

Miami-Dade Water and Sewer System (WASD) Lateral Inspection and Repair Program

Miami-Dade Water and Sewer Department (WASD) has been working on its sewer system evaluation and rehabilitation since 1993. The entire sewer system consisting of 12.9 million lf (2,440 miles) of gravity sewers including 58,000 manholes was televised by 1994 and evaluation was completed by 1997. A total of 32,000 defects were recorded and repaired by 2001.

The sewer system evaluation and repair program was successful in reducing system-wide flows to the regional treatment plant from 325- to 296-mgd in the time when the population increased by 25 percent. Although the system-wide flow was decreased, the peak flows during rainfall events have continued to increase. WASD evaluated that the only component of the system not fully evaluated was house laterals. The house laterals above the water table were considered to be the source of RDII.

In 1999 WASD started the initial lateral pilot program to evaluate RDII from house laterals and cost of lateral repairs. Three basins were selected. All main basin sewers were televised and defects were repaired prior to lateral evaluation work. After a significant rainfall event, RDII hydrographs were obtained as a baseline for 'before' laterals rehabilitation.

Pilot basins were selected based on its RDII peaking characteristics. Flows from basins were measured at the pumping stations (WASD has 1000 pumping stations in its sewer system). Peaking factors of 2 to 8 were observed after a 2-year return period rainstorm that has a total rainfall volume of 4.5 to 5 inches in 24 hours. These peaking factors were observed after all mainlines defects were repaired.

Laterals in each basin, both the public and private side were air pressure tested for leaks and televised for identifying defects. Permission from homeowners was obtained before pressure testing laterals in the private side. A total of 9202 letters were mailed to customers, 6,435 customers responded of which 6,281 had a 'Yes' response.

Following figure shows the lateral testing protocol.

Figure see attached

Following table shows the results of air pressure testing program:

Laterals Tested	Public		Private	
	Pass	Fail	Pass	Fail
783	428	326	297	166

All lateral defects on the public side were repaired in the three selected basins. Three types of repairs depending on the condition of the laterals were performed: 1) Full

Service Lateral Replacement, 2) Cured-in place liners, and 3) Cured-in-place mainline/Lateral Repair System.

After repair on the public side of the laterals, RDII signature was again obtained at the pump station for a 2- year storm. An additional year was needed to obtain comparable before and after hydrographs in the three basins. The following three hydrographs shows the RDII reduction for the three pilot basins. The peaking factors were reduced form 8 to 3-3.5 for the selected basins.

Show 3 hydrographs (not attached)

As a result of the initial pilot program, WASD has decided to expand the program to 52 additional basins in the hope that final program will be further expanded to 500 basins.

References

1. Personal conversation with Glenn Humphrey, MWH, and Rod Lovett, Manager Sewer Collection System Division WASD, September 2006.
2. J. Peter Larson, James T Cogwell, et. al., “Miami-Dade Lateral Pilot Program”, Water Environment Federation 2005 Annual Conference.
3. WASD Presentation to EPA, “Comprehensive Lateral Investigation Program (CLIP)”, March 23, 2006.
4. Ahmad Hibibian, “Miami-Dade Water & Sewer Department Case Study”, ASCE Solutions for Sanitary Overflows, EPA Cooperative Agreement CP 828955-01-0.