Pittston Avenue Sink Hole and Stone Arch Collapse - Scranton, Pennsylvania

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Stevenson Environmental Services hired CBC Engineers & Associates, Inc. to aid in the repair, replacement and restoration of this historic stone arch. CBC supplied a horse-shoe arch shaped structure to reline the remaining stone arch built in the early 1900's. CBC then matched this horse-shoe structure shape using Aluminum Structural Plate for the open cut areas in need of replacement. Once the entire length of the original 240 foot long stone arch was restored and replaced, CBC provided the design of the slope repair over the top on the new structures.

The existing Pittston Avenue culvert was a stone arch structure built in the early 1900's with a span of approximately 14 feet and a rise of 12 feet. The overall length of this stone stone arch culvert was approximately 240 feet. During the significant storm event of ***Ivan,*** a large portion of the existing arch collapsed causing the failure of the overlaying road and embankment. The City of Scranton, Pennsylvania and the Corps of Engineers had a real emergency on their hands to repair tee busy roadway above and eliminate any further damage to the remaining stone arch and thus the roadway above.

The city of of Scranton, Pennsylvania turned to Sevenson Environmental Services of PA, Inc. for the help they needed. This design firm immediately began a nationwide search for a design partner with expertise in this type of collapse and remediation design experience. Sevenson Environmental Services hired CBC Engineers & Associates, Ltd. to aid in the repair, replacement and restoration of this historical stone arch.

CBC went right to work to stabilize the remaining existing stone arch tunnel by designing a 2-Flanged Galvanized Steel Liner Plate as produced by CONTECH CONSTRUCTION PRODUCTS INC. This design was unique because not only was the remaining stone arch tunnel on a curve, it was a specialized horse-shoe arch shape. This product was chosen for its ability to accommodate these two unique design criteria as well as the product could be installed from the inside of the arch allowing for the largest liner possible to go back inside. Once the stone arch was relined, the annulus was then grouted between the liner and the stone arch tying the materials together. This stabilized the stone arch and added 50 or more years of service.

Next CBC set their sights on replacing the remainder of the stone arch that collapsed with a similar shaped product, but they searched for a different product that would require fewer bolts, and be lighter in handling weight, both increasing the installation process. Just as the horse-shoe arch shape was a special shape for Liner Plate it was also a special shape for Aluminum Structural Plate (ALSP). CONTECH once again was able to match the shape of the two products and CBC designed the structural gaging for the buried ALSP used for the remainder of the replacement. The large picture above shows the installation process of completed "cans" of ALSP being lowered onto a a new poured concrete foundation. CBC provided all of the specifications for the products, structural design of the products, on-site inspection, and slope stability analysis of the slope that was build back over the completed newly repaired and replaced culvert.

CBC Receives Accommodation

On September 18 2004, The US Army Corps of Engineers presented CBC with accommodation for its work on the project. It states: ***Presented to CBC Engineers for dedicated service to the U.S. Army Corps of Engineers, Baltimore District, in support of the emergency debris removal and culvert reconstruction at the Pittston Avenue Sinkhole, Scranton Pennsylvania following the "Ivan" storm event. Your effort speak highly of your commitment and dedication to duty in support of the Corps and have contributed significantly to the successful completion of the Corps Mission.*** This was signed by Robert J. Davis - Colonel, Corps of Engineers Commanding.

For more details about this particular project, please contact our ***Director of Marketing*** - **Joe Dennis** at 937-428-6150.