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Georgia Military Town Overcomes Stormwater Rehabilitation Challenges

Warner Robins, GA, is a military town named in honor of Brigadier General Augustine Warner Robins. The city is built around Robins Air Force Base, Georgia's largest employer.

Its military background has had consequences for the town's infrastructure. Rapid wartime expansion meant that sewers and other assets were put in quickly, with relatively little planning or inspection. As a result, "We have a lot of older corrugated metal pipe [CMP] storm sewer, even under roads," says stormwater management technician Krag Woodyard. As a result, and also due to EPA mandates, the city is now struggling with major rehabilitation challenges.



"We've divided our stormwater system into five sectors, and we need to address one each year in order to keep up with EPA requirements," explains Woodyard. This means he has to be organized and diligent. Inspection teams pull up to 60 manholes daily and inspect inlets and outlets as well. Flow direction is determined, condition assessed, and the amount of debris and blockage estimated. Using a handheld tablet, the results are noted and later uploaded to an office GIS. The result is a good record of a failing system; Warner Robins has a great deal of aging infrastructure, and there is much work to be done. Because there is too much work for one big project, tasks need to be prioritized.

Two main factors are considered when setting priorities: pipe condition and public safety. "If we're comparing two sewers that pass under roads, and both are showing 50% corrosion and need repair, the one that gets more traffic is going to be a higher priority," says Woodyard. "We really can't have pipe collapsing under roads; there's too much at stake."

With numerous CMP sewers in need of rehabilitation, many of them under high-traffic roadways, Warner Robins needed a solution that was trenchless, cost-effective, and, ideally, structural. Utility Asset Management Incorporated (UAM), a longtime city contractor, was working with a new technology that seemed to fit the bill.



Stepping Into Cleaner Water

UAM is a certified female business enterprise whose three principals each have about 20 years experience in manhole and sewer rehabilitation. The firm has been in existence for six years and has a reputation for technical excellence, good client relations, and completing projects on time within budget. And the company is ambitious. "We've done a lot of manhole work and a lot of sanitary sewer work," says UAM president Anita Clyne, "A year ago we were setting goals for our company and realized that storm sewer rehabilitation was an untouched area for us, mainly because we'd been waiting for good options." That realization set off a search for new trenchless solutions that eventually led to CentriPipe, a spin casting system designed by AP/M Permaform.

"We'd been thinking about spray applications, and when we looked at the science and the engineering of this system, we realized it was a good fit with our expertise," says Clyne, "so we got licensed."

CentriPipe is based on a computer-controlled spincaster that is pulled back through pipes at calculated speeds, spraying on thin, precisely measured layers of high-strength cementitious grouts. It doesn't require backhoes or large staging areas, and according to studies conducted by the Minnesota Department of Transportation, it costs less per foot than cured-in-place pipe. The result is a smooth layer of grout that adheres tightly to the inner surface of the rehabilitated pipe, effectively replacing the pipe from within with a new, structurally sound concrete pipe. Flow reduction is minimal.

"We had worked with spray systems on manholes, so this was an easy transition for us," says Clyne. She also likes the project engineering that comes with the CentriPipe system. "We give the project specifications to AP/M Permaform," she explains, "and they give us engineered thickness and layer calculations the same day. It gives us a level of comfort, especially on a project like Warner Robins' where there's a lot of elliptical CMP." Woodyard agrees, saying, "The engineer's stamp, with the soundness rating, really raises our confidence in this system."

Because it's a spray system, CentriPipe projects don't have to completely rehabilitate a pipe from end-to-end. Woodyard likes that aspect. "If corrosion is a lot worse at the downstream end of a crossing," he explains, "it's feasible to do just the corroded half of a pipe; that gives us more options. And we don't have to worry about bridging diameter changes. Several times already we've rehabilitated from an opening just to a junction box, without going past the box."

Clyne cheerfully offers yet another advantage of storm sewer rehabilitation with CentriPipe. "After all the sanitary sewers we've worked in," she says, "it's nice to step in cleaner water for a change!"



So Far, So Good

Video inspection allows UAM to assess the amount of damage and get the data needed for the engineered specifications for a particular length of pipe. Bottoms are often a concern. The CentriPipe applicator needs a fairly smooth bottom so that it can be moved along the pipe evenly, without jerking or stops. Sometimes a new bottom is poured to provide a smooth pulling surface. Pipes also have to be dewatered and cleaned. "A little moisture is fine," says Clyne, "but if there's standing water, as there often is in CMP bottoms, we go in with air hoses and blow it out." Clyne says her crew can rehabilitate up to 200 feet of sewer pipe daily.

To monitor thickness and quality, manual gauges are used to confirm the thickness of each pass, and logs are kept to monitor the amount of material being applied. After a length of pipe is completed, it's

videotaped again and the city is shown before-and-after comparisons. "We do need man entry to do a good job," says Clyne. "But for any pipe that's 30 inches or bigger, we feel that CentriPipe is definitely the way to go."

"We've been doing this for a few months," says Woodyard, "and so far, so good! We don't have to stop traffic, we have a structural repair, and there's no hindrance at all for the public. The before-and-after videos are just incredible—it's like we're replacing all the CMP under roads with new concrete pipe."

Clyne and UAM are also happy with their new infrastructure solution. Warner Robins is the firm's first CentriPipe project, but they'll be starting another soon in Macon, GA, and have quoted about a million dollars' worth of work to other municipalities. "We know these cities well from all our work in sanitary sewers and manholes," says Clyne. "They have been telling us for a while that storm sewers needed attention, and now we have a good way to help them out."

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