

## Mission Main Bypass, Kansas City MO

Mission Main is the major sewer treatment plant in Johnson City, KS. Sections of 24" and 30" sewer lines that ran parallel to each other and shared a common manhole were in need of repair. New sewer pipe had been purchased for replacement but there were problems with the curing of the protective epoxy coating. The coating was peeling off and needed to be re-applied. However, excavation had already commenced to replace the old sewer lines with the new, faulty sewer line.

The 24" sewer line was only 4' from the surface and did not have any storage – the amount of room available in the sewer line. The combination of the shallowness of the sewer line along with the high peak flows was causing surcharging. Surcharging occurs when the sewage becomes too much for the pipe to hold and exits from the manhole and flows out into the environment. The surcharge was flowing at about 5,400-gallons per minute at peak flows.

David Belcher, project manager of Wilson Plumbing Company contacted Thompson Pump's Kansas City Branch for assistance with the bypass.

After visiting the site and determining what was required to prevent the threat of surcharging and eventually allowing the repairs to be made, the Kansas City Branch representative recommended using two Thompson 12-inch Solids Handling High Pressure Pumps with the Silent Knight® Sound Attenuated Canopy as the primary bypass pumps. The Thompson 12-inch Solids Handling High Pressure Pumps are capable of maximum capacities of up to 5,250 gallons per minute each and are equipped with the *ENVIROPRIME*® Priming System which provides quick priming and re-priming times and protects the environment against sewage and other environmentally-hazardous materials from escaping the priming system. The two 12-inch pumps were used to counteract the massive amounts of sewage experienced during peak flows and to prevent surcharging. The pumps discharged through 12" High-Density Polyethylene (HDPE) Pipe and into a common manifold regulated by 12" gate valves. From there, 500' of 18" HDPE Pipe was run to an open 24" manhole away from the repair area where it was discharged. One Thompson 6-inch Dry Prime Trash Pump with the *ENVIROPRIME*® Priming System was also used for standby.

Even with the high flows from the Thompson 12-inch Solids Handling High Pressure Pumps, the surcharge of the sewage was exiting from the sewer line quicker than the pumps could re-prime after depleting the line of sewage. The Thompson Compressor-Assisted *ENVIROPRIME*® Priming System has some of the quickest priming times in the industry, but the sewage was surcharging out of the sewer line faster than the quickest priming times could counteract.



Two Thompson 12-inch Solids Handling High Pressure Pumps and a 6-inch Dry Prime Trash Pump, all with the *ENVIROPRIME*® System combat surcharging at Mission Main.



The three pumps discharged through 12" High-Density Polyethylene (HDPE) Pipe and into a common manifold regulated by 12" gate valves.

In order to combat this situation, another 6-inch Dry Prime Trash Pump with the *ENVIROPRIME*<sup>®</sup> Priming System was strategically placed at the available manholes before the main bypass. This was to further prevent the surcharging and direct flows of up to 1,500 gallons per minute into the 30" line that was slightly deeper and had adequate storage capacity.

Once the surcharging emergency was rectified, and the epoxy was re-applied to the new sewer pipe, the line was successfully repaired.



A 6-inch Dry Prime Trash Pump with the *ENVIROPRIME*<sup>®</sup> Priming System was strategically placed at the available manholes before the main bypass in order to divert peaks in flow and to prevent further surcharging.