



## BROAD RIVER & CHE CHE SSEE RIVER BRIDGE PROJECT

### ***CETCO DRILLING PRODUCTS (FOUNDATION DRILLING)***

Beaufort, South Carolina

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Construction on the bridges across many rivers in the low country of South Carolina has been needed for along time. As with 90% of our nations' bridges, these bridges have deteriorated from salt corrosion and age. Outdated for today's heavy traffic, the bridges will slowly need to be replaced. Funds for this construction have been appropriated and work has started in South Carolina beginning with the Broad River & Che Che Ssee River Bridge. These rivers empty into the Atlantic Ocean just north of Savannah, Georgia.

What makes this project special is that CETCO Drilling Products has accomplished what has never been done before, approval by The Department of Transportation of South Carolina to use synthetic dry polymer as drilling slurry for construction of foundation piers to support this new bridge. Until now when foundation drilling within saltwater was required, Attapulgite clay has always been used.

The CETCO product being used instead of Attapulgite is Shore Pac®. The general contractor for the Broad River & Che Che Ssee River Bridge, Balfour Beatty Construction, chose Shore Pac® because it offered an environmentally safe slurry that could be recycled and could be mixed using the saltwater from the Broad River as the mix water.

The Broad River is South Carolina's best fishing river. Strict guidelines were imposed by the Department of the Environment that no polymer slurry was to be spilled into the waters of the Broad River. CETCO®'s product had acquired an extensive resume of data when approved by the State of California Department of Transportation. This made the State of South Carolina and the general contractor, Balfour Beatty, comfortable with using a tried and proven product.

This bridge project consisted of 156 foundation caissons across both rivers. Each shaft is 96" in diameter and 120' deep. The shafts are together in pairs. After each pair is drilled with slurry and poured with concrete the barges move on to the next location. Work was in close quarters on three barges floating in the river. A casing 60' long is set into the marl clay on the bottom of the river. This casing is supported by a platform. The shaft is drilled within the casing down to tip point of 120'. The Shore Pac® slurry holds the sidewalls of the large diameter hole open. The polymer slurry also cohesively binds the spoils onto the flights of the drilling auger helping with removal and advancement of the caisson. When the hole is finished, a rebar cage is placed into the shaft. Next concrete is poured into an (elephant trunk) tremie pipe. As the concrete fills the foundation shaft the slurry is displaced and pumped back into a holding tank for re-use.



*Digging Bucket used for loose sands and oyster shells. (click image to enlarge)*



*Crane Mounted drilling attachment allows deeper holes to be drilled.(click image to enlarge)*



CETCO Drilling Products Shore Pac® reduces overall cost of construction by saving time and money. Balfour Beatty Construction will saved over \$200,000 in material costs alone by using the Shore Pac® polymer slurry system. The monies saved by completing the project ahead of schedule will be measured in many other ways. The construction industry, especially the Department of Transportation may adjust to new methodology slowly, however, when a new technique is proven the legend moves quickly along the grapevine.



*Slurry tanks on the barge next to the drilling barge. These tanks hold recycled slurry and fresh mixed batches of Shore Pac slurry. (click image to enlarge)*



*View of the old bridge & the rebar cage that is inserted into the drilled shaft prior to pouring concrete. (click image to enlarge)*