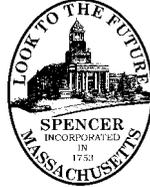


TOWN OF SPENCER, MASSACHUSETTS
OFFICE OF THE
SEWER COMMISSION

FRANCIS X. WHITE, CHAIRMAN
LAWRENCE H. DUFAULT, CLERK
MICHAEL J. MERCADANTE, MEMBER

JAMES T. LAPLANTE, JR, SUPERINTENDENT



3 OLD MEADOW ROAD
SPENCER, MA 01562
TEL. 508-885-7541
TTY 508-885-7525
PLANT 508-885-7542

SEWER BANK
(Version 1)

BACKGROUND

Sewered communities are constantly faced with the added burden that land development places on their sanitary sewer systems. Increases in real estate values and the availability of centralized wastewater collection and treatment facilities continue to spur on residential, commercial, industrial, and institutional development. Yet, frequently the municipal sewerage systems are old, having been designed for the flows that were envisioned fifty or more years ago. The Town of Spencer sewer system meets these conditions.

SOLUTION

The solution is a multifaceted approach for removing Inflow/Infiltration (I/I) from poorly constructed or aging sewers and manholes. The removal approach combines all available technologies and programs including, but not limited to:

- Rehabilitation of the municipal sewer system (lines and manholes) using standard methods such as: testing and sealing/point repairs of joints; replacement of cracked or eroded pipe; rebuilding and raising manhole tops; and patching/sealing manholes. These approaches have had limited success in addressing long term removal of sewer infiltration and manhole inflow for a number of structural reasons (poor initial construction, age, frost impacts, poor subgrade, poor bedding, poor backfill, root re-intrusion, etc.). Rehabilitation methods will be used to resolve specific I/I problems on a case by case basis.

The Spencer Sewer Commission in 1987 conducted an MADEP/EPA funded construction project to address sewer and manhole conditions. The Spencer Sewer Commission in 1990 conducted a follow up Inflow/Infiltration Study to verify the success of the rehab program and identify areas of the municipal sewer system still impacted by infiltration and inflow.

- The Town of Spencer has miles of vitrified clay pipe sewer. Vitrified clay pipe sewers have known infiltration impacts that have not been successfully addressed by test and point repair rehabilitation methods. A removal and replacement program is the best program to address the long term infiltration from VC pipe.
- The Town of Spencer has hundreds of brick manholes. Manholes barrels, cones and corbels constructed with bricks and mortar and mortared in frames have known infiltration and inflow impacts that have not been successfully addressed by patch and seal rehabilitation methods. A removal and replacement program is the best program to address the long term infiltration from brick manholes and an aggressive program to keep covers raised, as part of repaving programs.
- Inflow removal program in private residences to remove foundation drains, sump pumps, etc. Though the Spencer Sewer Commission/Sewer Department has an aggressive removal program, this approach has had limited success for the Town of Spencer.
- The establishment of I/I mitigation contributions from new connections and increased flow sources wanting sewer capacity to help fund Spencer Sewer Commission sponsored I/I removal programs or direct assistance in removing I/I by designing, bidding and constructing, Spencer Sewer Commission approved, replacement sewers and manholes with known I/I impacts.

The sewer system capacity gained (credits) by implementing the above programs is accumulated in a municipal inflow/infiltration “Sewer Bank.”

THE SEWER BANK

The Sewer Bank is an effective method of making needed municipal sewer system improvements while mitigating the burden of land development from the municipal sewer system. The Sewer Bank has been established by the Spencer Sewer Commission to address increased development interest and inquiries and to make needed municipal sewer system improvements. The Sewer Bank will be administered by the Wastewater Treatment Plant/Sewer Department Superintendent or anyone empowered by the Commission.

The MADEP’s “Guidelines for Performing Inflow/Infiltration Analyses and Sewer System Evaluation Surveys” includes guidance on estimating I/I component flows. For sump pumps and foundation drains, the DEP will allow 500 gpd @ 100% allocation. For all other inflow sources, the MADEP suggests using the average of the range of flows given in the guidance document. Furthermore, MADEP allows a 400% (4 parts I/I flow removal credit to 1 part proposed wastewater flow) allocation of the calculated daily capacity needs to be deposited into the Sewer Bank as I/I removal credits.

The system wide 1990 I/I Study conducted by the Spencer Sewer Commission identified areas of minor, moderate and severe I/I. The Study also identified areas of capacity deficiencies within the sewer system and areas that needed additional investigation. Toward that end, the Spencer Sewer Commission (SSC) may require a prospective Sewer Permit Applicant, requesting capacity for a new sewer service extension and/or sewer system connection(s), or additional capacity to an existing connection, to assist the Commission in determining the impact the additional wastewater flow from the sanitary sewer extension and/or connection(s) will have on the existing Spencer Sanitary Sewer System.

If the Commission does request assistance, the assistance will be in the form of: a field survey of a reach of the sanitary sewer system from the point(s) of the proposed sanitary sewer extension and/or connection(s) to a point on the sanitary sewer downstream identified by the Spencer Sewer Commission; and a fee to fund a limited modeling evaluation of the Spencer Sewer System, by the SSC's consultant, to determine: the existing sewer system capacity; the adequacy of the existing sewer line to accommodate the additional wastewater flow; bottlenecks at manholes; sewer segments (sewer lines between manholes) that require correction action in order to accommodate existing and proposed capacity; and locations for I/I removal and applicable I/I removal credits.

In general, I/I removal credits, for a new sewer service extension and/or sewer system connection(s), or additional capacity to an existing connection, are calculated based on the value of the additional wastewater capacity request times 4. I/I removal is calculated for sewer lines within a specific sewer line segment based on past or current sewer specific determined I/I values. If the total I/I removed, do to sewer line and manhole replacements needed to address capacity and/or hydraulic concerns, does not equal the total I/I removal credits then additional sewer line and manhole replacements will be assigned until the total I/I removal credits are obtained.

The SSC's may have the prospective Sewer Permit Applicant make a cash contribution per gallon of calculated I/I removal credit. Sewer Bank assets, from cash contributions, will help fund SSC sponsored I/I evaluation and rehab/removal programs. These programs usually grow slower and the removal of I/I from targeted locations takes longer.

The cash contribution is based on the estimated cost for the SSC to have replacement sewer and manhole projects designed, bid and constructed, divided by the inflow/infiltration removal credits. The value of the contribution may change by the SSC over time as the I/I removal cost database is expanded. The current cash contribution is \$4.00 per gallon of I/I removal credit.

The SSC's may also request, as a condition of the Sewer Permit, that the prospective Sewer Permit Applicant provide direct assist in removing I/I by designing, bidding and constructing replacement sewers and manholes, to SSC's Standards, identified in the evaluation, prior to commencing with his/her private development.