

CONTRACT No. 13-1 MARBLEHEAD PIPELINE REPLACEMENT PROJECT

SRF PROJECT NO. CWSRF-3927
OCTOBER 22, 2014
SOUTH ESSEX SEWERAGE DISTRICT
SALEM, MASSACHUSETTS

DISTRICT BOARD MEMBERS

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DISTRICT ADMINISTRATION

ALAN F. TAUBERT, JR., P.E., EXECUTIVE DIRECTOR
DAVID MICHELSEN, P.E., DISTRICT ENGINEER
ERIC BARBER, P.E., PROJECT ENGINEER



REVISIONS

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LOCUS MAP
SCALE: 1" = 100'

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Project Scope / Description

The Marblehead Pipeline Replacement Project consists of the installation of two 24-inch diameter High Density Polyethylene (HDPE) pipelines to convey all of the sanitary wastewater from the Town of Marblehead to the South Essex Sewerage District (SESD) treatment facility in Salem. The total capacity of the pipes is approximately 14 million gallons per day (mgd).

The Project will replace the existing 24-inch and 20-inch ductile iron pipelines that run under Salem Harbor. A release of sewage from a break in one of the pipes in March, 2013 prompted an assessment of the condition of the pipes. The existing pipe was repaired prior to the assessment and there is no longer a sewage release, but the assessment indicated that they are severely corroded and must be replaced.

The pressure mains will extend approximately 6,000 feet from the existing valve structure at the SESD facility to landside connections at Stramski Way in Marblehead. Nearly the entire length of the pipeline route passes under Salem Harbor. The route of the replacement pipes will be roughly parallel to the existing pressure mains, but displaced by about 200 feet to the west.

Construction will take place within a corridor approximately 75 feet wide. A trench approximately 8-9 feet deep will be dug by a barge-mounted excavator or bucket. The trench will be approximately 25 feet wide at the top, narrowing to approximately 8-10 feet wide at the bottom. The sediment dredged from the trench will be temporarily cast to one side of the trench and put back over the pipe after the pipes are laid in the trench.

Once the trench is dug, a set of barges will install the pipes into the trench. The pair of new pipes will be fitted with 7-foot wide by 4-foot high by 1-foot thick precast collars every 10 to 20 feet, which will counteract the effects of buoyancy so that the pipes can be sunk into place within the trench. Fifty-two foot long segments of pipe will be fused together on land at the staging area at the SESD facility, and longer sections of pipe will be fused together on the barge before they are placed in the trench.

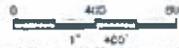
At the shorelines, the new pipeline will be placed in the same trench as the existing pipelines to avoid the need to blast ledge for new trenches on the shoreline. These trenches are currently covered by rock armoring. The rock armoring will be removed to gain access to the trench so that the existing pressure mains can be removed and replaced with the new pipes. This will require a temporary bypass connection of one of the new pipes at both ends. This temporary connection will allow wastewater to flow through one of the new pipes while the existing mains are removed from their trench at the shoreline. Permanent connections from the new pipelines to the landside valves may then be made using the existing trench across the shoreline.

After the pipe installation is complete, all sidecast material will be placed back into the trench and over the pipes to provide at least 5 feet of cover over the pipes. Once the pressure mains are installed in the trench, pressure testing will verify that the pipes were installed properly. Finally, the pipelines will be connected to new valves at both ends and placed into service when installation is satisfactorily completed and inspected. The existing pressure mains will be abandoned in place. Contractor cleanup and demobilization will complete the project.



- LEGEND**
- LAND UNDER DEED
 - OTHER LAND
 - LAND SUBJECT TO OTHER STATE PLANNING
 - GENERAL USE
 - EXISTING PIPE AREA

NOTE: DELINEATED AREAS SHOWN ARE INCLUSIVE OF AREA AT AND ADJACENT TO THIS PROJECT, AND ARE NOT INTENDED TO INDICATE AREAS OF IMPACT FROM THIS PROJECT. AREAS OF IMPACT FROM THIS PROJECT SHALL BE LIMITED TO SMALLER AREAS ALONG THE PIPELINE ROUTE



**PARSONS
BRINCKERHOFF**

CONTRACT No 13-1
MARBLEHEAD PIPE LINE REPLACEMENT PROJECT
SOUTH ESSEX SEWERAGE DISTRICT
NOVEMBER 2013

WETLAND RESOURCE AREA
DELINEATION PLAN
FIGURE D-1