PPM PROGRESSIVE PIPELINE MANAGEMENT

THE INFRASTRUCTURE RENEWAL SPECIALISTS

MARKET SEGMENT
NATURAL GAS

LOCATION
SOUTH ORANGE, NEW JERSEY

DATE
AUGUST/SEPTEMBER 2020

CLIENT
PUBLIC SERVICE ELECTRIC & GAS

TRENCHLESS TECHNOLOGY WINNER 2021 PROJECT OF THE YEAR

PROJECT PROFILE

EMERGENCY NATURAL GAS PIPELINE REPAIR

175 FEET / 30"- 36" MAIN AT RIVER CROSSING

BACKGROUND & SITUATION

In early 2020 in South Orange, New Jersey, a leak was discovered in the Public Service Electric & Gas Co. (PSE&G) pipeline running in an easement adjacent to the busy South Orange Avenue and the East Branch of the Rahway River. The leak was in a critical 175 ft segment of a high-pressure gas main at a steel reducer that transitioned the main from 30 inch diameter to 36 inch diameter. On the east side of the project, the pipeline plunged from 5 ft down to 15.5 ft and crossed under the Rahway River. It rose sharply to a 10 ft depth on the west side of the river. There, it connected with an inaccessible 30 inch gate valve, a leaking reducer and a short run of 30 inch cast iron pipe stretching westward.

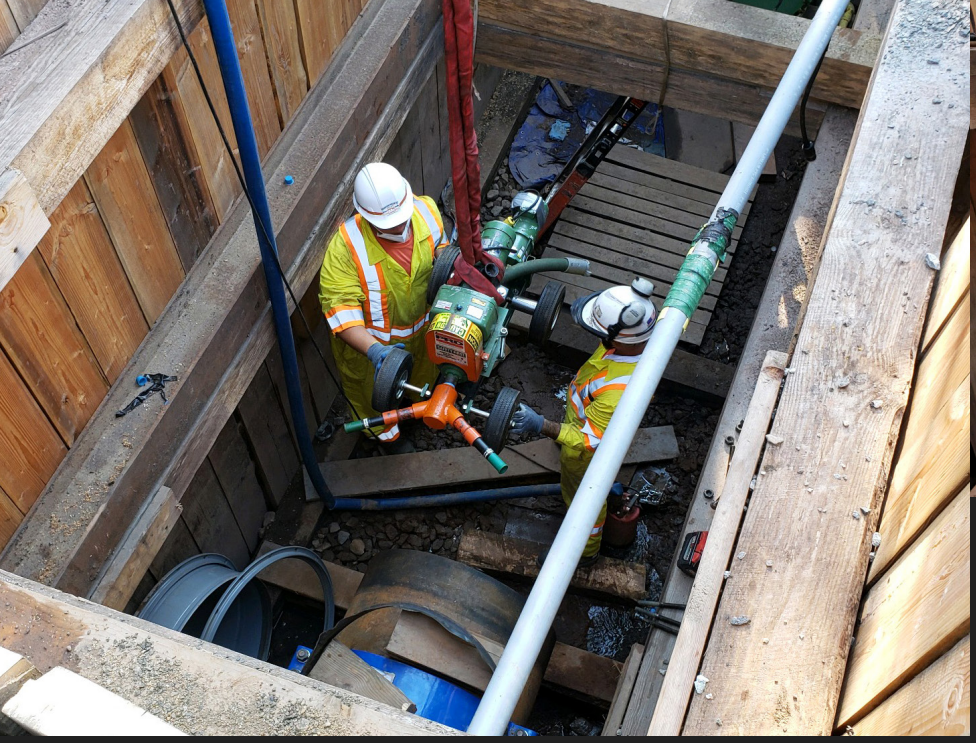
Deep excavation revealed there was a critical large diameter water main and a maze of utilities around the leaking gas main that resembled a tangled knot of yarn. There wasn't access to the pipe for conventional open cut repair. PSE&G looked to Progressive Pipeline Management to renew the 175 ft segment with Starline® Cured-in-Place-Lining to eliminate the gas leak and add 100 years of life to the pipeline.

SCOPE

The short segment included six complex compound bends, an opening for an inaccessible, active 20-in. lateral, and a legacy drip stack assembly made of steel located near monitoring well shafts around a decommissioned underground gasoline storage tank. Lining included an inversion of a 36 inch diameter liner through the 30 inch diameter pipe, then through a 30 inch diameter valve, and a leaking reducer that opened to the 36 inch diameter pipe.

With the lead engineer from PSE&G, PPM worked closely with a team of contractors including A&W Maintenance, Camden Group, ULC Robotics, and Miller Pipeline. A critical step, curtain grouting, was deployed to ensure water would not infiltrate the de-pressurized main before PPM sandblasted and inspected the main. Wetting out the liner followed with inversion and ambient curing.

PSE&G took advantage of the scheduled shutdown by renewing additional pipe segments. Two additional Starline® Cured-in-Place-Lining installations were scheduled. The second segment was 825 ft just to the west of the main launch pit. The third segment was 875 ft to the east of the receiving pit.



PPM PROGRESSIVE PIPELINE MANAGEMENT

THE INFRASTRUCTURE RENEWAL SPECIALISTS

MARKET SEGMENT
NATURAL GAS

LOCATION
SOUTH ORANGE, NEW JERSEY

DATE
AUGUST/SEPTEMBER 2020

CLIENT
PUBLIC SERVICE ELECTRIC & GAS

PROJECT PROFILE

EMERGENCY NATURAL GAS PIPELINE REPAIR

175 FEET / 30" - 36" MAIN AT RIVER CROSSING

CHALLENGES

Buried more than 10 ft deep, the main was surrounded by a critical large diameter water main, a 6-ft-wide telephone switching bank 8 ft deep and other essential underground utilities. There were multiple issues with the layout and problems the team had never before encountered. Breakthrough technical solutions were achieved due to the collective expertise of the teams. The innovative engineering techniques deployed included curtain grouting, high-strength epoxies, and a lateral restraint plug.

Pre-project testing was used to validate the design where appropriate. Other complexities included the overall depth of the pipeline, high water table, monitoring wells constructed in an old leaking gas station, and the stack drip that could not be removed.

OUTCOMES & RESULTS

In spite of the multiple challenges, the Cured-in-Place-Lining installation for the 175 foot segment proceeded flawlessly and according to plan. PSE&G and PPM then moved on to the next section and lined the 825-foot section of the 30-in. cast iron pipe on the west side of the river. Next, PPM lined the 875 feet of 36-in. cast iron on the east side of the river. A post installation CCTV inspection was carried out along with one final pressure test to 25 psig instead of three separate pressure tests. The liner was cut away at the 20-in. lateral and the cap was removed. The segment was gassed in ahead of schedule for the recommissioning deadline.

Trenchless technology experts from contracting, engineering and manufacturing sectors joined forces to solve unprecedented challenges. A number of first-time engineering solutions were developed, tested, and deployed to complete the project.

The technical complexities, ingenuity and advancements that enabled the project to succeed led to the distinctive award for the **2021 Trenchless Technology Project of the Year.**