CMP REPLACEMENT PROJECT

GROUND IN STRENGTH
**Project Description**

The City of Englewood discovered a 78" corrugated metal pipe (CMP) that was collapsing at the intersection of W Oxford Ave and S Navajo St. This intersection is very busy and provides access to the light rail station; a large, new apartment complex; the main throughway, Sante Fe; and access to many retail and shopping locations. The CMP was overloaded and extremely deflected from the corner of the intersection to the manhole located on the apartment complex site. Due to the heavy rains that occurred in the summer of 2017, the City of Englewood wanted to get the culvert replaced as soon as possible. The project was to remove as much of the 78" CMP as possible and replace with concrete pipe. This project is a part of a long term project replacing parts of the culvert line.

**Challenges**

This project had many challenges. The first was that, this pipeline was in a very congested area. The project site was located on the apartment complex’s property and was completely land locked in due to the roadways, the apartment complex, and the light rail line. The contractor had to remove all the soil that was excavated immediately due to a lack of storage. The same material then had to be trucked back in once the culvert was replaced and the line needed to be backfilled.

The second challenge was due to the depth of the culvert. While being in a very tight area the contractor had to dig up to 22 ft. in the ground for the replacement. Soil stabilization was a major concern, and the contractor had to spend significant time ensuring the area was safe and excavation was done per all safety and authorities having jurisdiction requirements. A further challenge was due to a nearby gas line. The gas line that was interfering with the excavation of the culvert. There was a 2 week delay while the project waited for the gas line to be relocated.

Another challenge was found once ACC began their excavation. The foundation for the retaining wall on Oxford Ave. was extending over the culvert. This made it extremely difficult for the contractor to maneuver the pipe into the intended location. Part of the retaining wall footer had to be chipped away in order for the equipment to effectively do the job. This took extra time but was necessary to complete the project.
Finally, the concrete pipe had to be connected into the CMP system that was already in place. In order to complete this task the contractor had to lower the concrete pipe into the trench and align the pipe to surround the end of the crushed CMP. They then had to form around the joint and pour slurry in order to connect the two materials and properly seal the joint.

The location is right off of a major north-south thoroughfare in the Denver Metro Area, Santa Fe, which travels from South Denver into Downtown. The intersection of W Oxford Ave and S Navajo St. is the main access to Santa Fe, the light rail station, an apartment complex, and a large amount of retail shops. Due to all of the parameters and infrastructure surrounding the culvert, the contactor was restricted to a very small amount of space between Oxford and the apartment complex building.

Products
Forterra’s strong relationship with the contractor helped to increase the efficiency of the project. The contractor had previously utilized Forterra to provide a 78” concrete pipe in the past and knew they had the forms on site. This allowed the plant to quickly get the needed pipes into production and out to the job site. The speed and efficiency ACC knew Forterra possessed is what allowed this project to be a success for both companies.

Success
This project stood out because it was an emergency situation that was a potential safety hazard to the general public. The City of Englewood wisely recognized this and quickly took action. It also took a lot of coordination and trouble shooting from the contractor, ACC, and the City of Englewood to work though all the project’s difficulties.
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