

City of Wauchula Stormwater

PERMEATION GROUT PROJECT

A critical culvert in Wauchula, Florida, was facing a significant issue. The joints between the newly installed vinyl storm drain were not sealing properly, causing water to seep through the connection gaps and erode the surrounding soil. This can be a common problem and can be expensive to rip out and replace. This was leading to surface subsidence, safety hazards, and potential damage to the infrastructure.

The project consisted of repairing a 5-foot-diameter stormwater drain that had gaps that were causing the soil above to erode through the gaps. A new road was laid on top of the existing stormwater drain, and when the pressure of the road compacted the soil underneath, it caused the drain to have gaps. There were two options: rip out the brand new road and replace it with a new road and new drain, or have Helicon repair the drain at a fraction of the cost.



To address the specific issue of the non-flush pipe joints, a two-step approach was employed:

Joint Sealing:

- **Oakum Preparation:** Oakum, a type of absorbent material, was soaked in F400 resin, a flexible, hydrophobic polyurethane.
- **Joint Packing:** The resin-soaked oakum was packed tightly into the gaps between the pipe joints. The moisture in the soil triggered a reaction, causing the oakum to expand and seal the joint.
- **Curing:** The F400 resin cured, forming a durable, flexible gasket that formed a barrier to keep the injected AP720 from flowing into the storm drain.

Encapsulation:

- **Drilling:** Small-diameter holes were drilled around the joint at strategic locations.
- **Injection:** A high-expansion polyurethane resin, AP Fill 720, was injected into the holes. This encapsulated the joint, filling voids and tightening the surrounding soil.



Our Non-Invasive, Money- and Time-Saving Process:

- Preparation for the polyurethane injections involved soaking Oakum in F400 resin and stuffing it into the open joints. This served as a form or barrier to prevent the injected AP720 from freely flowing into the storm drain. The barrier ensured the material could permeate and seal the seams effectively.
- Small holes were drilled adjacent to the seams in a clock-like pattern around the circular drain.
- Port valves were installed in a clock pattern adjacent to each of the seams at positions 12 o'clock, 2 o'clock, 4 o'clock, 6 o'clock, 8 o'clock, and 10 o'clock. Material was pumped into each point around the clock until it emerged from the seams.
- The operator completed approximately two laps around the clock, injecting material through each port valve until the process was complete

All the joints with gaps were completely sealed. The Helicon team completed this process in a single day, saving the county hundreds of thousands of dollars. The alternative would have been to rip out the roadway, excavate the vinyl storm drain, and replace it, hoping the newly installed drain seams aligned correctly. That alternative would have taken weeks, if not months, to complete. In contrast, Helicon's process minimized disruption, saved resources, and was better for the environment, as existing materials were preserved and no new materials were required for replacement.