

Continued Manhole Rehabilitation Successes in Denver

By Jeff Maier

The Metro Wastewater Reclamation District (MWRD), the wastewater treatment authority for most of metropolitan Denver, recently completed a significant manhole rehabilitation project that is helping set the precedent for how manhole rehabilitation work is performed in the Rocky Mountain Region. Emphasis on expert workmanship, efficiency, and cost-effectiveness, all while using high-quality, MWRD approved products has been paramount from design initiation through construction completion.

The project, designed in-house by the Metro Wastewater Reclamation District Engineering Department, resulted in more than 65 manholes being rehabilitated using the Warren Environmental S-301 fully structural epoxy lining system, a MWRD-approved rehabilitation product. The manholes, mostly constructed of reinforced concrete, were experiencing severe corrosion due to high levels of hydrogen sulfide gas and were in need of repair. The Contractor for this project was A&W Maintenance, Inc. of Carver, Mass., a MWRD-approved applicator of Warren Environmental epoxy products. Project construction began in September 2009 and is to be completed by February 2010, approximately 1 month ahead of schedule. Manhole work took place throughout Metro Denver, with manholes located on 17 of MWRD's major interceptors rehabilitated.

A primary goal of the project was to help streamline the MWRD rehabilitation process, from condition identification, to design initiation, and finally rehabilitation of the manholes in question. "Overall, we are very happy with the outcome of this latest manhole rehabilitation effort," said Jeff Maier, P.E., MWRD project manager and lead design engineer for the Manhole Rehabilitation 2009 project. "The project goals, both timing wise and financially were met, and the efficiency and quality workmanship of A&W Maintenance exceeded our expectations." Maier also added, "This project continues to prove that Metro's 5-Step Rehabilitation Product Evaluation Program that we developed in-house in 2004 is working well and continues to be a proven success."

Since 2004, Metro Wastewater has been committed to vigorously researching and evaluating concrete rehabilitation products to help ensure quality and consistency on its rehabilitation projects. Prior to then, significant failures of manhole and other concrete rehabilitation products were common and were costing the District hundreds of thousands of dollars to repair a second or even third time. As a result, the 5-Step Rehabilitation Product Evaluation Program was initiated as a unique, ongoing program that assesses rehabilitation products, coatings/linings and their true ability to withstand long-term, real world corrosive sewer conditions. "The 5-Step Evaluation Program has helped MWRD become a municipal leader with regards to concrete rehabilitation. The program has identified rehab products that really work in our system," said Jeff Maier, the co-founder of the MWRD 5-Step Rehabilitation Product Evaluation Program. "This is in addition to our current involvement with other research efforts; from the Severe Wastewater Analysis Test program to assisting with updating industry coating/lining standards."

The five-step approval program includes the following steps: Gather product/contractor information; official vendor presentations; site visit to another municipality to see how the product is working there; demonstration installation in MWRD system; and a final report either recommending or not recommending use of a particular product/ applicator and its limitations. To date, six rehabilitation products and their respective local applicators have been approved, including Warren Environmental S-301 epoxy and A&W Maintenance.

"At Metro Wastewater, we plan to continue our research and evaluation efforts of concrete rehabilitation products into the foreseeable future. The information we have gained has been very valuable to us and the industry in general, not to mention the cost-savings of getting it right the first time", stated Maier. "You know you will have a successful rehabilitation project, such as the one we just completed with Warren Environmental and A&W Maintenance, when you are using top-quality products, highly skilled applicators, coupled with stringent quality control from start to finish."

Background

The Metro Wastewater Reclamation District is the wastewater treatment authority for most of metro Denver. It was formed by the Colorado state legislature in 1961 to provide wastewater transmission and treatment services to member municipalities and special connectors in compliance with federal, state, and local laws. The district provides wholesale wastewater transmission and treatment service to 59 local governments in the Denver metropolitan area. These local governments provide retail wastewater services to approximately 1.6 million people in a 615-sq mile area. MWRD collects about 140 million gals of wastewater per day from neighborhood sewer lines and delivers it through 232 miles of interceptor sewers to the MWRD - Robert W. Hite Central Treatment Plant in northeast Denver. There are approximately 4,500 manholes in MWRD's trunk line sewer system.

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