



DEPARTMENT OF PUBLIC WORKS

Project: Sewer Rehabilitation Program 2009

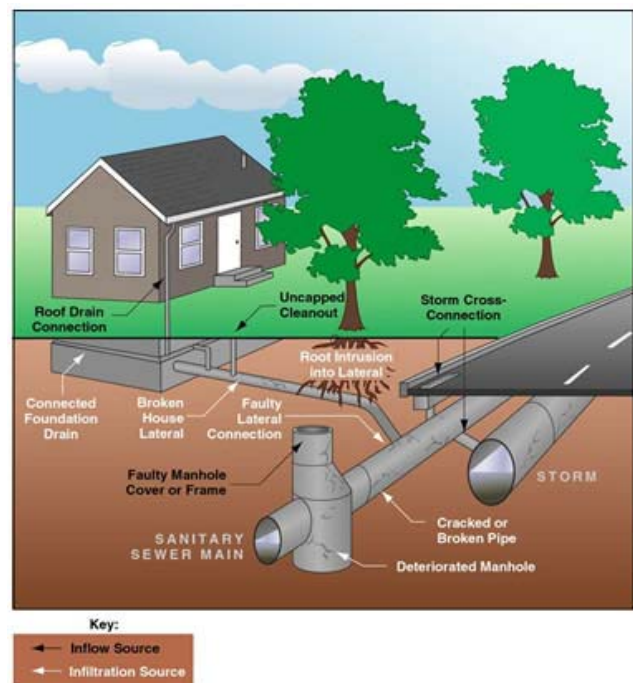
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Inspection and repairs to the Town's wastewater sewers is required by the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) through the Town's NPDES permit. This contract was developed with recommendations from an inspection report completed by FST in 2008 in an effort to reduce inflow and infiltration (I&I).

Inflow and infiltration occurs when clean ground water or storm water enters a sewer system through improper connections, cracked pipes, and defective joints. Most inflow comes from storm water and most infiltration comes from groundwater. I&I is a cause of sanitary sewer overflows and backups that release raw sewage into the environment and homes. In addition, excess storm and ground water entering the sanitary sewer system through I&I results in increased wastewater treatment costs.

Inflow is the term used to explain when the surface water enters a sewer system through improper connections of yard, roof, and cellar drains, cracked pipes, holes in manhole covers, catch basins, and cross connections between storm and sanitary sewers. The remedy for inflow is to remove improper connections to the sanitary sewer system.

Infiltration occurs when the ground water enters the wastewater system through deteriorated manholes, cracks, and leaks in the joints. The cracks or leaks may be caused by age related deterioration, loose joints, damage or root infiltration. The remedy for infiltration is repairing or replacing the leaking infrastructure.



The work for this project includes, but is not limited to, chemically root treating 8"-12" sewer pipes and sewer manholes; cleaning and inspecting 8"-12" sewer lines; testing 8"-12" sewer line joints; sealing 8"-12" sewer line joints; installing 8"-12" cured-in-place short liner; installing 8"-12" cured-in-place liner; interior sealing of manholes; exterior sealing of manholes; raising, resetting, and/or replacing manhole frames and covers; repairing manhole inverts; sealing pipe connections; repairing sewer corbels and/or chimneys; and other related tasks.

The contract was awarded to New England Pipe Cleaning Co., Division Heitkamp Inc. on May 7, 2009 for \$132,808.70.

Beginning in August, approximately 11,330 feet of sewer lines were cleaned and inspected. The joints were tested, and where necessary sealed. 12 manholes were repaired and sealed with new interior lining. Exterior sealing was performed on 3 manholes.

Over 40 feet of cured in place short liner was installed in pipes. A majority of the work was in the Nuttings Lake area, as this is one of the older sections of sewer and in need of the most repairs.

In September 2009, 66 manhole structures were adjusted throughout Town.

In October 2009 sewer lines and manholes were chemically treated for roots.



Equipment Trailer for Invert Sealing



Existing manhole chimney



Newly sealed manhole chimney



Existing manhole



Newly cleaned, lined and sealed manhole

Cleaning, inspecting, testing and sealing of sewer lines

The cleaning, inspection, testing, and sealing of sewer mains is done to find and seal joints or circular cracks which are leaking or have the potential to leak. As the camera and packer passes through the pipe, each joint or crack is pressure tested and, if necessary, sealed.



An inflated packer for a 12" line



Packer and camera being prepared for 8" line



Packer and camera being installed



Contractor monitoring the inspection

Installation of cured in place short liner

The short liner or magna line sleeve is a fiberglass material that is installed into the existing sewer line to repair and seal cracks and holes which are leaking or have the potential to leak. The process allows the pipe to be repaired from the inside, between manholes, and without the need for major excavation. The liner is impregnated with an epoxy resin, connected to a rubber packer, and installed into the existing pipe. Once in place, the packer is inflated and steam is applied to the liner. The liner cures in place as it cools. Once cool, the packer unit is removed from the pipeline leaving the sleeve in place. The packer is hollow which allows the sewage to continue to flow during the repair process, thereby eliminating the need for bypass pumping.



Short Liner being impregnated with epoxy resin



Short liner being prepared for installation



Placing short liner in pipe