



**PPM** PROGRESSIVE  
PIPELINE  
MANAGEMENT  
THE INFRASTRUCTURE RENEWAL SPECIALISTS

**MARKET SEGMENT**

STORMWATER DRAIN REMEDIATION

**LOCATION**

MIDDLESEX COUNTY, NJ

**DATE**

MARCH 2022

**CLIENT**

INDUSTRIAL MANUFACTURER

**PROJECT PROFILE**

# UV CURED-IN-PLACE-PIPE

## 70 FOOT / 36" STORMWATER DRAIN RENEWAL

**BACKGROUND & SITUATION**

An industrial manufacturing facility in Middlesex County, NJ had widened the roadway as the facility expanded to address increased road loading and to increase traffic. The corrugated metal pipe storm drain had been repaired with reinforced concrete pipe (RCP). When a major hurricane created a stormwater surge of 15 feet, the joint seals and the pipe connections to the culvert at the inverts failed, causing irreversible damage. Unwanted infiltration and sediment were leaking into and out of the end of the 36-inch pipe into the stormwater system.

The leaking stormwater drainpipe had been lined with a 1-inch geopolymer liner installed by a different contractor. PPM inspected the 36-inch stormwater pipe and identified a more efficient and permanent way to strengthen the pipe and prevent further leakage without full replacement. Replacing the 70-foot length of pipe would have required a costly excavation, traffic detours and delays in production at the plant.

**SCOPE**

PPM proposed a fiberglass, structural cured-in-place-pipe (CIPP) to be installed through the entire length of the 70-foot stormwater line. It was cured with ultraviolet (UV) light.

After flushing and cleaning the line, PPM conducted a CCTV inspection of the 70-foot stormwater drain. There was significant evidence that infiltration was occurring. The corrugated metal pipe had corroded in many places. Some sections were missing entirely.

After approvals and engineering, lining was completed in two days. As is true in most installations, CIPP does not require excavations. A protective layer was applied inside the bottom of the existing 36" pipe to prevent damage to the CIPP liner during installation. A cable was pulled through the pipe and attached to the uncured liner. End gates were attached so that air pressure would be properly maintained during the liner curing process. A UV light chain was pulled through at timed intervals to cure the liner.



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**CHALLENGES**

There were many challenges due to the location of the 36-inch pipe and culvert. The sloped sides of the culvert were lined with a special material that had sealers underneath it to prevent water from being absorbed into the ground. Due to the sloping terrain of the culvert and channel, there was no ready access for the necessary equipment at the exact location of the stormwater drain.

In order to fully seal the annular space between the corroded sag points of 'host' stormwater pipe and the CIPP, hydraulic water stop cement was applied using approved Confined Space Entry procedures. Hydrophilic end seals were installed at both termination points of the new CIPP inserts to prevent any future infiltration into the system.

A manhole penetration of the stormwater system (i.e. lateral) had to be reinstated after the CIPP was installed and cured.

**OUTCOMES & RESULTS**

The ultraviolet/UV CIPP technology selected was proven to be stronger and more sustainable than other liners. After the liner was cured and the ends sealed, a sample of the cured liner was submitted. Testing was done by a 3rd party to ensure it met the design specifications that were proposed. A second sample of the liner was provided to the client and the municipality to test the thickness and integrity.

A final CCTV inspection was conducted to confirm the internal structure of the new liner. The tests confirmed to all parties that unwanted infiltration was not detected, and the new liner was structurally sound.