

Thinking Long Term in Genesee County

By Robin Woodbury, Director of Marketing for the Premarc Corporation

Big projects often require special tools and strong willed professionals to make them a reality. This is a story about how a local leader secured long-term funding for sanitary and storm sewers in a high growth southeast Michigan county. These major trunk relief sewers were constructed using reinforced concrete pipe for maximum return on investment. The resulting low maintenance asset will serve the county for generations.

In the late 1990s, Genesee County reached the capacity of its sanitary sewer interceptors and planned phased improvements to the Northeast and West Trunk Relief Sewers to handle sewage overflow. The Northeast Relief Sewer would relieve flow from the northeast portion of Genesee County including the townships of Flushing,

Mt. Morris, Genesee, Davison and the City of Burton. The West Trunk Relief Sewer would alleviate flows from the Grand Blanc Township-City Interceptor by diverting sewage into the Swartz Creek Interceptor located to the west. The finished project will increase overall capacity and reduce sanitary sewer overflows and backups.

When all construction phases are completed, Genesee County will be able to process an additional 31,600,000 gallons of sewage each day to meet sewage treatment needs for the next 30 years. The relief sewers eliminate 20 major pump stations and their maintenance costs. With Interstate 69, Interstate 75 and Highway 23 all merging in Genesee County, increased sewer capacity will ensure that the county remains a hub of commerce. This project provides infrastructure capacity and services for economic development while also protecting public health and the environment.

Funding – the first step

Jeff Wright, Genesee County Drain Commissioner, led the drive to find long-term funding for the relief sewers and other major sewer projects. State law provides for the partisan election of a Drain Commissioner every four years. This elected official is responsible for the administration of the Drain Code, P.A. 40 of 1956, as amended. Duties include the construction and maintenance of drains, determining drainage districts, apportioning costs of drains among property owners, and overseeing local units of government that receive bids and award contracts for drain construction. The Genesee County Drain Commissioner, by action of the County Board of Commissioners, serves as the County Agency that provides sanitary sewer collection and treatment for 32 local municipalities. This responsibility encompasses more than 680 square miles in six counties, over 180,000 residents, and thousands of businesses and their employees.

Wright was well aware of the need for relief sewers when elected in 2001. He was born and raised in Genesee County and had worked for previous drain commissioners in various capacities from 1974 through 1997. Wright's predecessor wanted to raise sewer rates to fund relief projects. In a move that required a ruling by the Michigan Supreme Court to prevail, Jeff Wright implemented the County Capital Improvement Fee





condemnation of properties for the easements. Land acquisitions were less than half of one percent of the total project costs.

Design and Construction team meets the challenge

The Northeast Relief Sewer was designed in four phases. The new sewers eliminate three major and several smaller pump stations. Flows from several existing interceptors are redirected into the new system thereby relieving approximately 28 million gallons per day, at peak flow rates, from the existing overloaded system. Approximately 8,000 feet of 48-inch diameter reinforced concrete pipe (RCP) interceptor was constructed using micro-tunneling techniques; about 32,000 feet of 48-inch to 72-inch diameter RCP, 14,000 feet of 48-inch diameter

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(CCIF), which authorized the County Drain Commissioner to charge the fee to all new direct and indirect connections for \$1,000 per connection. This funding tool ensured that increased capacity in the County's sewer system would be paid for by property owners of new construction rather than by existing customers. By summer 2006, accumulated CCIF totaled approximately \$13 million. These funds, along with revenue bonds, enabled the County to spend \$90 million on sewer improvements without raising sewer rates.

Over 300 property easements were needed for the sewer improvements. Historically, Genesee County paid \$1 for property easements. With revenue procured by the CCIF, the County was able to compensate property owners at fair market value, preventing the





When completed, the team will have installed approximately 12 miles of new sewer. Phases 1 and 2 were completed in 2004 and 2005.

Phase 3, awarded to D'Agostini & Sons, Inc., began construction in mid July 2006. D'Agostini & Sons, Inc. specializes in heavy construction, tunneling, sewers, water mains and emergency infrastructure repair. Their part of the project, installation of over 12,408 feet of 21-inch diameter RCP, is expected to be completed by November 1, 2006. The fourth phase of the West Trunk will bid in the spring of 2007.

Watertight pipe joints that limit the migration of fine soil were a major concern on this project. Storm water inflow and groundwater infiltration had added to the sanitary flows that exceeded the capacities of the original interceptor system.

The contractors on this project chose the Premarc Corporation of Durand, Michigan as their RCP supplier. Premarc uses diamond-tipped grinding wheels to manufacture the gasket-seating surface and ensure dimensional control over the pipe joint. Premarc is the only manufacturer in Michigan to grind all pipe joints for sanitary installation, thereby ensuring a watertight joint and enabling construction crews to accurately install gaskets and home the pipe.

Premarc worked with engineers of the Genesee County Drain office to ensure Phase 3 concrete pipe of the West Trunk was installed according to ASTM C-1479. The backfill specification was changed from an open-graded aggregate material that allowed soil migration and might also allow shifting and movement of the pipe, to a Class 2 sand backfill. This change ensured that the pipe would last well beyond the design life of the project.

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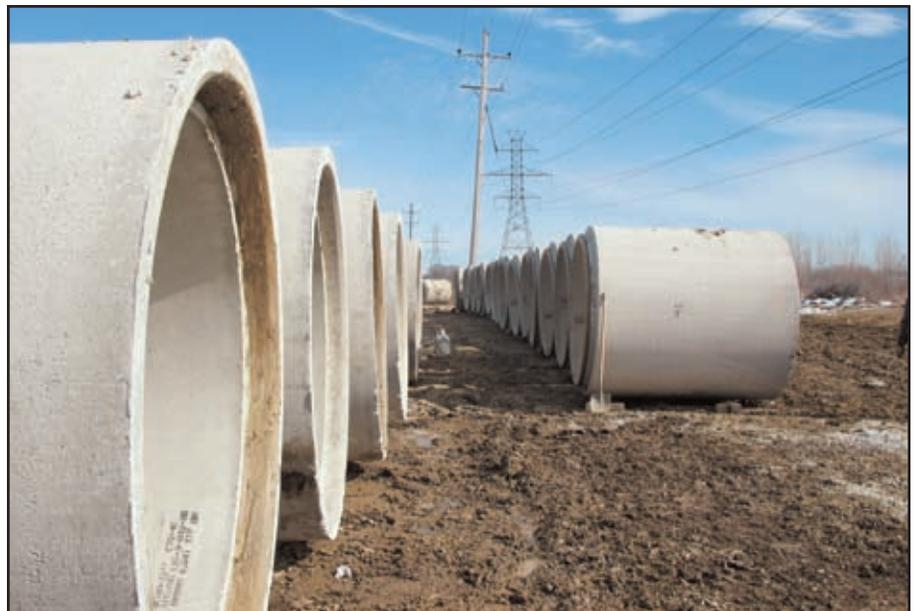
RCP, and 2,500 feet of 30-inch to 42-inch diameter RCP were required for the Northeast Relief Sewer.

Consoer, Townsend, Envirodyne Engineers, Inc. (CTE) was the lead engineer on the project; as an AECOM Company, CTE is part of a global design and management organization. Hubbell, Roth and Clark assisted with pump station design while Wade Trim, Inc. and Rowe Inc. assisted with surveying and layout of the project.

Phase 1 was completed in 2005 at a cost of \$9 million. Phase 2 was awarded in 2005 to Zito Construction, a family owned firm with 45 employees specializing in road building, earth moving, sewers and water mains. Burial depths of the RCP ranged from twenty to thirty feet. High water tables were encountered through 70 percent of the project area, presenting additional challenges for the Zito crew. When construction is completed on Phase 2 by winter 2006, over 18,072 feet of 72-inch diameter RCP will have been installed at a cost of \$8.5 million.

Phase 3 was awarded to D'Alessandro Contracting Group out of Detroit; construction is scheduled to begin in the fall of 2006. Two miles of 48-inch through 54-inch diameter RCP will be installed during this phase. Fifty-foot burial depths will require tunneling of a portion of this \$7.5 million project. Phase 4 will be bid in the spring of 2007, after which work will begin to install five miles of RCP from 48-inch through 72-inch diameter.

Construction is also progressing on the West Trunk Interceptor. CTE was the lead engineer for Phase 1 of the West Trunk; Wilcox Engineering was the lead design engineer for Phases 2 through 4.





Thinking long term...

Solving the problem of capacity in the existing sewers of Genesee County required innovative project funding and products that would meet the expectations of a life cycle cost analysis. Both the Northeast and West Trunk Relief Sewers are being constructed within the model of long-term planning for service and maintenance. Taxpayers, both new and established, will benefit from the return on investment. ■

The author is employed by Premarc Corporation. Products include pre-cast reinforced concrete sanitary and storm sewer pipe, manholes, catch basins, wet wells, and pump stations. Bridge products include concrete boxes and pre-stressed bridge beams. For more information, go to www.premarc.com or call the author at 616.437.0781.
