

TEX-246-F

Permeability or Water Flow of Hot Mix Asphalt



Why

Determines if roller compaction is sufficient so rain water does not drain into roadway. May be used to determine if roadway has adequate drainage where rainwater is draining off surface.

Water draining into pavements may cause stripping and lead to cracking, raveling, and roughness. For open-graded mixtures, when water is not removed from the surface, there's too much roller compaction and it will not achieve the intended safety improvements.



When

Only required for TxDOT's specifications for Permeable Friction Course (PFC) and Thin Overlay Mixtures (TOM). This test is performed **after roller compaction**. Testing frequency:

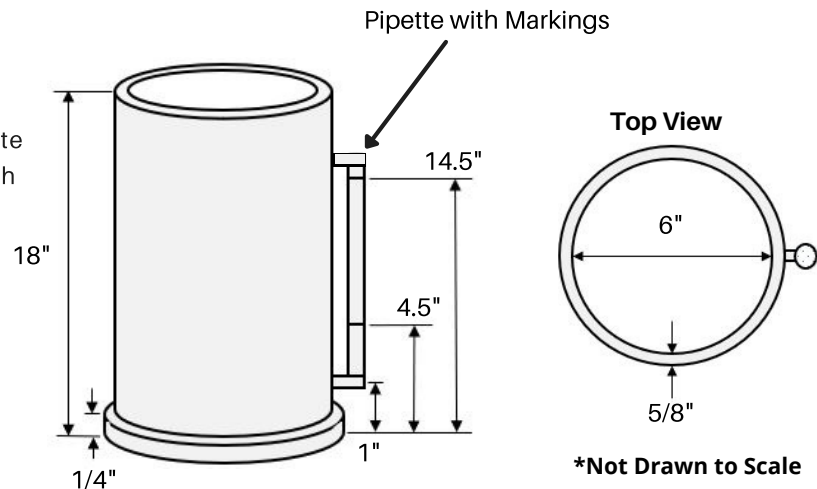
1. Engineer is one per project.
2. Contractor is one per subplot.



How

Equipment

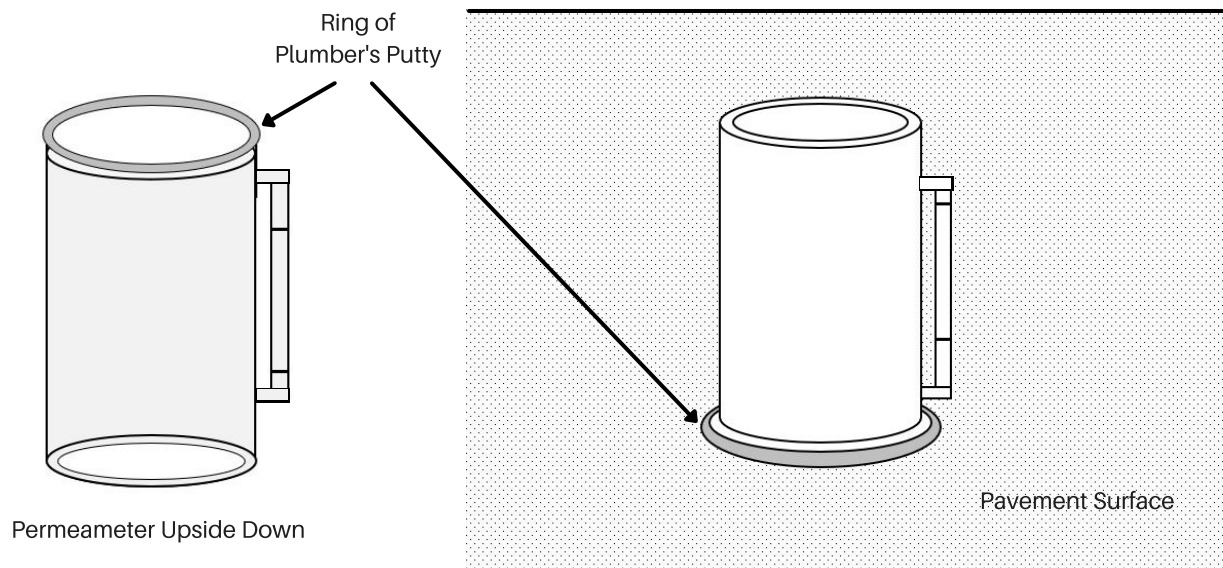
- Cylindrical permeameter with a pipette having graduated divisions of 1.0 inch
- Stopwatch or timing device
- Plumber's putty



Procedure

- Select a random area of the compacted pavement surface (mat) after it cools down.
- Turn the permeameter upside down, so the bottom is facing upward.
- Place a ring of plumber's putty onto the circular base.
- Use an adequate amount to create a watertight seal between the permeameter and the mat.
- Turn the permeameter right side up and push it firmly onto the mat.
- Use enough force to create a watertight seal between the permeameter and the mat where the putty penetrates into the surface voids.
- Trim and remove any excess plumber's putty inside the permeameter.
- Push on the excess plumber's putty outside the permeameter using your thumb or finger against the outer base to tighten the seal between the permeameter and the mat.

QUICK FACTS: LEVEL 1B



- Fill the permeameter with water approximately 1-2 inches above the top marking on the pipette.
- Start the timing device when the water level reaches the top marking on the pipette.
- Stop the timing device when the water level reaches the bottom marking on the pipette.
- Record the time the water traveled from the top marking to the bottom marking on the pipette.

Action

- Permeability or water flow is only required for two hot mix asphalt mixtures.
 - *Permeable Friction Course (PFC)*
 - *Thin Overlay Mixtures (TOM)*
- PFC
 - **Water flow rate must be less than 20 seconds.**
 - *This ensures the compacted mixture has adequate permeability.*
 - *Rainwater will drain off the pavement surface to improve driving conditions during wet weather.*
- TOM
 - **Water flow rate must be greater than 120 seconds.**
 - *This ensures the mixture is adequately compacted.*
 - *Placed in thin lifts, poor compaction may let water permeate into the mixture and cause debonding and delamination from the roadway.*
- When the water flow does not meet specifications, take corrective actions during production and placement.
 - *Verify the rolling pattern — does it need to be changed?*
 - *Communicate with Level 1A technician — does the mixture meet the material requirements?*

Suspend production if two consecutive tests do not meet specifications.