




American Concrete Institute®
Advancing concrete knowledge

Architectural Concrete in Hot Weather

ACI Spring 2012 Convention
March 18 – 21, Dallas, TX

ACI WEB SESSIONS



William A. Thompson (Tony), marketing Manager for Vulcan Materials Company Northern Concrete Division, has worked in the ready-mixed concrete and pre-cast concrete industries in northern Virginia for more than 20 years. Tony has held positions in Technical Services and Ready-Mixed Concrete Sales and has served as the Sales Manager for Cardinal Concrete and the Technical Services Manager for Virginia Concrete. Tony holds various ACI technical certifications as well as NRMCA Concrete Technologist, NRMCA Certified Concrete Sales Professional and NRMCA Certified Pervious Technician Certification. Tony has been active in the promotion of concrete with the VRMCA Concrete Advisory Council and is the current president of the ACI National Capital Chapter.

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Decorative Concrete in Hot Weather

Smithsonian National Zoo
Elephant Trail Project

Tony Thompson
Marketing Manager
Vulcan Materials Company
March 21, 2012

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Project Background

This \$30M project was awarded in 2006 and completed in 2011 by Wm. V. Walsh Construction Co. It encompasses a complete renovation and expansion of the Elephant Facility and habitat at the National Zoo. The existing enclosure was renovated with a barn extension housing state of the art facilities for the elephants.

The elephant habitat was expanded to twice its former size with diverse outdoor habitats incorporating elements to stimulate natural elephant behavior, such as mud wallows, pools and sand piles.

The project includes an elephant walking trail which passes through the outdoor habitats and provides the elephants with exercise, foraging opportunities and outdoor shaded and heated spots.

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Project Background

- Wm. V. Walsh, the general contractor, self-performed the structural concrete, including integrally colored, architectural walls
- Wall mix (.40, 5000 psi, #8 CA) contained **676# cementitious** 50% portland, 50% slag
- Recover **hydration stabilizer** used in wall mix
- Cost of Wisconsin was the shotcrete sub-contractor that crafted the boulders and other simulated natural structures.
- Shotcrete mix contained **940# cementitious** 75% portland, 25% slag
- Daratard HC **retarding water-reducer** used in shotcrete
- Total distance to job, **15 miles**
- Total time to job mid-day **37 minutes**
- Total time to job rush hour **50-70 minutes**
- Grace Hydrotint colors used for **Sandstone, Adobe and Mesa Buff**

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ACI Definition of Hot Weather

- Not precisely defined like Cold Weather
- More like another hard to define topic “I know it when I see it...”

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ACI Definition of Hot Weather

•**Hot Weather** — one or a combination of the following conditions that tends to impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration, or otherwise causing detrimental results: **high ambient temperature; high concrete temperature; low relative humidity; and high wind speed.**



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So, it doesn't have to be "hot" to be hot



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And it doesn't have to be decorative to be decorative



- Traditional Decorative
 - Noticeable
 - Bright
 - Distinct
- Natural Decorative
 - Blend with Environment
 - Create Illusion
 - Muted
- Ultimately, Expectation of Owner

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Practices for Success

- Communicate Reality
 - Travel Time
 - Traffic
 - Slump Loss
 - Cancellation
 - Placement Time



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Practices for Success

- Communication (All)
 - Specification
 - Actual Conditions
 - Parameters Tighter



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Practices for Success



- Contractor Cooperation (be ready)
 - Forming
 - Tools
 - Personnel
 - Conveyance

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Practices for Success



- Advance Scheduling
- Anticipate Weather
- Anticipate Traffic
- Ensure Ice Available
- Ensure Chilled Water
- Ensure No Conditions that Prevent Delivery

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Practices for Success

- Quality Assurance & Control
 - Preparation
 - Empty Bins
 - Water Stockpiles
 - Technical Services
 - Review Mixes
 - Technician at Plant



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Project Images



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Questions?

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