Long Range Sewer Improvement Program

The Problem, *The Solution*, *The Costs*

In 1991 Evanston debuted its long awaited Long Range Sewer Improvement Plan - a massive forward thinking public works project designed to eliminate basement sewage backup, reduce street flooding, reduce North Shore Channel pollution, rehabilitate existing sewers and some streetscapes and take full advantage of the Metropolitan Water Reclamation District of Greater Chicago's current and future provisions for sewage treatment.

Photo of open cut sewer installation

Photo of tunnel sewer installation

The Problem

Unlike newer suburbs with separate sanitary sewer and stormwater systems, Evanston's sewer system is roughly 100 years old and designed to convey both sewage and rainwater in the same conduits. During dry weather, the combined sewage flow is designed to go to the Metropolitan Water Reclamation District of Greater Chicago's (MWRDGC) plant at Howard Street and McCormick, for treatment. However, the pipes carrying the combined sewer flow have severe capacity limitations, due to their size. This becomes apparent when rain events or intense storms cause the sewers to "surcharge" resulting in the backup of sewage into basements and street flooding.

The Solution

Over the years, a number of studies were conducted to try and find a solution to Evanston's undersized sewer problems. The results continuously came back to either replace the existing combined sewer pipes with larger sizes or to build a completely new storm sewer system. Both of these solutions, while effective, were extremely expensive and required construction of new sewers on every street in Evanston. In 1989 a team was formed to come up with an affordable and implementable solution to the problem. The result was a plan for partial sewer separation. This plan combines flow restriction to the existing system with the construction of a *new partial* relief sewer system. It is designed to reduce the incidence of street flooding to about once in ten years and *the frequency of*

basement backups to less than once in 100 years!!! It also requires the construction of new sewers on roughly one-half of the streets in Evanston reducing the cost substantially.

HERE'S HOW IT WORKS:

The **new relief sewer system** accepts the flow during a rainstorm. Overflow structures are located at surcharge points in the existing system to divert excess flow to the relief system.

Street inlet flow restrictors are placed in the pipe that connects the catchbasin to the existing sewer main, restricting the amount of storm water that can enter the combined sewer system. This prevents surcharging of the existing combined system.

Overland street flow is created as a result of the restrictors and allows water to run for as much as two blocks in the street before it flows into new high capacity inlets. This design reduces the lengths of new relief sewers necessary.

High Capacity Inlets are installed at the ends of the relief sewer system to deliver overland street flows into the new relief sewer system.

The Costs

The estimated total cost of the sewer improvements in January, 2000 was $175 million dollars. While this cost is roughly one-half of the cost it would have been for the replacement or augmentation of all pipes in the system, it still represents an enormous investment.

The bulk of the funding for the program has come from the Illinois Environmental Protection Agency Revolving Loan Fund. These funds have been available at extremely low interest rates (between 3.59% and 2.82%). However, since the project goes beyond sewer improvements - there are streetscape improvements, full street restoration and water main replacements - a portion of each phase of the project must be funded by other sources.

The sewer user charge is the mechanism for funding the sewer improvement program. The charge is based on metered water usage and billed bimonthly to Evanston water consumers. Originally developed in 1978 to fund the basic maintenance costs of the sewer system, the user charge was analyzed and a formula for its calculation was developed to meet IEPA requirements for loan eligibility. The user charge had to determined to be equitable for all users of the system. Based on water consumption, the amount of the charge is directly related to the cost of the project. The formula for the user charge consists of three basic components; operation and maintenance costs, capital costs and debt service costs. These costs are divided by the estimated water usage to determine the user charge necessary to cover the costs.