PPM PROGRESSIVE PIPELINE MANAGEMENT

THE INFRASTRUCTURE RENEWAL SPECIALISTS

MARKET SEGMENT
FACILITIES PIPE RENEWAL

LOCATION
PHILADELPHIA, PA

DATE
MAY - DEC 2023

CLIENT
ASSISTED LIVING FACILITY

PROJECT PROFILE

FULL BUILDING PIPE REHAB

BACKGROUND & SITUATION

An assisted living facility in suburban Philadelphia was experiencing significant backup and piping issues throughout the building. The two-story building has two parallel sewer mains that each extend 350 feet along the length of the building. A professional plumbing company brought in Progressive Pipeline Management (PPM) for their expertise in assessing and executing complex pipeline rehabilitation. PPM recommended the non-destructive methods cured-in-place-pipe (CIPP) and brush-in-place-pipe (BIPP) for rehabilitating sewer lines. CIPP essentially creates a "pipe inside a pipe," restoring the pipe structure's integrity and extending its useful life.

The 1950's building accommodates about 75 senior and special needs residents and staff. Parallel hallways extend 350 feet with rooms on both sides. The two sewer mains are located under the first floor slab, between the ground floor and basement. Along the mains are 22 connection points that start at the roof and extend down up to 60 feet. The connection points link to the connections for sinks, showers, toilets and other drains.

SCOPE

The first step PPM recommended was a CCTV camera inspection to get a full picture of the two mains and all the connection points. The Envirosite Pan and Tilt camera accessed the 22 connections and revealed massive blockages in every one of the connections. There was also significant build up in both mains where masses of rags, debris, and objects were causing a backup of flow.

The sewer mains also had a large amount of tuberculation, a bacterial-based oxygen-driven form of corrosion. A biomass of iron oxide leads to harmful buildup and accumulation of bacteria and slime inside the pipe's interior walls.

The first priority was cleaning and clearing the 22 connecting pipes. The team also needed to pinpoint the exact location of each connection to the main, prior to any lining of the main. With the connection locations accurately measured, each connection point could be cut and opened post lining.

The crew shifted focus to the two sewer mains. Five pits were dug to access a segment of the main at a time. A thorough cleaning with jetters, chain knockers, and sandpaper fins prepared the pipe prior to lining. After a second camera inspection, the UV CIPP liner was measured and cut. The pre-cut liner was loaded soaked in resin, loaded into a pressure drum, inverted, and installed. A chain of ultraviolet lights on a cable was inserted into each section of pipe by section to cure the resin. After lining, the previously marked connections were opened and the reinstatements were made.

The next project was to BIPP brush coat the 22 connection stacks. Each stack extended from the roof down to the main, a distance of 31 feet to 60 feet. Another CCTV inspection revealed more blockage and debris. After another thorough cleaning, each connection was brushed along the sides of the stack with the adhesive coating of epoxy and a chemical that enables it to adhere to the pipe. The process was viewed live on camera in order to ensure a quality installation.

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CHALLENGES

Inspecting, cleaning and lining the small diameter mains and sewer pipes throughout the building had inherent logistical challenges with accessing the pipes and coordination. Pits were dug to access the pipes one segment at a time. A lot of coordination and communication was required, but the staff was able to shift the residents to different rooms while the crews were working in affected areas. Water was shut off in the building for a few hours at a time when the crew lined each main section.

There was minimal disruption and/or displacement of the residents except when the mains were being cleaned and lined. In contrast, a full replacement of the pipes would have required a partial or full relocation of residents and no access to water for long periods of time.

Another challenge surfaced when the team discovered that the building blueprints were inaccurate. The plans said the cast iron sewer mains were 6” throughout. In reality, some mains transitioned from 6 to 8 inches and 8 to 10 inches. PPM had to obtain special 3D liners that expanded at the transition points to accommodate the changing diameters.

OUTCOMES & RESULTS

PPM and the plumbing company performed a nearly full building piping rehab to line and remediate the sewer mains and the connection points at a fraction of the cost and with minimal displacement of the building residents.

Full replacement of the sewer piping and mains located under the concrete floors, the basement and in every room as an alternative to lining would have required months of displacement and been significantly more costly.

Rehabilitating the two mains with UV CIPP delivered an extended life of up to fifty years. BIPP brush coating the 22 connection points delivered an added level of protection adding decades of life to the building's entire sewer system.