



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

August 14, 2012

Addendum No. 1

RE: Contract ID C203122

WBS # 17BP.2.P.16

Carteret County

Bridge #6 On NC-58 Over The Intracoastal Waterway

August 21, 2012 Letting

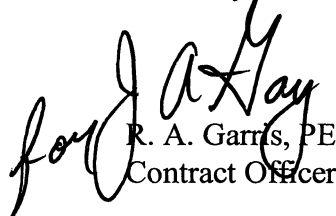
To Whom It May Concern:

Reference is made to the proposal furnished to you on this project.

The following revision has been made to the Proposal:

On Page Nos. 72 thru 75 various changes have been made to the project special provision entitled "Concrete For Deck Repair". Please void Page Nos. 72 thru 75 in your proposal and staple the revised Page Nos. 72 thru 75 thereto.

Sincerely,


R. A. Garris, PE
Contract Officer

RAG/jag
Attachments

cc: Mr. Ron Hancock, PE
Mr. C.E. Lassiter, PE
Ms. D. M. Barbour, PE
Mr. J. V. Barbour, PE
Mr. G.R. Perfetti, PE
Mr. Ray Arnold, PE
Project File (2)

Mr. R.E. Davenport, PE
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Mr. Ronnie Higgins
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LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

7.0 TWELVE MONTH OBSERVATION PERIOD

The contractor maintains responsibility for the coating system for a twelve (12) month observation period beginning upon the satisfactory completion of all the work required in the plans or as directed by the engineer. The contractor must guarantee the coating system under the payment and performance bond (refer to article 109-10). To successfully complete the observation period, the coating system must meet the following requirements after twelve(12) months service:

- No visible rust, contamination or application defect is observed in any coated area.
- Painted surfaces have a uniform color and gloss.
- Surfaces have an adhesion of no less than 500 psi (3.45 MPa) when tested in accordance with ASTM D-4541.

8.0 BASIS OF PAYMENT

The contract price bid for the bridge component to which the coating is applied will be full compensation for the thermal sprayed coating.

CONCRETE FOR DECK REPAIR

SPECIAL

Description

Work described herein details requirements for procurement and placement of high early strength structural concrete to be used for reconstruction of deck slab and bent diaphragm regions as noted in the plans.

Materials

Furnish pre-proportioned, bagged concrete mix or bulk concrete materials in a mix proportioned to satisfy provisions for Class AA Concrete detailed in Section 1000-4 of the *Standard Specifications* or as otherwise noted in these provisions. Concrete mix shall meet the following requirements:

Physical Property	Threshold Limitation	Test Method
Compressive Strength (psi) @ 3 hrs.	4,500 (min.)	ASTM C 39/C109

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Physical Property	Threshold Limitation	Test Method
Slump (in.)	4 (min.) 7 (max.)	AASHTO T 119
Maximum Water to Cement Ratio	0.450	N/A
Modulus of Elasticity (ksi) @ 28 days	5,200 (max.)	ASTM C 469
Coefficient of Thermal Expansion (in./in./°F) @ 28 days	4.5 (min.) 5.5 (max.)	AASHTO TP 60
Concrete Setting Times (Minutes)		ASTM C 191
Initial Set	30 (max.)	
Final Set	40 (max)	

Concrete furnished for deck repairs shall be capable of placement on existing concrete substrate surfaces within the following temperature limitations:

40 °F (4.4 °C) (min.)

100 °F (37.7 °C) (max.)

For equipment, proportioning and mixing of concrete compositions, see Section 1000-12 of the *Standard Specifications* and the Special Provision entitled “High performance Volumetric Mixers”. Prior to beginning any work, obtain approval for all equipment to be used for preparation of expansion joint areas, mixing, placing, finishing, and curing the deck repair concrete.

Measurement for determination of concrete material compositions shall be in accordance with Section 1000-8 of the *Standard Specifications* and the following modifications:

Page 10-11, last paragraph of 1000-8, add the following:

Submit pre-packaged concrete mix contents by analysis or concrete mix design, including laboratory compressive strength data for a minimum of six 4-inch by 8-inch cylinders at an age of 1.) 3 hours; and 2.) 1 day to the Engineer for review. Include test results for the

slump and air content of the laboratory mix. Perform tests in accordance with AASHTO T 22, T 119 and T 152.

Preparation of Existing Concrete Surfaces

Remove existing deck slab concrete to limits shown in the plans. Existing concrete that is deteriorated, cracked or spalled shall be removed to sound material. Completely clean all surfaces of grease, oil, curing compounds, acids, dirt, or loose debris no more than 24 hours prior to placing deck repair concrete unless otherwise approved.

Thoroughly soak and cover existing clean concrete surfaces for at least 2 hours prior to placing Concrete for Deck Repair. Immediately prior to placing the Concrete for Deck Repair, remove any standing water from existing surfaces surface.

Placing and Finishing

Prior to placing Concrete for Deck Repair at foam joint seal installations, install a rigid bulkhead at expansion joints to the required grade and profile.

Secure strip seal retainer rails in final position to match existing grade line profile and cross slope at each location. Furnish falsework to support retainer rails during installation as described in the special provision entitled "Strip Seals".

Secure guides in position to ensure finishing the new surface at expansion joint locations to the required profile and cross slope. Do not treat screed rails with parting compound to facilitate their removal.

To establish a mechanical bond, all concrete substrate surfaces shall be prepared with a minimum profile of one-eighth of an inch (1/8").

Place the Concrete for Deck Repair monolithically in one operation. Concrete shall not be placed in layers. Sections to be reconstructed are to be filled full depth and shall progress horizontally. Deviation from this procedure shall be cause for rejection.

Construction joints other than those shown on the plans will not be permitted unless approved by the Engineer.

When a tight, uniform surface is achieved and before the concrete becomes non-plastic, further finish the top surface of the deck repair by burlap dragging or another acceptable method that produces an acceptable uniform surface texture.

As soon as the surface supports burlap without deformations, cover the surface with a single layer of clean, wet burlap.

Place Concrete for Deck Repair only after the burlap is saturated and approved by the Engineer. Drain excess water from the wet burlap before placement.

Wet cure the Concrete for Deck Repair for a minimum of 3 hours or until at least 4500 psi compressive strength is obtained. Wet cure the fresh concrete through maintenance of a wet saturated surface as soon as it is possible to place burlap on the surface without damaging the finished surface. Place a layer of 4 mil (0.100 mm) white opaque polyethylene film on the wet burlap and cure the surface a minimum of 3 hours. Other wet cure methods are permitted but must be approved by the Engineer prior to start of placement.

As soon as practical, after the concrete has hardened sufficiently, test the finished surface with an approved rolling straightedge that is designed, constructed, and adjusted so that it will accurately indicate or mark all floor areas which deviate from a plane surface by more than 1/8 inch in 10 feet (3 mm in 3 m). Remove all high areas in the hardened surface in excess of 1/8 inch in 10 feet (3 mm in 3 m) with an approved grinding or cutting machine. Where variations are such that the corrections extend below the limits of the top layer of grout, seal the corrected surface with an approved sealing agent if required by the Engineer. If approved by the Engineer, correct low areas in an acceptable manner.

Groove finished concrete surfaces in the vicinity of expansion joint seals deck unless otherwise shown in the plans.

Limitations of Operations

The volumetric mixer may be permitted on the bridge deck. Submit mixer size and weight data to the Engineer for review.

No vehicular or construction traffic is permitted on finished Concrete for Deck Repair prior to evidence being provided that the minimum compressive strength referred to above is satisfied by compressive strength tests made in accordance with AASHTO T 22 and T 23.

Do not place Concrete for Deck Repair if the temperature of the concrete surface on which the overlay is to be placed is below 40°F (4.4°C) or above 95°F (35.0°C). Measure the surface temperature by placing a thermometer under insulation placed against the surface.

Prior to placing Concrete for Deck Repair, the Engineer shall determine the air temperature and wind speed. Do not place Concrete for Deck Repair if the ambient air temperature is below 45°F (7.2°C) or above 85°F (29.4°C), or if the wind velocity is in excess of 10 mph (16 km/h). If working at night, provide approved lighting. Provide aggregates for use in Concrete for Deck Repair that are free from ice, frost and frozen particles when introduced into the mixer.

Do not place concrete when the temperature of the Concrete for Deck Repair is below 45°F (7.2°C) or above 85°F (29.4°C).

If the rate of evaporation of surface moisture from the Concrete for Deck Repair exceeds 0.10 pounds per square foot per hour during placement, measures shall be taken to reduce the rate of evaporation. The evaporation rate is calculated using the following formula:

$$E=(T_c^{2.5}-rT_a^{2.5})(1+0.4V)(10^{-6}) \text{ where,}$$

E=Evaporation Rate, T_c =Concrete Temp ($^{\circ}$ F), r=Relative Humidity (%/100)

T_a =Air Temp ($^{\circ}$ F), V=Wind Velocity (mph)