



# Case Study

## Virginia DOT June 2009 Rapid Full Depth Slab Replacement

### Overview:

April 2009 - VDOT Concrete Program expressed interest in evaluating **GreatWhite**<sup>®</sup> as an alternative to Portland and calcium aluminate cement based concretes for full depth slab replacement applications. **GreatWhite**<sup>®</sup> was submitted to VDOT under the Special Product Approval List. This cleared the way for the contractor working these types of applications, to set up a location for a demonstration of the **GreatWhite**<sup>®</sup> material. The location selected was I-295 bypass. (4) Slab replacement sites were identified to be replaced during the week of June 15-19, 2009.

### Project Procedures:

June 15, 2009 CERATECH personnel arrived at the volumetric producer to pre-verify volumetric transit truck calibrations. Fine aggregate moisture content was determined using a Trident gauge and found to be 4.3% to 4.6% mid height of aggregate pile. CERATECH recommended taking material



# Case Study

## Project Procedures: ( Continued )

from the top half of pile. The Volumetric producer ran moisture by drying and obtained 6.5% with a 1.1% absorption = 5.4% free. A gate setting of 3.6 resulted in a discharge of 1.7/count.

A spot check of #57 stone found 1.0% moisture and absorption at 0.5%. Gate setting at 4.45 resulted in a discharge of 1.9/count which was the required amount. CERATECH verified calibration settings for the **GreatWhite® Liquid Activator Admixture** and SRA. The **GreatWhite® Liquid Activator Admixture** was set at 4.77 gal/min and the SRA was calibrated to deliver 68 oz/yard per mix design.

Material was then produced to adjust to the correct water setting to produce a 4 1/2" slump. Initial working time was only 12 minutes. This was adjusted by altering the activator admixture rate, where 15 minutes working time was then achieved. Ambient conditions during calibrations were 73°F, cloudy skies with a light breeze. First two slab replacements were rescheduled for 11:00 am the next morning due to rain in the forecast.



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## June 17 - Slab Replacement:

Site location, two slabs on I-295 south near mile post 11.

There were two separate slab areas measuring roughly 10' x 20' x 10" deep and 10' x 40' x 10" deep respectively requiring roughly 21 yards of **GreatWhite®** cement concrete in total. Material was discharged, consolidated and finished at each slab area within approximately 20 minutes respectively. Sika Film was used as a finishing aid, which proved to be very effective. The mix had 18 minutes of working time and set in 25 minutes. Temperatures on site were 78°F surface and 75°F ambient. Material was initially 75°F off the chute. At the time of set the surface temp of the hardened concrete was 107°F.

Placement and finishing were completed by 2pm and the lanes re-opened to traffic by approximately 5 pm later that evening.