

ABINGDON WATER TREATMENT PLANT

ABINGDON, MD

THE CHALLENGE

The existing 4,160-volt electrical ductbanks and high service force mains were located in the areas where excavation was required for the construction of the water treatment plant's new structures. Interruption of service and the relocation of the utilities were not options.

THE SOLUTION

The team, along with engineering subcontractors, designed systems which would allow the ductbanks and piping to be supported and restrained safely prior to and during excavations.

DESCRIPTION

On the site was a 36-inch force main that was unrestrained and subject to 90 psi of pressure. The pipeline was located in the area that required excavation for a new Equalization Basin. Any disturbance of the soils could result in the fittings blowing apart and a potentially catastrophic failure that would require the entire treatment plant to shut down. New piping for the expanded facilities necessitated going below the force main at eight locations and under the main electrical feeder ductbanks at six locations.

The team's solution to the problem consisted of several steps. H-beam piles were driven behind the force main fittings and $\frac{3}{4}$ -inch steel cables or rods were installed through all of the mechanical joint bolt holes to stabilize any thrust forces. Every fitting was cabled to the next one to ensure that when excavation began, the possibility of failure would be mitigated.



To support the ductbanks, 18-inch auger-cast piles were driven underneath. The piles were reinforced with steel and 4,000 psi concrete was placed in the casing, providing a solid foundation. Steel I-beams were utilized to straddle the ductbanks and grade 8 chain provided additional support between the piles.

Some portions of the high pressure force main and ductbanks sat exposed for nearly eight months while the excavations were completed. Through constant communication and collaboration with the Owner and engineering staff, the PC Construction team alleviated concerns for this high-risk operation and was able to complete the work without interruption of service.



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