

Better Roads®

For The Government/Contractor Project Team

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New Road Products

California Highway 101 Rapid-Repair Project

A bridge header joint on California Highway 101 South at the 1st Street Bridge in San Jose had severely deteriorated posing a potential risk to motorists. Due to the fact that this particular section of Highway 101 is so heavily traveled, the project required minimal disruption to traffic. California Department of Transportation officials decided to make necessary repairs to the header joint on the night of August 26th, 2007, using Ceratech's D.O.T.Line. The environmentally-friendly, high-performance, rapid concrete repair product is engineered to address the constraints posed by traditional construction materials.

Caltrans work crews began the process of removing failed header material using pneumatic jackhammers at approximately 10:00 p.m. Residual material was ground off of sound concrete using right-angle grinders and concrete saws to ensure a clean bonding interface for the replacement concrete. Existing expansion-joint material was completely removed to a depth of several inches below the base of repair trough, as well as re-cut to readily accept new joint material. The entire repair area was evacuated of all dirt and debris by means of high pressure air.

Following the prep work, and the removal of the failed material, the site was ready for D.O.T.Line, a single component, non-Portland, non-epoxy cement comprised of over 90% recycled materials. Polyethylene foam strips were inserted into existing control-joint slots and secured in place. Duct tape was used to mask off the entire perimeter of the repair to obtain a clean-edged and neat final repair, and the entire site was lightly sprayed with water to dampen existing concrete and to facilitate a strong bond with the new repair concrete.

The mineral composite, structural concrete is packaged with high-strength aggregates in a 58-pound bag and prepared in a standard portable drum mixer, requiring only water for activation.

At approximately 12:00 midnight, crews began mixing batches of material. Each batch consisted of four to five units of D.O.T.Line mixed with a half gallon of water. Batches were mixed for seven minutes and loaded into a wheelbarrow where personnel then transported and placed the wet concrete into the repair site. This process included no previous application of primers and/or bonding agents.

Caltrans personnel floated, screeded, and

trowelled the material in the same manner as traditional Portland-based concrete would be finished. The material had approximately 17 to 20 minutes of working time and reached final set in 30 to 40 minutes. Ambient temperatures at the time of repair were approximately 60 to 68 degrees with low humidity. Approximately 30 units were used, totaling just over 30 cubic feet of material.

The D.O.T.Line repair concrete required no special curing requirements, as might be required with PCC-based materials; mixers and tools were cleaned with water.

The repair process was completed by approximately 1:30 a.m. and traffic lanes were re-opened at 4:30 a.m.

Circle 66 on reader card.

