

August 19, 2024

**ADDENDUM NO. 1**

**RE: Item #3, August 21, 2024 Letting - IM 0901(200)1, PCN 07D3, Lawrence County - Polymer Chip Seal, Joints, Approach Slab Repair**

**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 attached Index of Special Provisions revised 8/19/24.

Please remove the "Special Provision for Contract Time", dated 7/8/24 and replace with the "Special Provision for Contract Time", dated 8/19/24.

Please remove the "Special Provision for High Friction Surface Treatment", dated 3/1/24 and replace with the "Special Provision for High Friction Surface Treatment", dated 8/15/24.

**SDEBS BID PROPOSAL:** *The electronic bid proposal for this contract has been revised to include the changes associated with this addendum. Bidders must log in to the SDEBS to retrieve and incorporate these changes into their bid.*

**Bid Items were added:**

- Bid Item 634E0525 "Linear Delineation System Panel, Barrier Mounted"
- Bid Item 634E0700 "Traffic Control Movable Concrete Barrier"
- Bid Item 634E0750 "Temporary Concrete Barrier End Protection"
- Bid Item 634E0755 "Remove and Reset Temporary Concrete Barrier End Protection"
- Bid Item 634E0760 "Temporary Concrete Barrier End Protection Module Set or Repair Kit"
- Bid Item 634E1002 "Detour and Restriction Signing"

**Quantities for Bid Items were changed:**

- Bid Item 491E0005 "Two Coat Bridge Deck Polymer Chip Seal" changed from 4,736.4 to 4,768.8 SqYd
- Bid Item 491E0110 "Abrasive Blasting of Bridge Deck" changed from 5,328.5 to 5,360.9 SqYd
- Bid Item 491E0120 "Bridge Deck Grinding" changed from 5,328.5 to 5,360.9 SqYd
- Bid Item 634E0010 "Flagging" changed from 200 to 2,000 Hour

**Bid Items were removed:**

- Bid Item 634E1260 "Truck/Trailer Mounted Attenuator"

**PLANS:** Please destroy sheets 2, 3, 7, 33, 44, 55, 67, 79, 86, 93, 114, 121, 123, 126, 127, 130-132, 150, 152, 155, 156 and 159-161 and replace with the enclosed sheets, dated 8/9/24, 8/15/24, 8/16/24 & 8/19/24. Sheets 7A, 22A, 22B, 22C, 23A, 132A & 161A were added.

**Sheet 2: Bid Items were added:**

Bid Item 634E0525 "Linear Delineation System Panel, Barrier Mounted"  
Bid Item 634E0700 "Traffic Control Movable Concrete Barrier"  
Bid Item 634E0750 "Temporary Concrete Barrier End Protection"  
Bid Item 634E0755 "Remove and Reset Temporary Concrete Barrier End Protection"  
Bid Item 634E0760 "Temporary Concrete Barrier End Protection Module Set or Repair Kit"  
Bid Item 634E1002 "Detour and Restriction Signing"

**Quantities for Bid Items were changed:**

Bid Item 634E0010 "Flagging" changed from 200 to 2,000 Hour

**Bid Items were removed:**

Bid Item 634E1260 "Truck/Trailer Mounted Attenuator"

**Sheet 3: Structure No. 41-214-098 & Structure No. 41-214-099**

**Bid Items were added:**

Bid Item 491E0005 "Two Coat Bridge Deck Polymer Chip Seal"  
Bid Item 491E0110 "Abrasive Blasting of Bridge Deck"  
Bid Item 491E0120 "Bridge Deck Grinding"

**Sheet 7: TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS, TEMPORARY CONCRETE BARRIER END PROTECTION, BARRIER MOUNTED LINEAR DELINEATION SYSTEM PANELS notes and ITEMIZED LIST FOR OVERWIDTH DETOUR SIGNING table were added. TRUCK/TRAILER MOUNTED ATTENUATOR note was removed. Note placement was adjusted.**

**Sheet 7A: Sheet was added due to note placement adjustment of Sheet 7.**

**Sheet 22A: TRAFFIC CONTROL MOVABLE CONCRETE BARRIER LAYOUT sheet was added.**

**Sheet 22B: WIDTH RESTRICTION SIGN DETAILS sheet was added.**

**Sheet 22C: TRAFFIC CONTROL OVERWIDTH DETOUR LAYOUT sheet was added.**

**Sheet 23A: Standard Plate 628.01 was added.**

**Sheets 33, 44, 55, 67, 79, 86, 93, 114: BRIDGE DECK GRINDING note was added.**

**Sheets 121 & 150: Bid Items were added:**

Bid Item 491E0005 "Two Coat Bridge Deck Polymer Chip Seal"  
Bid Item 491E0110 "Abrasive Blasting of Bridge Deck"  
Bid Item 491E0120 "Bridge Deck Grinding"

**Sheets 123 & 152: TWO COAT BRIDGE DECK POLYMER CHIP SEAL and BRIDGE DECK GRINDING notes were added.**

**Sheets 126, 127, 155 & 156: 5-Bolt Insert Assembly details were revised/added.**

**Sheets 130-132 & 159-161:** Two Coat Bridge Deck Polymer Chip Seal details added. ESTIMATED QUANTITIES revised to include two coat bridge deck polymer chip seal quantities.

**Sheet 132A & 161A:** Standard Plate 630.92 was added.

Sincerely,

Sam Weisgram  
Engineering Supervisor

SW/cj

CC: Todd Seaman, Rapid City Region Engineer  
Mike Carlson, Rapid City Area Engineer

REV 3/28/24

INDEX OF SPECIAL PROVISIONS

PROJECT NUMBER(S): IM 0901(200)1

PCN: 07D3

TYPE OF WORK: POLYMER CHIP SEAL, JOINTS, APPROACH SLAB REPAIR

COUNTY: LAWRENCE

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.

Jonathan England is the official in charge of the Spearfish Career Center for Lawrence County.

**THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:**

**Special Provision for Contract Time, dated 8/19/24.**

**Special Provision for High Friction Surface Treatment, dated 8/15/24.**

Special Provision for Acknowledgment and Certification Regarding Article 3, Section 12 of the South Dakota Constitution, dated 8/24/23.

Special Provision for Buy America, dated 5/1/24.

Special Provision for Liability Insurance, dated 4/21/22.

Special Provision for Responsibility for Damage Claims, dated 4/21/22.

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 Disadvantaged Business Enterprise, dated 2/9/24.

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 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 12/6/23.



**STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION  
FOR  
CONTRACT TIME**

**PROJECT IM 0901(200)1, PCN 07D3  
LAWRENCE COUNTY**

**AUGUST 19, 2024**

---

**March 31, 2025 Work Restriction**

The Contractor will not begin any work on the project unless otherwise approved by the Engineer prior to March 31, 2025.

**Sturgis Motorcycle Rally Restrictions**

The Contractor will open all lanes to unimpeded traffic and the Department will not allow work on the project from July 26, 2025 to August 10, 2025 (inclusive) due to the Sturgis Motorcycle Rally.

The Department will make a disincentive assessment in the amount of \$1,000 per calendar day for the Contractor's failure to comply with the Sturgis Motorcycle Rally restrictions. A contract item for incentive/disincentive pay is included in the bid schedule for the Department's use in assessing disincentive. The Department will use a negative quantity of days for assessing disincentives. The Department will not grant time extensions for the Sturgis Motorcycle Rally restrictions for any reason.

**Site Specific Working Day Count Requirements**

The Department will count and track working days and possible disincentive for each location separately in accordance with the following.

### **Location #5 - Structure No. 41-092-059 Working Day Completion Requirement**

The Contractor will complete all work at the Location #5 - Structure No. 41-092-059 portion of the project within 10 working days. The Department will begin to count working days when the Contractor closes the road to through traffic. The Department will count working days continuously until all work is complete at this location.

If the Contractor does not complete the work within the working day completion requirement, the Department will make a disincentive assessment in the amount of \$500 per working day. A contract item for incentive/disincentive pay is included in the bid schedule for the Department's use in assessing disincentive. The Department will use a negative quantity of days for assessing disincentives. The Department will count working days in accordance with Section 8.6 C.

### **Location #6 - Structure No. 41-214-098 and 41-214-099 Working Day Completion Requirement**

The Contractor will complete all work at the Location #6 - Structure No. 41-214-098 and 41-214-099 portion of the project within 50 working days. The Department will begin to count working days when the Contractor closes the road to through traffic. The Department will count working days continuously until all work is complete at this location.

If the Contractor does not complete the work within the working day completion requirement, the Department will make a disincentive assessment in the amount of \$500 per working day. A contract item for incentive/disincentive pay is included in the bid schedule for the Department's use in assessing disincentive. The Department will use a negative quantity of days for assessing disincentives. The Department will count working days in accordance with Section 8.6 C.

### **Field Work Completion**

The Contractor will complete the project by the October 31, 2025 field work completion date.

### **Failure to Complete on Time**

The Contractor will complete all work on the project prior to the field work completion requirement or the field work completion requirement as amended by formally approved time extension. If the Contractor does not complete all work by the field work completion requirement or the field work completion requirement as amended by formally approved time extension, the Department will assess liquidated damages in accordance with Section 8.8. The Department will assess liquidated damages for each working day the work (project) is late until the Contractor completes all field work.

In the event the Contractor does not complete all field work on time, the Department will count working days in accordance with Section 8.6 C.

**Expected Adverse Weather Days**

The Department has provided Attachment 1 for information purposes only as a guide to bidders. This table depicts the typical number of adverse weather days expected for any given month, based on historical records. The Department will consider this project a structural project in Zone 3.

The Department will consider expected adverse weather days cumulative in nature over the time period when the Contractor is actively pursuing completion of the work. The Department will not consider adverse weather days during an extended period of time when the Contractor is not pursuing completion of the work. When considering a time extension for working day count completion or field work completion of the project, the Engineer will compare the total number of expected adverse weather days against the total number of actual adverse weather days for the time period during which the work was being completed.

\* \* \* \* \*

# ATTACHMENT 1

Figure A - Expected Adverse Weather Days for South Dakota

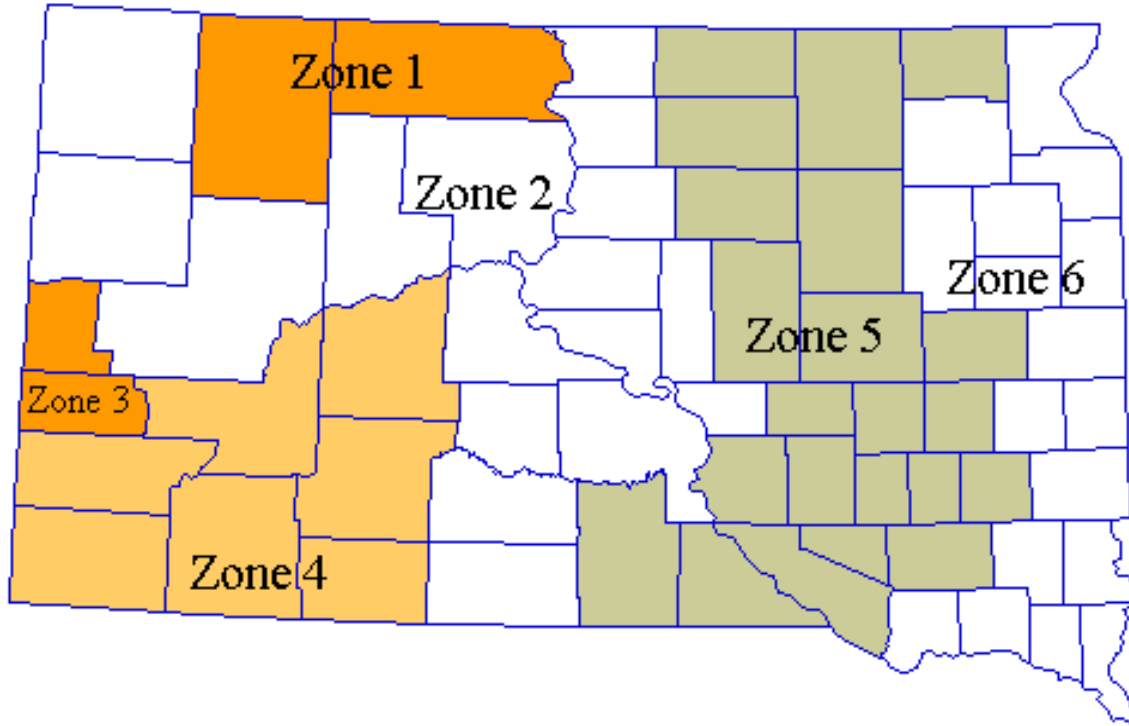


Table 1 - Expected Adverse Weather Days for South Dakota

	Grading Projects						Surfacing and Structural Projects					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Jan	18	18	16	16	22	24	18	18	15	16	21	23
Feb	19	18	12	14	19	21	19	18	12	14	19	21
Mar	12	10	9	8	11	13	12	10	9	8	10	12
Apr	6	5	8	5	6	6	5	4	6	4	4	4
May	6	6	8	6	6	6	5	5	6	4	4	5
Jun	7	6	7	6	7	8	5	5	5	4	5	6
Jul	5	5	6	5	6	7	4	4	5	3	4	5
Aug	4	4	5	4	5	6	3	3	4	3	4	4
Sep	3	3	4	3	4	5	2	2	3	2	3	4
Oct	4	3	5	3	4	4	3	3	4	2	3	3
Nov	11	9	8	7	10	12	11	9	8	7	10	11
Dec	21	19	15	14	20	22	21	19	15	14	20	22

NOTE: Includes Holidays and Weekends.

**STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION  
FOR  
HIGH FRICTION SURFACE TREATMENT**

**PROJECT IM 0901(200)1, PCN 07D3  
LAWRENCE COUNTY**

**AUGUST 15, 2024**

---

**I. DESCRIPTION**

This work consists of construction of a High Friction Surface Treatment (HFST) using calcined bauxite aggregate bound with an epoxy resin binder.

**II. MATERIALS**

**A. Epoxy Resin Binder:** The epoxy resin binder will consist of a two-part resin binder/compound which holds the calcined bauxite aggregate firmly in position. The epoxy resin binder will conform to the requirements of Table 1. The epoxy resin binder will be certified to meet the requirements of Table 1. The certification will contain test results dated no more than 2 years prior to the anticipated application season from an accredited laboratory for the properties listed in Table 1 meeting the applicable requirements. The Contractor will submit the certification for approval by the Engineer and the Manufacturer's recommended mixing ratio a minimum of 14 days prior to beginning the test section.

**Table 1**

<b>Physical Requirements for Low Modulus Epoxy</b>		
<b>Property</b>	<b>Requirements</b>	<b>Test Method</b>
Viscosity	1500-3000 Centipoise*	ASTM D2556-11 Spindle and speed selection based on ASTM D2556-11
Gel Time	10 minutes minimum	ASTM C881/M 235
Compressive Modulus 7 days	130,000 psi max	ASTM D695
Compressive Strength 24 hours	3,000 psi min	ASTM C579 Test Method B
Tensile Strength 7days	2,000-5,000 psi	ASTM C881/M 235
Tensile Elongation	40% min	ASTM C881/M 235
Absorption	1.0% max	ASTM C881/M 235
Type D Hardness	60-80	ASTM D2240 Cure specimen for 7 days± 6 hours
Thermal Compatibility	PASS	ASTM C884

\*Epoxies with low viscosities may be unsuitable for some heated mechanical applications.

**B. Calcined Bauxite Aggregate:** The material will be clean, dry, free from foreign matter, and conform to the requirements in Table 2. The Contractor will deliver the calcined bauxite aggregate to the construction site in clearly labeled sealed containers. The calcined bauxite aggregate will be certified to meet the requirements of Table 2. The certification will contain the test results dated no more than 2 years prior to the anticipated application season from an accredited laboratory for the properties listed in Table 2. The Contractor will submit the certification for approval by the Engineer a minimum of 14 days prior to beginning the test section.

**Table 2**

<b>Calcined Bauxite Aggregate Requirements</b>		
<b>Property</b>	<b>Requirements</b>	<b>Test Method</b>
Gradation	100.0% Passing #4 95.0% - 100.0% Passing #6 0.0% - 5.0% Passing #16 0.0% - 0.2% Passing #30	AASHTO T 27
Moisture Content	0.2% Maximum	AASHTO T 255
Aluminum Oxide	87% Minimum	ASTM C25
Resistance to Degradation	20% Maximum	AASHTO T 96

### III. CONSTRUCTION REQUIREMENTS

#### A. General:

1. **Quality Control (QC) Plan:** The Contractor will submit a QC plan to the Engineer for approval at least 14 days prior to the placement of the HFST. The QC plan will show proposed methods to control the equipment, materials, mixing, and placement operations to ensure conformance with these specifications. The Contractor will discuss the QC plan at the preconstruction meeting and as requested by the Engineer.

At a minimum, the QC plan will contain the following:

- a. Key Personnel and Contact Information.
  - 1) The QC plan will designate a plan administrator, who will have full authority to institute any action necessary for the successful operation of the plan. The plan administrator will be available on the jobsite within one hour after being notified of a concern.
  - 2) A field technician will be present at the job site unless otherwise approved in the QC plan. The technician will be responsible for the required field quality control sampling and testing in conformance with the approved QC plan and contract documents. The Contractor will maintain and make available upon request complete records of sampling, testing, actions taken to correct problems, and quality control inspection results. Any deviation from the approved QC plan, without Engineer approval, will be cause for immediate suspension of operations.
- b. Epoxy resin binder production plants, locations of plant, personnel qualifications, inspection and record keeping methods, equipment calibration records, accreditation certificates, and minimum frequencies of sampling and testing per Table 1.
- c. Calcined Bauxite aggregate production plant locations, personnel qualifications, inspection and record keeping methods, equipment calibration records, accreditation certificates, and minimum frequencies of sampling and testing per Table 2.
- d. Calcined Bauxite aggregate storage and moisture control methods.
- e. Cleaning and maintenance procedures and schedule for mixing and application equipment. The cleaning and maintenance procedures and schedule will contain the equipment manufacturer's recommendations for maximum allowable time the epoxy resin binder may remain in the

application equipment before cleaning of the mixer and application system is required.

- f. Corrective actions that will be taken for unsatisfactory construction practices.
2. **Weather Limitations:** The Contractor will not apply the epoxy resin binder material on wet surfaces (including condensation moisture from construction vehicles in front binder application), when the ambient air and pavement surface temperature is less than 55°F or above 105°F, or when the anticipated weather conditions or pavement surface temperature would prevent the proper application of the surface treatment in accordance with the manufacturer's recommendations.
  3. **Seasonal Limitations:** HFST will only be applied within the seasonal limitation of May 1 to October 15 (inclusive).
  4. **Manufacturer's Representative:** A manufacturer's representative must be present on the jobsite for a minimum of the first two full production days of HFST application.

The manufacturer's representative will provide the Engineer and the Contractor with a copy of the written recommendations, technical data sheet, and product safety data sheet. In addition, the Contractor will make a product safety data sheet available to anyone who will be exposed to the epoxy resin binder materials.

5. **Fully-Automated Continuous Application:** The contractor will apply the epoxy resin binder by a truck or trailer mounted application machine that continually mixes, meters, monitors, and delivers the binder components on demand in varying widths up to 12 feet wide at a minimum uniform thickness of 60 mils. Squeegee application of the epoxy resin will not be permitted except as specified for hand applications in accordance with Section III.A.6. The application equipment must utilize continuous pumping and proportioning devices that blends the binder components within a controlled system per the manufacturer's specifications (+/- 2% by volume). The epoxy resin binder must be continuously applied once blended. The application equipment must have an independent recirculating heating system capable of heating the epoxy resin binder per manufacturer's specifications.

The continuous application equipment will utilize an aggregate distribution system capable of mechanically placing aggregate at an application rate of 13 lbs./SY, within 30 seconds of the epoxy resin binder, and from a maximum height of 12 inches into the wet epoxy resin binder evenly across the full width of the installation. Hand application of the aggregate will only be allowed in accordance with Section III.A.6. No exposed "wet" spots of



the epoxy resin binder will be visible once the aggregate is installed. The Contractor will ensure no seams are visible in the middle of the traffic lanes of the finished work after application of the HFST calcined bauxite aggregate.

The Contractor will not allow the mixed epoxy resin binder to separate, cure, dry, be exposed, or harden which may impair retention and bonding of the calcined bauxite aggregate.

The application equipment must be equipped with a built-in data management unit producing real time data providing the following information to the Engineer:

1. The volume of mixed epoxy resin binder per SY being applied
2. The rate of aggregate being applied in lbs./SY
3. The mixed epoxy resin binder mil thickness on average throughout the application width per SY
4. The ambient air and pavement surface temperature during the application period

- 6. Hand Application:** Hand application may be used for areas less than 300 yd<sup>2</sup>. For hand applications, the Contractor will mix the epoxy resin binder components to the correct proportion within 4% by weight using a low speed high torque drill fitted with a helical stirrer. The Contractor will mechanically spray or squeegee the polymeric resin binder over the application surface area. The Contractor will use spiked shoes for all walking, standing, or any other form of foot contact with the polymeric resin binder prior to the application of the calcined bauxite aggregate. The Contractor will apply the epoxy resin binder in the number of layers (minimum of one) recommended by the manufacturer. The application rates of the polymeric resin binder in the various layers shall be as recommended by the manufacturer in order to achieve an average application thickness of 60 mils on the surface.

The Contractor will sprinkle or vertically drop the calcined bauxite aggregate resulting in a minimum coverage rate of 13 lbs./yd<sup>2</sup> without splashing or disrupting the leveling of the “wet” epoxy resin binder during placement, whether by mechanical or manual means.

- 7. Test Section:** The Contractor will construct a test section (minimum of 200 yd<sup>2</sup>, maximum of 500 yd<sup>2</sup>) at a self-determined location to demonstrate equipment has been properly calibrated a minimum of 24 hours prior to beginning the project, unless a shorter time period is approved and the finished surface is satisfactory to the Engineer. If the project site is used for the test section, the Contractor will open the test section to traffic after curing has completed, and no uncovered epoxy resin binder remains exposed. The Contractor will correct deficient areas before opening to traffic as directed by the Engineer at no additional cost. At the completion of the

test section, the Contractor will demonstrate the application equipment cleaning procedures.

**B. Portland Cement Concrete Pavement and Bridge Approach Slab Preparation and HFST Application:**

- 1. Preparation:** Surfaces must be clean, dry, and free of all dust, oil, debris and any other material that might interfere with the bond between the epoxy resin binder material and existing surfaces. Adequate cleaning of all surfaces will be determined by the Engineer. The Contractor will remove pavement markings and delineation within the area to receive HFST prior to placing epoxy resin binder.

The Contractor will prepare the surface receiving a HFST in accordance with the following.

- a. Abrasive Blasting of PCC Pavement:** The entire surface will be thoroughly shot blasted to approximately an International Concrete Repair Institute (ICRI) concrete surface profile CSP-5 (medium shot blast) to remove all foreign materials which may interfere with the bonding or curing of the HFST. The shot blasting will remove all surface laitance and will expose the coarse aggregate to the satisfaction of the Engineer. Small areas where shot blasting is unable to be performed (curb lines, etc.) will be cleaned by abrasive blast cleaning to the satisfaction of the Engineer.

Upon completion of the shot blasting and abrasive blasting, the entire surface will be blown clean with dry compressed air to remove all dust and debris.

Cleaning by shot blasting, abrasive blasting, and compressed air will be done no more than 24 hours prior to the placement of the HFST. In the event the HFST is not placed within 24 hours of shot blasting and abrasive blast cleaning or in the event of rain or other inclement weather contaminating the surface, the surface will be re-cleaned by abrasive blast cleaning and dry compressed air.

- b. Grinding PCC Pavement:** The entire surface will be ground prior to placement of a HFST.

The Contractor will accomplish grinding with specially prepared circular diamond blades mounted on a horizontal shaft on a self-propelled machine designed for grinding and texturing pavement. The equipment will be operated in such a manner that it will not damage the underlying surface. Grinding equipment that causes ravels, aggregate fractures, or spalls will not be allowed to continue.

The grinding will be performed in the longitudinal direction. The grinding will result in a parallel corduroy texture consisting of grooves between 0.090 and 0.130 inches wide. The distance between the grooves will be between 0.060 and 0.125 inches. The peaks of the ridges will not be greater than 1/16 inch higher than the bottom of the grooves. The grinding will be uniform and will follow the existing profile of the pavement surface. The grinding process will not introduce dips and bumps that did not previously exist on the surface or in any way decrease the existing ride quality.

The Contractor will day light grinding to the outside edge of the pavement. The Contractor will repair and replace joint sealant damaged by corrective grinding as directed by the Engineer and at no additional cost to the Department. The Contractor will not leave ground areas smooth or polished. The Contractor will ensure ground areas have a uniform texture equal in roughness to the surrounding unground concrete.

The Contractor will establish a positive means for the removal of the grinding 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 nuisance to property owners. Residue from wet grooving will not be permitted to flow across 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.

Only equipment required for the application of the HFST will be allowed on any portion of the surface which has been cleaned and prepared for application of the HFST. If equipment is used on the cleaned and prepared surface, the area will be protected from contamination with plastic.

Surfaces may need to be washed with a mild detergent, rinsed, and dried using a hot compressed air lance.

2. **HFST Application:** The Contractor will apply the HFST on Portland cement concrete pavements and bridge approach slabs in accordance with the following.
  - a. **Epoxy Resin Binder Application Requirements:** The Contractor will apply the two-part modified epoxy resin binder onto the surface to be treated within the temperature range specified and in accordance with Section III.A of this special provision.

- b. Calcined Bauxite Aggregate Application Requirements:** The Contractor will apply the calcined bauxite aggregate in accordance with Section III.A of this special provision.
- c. Curing and Clean Up:** The Contractor will allow the HFST to cure in accordance with the epoxy resin binder manufacturer's recommendations (3 hours maximum at an ambient air temperature of at least 75°F). The Contractor will clean up the HFST by removing the excess calcined bauxite aggregate on the treated area and adjacent areas with raveled calcined bauxite aggregate. The Contractor will perform the clean-up prior to opening the section to traffic. The Contractor may reuse excess HFST calcined bauxite aggregate. In order to reuse the reclaimed excess HFST calcined bauxite aggregate, the Contractor must reclaim the excess HFST calcined bauxite aggregate with a mechanical sweeper. The recovered calcined bauxite aggregate must be clean, uncontaminated, and dry. The Contractor will perform street sweeping before placing pavement markings. Temporary or permanent pavement markings must be in place prior to opening lanes to traffic. At least 3 days but not more than 5 days following opening the application area to through traffic, the Contractor will perform additional clean-up of the application area to remove all aggregate shed from the application site by traffic. The Contractor will perform this clean up by sweeping the surface with equipment meeting the requirements of Section 4.5 of the specifications.

### **C. Asphalt Concrete Pavement Preparation and HFST Application:**

- 1. Preparation:** Surfaces must be clean, dry, and free of all dust, oil, debris and any other material that might interfere with the bond between the epoxy resin binder material and existing surfaces. Adequate cleaning of all surfaces will be determined by the Engineer. The Contractor will remove pavement markings and delineation within the area to receive HFST prior to placing epoxy resin binder.

The Contractor will prepare the surface receiving a HFST in accordance with the following.

- a. Abrasive Blasting of Asphalt Concrete:** The Contractor will clean existing surfaces without the use of dust suppression water, or by other methods approved by the manufacturer and the Engineer. When recommended by the manufacturer and approved by the Engineer, surfaces may be washed with a mild detergent, rinsed, and dried using a hot compressed air lance.

The entire asphalt concrete surface will be thoroughly shot blasted to approximately an International Concrete Repair Institute (ICRI) concrete surface profile CSP-5 (medium shot blast) to remove all foreign materials and to remove any surface oil coating the aggregate which may interfere with the bonding or curing of the HFST. The shot blasting will remove all surface laitance and will expose the coarse aggregate to the satisfaction of the Engineer. Small areas where shot blasting is unable to be performed (curb lines, etc.) will be cleaned by abrasive blast cleaning to the satisfaction of the Engineer.

Upon completion of the shot blasting and abrasive blasting, the entire surface will be blown clean with dry compressed air to remove all dust and debris.

Cleaning by shot blasting, abrasive blasting, and compressed air will be done no more than 24 hours prior to the placement of the HFST. In the event the HFST is not placed within 24 hours of shot blasting and abrasive blast cleaning or in the event of rain or other inclement weather contaminating the surface, the surface will be re-cleaned by abrasive blast cleaning and dry compressed air.

- b. Grinding Asphalt Pavement:** The entire surface will be ground prior to application of the HFST.

The Contractor will accomplish grinding with specially prepared circular diamond blades mounted on a horizontal shaft on a self-propelled machine designed for grinding and texturing pavement. The equipment will be operated in such a manner that it will not damage the underlying surface. Grinding equipment that causes ravels, aggregate fractures, or spalls will not be allowed to continue.

The grinding will be performed in the longitudinal direction. The grinding will result in a parallel corduroy texture consisting of grooves between 0.090 and 0.130 inches wide. The distance between the grooves will be between 0.060 and 0.125 inches. The peaks of the ridges will not be greater than 1/16 inch higher than the bottom of the grooves. The grinding will be uniform and will follow the existing profile of the pavement surface. The grinding process will not introduce dips and bumps that did not previously exist on the surface or in any way decrease the existing ride quality.

The Contractor shall establish a positive means for the removal of grinding residue. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. The Contractor shall 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 grinding shall 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, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state.

Only equipment required for the application of the HFST will be allowed on any portion of the surface which has been cleaned and prepared for application of the HFST. If equipment is used on the cleaned and prepared surface, the area will be protected from contamination with plastic.

Surfaces may need to be washed with a mild detergent, rinsed, and dried using a hot compressed air lance.

2. **Asphalt Concrete Pavements HFST Application:** HFST installation will not be permitted within the first 30 days following any new asphalt concrete paving. The Contractor will apply the HFST on asphalt pavements in accordance with the following.
  - a. **Epoxy Resin Binder Application Requirements:** The Contractor will apply the two-part modified epoxy resin binder onto the surface to be treated within the temperature range specified and in accordance with Section III.A of this special provision.
  - b. **Calcined Bauxite Aggregate Application Requirements:** The Contractor will apply the calcined bauxite aggregate in accordance with Section III.A of this special provision.
  - c. **Curing and Clean Up:** The Contractor will allow the HFST to cure in accordance with the epoxy resin binder manufacturer's recommendations (3 hours maximum at an ambient air temperature of at least 75°F). The Contractor will clean up the HFST by removing the excess calcined bauxite aggregate on the treated area and adjacent areas with raveled calcined bauxite aggregate. The Contractor will perform the clean-up prior to opening the section to traffic. The Contractor may reuse excess HFST calcined bauxite aggregate. In order to reuse the reclaimed excess HFST calcined bauxite aggregate, the Contractor must reclaim the excess HFST calcined bauxite aggregate with a mechanical sweeper. The recovered calcined bauxite aggregate must be clean, uncontaminated, and dry. The Contractor will perform street sweeping before placing pavement markings. Temporary or permanent pavement markings must be in place prior to opening lanes to traffic. At least 3 days but not more than 5 days following opening the application area to through traffic, the Contractor will perform additional clean-up of the application area to remove all aggregate shed from the application site by traffic. The Contractor will

perform this clean up by sweeping the surface with equipment meeting the requirements of Section 4.5 of the specifications.

- B. Field Acceptance Testing:** The Contractor will ensure the coverage rate of the retained calcined bauxite aggregate is a minimum of 13 lbs./yd<sup>2</sup>. The Contractor will remove and reapply HFST where any patches of exposed epoxy resin binder exist, at no additional cost. The Contractor will perform testing in accordance with Table 3 between 60 and 90 days after installation.

**Table 3**

<b>Field Acceptance Testing Requirements</b>			
<b>Property</b>	<b>Requirements</b>	<b>Frequency</b>	<b>Test Method</b>
FN40R (Corrected field FN by adding the correction in Table 4)	65 Minimum	Every 0.1 mile in each lane. Location determined by SDDOT	ASTM E274 using a ribbed tire

**Table 4**

<b>HFST Speed Correction Factors for ASTM E274 Testing</b>					
<b>Test Speed (mph)</b>	<b>FN Correction</b>	<b>Test Speed (mph)</b>	<b>FN Correction</b>	<b>Test Speed (mph)</b>	<b>FN Correction</b>
20	-9.3	30	-4.8	40	0.0
21	-8.9	31	-4.4	41	0.5
22	-8.4	32	-3.9	42	1.0
23	-8.0	33	-3.4	43	1.5
24	-7.6	34	-2.9	44	2.0
25	-7.1	35	-2.5	45	2.5
26	-6.7	36	-2.0	46	3.1
27	-6.2	37	-1.5	47	3.6
28	-5.8	38	-1.0	48	4.1
29	-5.3	39	-0.5	49	4.6

The maximum aggregate moisture at the time of application will not exceed 0.5%. The Department will sample the aggregate and perform the aggregate moisture testing in accordance with SD 108 at a minimum frequency of 1 per day.

**II. METHOD OF MEASUREMENT**

- A. Abrasive Blasting of PCC Pavement:** Measurement will not be made for abrasive blasting of PCC pavement. The plan quantity will be the basis of payment.

- B. Grinding PCC Pavement:** Measurement will not be made for grinding PCC pavement. The plan quantity will be the basis of payment.
- C. Abrasive Blasting of AC Pavement:** Measurement will not be made for abrasive blasting of AC Pavement. The plan quantity will be the basis of payment.
- D. Grinding Asphalt Concrete:** Measurement will not be made for grinding asphalt concrete. The plan quantity will be the basis of payment.
- E. High Friction Surface Treatment:** Measurement will not be made for high friction surface treatment. The plan quantity will be the basis of payment unless additional application areas are ordered by the Engineer. No deductions will be made for the areas occupied by manholes, inlets, drainage structures, pavement markings, or by any public utility appurtenances within the area.

### III. BASIS OF PAYMENT

- A. Abrasive Blasting of PCC Pavement:** Abrasive blasting of PCC pavement will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to shot blast and abrasive blast clean the PCC pavement surface of all foreign materials and to remove and dispose of all residue.
- B. Grinding PCC Pavement:** Grinding PCC pavement will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to grind the surface and to contain, remove, and dispose of the grinding residue and water.
- C. Abrasive Blasting of AC Pavement:** Abrasive blasting of AC pavement will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to shot blast and abrasive blast clean the AC pavement surface of all foreign materials and to remove and dispose of all residue.
- D. Grinding Asphalt Concrete:** Grinding asphalt concrete will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to grind the surface and to contain, remove, and dispose of the grinding residue and water.
- E. High Friction Surface Treatment:** High friction surface treatment will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to furnish and install the high friction surface treatment including all testing and to remove and dispose of excess calcined bauxite aggregate and all preparation work required by this specification not included in the contract items provided.

\* \* \* \* \*



# ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT IM 0901(200)1	SHEET 2	TOTAL SHEETS 177
-----------------------------	--------------------------	------------	------------------------

Revised 8/19/24 GDS

## Structure No. 41-015-042

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0730	Remove Beam Guardrail	150.0	Ft
110E1010	Remove Asphalt Concrete Pavement	3,869.0	SqYd
110E6410	Remove Type 1 MGS for Reset	1,150.0	Ft
110E6617	Remove MGS Tangent End Terminal for Reset	4	Each
120E0010	Unclassified Excavation	860	CuYd
260E1010	Base Course	1,065.0	Ton
260E2010	Gravel Cushion	280.0	Ton
320E1200	Asphalt Concrete Composite	428.0	Ton
380E0070	9" Nonreinforced PCC Pavement	2,666.6	SqYd
380E6110	Insert Steel Bar in PCC Pavement	1,200	Each
630E1500	Type 1 Guardrail Transition	4	Each
630E5010	Reset Type 1 MGS	1,150.0	Ft
630E5206	Reset MGS Tangent End Terminal	4	Each
633E1220	High Build Waterborne Pavement Marking Paint, 4" White	420	Ft
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	420	Ft
633E1230	High Build Waterborne Pavement Marking Paint, 6" White	2,002	Ft
633E1232	High Build Waterborne Pavement Marking Paint, 6" Yellow	1,078	Ft
634E0010	Flagging	2,000.0	Hour
634E0110	Traffic Control Signs	1,819.1	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	20	Each
634E0310	Temporary Flexible Vertical Markers (Tabs)	4,032	Ft
634E0420	Type C Advance Warning Arrow Board	4	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	23	Each
634E0700	Traffic Control Movable Concrete Barrier	46	Each
634E0750	Temporary Concrete Barrier End Protection	2	Each
634E0755	Remove and Reset Temporary Concrete Barrier End Protection	2	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
634E1002	Detour and Restriction Signing	632.9	SqFt
634E1260	Truck/Trailer Mounted Attenuator	0	Each
900E1250	High Friction Surface Treatment	933.0	SqYd

## Structure No. 41-015-041

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	8.1	CuYd
460E0300	Breakout Structural Concrete	8.1	CuYd
464E0100	Controlled Density Fill	2.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	104	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	524.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	524.4	SqYd
491E0120	Bridge Deck Grinding	524.4	SqYd
491E0130	Concrete Removal, Class A	33.2	SqYd
491E0140	Concrete Removal, Class B	33.2	SqYd
491E0172	Concrete Patching Material, Bridge Deck	436.0	CuFt

## Structure No. 41-020-042

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	9.7	CuYd
460E0300	Breakout Structural Concrete	9.7	CuYd
464E0100	Controlled Density Fill	2.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	124	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	582.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	582.2	SqYd
491E0120	Bridge Deck Grinding	582.2	SqYd
491E0130	Concrete Removal, Class A	31.2	SqYd
491E0140	Concrete Removal, Class B	31.2	SqYd
491E0172	Concrete Patching Material, Bridge Deck	409.8	CuFt

## Structure No. 41-061-056

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0070	Class A45 Concrete, Bridge Repair	0.7	CuYd
460E0300	Breakout Structural Concrete	0.7	CuYd
464E0100	Controlled Density Fill	1.4	CuYd
480E5000	Galvanic Anode	12	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	759.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	759.4	SqYd
491E0120	Bridge Deck Grinding	759.4	SqYd
491E0130	Concrete Removal, Class A	4.8	SqYd
491E0140	Concrete Removal, Class B	4.8	SqYd
491E0172	Concrete Patching Material, Bridge Deck	34.0	CuFt

## Structure No. 41-061-057

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0070	Class A45 Concrete, Bridge Repair	0.6	CuYd
460E0300	Breakout Structural Concrete	0.6	CuYd
464E0100	Controlled Density Fill	1.2	CuYd
480E5000	Galvanic Anode	10	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	759.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	759.4	SqYd
491E0120	Bridge Deck Grinding	759.4	SqYd
491E0130	Concrete Removal, Class A	33.7	SqYd
491E0140	Concrete Removal, Class B	33.7	SqYd
491E0172	Concrete Patching Material, Bridge Deck	239.9	CuFt

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	7.0	CuYd
460E0300	Breakout Structural Concrete	7.0	CuYd
464E0100	Controlled Density Fill	1.5	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	93	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	524.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	524.4	SqYd
491E0120	Bridge Deck Grinding	524.4	SqYd
491E0130	Concrete Removal, Class A	30.1	SqYd
491E0140	Concrete Removal, Class B	30.1	SqYd
491E0172	Concrete Patching Material, Bridge Deck	395.2	CuFt

## Structure No. 41-020-041

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	7.7	CuYd
460E0300	Breakout Structural Concrete	7.7	CuYd
464E0100	Controlled Density Fill	4.2	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	115	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	582.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	582.2	SqYd
491E0120	Bridge Deck Grinding	582.2	SqYd
491E0130	Concrete Removal, Class A	22.0	SqYd
491E0140	Concrete Removal, Class B	22.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	288.8	CuFt

**Structure No. 41-080-057**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	6.5	CuYd
460E0300	Breakout Structural Concrete	6.5	CuYd
464E0100	Controlled Density Fill	1.1	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	93	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	502.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	502.2	SqYd
491E0120	Bridge Deck Grinding	502.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	48.8	CuFt

**Structure No. 41-080-058**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	9.7	CuYd
460E0300	Breakout Structural Concrete	9.7	CuYd
464E0100	Controlled Density Fill	2.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	124	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	502.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	502.2	SqYd
491E0120	Bridge Deck Grinding	502.2	SqYd
491E0130	Concrete Removal, Class A	13.2	SqYd
491E0140	Concrete Removal, Class B	13.2	SqYd
491E0172	Concrete Patching Material, Bridge Deck	163.6	CuFt

**Structure No. 41-092-059**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E2310	Strip Seal Gland	42.1	Ft
410E2610	Membrane Sealant	36.3	Ft
491E0005	Two Coat Bridge Deck Polymer Chip Seal	592.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	592.1	SqYd
491E0120	Bridge Deck Grinding	592.1	SqYd
491E0130	Concrete Removal, Class A	52.8	SqYd
491E0140	Concrete Removal, Class B	52.8	SqYd
491E0172	Concrete Patching Material, Bridge Deck	267.2	CuFt

**Structure No. 41-214-098**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
380E6305	Compression Seal Joint	57.1	Ft
410E2300	Strip Seal Expansion Joint	56.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	18.6	CuYd
460E0300	Breakout Structural Concrete	18.6	CuYd
460E0380	Install Dowel in Concrete	212	Each
480E0200	Epoxy Coated Reinforcing Steel	1,613	Lb
480E0505	No. 5 Rebar Splice	16	Each
480E5000	Galvanic Anode	164	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	16.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	16.2	SqYd
491E0120	Bridge Deck Grinding	16.2	SqYd

**Structure No. 41-214-099**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
380E6305	Compression Seal Joint	57.1	Ft
410E2300	Strip Seal Expansion Joint	56.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	18.6	CuYd
460E0300	Breakout Structural Concrete	18.6	CuYd
460E0380	Install Dowel in Concrete	212	Each
480E0200	Epoxy Coated Reinforcing Steel	1,613	Lb
480E0505	No. 5 Rebar Splice	16	Each
480E5000	Galvanic Anode	164	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	16.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	16.2	SqYd
491E0120	Bridge Deck Grinding	16.2	SqYd

**SPECIFICATIONS**

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**PRESS RELEASE ANNOUNCEMENTS**

The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

**TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS**

Concrete barriers will be provided by the State and are available for pickup from the SDDOT Rapid City Maintenance Yard located on south SD Highway 79. The barriers will be hauled back to the SDDOT Rapid City Maintenance Yard when they are no longer needed on the project.

Barriers to be adjusted or moved will be disconnected from adjacent barriers to minimize damage to connecting pins. Pins damaged by the Contractor will be replaced at no cost to the Department.

Concrete barrier sections will be placed as depicted in the plans to comply with clear zone requirements and as required by the Engineer. The barriers will be pinned and bolted together as directed by the Engineer.

All costs associated with picking the barriers up from the SDDOT Maintenance Yard, transporting, setting, connecting, and hauling them back to the SDDOT Maintenance Yard will be incidental to the contract unit price per each for Traffic Control Movable Concrete Barrier.

After the initial placement, the concrete barriers may need to be adjusted. Adjustment of the barriers, where they do not need to be loaded on a truck for transport, will be incidental to the contract unit price per each for Traffic Control Movable Concrete Barrier. All costs associated with removing, loading, unloading, and resetting of the barriers at a new site, will be incidental to the contract unit price per each for Remove and Reset Traffic Control Movable Concrete Barrier. No additional payment will be made for barriers that are not immediately reset at a new location on the project and stored on-site until they are either reset on the project or returned to the SDDOT as indicated in these plans.

**TEMPORARY CONCRETE BARRIER END PROTECTION**

Crash attenuators meeting the requirements of NCHRP 350 or MASH TL-3 will be furnished and installed by the Contractor. Attachment of the attenuators to the concrete barriers will be by approved methods.

All costs associated with furnishing, transporting, initial setup, connecting, maintaining, and removing the crash attenuators will be incidental to the contract unit price per each for Temporary Concrete Barrier End Protection.

All costs associated with moving and resetting crash attenuators to accommodate traffic flows after initial set-up will be paid for at the contract unit price per each for Remove & Reset Temporary Concrete Barrier End Protection. All costs associated with removing from initial placement and resetting at a new location will be incidental to the contract unit price per each. No additional payment will be made for crash attenuators that are not immediately reset at a new location on the project and stored on-site until they are either reset or removed from the project as determined by the Engineer. No additional payment will be made for minor adjustments.

The Contractor will have replacement hardware available so that in the event the crash attenuator is hit and made unusable, the crash attenuator can be made functional within 24 hours. The cost of replacement will be incidental to the contract unit price per each for Temporary Concrete Barrier Module Set or Repair Kit. No payment will be made for the Temporary Concrete Barrier Module Set or Repair Kit if no repairs are necessary. Upon completion of the project, crash attenuators will remain the property of the Contractor.

**BARRIER MOUNTED LINEAR DELINEATION SYSTEM PANELS**

A linear delineation system (LDS) panel will be attached to each barrier section. The color will be the same as the nearest pavement marking, white along outside edgelines or yellow for the left side on one way traffic sections. The LDS will be 34 inches long and 6 inches in height and be constructed of aluminum formed into a shape to provide retroreflective properties across a wide range of angles. It will be sheeted with sheeting meeting the requirements of ASTM D4956 Type XI. The panels will be evenly spaced, with the top of the panel 4 inches below the top of the barrier. Installation will be as per the manufacturer's recommendations. This will allow for easy removal for replacement of damaged panels or to replace with an alternate color. The Contractor will furnish and install one panel along each side of the barrier if any panels are missing from the barriers. Replacement of damaged linear delineation system panels will be furnished and replaced by the Contractor. All costs associated with furnishing, installing, and replacing, if needed, will be incidental to the contract unit price per each for Linear Delineation System Panel, Barrier Mounted.

All LDS panels will remain attached to the barrier sections and will become the property of the State of South Dakota upon completion of the project.

The Contractor will verify the number of LDS panels that will need to be installed or replaced on the Traffic Control Movable Concrete Barriers. The contract

amount of LDS panels is an estimate and the full contract amount may not be needed.

Maintaining the linear delineation system, including moving LDS panels from one side of the barrier to the other side of the barrier to match the applicable color of the nearest pavement marking will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

**ITEMIZED LIST FOR OVERWIDTH DETOUR SIGNING**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
M1-1	INTERSTATE ROUTE MARKER (2 digits)	10	24" x 24"	4.0	40.0
M3-2	DIRECTION MARKER - EAST	5	24" x 12"	2.0	10.0
M3-4	DIRECTION MARKER - WEST	5	24" x 12"	2.0	10.0
M5-1	ADVANCE TURN ARROW 90° (L or R)	4	21" x 15"	2.2	8.8
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	6	21" x 15"	2.2	13.2
SPECIAL	OVERWIDTH VEHICLES	10	42" x 24"	7.0	70.0
SPECIAL	NO VEHICLES OFER XX FT WIDE	3	138" x 42"	40.3	120.9
SPECIAL	WIDTH RESTRICTION XX FT MAX 90 XXXX USE EXIT XX	1	144" x 108"	108.0	108.0
SPECIAL	WIDTH RESTR XX FT MAX 90 XXXX MI AHEAD USE EXIT XX	2	144" x 126"	126.0	252.0
<b>CONVENTIONAL ROAD DETOUR AND RESTRICTION SIGNING SQFT</b>					<b>632.9</b>

**ITEMIZED LISTS FOR TRAFFIC CONTROL SIGNS**

**Locations #1 & #2**

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-2	YIELD	1	36"	3.9	3.9
R2-1	SPEED LIMIT	12	36" x 48"	12.0	144.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-2	YIELD AHEAD (symbol)	1	48" x 48"	16.0	16.0
W3-5	SPEED REDUCTION AHEAD ( MPH)	6	48" x 48"	16.0	96.0
W4-1	MERGE (symbol)	1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	5	48" x 48"	16.0	80.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
SPECIAL	EXIT	1	36" x 32"	8.0	8.0
G20-2	END ROAD WORK	3	48" x 24"	8.0	24.0
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>559.9</b>

**Locations #3 & #4**

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-2	YIELD	1	36"	3.9	3.9
R2-1	SPEED LIMIT	12	36" x 48"	12.0	144.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-2	YIELD AHEAD (symbol)	1	48" x 48"	16.0	16.0
W3-5	SPEED REDUCTION AHEAD ( MPH)	6	48" x 48"	16.0	96.0
W4-1	MERGE (symbol)	1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	5	48" x 48"	16.0	80.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
SPECIAL	EXIT	1	36" x 32"	8.0	8.0
G20-2	END ROAD WORK	3	48" x 24"	8.0	24.0
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>559.9</b>

**Location #5**

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	1	48" x 30"	10.0	10.0
SPECIAL	DETOUR EXIT 10 CLOSED AHEAD USE EXIT 12	1	90" x 90"	56.3	56.3
SPECIAL	DETOUR USE NEXT EXIT	1	72" x 78"	39.0	39.0
E5-2a	EXIT CLOSED	2	48" x 36"	12.0	24.0
M1-2	INTERSTATE BUSINESS LOOP ROUTE MARKER	2	36" x 36"	9.0	18.0
M1-4	US ROUTE MARKER (1 or 2 digits)	2	36" x 36"	9.0	18.0
M3-1	DIRECTION MARKER - NORTH	2	36" x 18"	4.5	9.0
M3-3	DIRECTION MARKER - SOUTH	2	36" x 18"	4.5	9.0
M4-5	TO	2	36" x 18"	4.5	9.0
M4-8	DETOUR	2	30" x 15"	3.1	6.2
M4-10	DETOUR ARROW (L or R)	2	48" x 18"	6.0	12.0
M6-1	DIRECTION ARROW - Horizontal Single Head (L or	2	30" x 21"	4.4	8.8
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>219.3</b>

**ITEMIZED LISTS FOR TRAFFIC CONTROL SIGNS (CONTINUED)**

**Location #6**

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT __	11	36" x 48"	12.0	132.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (__ MPH)	6	48" x 48"	16.0	96.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			<b>480.0</b>

**PERMANENT PAVEMENT MARKING – GENERAL NOTES**

The Contractor will repaint all the existing pavement marking paint including edge lines and lane lines. The Contractor will be required to inventory and mark, with appropriately colored tabs, the extent and location of the existing edgelines for the I90 eastbound off ramp before the markings are obliterated. The Contractor will provide a copy of the pavement marking inventory to the Engineer. All costs associated with this work will be incidental to the various pavement marking bid items.

**HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT**

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads.

Solid 4" line = 22.5 Gals/Mile  
Dashed 4" line = 6.2 Gal/Mile  
Glass Beads = 8 Lbs/Gal.

Solid 6" line = 33.8 Gals/Mile  
Dashed 6" line = 9.3 Gal/Mile  
Glass Beads = 8 Lbs/Gal.

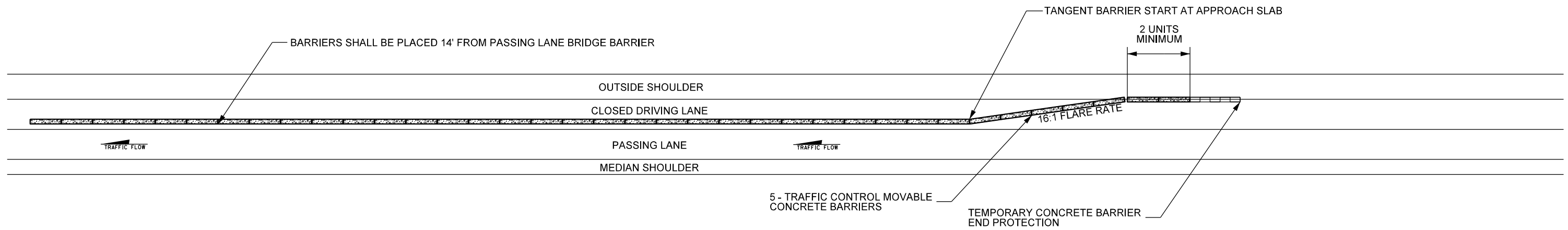
All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

# TRAFFIC CONTROL

## MOVABLE CONCRETE BARRIER LAYOUT

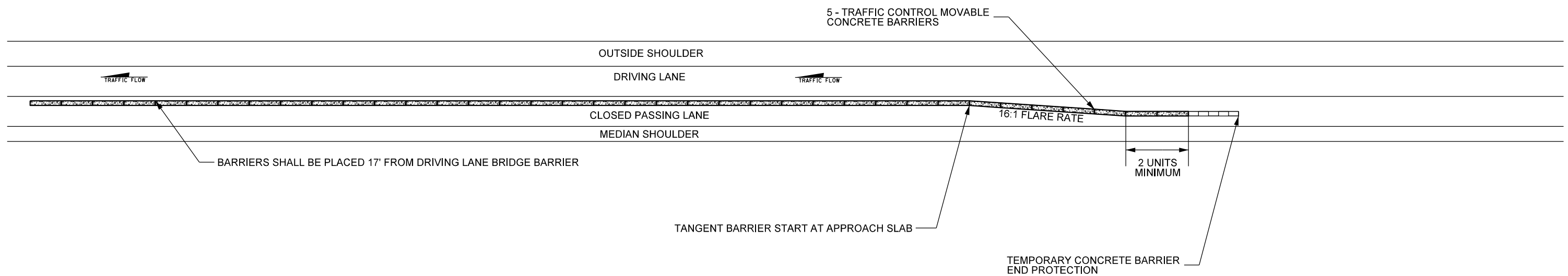
### CLOSED DRIVING LANE & OUTSIDE SHOULDER

23 TOTAL MOVABLE CONCRETE BARRIERS

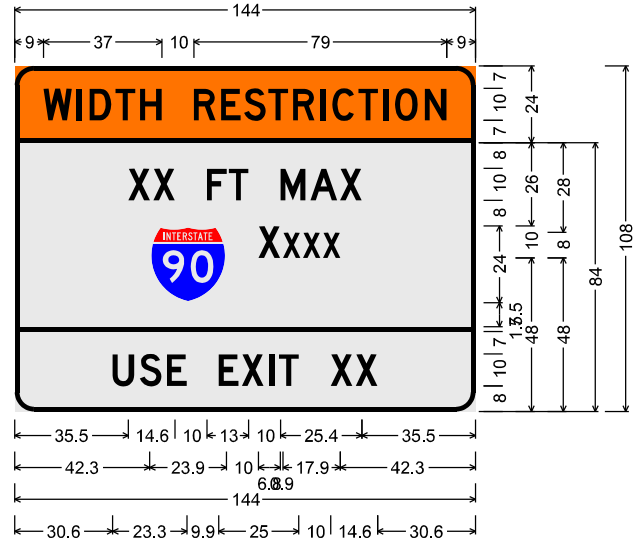


### CLOSED PASSING LANE & MEDIAN SHOULDER

23 TOTAL MOVABLE CONCRETE BARRIERS



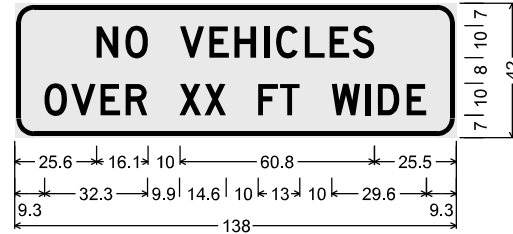
# WIDTH RESTRICTION SIGN DETAILS



6.0" Radius, 1.5" Border, Black on Orange; "WIDTH RESTRICTION", D 2K;  
 6.0" Radius, 1.5" Border, Black on White; "XX FT MAX", D 2K; "XXXX", D 2K; "USE EXIT XX", D 2K;

Table of widths and spaces

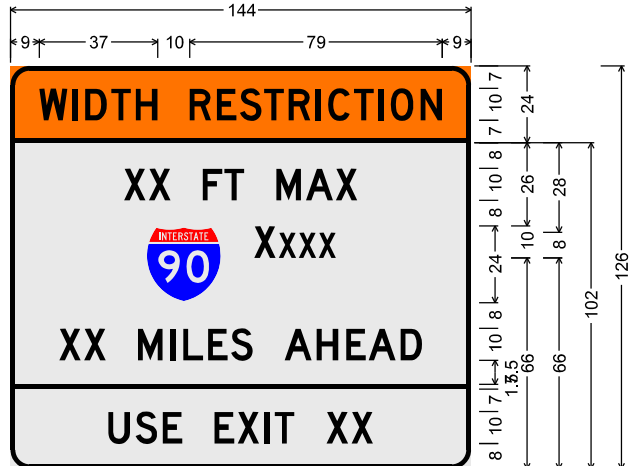
9.0	8.9	1.5	1.6	2.4	6.8	1.3	6.3	1.4	6.8													
		R	E	S	T	R	I	C	T	I	O	N										
10.0	6.8	1.8	6.1	1.0	6.8	0.8	6.3	1.4	6.8	1.8	1.5	2.3	6.8	1.3	6.1	1.5	1.6	2.3	7.0	2.3	6.8	8.9
35.5	X	X	F	T																		
6.8	1.0	6.8	10.0	6.3	0.5	6.3																
	M	A	X	35.5																		
9.9	7.8	1.5	8.5	0.8	6.8	35.5																
42.3	23.9	10.0	6.8	0.9	5.4	0.9	5.4	0.8	5.4	42.3												
0.0	144.0	0.0																				
30.6	U	S	E																			
6.8	1.8	6.8	1.6	6.3																		
	E	X	I	T																		
9.9	6.3	0.9	6.8	1.8	1.5	1.5	6.3															
	X	X	30.6																			
9.9	6.8	1.0	6.8	30.6																		



6.0" Radius, 1.5" Border, 0.5" Indent, Black on White; "NO VEHICLES", D 2K; "OVER XX FT WIDE", D 2K;

Table of widths and spaces

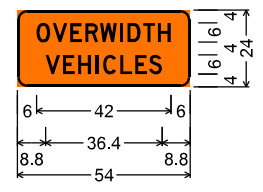
25.6	N	O													
6.8	2.3	7.0													
10.0	V	E	H	I	C	L	E	S							
7.6	1.5	6.3	1.6	6.8	2.4	1.6	2.3	6.8	2.1	6.3	1.4	6.3	0.9	6.8	25.6
9.3	O	V	E	R	X	X									
7.1	1.3	7.6	1.5	6.3	1.6	6.8	10.0	6.8	1.0	6.8					
	F	T													
10.0	6.3	0.5	6.3												
	W	I	D	E											
9.9	8.9	1.5	1.6	2.4	6.8	2.3	6.1	9.3							



6.0" Radius, 1.5" Border, Black on Orange; "WIDTH RESTRICTION", D 2K;  
 6.0" Radius, 1.5" Border, Black on White; "XX FT MAX", D 2K; "XXXX", D 2K; "XX MILES AHEAD", D 2K; "USE EXIT XX", D 2K;

Table of widths and spaces

9.0	8.9	1.5	1.6	2.4	6.8	1.3	6.3	1.4	6.8													
		R	E	S	T	R	I	C	T	I	O	N										
10.0	6.8	1.8	6.1	1.0	6.8	0.8	6.3	1.4	6.8	1.8	1.5	2.3	6.8	1.3	6.1	1.5	1.6	2.3	7.0	2.3	6.8	8.9
35.5	X	X	F	T																		
6.8	1.0	6.8	10.0	6.3	0.5	6.3																
	M	A	X	35.5																		
9.9	7.8	1.5	8.5	0.8	6.8	35.5																
42.3	23.9	10.0	6.8	0.9	5.4	0.9	5.4	0.8	5.4	42.3												
15.3	X	X																				
6.8	1.0	6.8																				
	M	I	L	E	S																	
10.0	7.8	2.4	1.5	2.5	6.1	1.5	6.3	1.0	6.8													
	A	H	E	A	D	15.3																
10.0	8.5	1.5	6.8	2.4	6.1	0.9	8.5	1.5	6.8	15.3												
0.0	144.0	0.0																				
30.6	U	S	E																			
6.8	1.8	6.8	1.6	6.3																		
	E	X	I	T																		
9.9	6.3	0.9	6.8	1.8	1.5	1.5	6.3															
	X	X	30.6																			
9.9	6.8	1.0	6.8	30.6																		



3.0" Radius, 0.8" Border, Black on Orange; "OVERWIDTH", D 2K; "VEHICLES", D 2K;

Table of widths and spaces

6.0	O	V	E	R	W	I	D	T	H								
4.3	0.8	4.5	0.9	3.8	1.0	4.0	0.5	5.4	0.9	0.9	1.5	4.0	0.8	3.8	0.9	4.0	6.0
8.8	V	E	H	I	C	L	E	S									
4.5	1.0	3.6	1.1	4.1	1.4	1.0	1.3	4.1	1.3	3.8	0.8	3.8	0.5	4.1	8.8		

NOTE: ALL X's WILL BE REPLACED WITH APPROPRIATE VALUES OR CARDINAL DIRECTIONS AS SPECIFIED ELSEWHERE IN THE PLANS

Plot Scale - 1:5

Plotted From - TRR012216

File - ...Interstate Width Restriction.dgn



# TRAFFIC CONTROL

## OVERWIDTH DETOUR LAYOUT

Plot Scale - 1:40

Plotted From - TRRC11640

SPECIAL (42"X24")

OVERWIDTH VEHICLES ④



M5-1 (21"X15")

OVERWIDTH VEHICLES ⑤



M3-4 (24"X12")

M6-1 (21"X15")

OVERWIDTH VEHICLES ⑥



M3-2 (24"X12")

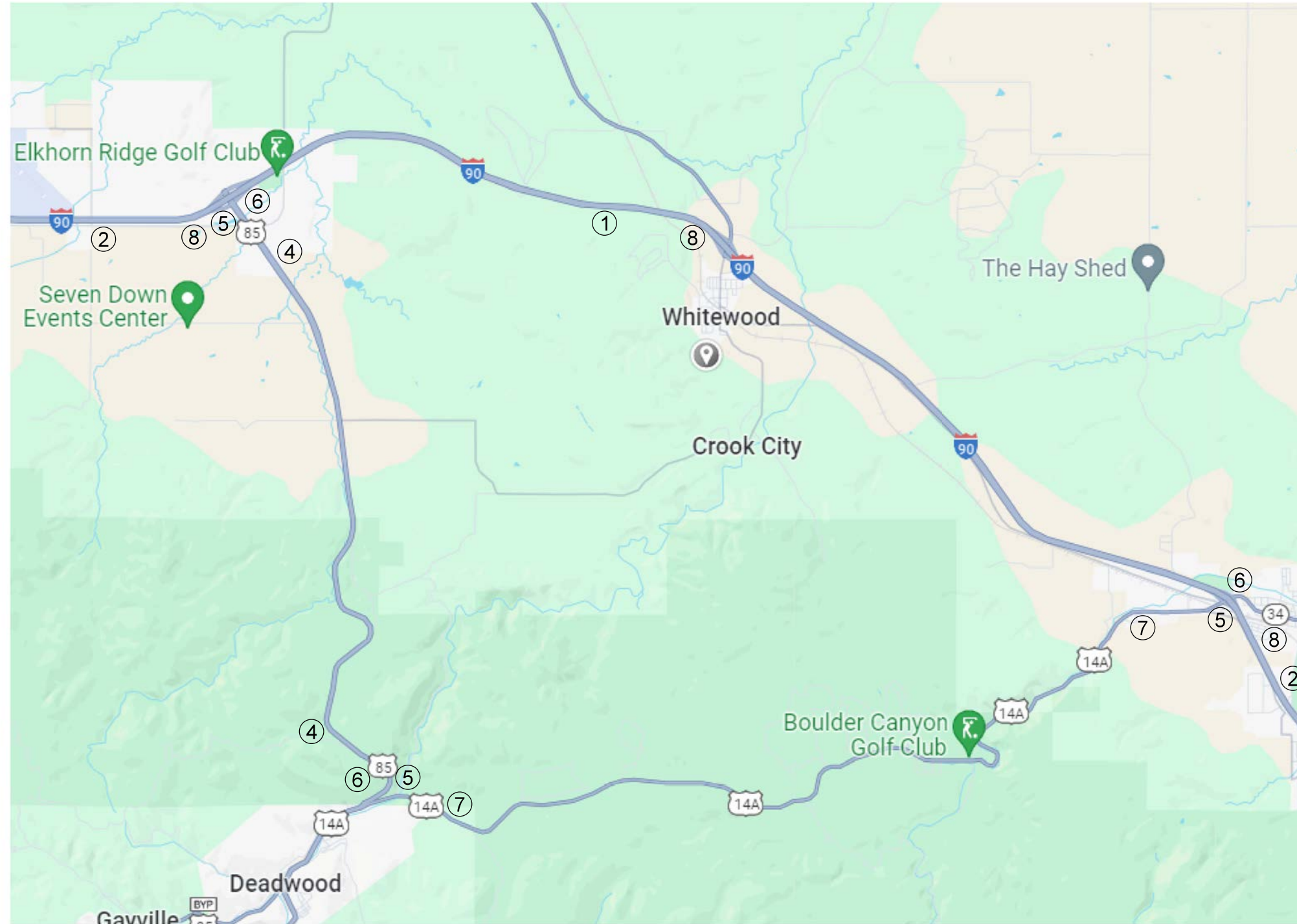
M1-1 (24"X30")

M6-1 (21"X15")

OVERWIDTH VEHICLES ⑦



M5-1 (21"X15")



WIDTH RESTRICTION

①

XX FT MAX

90 XXXX

USE EXIT XX

SPECIAL (144"X108")

WIDTH RESTRICTION

②

XX FT MAX

90 XXXX

XX MILES AHEAD

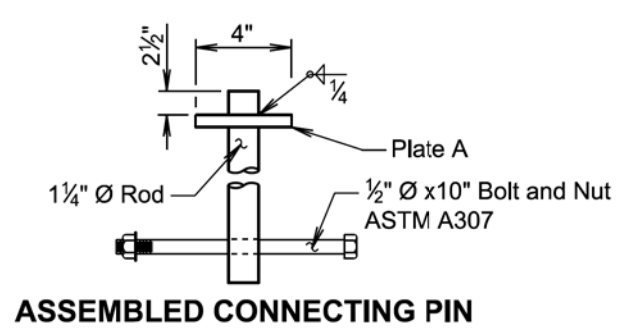
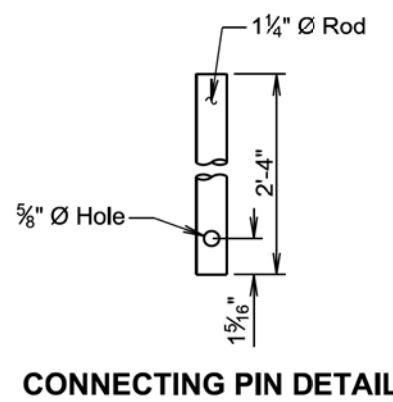
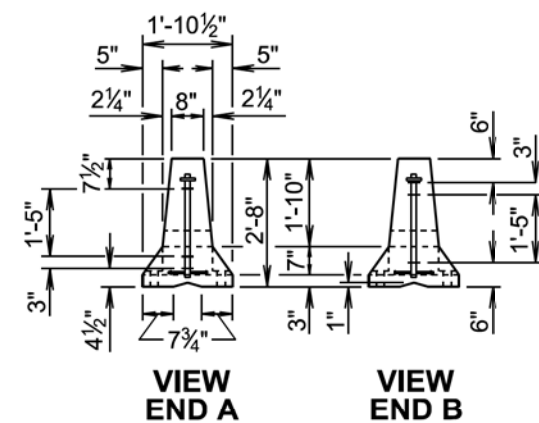
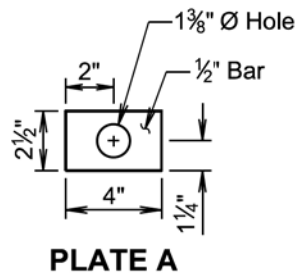
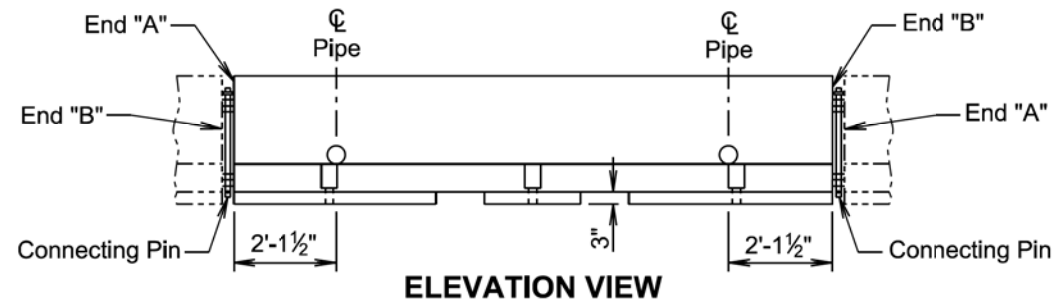
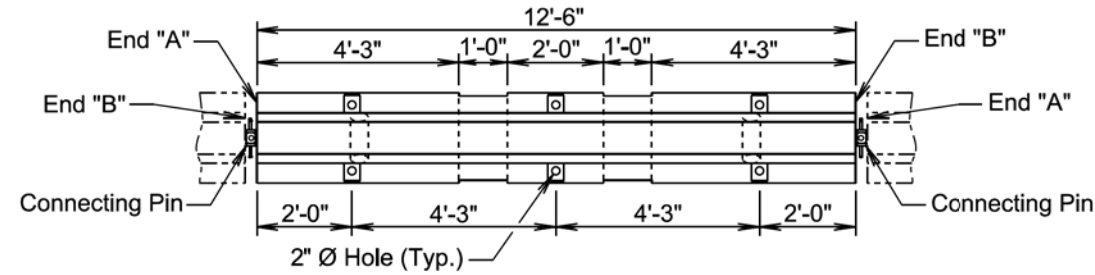
USE EXIT XX

SPECIAL (144"X126")

⑧

NO VEHICLES OVER XX FT WIDE

SPECIAL (138"X42")



**GENERAL NOTES:**

The detailed drawings are for illustrative purpose and depicts the current version of the F shape concrete barrier. If new movable concrete barriers are requested on a project, they will be constructed according to the F shape movable concrete barrier details on standard plate 628.10.

Each movable concrete barrier section weighs 5030 ± pounds.

Each movable concrete barrier section is detailed to provide end "A" to end "B" connection by insertion of a pin through steel loops.

The Jersey shape or any version of the F shape traffic control movable concrete barriers may be used on a project, however, only the same type or version will be used for each run of barriers.

Movable concrete barrier sections will be placed to provide uniform bearing of the sections with the paved surface as approved by the Engineer.

Movable concrete barrier sections will never be moved or lifted using the end loops.

Movable concrete barrier sections that have been damaged will not be used. Barrier sections are considered damaged if the loops are end welded onto existing damaged loops, loops are fractured, or there is exposed rebar from fractured concrete.

All cost for transporting the barriers from the specified location to the project site, installing, and returning the barriers to the specified location will be incidental to the contract unit price per each for "Traffic Control Movable Concrete Barrier".

If the concrete barriers need to be moved and reset on the project, requiring the barriers to be transported by truck, all cost for removing, transporting, and resetting the barriers will be incidental to the contract unit price per each for "Remove and Reset Traffic Control Movable Concrete Barrier". All cost for small shifts in alignment of the barriers, not requiring the barriers to be transported by truck, will be incidental to various contract items.

Plot Scale - 1:200

Plotted From - TRRC12608

File - ...Standard Plates630\_1.dgn

Published Date: 2025	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	September 14, 2018
			PLATE NUMBER 628.01 Sheet 1 of 2

Published Date: 2025	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	September 14, 2018
			PLATE NUMBER 628.01 Sheet 2 of 2



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	33	177

### ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	8.1	CuYd
460E0300	Breakout Structural Concrete	8.1	CuYd
464E0100	Controlled Density Fill	2.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	104	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	524.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	524.4	SqYd
491E0120	Bridge Deck Grinding	524.4	SqYd
491E0130	Concrete Removal, Class A	33.2	SqYd
491E0140	Concrete Removal, Class B	33.2	SqYd
491E0172	Concrete Patching Material, Bridge Deck	436.0	CuFt

### SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

### DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

### SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Breakout concrete in approach slab for access holes for the first phase of construction.
3. Place Controlled Density Fill for the first phase of construction.
4. Breakout concrete in approach slab as shown for the first phase of construction.
5. Remove approach slab joint for the first phase of construction.
6. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.

7. Place Galvanic Anodes for the first phase of construction.
8. Repair Approach Slab for the for the first phase of construction.
9. Place approach slab joint for the first phase of construction.
10. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
11. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
12. Switch traffic and repeat steps 1 through 11 for the second phase of construction.

### TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

### CONCRETE PATCHING MATERIAL, BRIDGE DECK

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

### CONCRETE BREAKOUT

1. The existing approach slab and joint will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Breakout Structural Concrete includes the two 18"-square access locations in approach slab No. 1. The actual location and configuration may vary. The access locations will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

### BRIDGE DECK GRINDING

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

### ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 41-015-041

APRIL 2024

2 OF 11

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RA02	DRAFTED BY JRB	<i>Steve A. Johnson</i> BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	44	177

### ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	7.0	CuYd
460E0300	Breakout Structural Concrete	7.0	CuYd
464E0100	Controlled Density Fill	1.5	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	93	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	524.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	524.4	SqYd
491E0120	Bridge Deck Grinding	524.4	SqYd
491E0130	Concrete Removal, Class A	30.1	SqYd
491E0140	Concrete Removal, Class B	30.1	SqYd
491E0172	Concrete Patching Material, Bridge Deck	395.2	CuFt

### SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

### DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

### SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Breakout concrete in approach slab for access hole for the first phase of construction.
2. Place Controlled Density Fill for the first phase of construction.
3. Breakout concrete in approach slab as shown for the first phase of construction.
4. Place Galvanic Anodes for the approach slab repair area for the first phase of construction.
5. Place Class A45 Concrete, Bridge Repair in the approach slab repair area for the first phase of construction.
6. Perform Bridge Deck Grinding for the first phase of construction.

7. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
8. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
9. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
10. Remove approach slab joint for the first phase of construction.
11. Place Galvanic Anodes for the approach slab joint for the first phase of construction.
12. Place approach slab joint for the first phase of construction.
13. Place Class A45 Concrete, Bridge Repair for the approach slab joint for the first phase of construction.
14. Switch traffic and repeat steps 6 through 13 for the second phase of construction.

### TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

### CONCRETE PATCHING MATERIAL, BRIDGE DECK

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

### CONCRETE BREAKOUT

1. The existing approach slab and joint will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Breakout Structural Concrete includes the 18"-square access location in approach slab No. 1. The actual location and configuration may vary. The access locations will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

### BRIDGE DECK GRINDING

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

### ESTIMATE OF STRUCTURE QUANTITIES AND NOTES


FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 41-015-042

APRIL 2024

2 OF 11

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3BB02	DRAFTED BY JRB	 BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	55	177

**ESTIMATE OF STRUCTURE QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	7.7	CuYd
460E0300	Breakout Structural Concrete	7.7	CuYd
464E0100	Controlled Density Fill	4.2	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	115	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	582.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	582.2	SqYd
491E0120	Bridge Deck Grinding	582.2	SqYd
491E0130	Concrete Removal, Class A	22.0	SqYd
491E0140	Concrete Removal, Class B	22.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	288.8	CuFt

**SPECIFICATIONS**

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**DETAILS AND DIMENSIONS OF EXISTING BRIDGE**

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

**SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS**

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Breakout concrete in approach slab for access holes for the first phase of construction.
2. Place Controlled Density Fill for the first phase of construction.
3. Breakout concrete in approach slab as shown for the first phase of construction.
4. Remove approach slab joint for the first phase of construction.
5. Place Galvanic Anodes for the first phase of construction.
6. Perform Bridge Deck Grinding for the first phase of construction.
7. Place approach slab joint for the first phase of construction.

8. Place Class A45 Concrete, Bridge Repair for the for the first phase of construction.
9. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
10. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
11. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
12. Switch traffic and repeat steps 1 through 11 for the second phase of construction.

**TWO COAT BRIDGE DECK POLYMER CHIP SEAL**

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

**CONCRETE PATCHING MATERIAL, BRIDGE DECK**

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

**CONCRETE BREAKOUT**

1. The existing approach slab and joint will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Class A45 Concrete, Bridge Repair includes the 18"-square access location at approach slab No. 1 and the two 18"-square access locations at approach slab No. 4. The actual location and configuration may vary. The access locations will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

**BRIDGE DECK GRINDING**

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES**  
FOR  
**132' - 0" CONTINUOUS CONCRETE BRIDGE**  
STR. NO. 41-020-041  
APRIL 2024

(2) OF (12)

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RC02	DRAFTED BY JRB	<i>Steve A. Johnson</i> BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	67	177

**ESTIMATE OF STRUCTURE QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	9.7	CuYd
460E0300	Breakout Structural Concrete	9.7	CuYd
464E0100	Controlled Density Fill	2.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	124	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	582.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	582.2	SqYd
491E0120	Bridge Deck Grinding	582.2	SqYd
491E0130	Concrete Removal, Class A	31.2	SqYd
491E0140	Concrete Removal, Class B	31.2	SqYd
491E0172	Concrete Patching Material, Bridge Deck	409.8	CuFt

**SPECIFICATIONS**

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**DETAILS AND DIMENSIONS OF EXISTING BRIDGE**

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

**SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS**

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Breakout concrete in approach slab for access holes for the first phase of construction.
2. Place Controlled Density Fill for the first phase of construction.
3. Breakout concrete in approach slab and bridge deck as shown for the first phase of construction.
4. Remove approach slab joint for the first phase of construction.
5. Place Galvanic Anodes for the first phase of construction.
6. Place approach slab joint for the first phase of construction.

7. Place Class A45 Concrete, Bridge Repair for the first phase of construction.
8. Perform Bridge Deck Grinding for the first phase of construction.
9. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
10. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
11. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
12. Switch traffic and repeat steps 1 through 11 for the second phase of construction.

**TWO COAT BRIDGE DECK POLYMER CHIP SEAL**

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

**CONCRETE PATCHING MATERIAL, BRIDGE DECK**

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

**CONCRETE BREAKOUT**

1. The existing approach slab, bridge deck, and joint will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Breakout Structural Concrete includes the two 18"-square access locations in Approach Slab No. 4. The actual location and configuration may vary. The access locations will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

**BRIDGE DECK GRINDING**

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES**

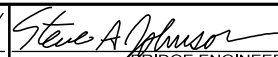
FOR

132' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 41-020-042

APRIL 2024

2 OF 12

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3BD02	DRAFTED BY JRB	 BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	79	177

**ESTIMATE OF STRUCTURE QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0070	Class A45 Concrete, Bridge Repair	0.7	CuYd
460E0300	Breakout Structural Concrete	0.7	CuYd
464E0100	Controlled Density Fill	1.4	CuYd
480E5000	Galvanic Anode	12	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	759.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	759.4	SqYd
491E0120	Bridge Deck Grinding	759.4	SqYd
491E0130	Concrete Removal, Class A	4.8	SqYd
491E0140	Concrete Removal, Class B	4.8	SqYd
491E0172	Concrete Patching Material, Bridge Deck	34.0	CuFt

**SPECIFICATIONS**

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**DETAILS AND DIMENSIONS OF EXISTING BRIDGE**

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

**SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS**

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Breakout concrete in approach slab for access holes for the first phase of construction.
2. Place Controlled Density Fill for the first phase of construction.
3. Breakout concrete in approach slab as shown for the first phase of construction.
4. Place Galvanic Anodes for the first phase of construction.
5. Place Class A45 Concrete, Bridge Repair for the for the first phase of construction.
6. Perform Bridge Deck Grinding for the first phase of construction.
7. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.

8. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
9. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
10. Switch traffic and repeat steps 6 through 9 for the second phase of construction.

**TWO COAT BRIDGE DECK POLYMER CHIP SEAL**

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

**CONCRETE PATCHING MATERIAL, BRIDGE DECK**

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

**CONCRETE BREAKOUT**

1. The existing approach slab will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.

2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Breakout Structural Concrete includes the 18"-square access location in Approach Slabs No. 4. The actual location and configuration may vary. The access location will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

**BRIDGE DECK GRINDING**

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES**

FOR  
174' - 0 <sup>3</sup>/<sub>4</sub>" CONT. COMP. GIRDER BRIDGE

STR. NO. 41-061-056

APRIL 2024

2 OF 7

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3BE02	DRAFTED BY JRB	<i>Steve A. Johnson</i> BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	86	177

### ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0070	Class A45 Concrete, Bridge Repair	0.6	CuYd
460E0300	Breakout Structural Concrete	0.6	CuYd
464E0100	Controlled Density Fill	1.2	CuYd
480E5000	Galvanic Anode	10	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	759.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	759.4	SqYd
491E0120	Bridge Deck Grinding	759.4	SqYd
491E0130	Concrete Removal, Class A	33.7	SqYd
491E0140	Concrete Removal, Class B	33.7	SqYd
491E0172	Concrete Patching Material, Bridge Deck	239.9	CuFt

### SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

### DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

### SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Breakout concrete in approach slab for access holes for the first phase of construction.
2. Place Controlled Density Fill for the first phase of construction.
3. Breakout concrete in approach slab as shown for the first phase of construction.
4. Place Galvanic Anodes for the first phase of construction.
5. Place Class A45 Concrete, Bridge Repair for the for the first phase of construction.
6. Perform Bridge Deck Grinding for the first phase of construction.
7. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.

8. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
9. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
10. Switch traffic and repeat steps 6 through 9 for the second phase of construction.

### TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

### CONCRETE PATCHING MATERIAL, BRIDGE DECK

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

### CONCRETE BREAKOUT

1. The existing approach slab will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.

2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Breakout Structural Concrete includes the 18"-square access location in Approach Slab No. 4. The actual location and configuration may vary. The access locations will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

### BRIDGE DECK GRINDING

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

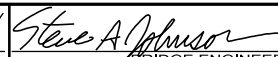
### ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR  
174' - 0 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 41-061-057

APRIL 2024

2 OF 7

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3BF02	DRAFTED BY JRB	 BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	93	177

### ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
460E0070	Class A45 Concrete, Bridge Repair	6.5	CuYd
460E0300	Breakout Structural Concrete	6.5	CuYd
464E0100	Controlled Density Fill	1.1	CuYd
480E0200	Epoxy Coated Reinforcing Steel	347	Lb
480E0505	No. 5 Rebar Splice	8	Each
480E5000	Galvanic Anode	93	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	502.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	502.2	SqYd
491E0120	Bridge Deck Grinding	502.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	48.8	CuFt

### SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

### DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

### SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Breakout concrete in approach slab for access holes for the first phase of construction.
2. Place Controlled Density Fill for the first phase of construction.
3. Breakout concrete in approach slab as shown for the first phase of construction.
4. Place Galvanic Anodes for the approach slab repair for the first phase of construction.
5. Place Class A45 Concrete, Bridge Repair for the for the first phase of construction.
6. Remove approach slab joint for the first phase of construction.

7. Place Galvanic Anodes for the approach slab joint for the first phase of construction.
8. Place approach slab joint for the first phase of construction.
9. Place Class A45 Concrete, Bridge Repair for the Joint for the first phase of construction.
10. Perform Bridge Deck Grinding for the first phase of construction.
11. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
12. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
13. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
14. Switch traffic and repeat steps 6 through 13 for the second phase of construction.

### TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

### CONCRETE PATCHING MATERIAL, BRIDGE DECK

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

### CONCRETE BREAKOUT

1. The existing approach slab and joint will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.
3. The quantity shown for Breakout Structural Concrete includes the 18"-square access location in Approach Slab No. 4. The actual location and configuration may vary. The access location will not be allowed in wheel paths.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

### BRIDGE DECK GRINDING

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

### ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

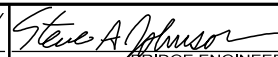
FOR

114' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 41-080-057

APRIL 2024

2 OF 10

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RG02	DRAFTED BY JRB	 BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	114	177

**ESTIMATE OF STRUCTURE QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E2310	Strip Seal Gland	42.1	Ft
410E2610	Membrane Sealant	36.3	Ft
491E0007	Two Coat Bridge Deck Polymer High Friction Chip Seal	592.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	592.1	SqYd
491E0120	Bridge Deck Grinding	592.1	SqYd
491E0130	Concrete Removal, Class A	52.8	SqYd
491E0140	Concrete Removal, Class B	52.8	SqYd
491E0172	Concrete Patching Material, Bridge Deck	267.2	CuFt

**SPECIFICATIONS**

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

**DETAILS AND DIMENSIONS OF EXISTING BRIDGE**

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

**SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS**

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Perform Bridge Deck Grinding.
2. Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface.
3. Clean the bridge deck surface with abrasive blasting.
4. Place the Two Coat Bridge Deck Polymer High Friction Chip Seal.
5. Remove Membrane Sealant and Strip Seal Gland.
6. Place Membrane Sealant and Strip Seal Gland.

**CONCRETE PATCHING MATERIAL, BRIDGE DECK**

1. In lieu of the 48-hour wet cure, the Contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
2. A thicker layer of the Two Coat Bridge Deck Polymer High Friction Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

**TWO COAT BRIDGE DECK POLYMER HIGH FRICTION CHIP SEAL**

1. The Two Coat Bridge Deck Polymer High Friction Chip Seal will be furnished and installed in accordance with Section 491 of the Construction Specifications except as modified by these notes.
2. The polymer will conform to Type I from the Department's Approved Products List for Bridge Deck Polymer Chip Seal.
3. The calcined bauxite aggregate will be used in lieu of the aggregate specified in Section 491. Properties of the calcined bauxite aggregate are listed in the High Friction Surface Aggregate notes.
4. Measurement will not be made for the Two Coat Bridge Deck Polymer High Friction Chip Seal. The plans quantity will be the basis of payment.
5. The Two Coat Bridge Deck Polymer High Friction Chip Seal will be paid for at the contract unit price per square yard. Payment will be full compensation for labor, equipment, material, and all incidental work required to furnish and install the Two Coat Bridge Deck Polymer High Friction Chip Seal and to remove and dispose of the excess cover aggregate. Payment will also be full compensation for all manufacturer approved representative expenses.

**HIGH FRICTION SURFACE AGGREGATE**

The material will be clean, dry, and free from foreign matter. The Contractor will deliver the calcined bauxite aggregate to the construction site in clearly labeled containers. The calcined bauxite aggregate will be certified to meet the requirements of Table 1.

Table 1. High Friction Aggregate

Calcined Bauxite Aggregate Requirements		
Property	Requirements	Test Method
Gradation	100.0% Passing #4	AASHTO T 27
	95.0% - 100.0% Passing #6	
	0.0% - 5.0% Passing #16	
Moisture Content	0.2% Maximum	AASHTO T 255
Aluminum Oxide	87% Minimum	ASTM C25
LA Abrasion Test	20% Maximum. Test sample gradation differs from gradation requirements.	AASHTO T 96

**BRIDGE DECK GRINDING**

The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES**  
FOR  
**226' - 0" CONT. COMP. CURVED GIRDER BRIDGE**  
STR. NO. 41-092-059  
APRIL 2024

(2) OF (7)

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3B102	DRAFTED BY JRB	<i>Steve A. Johnson</i> BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	121	177

**ESTIMATE OF STRUCTURE QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
380E6305	Compression Seal Joint	57.1	Ft
410E2300	Strip Seal Expansion Joint	56.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	18.6	CuYd
460E0300	Breakout Structural Concrete	18.6	CuYd
460E0382	Install Dowel in Concrete	212	Each
480E0200	Epoxy Coated Reinforcing Steel	1613	Lb
480E0505	No. 5 Rebar Splice	16	Each
480E5000	Galvanic Anode	164	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	16.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	16.2	SqYd
491E0120	Bridge Deck Grinding	16.2	SqYd

**SPECIFICATIONS**

- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.
- All Welding and Welding Inspection will be in conformance with the latest edition of the AASHTO/AWS D1.5M/D1.5 Bridge Welding unless otherwise noted in this plan set.

**DETAILS AND DIMENSIONS OF EXISTING BRIDGE**

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

**SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS**

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

- Remove joints and breakout concrete to the extent shown in the plans for the joints, end blocks, deck, and barriers for the first phase of construction.
- Perform abrasive blasting and cleaning of steel to be salvaged, including barrier expansion device, for first phase of construction.
- Place Galvanic anodes for both joints and barriers.
- Install joints and repair abutments and deck at both bridge ends for first phase of construction.
- Replace concrete at end blocks and barrier and apply commercial texture finish to the end blocks and barrier for the first phase of construction.

- Switch traffic for and repeat steps 1 to 5 for the second phase of construction.

**GENERAL CONSTRUCTION - BRIDGE**

- All reinforcing steel will conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
- Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
- The Contractor will only imprint one year-plate on the structure. The year plate will contain the date the existing bridge was built and will be located as specified and detailed on Standard Plate No. 460.02.
- Barrier curbs and end blocks will be built perpendicular to the grade.
- Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.
- All lap splices are contact lap splices unless noted otherwise.

**COMPRESSION SEAL JOINT**

- Steel for the Armor Assembly will conform to ASTM A709, Grade 36. The Automatic End Welded Deformed Bar Anchor Studs will conform to ASTM A1064. The Armor Assembly complete in-place will be a continuous unit.
- The compression seal at the location shown can be obtained from the following suppliers. Company addresses and type of compression seal required are listed below.

A. THE D.S. BROWN COMPANY  
 Delastic Preformed Neoprene Compression Seal  
 Type: CV-2502 (2 1/2" x 2 1/2")  
 P.O. Box 158  
 300 East Cherry Street  
 North Baltimore, Ohio 45872-0158  
 Telephone: 419-257-3561

B. HARRIS SPECIALTY CHEMICALS, INC.  
 Watson Bowman Acme  
 Wabo Compression Seal  
 Type: WJ-250 (2.5" x 2.546")  
 95 Pineview Drive  
 Amherst, New York 14228  
 Telephone: 716-691-7566

- Material for the Neoprene Compression Seal will conform to that specified in ASTM D2628. No splices will be permitted in the Neoprene Seal.
- The Neoprene seal will be installed and bonded to the joint with a high solids lubricant adhesive. At the time of the Neoprene Seal installation, the steel surfaces of the joint to be in contact with the Neoprene Seal will be dry, clean and free from dirt, grease and contaminants. The Contractor will be required to clean those areas by abrasive blasting.
- The installation of the compression seal will be as specified by the manufacturer and will be subject to the approval of the Engineer. The ends of the Neoprene Seal will be sealed as recommended by the manufacturer.
- Galvanize the Armor Assemblies and anything welded to them after all welding is completed. They will be galvanized in accordance with AASHTO M111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding will be included with the shop plans. Repair of galvanizing will be by the zinc-based solder method in conformance with ASTM A780.
- Welding for the Armor Assembly will be in accordance with ANSI/AWS D1.1 Structural Welding Code - Steel.
- The Compression Seal Joint supplier will submit a detailed compression seal installation procedure with the shop plans.
- The cost of welding will be included in the contract unit price per foot for Compression Seal Joint.
- The Compression Seal Joint will be measured in linear feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Compression Seal Joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES**

FOR

135' - 8" I-BEAM BRIDGE

STR. NO. 41-214-098

APRIL 2024

2 OF 29

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RJ02	DRAFTED BY JRB <i>Steve A. Johnson</i>	BRIDGE ENGINEER
--------------------------------	-------------------------------	--	-----------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	123	177

**INSTALL DOWEL IN CONCRETE (CONTINUED)**

2. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, (Equivalent to ASTM C881, Type IV, Grade 3). Grade 1, 2 or 3 may be used for vertical dowels, and Grade 3 epoxy will be used for all horizontal dowels.
3. The diameter of the drilled holes will not be less than 1/8-inch greater, nor more than 3/8-inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
4. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
5. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
6. Dowel bars will be deformed bars conforming to ASTM A615, Grade 60.
7. The cost of epoxy resin, dowels, installation, and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

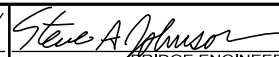
**TWO COAT BRIDGE DECK POLYMER CHIP SEAL**

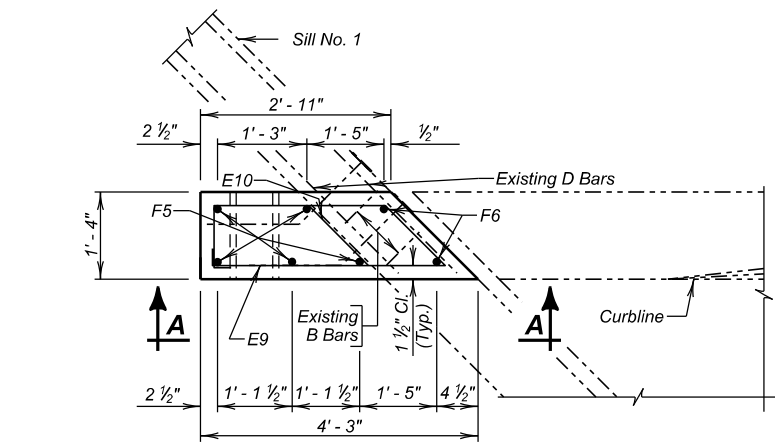
The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

**BRIDGE DECK GRINDING**

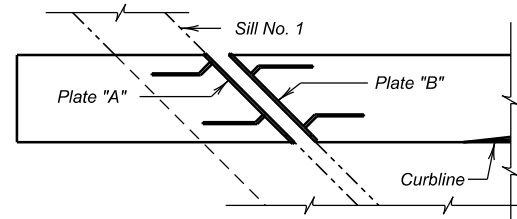
The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

**NOTES (CONTINUED)**  
 FOR  
**135' - 8" I-BEAM BRIDGE**  
 STR. NO. 41-214-098  
 APRIL 2024

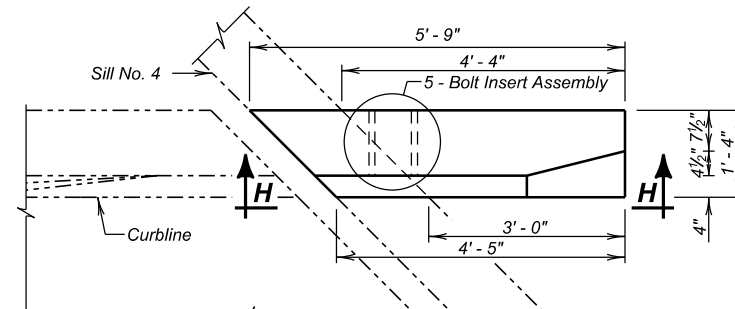
DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RJ04	DRAFTED BY JRB	 BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--



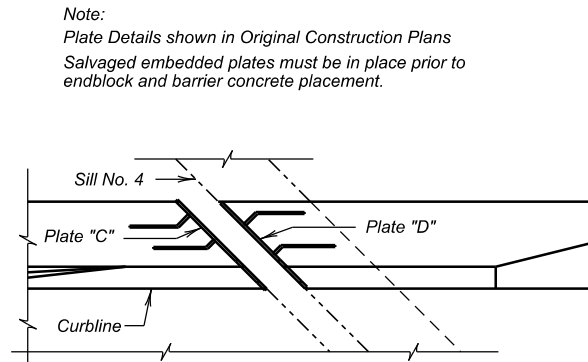
**PLAN**  
(Sill No. 1)  
(Northwest)



**PLAN**  
(Sill No. 1)  
(Northwest)  
(Embedded plates placement  
of salvaged Barrier Expansion Device)

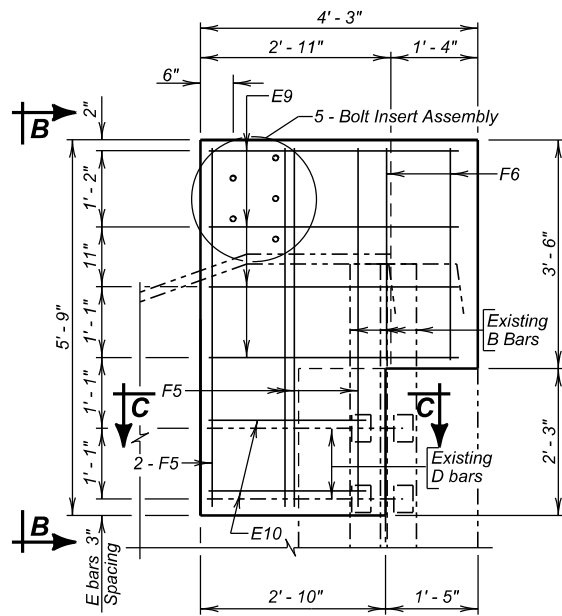


**PLAN**  
(Sill No. 4)  
(Northeast)

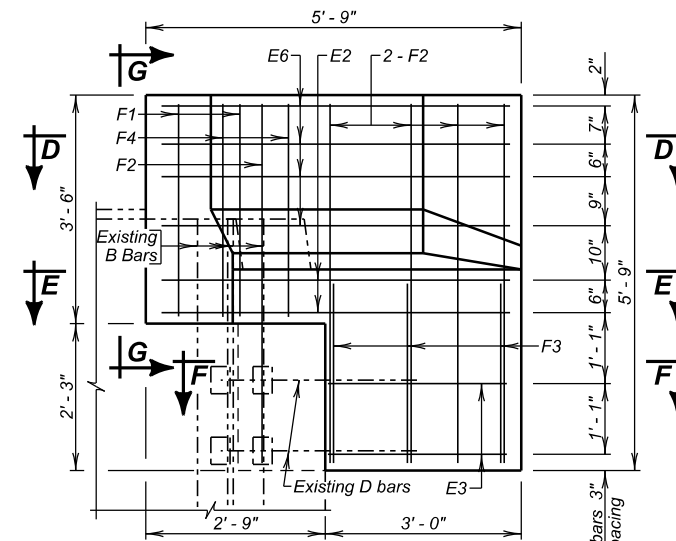


**PLAN**  
(Sill No. 4)  
(Northeast)  
(Embedded plates placement  
for salvaged Barrier Expansion Device)

Note:  
Plate Details shown in Original Construction Plans  
Salvaged embedded plates must be in place prior to  
endblock and barrier concrete placement.



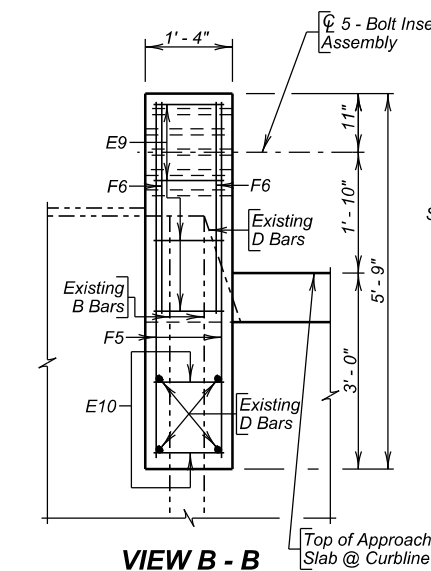
**VIEW A - A**



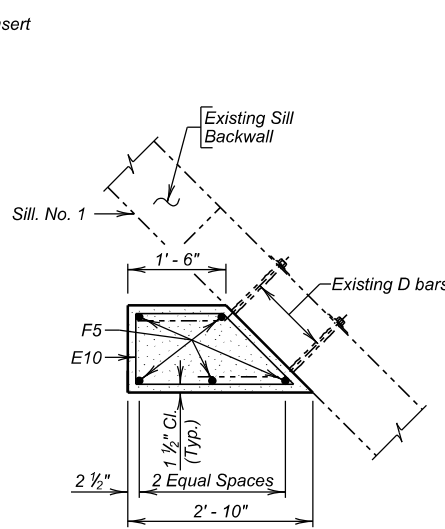
**ELEVATION**  
(Sill No. 4)  
(Northeast)

REINFORCING SCHEDULE					
End Blocks (Phase 1)					
Mk.	No.	Size	Length	Type	Bending Details
F1	2	7	3'-3"	Str.	
F2	9	7	5'-6"	Str.	
F3	3	7	2'-9"	Str.	
F4	2	7	3'-4"	19A	
F5	5	7	5'-6"	Str.	
F6	2	7	3'-3"	Str.	
E2	2	5	13'-2"	T7	
E3	2	5	10'-4"	T7	
E6	4	4	12'-2"	T8B	
E9	4	4	10'-0"	T7	
E10	2	4	7'-2"	T7	

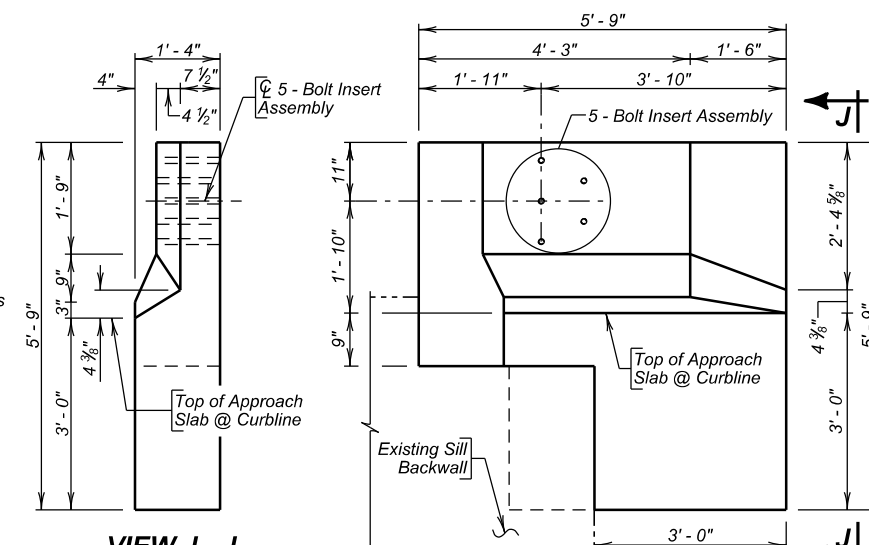
NOTES:  
All Bars to be Epoxy Coated.  
All dimensions are out to out of bars.



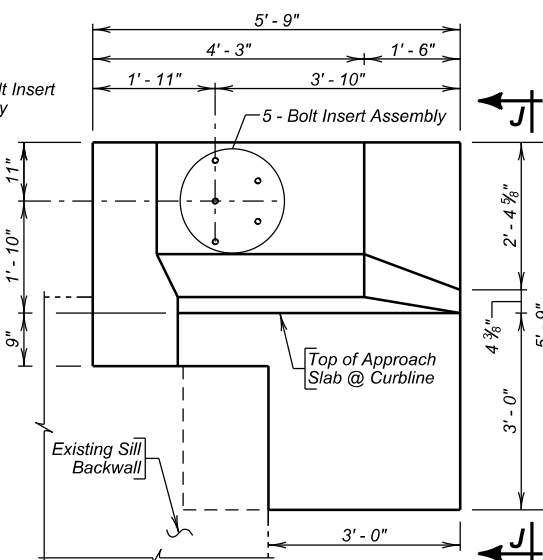
**VIEW B - B**



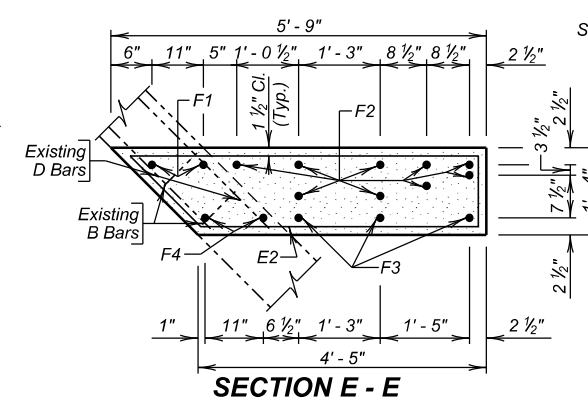
**SECTION C - C**



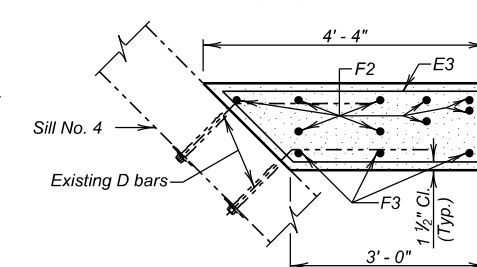
**VIEW J - J**



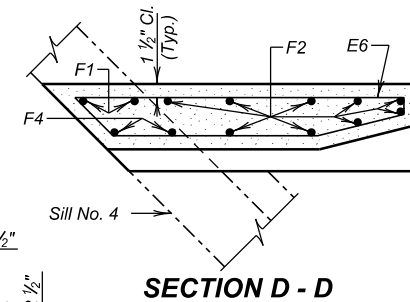
**VIEW H - H**



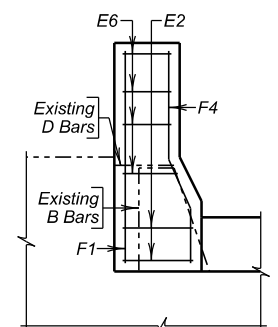
**SECTION E - E**



**SECTION F - F**



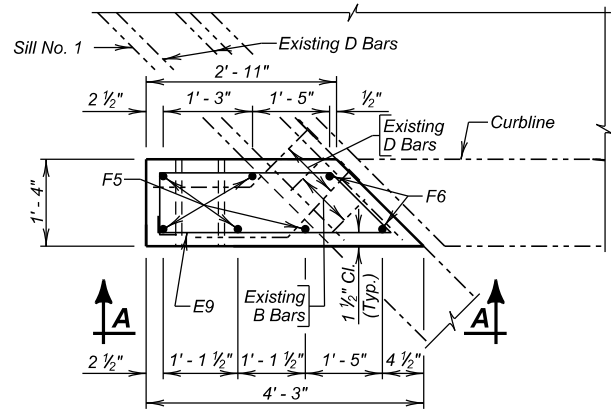
**SECTION D - D**



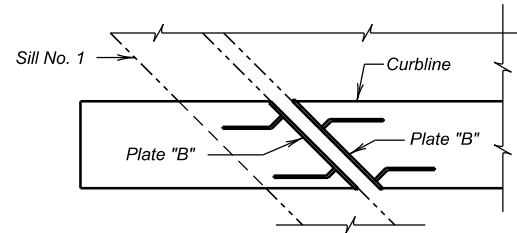
**VIEW G - G**

(WEST BOUND LANES)  
END BLOCK DETAILS (A)  
FOR  
135' - 8" I-BEAM BRIDGE  
38' - 0" ROADWAY  
OVER WHITEWOOD CREEK  
STR. NO. 41-214-098  
45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

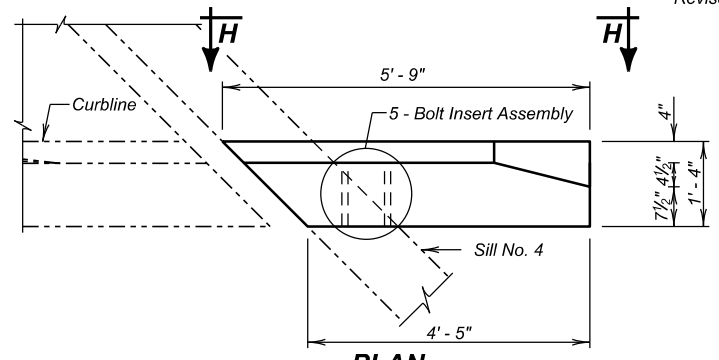
LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION  
APRIL 2024



**PLAN**  
(Sill No. 1)  
(Southwest)

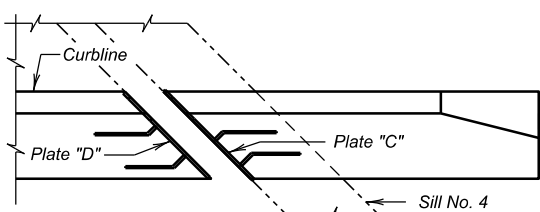


**PLAN**  
(Sill No. 1)  
(Southwest)  
(Embedded plates placement  
of salvaged Barrier Expansion Device)

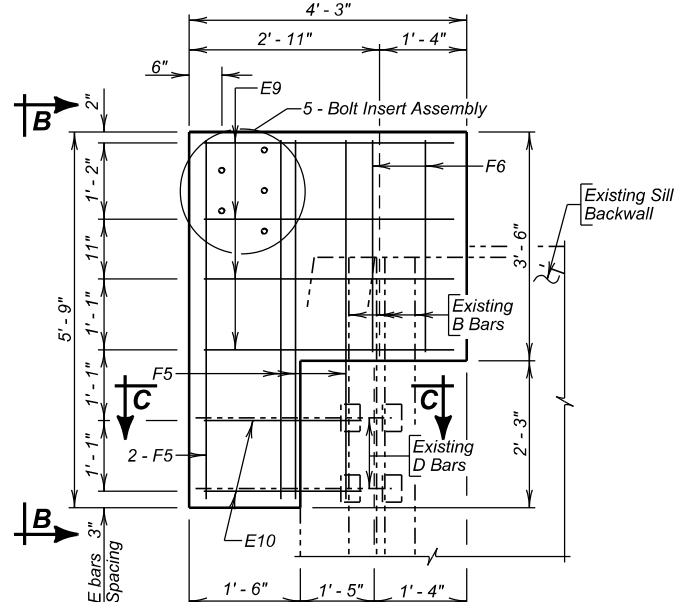


**PLAN**  
(Sill No. 4)  
(Southeast)

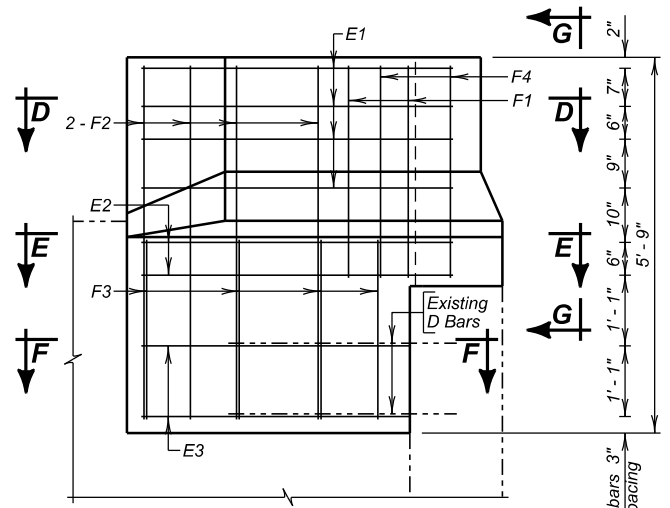
Note:  
Plate Details shown in Original Construction Plans  
Salvaged embedded plates must be in place prior to  
endblock and barrier concrete placement.



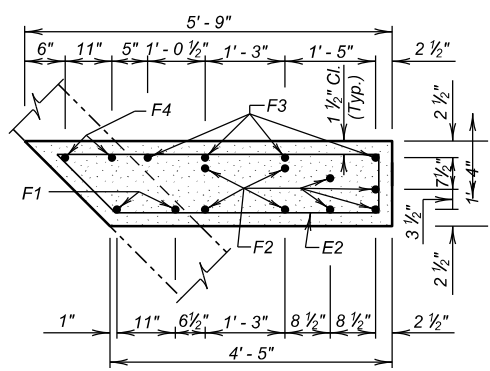
**PLAN**  
(Sill No. 4)  
(Southeast)  
(Embedded plates placement  
of salvaged Barrier Expansion Device)



**VIEW A - A**

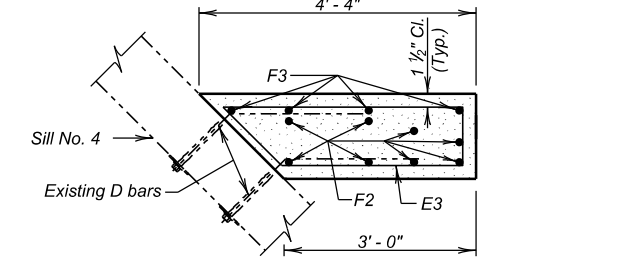


**ELEVATION**  
(Sill No. 4)  
(Southeast)



**SECTION E - E**

REINFORCING SCHEDULE					Bending Details	
Endblocks (Phase 2)						
Mk.	No.	Size	Length	Type		
F1	2	7	3'-3"	Str.		
F2	8	7	5'-6"	Str.		
F3	4	7	2'-9"	Str.		
F4	2	7	3'-4"	19A		
F5	5	7	5'-6"	Str.		
F6	2	7	3'-3"	Str.		
E1	4	4	11'-6"	T8B		
E2	2	5	13'-2"	T7		
E3	2	5	10'-4"	T7		
E9	4	4	10'-0"	T7		
E10	2	4	7'-2"	T7		



**SECTION F - F**

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Class A45 Concrete, Bridge Repair	CuYd	2.0	2.0
Epoxy Coated Reinforcing Steel	Lb	333	325

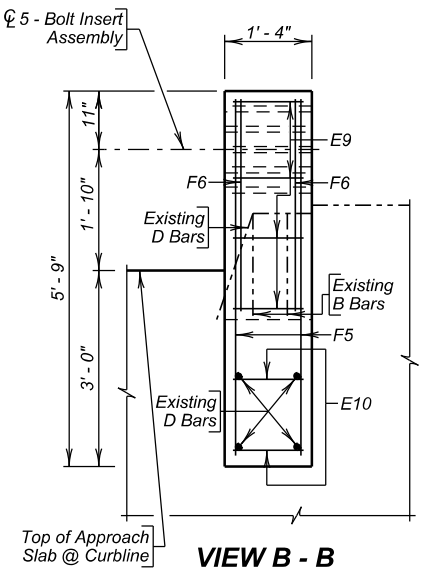
**(WEST BOUND LANES)  
END BLOCK DETAILS (B)**

FOR  
**135' - 8" I-BEAM BRIDGE**  
38' - 0" ROADWAY OVER WHITEWOOD CREEK  
STR. NO. 41-214-098

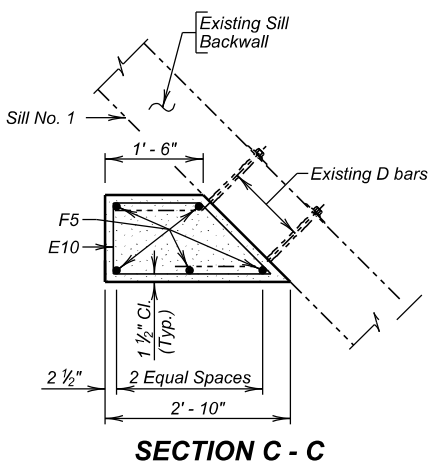
45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION

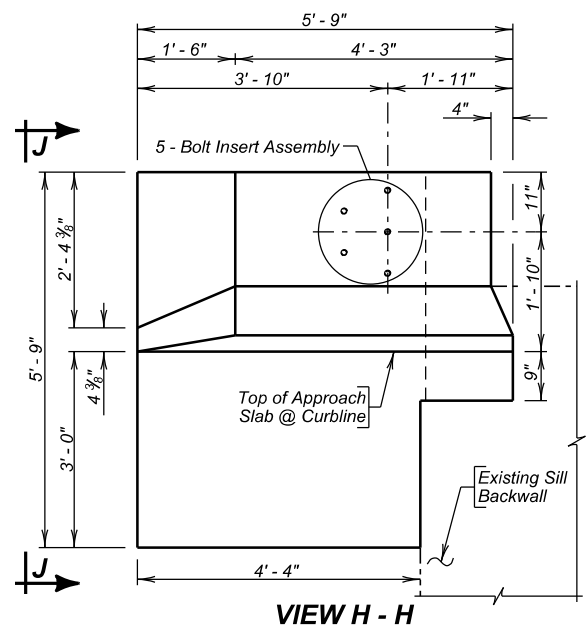
APRIL 2024



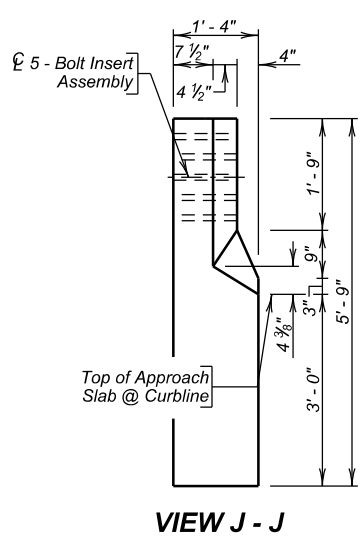
**VIEW B - B**



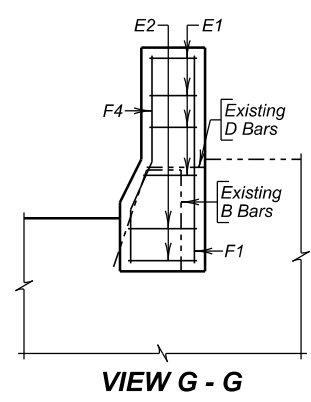
**SECTION C - C**



**VIEW H - H**



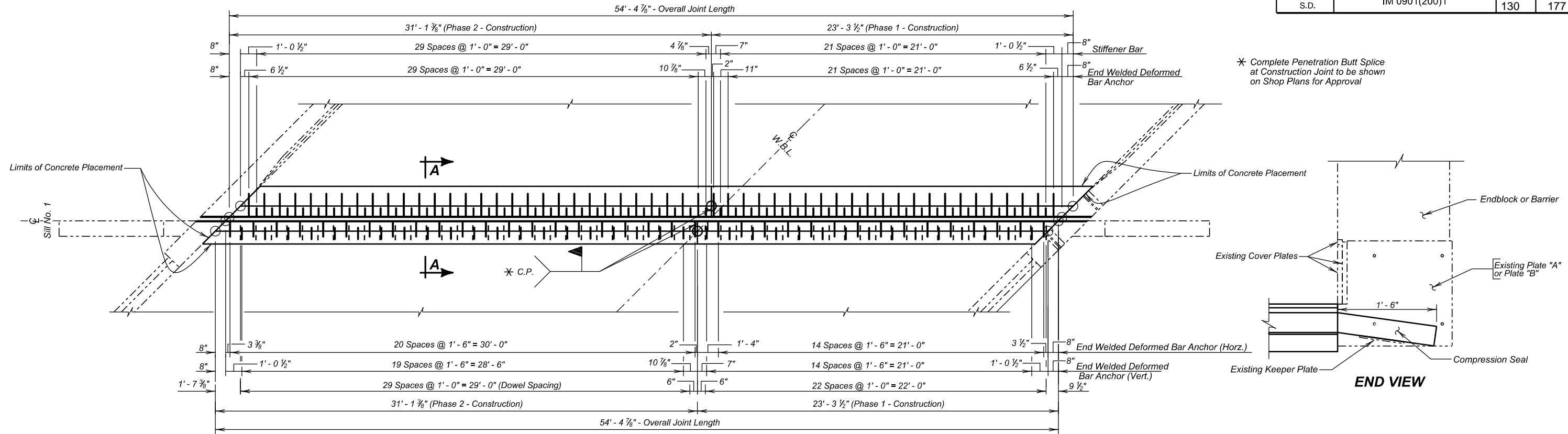
**VIEW J - J**



**VIEW G - G**

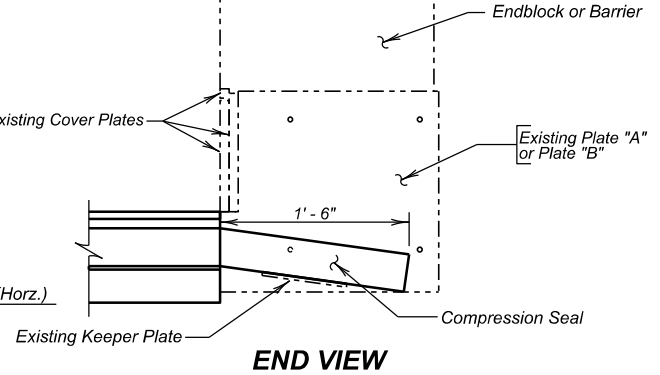
Revised 08/16/2024 JH

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	130	177

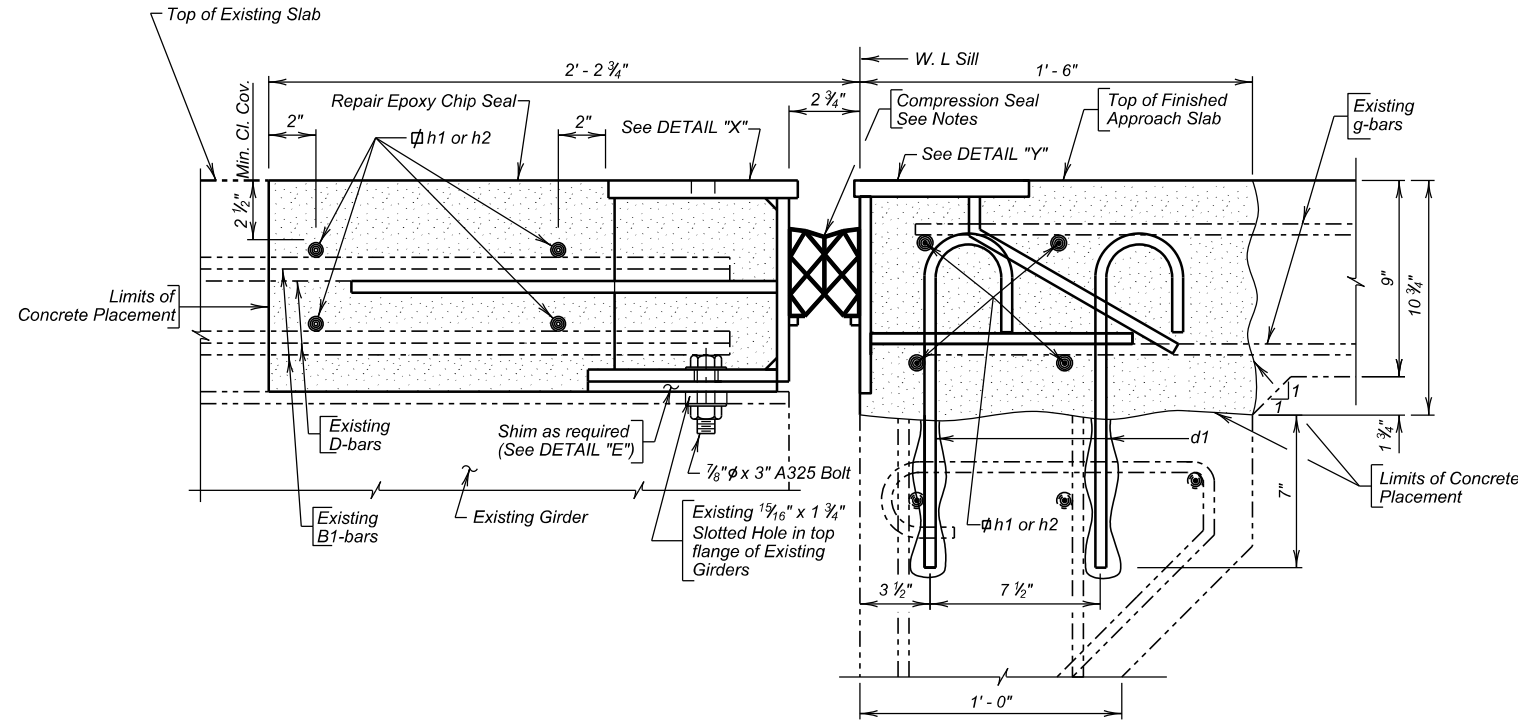


**PLAN**  
(Sill No. 1)  
(Compression Seal Joint)  
(h bars not shown for clarity)

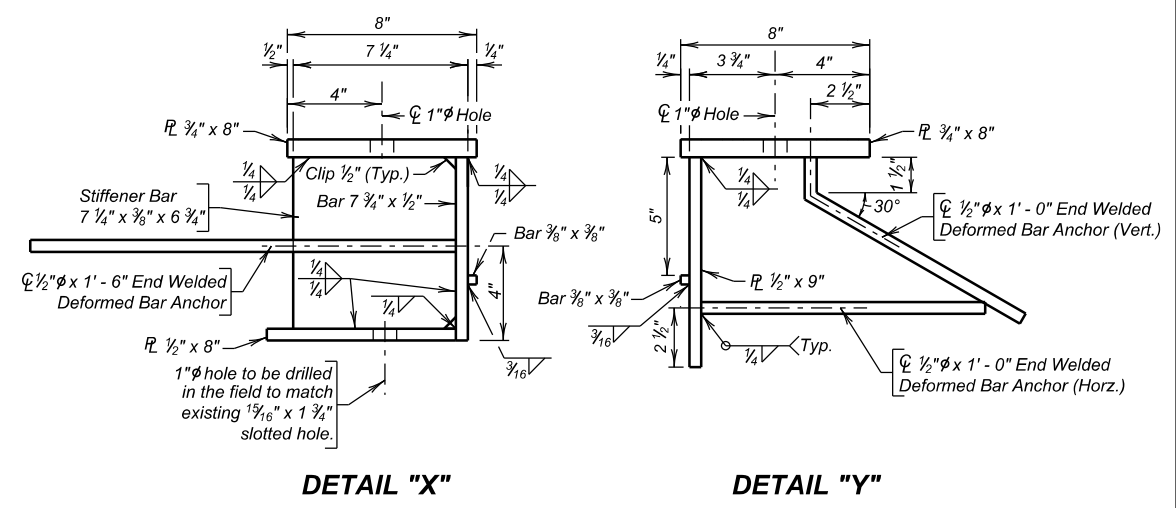
\* Complete Penetration Butt Splice at Construction Joint to be shown on Shop Plans for Approval



**END VIEW**



**SECTION A - A**



**DETAIL "X"**

**DETAIL "Y"**

**(WEST BOUND LANES)  
BRIDGE JOINT REPLACEMENT DETAILS (A)  
FOR**

**135' - 8\"/>**

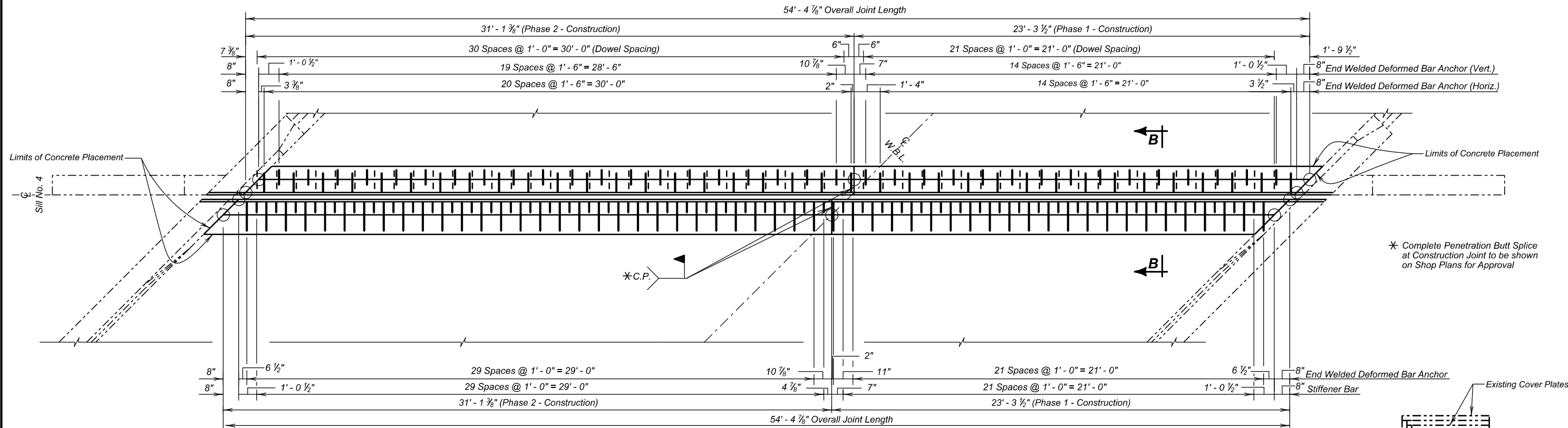
38' - 0" ROADWAY  
OVER WHITEWOOD CREEK  
STR. NO. 41-214-098

45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION  
APRIL 2024

∅ The h bars will be placed in original position and mechanically spliced at construction joint.

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RJ11	DRAFTED BY JRB	Steve A. Johnson BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	-------------------------------------



**PLAN**  
(Sill No. 4)

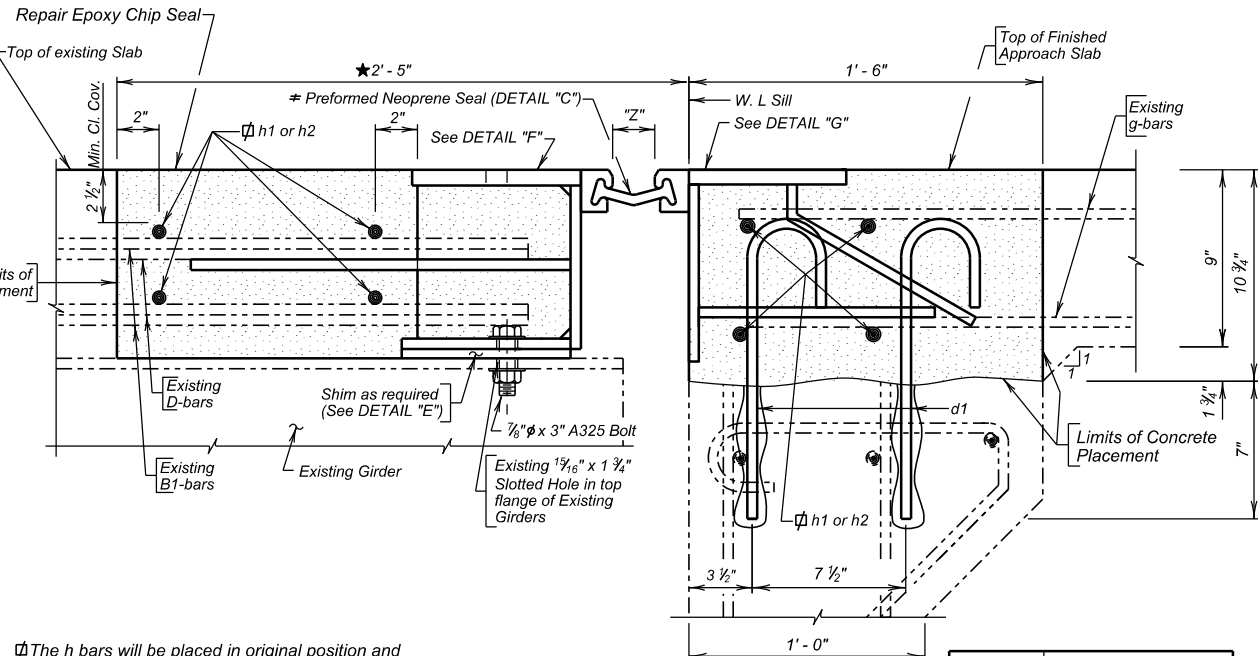
(Neoprene Seal not shown)  
(h bars not shown for clarity)

★ Dimensions given at 70° F.

≠ Seal will have a 4 inch movement capability.

**GENERAL NOTES FOR NEOPRENE SEAL JOINT:**

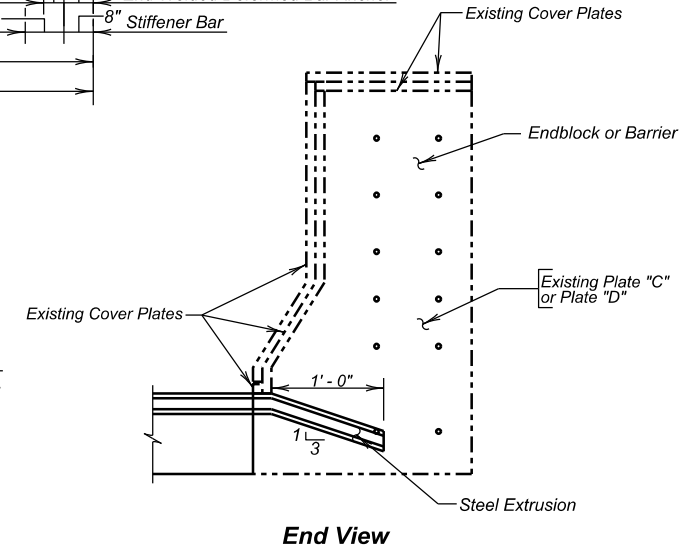
- Materials for the Steel Extrusion will conform to ASTM-A36, A242 or A588. Materials for the 2" x 2" x 5/16" welded steel plates will conform to ASTM-A36. Material for the 1/2" diameter x 6" Concrete Anchors will conform to Type A steel studs of Section 7 of the latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel.
- Material for the neoprene seal will conform to ASTM D2628 modified to omit the recovery test. No splices will be permitted in the neoprene seal.
- The lubricant-adhesive used to install the neoprene seal will conform to the requirements of ASTM D4070. The neoprene seal and the lubricant adhesive should be supplied or recommended by the same source as they must be compatible.
- The installation of the neoprene seal will be as recommended by its Manufacturer and approved by the Engineer, but in general will be as follows: The neoprene seal will be installed and bonded to the steel extrusion with a high-solids lubricant adhesive. The neoprene surfaces will be roughened with a wire brush before the application of the lubricant adhesive. The neoprene seal may be installed either prior to or after the time the steel extrusions are concreted in the approach slabs. The steel extrusion will be dry, clean, free from dirt, grease and contaminants at the time the neoprene seal is installed.
- Due to the length of the steel extrusions, splices are permitted. No welds will be permitted in the internal section of the extrusion where the neoprene seal is located. Weld details will be shown on the shop plans for approval by the Engineer. Welding will be in accordance with latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel. Galvanize the steel extrusions and anything welded to them after all welding is completed. They will be galvanized in accordance with AASHTOM111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding will be included with the shop plans. Repair of galvanizing will be by the zinc-based solder method in conformance with ASTM A780.
- The thickness and shape of the neoprene seal may vary from the sketch shown (Detail "C" on this sheet) according to the manufacturer's design; however, the wedge lugs must properly fit the groove in the steel extrusion. Before installation, the shop plans of the proposed neoprene seal showing the fixed dimensions, thickness of neoprene seal, and dimensions pertinent to the fit of the neoprene seal in the steel extrusion will be submitted to and approved by the Engineer.
- Since the configuration and dimensions of the steel extrusion may vary according to each manufacturer's design, they need not conform exactly to that shown in DETAIL "D", however, any deviations from the plan shown configuration or dimensions must be approved by the Office of Bridge Design.
- The Strip Seal Expansion Joint supplier will submit a detailed gland installation procedure with the shop plans.
- The cost of welding will be included in the unit cost for Strip Seal Expansion Joint.
- The neoprene seal will be of sufficient length such that a minimum length of 6" will extend beyond each end of the steel extrusions.
- The Strip Seal Expansion Joint will be measured in linear feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Strip Seal Expansion Joint will be paid for at the contract unit price per linear foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.



**SECTION B - B**

∅ The h bars will be placed in original position and mechanically splice at construction joint.

TEMP.	DIMENSION "Z"
- 30°	3 7/8"
25°	2 9/16"
40°	2 3/8"
55°	2 3/16"
70°	2"
85°	1 13/16"
100°	1 5/8"
120°	1 7/16"



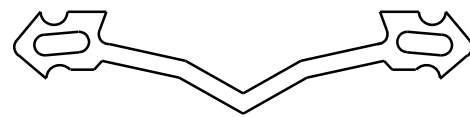
**End View**

**(WEST BOUND LANES)  
BRIDGE JOINT REPLACEMENT DETAILS (B)  
FOR  
135' - 8" I-BEAM BRIDGE**

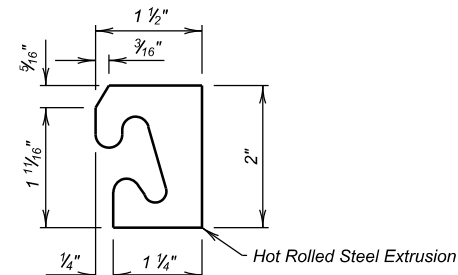
38' - 0" ROADWAY OVER WHITEWOOD CREEK STR. NO. 41-214-098  
45° SKEW R.H.F. SEC. 22-T6N-R4E IM 0901(200)1

LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION

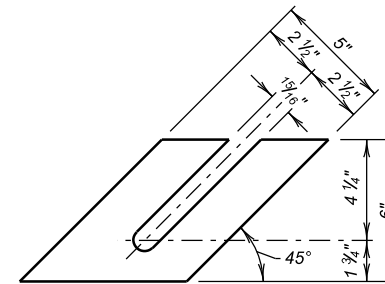
APRIL 2024



**DETAIL "C"**  
Neoprene Seal will have a 4 in movement capability.



**DETAIL "D"**



**DETAIL "E"**

Provide: 20 - 1/16" thick shims  
10 - 1/8" thick shims  
20 - 3/8" thick shims

**REINFORCING SCHEDULE**

(Both Joints)

Mk.	No.	Size	Length	Type	Bending Details	
(Phase 1)						
d1	90	5	1' - 9"	1A		
h1	8	5	24' - 10"	Str.		
(Phase 2)						
d1	122	5	1' - 9"	1A		
h2	8	5	31' - 10"	Str.		

NOTES:  
All Bars to be Epoxy Coated.  
All dimensions are out to out of bars.  
⊗ Mechanically Splice

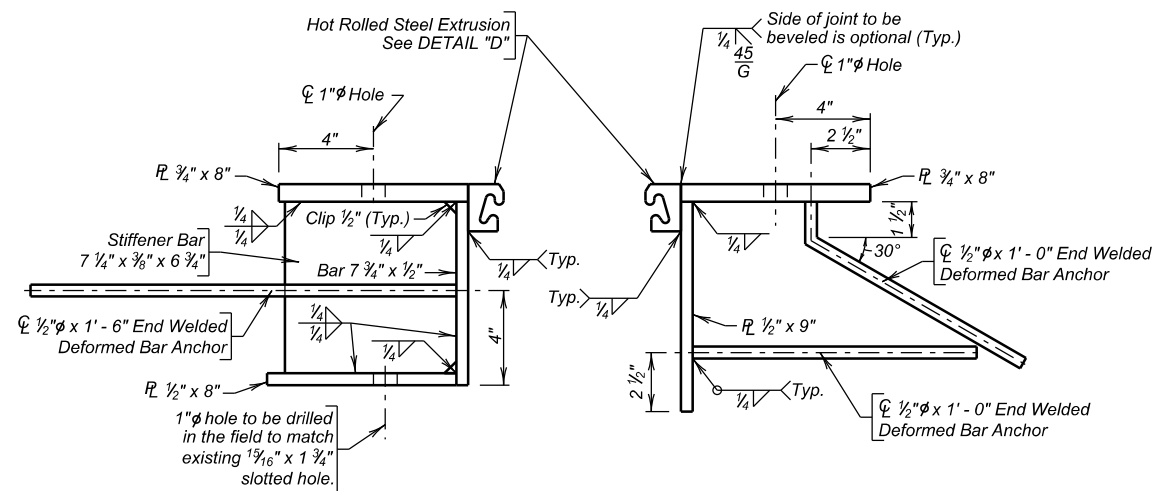
**ESTIMATED QUANTITIES**

(For Two Joints)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Strip Seal Expansion Joint	Ft	23.8	32.3
Class A45 Concrete, Bridge Repair	CuYd	4.8	6.3
Galvanic Anode	Each	64	84
Compression Seal Joint	Ft	24.3	32.8
Install Dowel in Concrete	Each	90	122
Epoxy Coated Reinforcing Steel	Lb	208	266
No. 5 Rebar Splice	Each	16	-
Two Coat Bridge Deck Polymer Chip Seal	SqYd	7.0	9.2
Abrasive Blasting of Bridge Deck	SqYd	7.0	9.2
Bridge Deck Grinding	SqYd	7.2	9.0

Items 1 and 2 are approximate quantities contained in the above contract items and are for information only.

	PHASE 1	PHASE 2
1. Epoxy Coated Reinforcement for Dowels	165 Lb	223 Lb
2. Structural Steel in Bridge Joints	4642 Lb	6226 Lb



**DETAIL "F"**

**DETAIL "G"**

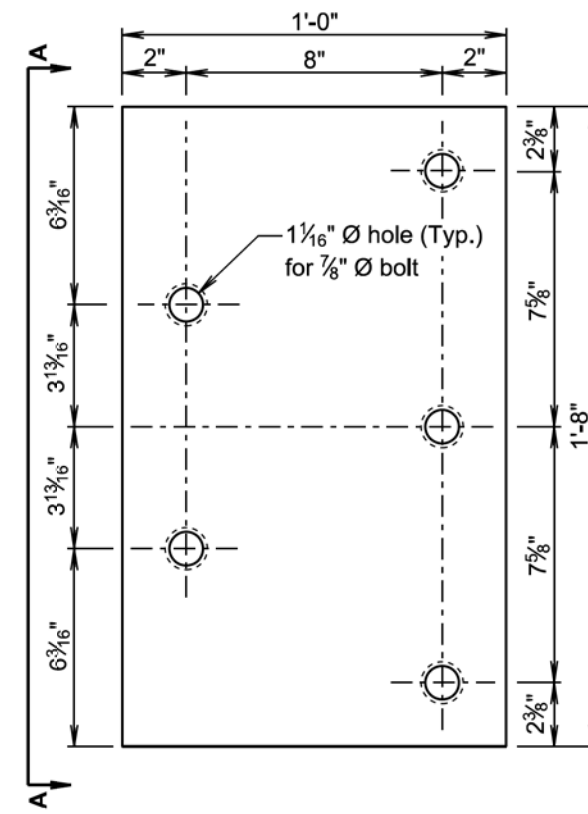
**(WEST BOUND LANES)  
BRIDGE JOINT REPLACEMENT DETAILS (C)**

FOR  
**135' - 8" I-BEAM BRIDGE**  
38' - 0" ROADWAY OVER WHITEWOOD CREEK  
STR. NO. 41-214-098  
45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

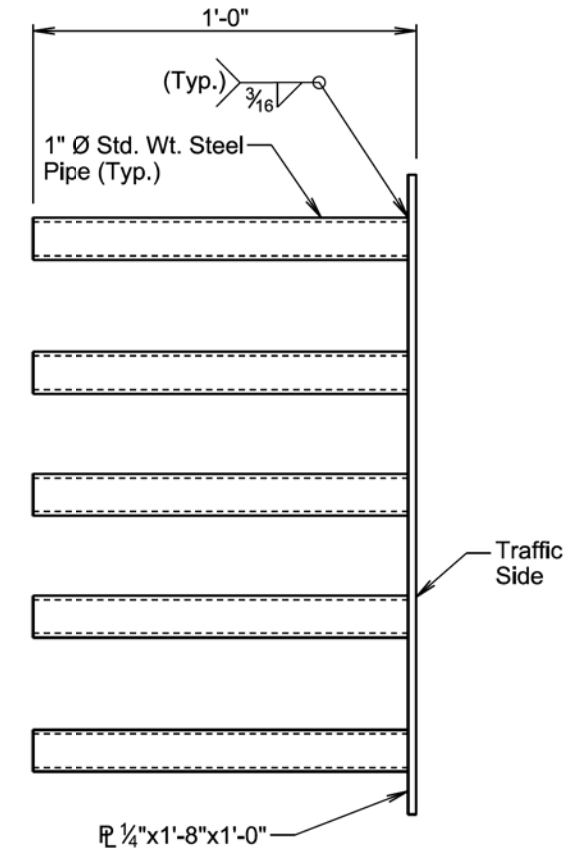
LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION

APRIL 2024

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	132A	177



**ELEVATION VIEW**



**VIEW A - A**

**GENERAL NOTES:**

Steel plate for the insert assembly will conform to ASTM A709, Grade 36. The steel pipes will conform to ASTM A53 or ASTM A500, Grade B.

Welding and weld inspection will be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.

After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

Bolts, nuts, and washers will be provided with each assembly. Bolts will be galvanized and conform to the requirements of ASTM A307, F-1554 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing will be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

August 27, 2020

Published Date: 2025

**S  
D  
D  
O  
T**

**5 BOLT INSERT PLATE ASSEMBLY**

PLATE NUMBER  
**630.92**

Sheet 1 of 1

135' - 8" I-BEAM BRIDGE

STR. NO. 42-214-099  
APRIL 2024



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	150	177

**ESTIMATE OF STRUCTURE QUANTITIES**

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
380E6305	Compression Seal Joint	57.1	Ft
410E2300	Strip Seal Expansion Joint	56.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	18.6	CuYd
460E0300	Breakout Structural Concrete	18.6	CuYd
460E0382	Install Dowel in Concrete	212	Each
480E0200	Epoxy Coated Reinforcing Steel	1613	Lb
480E0505	No. 5 Rebar Splice	16	Each
480E5000	Galvanic Anode	164	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	16.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	16.2	SqYd
491E0120	Bridge Deck Grinding	16.2	SqYd

**SPECIFICATIONS**

- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.
- All Welding and Welding Inspection will be in conformance with the latest edition of the AASHTO/AWS D1.5M/D1.5 Bridge Welding unless otherwise noted in this plan set.

**DETAILS AND DIMENSIONS OF EXISTING BRIDGE**

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

**SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS**

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

- Remove joints and breakout concrete to the extent shown in the plans for the joints, end blocks, deck, and barriers for the first phase of construction.
- Perform abrasive blasting and cleaning of steel to be salvaged, including barrier expansion device, for first phase of construction.
- Place Galvanic anodes for both joints and barriers.
- Install joints and repair abutments and deck at both bridge ends for first phase of construction.
- Replace concrete at end blocks and barrier and apply commercial texture finish to the end blocks and barrier for the first phase of construction.

- Switch traffic for and repeat steps 1 to 5 for the second phase of construction.

**GENERAL CONSTRUCTION - BRIDGE**

- All reinforcing steel will conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
- Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
- The Contractor will only imprint one year-plate on the structure. The year plate will contain the date the existing bridge was built and will be located as specified and detailed on Standard Plate No. 460.02.
- Barrier curbs and end blocks will be built perpendicular to the grade.
- Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.
- All lap splices are contact lap splices unless noted otherwise.

**COMPRESSION SEAL JOINT**

- Steel for the Armor Assembly will conform to ASTM A709, Grade 36. The Automatic End Welded Deformed Bar Anchor Studs will conform to ASTM A1064. The Armor Assembly complete in-place will be a continuous unit.
- The compression seal at the location shown can be obtained from the following suppliers. Company addresses and type of compression seal required are listed below.

A. THE D.S. BROWN COMPANY  
 Delastic Preformed Neoprene Compression Seal  
 Type: CV-2502 (2 1/2" x 2 1/2")  
 P.O. Box 158  
 300 East Cherry Street  
 North Baltimore, Ohio 45872-0158  
 Telephone: 419-257-3561

B. HARRIS SPECIALTY CHEMICALS, INC.  
 Watson Bowman Acme  
 Wabo Compression Seal  
 Type: WJ-250 (2.5" x 2.546")  
 95 Pineview Drive  
 Amherst, New York 14228  
 Telephone: 716-691-7566

- Material for the Neoprene Compression Seal will conform to that specified in ASTM D2628. No splices will be permitted in the Neoprene Seal.
- The Neoprene seal will be installed and bonded to the joint with a high solids lubricant adhesive. At the time of the Neoprene Seal installation, the steel surfaces of the joint to be in contact with the Neoprene Seal will be dry, clean and free from dirt, grease and contaminants. The Contractor will be required to clean those areas by abrasive blasting.
- The installation of the compression seal will be as specified by the manufacturer and will be subject to the approval of the Engineer. The ends of the Neoprene Seal will be sealed as recommended by the manufacturer.
- Galvanize the Armor Assemblies and anything welded to them after all welding is completed. They will be galvanized in accordance with AASHTO M111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding will be included with the shop plans. Repair of galvanizing will be by the zinc-based solder method in conformance with ASTM A780.
- Welding for the Armor Assembly will be in accordance with ANSI/AWS D1.1 Structural Welding Code - Steel.
- The Compression Seal Joint supplier will submit a detailed compression seal installation procedure with the shop plans.
- The cost of welding will be included in the contract unit price per foot for Compression Seal Joint.
- The Compression Seal Joint will be measured in linear feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Compression Seal Joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES**

FOR

135' - 8" I-BEAM BRIDGE

STR. NO. 41-214-099

APRIL 2024

2 OF 29

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RK02	DRAFTED BY JRB <i>Steve A. Johnson</i>	BRIDGE ENGINEER
--------------------------------	-------------------------------	--	-----------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	152	177

**INSTALL DOWEL IN CONCRETE (CONTINUED)**

2. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, (Equivalent to ASTM C881, Type IV, Grade 3). Grade 1, 2 or 3 may be used for vertical dowels, and Grade 3 epoxy will be used for all horizontal dowels.
3. The diameter of the drilled holes will not be less than 1/8-inch greater, nor more than 3/8-inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
4. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
5. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
6. Dowel bars will be deformed bars conforming to ASTM A615, Grade 60.
7. The cost of epoxy resin, dowels, installation, and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

**TWO COAT BRIDGE DECK POLYMER CHIP SEAL**

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

**BRIDGE DECK GRINDING**

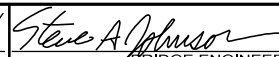
The Contractor will have the option of grinding the entire deck surface during phase one. Any additional costs incurred for grinding the entire deck surface such as additional traffic control or cleaning will be at no additional cost to the Department.

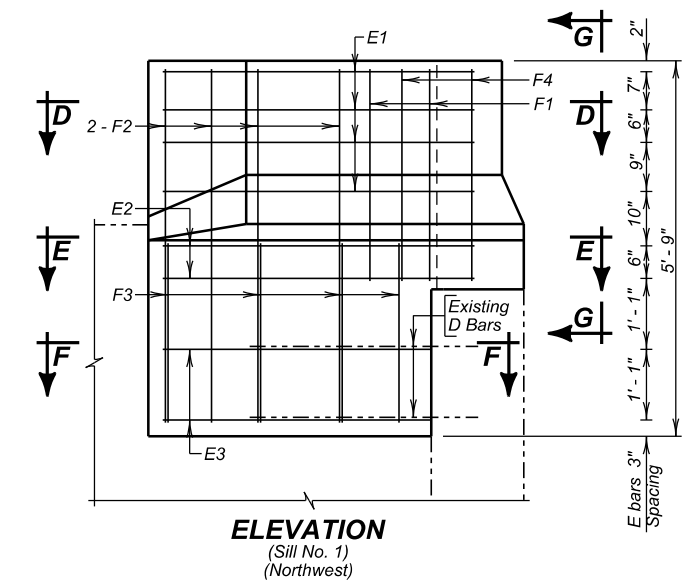
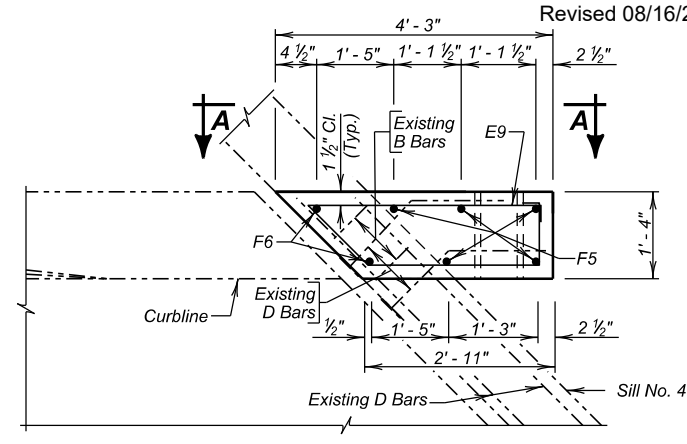
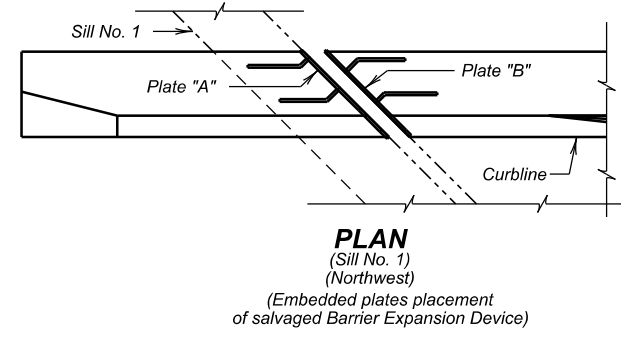
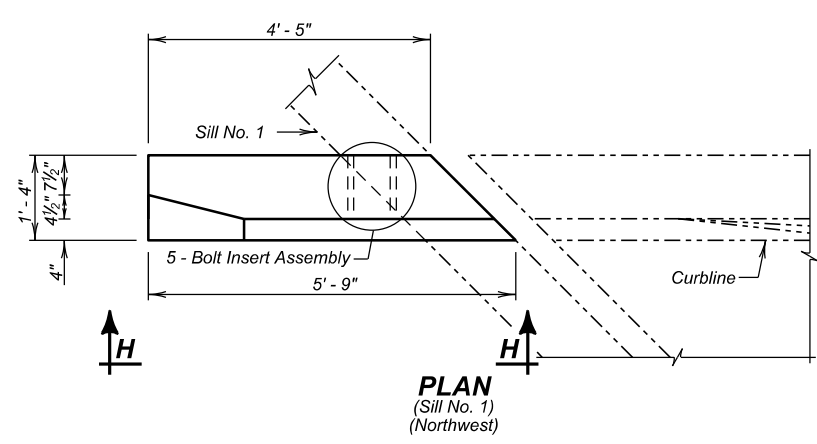
**NOTES (CONTINUED)**  
FOR  
**135' - 8" I-BEAM BRIDGE**

STR. NO. 41-214-099

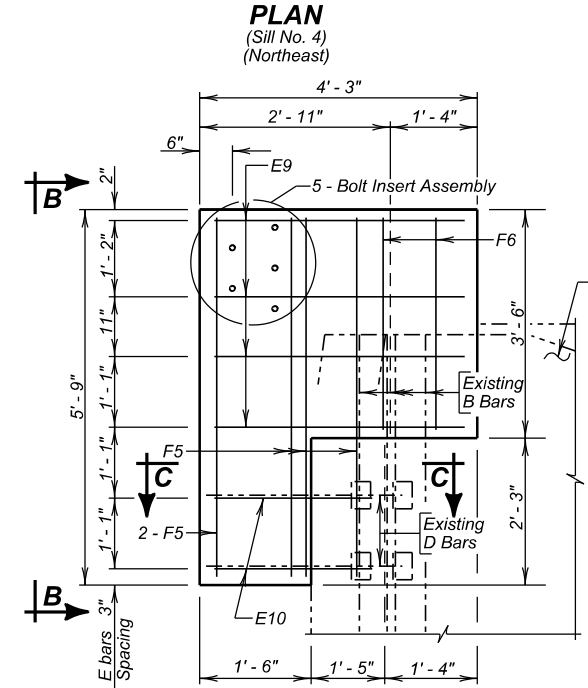
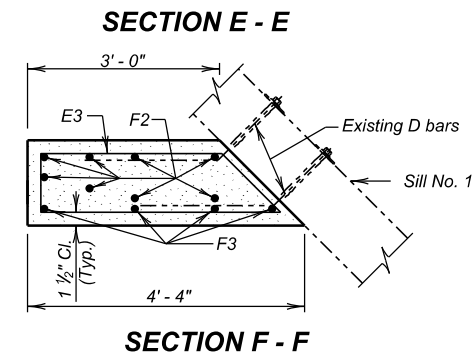
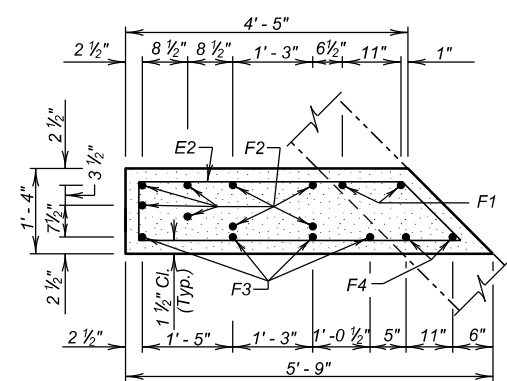
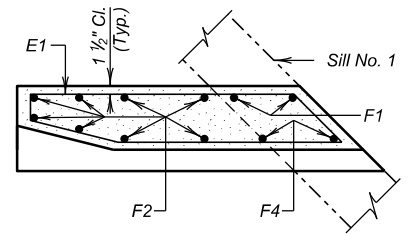
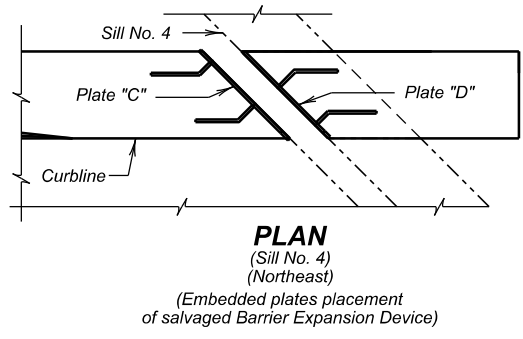
APRIL 2024

4 OF 29

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RK04	DRAFTED BY JRB	 BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	--

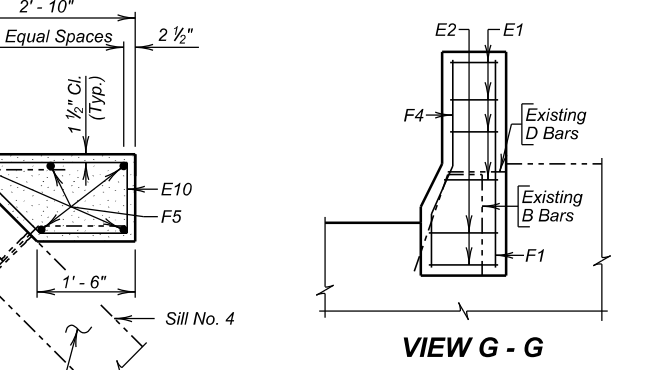


Note:  
Plate Details shown in Original Construction Plans  
Salvaged embedded plates must be in place prior to  
endblock and barrier concrete placement.



REINFORCING SCHEDULE				
Endblocks (Phase 1)				
Mk.	No.	Size	Length	Type
F1	2	7	3' - 3"	Str.
F2	8	7	5' - 6"	Str.
F3	4	7	2' - 9"	Str.
F4	2	7	3' - 4"	19A
F5	5	7	5' - 6"	Str.
F6	2	7	3' - 3"	Str.
E1	4	4	11' - 6"	T8B
E2	2	5	13' - 2"	T7
E3	2	5	10' - 4"	T7
E9	4	4	10' - 0"	T7
E10	2	4	7' - 2"	T7

NOTES:  
All Bars to be Epoxy Coated.  
All dimensions are out to out of bars.

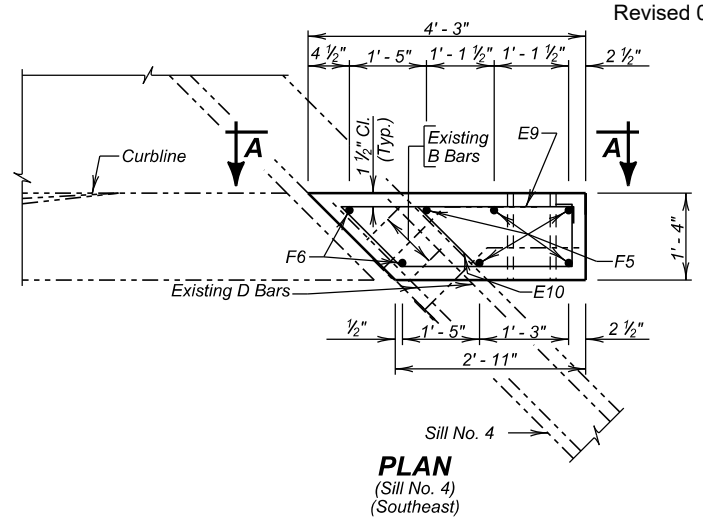
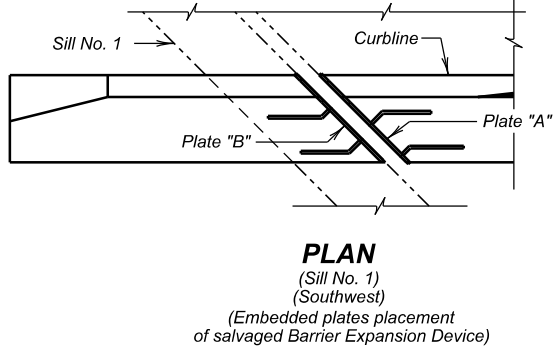
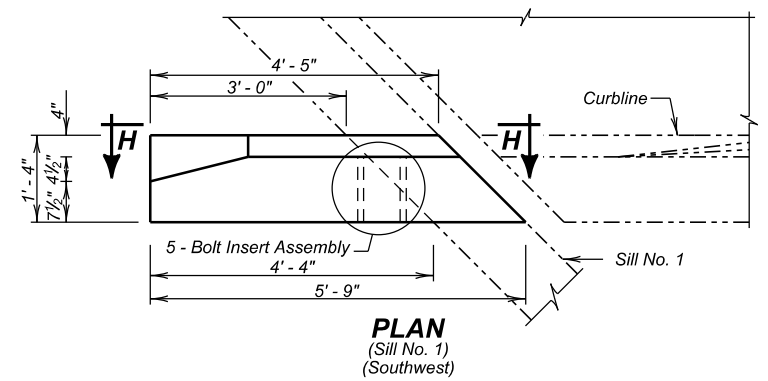


(EAST BOUND LANES)  
END BLOCK DETAILS (A)  
FOR  
135' - 8" I-BEAM BRIDGE  
38' - 0" ROADWAY  
OVER WHITEWOOD CREEK  
STR. NO. 41-214-099

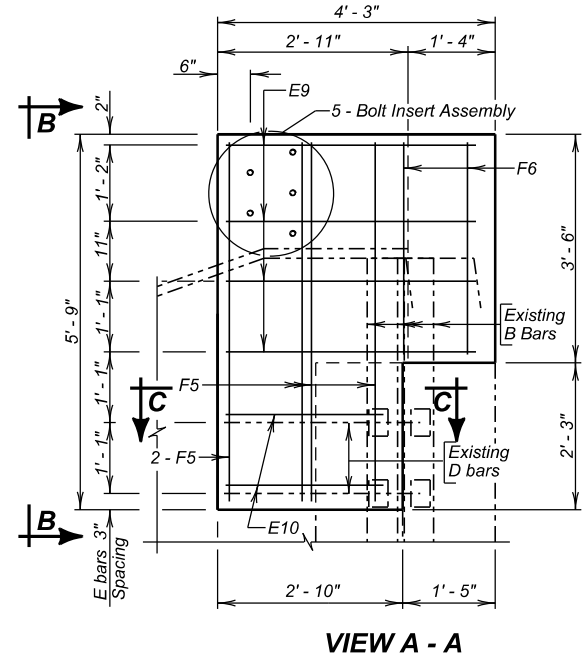
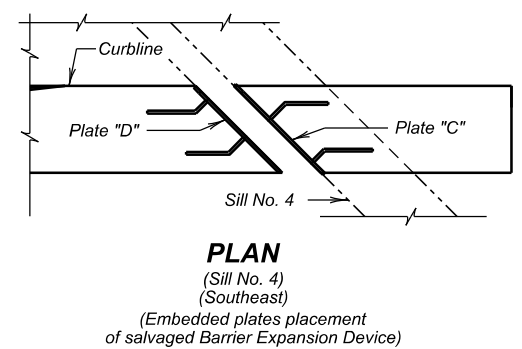
45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION  
APRIL 2024

Revised 08/16/2024 JH

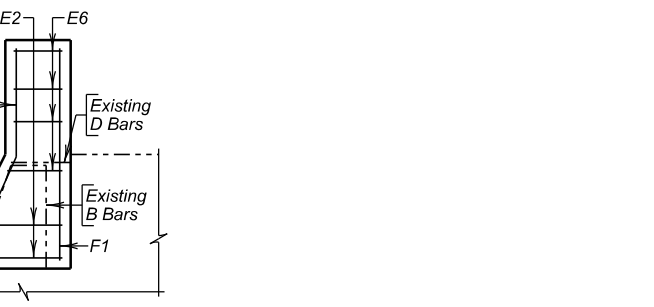


Note:  
Plate Details shown in Original Construction Plans  
Salvaged embedded plates must be in place prior to  
endblock and barrier concrete placement.



REINFORCING SCHEDULE					
End Blocks (Phase 2)					
Mk.	No.	Size	Length	Type	Bending Details
F1	2	7	3'-3"	Str.	
F2	9	7	5'-6"	Str.	
F3	3	7	2'-9"	Str.	
F4	2	7	3'-4"	19A	
F5	5	7	5'-6"	Str.	
F6	2	7	3'-3"	Str.	
E2	2	5	13'-2"	T7	
E3	2	5	10'-4"	T7	
E6	4	4	12'-2"	T8B	
E9	4	4	10'-0"	T7	
E10	2	4	7'-2"	T7	

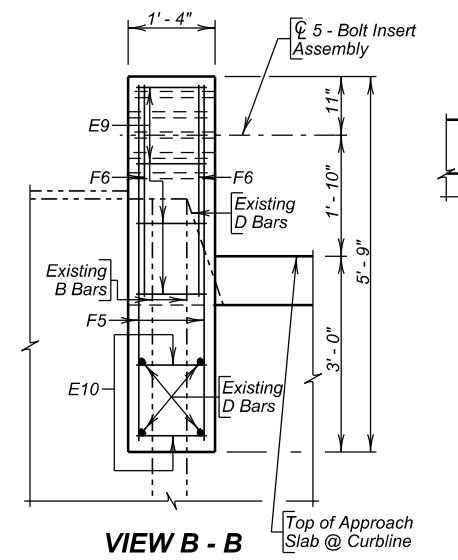
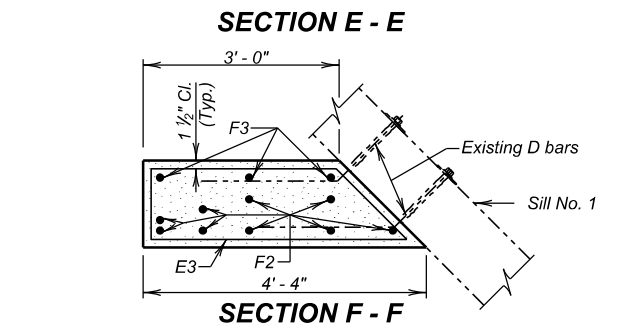
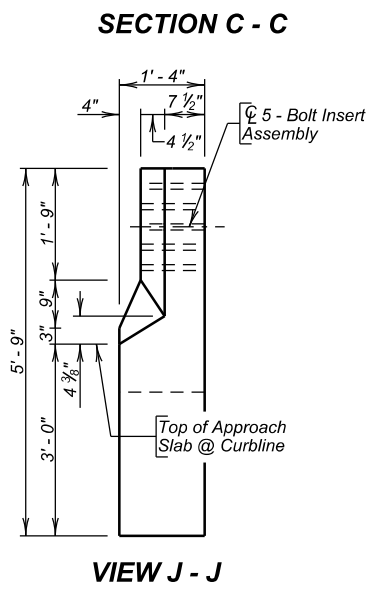
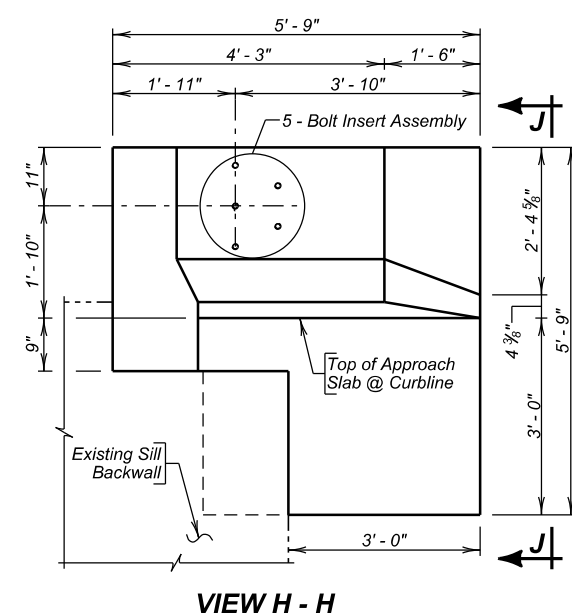
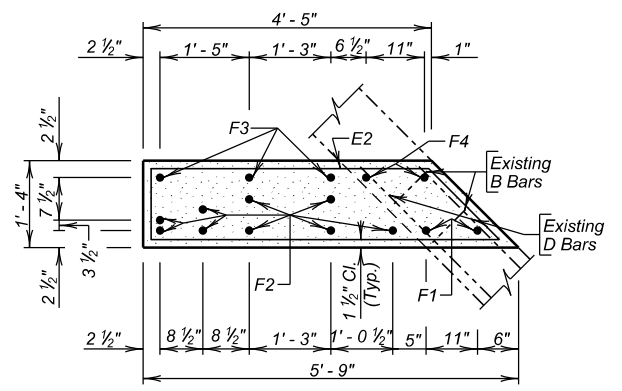
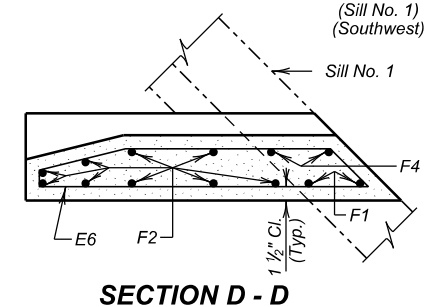
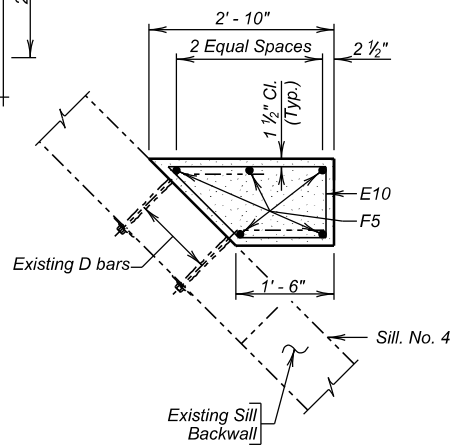
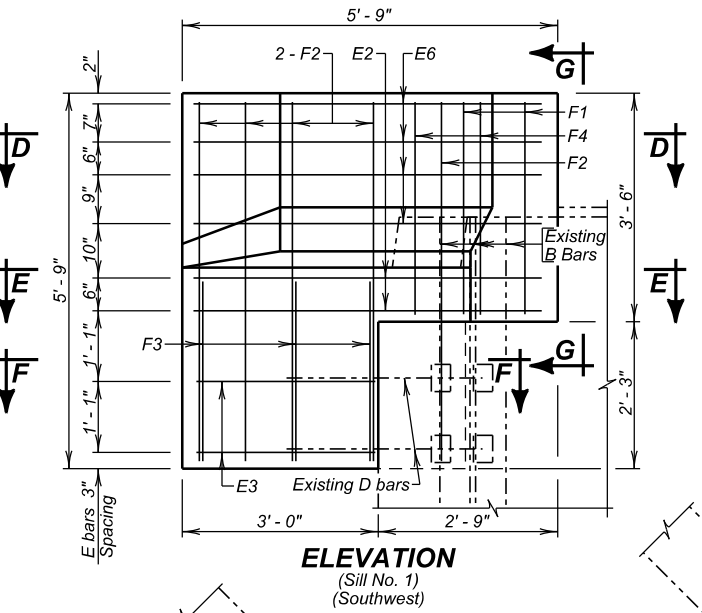
ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Class A45 Concrete, Bridge Repair	CuYd	2.0	2.0
Epoxy Coated Reinforcing Steel	Lb	333	325



(EAST BOUND LANES)  
END BLOCK DETAILS (B)  
FOR  
135' - 8" I-BEAM BRIDGE  
38' - 0" ROADWAY  
OVER WHITEWOOD CREEK  
STR. NO. 41-214-099  
45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

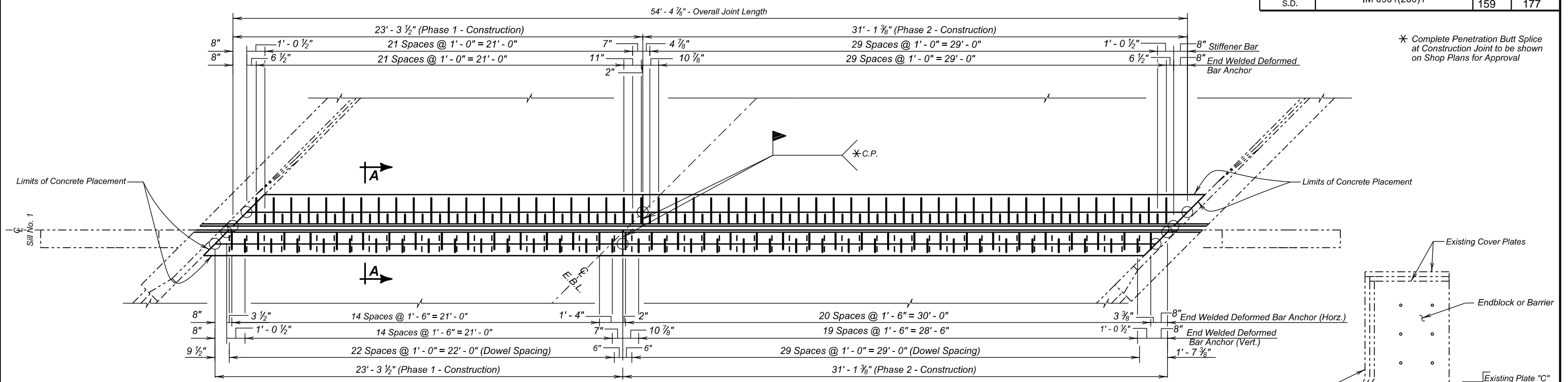
LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION

APRIL 2024



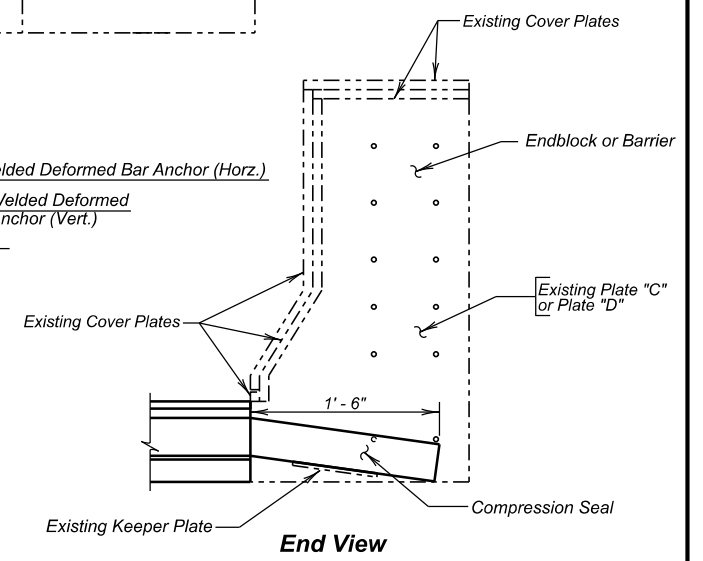
Revised 08/16/2024 JH

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	159	177

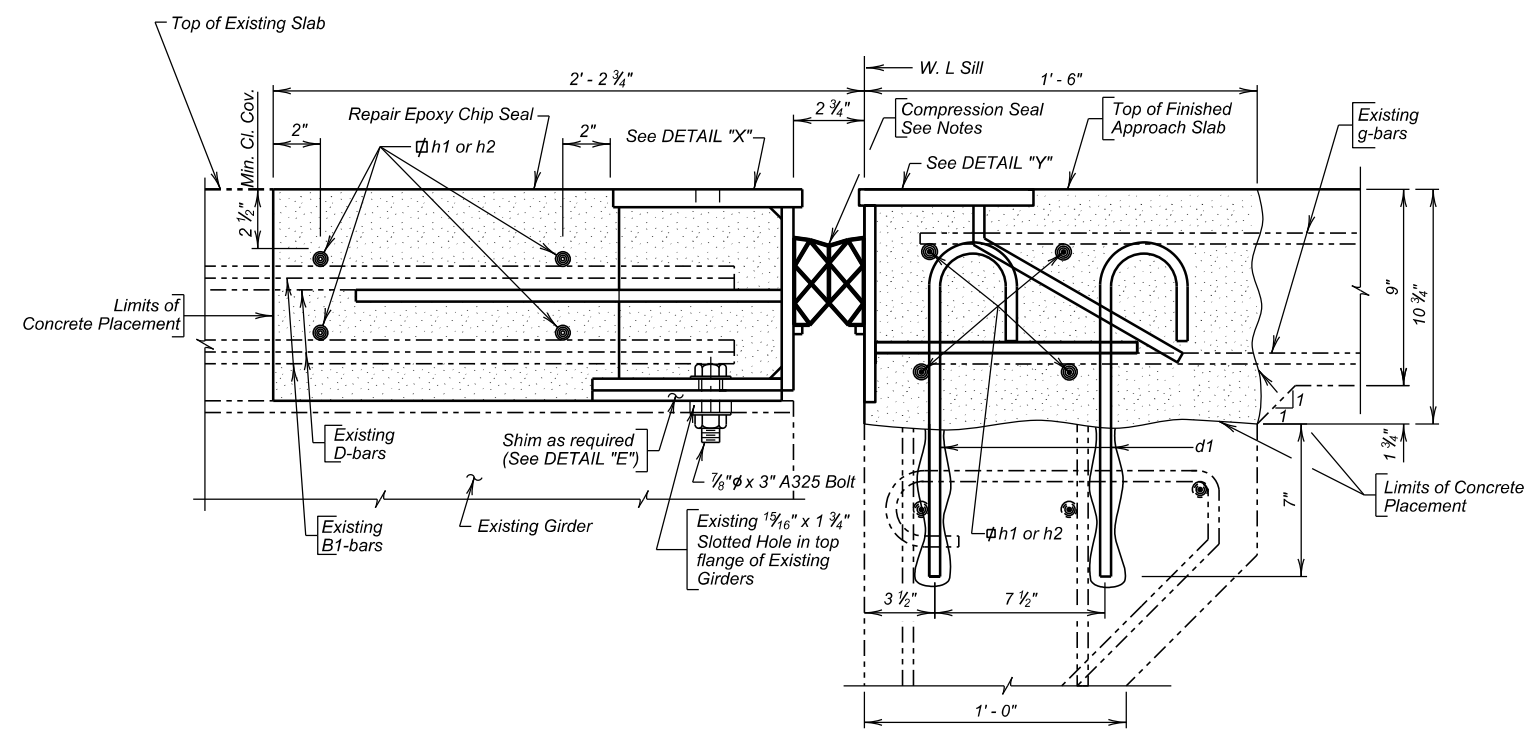


\* Complete Penetration Butt Splice at Construction Joint to be shown on Shop Plans for Approval

**PLAN**  
(Sill No. 1)  
(Compression Seal Joint)  
(h bars not shown for clarity)

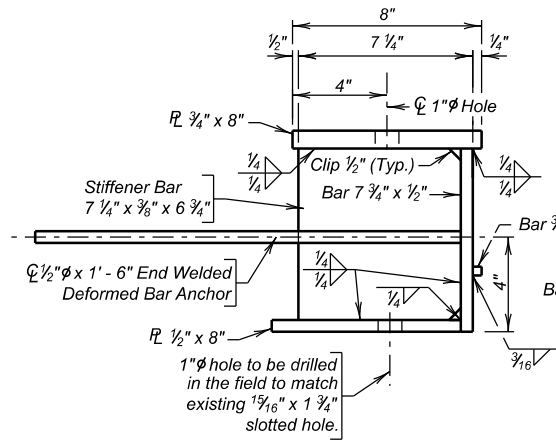


**End View**

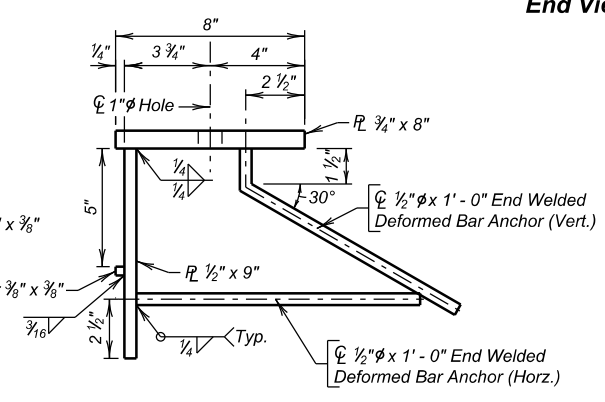


**SECTION A - A**

∅ The h bars will be placed in original position and mechanically splice at construction joint.



**DETAIL "X"**



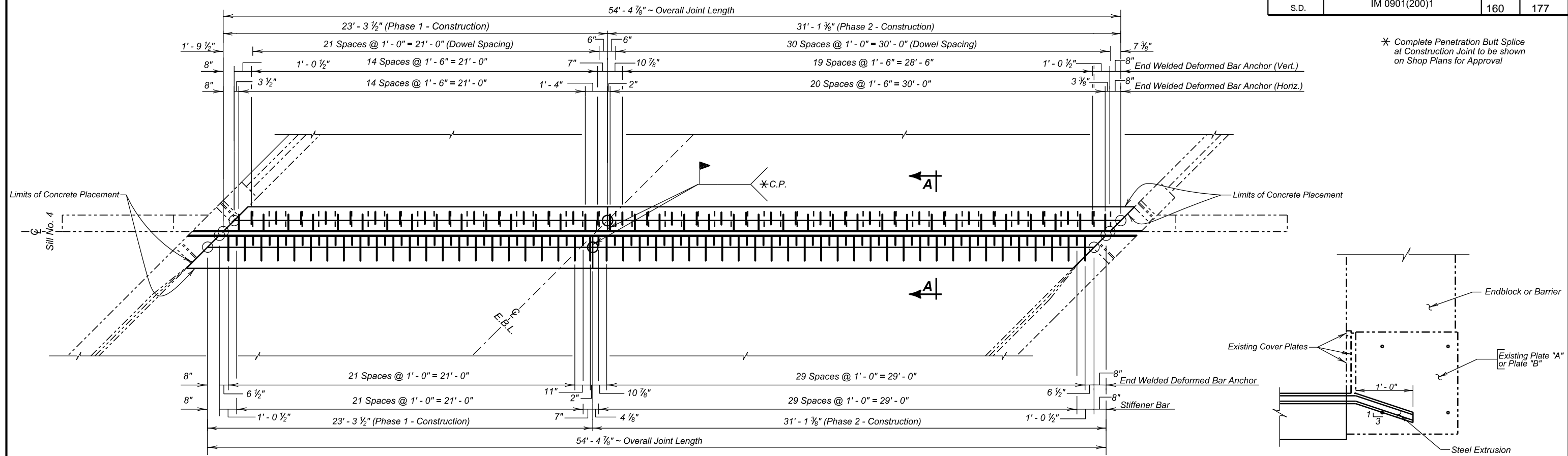
**DETAIL "Y"**

(EAST BOUND LANES)  
**BRIDGE JOINT REPLACEMENT DETAILS (A)**  
 FOR  
**135' - 8" I-BEAM BRIDGE**  
 38' - 0" ROADWAY  
 OVER WHITEWOOD CREEK  
 STR. NO. 41-214-099

45° SKEW R.H.F.  
 SEC. 22-T6N-R4E  
 IM 0901(200)1

LAWRENCE COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 APRIL 2024

DESIGNED BY JRB LAWR07D3	CK. DES. BY JH 07D3RK11	DRAFTED BY JRB	Steve A. Johnson BRIDGE ENGINEER
--------------------------------	-------------------------------	-------------------	-------------------------------------



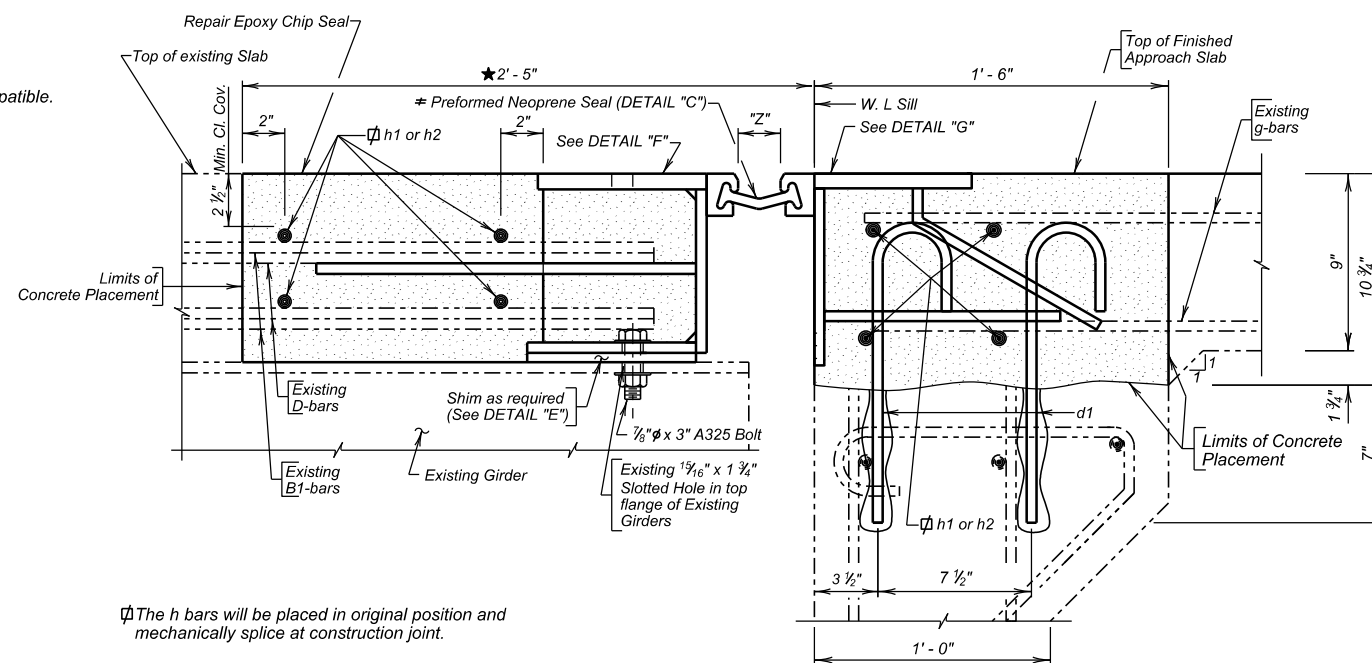
**PLAN**  
(Sill No. 4)  
(Neoprene Seal not shown)  
(h bars not shown for clarity)

**END VIEW**

**GENERAL NOTES FOR NEOPRENE SEAL JOINT:**

- Materials for the Steel Extrusion will conform to ASTM-A36, A242 or A588. Materials for the 2" x 2" x 3/16" welded steel plates will conform to ASTM-A36. Material for the 1/2" diameter x 6" Concrete Anchors will conform to Type A steel studs of Section 7 of the latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel.
- Material for the neoprene seal will conform to ASTM D2628 modified to omit the recovery test. No splices will be permitted in the neoprene seal.
- The lubricant-adhesive used to install the neoprene seal will conform to the requirements of ASTM D4070. The neoprene seal and the lubricant adhesive should be supplied or recommended by the same source as they must be compatible.
- The installation of the neoprene seal will be as recommended by its Manufacturer and approved by the Engineer, but in general will be as follows: The neoprene seal will be installed and bonded to the steel extrusion with a high-solids lubricant adhesive. The neoprene surfaces will be roughened with a wire brush before the application of the lubricant adhesive. The neoprene seal may be installed either prior to or after the time the steel extrusions are concreted in the approach slabs. The steel extrusion will be dry, clean, free from dirt, grease and contaminants at the time the neoprene seal is installed.
- Due to the length of the steel extrusions, splices are permitted. No welds will be permitted in the internal section of the extrusion where the neoprene seal is located. Weld details will be shown on the shop plans for approval by the Engineer. Welding will be in accordance with latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel. Galvanize the steel extrusions and anything welded to them after all welding is completed. They will be galvanized in accordance with AASHTOM111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding will be included with the shop plans. Repair of galvanizing will be by the zinc-based solder method in conformance with ASTM A780.
- The thickness and shape of the neoprene seal may vary from the sketch shown (Detail "C" on this sheet) according to the manufacturer's design; however, the wedge lugs must properly fit the groove in the steel extrusion. Before installation, the shop plans of the proposed neoprene seal showing the fixed dimensions, thickness of neoprene seal, and dimensions pertinent to the fit of the neoprene seal in the steel extrusion will be submitted to and approved by the Engineer.
- Since the configuration and dimensions of the steel extrusion may vary according to each manufacturer's design, they need not conform exactly to that shown in DETAIL "D", however, any deviations from the plan shown configuration or dimensions must be approved by the Office of Bridge Design.
- The Strip Seal Expansion Joint supplier will submit a detailed gland installation procedure with the shop plans.
- The cost of welding will be included in the unit cost for Strip Seal Expansion Joint.
- The neoprene seal will be of sufficient length such that a minimum length of 6" will extend beyond each end of the steel extrusions.
- The Strip Seal Expansion Joint will be measured in linear feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Strip Seal Expansion Joint will be paid for at the contract unit price per linear foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.

≠ Seal will have a 4 inch movement capability.      ★ Dimensions given at 70° F.



**SECTION B - B**

TEMP.	DIMENSION "Z"
- 30°	3 1/8"
25°	2 9/16"
40°	2 3/8"
55°	2 7/16"
70°	2"
85°	1 13/16"
100°	1 5/8"
120°	1 7/16"

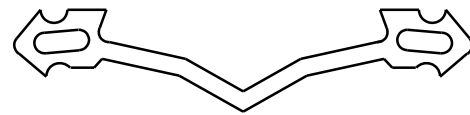
**(EAST BOUND LANES)  
BRIDGE JOINT REPLACEMENT DETAILS (B)  
FOR  
135' - 8" I-BEAM BRIDGE**

38' - 0" ROADWAY OVER WHITEWOOD CREEK STR. NO. 41-214-099  
45° SKEW R.H.F. SEC. 22-T6N-R4E IM 0901(200)1

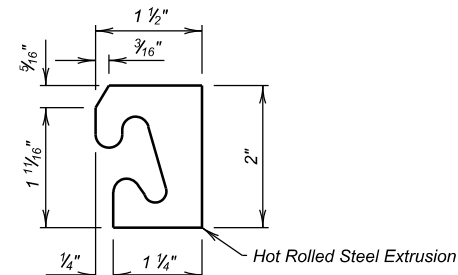
LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION

APRIL 2024 (12) OF (29)

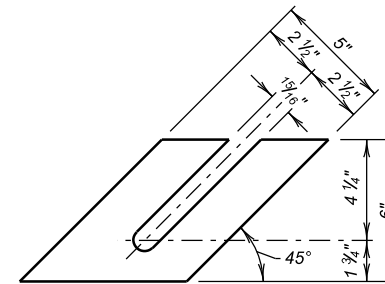
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	161	177



**DETAIL "C"**  
Neoprene Seal shall have a 4 in movement capability.



**DETAIL "D"**

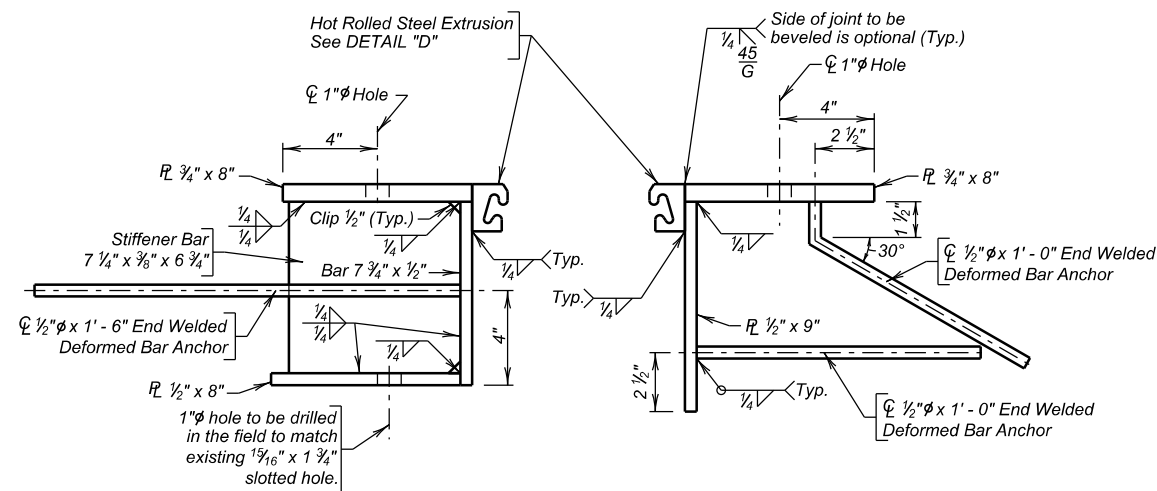


**DETAIL "E"**

Provide: 20 - 1/16" thick shims  
10 - 1/8" thick shims  
20 - 3/8" thick shims

REINFORCING SCHEDULE						
(Both Joints)						
Mk.	No.	Size	Length	Type	Bending Details	
(Phase 1)						
d1	90	5	1' - 9"	1A	<p>Type 1A</p>	
h1	8	5	24' - 10"	Str.		
(Phase 2)						
d1	122	5	1' - 9"	1A		
h2	8	5	31' - 10"	Str.		

NOTES:  
All Bars to be Epoxy Coated.  
All dimensions are out to out of bars.  
⊗ Mechanically Splice



**DETAIL "F"**

**DETAIL "G"**

ESTIMATED QUANTITIES			
(For Two Joints)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Strip Seal Expansion Joint	Ft	23.8	32.3
Class A45 Concrete, Bridge Repair	CuYd	4.8	6.3
Galvanic Anode	Each	64	84
Compression Seal Joint	Ft	24.3	32.8
Install Dowel in Concrete	Each	90	122
Epoxy Coated Reinforcing Steel	Lb	207	265
No. 5 Rebar Splice	Each	16	-
Two Coat Bridge Deck Polymer Chip Seal	SqYd	7.0	9.2
Abrasive Blasting of Bridge Deck	SqYd	7.0	9.2
Bridge Deck Grinding	SqYd	7.2	9.0

Items 1 and 2 are approximate quantities contained in the above contract items and are for information only.

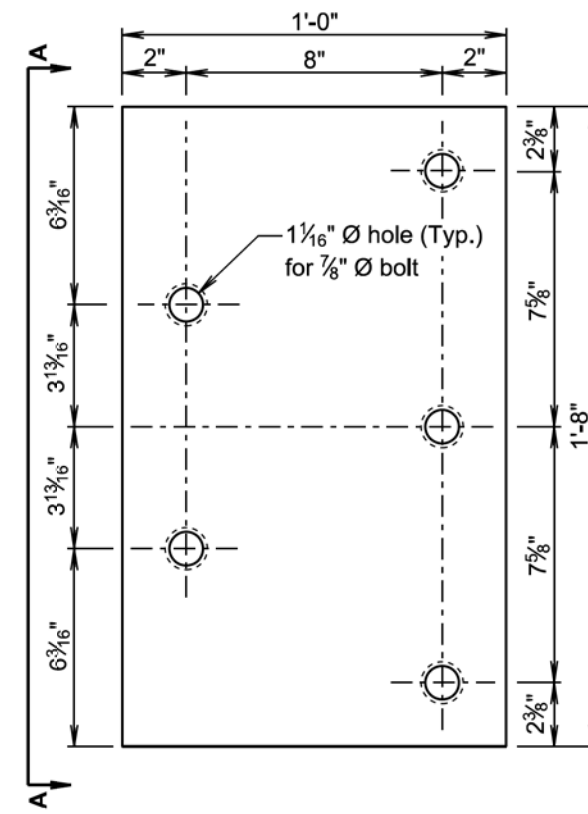
	PHASE 1	PHASE 2
1. Epoxy Coated Reinforcement for Dowels	165 Lb	223 Lb
2. Structural Steel in Bridge Joints	4642 Lb	6226 Lb

(EAST BOUND LANES)  
**BRIDGE JOINT SILL NO. 4 REPLACEMENT DETAILS CONT.**  
FOR  
**135' - 8" I-BEAM BRIDGE**  
38' - 0" ROADWAY  
OVER WHITEWOOD CREEK  
STR. NO. 41-214-099  
45° SKEW R.H.F.  
SEC. 22-T6N-R4E  
IM 0901(200)1

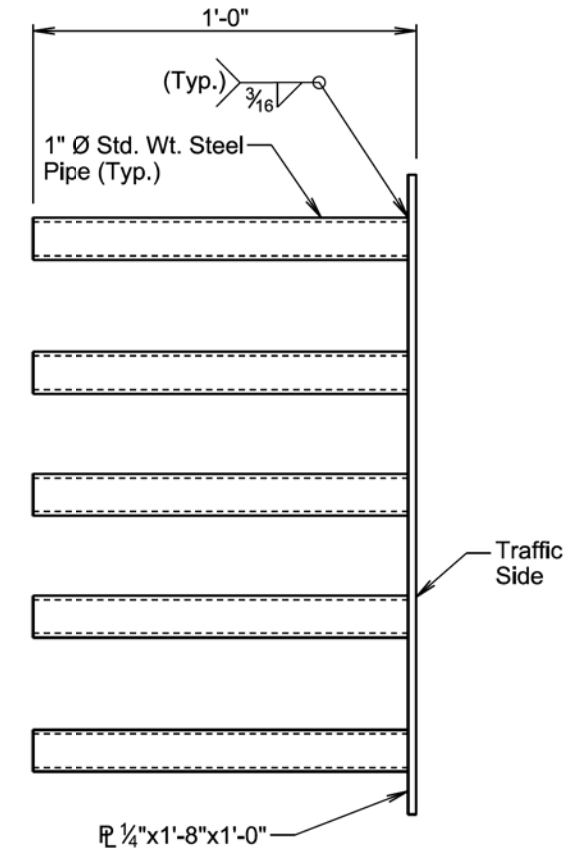
LAWRENCE COUNTY  
S. D. DEPT. OF TRANSPORTATION  
APRIL 2024

DESIGNED BY JRB LAWR07D3	CHECKED BY JH 07D3RK12	DRAWN BY JRB	 BRIDGE ENGINEER
--------------------------------	------------------------------	-----------------	---------------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0901(200)1	161A	177



**ELEVATION VIEW**



**VIEW A - A**

**GENERAL NOTES:**

Steel plate for the insert assembly will conform to ASTM A709, Grade 36. The steel pipes will conform to ASTM A53 or ASTM A500, Grade B.

Welding and weld inspection will be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.

After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

Bolts, nuts, and washers will be provided with each assembly. Bolts will be galvanized and conform to the requirements of ASTM A307, F-1554 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing will be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

August 27, 2020

Published Date: 2025

**S  
D  
D  
O  
T**

**5 BOLT INSERT PLATE ASSEMBLY**

PLATE NUMBER  
**630.92**

Sheet 1 of 1

135' - 8" I-BEAM BRIDGE

STR. NO. 42-214-099  
APRIL 2024