Lightening Loads With 'The Crane'

Carl St. Angelo, Mark Verzella, and Craig Pierce from the City of Ashtabula, Ohio, invented an alternative to purchasing a new crane truck for the city.

The city operates a 54,500-m³/d (12-mgd) water resource recovery facility with a sanitary sewer collection system consisting of approximately 146 km (91 mi) of gravity sewer and 2.4 km (1.5 mi) of force main. The collection system is serviced by six sanitary sewer pump stations that include a 4.2-million-L (1.1-million-gal) equalization basin.

A U.S. Army surplus Humvee got a new life at an Ohio water resource recovery facility. The refurbished vehicle helps save time and money while reducing hazards. Mark Verzella and Jose Reynoso

The city is responsible for the continued maintenance and repairs of the pump stations, facility, and all associated components. The pump stations are not set up with crane removal systems; city personnel would use electric hoists, hand winches, or hired contractors to pull pumps for repair and maintenance.

Enter 'The Crane'

The city had obtained some decommissioned U.S. Army vehicles through a military surplus program. That led St. Angelo, Verzella, and Pierce to begin with a 1988 M998 Humvee and end up with "The Crane." They converted the Humvee into a utility maintenance vehicle capable of pulling pumps and lowering equipment in and out of structures in the collection system.

First, they completed some minor mechanical repairs to the truck. They they installed a Venturo ET8K electric-hydraulic service crane capable of lifting 1,450 kg (3,200 lb) with a maximum reach of 4.3 m (14 ft). The modified vehicle also includes a remote-controlled LED spotlight mounted on the top of the crane, reinforced frame with adjustable outriggers, LED turn signals and strobe lights, a new canvas top, and a new paint job. The facility staff performed about 90% of the fabrication work on the truck.

Saving Money and Time

The city saved thousands of dollars by building a truck in house rather than purchasing a used or new crane truck. And the team built the customized vehicle to fit the specific needs for lift stations.

In its first year in service, the Crane earned a full return on its investment. The savings come from fewer calls for contractor assistance to pull pumps as well as helping reinstate the preventive maintenance program. Prior to the Crane, the facility only pulled pumps when there was a problem. Now, operators and mechanics can be more proactive than reactive.

Safer Movements

Having the Crane means staff no longer use hand winches and electrical hoists to pull pumps. The Crane makes it much safer and more efficient to perform maintenance and repairs at the stations. The team also has used the Crane to lower equipment and tools into manholes and structures; this would have been done previously by rope and bucket.

Having the ability to fix pumps in an expeditious manner also helps facility staff to prevent sewage backups in residences and sanitary sewer overflows in the collection system — ultimately protecting public health and safety.

Staff members at the City of Ashtabula (Ohio) Water Pollution Control Center retrofit a Humvee with an electric-hydraulic service crane to help with collection system and facility maintenance. Mark Verzella and Jose Reynoso