



RETURNING BRIDGES TO SERVICE QUICKLY IN NORTH CAROLINA

Project Type:

Bridge Deck Joint Repairs

Application:

Repairs and restoration

Location:

Interstate 95, Roaring Rapids, North Carolina

Project Dates:

October 10–12, 2020

Project Owner:

North Carolina Department of Transportation

Contractor:

Triangle Grading & Paving

Project Size:

50 tonnage

Product:

Rapid Set® Cement

North Carolina Department of Transportation (NCDOT) follows an aggressive inspection program to ensure the safety of more than 18,000 bridges, pipes and culverts along the state's highways. In 2020, the NCDOT identified a dual set of two-lane bridges along Interstate 95 near Roanoke Rapids that needed new bridge deck expansion joints.

Bridge deck joints perform an important function in bridge performance, helping to accommodate movement of the bridge due to dynamic loads and thermal expansion and contraction. They also take a lot of abuse from vehicles rolling over them, weather, chemical attack (i.e., de-icing materials) and impacts from snowplow blade strikes. Expansion joints are typically one of the first elements of a bridge that must be repaired to extend the structure's lifespan.

When repairing or replacing bridge deck joints, using methods and materials that allow a quick return to service minimizes traffic disruption and lane closures as much as possible. Repair materials with high early strength and fast cure times are ideal, such as Rapid Set® Cement. Like many state transportation departments, NCDOT includes Rapid Set Cement on their approved list of construction materials. The hydraulic cement's rapid-hardening properties make it possible to repair and replace bridge deck joints overnight and return bridges to full service by morning.

I-95 BRIDGE REPAIRS

Triangle Grading and Paving Inc. of Burlington, N.C., performed the maintenance work, which began Oct. 1, 2020, and lasted through Dec. 1. Starting on Sunday evening each week, the contractor performed work nightly to ensure the bridge would be open by 6:30 a.m. the following Friday to accommodate weekend traffic. The repaired areas had to reach a compressive strength of 4,000 psi within four hours.

During each five-day lane closure, the contractor saw cut and removed 3.5 feet of existing concrete pavement along both sides of a 24-foot-long portion of joint that was 8 to 12 inches thick to repair it. Once repaired, the crew had to replace the pavement by Friday morning. The contractor used Rapid Set Cement as the replacement material to meet and exceed the required strength to allow for traffic loads. The Rapid Set based material often reached strengths of 5,500 psi in three hours.

Approximately 150 cubic yards of material was delivered by volumetric mixer and used for the joint repairs. Because the high-performance cement is engineered for low shrinkage and superior resistance to chemical attack, its use on this project will help maximize the bridge deck's service life and minimize maintenance needs. From the material provider to the contractor to the project owner, all parties involved are pleased with the performance of Rapid Set Cement.

CTS Cement Manufacturing Corporation manufactures Rapid Set professional-grade cement products for concrete repairs and new construction projects. Contractors, owners, engineers and architects choose Rapid Set to eliminate problems they have with other concrete repair materials, to save time and money, when superior durability is required and results need to be aesthetically pleasing. For more information about CTS Cement and Rapid Set, please visit www.CTScement.com.

ABOUT CTS CEMENT