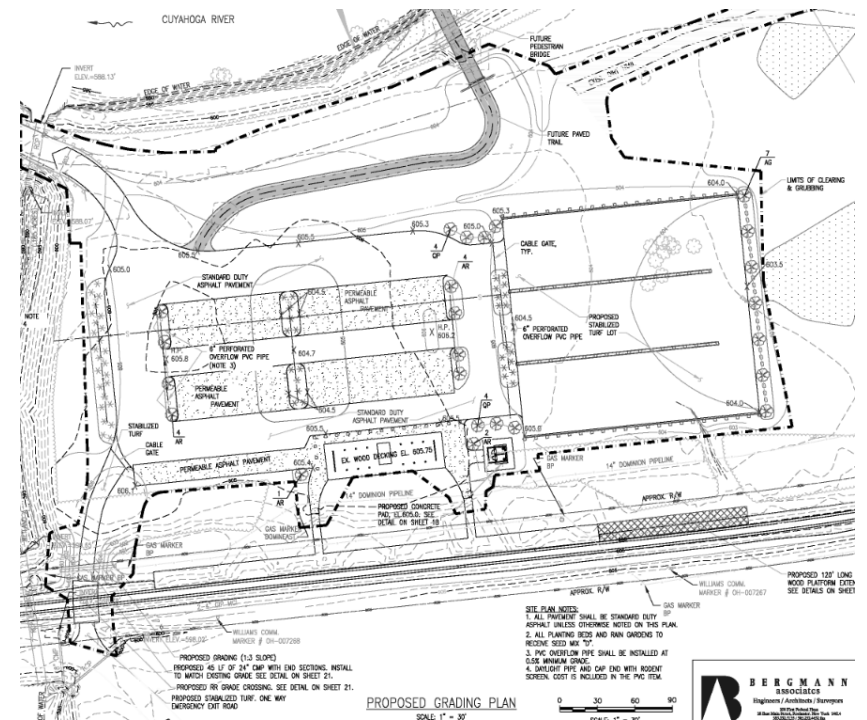
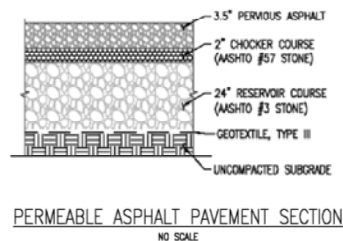
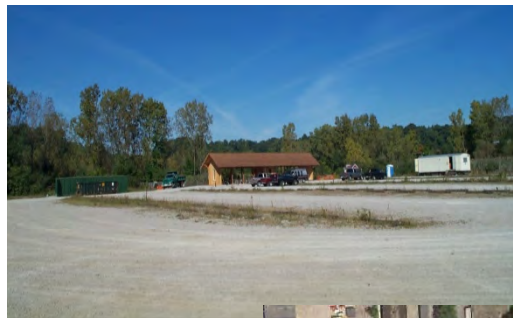
- Fall 2010
- Winter season
 - Reduced salt/deicer
 - Less ice buildup
 - Safer walking surface
- 2011: The Year of Rain
 - Puddles
 - Runoff





Design: *Rockside Boarding Area*

- Different Design Concerns
- Aggregate lot draining to Cuyahoga River
- Worked with US Army Corps of Engineers
- Drain to north using filtration system to protect river
- Series rain gardens surrounded by porous paving





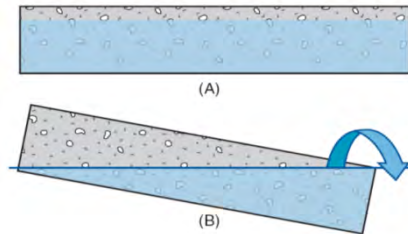
Construction: *Rockside*

- Good example of benefits to porous next to traditional

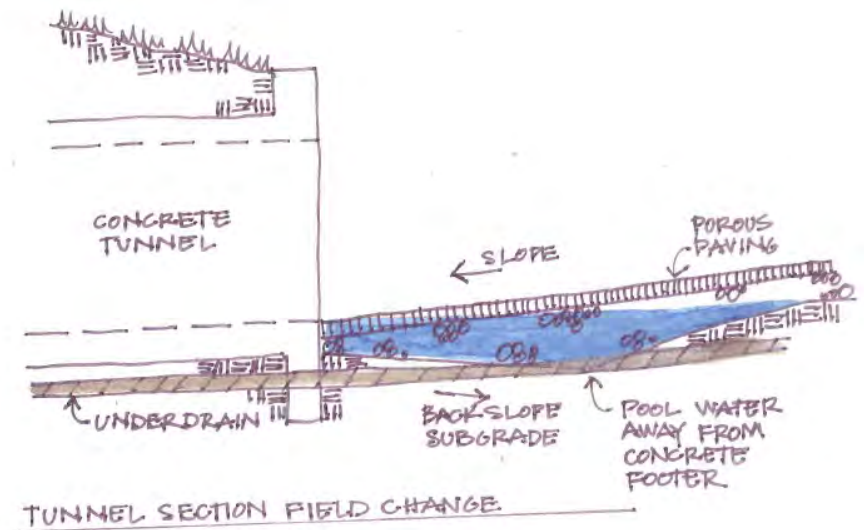
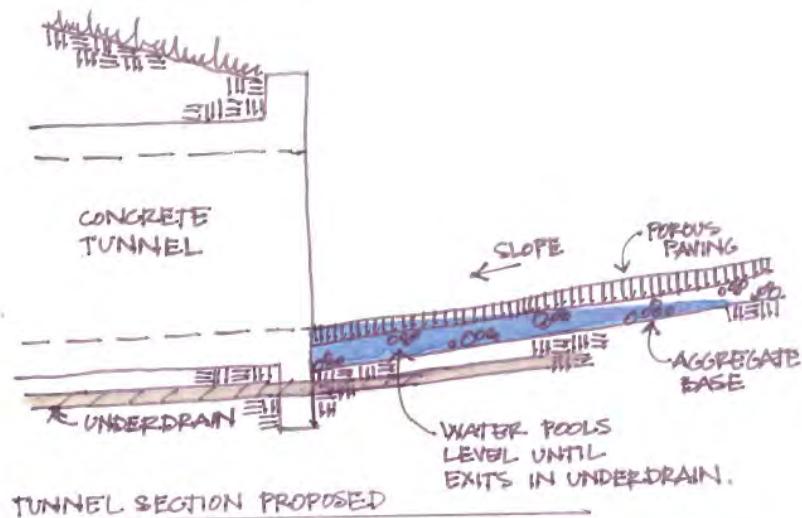


Key to Success

- Control water at subgrade
 - Downhill hydraulics
 - Outlets & Runoff



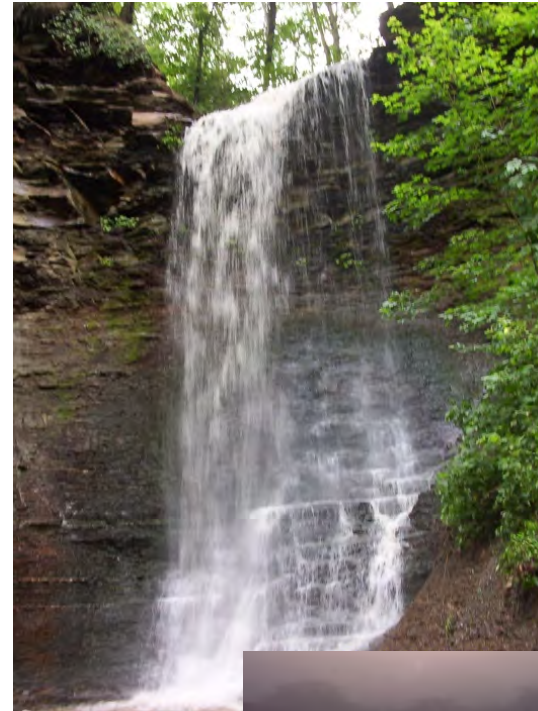
From Hydrologic Design of Pervious Concrete





Believer

- **SAFER FOR USERS**
 - Less salt & ice build up
 - More adhesion
 - Good visibility during hard rain
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- **BETTER FOR ENVIRONMENT**
 - Filtration
 - Slows water down
 - Less erosion





Think Differently.... Protect Our Water Resources!

