

# Rehabilitation T E C H N O L O G Y

## Quick Reaction Turns Major Problem Into Routine Repair

Country clubs are known for their impeccable landscaping, pristine grounds and perfectly manicured golf courses, so when a sewer line running through a heavy traffic area of the Prestonwood Country Club threatened to overflow, it was immediately declared an emergency by the Town of Cary, NC, Public Works and Utilities Department.

On a routine inspection, the Cary Public Works personnel noticed a sewage backup in an upstream manhole on the Prestonwood Country Club, home of the Senior PGA Tour's SAS Championship. Department officials quickly called to set up a by-pass to contain and control the conditions and prevent what they felt would have been an inevitable overflow in a matter of days. To identify the cause of the problem, they performed an internal investigation of the pipeline by utilizing a CCTV tractor camera. The video inspection showed one 21-foot section that was 70 percent collapsed, and several other locations that were "egg-shaped," indicating severe signs of stress. The restrictions in the flow capacity were resulting in the backups and surcharged manholes discovered earlier.

It was immediately evident that the entire 737-foot line would need to be repaired or replaced with minimal disruption to the surroundings. Since the interceptor line ran near the tennis courts, fit-



ness center, driving range and parking lot of the country club, it was obvious that traditional dig and replace methods or pipe bursting were not options. Such methods would be time consuming, costly and cause serious disruption to the club and its members. Cary's Public

Works Department believed the cured-in-place pipe (CIPP) rehabilitation method would provide the best solution to preserve the grounds and the club's activities, as well as the sensitive utilities running parallel to the sewer lines 18 feet under ground.

# Quick Reaction

## Design solution

The Cary Engineering Department consulted rehab specialists Frazier Engineering who came up with the design for the solution. The firm recommended a 30-inch diameter CIPP rehabilitation, with a 21mm wall thickness to preserve maximum flow and withstand the external pressures of such a deep sewage line.

The Town of Cary contracted a firm out of Morrisville, NC, to perform a 30-foot point repair to fix the worst part of the collapsed line prior to the CIPP repair. American Water Services (AWS), a member of the National Liner CIPP Process, was selected by the city due to their expertise in CIPP rehabilitation.

American Water recognized the emergency nature of the job and was able to respond quickly with a solution. Lou Krch, operations manager for the Midwest region of American Water, and his team had to survey and quote the job within 24 hours. The team implemented a field inversion of a resin impregnated CIPP 21mm-thick liner tube, which was custom designed by American Water and Frazier Engineering in partnership with Applied Felts, the industry's only ISO-9002 certified manufacturer focusing solely on the production of felt liners.

The liner was designed with a 21mm thickness – thick enough to serve as a stand-alone tight-fitting pipe within a pipe capable of structurally rehabilitating the existing pipe, yet maintaining maximum hydraulic flow of approximately 2 mgd. American Water selected Applied Felts for their technical expertise, continual product improvement and development and proven experience. “Given the emergency nature of this situation, they were an obvious choice,” Krch said.

## Fast delivery

Within just one week of the order, Applied Felts custom liners arrived on site and the American Water team was mobilized.

“This was a completely trenchless job,” said Krch. “We were able to invert the liner through an existing manhole cover without disassembling the manhole at all. With one shot of liner, we were able to rehabilitate more than 700 feet.”

A dig and replace method would have cost the Town of Cary hundreds of thousands of dollars plus disruption of activities at the country club. It would have taken months to replace and restore all the areas that would have been disturbed including the tennis courts, retaining

walls around the driving range and parking lots, not to mention disturbing the golf course's sensitive sprinkler lines.

In approximately one week, the Town of Cary's Public Works Department was able to stabilize the sewer flows and conduct an onsite spot repair before AWS rehabilitated over 700 feet of sewer line running through a sensitive and congested area of the country club – all while club members continued to play tennis and golf, and enjoy the fitness center (which never closed). From start to finish, the lining job took five days, including staging and prep work; the CIPP process took only two days.

As a result of the work completed by American Water, the Town of Cary now has a stand-alone pipe within a pipe that has a 50-year design life expectancy with maximum hydraulic capacity. From the initial design concept to cleaning and pipe preparation, spot repair, lining, site cleanup and restoration, the entire job was completed in 10 days. “The town was very pleased with the expedient manner in which the team responded and that all of the work was conducted with no sewer overflows,” said Jamie Revels, civil engineer for the Town of Cary, NC.