



Potential Alkali Reactivity of Aggregates



Headline

- 7,000 ft of Concrete Runway
- 2 Onsite Batch Plants
- 54,000 CY Produced for Runway & Associated Taxiways
- Pavement Section
 - 5” Crushed Concrete
 - 6” Cement Stabilized 67 Stone
 - 15” Concrete



Repair Runway 03/21
Charleston, SC

Materials

Aggregates

- Fine
 - Murray Sand
- Coarse
 - Kinder Morgan 67 Stone

Cementitious Materials

- Holcim Type IS(20) Slag Modified
- Holcim Type 1
- Sefa Class F Fly Ash



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RC Construction Batch Plant

Mix Designs

- **Mix #1**
 - Type 1 with 20% Fly Ash
- **Mix #2**
 - Type 1 with 25% Fly Ash
- **Mix #3**
 - Type 1 with 30% Fly Ash
- **Mix #4**
 - Type 1S(20) Slag Modified
- **Mix #5**
 - Type 1

- **3 Analysis per Mix**

- Fine Aggregate
- Coarse Aggregate
- Combination
 - Fine
 - Coarse



Fine Aggregate



Coarse Aggregate

Specifications

- ASTM C1260
 - Cement/Aggregate Ratio
1:2.25
 - w/c Ratio - 0.47
 - Sodium Hydroxide Solution
 - Intermediate readings for 16
days
- Initial Specification
 - No Expansion greater than
0.08% after 16 days
- Specification Change
 - No Expansion greater than
0.08% after 28 days



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Initial Results

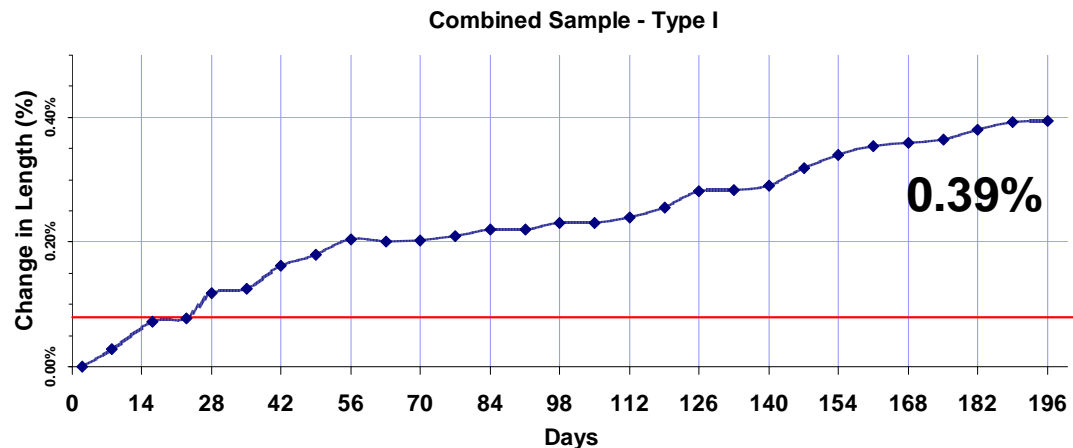
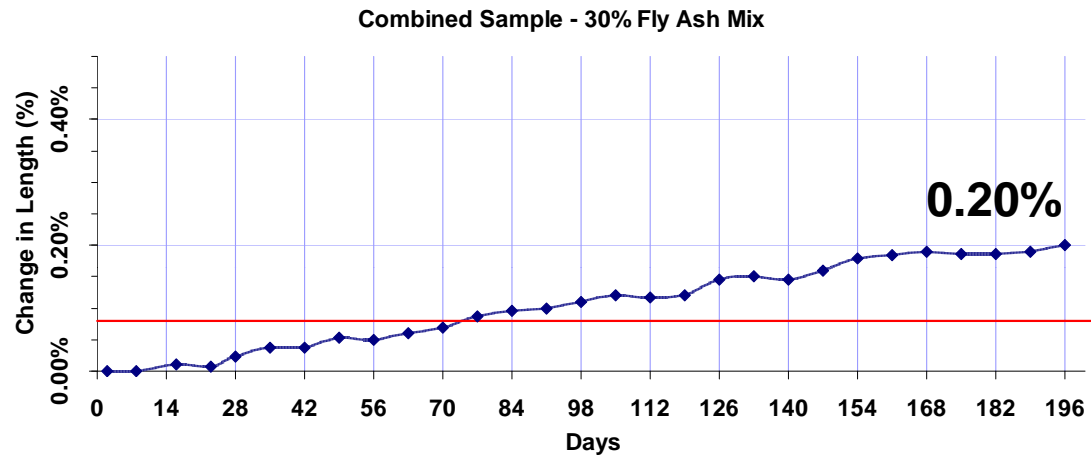
- Less ASR Expansion with Increased percentage of Fly Ash
- Type 1 mix generally experienced the highest expansion



Long Term Results

25 Weeks

- Less ASR Expansion with Increased percentage of Fly Ash
- Type 1 mix generally experienced the highest expansion



Thank you

