DEPARTMENT OF TRANSPORTATION

Planning & Engineering
Office of Project Development
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April 24, 2026

ADDENDUM NO. 1

RE: Item #7, May 6, 2026 Letting - NH-P 0023(73), PCN 09WX, Clay, Hutchinson, Yankton County - Asphalt Surface Treatment

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: Please remove the Index of Special Provisions and replace with the attached Index of Special Provisions revised 4/24/26.
Please add the "Special Provision for Durable Pavement Markings" dated 4/24/26 after the "Special Provision for Asphalt Surface Treatment Design", dated 11/19/15.

SDEBS BID PROPOSAL: NONE

PLANS: NONE

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/gp

CC: Travis Dressen, Mitchell Region Engineer
Greg Rothschadl, Yankton Area Engineer

REV 4/24/26

INDEX OF SPECIAL PROVISIONS

PROJECT NUMBER(S): NH-P 0023(73) PCN: 09WX

TYPE OF WORK: ASPHALT SURFACE TREATMENT

COUNTIES: CLAY, HUTCHINSON, YANKTON

The following clauses have been prepared subsequent to the Standard Specifications for Roads and Bridges and refer only to the above described improvement, for which the following Proposal is made.

The Contractor's attention is directed to the need for securing from the Department of Environment & Natural Resources, Foss Building, Pierre, South Dakota, permission to remove water from public sources (lakes, rivers, streams, etc.). The Contractor should make his request as early as possible after receiving his contract, and insofar as possible at least 30 days prior to the date that the water is to be used.

Kristal McKee, Lacey Johnson is the official in charge of the Vermillion Career Center for Clay, Hutchinson, Yankton Counties.

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Special Provision for Asphalt Surface Treatment Design, dated 11/19/15.
Special Provision for Durable Pavement Marking, dated 4/24/26.

Special Provision for Price Schedule for Miscellaneous Items, dated 2/18/26.
Special Provision for American Security Drone Act, dated 12/15/25.
Special Provision for Steel Beam Guardrail AASHTO M 180 Designation, dated 10/1/25.
Special Provision for Acknowledgment and Certification Regarding Article 3, Section 12 of the South Dakota Constitution, dated 8/24/23.
Fuel Adjustment Affidavit, DOT form 208 dated 11/25.
Standard Title VI Assurance, dated 3/1/16.
Special Provision For EEO Affirmative Action Requirements on Federal and Federal-Aid Construction Contracts, dated 2/5/24.
Special Provision For Required Contract Provisions Federal-Aid Construction Contracts, Form FHWA 1273 (Rev. October 23, 2023), dated 10/18/23.
Required Contract Provisions Federal-Aid Construction Contracts, Form FHWA 1273 (Rev. 10/23/23).
Special Provision Regarding Minimum Wage on Federal-Aid Projects, dated 10/24/19.
Wage and Hour Division US Department of Labor Washington DC. - US Dept. of Labor Decision Number SD20260001, dated 1/30/26.

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
DURABLE PAVEMENT MARKINGS

PROJECT NH-P 0023(73), PCN 09WX
HUTCHINSON & YANKTON COUNTY

APRIL 24, 2026

I. DESCRIPTION

Durable pavement markings, for the purpose of the special provision, include epoxy and polyurea. Water base paint will not be considered a durable marking product.

This work will consist of grooving pavement for durable pavement marking and furnishing and applying durable pavement markings in accordance with the plans, this provision, and as directed by the Engineer.

II. MATERIALS

The Contractor will submit the type of material to be used at the preconstruction meeting prior to application of the durable pavement marking.

A. CERTIFICATIONS

The Contractor will provide the Engineer with a copy of the manufacturer's product data sheet, component certification, and instructions for material application at least 14 calendar days before application work begins. Whenever the manufacturer's recommendations are more stringent than these provisions, the manufacturer's recommendations will apply. The Contractor will provide the Engineer a copy of the certified batch test results, showing the product meets the following requirements, upon delivery of the product to the job site.

B. MATERIAL REQUIREMENTS

1. **Marking Material:** The Contractor will follow the manufacturer's mixing ratio. No solvents are to be given off to the environment upon application to a pavement surface. The components, when combined, will not contain or produce volatile solvents. If Type II epoxy pavement marking material is used, it will be completely free of TMPTA (Tri-Methyl Propane Tri-Acrylate)

and other multi-functional monomers. All materials will be free of lead, cadmium, mercury, hexavalent chromium, and other toxic heavy metals as defined by the United States Environmental Protection Agency.

a. Color: The pavement marking colors will meet the following:

White: The color will be within the Chromaticity coordinates listed in Tables 1 & 2 when tested in accordance with ASTM E1347 or ASTM E1349

Yellow: The color will match Federal Test Standard Number 595a, Color 13538 or will be within the Chromaticity coordinates listed in Tables 1 & 2 when tested in accordance with ASTM E1347 or ASTM E1349.

TABLE 1

Color	Chromaticity coordinates (corner points)								Y values %			
									With Glass Beads		Without Glass Beads	
	x	y	x	y	x	y	x	y	Min	Max	Min	Max
White	.355	.355	.305	.305	.285	.325	.335	.375	60	--	70	--
Yellow	.560	.440	.490	.510	.420	.440	.460	.400	30	--	35	--

TABLE 1 - Daytime Color Specification Limits for Pavement Markings Material with CIE 2° Standard Observer and 45/0 (0/45) Geometry and CIE D65 Standard Illuminant

TABLE 2

Color	Chromaticity coordinates (corner points)							
	1		**2**		**3**		**4**	
	x	**y**	**x**	**y**	**x**	**y**	**x**	**y**
White	.480	.410	.430	.380	.405	.405	.455	.435
Yellow	.575	.425	.508	.415	.473	.453	.510	.490

TABLE 2 - Nighttime Color Specification Limits for Pavement Marking Retroreflective Material with CIE 2° Standard Observer and Observation Angle = 1.05°, Entrance Angle = 88.76° (beta angle 2 and epsilon = 0°) and CIE Standard Illuminant A

b. Hardness: The type D durometer hardness of the material will not be less than 75 when tested in accordance with ASTM D2240 after the material has cured for 72 hours at 73°F ± 5°F.

c. Adhesion Capabilities: When tested in accordance with the American Concrete Institute Committee 503 testing procedure, the adhesion must be a minimum of 250 psi, or the failure of the system must take place in the substrate. The prepared specimens will be allowed to cure for 72 hours at 73°F ± 5°F.

d. Weather Resistance: Apply the mixed epoxy, both white and yellow, at 15 mils ± 1 mil thick to 3 inch x 6 inch aluminum panels. Do not apply beads to the epoxy sample. Expose the cured sample in an Environmental Test Chamber meeting the requirements of ASTM G154. Conduct the test for 80 hours at 122°F, alternating four-hour cycles of condensation and ultraviolet light. At the end of the exposure period, the material will show no substantial change in color or gloss.

e. Abrasion Resistance: When the abrasion resistance of the material is tested in accordance with ASTM D4060 with a CS-17 wheel under a load of 1000 grams for 1000 cycles, the wear index will be no greater than 82 (The wear index is the weight in milligrams that is abraded from the sample under the test conditions).

f. Chemical Resistance: Cured markings will be resistant to calcium chloride, sodium chloride, fuels, and oils.

g. Wet-Reflective Optics and Glass Beads: Wet-reflective optics and glass beads will be used as recommended by the durable pavement marking manufacturer for all durable pavement markings on this project. Glass beads will meet the following gradation requirements when tested according to ASTM D1214:

Sieve Size	Percent Passing
#14	100
#18	65 - 80
#30	30 - 50
#50	0 - 5

Glass beads will have a minimum of 70% true spheres.

The glass spheres will be transparent, colorless, and free of milkiness, dark particles, carbon residues, and excessive air inclusions. All glass beads retained on the #18 sieve will be produced from virgin glass by direct melt methods.

The glass beads will be without floatation properties. The glass beads will have dual surface treatment consisting of a moisture resistant silicone treatment and a silane adherence surface treatment.

The wet-reflective optics will contain either clear, white, amber, or yellow tinted beads composed of glass or a composite consisting of a core made from ceramic or glass with an outer layer of microcrystalline ceramic or glass beads. The wet-reflective optics will provide a 50/50 blend of dry to wet ratio of optics. All beads bonded to wet-reflective optics will have a minimum index of refraction of 1.8 for dry

retroreflectivity and 2.4 for wet retroreflectivity when tested using the liquid oil immersion method.

2. **Epoxy Materials:** The following requirements, in addition to those specified in Section II.B.1 of this special provision, will also apply when the Contractor elects to use epoxy pavement markings.

   a. **Classification:** This specification provides for the classification of epoxy pavement marking systems by type.

      Modified Polyacrylate - A 100% solids, reflectorized multi-functional polyacrylate system designed for rapid-setting marking.

      Type I - A fast cure material suitable for line applications and, under ideal conditions, may not require coning.

      Type II - A slow cure material suitable for all applications of pavement markings performed under controlled traffic conditions requiring coning and may require flagging as directed by the Engineer.

      Either Modified Polyacrylate, Type I, or Type II epoxy material will be used for epoxy pavement markings except as specified otherwise in the plans.

   b. **Composition:** Furnish a two component 100% solids epoxy material containing no fillers or pigment extenders. Follow the manufacturer's mixing ratio when mixing the two components. Mix the components within ± 2.5% of the manufacturer's recommended mix ratio.

   c. **Pigment and Epoxy Resin:** The pigment and resin component will meet the following percentages by weight:

Material	White	Yellow
Pigment		
TiO2, meeting ASTM D476	18 - 38	12 - 17
Organic Yellow		7 - 9
Epoxy Resin	75 - 82	74 - 82

      Test the epoxy content of the epoxy resin in accordance with ASTM D1652 and calculate as the Weight per Epoxy Equivalent (WPE) for both white and yellow. Determine the epoxy content on a pigment free basis. The accepted epoxy content range (WPE) is ± 50 of the manufacturer's target value.

      Ensure the activator/curing agent meets the following requirements:

Test the amine value in accordance with ASTM D2074. Ensure the total amine value meets the manufacturer's target value with the acceptance range being ± 50 of the target value.

d. Tensile Strength: The tensile strength of the epoxy paint material, when tested in accordance with ASTM D638, will not be less than 6,000 psi after 72 hours cure at 73°F ± 5°F.

3. Polyurea Materials: The following requirements, in addition to those specified in Section II.B.1 of this special provision, will also apply when the Contractor elects to use polyurea pavement markings.

a. Composition: The polyurea pavement marking material will consist of 100% solid two part system formulated and designed to provide a simple volumetric mixing ratio of two components (part A and part B). No volatile or polluting solvents or fillers will be allowed.

Upon heating to application temperature, the material will not exude fumes which are toxic or injurious to persons or property.

b. Pigment: White polyurea coating materials will contain not less than 13% by weight rutile titanium dioxide (TiO_2), meeting ASTM D476. Yellow pigments will be an organic yellow and contain no heavy metals.

III. CONSTRUCTION REQUIREMENTS

A. Equipment for Durable Pavement Marking: Equipment furnished will be designed to apply the type of durable pavement marking material selected including reflecting elements or glass beads. The equipment will be capable of applying marking materials in a solid and intermittent line pattern, according to the details in the plans. The equipment will be capable of placing lines on the left and right sides. The left carriage will be capable of placing three lines simultaneously with each line in a solid or intermittent pattern in yellow or white, with each gun applying 4 to 8 inches wide. The equipment will be capable of accumulating the footage of marking applied per gun, individually, each day. Only material application will activate the footage accumulators. The readout will be digital and not adjustable. The equipment will accurately meter the two or more component materials. The equipment will produce and maintain the mixing head temperature, meeting the manufacturer’s specifications.

The equipment will be capable of applying reflective elements or glass beads in a pressurized system, synchronized with the spray guns, uniformly across the entire marking. All guns on the spray carriages will be in full view of the operator during operation.

The equipment in the striping train will be capable of displaying a left or right Type C sequential chevron. The Type C sequential chevrons will meet the current Manual on Uniform Traffic Control Devices (MUTCD) standard for minimum size, legible distance, number of elements, and other specifications. All traffic control items mounted on the equipment will be incidental to the other contract items. No separate payment will be made.

B. Grooving for Durable Pavement Marking: When specified in the plans, the Contractor will groove the pavement prior to applying the durable pavement marking in accordance with the following.

Grooving for durable pavement markings will not be allowed on bridge decks. All pavement markings on bridge decks will be surface applied. Unless otherwise specified in the plans, the Contractor will groove the surface for pavement markings as specified below:

The grooving will be performed within the following specifications and tolerances:

Description	Specification	Tolerance
Depth of Groove	Marking Thickness*[1] + 15 mils	+ 5 mils
Width of Groove	5 to 6 inches	± 1/8 inch
Length of Skip Lines*[2]	10 foot 6 inches	± 3 inch
Tapers at ends of lines	6 to 9 inches	
Between Double Lines	4 inches	± 1/2 inch

*[1] Marking thickness will include the thickness of marking material and reflective media.
*[2] Additional length may be required as specified in the plans.

The equipment will be capable of:

- grooving the total width of the groove in one pass or uniform depths with multiple passes
- grooving without causing damage to the pavement joints or joint sealant material
- providing uniform alignment and depth
- moving continuously to permit a mobile traffic work operation

If damage to joints, joint sealant material, backer rod, etc. occurs, the grooving operation will be stopped and modifications will be made to the grooving operation to prevent further damage. The Contractor may be required to use specially prepared circular diamond blade cutting heads to prevent damage at the joints. Damage caused to joints, the joint sealant material, backer rod, etc will be repaired or replaced by the Contractor, as directed by the Engineer. No additional payment will be made for the repair work or any reapplication of the pavement marking in the area of the repair.

The Contractor will establish a positive means for the removal of grooving residue. Solid residue will be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor will conduct this work to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or a nuisance to property owners. Residue from wet grooving will not be permitted to flow across traffic lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, will be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state.

The bottom of the groove will be uniform and free of loose material. The groove will be flat and of uniform depth for the entire width of the groove.

C. Surface Preparation for Pavement Marking: When specified in the plans, the Contractor will prepare the pavement surface prior to applying the durable pavement marking in accordance with the following.

In areas where the existing groove meets the required depth and existing markings are still in place, the Contractor will clean the existing groove without adding additional depth beyond the required depth for the new pavement marking, including reflective media as noted in Section III.B of this special provision.

The cleaning will result in the existing pavement marking being adequately scuffed, abraded, and removed by light grinding or abrasive blasting or both to allow proper adhesion of the new durable pavement marking as per manufacturer's recommendations to comply with product warranties.

Existing grooves not meeting the required depth will be re-grooved in accordance with Section III.B of this special provision to the required depth for the new pavement marking, including reflective media.

D. Seasonal Limitations: Pavement markings will only be placed between April 1 and October 31 (inclusive) unless the manufacturer recommends a more stringent seasonal limitation.

E. Application: Pavement markings will be placed in accordance with the details shown in the plans. Markings will not be applied over a longitudinal joint. Markings will not be applied when the wind or other conditions cause a film of dust to be deposited on the pavement surface before the material can be applied.

The Contractor will place necessary control points for striping and to indicate necessary starting and cutoff points.

The Contractor will use a vacuum truck to clean the pavement in the pavement marking areas unless otherwise specified in the plans. The Contractor will ensure a clean, dry pavement surface free of deleterious material. Cost for this work will be incidental to the contract unit price for durable pavement marking.

The final location of the pavement marking will be placed in the area of road way surface as prepared as per Section III.B or III.C of this special provision.

The material application will be immediately preceded by a minimum of 80 psi air blast. Placement of marking materials will be only on clean, dry pavement with air and pavement temperatures at least 40°F and rising and within the seasonal limitation dates listed above.

The Contractor will apply the durable pavement markings prior to the section being opened to traffic. If weather conditions or seasonal limits prevent placement of durable pavement markings, temporary pavement markings will be applied before the section is opened to traffic and then removed prior to durable pavement marking application at no additional cost to the Department.

Edge marking and lane lines on divided roadways will be applied in the direction of travel.

Tracking of applied pavement marking will not be allowed. The Contractor will adjust the pavement marking operation to prevent tracking. The “no-tracking” will be determined by passing over the line with a passenger car or pickup truck at a speed of 25 to 35 mph in a simulated passing maneuver. A line showing no visual deposition of the material to the pavement surface when viewed from a distance of 50 feet will be considered as showing “no-tracking” and conforming to the requirement for “no-track”.

During pavement marking operations on sections of roadway open to traffic, the Contractor will protect the markings from tracking.

All material heated over the manufacturer’s upper limit on temperature will be discarded.

F. Durable Pavement Marking Application Rates & Thickness: The pavement marking will be applied at the rate and thickness as recommended by the manufacturer. Pavement markings applied at a wet thickness less than 20 mils will not be accepted.

G. Wet-Reflective Optics and Glass Beads: Reflective elements and glass beads will be applied at a rate necessary for meeting the minimum levels of retroreflectivity. Application of wet-reflective optics and glass beads will be a double drop system. For application on epoxy pavement markings, the first drop will consist of a minimum of 4.2 lbs/gallon of reflective elements and the second

drop will consist of a minimum of 16 lbs/gallon of glass beads. For application on polyurea pavement markings, the first drop will consist of a minimum of 4.2 lbs/gallon of wet-reflective optics and the second drop will consist of a minimum of 7 lbs/gallon of glass beads.

Wet-reflective optics and glass beads will be applied immediately after the placement of the marking.

H. Application Tolerances:

- The length of the stripe will not vary more than plus or minus 3 inches from the plans requirement.
- The minimum width of the stripe will be its nominal width as required in the plans with 1/2 inch greater than nominal width allowed provided the variation is gradual and does not detract from the general appearance.
- The stripe will have the same general appearance and width in both daytime and nighttime conditions (no shadowing or shading).
- The length of a 40 foot cycle length (stripe and gap) will not vary more than 3 inches.
- The alignment from the plans requirement or existing markings will not vary more than plus or minus 1 inch in 200 feet.
- The maximum longitudinal deviation from the existing markings at the beginning of the painted roadway segment will not vary more than plus or minus 6 inches.
- Placement of cycle will coincide with the existing markings at each end of the project limits.

Any markings that are outside of these tolerances will be removed and replaced by the Contractor at no cost to the Department. Removal will be performed utilizing equipment that is not detrimental to the final surface, as required by the Engineer. Establishment of application tolerances will not relieve the Contractor of the responsibility to comply as closely as practicable with plan dimensions.

I. Retroreflectivity Testing General: Retroreflectivity testing will be completed in accordance with the plan notes.

If replacement of markings cannot be applied within the same year, the contractor will schedule subject work to be completed no later than June 15th in the following year. Upon replacement, the retroreflectivity testing process will be done again requiring new readings.

J. Retroreflectivity Requirements: The pavement markings will meet the following minimum retroreflectivity requirements.

Pavement Marking Color	Minimum Value
White	331 mcd/m2/lux
Yellow	206 mcd/m2/lux

K. Non-conformance: All pavement markings not conforming to the requirements of the contract will be considered under the provisions of Section 5.3 and may be required to be removed. Additional retroreflectivity readings will be taken by the Department to determine the limits of removal. The removal will be accomplished using suitable sand blasting or grinding equipment unless the Engineer authorizes other means. The removal process will remove at least 90% of the deficient line, with no excessive scarring of the existing pavement. The removal width will be one inch wider all around the nominal width of the pavement marking to be removed. Removal and replacement of the pavement markings will be at Contractor's expense, with no cost incurred by the Department.

IV. METHOD OF MEASUREMENT

A. Grooving for Durable Pavement Marking: Grooving will be measured to the nearest foot, along the length of the groove for the width of the grooving specified.

B. Grooving for Durable Pavement Marking Arrow: Grooving for durable pavement marking arrow will be measured by the count of each arrow type specified.

C. Grooving for Durable Pavement Marking Area: Grooving for durable pavement marking area will be measured to the nearest square foot.

D. Surface Preparation for Pavement Marking: Surface preparation for pavement marking will be measured to the nearest foot, square foot, or each as required by the respective contract item.

E. Durable Pavement Marking: Durable pavement markings, of the width and color specified, will be measured to the nearest foot.

F. Durable Pavement Marking Arrow: Durable pavement marking arrows will be measure by count of each type specified.

G. Durable Pavement Marking Area: Durable pavement marking areas will be measured to the nearest square foot.

V. BASIS OF PAYMENT

A. Grooving for Durable Pavement Marking: Grooving for durable pavement marking will be paid at the contract unit price per foot for the width of groove

specified. Payment will be full compensation for equipment, labor, materials, and all incidentals required.

B. Grooving for Durable Pavement Marking Arrow: Grooving for durable pavement marking arrow will be paid for at the contract unit price per arrow type specified. Payment will be full compensation for equipment, labor, materials, and all incidentals required.

C. Grooving for Durable Pavement Marking Area: Grooving for durable pavement marking area will be paid for at the contract unit price per each square foot. Payment will be full compensation for equipment, labor, materials, and all incidentals required.

D. Surface Preparation for Pavement Marking: Surface preparation for pavement marking will be at the contract unit price per foot, square foot, or each as required by the respective contract item. Payment will be full compensation for equipment, labor, materials, and all incidentals required.

E. Durable Pavement Marking: Cost for durable pavement marking will be paid at the contract unit price per foot for Durable Pavement Marking. Payment will be full compensation for all items necessary to complete the work including, but not limited to, all traffic control, equipment, labor, materials, and all incidentals required.

F. Durable Pavement Marking Arrow: Durable pavement marking arrows of the type specified will be paid for at the contract unit price per each. Payment will be full compensation for all items necessary to complete the work including, but not limited to, all traffic control, equipment, labor, materials, and all incidentals required.

G. Durable Pavement Marking Area: Durable pavement marking areas will be paid for at the contract unit price per square foot. Payment will be full compensation for all items necessary to complete the work including, but not limited to, all traffic control, equipment, labor, materials, and all incidentals required.

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