



# Case Study

## Full Depth Slab Replacement Gilroy, CA September 18, 2008

**Location:** US 101 Southbound, Lane 4, Cochrane Exit, Gilroy, CA

**Purpose:** Replace existing shattered slab using CERATECH's Non Portland, Ultra GREEN **GreatWhite**® rapid volumetric cement as a beta test to determine suitability and long term durability for CALTRANS

**Overview:**

On the evening of 18 September, CALTRANS replaced an existing shattered and settled slab on US 101 freeway using **GreatWhite**®. The purpose of this placement was for CALTRANS officials to evaluate CERATECH's ultra green, GreatWhite™ rapid cement as a high performance repair material. CALTRANS currently subcontracts slab replacement work and is considering performing it themselves, so this was a training and evaluation evolution of the CALTRANS crew as well. This was also the first heavy traffic application for CERATECH's **GreatWhite**® rapid cement.





# GREAT™ WHITE™ RAPID CEMENT

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### Weather, Material and Equipment:

Weather for 18 September was overcast with a light breeze from 3-5 mph. Ambient temperatures during placement were around 55°F-60°F. Material and water temperatures reflected the ambient conditions.

The component proportions / mix design were:

Cement: 795 lbs.

CA (#57): 1685 lbs.

FA (C33): 1593 lbs.

Water: 150 lbs.

SRA: 41 oz

CERATECH Proprietary Activator

Admixture: 111 (10 gal)

( All values listed as lbs (or oz) / cuyd:)

A 10 cuyd Global volumetric mixer equipped with a 9” diameter mixing auger was used for this project. In order to support this application, we added an additional high flow admix system to introduce CERATECHS liquid activator admixture at the required dosage rate. A color admix system was re-purposed to introduce the SRA.



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## Site Preparation and Process

2:00 AM - In order to facilitate a full slab replacement, 2 lanes were required to be closed. A quick examination of the slab while the crew saw cut the perimeter revealed that a 12'x15' slab was shattered, by definition, due primarily to settlement of the base courses. Transverse joints were skewed by ~15°, with both transverse and longitudinal joints being dowelled. After sectioning and removing the debris, slab thickness from surface varied from 9" to 11".

Foam was attached to the perimeter of the existing pavement to isolate the new slab. 6 mil plastic sheeting was laid over the base after the water from sawcutting drained away to prevent interlock. The new slab would not be dowelled into the existing pavement.

The contracted finishing crews would have about 15 minutes to get their finish on the material before it would skin and become unworkable. The surface could be misted with water to buy a little extra time and to help close the surface.



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## Execution:

With everything and everyone in place, we began placing material at around 1:45 AM. It took a few minutes to get the slump dialed in, but generally placed between 4" to 6". The finishers were to use a vibrating power screed (truss type). The power screed they brought was too short to effectively use and ended up hand screeding instead.

A backpack mounted vibrator was on hand to consolidate and help move the material. After 18 minutes and several reminders, the first bull float went on the material. By 2:15 AM, material discharge was completed. The material had skinned by the time the tining rake was applied at the section first placed, thus it was difficult to achieve proper depth.

CALTRANS was advised that the lane could reopen at 4:30 AM, however, the repaired lane was not re-opened until approximately 6:00 AM.



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## Conclusions:

CERATECH's **GreatWhite**® rapid cement performed as promised. CALTRANS officials were impressed and judged the surface texture acceptable and understood that with training, finishing would improve. Working with rapid sets, in general, require a mixer with a high production rate and a 12" auger would have definitely helped buy the finishers some time.

