

Turnkey Alliance Manages Leak-Prone Infrastructure

Complex Lining Meets (almost every) Challenge in Queens NY

By: Mario Carbone, Progressive Pipeline Management

Specs:

Project: 24-inch Cast Iron Main Rehabilitation with Starline® 2000 Cured-in-Place-Lining

Location: New York City, Queens, 134th Street

Length of Project: 6,960 feet, 1.3 miles

Client: National Grid NY (NGNY)

Contractors: Progressive Pipeline Management (PPM) and Hallen Construction

After a big lining project, I often go back to the site and think about what went well and any lessons learned that we could apply to future projects. I was standing on the corner of 134th Street and 97th Ave. in Queens, New York City. Cars were parked on both sides of the one-way street. There was a constant hum from cars and vroom from the trucks two blocks north along the Van Wyck Expressway. Overhead was the intermittent high-pitched whir of plane engines as they fly in and out of JFK airport 2 miles to the South. PPM was tasked with remediating an underground gas main that traversed over 1 mile in this densely populated, heavily trafficked urban area.

The 24-inch cast iron National Grid gas main pipeline underneath 134th Street was lined using the Starline® Cured-in-Place-Lining (CIPL) technology. The 1.3-mile project extended along 134th Street from 97th Ave. and the Van Wyck Expressway all the way to 116th Avenue. PPM's advanced leak repair technology is a trusted strategy enabling gas utilities to comply with the PHMSA PIPES ACT regulations for reducing methane emissions. CIPL technology is integral to National Grid's long-term strategy to manage leaking infrastructure.

TACKLING LEAK PRONE PIPE WITH A TURNKEY SOLUTION

This section of cast iron gas main in Queens is part of National Grid's strategic mandate to rehabilitate over 100 miles of leak prone pipe throughout New York and New England. Taking advantage of

the 100+ years of additional life that the Starline CIPL restores back into their aging infrastructure, National Grid's Leak Prone Pipe is being lined and rehabilitated. PPM and Hallen Construction, National Grid's primary contractor, deliver a turnkey solution that has been a cost-effective and critical alliance for National Grid's Leak Reduction Program.



The Starline® Cured-in-Place-Lining Inversion Drum on 134th Street

“Our alliance with Hallen Construction and the Turn-Key CIPL program for National Grid is an industry first.”

-DAVID WICKERSHAM, CEO, PPM



PPM crew with ARIES LETS CCTV camera used to inspect the pipeline prior to lining

The dense, urban neighborhood in Queens has modest single-family homes, apartments, and tree-lined sidewalks. Along the sixteen-block stretch is a Sikh temple, a used car lot, a 24-hour grocery store and a few local bars and restaurants.

This was a complex project. 1.3 miles is quite long for a CIPL project. The 24-inch main under 134th Street changes direction multiple times with zigs and zags. Every joint where a length of the cast iron pipe connected to the next length of pipe was leaking. PPM needed ten pits for the lining and two additional pits for the gas shut off, an essential step in the CIPL process.

When we talk about lining projects, engineers often ask, ‘how long did it take?’ On paper, the planning, excavation, cleaning, pipe preparation, lining and completion took approximately four months. But that is not completely accurate. It really took five decades, which is as long I have been in the gas pipeline business. The relationships with Hallen, National Grid and PPM were built on trust and competence across several decades. We execute complex lining projects



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“We speak the same language.”

*-SHEP POOLE, PRESIDENT,
HALLEN CONSTRUCTION*

successfully, safely, and cost-effectively, because we have an alliance that is focused on a single goal, successfully eliminating leaks from existing gas mains.

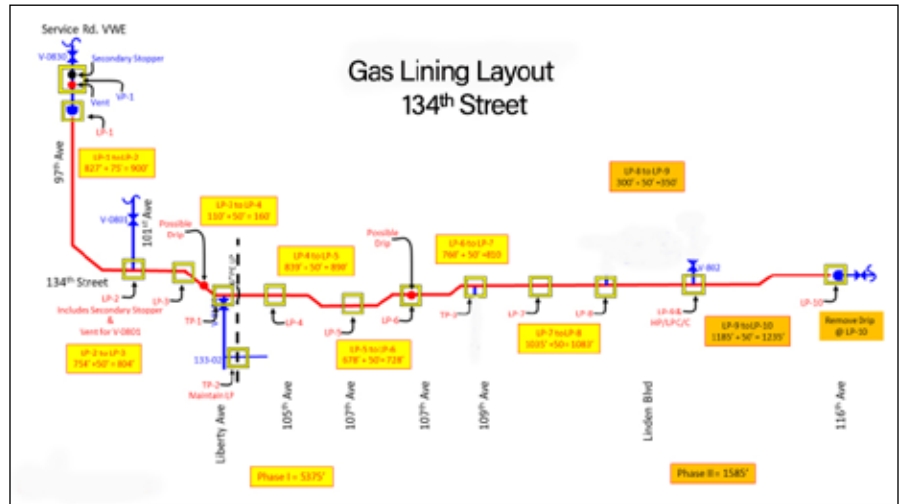
AN EXTRAORDINARY ALLIANCE

I have had the privilege to know and work with Hallen and National Grid almost the entire 52 years I've been in the gas industry. The combined expertise encompasses the best of rehabilitation technology, pipeline construction, gas engineering and distribution practices. Our training took place on these streets of New York, and the northeast.

Hallen has been in business for ninety-five years. Hallen and National Grid, formerly Brooklyn Union Gas, have been working together since the early 1970s. I've known Hallen since I started out at Brooklyn Union Gas. As PPM's construction management arm of the turnkey operation, Hallen handles the excavation, the pipe work, paving and putting it all back together. The crews support PPM with manpower, traffic control and offer invaluable input at every stage.

“We speak the same language.” explained Shep Poole, President of Hallen Construction. *“Whatever PPM or National Grid needs for the project, it will get done. Our partnership operates from a deep level of trust while at the same time being open to new ideas and solutions.”*

Most of PPM's engineering team was at one time part of the National Grid ecosystem. We learned the gas industry the old-fashioned way, starting at the “Brooklyn Union Gas School of Hard Knocks.” They gave us shovels and put us to work in a ditch. I loved



The Gas Lining Layout (GLL) maps the lining project with locations and details of the pits for lining and gas shutdown



PPM crew prepare the transfer hose for lining the 24" cast iron natural gas pipeline on 134th Street

“CIPL eliminates leaks, reduces emissions and extends the life of the pipelines by another 100 years, supporting our net zero vision and NY CLCPA mandate.”

-SAADAT KHAN, DIRECTOR GAS DISTRIBUTION ASSET & ENGR., NYS AT NATIONAL GRID

every minute of it. Brooklyn Union Gas (BUG) ultimately became National Grid. I worked my way through National Grid and “retired” after 35 years. I “unretired” twenty years ago to join David Wickersham at PPM.

David Wickersham, PPM’s CEO said about the alliance, “Our alliance with Hallen Construction and the Turn-Key CIPL program for National Grid is an industry first. It demonstrates proven value and showcases our companies’ mutual commitment to excellence. We offer CENTURIES of experience in gas system engineering, gas construction, excavation, safety and pipeline rehabilitation in a single offering.” He continued, “This experience and partnership enables PPM, with Hallen, to synchronize all aspects of pipeline rehabilitation seamlessly from initial project design to final restoration.”

STEP ONE – PLANNING

Once National Grid had identified that this pipe would need to be rehabilitated, their engineers provided drawings and specified the sections that we were to line. We studied every detail, collaborated with our internal teams, and designed the Gas Lining Layout (GLL). The GLL maps the entire project laid out from the gas perspective and the lining perspective. The location and details of the lining pits and gas shutdown pits were identified along 134th Street and 97th Street. Our operations team led by Tom Nestoras weighed in on the execution and safety protocols.

When we presented the Gas Lining Layout to National Grid, we talked through the geographic location of the ten pits that were required to support the lining. National Grid has a gas feed system that regulates gas services in the neighborhood. By redirecting the service to an alternate main, they ensured that

service to their customers was never interrupted during the project. Gas shutdown procedures and pits were also reviewed.

The GLL worked perfectly.....on paper. However, when we walked the site with National Grid and Hallen to see the exact sites for excavation, we realized that we

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Concrete Median in Williamsburg, Brooklyn and site of the Chair Challenge

had not fully considered the impact that one of the pits would have on traffic at a key intersection. Hallen recommended we move that specific pit about 25 feet to minimize the traffic impact.

LINING COMPARED TO TRADITIONAL TRENCH AND REPLACE

National Grid could have opted not to install a CIPL in this 1.3-mile-long section of gas main. Upon closer analysis, however, this would have been a more daunting challenge. To ‘trench and replace’ would have meant excavating over every connecting joint within the scope of the project. That would have required 580 individual pit openings. Each pit requires a road permit. The pits are large and sheeted because the pipe is large in diameter. There would have been a pit every twelve feet along the 1.3-mile section of pipe. Not only would the hard costs have been astronomical, the carbon footprint and environmental impact of pulling all that soil out of the ground and then having to replace it all again is unthinkable. Furthermore, the entire project would have taken about two years to complete. Rehabilitating the pipeline with 12 pits total was the most sensible option.

“PPM and Hallen are crucial to National Grid’s Leak Reduction Program.” Saadat Khan, Director Gas Distribution Asset & Engr. NYS at National Grid explained. “CIPL rehabilitates large diameter leak-prone pipes permanently. The technology eliminates leaks, reduces emissions and extends the life of the pipelines by another 100 years. They support the Company’s net zero vision and NY CLCPA mandate.”

PREPARATION & LINING

After the gas was shut down, the pipeline was excavated, purged and cut up for PPM’s crews to lead the lining portion of the scope. Using a CCTV Aries LETS camera, PPM examined the pipe internally looking for anomalies before cleaning, while also confirming that the pipeline was dry. After the first camera inspection, the pipe was sandblasted and cleaned. The next CCTV inspection showed that it was clean without any obstructions.

Lining was executed section by section, pit to pit. As soon as the first pit was ready and prepared, the crews lined, cured and moved to the next section. It was seamlessly orchestrated by the field and lining teams. After lining, the pipeline was inspected for the third time using CCTV. It looked exactly like it should.

The pipeline was put back together with compression couplings. Pressure tests were executed per National Grid’s test procedures and oversight. Once the team verified there were not any leaks, the pipe was blown down. Cathodic protection was applied to the couplings, then the pits were backfilled and paved. The main was put back online.

THE CHAIR CHALLENGE

Challenges come from different directions, and this project was no exception. The large diameter services and major connection points at some intersections required special attention. National Grid has a pressure control device that allows the high-pressure gas to be regulated into the low-pressure system. A unique shut-down procedure added some complexity that required the lining project to be divided into two phases.

Sometimes the challenges come from the neighborhood, unrelated to the pipeline itself. The team executed a project for National Grid in Williamsburg, Brooklyn with an unforeseen challenge. The pipeline to be remediated was in the middle of the highway, under a concrete median. Across the street was a synagogue. The team was prepping for a few days on the street and in the median. When we showed up early Saturday morning to line the pipe, on the median were about 300 wooden folding chairs, stacked about 6 high. ‘What in the heck are all these chairs doing here?’ I cried. The name of the synagogue was stamped on the chairs. I knocked on the door at the synagogue. No answer. A police car drove up. He said the chairs belong to the Rabbi. I walked back towards the synagogue. The policeman asked, ‘Where are you going?’

‘I’m going to tell him to get the chairs out of here!’ I exclaimed. The policeman laughed.

‘Rabbi, are those your chairs?’ I asked. ‘Yeah,’ he replied. He said he had seen our crews working on the pipeline.

I asked, ‘Why are your chairs in the middle of the street? Our guys will put them back for you.’ I offered.

“No. I have to put them somewhere.” The Rabbi answered. “We have services on Saturday, and I need the space in our auditorium.” He explained that he stacks his wooden chairs on the median in the middle of the street every Friday afternoon for the services Friday night and Saturday. “This is where I’ve been putting them for years. You can have the space back Monday.” Then he closed the door.

Those chairs never moved until Monday morning. The team had to call National Grid and explain. We laugh about it now. We were able to adjust the project schedule without any adverse impact. I have 100 percent certainty that whatever complications or challenges come up, we can always find a workable solution.

The effectiveness of the PPM-Hallen Construction turnkey alliance boils down to three things. Our collective expertise across disciplines minimizes our blind spots; our decades of experience and connections in the region allow us to lessen the impact that

unforeseen obstacles throw at us; and the extraordinary trust we have in each other enables us to put the client’s issues front and center. As lining becomes integral to operator’s strategy for leak elimination, we encourage more operators to consider the turnkey model for infrastructure management.

Progressive Pipeline Management (PPM) is a NJ-based, full-service contractor that has been committed to improving the safety and longevity of pipeline infrastructure for more than 20 years. PPM offers the latest trenchless robotics and technologies to perform condition assessments and renew aging, damaged or leaking underground infrastructure, including pipelines of all types and sizes. The Starline® Cured-In-Place-Lining (CIPL) technology is the only approved liner for natural gas pipelines and adds 100 years of new service life to the existing pipe while eliminating methane leaks and emissions. This innovative and green solution has been installed in over 1 million feet of gas mains in 20 states. 🔥

ABOUT THE AUTHOR:



Mario Carbone, Chief Operating Officer leads PPM’s key projects and spearheads the testing of new technologies and robotics. He spent thirty-two years in design, maintenance and construction with Brooklyn Union Gas/KeySpan Energy and ten years as the senior manager for gas research and development with KeySpan Energy. Mario holds three gas pipeline industry patents for new technologies in gas pipeline purging, live gas polychlorinated biphenyls (PCBs) pipeline sampling, and live service pipeline transfer without interruption. In addition to his expertise in Starline® CIPL, engineering and managing field operations, Mario is versed in current regulations for corrosion and pipeline environmental procedures. His inventiveness to overcome challenges led PPM to win the Trenchless Technology Project of the Year multiple times.



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