



Construction of Permeable Pavement Systems

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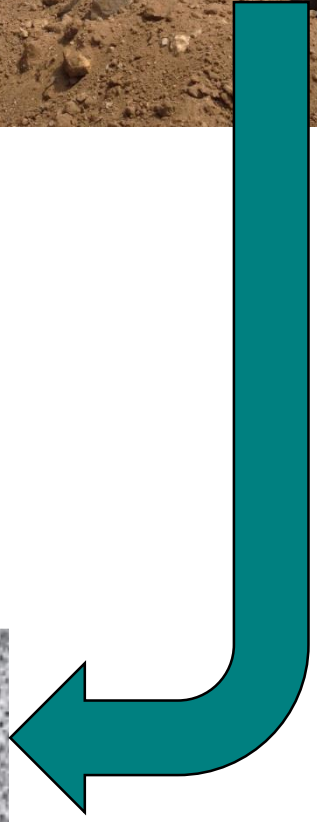
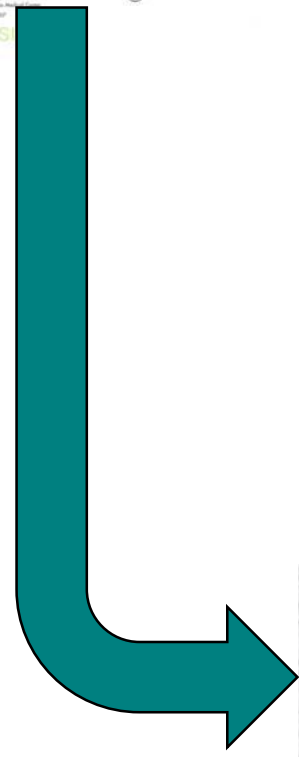
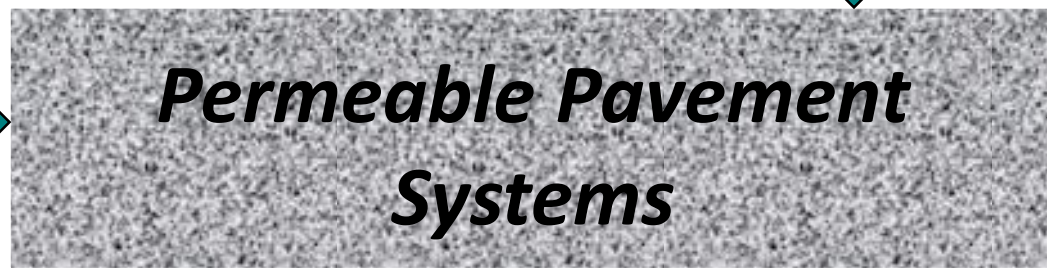
DESIGN



CONSTRUCTION



MAINTENANCE





Sheet Flow vs. Concentrated Flow



Preconstruction Meeting

Scheduling

- Late in the site schedule
- Short durations to get pavement installed

Check site Conditions

- Soil types – bedrock, infiltration rates
- Groundwater elevation



Preconstruction Meeting



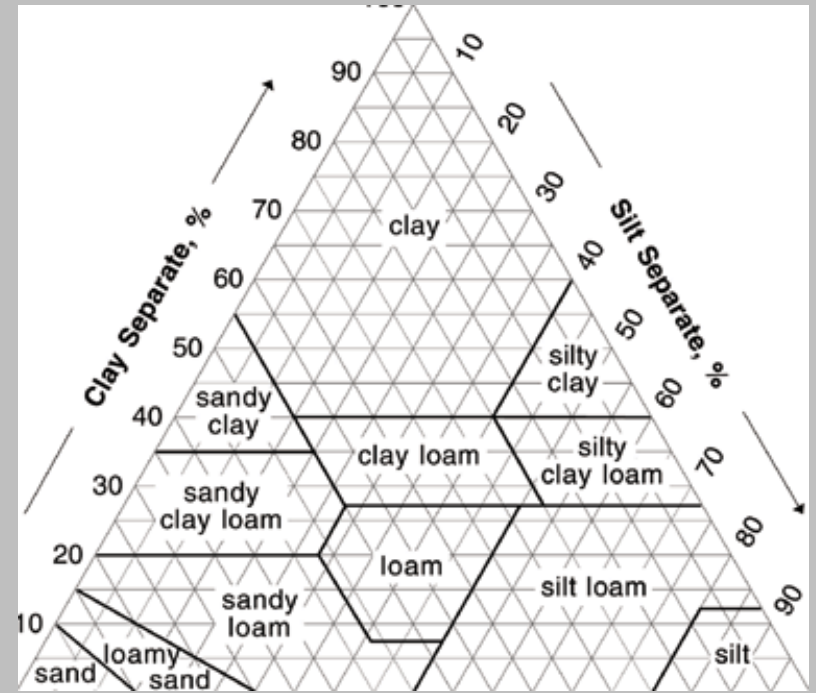
Planning

- **Protect area from construction site run-off**
- **Protect the area from construction traffic**

Material Approval

Submittals

- **Aggregate gradations**
- **Aggregate sources**
- **Porosity testing**



Experienced Contractors

- Employee certifications
- Previous number of installations
- Training



Excavation to Subgrade

- Limit compaction
- Use appropriate equipment
- May Leave 6" on initial cut if used for sediment control





Excavation to Subgrade

- **Confirm soil types and infiltration rates**
- **Confirm groundwater levels**
- **Verify bearing capacity**



Underdrain (if included)

- **Route to outfall**
- **Drain down in less than 72 hours**

System Outfall

- Safely discharge excess stormwater
- Non-erosive



Monitoring Wells

- Need to be protected
- May be located outside of pavement but must still be in the aggregate storage layer





Aggregate Storage Layer Material

- **Open Graded**
- **Less than 5% p200**
- **Minimum porosity of 30%**
- **Locally available material**
- **Store and handle the aggregate to prevent contamination**



Aggregate Installation

- **Minimum storage layer of 12"**
- **Upper "choker" layer of smaller stone**



Larger sites require special planning and sequencing to limit tacking and rutting as the base material is installed



Fabrics (when required)

- **Soil separation**
- **Strengthen the subgrade**

Liners

- **Prohibited infiltration areas**



Permeable Concrete Pavement

**Special
Techniques**

Special Tools






DRIESENGA ASSOCIATES, INC.
Engineering • Surveying • Testing

Labor intensive
Time sensitive



When it's down...
It's DONE

A yellow tractor is paving permeable concrete pavers on a construction site. The pavers are arranged in a grid pattern on a gravel base. In the background, there are several large brick buildings, a parking lot with cars, and a red SUV. The sky is clear and blue.

***Permeable
Concrete
Pavers***



Special Considerations

- **Leveling course—#8 fractured and washed**
- **Installed from finished surface**
- **Remove and reinstall for repairs**
- **Labor intensive handwork at cut ins**



Jointing Stone

- #8 fractured Stone
- Remove and replace to restore the permeability





Permeable Asphalt Pavement



Special Considerations for Rutting

- **Manpower to direct trucks**
- **Labor/Equipment - remove ruts prior to surfacing, just ahead of the paver**



- **Roll in static mode only**
- **Roll only to smooth the surface**

Not Done Until Final Stabilization is Complete

- **Use perimeter controls to prevent run-on when possible**
- **Covering the surface is not always sufficient**

SEP 12 2006

Protect the Finished Surfaces



- **Limit construction traffic to decrease tracking**



Protect the Finished Surfaces



- **No storage of loose materials on the surface**
- **Educate superintendents and subcontractors**



Signage

- Identify location
- Describe purpose
- Identify activities that should not occur – seal coating, material storage

Permeable Pavement Area

Permeable pavement is located in these 4 parking stalls.

DO NOT –

- Seal coat the pavement
- Stockpile loose materials
- Use sand for ice control

Designed to safely infiltrate & clean storm water.

Please call 262-884-2360 with questions.



Final Inspection

- Visual inspection during rainstorm to ensure the systems function
- If necessary clean or repair

SEP 12 2006



Patching and Repair

- **Up to 10% of pavement area may be patched with impervious pavement during lifetime**
- **As long as it does not effect the performance of the system**



Permeable Pavement Test Plot – Sycamore Road, Madison, WI





Photo Credits

