Objective

• Evaluate methods to increase the subsoil infiltration rate of pervious concrete systems placed over a compacted clay soil.

Method

• Grade a level pad large enough for twelve 8' x 10' pervious concrete infiltration plots
• Construct plots with four subsoil infiltration treatments and three repetitions of each
• Monitor water level in the concrete storage
• Determine treatment effect on subsoil infiltration rate

Subsoil Permeability/Infiltration Rate

• The infiltration rate prior to grading was established by conducting perc tests
  - ½ – ¼ in / hr
• The infiltration rate of the graded pad was determined with a double ring infiltrometer
  - <1/16 in / day

Double Ring Infiltrometer
Plot Construction

- The 8’ x 10’ plots were constructed with pressure treated 2” x 12”s
- 8-mil plastic was trenched 12” into the ground and placed along the inside perimeter of each plot
- The plastic trench was sealed with *Easy Seal Bentonite* clay
- The outside perimeter of the plots was backfilled with soil

Wooden Frame Plots with Plastic Seals

Bentonite Clay Seal

Treatments

- Subsoil Rip
- Boreholes
- Trenches
- Control – No Treatment
Stone Base

• Each plot was filled with 6.5” of washed #57 stone
  – Grade steel was driven into the subsoil to set the depth of stone

Monitoring Equipment

• Soil Moisture Tension — Watermark sensors placed at 1 and 3 feet in the subsoil of each plot

• Storage Water Level — A 1 psi pressure sensor monitors water level in a stilling well in each plot

• Rain Gage
Pouring Pervious Concrete

- Pervious concrete was placed by Tennessee Concrete Assoc.
  - Plastic was placed over the concrete for 7 days
- Ready Mix Conc. Co. and Rinker Materials donated the concrete for this project
Preliminary Conclusions

• Exfiltration time of a pervious concrete system on a compacted clay soil will generally exceed 3 days

• Treating the subsoil with trenches, rips, or boreholes is affective
  – The fraction of treatment area required is soil and compaction dependent

Questions?