

TELECOMMUNICATIONS

PROBLEM OVERVIEW

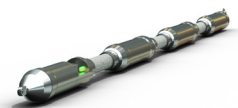
CUES was requested to map/locate three communication conduits that run under a canal and parallel to a bridge that is planned to be extended ([ref Figure 1](#)). Locating these pipes is necessary in order to avoid driving pilings through the structure during the construction phase of the bridge extension. The three conduits are within a structure that was dug as an open trench in the 1960's and per the drawings, it is impossible to know exactly where the pipes are located. Many attempts were made to locate this structure (sonde, divers) but were unsuccessful.

CUES APPROACH

The main issue for this job was verifying the inside diameter (ID) of the three conduits ([ref Figure 2](#)). The contractor requesting the mapping job originally thought the pipes were 3in ID. CUES required the contractor to verify using a pig, which could not be done. In this particular case, having a 3in ID, it was important for CUES to have verification of the exact pipe size before traveling to the site. The reason being a pipe size range of 1.5-3in ID requires a different probe than a pipe size range of 3in and larger (DR2 articulated probe vs DR4.2XS probe). Since a 2.5in pig was unable to transverse the pipes, CUES recommended the contractor install clean pipes through the host pipes. This would give CUES a known ID and clean pipe to map/locate. In two out of the three pipes, they were able to push through a HDPE 2in OD, 1 5/8in ID line, with no joints ([ref Figure 3](#)). With the third conduit, they pushed through a 2 3/8in OD, 2in ID PVC line with 2 ft sections. The two HDPE and one PVC lines were cut to be flush with the bulkhead walls before the mapping was performed. This was a success and CUES was able to run the articulated AMP™ through each conduit multiple times.

RESULTS

The individual plan and profile for each conduit were generated along with a plan and profile that shows all three conduits together ([ref Appendix A](#)). [Figures 4 and 5](#) are the Google Earth images containing the results.



Operational range of 1.5in ID (38mm) to 9in ID (229mm). Whether the pipeline is made of steel, concrete, PE, or PVC, this mapping system can be used to accurately locate any pipe.



Figure 1: Site Location

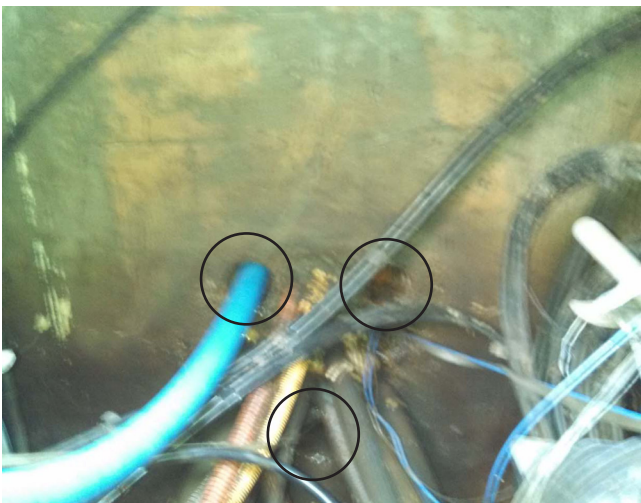


Figure 2: Bulkhead of Structure Containing Conduits



Figure 3: HDPE Host Pipes before Trim

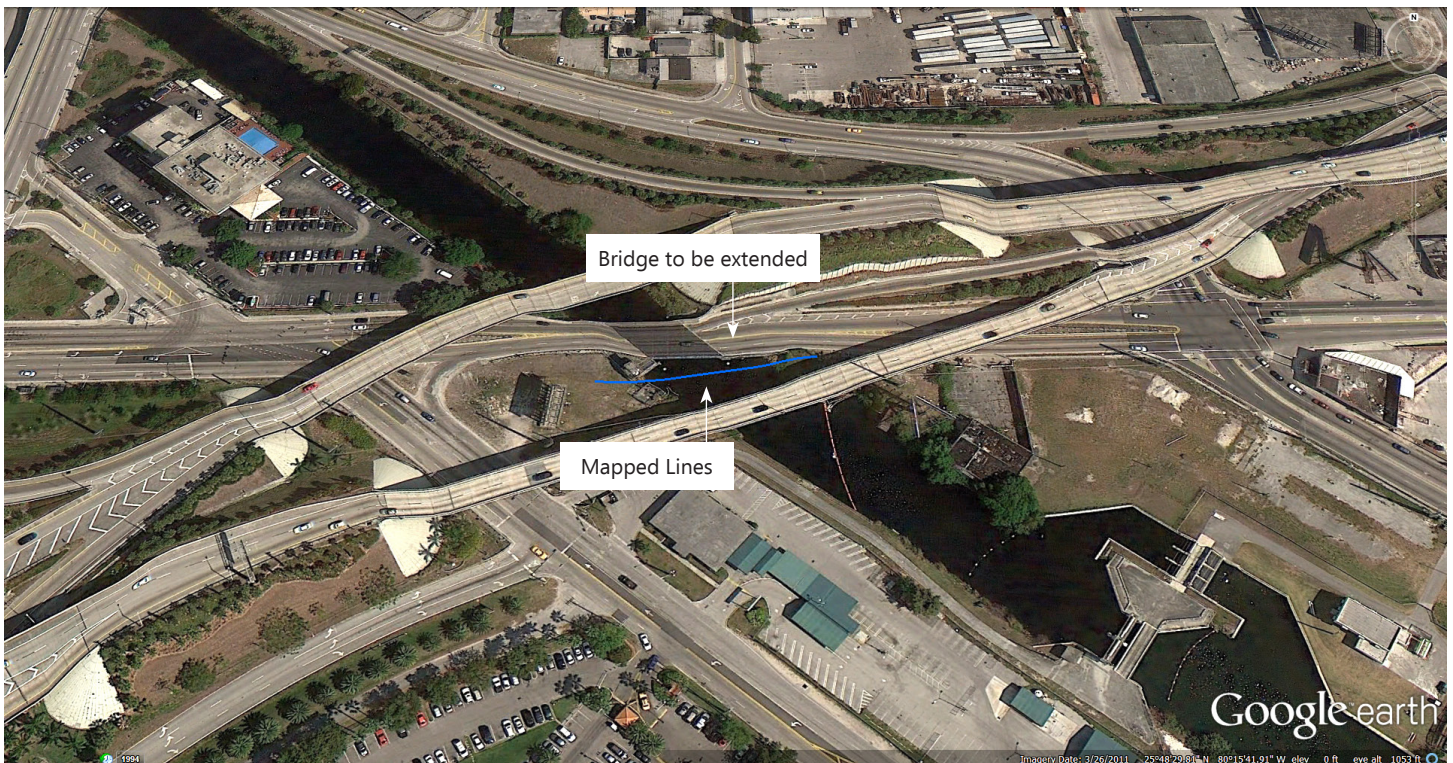


Figure 4: Site Location with Results

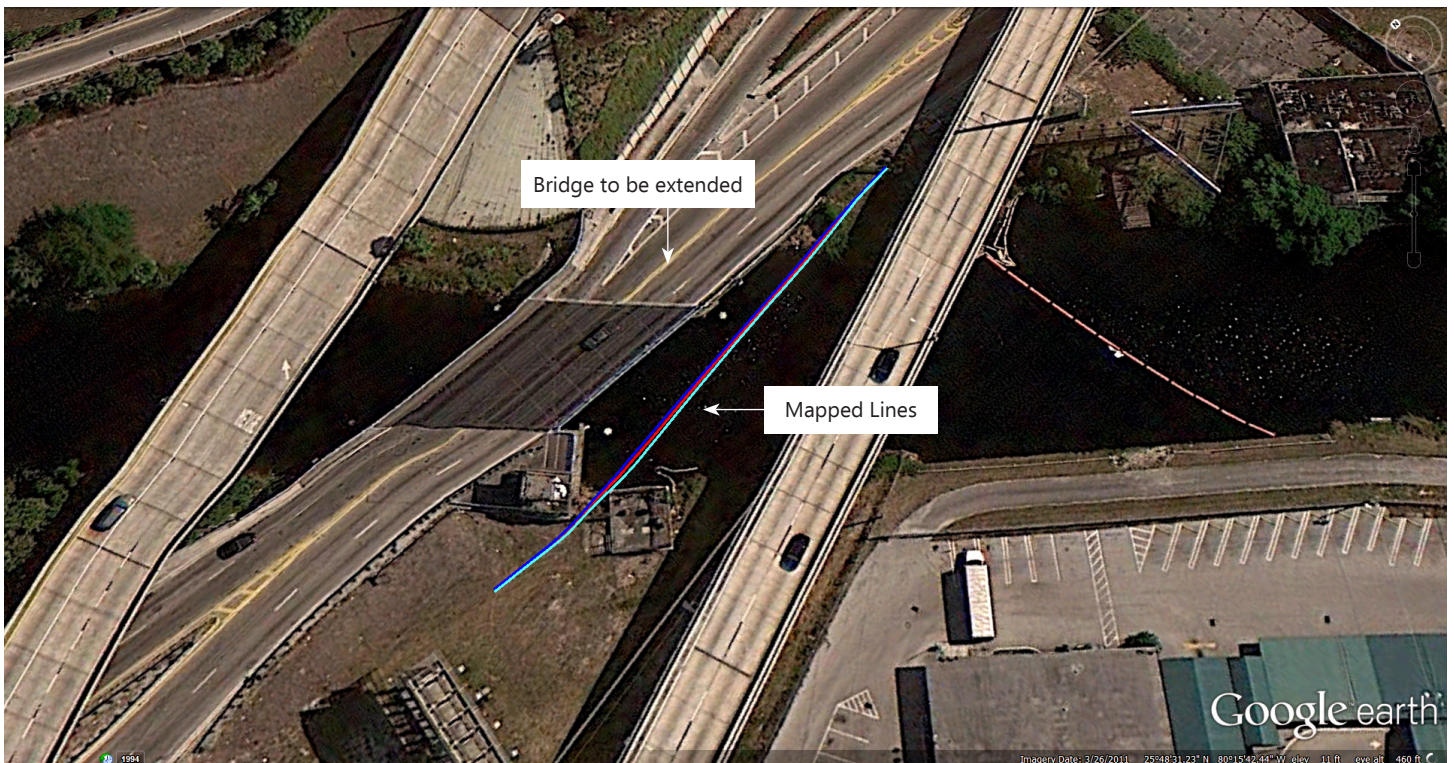
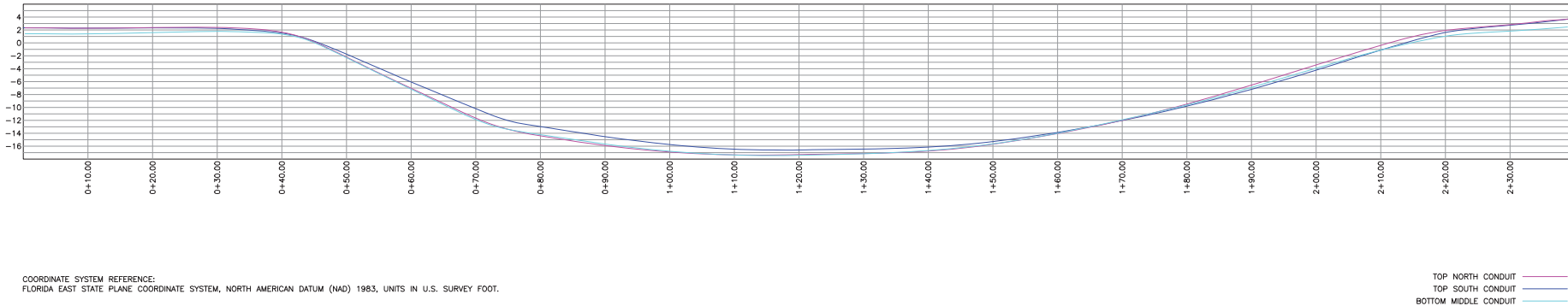
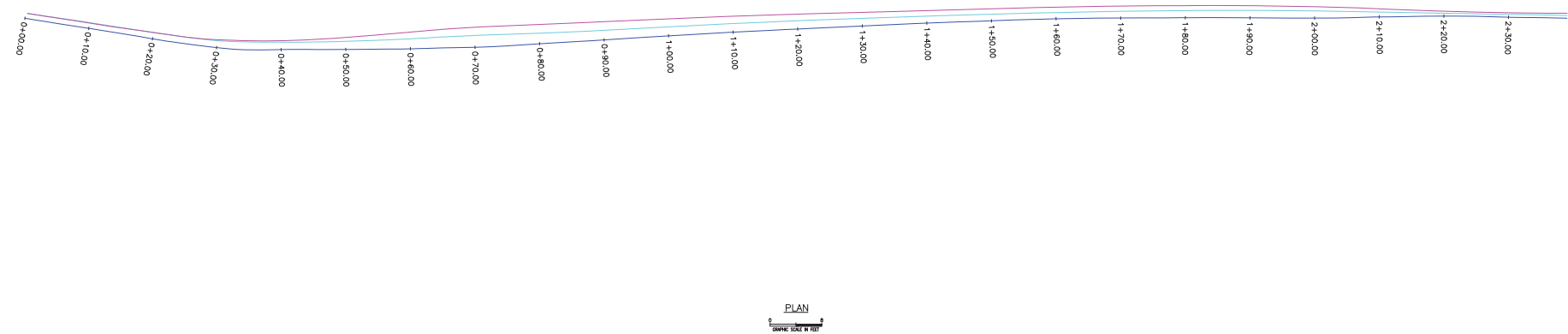


Figure 5: All 3 Mapped Conduits

Appendix A: Combined Plan and Profile of 3 Mapped Conduits



COORDINATE SYSTEM REFERENCE:
FLORIDA EAST STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM (NAD) 1983, UNITS IN U.S. SURVEY FOOT.

TOP NORTH CONDUIT
TOP SOUTH CONDUIT
BOTTOM MIDDLE CONDUIT

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DATE VUE		DATE PM	
PROJECT NO.		FILENAME	
SCALE: AS SHOWN		DATE: JAN 2014	
SHEET 1 OF 1		ALL CONDUITS LOCATION MAPPED WITH CUES ACCURATE MAPPING PROBE	