



INDIANA DEPARTMENT OF TRANSPORTATION

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Indianapolis, Indiana 46204


www.in.gov/indot

Eric Holcomb, Governor
Mike Smith, Commissioner

October 04, 2022

CONSTRUCTION MEMORANDUM 22-04 **(REVISED)**

TO: District Deputy Commissioners
District Construction Directors
District Technical Services Directors
District Area Engineers, Project Engineers/Supervisors
District Project Management Director, Project Management Director
District Traffic Engineers, District Testing Engineers
District LPA Coordinators, Field Engineers, Division of Materials and Tests

FROM: Gregory G. Pankow, P.E., Director 
Division of Construction Management and District Support

SUBJECT: Alternate Overlay Mix Design Using E5 Internal Cure and E5 Liquid Fly Ash

E5 Internal Cure and E5 Liquid Fly Ash are a new type of concrete admixture that has been shown to provide significant benefits during the placement of concrete and in the overall quality of the in-place concrete. Some of the benefits include improved water retention, improved workability, reduced cracking and higher pozzolanic activity, which can create higher strength and reduced permeability.

An alternate bridge deck overlay mix design may be used while the Department continues to evaluate the performance of these admixtures. In lieu of Latex Modified Concrete per 722.05(a) or Silica Fume Modified Concrete per 722.05(c) Standard Specifications, concrete may be in accordance with 722 and the following exceptions:

Mix Design & Batching:

1. The concrete mix design shall include the following two admixtures by Specification Products: "E5 Internal Cure" with a dosage rate of 4 oz/cwt of cementitious and "E5 Liquid Fly Ash" with a dosage rate of 8 oz/cwt of cementitious.
2. Mix designs shall be based on a cement content from 600 to 620650 lbs/cu yd. The cement content shall not be increased above 620650 lbs/cu yd. No other supplementary cementitious materials shall be added.
3. The water-cementitious ratio shall be 0.45 to 0.49.
4. Fibrillated polypropylene fiber with dosage per manufacture (min 1.5 lbs/cu yd).
5. Slump at time of placement (AASHTO T 119): minimum 5 in., maximum 8 in.
6. Compressive strength: 3,200 psi at 7 days, 4,200 psi at 28 days.
7. A water-reducing admixture, Type A, may be used.

8. Ensure that the concrete mixture is fully wetted before adding the E5 Internal Cure and E5 Liquid Fly Ash admixtures to the load.
9. The minimum batch size shall be 2 cu yds. The maximum batch size of 80% shall not apply.
10. An additional 15 seconds of mixing time shall be added during batching of each load.

During placement:

1. A representative from Specification Products shall be on site during placement.
2. Water shall not be applied to the plastic concrete surface.
3. Products marketed as “evaporative retardants” or “evaporation reducers” shall not be used. Some common trade names for these products include Sika Film, MasterKure ER50 and Eucobar.
4. The following products may be used as finishing aids as directed by the manufacturer:
 - a. E5 Miracle Aid by Specification Products
 - b. EZ Finish by Specified Surfaces
 - c. The Juice by M2 Solutions.

After placement:

1. Curing shall be for a minimum period of 7 days and consist of 120 h of wet cure followed by 48 h of dry cure. Wet curing shall be in accordance with 702.22(a) Standard Specifications and pre-wetted burlap and soaker hoses shall be used. The deck shall remain completely covered with burlap and white plastic during the dry cure period except the soaker hoses shall be off. The bridge deck may be opened to traffic after the dry cure period and when the average compressive strength of cylinders is 3,200 psi or greater.
2. Strength testing will consist of the average of three 4 in. by 8 in. cylinders or two 6 in. by 12 in. cylinders. The cylinders will be cured in accordance with AASHTO T 23 Section 10.1, Standard Cure conditions. The frequency for all testing will be per the Frequency Manual and will be the same as for silica fume modified concrete overlay.

The Contractor shall submit a request to use the alternate overlay mix design along with the proposed CMDS to the Department’s project personnel for approval a minimum of 14 days prior to the trial batch. Project personnel will then forward the request to the Area Engineer, the Concrete Engineer at the Division of Materials and Tests and District Testing Engineer. Upon approval, a zero-cost change order will be processed to add the appropriate contract pay item with a supplemental description as follows:

722-12899 Bridge Deck Overlay, E5 Internal Cure

Any questions should be directed to the Concrete Engineer at Materials and Tests, Mike Nelson mnelson@indot.in.gov.

GGP/mwn