

FINAL REPORT

ALVAMAR AREA SANITARY SEWER IMPROVEMENTS

(PROJECT# CS05-1-3)

Report prepared by Jim Stuit (Project Manager)
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A MAP OF THE PROJECT AREA IS ON PAGE 4 OF THIS REPORT

This report provides information regarding the recently completed Capital Improvement Project # CS05-1-3, also known as the Alvamar Area Sanitary Sewer Improvements.

Project History

The *2003 Wastewater Master Plan* identified the replacement of +/- 8,760 LF of sanitary sewer pipe running from northeast of Bob Billings Pkwy and Kasold to a point southeast of Clinton Pkwy and Kasold. These projects were identified in the *2003 Wastewater Master Plan* as projects *WR3-1*, *WR3-2* and *WR3-3* and given a budget of \$2,103,000 for engineering and construction.

In April 2005 the City Commission approved a request from the Utilities Department to negotiate a contract with **Professional Engineering Consultants, P.A. (PEC)** for a comprehensive study of the recommendation in the *2003 Wastewater Master Plan* for the Alvamar Area Sanitary Sewer Improvements.

Comprehensive Study Phase

City staff performed flow monitoring and rainfall monitoring in the basin and provided this information to PEC, who used the data to develop a statistically accurate hydraulic model to evaluate the behavior of the system under varying rainfall and groundwater conditions, and to evaluate the impact of full build-out in the service area of basin WR-3.

Modeling results indicated no existing, dry-weather condition or capacity problems in the collection system studied. The model did indicate that capacity problems developed when wet weather flow from inflow and infiltration (I&I) was added in to the base flow, and that future growth would exacerbate the capacity problems under those conditions.

The consultants used cost-effective analysis to determine the least-cost improvement plan to reduce excessive I&I and effectively manage the remaining wet weather peak wastewater flows by increasing the capacity of the collection system in basin WR-3.

Design Memorandum

PEC submitted a design memorandum that recommended the replacement/upsizing of 5,648 LF of existing sanitary sewer line, the rehabilitation of 18 existing manholes and cleaning/CCTV inspection and selected point repairs along another 4,940 LF of existing sanitary sewer line.

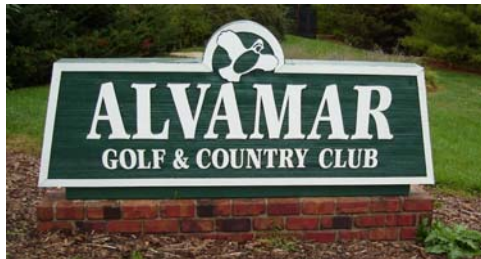
Various methods of pipe replacement were evaluated during the design process to arrive at the best method for each pipe reach based on topography, access, required increase in pipe diameter and impact on the surrounding community.

Project Challenges

Much of the open cut portion of the project was designed to occur within the confines of the Hidden Valley Girl Scout Camp, located north of Bob Billings Pkwy, and west of Kasold Drive. Because of several events that the camp had planned for the spring and summer of 2007, it was necessary schedule the construction for the winter months. In addition, construction would remove a footbridge and create the need for a new culvert.



In an effort to minimize disruption to the Alvamar Golf Course, most of the pipeline replacement was done using the trenchless method of pipe reaming. Even by utilizing trenchless methods for pipe upsizing, it remained necessary to access the course for CCTV, manhole rehabilitation and excavation. The work was scheduled for the winter months, a time that would minimize loss of revenue and disruption to the course.



A new section of sanitary sewer pipeline was designed to be installed on the east side of the channel that divides Dad Perry Park. The alignment of the pipeline was along a popular walking path, and presented access challenges. Again, the work was scheduled to occur in the winter months when trail usage was low. Contractor access to the site was restricted to the west side of the park so that the east shelter and playground would be unaffected.



Schedule Information

Table 1 presents information related to the schedule of the project.

Engineering Proposals Received	March 2005
Preliminary Report Received	August 2005
Design Completed	October 2006
Bids Opened	12/5/06
Working Days Allotted	140
Working Days Used	110
Notice to Proceed Given	1/15/07
Final Completion Date	6/20/07

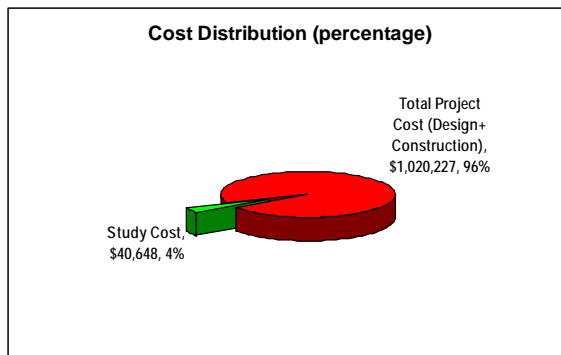
Table 1

Contractor Information

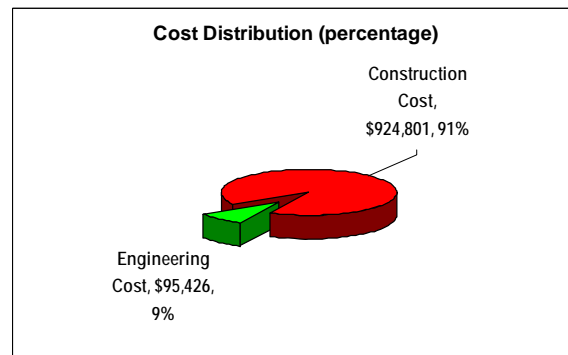
McLouth Excavating Inc. (MEI) was the low bidder on the project and was awarded the construction contract. MEI utilized subcontractors **Nowak Construction Company Inc** for the pipe reaming portion of the project, **Ace Pipe Cleaning Inc.** for the CCTV inspection and point repairs, and **I-Con Underground LLC** for the pipe lining portion of the project.

Project Cost Information

Graph 1 provides information on the cost of the study phase in comparison with all other design and construction costs. Graph 2 provides the ratio of engineering costs (design-bid-construction phases) to construction costs.



Graph 1



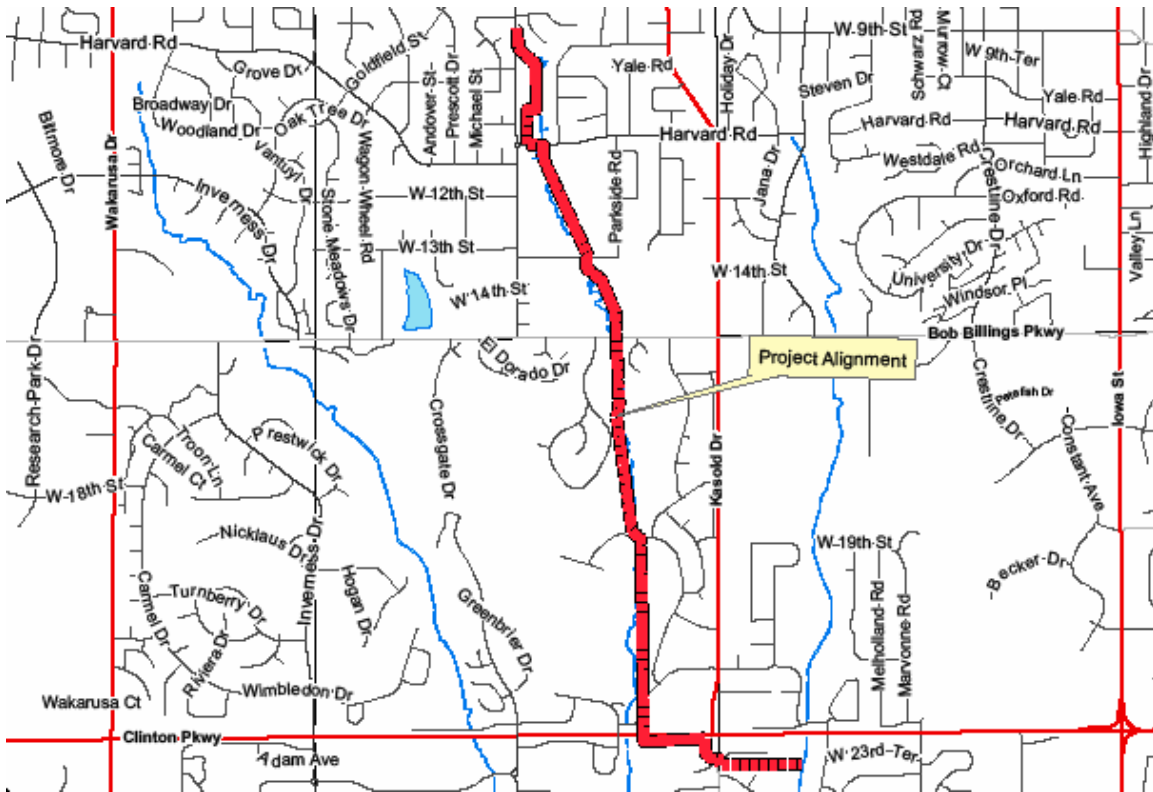
Graph 2

Table 2 presents information on cost of the project

Engineer's Estimate of Construction Cost	\$903,221
Lowest Bid	\$880,031
Easement Costs	\$70,305
Engineering Costs (incl. study phase)	\$137,074
Change Orders	1
Change Order Amounts (+/-)	+ \$44,770
Adjusted Construction Cost	\$924,801
Total Cost of Project	\$1,132,180
2003 Master Plan Projected Cost	\$2,103,000
Amount Above (Below) Master Plan Projected Cost	(\$970,820)

Table 2

PROJECT AREA MAP



PROJECT PHOTOGRAPHS



Cleaning/inspecting lines at Alvamar Golf Course



Pipe reaming equipment staged at AGC



Pipe train through Kaw Valley Girl Scout Camp



Fusing pipe at the Kaw Valley Girl Scout Camp



Pipe reaming at night on the AGC



Excavation at the AGC Number 16 T Box



Surveying pipe alignment on the golf course



Alvamar Golf Course sod and restoration



Manhole Rehab at Clinton Pkwy and Kasold



Trenchless point repair on a 24" sewer line



Installing pipe at Kaw Valley Girl Scout Camp



New culvert at Kaw Valley Girl Scout Camp



KVGSC restoration



KVGSC back to peace and quiet