



Self-performed Dewatering Enhances California Sewer Line Project

After years of relying on specialty subcontractors to dewater their deep ditch projects, Jaeger Construction, Inc., self-performed the work on the North Davis Sanitary Sewer Trunkline Project for the city of Salinas, California. The trunkline connects a pump station in the municipality's sanitary sewer system with a large wastewater treatment plant operated by the Monterey Regional Water Pollution Control Agency.

The Yuba City, Calif. grading, paving and underground contractor gained several benefits from using its own workforce to dewater the work zone. The labor and equipment costs to self-perform the requirement ran about the same as to subcontract the work. The investment in pumps, well sleeves, discharge line and generators has equipped Jaeger to self-perform the work again on future projects.

"The most important thing for me was the increased control we gained over the job," emphasized Mike Robertson, Jaeger Construction's veteran project superintendent.

"We're always better off doing as much work as possible with our own forces. It turned out successful enough that I can foresee us doing it again and again."

The project replaced a 48-in., unlined reinforced concrete (RC) line that had been in service for 35 years with more acid-resistant HDPE line and components. Included were 9,000 feet of 54-in. segmental pipe; 4,000 ft. of miscellaneous runs; 30 molded manholes ranging size from 48 in. up to 120 in. and two 10-ft. diameter inverted siphon structures. The alignment runs 50 ft. from and parallel with the original 4,000,000 GPM line that had experienced repeated structural collapses caused by the crown being eaten away by sewer gases. Plans called for plugging the old line after completion of the larger replacement.

Sandis Humber Jones served as the project's design engineers, with the Salinas Public Works Department providing inspection. The \$4.2-million contract was awarded in July, 2000 with an anticipated 100 working days scheduled for a crew consisting of five equipment operators and five laborers. Equipment included a CAT 330, two CAT 235 units, an Hitachi 750, a Komatsu 1100, CAT D-8 dozer and two CAT 950 loaders. Jaeger Construction was exceeding the anticipated 100 feet per day when rains swept the area around Christmas and cost the project two weeks. The majority of the work has involved cut-and-fill trenching to depths ranging from 15 to 35 feet below grade. Exceptions were several hundred feet of 6-ft. diameter bores dug under four roadways and a railroad crossing. The only other known hurdle to overcome in planning the project was the relatively high watertable along the path of the line. Chris Jaeger, and Hans Norlander, a sales representative for ITT Flygt, collaborated in planning and iden-

tifying the equipment needed to lower the watertable long enough in work areas to dig the trench and install the segments of new line. After analyzing the watertable and site conditions along the line, they concluded that one hundred Model BS2052 Flygt submersible pumps would be ideal for the task. The 1.6-HP, 460 volt/3-phase units would be powered by four generators.

The Flygt pumps are rated at 120 GPM and with a maximum 60-ft. head and feature a durable design features that makes them resistant to failure even when running dry for extended periods of time. Reliability, in fact, was a decisive factor in their selection and can be attributed to an impeller molded from hardened cast iron alloy and wear parts protected with a polyurethane liner. With several options available, Jaeger Construction settled on 3 phase, 460-volt service to gain longer cable runs off the 70 KW generator units. The pumps were wired in 24-unit groups, with three pumps linked to a common junction box. Portable control was retained for each pump to protect against motor short circuits or overloads. The light weight of the 7¹/₁₆-in. diameter pumps — just 40 pounds — would also make them easy to remove and relocate to new wells ahead of the work crew.

It took the field crew six weeks to drill the initial 100 wells that established the first area dewatered. The wells were generally placed at 80-ft. to 100-ft. spacings with the grid extended 35 feet out from the center of the trenchline at points requiring a wider, safer trench line. Each well was lined with 10 feet of interlocked sections of 10-in. diameter, Schedule 40 PVC pipe. The lower 20 feet of these well liners were perforated to allow the water to flow freely into the pipe. A plastic bucket at the bottom of each well prevented large solids from clogging the sleeve.

The pumps typically would run around the clock for a minimum of three weeks before the crew could work the drained area. Twenty-five wells would be ganged into an 8-in. line that discharged into the storm drainage system. At least 48 pumps would operate while 24 others in trailing areas were pulled and advanced to wells drilled downline. The abandoned wells were then filled with pea gravel. The remaining pumps were held in reserve to contend with areas having higher than expected water levels or as replacements.

After observing dewatering contractors perform the work



The pumps were easily pulled from the wells when an area was drained and advanced to wells drilled in the next work area.

for many years, Robertson was fully confident that Jaeger Construction could perform the work. He eagerly took on the added task.

"I didn't find the dewatering all that challenging and wouldn't hesitate to do it again," Robertson said, adding, "The equipment is a lot more advanced than when I started in construction.

"But those were the days when we used smoke signals to communicate instead of cell phones," he joked.

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