

AZP Girder Strengthening

MOORESBORO, NORTH CAROLINA

SUBMITTED BY FREYSSINET, INC.

In April 2019, the American Zinc Products LLC (AZP) facility, located in Mooresboro, North Carolina, unfortunately caught fire in the electrolytic cell house. The high-temperature flames impacted the condition of the girders and double-tees. It was imperative that the contractor begin work immediately to reopen the facility as soon as possible.

Prior to beginning work, the contractor took time to analyze the as-built drawings to establish the best way to strengthen the weakened girders and double-tees. The contractor determined that the most effective method to enhance durability and fire protection would be utilizing external post-tensioning, where tendons would be encased in stainless steel conduit and grouted after stressing. In addition to the necessary girder and double-tee repair, the scope of work included epoxy crack injection at designated stems of the double-tees.

Work started by using Ground Penetrating Radar (GPR) to locate all pre-stressed strands in both concrete girders (ends of beams) and double-tee stems. To facilitate an efficient



and fast-tracked schedule, the contractor developed two work crews so work could be completed concurrently. One crew was assigned to lay out girder and double-tee stem pre-stress strands and steel reinforcement locations, from prior GPR work, for the purpose of coring through concrete for base and anchor plates supporting post-tension anchors. The second crew prepared and proceeded with epoxy crack injection repairs. Coring had to be precise for the installation of all thread rods utilized in connecting post-tension base plates on opposite sides of each of the girder ends.

The installation of all external post-tensioned materials followed by tensioning of the girders had a three-day turnaround for each girder, with an extra day added for the double-tee stems (pair). In a matter of several weeks, a total of six concrete girders and six double-tees were strengthened by the use of external post-tensioning.



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