DEPARTMENT OF TRANSPORTATION

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October 26, 2023

ADDENDUM NO. 1

Re: **037-151 & 012-152, PCN i7CL & i7CM**
Brown & Edmunds Counties
Culvert Cleaning and Lining

TO WHOM IT MAY CONCERN:

PROPOSAL: Please destroy the Index of Special Provision and replace with the enclosed Index of Special Provision, revised 10-26-23. The Special Provision for Glass Reinforced Plastic (GRP) Ultraviolet Light (UV) Cured in Place Pipe (CIPP) Liner, dated 10-25-23 has been added and is enclosed with this addendum.

PLANS: No Changes

When sending in your sealed bid please state on the front of the envelope that Addendum No. 1 was received.

Sincerely,

DEPARTMENT OF TRANSPORTATION

_____
Mark Peterson
Region Engineer

cc: B. Schroeder C. Bennett Steen File

REV. 10-26-23

INDEX OF SPECIAL PROVISIONS

PROJECT(S): 037-151 & 012-152 PCN i7CL & i7CM

COUNTY(IES): Brown & Edmunds

TYPE OF WORK: CULVERT CLEANING AND LINING

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Plans for Project – Sheets 1 thru 10.

Special Provision Regarding Section 404 of the Clean Water Act, dated 10/20/23.

Fact Sheet #3.

SPECIAL PROVISION FOR GLASS REINFORCED PLASTIC (GRP) ULTRAVIOLET LIGHT (UV) CURED IN PLACE PIPE (CIPP) LINER, dated 10-25-23.

Special Provision for Acknowledgement and Certification Regarding Article 3, Section 12 of the South Dakota Constitution, dated 8/24/23.
Special Provision for Buy America, dated 1/20/23.
Special Provision for Liability Insurance, dated 4/21/22.
Special Provision for Responsibility for Damage Claims, dated 4/21/22.
Special Provision for Grass Seed Substitution, dated 2/9/23.
Special Provision for Restriction of Boycott of Israel, dated 1/31/20.
Special Provision for Contractor Administered Preconstruction Meeting, dated 12/18/19.
Fuel Adjustment Affidavit, DOT form 208 dated 7/15.
Standard Title VI Assurance, dated 3/1/16.
Special Provision For Implementation of Clean Air Act & Federal Water Pollution Control Act, dated 9/1/97.
Special Provision Regarding Minimum Wage on State Funded Projects, dated 10/24/19.
Wage and Hour Division US Department of Labor Washington DC.
- US Dept. of Labor Decision Number SD20230032, dated 3/10/23.
Special Provision for Supplemental Specifications to 2015 Standard Specifications for Roads and Bridges, dated 9/7/22.
Special Provision for Price Schedule for Miscellaneous Items, dated 4/5/23.

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STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
GLASS REINFORCED PLASTIC (GRP) ULTRAVIOLET LIGHT (UV) CURED IN PLACE PIPE (CIPP) LINER

PROJECT 037-151 & 012-152; PCN i7CL & i7CM
BROWN & EDMUNDS COUNTY

OCTOBER 25, 2023

I. DESCRIPTION

This work consists of rehabilitating existing drainage culverts by furnishing and installing Glass Reinforced thermosetting Plastic (GRP) Cured-in-Place Pipe (CIPP) liners using Ultraviolet (UV) cure methods.

II. MATERIALS

A. Tube Liner: Tube liner will consist of at least two separate tubes made of corrosion resistant (E-CR or equivalent) glass fibers according to ASTM D578 and ASTM F2019. Provide flexible liner tubing that exhibits the following characteristics.

- Constructed to withstand pulling and installation forces.
- Fabricated to a size that when installed, conforms to the internal circumference and length the of host pipe.
- Includes an impermeable inner and outer foil layer to contain resin migration and contamination.
- Do not include any material in the tube that may cause delamination in the CIPP.
- After installation the wall color of the interior pipe surface of CIPP is a light reflective color.
- Maximum cured thickness of liner not to exceed ½ inch for host pipes of 48” diameter and less.

Minimum Initial Liner Structural Properties

Property	Test Method	Minimum Value
Flexural Strength	ASTM D790	6,500
Flexural Modulus	ASTM D790	725,000
Tensile Strength	D3039/D3039M D638	9,000 9,000

As Per Table 1 of ASTM F2019.

B. Resin: Resins will meet the requirements of ASTM F2019, Section 5 for UV-light cured.

C. Slide Foil: A continuous heavy gauge plastic sheet for the purpose of covering the lower portion of the host pipe, protecting the liner during the pull in process.

III. DESIGN PARAMETERS

Follow the design considerations of ASTM F2019 and meet the following:

CONDITION	PARAMETER
Minimum Design Service Life	Greater than 50 years
Pipe Condition	Gravity Pipe - Fully Deteriorated*
Soil Load	120 lbs./Cu.Ft.
Live Load	AASHTO LRFD Article 3.6.1.2.6
Pipe Ovality[1]	Minimum 2% for RCP host pipe Minimum 3% for CMP host pipe
Minimum Factor of Safety	2.0
Inside Pipe Diameter	Refer to plan sheets
Pavement type	Refer to plan sheets**
Height of fill from invert to top of road	Refer to plan sheets
Height of Water above Top of Pipe	Top of pipe unless site conditions indicate higher

[1]The Contractor will be responsible for estimating the ovality of the host pipe. The values provided are the minimum to be used for design.

*Use Fully Deteriorated pipe condition, unless otherwise stated in plans.

**Use Flexible Pavement, unless otherwise stated in the plans.

Assume no bonding to host pipe wall.

Design the CIPP liner system to meet ASTM F1216, Appendix X1.

IV. CLOSED-CIRCUIT TELEVISION (CCTV) CAMERA

The CCTV camera will be mounted on a crawler. The crawler will be capable of traveling the entire length of the pipe culvert. If unable to travel through the pipe culvert due to an obstacle or large void, then the CCTV camera will be run from both ends of the pipe culvert as far as possible.

The CCTV camera will travel through the pipe culvert at a speed not exceeding 30 feet per minute.

Pipe culverts may need to be dewatered to allow for CCTV inspection.

The CCTV camera will be equipped with an accurate working footage counter that shows accurate distances on the video recordings.

The CCTV camera will have the ability to pan and tilt. Lighting for the CCTV camera will be suitable to allow a clear picture of the entire periphery of the pipe. The CCTV monitor and other components of the CCTV system will be capable of producing a clear color picture/CCTV image.

A DVD recording (or other Engineer approved method) of each CCTV camera inspection of each pipe culvert will be provided to the Engineer.

All defects such as holes, cracks, and open joints will be fully documented when doing the CCTV inspections.

V. CONTRACTOR QUALIFICATIONS

The Contractor will have qualified staff on the project during the CIPP installation process that meet the following requirements:

- Are certified by the Manufacturer of the CIPP product to be used on the project.
- Have at least 2 years of active experience in the installation and UV curing methods of CIPP according to ASTM F2019.
- Have a job supervisor for the CIPP installation crew who is assigned to the project full time during the CIPP installation and has at least 5 years of experience in the installation and UV curing methods of CIPP according to ASTM F2019.

Or

- Provide a manufacturer’s representative with at least three years’ experience with UV-GRP CIPP installation in pipes and has installed at least 10,000 feet of UV-GRP CIPP according to ASTM F2019. The Contractor is responsible to ensure the manufacturer’s representative is on-site during the first 5 CIPP installations. When the representative is not on-site, provide the telephone number of a manufacturer’s representative who is available on a 24-hour basis throughout the Project duration.

VI. SUBMITTALS

Submit the following to the Area Engineer at least 14 Calendar Days before the preconstruction meeting:

- Certification by the lining system manufacturer that the installation contractor is approved by the CIPP manufacturer to install the liners.
- Documentation of Contractor staff members that will be on project that meet the Contractor Qualifications listed above.
- Manufacturer's technical data showing complete information on material composition, structural properties, and dimensions of system components of the tube and resin system. Include manufacturer's recommendation for handling and storage.
- Independent third-party certification of test results confirming that the CIPP liner system meets the minimum chemical resistance requirements and initial structure properties according to ASTM F2019.
- Detailed installation plan describing project staging, liner shot plan and sequence, and the manufacturer’s standard procedures for liner installation. Include installation pressures, allowable curing temperatures, temperature monitoring plan, and speed of the UV light train for proper curing of the installed liner.
- End seal material to be used, and method of installation. Hydraulic cements and quick-set cement products are not acceptable.
- Provide copy of engineering drawing and design calculations for each location, signed and sealed by a Professional Engineer registered in the state of South Dakota. At a minimum, design calculations will include all the items listed above under MATERIALS Structural Properties and DESIGN PARAMETERS.

VII. CONSTRUCTION REQUIREMENTS

Field verify pipe inside diameter(s) throughout the pipe, length(s), alignment, material and condition of the host pipe prior to ordering liner material and construction. Handle and store all liner material to ensure that the material is not torn, cut, exposed to direct sunlight or otherwise damaged.

The host pipe will be thoroughly cleaned using a high-pressure water jet or hydro-mechanical methods. The cleaning method will produce a clean, sound surface that demonstrates no evidence of loose material, debris or contaminates. The host pipe will be cleaned just prior to insertion of the CIPP liner. The Contractor will implement appropriate sediment control measures prior to cleaning in order to prevent discharges from the project boundaries to comply with the Storm Water Permit.

Material removed from the pipe culverts will become the property of the Contractor for disposal.

Host pipe inspection will be completed with a CCTV camera. A DVD recording (or other Engineer approved method) of the inspection will be provided to the Engineer. The inspection will determine the suitability of the liner for the host pipe including such items as the horizontal and vertical alignments, location of gaps in the joints and pipe damage. The Engineer will be notified if any pipe sections are impassible, or the pipe cannot be lined.

Any intrusions into the pipe will be cut or ground off flush with the host pipe interior wall before installing the liner. Cut off existing pipe tie bolts flush with the nut or as per the manufacturer's recommendation, if manufacturer's recommendations are more stringent.

Control groundwater infiltration that will interfere with installation of the CIPP liner. Dewatering may be necessary. Host pipe will be in a dry condition as prescribed by the CIPP liner manufacturer.

Prior to inserting the CIPP liner, a slide foil protector will be pulled into the host pipe to protect the CIPP liner from damage, during the pull in process.

Installation of the liner into the host pipe will be in accordance with ASTM F2019.

CCTV camera will be located on the ultraviolet light assembly to view that the liner is properly inflated and identify any liner problems before curing begins.

The cured CIPP liner will be continuous over the entire length of an installation run and be free of material defects. The lining will be impervious and free of any leakage from the pipe to the surrounding ground or from the ground to inside the lined pipe.

Trim the liner to length according to the manufacturer's recommendations. The liner will provide a smooth transition taper at each end of the pipe. There will not be any gaps between the liner and the host pipe. The ends will be sealed providing a watertight seal between the host pipe and the CIPP liner.

CIPP inspection will be completed with a CCTV crawler after the liner has been cured. A DVD recording (or other Engineer approved method) of the inspection will be provided to the Engineer.

Defects which will or could affect the structural integrity, strength, capacity, or future maintenance of the installed CIPP liner will be repaired at the Contractor's expense, in a manner approved by the Engineer.

VIII. METHOD OF MEASUREMENT

A. Cleanout for Culvert Treatment: Cleanout for Culvert Treatment will be measured by the number of complete culverts that are cleaned.

B. Cured In Place Pipe: Cured in Place Pipe will be measured along the centerline of the pipe to the nearest 1 foot.

IX. BASIS OF PAYMENT

A. Cleanout for Culvert Treatment: Cleanout for Culvert Treatment will be paid for at the contract unit price per each. Payment will be full compensation for cleaning, disposal of removed materials, initial CCTV camera inspection, labor, equipment, and incidentals necessary.

B. Cured In Place Pipe: Cured in Place Pipe will be paid for at the contract unit price per foot for the various size specified. Payment will be full compensation for dewatering, host pipe preparation, slide foil, CIPP liner material, installation, curing, CCTV camera inspection of finished liner, labor, equipment, and incidentals necessary.

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