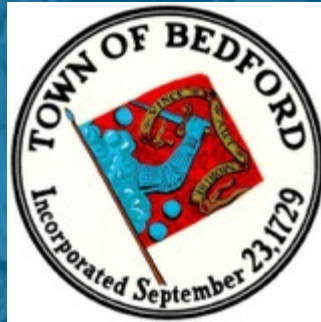


Critical Force Main Relining



Town of Bedford, MA



Jeffrey Hutton, P.E.

Project Manager
Weston & Sampson
Wastewater Group, Peabody, MA

The Location

- 20 miles northwest of Boston
- Approximately 13,500 residents
- Only MWRA community without a gravity sewer connection.



The Problem

- History of Pipe Breaks
- Critical Infrastructure
- Interstate Highway



The Problem

- Unlined Ductile Iron (DI) pipe installed in 1972.
- Internal H_2S Corrosion
- Internal Microbial Influenced Corrosion (MIC)
- External corrosive soils



The Solution

- **Design**
 - **H₂O Net Model**
 - **Bid Documents Included:**
 - **Dig and Replace**
 - **Cured-in-Place Pipe**
 - **HDPE using Slip Lining**



HDPE Pipe and Slip Lining

- **18-inch IPS DR-21 HDPE pipe**
- **2,700 linear feet included Phase I Project**
- **Lower coefficient of friction, similar head loss, higher velocity.**



Existing Flow

1. Shutdown
2. Install valves and tees
3. Install 12-inch HDPE bypass pipe



Additional Pipe Breaks



1. Dig Access Pits





2. Fuse Pipe





3. Connect Winch



4. Install Pipe





5. Install Appurtenances



6. Grout Void Space



7. Restore Access Pits



Summary

- **Slip lined 10,900 linear feet of 20-inch ductile iron with 18-inch HDPE**
 - **Phase I (2014) – 2,700 linear feet**
 - **Phase II (2015) – 8,200 linear feet**
- **Project Duration Phase I Design to Phase II Construction Completion ~ 24 Months**
- **\$4.38 Million (~\$400 / lf.)**
 - **Completed by Revoli Construction**

Thank You

- **Town of Bedford, MA**
 - **Adrienne St. John, Public Works Engineer**
 - **Peter Churchill, Water & Sewer Ops Manager**
 - **Roy Sorenson, Former DPW Director**
- **Town of Lexington, MA**
 - **John Livsey, Town Engineer**
- **Hanscom Air Force Base**
 - **Joan Croteau, Base Civil Engineer**
 - **Joe Philbrick, Base Water & Sewer Supervisor**

QUESTIONS

