Inflow and Infiltration Study

Trenton, Michigan

The City of Trenton encompasses 4,180 acres of heavy industrial, commercial, and residential developments. The sewage collection system is comprised of over 400,000 lineal feet of pipe ranging in diameter from 8" to 60", seven pump stations, four sanitary overflows, and a 14.6 MGD peak flow Wastewater Treatment Plant (WWTP). The sewer system has been classified as a wet sanitary system with some combined industrial areas.

Spalding DeDecker Associates, Inc. (SDA) developed a Michigan Department of Environmental Quality (MDEQ) approved Infiltration and Inflow (I&I) Program which established primary flow metering districts and provided a manageable flow monitoring program.

Districts and sub-districts were created and a comprehensive AutoCAD map was developed. Flow monitoring points were selected to isolate tributaries within the main interceptors. Twelve primary flow-monitoring points were selected along with six secondary points. Isco Model 4150 Area velocity meters were used. Five Marsh-McBirney Model 302 Pump Station monitors were installed on the pump stations to further define sub-district flow measurements and to evaluate the performance of each station. Five tipping bucket rain gauges were installed to accurately quantify rainfall patterns within the three main flow districts. The meters were field calibrated for flow rate and the meter velocity was compared with a Marsh-McBirney Flowmate 2000 instantaneous velocity meter. Velocity was checked by using an average of velocities across the flow area.

Quality control procedures were utilized to ensure reliable results. A final I&I Report was approved by the MDEQ. In the report, SDA quantified the excess I&I entering each of the meter districts. SDA also provided recommendations for areas to be included in a Sewer System Evaluation Survey (SSES).

SPECIAL FEATURES

Meter installations were performed by SDA's confined space entry personnel using the SDA Sewer Monitoring Vehicle (SMV), explosion proof lighting, cordless rotary hammer drill, stainless steel anchors, and mounting plates.

OWNER / CLIENT

City of Trenton

PROJECT START - END

January 1996 – September 1996

SDA PROJECT NO.

MS96-001