

STATE OF NEBRASKA  
DEPARTMENT OF ROADS  
ADDENDUM NO. 2  
AND  
ELECTRONIC BIDDING SYSTEM  
AMENDMENT NO. 1  
PROJECT NO. RD-6-3(1024)  
CONTROL NO. 71093  
CALL NO. 700  
US-6/US-34, HOLDREGE - FUNK  
LETTING DATE: OCTOBER 8, 2009

The Schedule of Items for Group 9 is amended as follows:

1. The quantity for the bid item "5" Yellow Permanent Pavement Marking Paint" is incorrect and should read 16,200.000 LF.
2. The bid item "4" White Wet Reflective Preformed Pavement Marking, Type 4, Grooved" has been eliminated.
3. The bid item "4" Yellow Wet Reflective Preformed Pavement Marking, Type 4, Grooved" has been eliminated.
4. The bid item "5" White Wet Reflective Thermoplastic Pavement Marking, Grooved" has been added with a quantity of 2,500.000 LF.
5. The bid item "5" Yellow Wet Reflective Thermoplastic Pavement Marking, Grooved" has been added with a quantity of 10,500.000 LF.
6. The bid item "12" Yellow Wet Reflective Thermoplastic Pavement Marking, Grooved" has been added with a quantity of 800.000 LF.

The EBS generated bid items sheets must show these corrections or the bid will be considered void.

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The Special Provisions are amended to include the following:

**WET REFLECTIVE THERMOPLASTIC PAVEMENT MARKING, GROOVED**

**I. Description**

This work shall consist of furnishing and installing wet night retroreflective thermoplastic pavement markings in accordance with this provision and in conformance to the dimensions and lines shown on the plans or established by the engineer.

This specification covers wet reflective thermoplastic materials suitable for use as reflecting pavement markings on asphalt pavements. A manufacturer recommended heat source fuses the markings to the asphalt pavements. Both glass beads and wet

reflective glass beads are pre-mixed into the material furnished, and also must be applied to the surface either before or after fusion to the pavement. Upon cooling, the material produces an adherent reflectorized marking of specified thickness and width, capable of resisting deformation by traffic.

The Contractor shall field verify the pavement marking quantities required for the project prior to purchasing materials. The Department will not be held responsible for the Contractor's shortage or surplus of material. The Contractor's verification of quantities and purchasing material shall not delay the project or the installation of pavement marking when required.

The thermoplastic pavement marking shall be applied in grooves cut into the surfacing. The grooves shall be made in a single pass dry cut; the equipment used shall be self vacuuming and leave the cut groove ready for thermoplastic pavement marking application. The equipment and method used shall be approved by the thermoplastic pavement marking manufacturer. The thermoplastic pavement marking shall be applied in the grooves the same day as the cut. Grooves shall be clean and dry prior to thermoplastic pavement marking application. All conflicting pavement markings remaining after thermoplastic pavement marking application shall be removed; this removal shall be subsidiary to the pavement marking.

Groove width:	pavement marking width + 1 inch to 2 inch max
Groove depth:	Per Manufacturers recommendations
Groove length:	full length of marking + minimum required grooving transition
Groove position:	2 inches off of joint line (per plan)

Grooving of the surfacing shall be performed in accordance with the thermoplastic manufacturer's recommendations. Grooving the surfacing shall not be measured and paid for but shall be considered subsidiary to "Wet Reflective Thermoplastic Pavement Marking, Grooved".

## II. Requirements

### a. General

- (1) Provide the material in white and/or yellow as specified.
- (2) Provide material with a minimum thickness of 0.1 inch as supplied by the manufacturer.
- (3) Provide material that is resistant to deterioration due to exposure to sunlight, water, oil, gasoline, salt, or adverse weather conditions.
- (4) After application, the material must exhibit no appreciable deformation or discoloration, remain tack free, and not lift from the pavement under normal traffic conditions within a road temperature range of 20 to 150°F.

(5) Provide material that is capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures.

**b. Color**

Provide yellow material that meets the minimum chromaticity coordinates in **TABLE 1**.

<b>TABLE 1: MINIMUM CHROMATICITY COORDINATES FOR YELLOW</b>				
X	.470	.510	.485	.530
Y	.455	.485	.425	.456

**c. Retroreflectivity**

Provide wet reflective thermoplastic that meets the minimum retroreflectivity requirements in **TABLE 2**, using an acceptable 30-meter retroreflectometer. Initial performance of pavement markings should be measured within 7-14 days after application.

<b>TABLE 2: RETROREFLECTIVITY REQUIREMENTS (mcd(ft<sup>2</sup>)(fc-1)</b>		
	White	Yellow
Dry (ASTM E1710)	400	325
Wet Recovery (ASTM E2177)	350	275
Wet Continuous (ASTM E2176)	100	75

**d. Thermoplastic Material and Premix Beads.**

(1) Provide thermoplastic material that complies with AASHTO M 249 with exception of the relevant differences due to the material being supplied in a preformed state.

(2) All pigments must be heavy metal free, including, but not restricted to lead, cadmium, and mercury.

**e. Glass Beads for Drop-on Application.**

Provide glass beads that are specifically manufactured to be compatible with the thermoplastic system, and comply with AASHTO M 247, Type I.

**f. Wet Reflective Media.**

Provide wet reflective media approved by the manufacturer. The wet reflective media that qualify for use are shown in the NDR Qualified Products List.

**III. Test Methods**

- a. Thermoplastic Material and Premix Beads.** AASHTO T 250
- b. Glass Beads for Drop-On Application.** AASHTO M 247
- c. Field Evaluation.** KTMR-9, Field Evaluation of Pavement Marking Materials.

#### **IV. Observation Period**

Following initial completion of all pavement marking, there will be a 180 day observation period before final acceptance. During the observation period, the contractor, at no expense to the Department of Roads, shall replace any marking that the Engineer determines are not performing satisfactorily due to defective materials and/or workmanship in manufacture and/or application. At the end of the observation period the minimum required retention percentage for marking installed shall be 90%.

Determination of Percentage Retained - The percentage retained shall be calculated as the nominal area of the strip less the area of loss divided by the nominal area and expressed as a percentage of the nominal area. A claim, made by the State against the Contractor, shall be submitted to the Contractor in writing within 30 days after the 180 day observation period. When such a claim is made prior to August 1, the replacement material shall be installed during that same construction season. Replacement material for any claim after August 1 shall be installed prior to June 1, of the following year. Marking replacement shall be performed in accordance with requirement specified herein for the initial application, including but not limited to surface cleaning, sealer application, etc.

Final acceptance of all marking will include an inspection of the appearance of the markings during daylight and darkness. Any markings that fail to have a satisfactory appearance during either period, as determined by the Engineer, shall be reapplied at no expense to the Department of Roads.

Final acceptance of the pavement marking will be: (1) 180 days after the initial completion of all work, or (2) upon completion of all corrective work, whichever occurs last.

#### **V. Certification of Compliance**

The Contractor shall furnish a manufacturer's certification that the material complies with the provisions of this specification.

#### **VI. Contract Units and Basis for Payment**

- A. Linear pavement markings will be measured in linear feet complete-in-place for the width specified.
- B. Retroreflective markings will be paid for at the contract unit price, which shall be full compensation for cleaning and preparing the pavement surface, for furnishing and placing all materials, and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Subsection 423.01 of the 2007 Standard Specifications is amended to include the item: "Wet Reflective Thermoplastic Pavement Marking, Grooved". The price shall be full

compensation for grooving the pavement surface, furnishing and applying all markings, and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
_____Wet Reflective Thermoplastic Pavement Marking, Grooved	Linear Feet (LF)

\* \* \* \* \*

Upon execution of the contract, the plans will be revised to reflect these changes.

DEPARTMENT OF ROADS

***Original Signed by Claude Oie***

Claude Oie  
Construction Engineer

Issued: September 23, 2009

CO:700AD210

NOTICE: Only the Contractors issued bidding proposals receive this addendum and responsibility for notifying any potential subcontractors or suppliers remains with the Contractor.