BEGIN P 1806(12)149
MRM 170.23
Approximately 1176 feet north and 1628 feet east of the southwest corner of Section 17, Township 4 North, Range 33 East of the B.H.M.

STRUCTURE NO. 59-493-328
Cont. Concrete Bridge
114.9' = .022 Mile
MRM 170.23

END P 1806(12)149
End Resurfacing
Station 770+16.'W
MRM 149.00 + 0.730
8.16 feet south and 1646.38 feet west of the southeast corner of Section 32, Township 109 North, Range 76 West of the 5th P.M.

BEGIN RESURFACING
Station 0+00
MRM 164.00 + 0.430
4.14 feet north and 0.15 feet west of the southwest corner of Section 3, Township 109 North, Range 77 West of the 5th P.M.

STRUCTURE NO. 59-617-374
Station 482+37.75 to Station 482+62.25
2 X 12 X 8 Concrete Box Culvert
24.6' = 0.005 Mile
MRM 155.31
### SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

Str. No. 59-493-328

<table>
<thead>
<tr>
<th>BID ITEM NUMBER</th>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>009E3310</td>
<td>Bridge Elevation Survey</td>
<td>Lump Sum</td>
<td>LS</td>
</tr>
<tr>
<td>460E0300</td>
<td>Breakout Structural Concrete</td>
<td>1.0</td>
<td>CuYd</td>
</tr>
<tr>
<td>460E0380</td>
<td>Install Dowel in Concrete</td>
<td>16</td>
<td>Each</td>
</tr>
<tr>
<td>460E0200</td>
<td>Epoxy Coated Reinforcing Steel</td>
<td>64</td>
<td>Lb</td>
</tr>
<tr>
<td>550E0010</td>
<td>Low Stump Dense Concrete Bridge Deck Overlay</td>
<td>52</td>
<td>CuYd</td>
</tr>
<tr>
<td>550E0110</td>
<td>Concrete Removal Type 1A</td>
<td>423.5</td>
<td>SqYd</td>
</tr>
<tr>
<td>550E0110</td>
<td>Concrete Removal Type 1B</td>
<td>42.4</td>
<td>SqYd</td>
</tr>
<tr>
<td>550E0110</td>
<td>Concrete Removal Type 1C</td>
<td>31.2</td>
<td>SqYd</td>
</tr>
<tr>
<td>550E0110</td>
<td>Concrete Removal Type 1D</td>
<td>21.2</td>
<td>SqYd</td>
</tr>
<tr>
<td>550E0110</td>
<td>Concrete Removal Type B</td>
<td>20.0</td>
<td>Ft</td>
</tr>
<tr>
<td>550E0020</td>
<td>Class A45 Concrete Fill</td>
<td>8.4</td>
<td>CuYd</td>
</tr>
<tr>
<td>550E0500</td>
<td>Finishing and Curing</td>
<td>423.6</td>
<td>SqYd</td>
</tr>
</tbody>
</table>
INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Layout for Upgrading
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 thru 4 - Notes (Continued)
Sheet No. 5 - Paving Notch Modification Details
Sheet No. 6 - Deck Profiles for Low Slump Dense Concrete Bridge Deck Overlay
Sheet No. 7 - As Built Elevation Survey Request (A)
Sheet No. 8 - As Built Elevation Survey Request (B)
Sheet No. 9 W/ No. 10 - Original Construction Plans

---

LAYOUT FOR UPGRADING FOR 119' - 1 ½" CONTINUOUS CONCRETE BRIDGE
32' - 0" ROADWAY OVER ANTELOPE CREEK SEC. 17 - T4N - R33E STR. NO. 59-463-328 PCN 038Z

STANLEY COUNTY S. D. DEPT. OF TRANSPORTATION JANUARY 2020

P 1806(12)149
4. Switch traffic and repeat steps 1 through 3 for the second phase of construction.

550E0130 Concrete Removal Type 1 D 21.2 Sq Yd
550E0010 Low Slump Dense Concrete Deck Overlay 32.0 Cu Yd
009E3 3 10 Bridge Elevation Survey Lump Sum LS
550E0110 Concrete Removal Type 1 B 42.4 Sq Yd
550E0120 Concrete Removal Type 1C 21.2 Sq Yd
550E0130 Concrete Removal Type 1D 21.2 Sq Yd
550E0140 Concrete Removal Type B 20 Fl
550E0200 Class A45 Concrete Fill 8.4 Cu Yd
550E0350 Finishing and Curing 423.6 Sq Yd

SPECIFICATIONS

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 a minimum of two weeks prior to the pre-construction meeting.
1. Accomplish all Concrete Removal Type 1A, 1B, 1C, 1D, 2A, and B and place Class A45 Concrete Fill to the satisfaction of the Engineer for the first phase of construction.
2. Modify the existing paving notch for the first phase of construction.
3. Place a Low Slump Dense Concrete Bridge Deck Overlay to the elevations shown in the plans on the bridge deck for the first phase of construction.
4. Switch traffic and repeat steps 1 through 3 for the second phase of construction.

GENERAL CONSTRUCTION NOTES
1. All reinforcing steel will conform to ASTM A615, Grade 60.
2. All exposed concrete corners and edges will be chamfered ¼-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
4. 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.

CONCRETE BREAKOUT
1. The existing paving block 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 no 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 bars will be disposed of by the Contractor. Any disposal of discarded material will be in accordance with the Environmental Commitments.
3. During concrete removal operations, no broken out concrete will be allowed to fall into Antelope Creek.
4. The contract unit price per cubic yard for Breakout Structural Concrete will include breakout out concrete, cleaning, straightening existing reinforcing steel, and disposal of all broken out material.

INSTALLING DOWELS IN CONCRETE
1. Holes drilled in the existing concrete will be true and normal or as shown in the plans. Drilling holes using a core drill will not be allowed. Care will be taken not to damage the existing reinforcing steel. It is likely that some of the existing reinforcing steel shown in the original construction plans may have been placed out of position during original construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the inplace reinforcing steel. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes will be completely filled with epoxy resin as approved by the Engineer.
2. The epoxy resin mixture will be a type of bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (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. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. 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.

LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY
1. The preparation for resurfacing consists of Concrete Removal Type 1A on the entire bridge deck and Type 1B, Type 1C, Type 1D and Type B over the deck surface as detailed on the plan sheets. Such removal will be in conformance with these plans and Section 550 of the Construction Specifications. Extreme care will be taken during the Concrete Removal 1A to assure that the existing reinforcing steel is not damaged. In the event that reinforcing steel damage inadvertently occurs, the Bridge Construction Engineer will be immediately notified. Any damaged reinforcing steel will be repaired by the Contractor, as approved by the Engineer, at no additional cost to the Department.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 115" - 1 1/2" CONTINUOUS CONCRETE BRIDGE STR. NO. 59-493-328 JANUARY 2020
LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY

3. Extreme care will be taken during Removal Type 1B, 1C, 1D, and B to ensure that the existing reinforcing steel is not damaged. In the event reinforcing steel damage inadvertently occurs, the Bridge Construction Engineer will be immediately notified. Any damaged reinforcing steel will be repaired by the Contractor, as approved by the Engineer, at no additional cost to the Department.

4. Class A45 Concrete Fill and Concrete Removal Type 1B, 1C, 1D, and B may not be encountered and may be omitted from the project as determined by the Engineer.

5. A minimum thickness of 2" of Low Slump Dense Concrete will be maintained on the bridge deck.

6. Corcoron Removal Typo 1G, Corcoron Removal Typo 1D, and Class A45 Concrete Fill are not anticipated to exceed the plan shown quantities. If the Engineer determines that Concrete Removal Type 1C, Concrete Removal Type 1D, and/or Class A45 Concrete Fill in excess of the plan quantity shown is necessary, payment for the additional quantity will be in accordance with Section 550.5 of the Construction Specifications.

7. The coarse aggregate in the existing bridge deck is a natural aggregate. The coarse aggregate in the low slump bridge deck overlay will be limestone in accordance with Section 820 of the Construction Specifications. No other type of coarse aggregate will be allowed.

8. Concrete used in the Low Slump Dense Concrete Bridge Deck Overlay will meet the requirements of Section 550 of the Construction Specifications. Class A45 Concrete Fill will be an approved A45 Concrete Mix Design mixed and proportioned in accordance with Section 460 of the Construction Specifications and the size #3 will be substituted in lieu of the course aggregate gradation will be in accordance with Section 820 of the Construction Specifications and the size #3 will be substituted in lieu of the course aggregate gradation will be in accordance with Section 820 of the Construction Specifications.

a. Fine aggregates from sources that have not been tested by the Department will be submitted to the Department’s Materials and Surfacing Central Materials Laboratory for ASR testing 30 days prior to performing the concrete mix design.

b. When a fine aggregate supplier changes location within the pit, the fine aggregate from the new location in the pit will be submitted for testing.

c. When more than one source of fine aggregate is blended to meet the gradation specifications, the expansion value of the blended sands will be used. Blended sources will be treated as a new source and it will be the responsibility of the Contractor to submit the blended samples for testing 30 days prior to performing the concrete mix design.

d. ASR testing will be performed in accordance with ASTM C1260, except that the gradation of the material used for testing will be as sourced from the source. The fine aggregate will only be sampled by a Department representative or in the presence of a Department representative.

e. The Department will use the running average of the last three known expansion test results or less for determining acceptability of the source. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor’s expense.

f. A list of known fine aggregate sources and the average corresponding 14-day expansion values as of August, 2018 is provided below in Table 6.106.

Table 6.106 Fine Aggregate Sources August, 2018

<table>
<thead>
<tr>
<th>Source</th>
<th>Location</th>
<th>Expansion Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachman</td>
<td>Winner, SD</td>
<td>0.335*</td>
</tr>
<tr>
<td>Bitterman</td>
<td>Delmont, SD</td>
<td>0.316*</td>
</tr>
<tr>
<td>Concrete Materials</td>
<td>Corson, SD</td>
<td>0.146</td>
</tr>
<tr>
<td>Croell</td>
<td>Hot Springs, SD</td>
<td>0.089</td>
</tr>
<tr>
<td>Croell</td>
<td>Wasta, SD</td>
<td>0.212</td>
</tr>
<tr>
<td>Emme Sand &amp; Gravel</td>
<td>Oire, NE</td>
<td>0.217</td>
</tr>
<tr>
<td>Fisher S&amp;G - Mickelson Pit</td>
<td>E of Nisland, SD</td>
<td>0.129</td>
</tr>
<tr>
<td>Fisher S&amp;G - Valley Pit</td>
<td>Nisland, SD</td>
<td>0.110</td>
</tr>
<tr>
<td>Fisher S&amp;G</td>
<td>Rapid City, SD</td>
<td>0.092</td>
</tr>
<tr>
<td>Fisher S&amp;G</td>
<td>Spearfish, SD</td>
<td>0.053</td>
</tr>
<tr>
<td>Fisher S&amp;G</td>
<td>Wasta, SD</td>
<td>0.159</td>
</tr>
<tr>
<td>Fuchs</td>
<td>Picketow, SD</td>
<td>0.275*</td>
</tr>
<tr>
<td>Hughan</td>
<td>Hawkeye, SD</td>
<td>0.167</td>
</tr>
<tr>
<td>Jensen</td>
<td>Hemned, SD</td>
<td>0.276*</td>
</tr>
<tr>
<td>L.G. Everist</td>
<td>Akron, IA</td>
<td>0.257*</td>
</tr>
<tr>
<td>L.G. Everist</td>
<td>Brookings, SD</td>
<td>0.267*</td>
</tr>
<tr>
<td>L.G. Everist</td>
<td>Hawarden, IA</td>
<td>0.166</td>
</tr>
<tr>
<td>L.G. Everist</td>
<td>Summit, SD</td>
<td>0.179</td>
</tr>
<tr>
<td>Morris</td>
<td>Blunt, SD</td>
<td>0.192</td>
</tr>
<tr>
<td>Morris - Richards Pit</td>
<td>Onida, SD</td>
<td>0.188</td>
</tr>
<tr>
<td>Morris - Shaw's Pit</td>
<td>E of Sturgis, SD</td>
<td>0.186</td>
</tr>
<tr>
<td>Myrl &amp; Roys - Nelson Pit</td>
<td>NE Sioux Falls, SD</td>
<td>0.156</td>
</tr>
<tr>
<td>Northern Concrete Agg</td>
<td>Raullie, SD</td>
<td>0.113</td>
</tr>
<tr>
<td>Northern Concrete Agg</td>
<td>Luverne, MN</td>
<td>0.133</td>
</tr>
<tr>
<td>Opperman - Gunvomthahl Pit</td>
<td>Bure, SD</td>
<td>0.363*</td>
</tr>
<tr>
<td>Opperman - Cahoy Pit</td>
<td>Herick, SD</td>
<td>0.307*</td>
</tr>
<tr>
<td>Opperman - Jones Pit</td>
<td>Bure, SD</td>
<td>0.321*</td>
</tr>
<tr>
<td>Opperman - Randall Pit</td>
<td>Picktown, SD</td>
<td>0.239</td>
</tr>
<tr>
<td>Pete Lien &amp; Sons</td>
<td>Creston, SD</td>
<td>0.158</td>
</tr>
<tr>
<td>Pete Lien &amp; Sons</td>
<td>Oral, SD</td>
<td>0.129</td>
</tr>
<tr>
<td>Pete Lien &amp; Sons</td>
<td>Wasta, SD</td>
<td>0.192</td>
</tr>
<tr>
<td>Thorpe Pit</td>
<td>Britton, SD</td>
<td>0.098</td>
</tr>
<tr>
<td>Wagner Building Supplies</td>
<td>Picktown (Wagner), SD</td>
<td>0.251*</td>
</tr>
<tr>
<td>Winter Brothers - Whitehead Pit</td>
<td>Brookings, SD</td>
<td>0.197</td>
</tr>
</tbody>
</table>

*These sources are 0.250% or greater.

The values in Table 6.106 are intended for use in bidding. If a pit, previously tested by SDDOT, with a test value less than 0.250% is discovered after letting, the Contractor will use Table X to determine the percentage of cement to be replaced with Class F Modified Fly Ash (in accordance with Section 605 of the Construction Specifications) and/or specified rate of lithium nitrate (30% solution by weight) to be provided in the concrete mix for the Low Slump Dense Concrete Bridge Deck Overlay and Class A45 Concrete Fill. Fine aggregate with a 14-day expansion value of 0.400% or greater will not be used.
LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY (CONTINUED)

Table X Cement Replacement

<table>
<thead>
<tr>
<th>Course Aggregate</th>
<th>Fine Aggregate</th>
<th>Cement Type</th>
<th>Fly Ash</th>
<th>Lithium Nitrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limestone or Granite</td>
<td>&lt; 0.250%</td>
<td>Type I or II</td>
<td>-----</td>
<td>2.0 gallon/cubic yard</td>
</tr>
<tr>
<td></td>
<td>≥ 0.250%</td>
<td>Type I or II</td>
<td>-----</td>
<td>3.0 gallon/cubic yard</td>
</tr>
</tbody>
</table>

i. Grout for bonding new concrete to old concrete will meet the requirements of Section 550 of the Construction Specifications. In addition, the grout mix will contain 1 1/2 gallons of Lithium per cubic yard or 20% to 25% of the cement replaced with fly ash.

j. All material, labor, equipment, and incidental costs to meet ASR requirements will be included in the contract unit price for Low Slump Dense Concrete Bridge Deck Overlay or Class A45 Concrete Fill.

9. Suppliers of Lithium are listed below:

a. BASF Construction Chemical
   23700 Chagrin Boulevard
   Beachwood, Ohio 44122
   1-612-961-8575
   website: www.master-builders-solutions.basf.us/en-us

b. FMC Corporation
   2801 Yorkmont Road, Suite 300
   Charlotte, North Carolina 28216
   1-704-868-5300
   website: www.fmc lithium.com

10. No traffic will be allowed to operate on the scarified portion of the bridge deck. If it appears that the entire Low Slump Dense Concrete Bridge Deck Overlay cannot be completed prior to winter, Concrete Removal Type 1A, 1B, 1C, 1D, and B will not be done until work resumes in the spring. In the event, scarification has been started and due to unforeseen circumstances, it becomes impossible to complete the placement of the overlay on the entire surface of the structure prior to winter the Office of Bridge Design will be notified. Recommendations for handling winter traffic will then be made. These recommendations may include, but are not limited to, filling extra depth removal areas with Class A45 Concrete, placing an asphalt overlay on the uncompleted area so that the entire roadway width may be opened to traffic, removal of the asphalt overlay when work is resumed and scarifying an additional 1/4" of depth on the bridge deck. The cost of this work, including asphalt overlay, scarification, Class A45 Concrete, extra low slump dense concrete and all other items incidental to this work, will be at the expense of the Contractor.

11. The paving notch will be cleaned by abrasive blasting as approved by the Engineer. Reinforcing steel will be placed in the paving notch according to the plans. The modified paving notch will be filled with Low Slump Dense Concrete during the placement of the Low Slump Dense Concrete Bridge Deck Overlay.

12. It will be necessary for the Contractor to shape the surface of the Low Slump Dense Concrete Bridge Deck Overlay within one foot of the curb as detailed in the plans to ensure that water drains to the deck drains or off the ends of the bridge.

AS - BUILT ELEVATION SURVEY

The Contractor will be responsible for recording the as-built deck elevations at the locations shown by the table of as-built elevations shown in the plans. The elevations to be recorded in these tables will be based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88). The Engineer will provide the Contractor with a description, elevation and location of the nearest benchmark that has a NAVD88 established elevation for the Contractor's use. The benchmark shown in the plans has not been tied to the NAVD88. The Contractor will be responsible for establishing a NAVD88 elevation for the benchmark provided in the plans. All costs associated with obtaining the NAVD88 elevations at the locations shown in the table and for the benchmark shown in the plans, including all equipment, labor and any incidental costs required will be incidental to the contract lump sum price for Bridge Elevation Survey.
REINFORCING SCHEDULE
(For Both Ends of Bridge)

<table>
<thead>
<tr>
<th>MK No.</th>
<th>Size</th>
<th>Length</th>
<th>Type</th>
<th>Bending</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6z1</td>
<td>8</td>
<td>2'-6&quot;</td>
<td>17A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6z1</td>
<td>8</td>
<td>7'-9&quot;</td>
<td>Str.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6z1</td>
<td>8</td>
<td>2'-6&quot;</td>
<td>17A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6z1</td>
<td>8</td>
<td>7'-9&quot;</td>
<td>Str.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES:
- All Dimensions are out to out of bars.
- All Bars to be Epoxy Coated & Dowels

VIEW A-A
(Aboutment No. 1 shown, Abutment No. 4 identical)

SECTION B-B
(Section after Reconstruction)

ESTIMATED QUANTITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakout Structural Concrete</td>
<td>Cu. Yd.</td>
<td>0.5 Phase 1</td>
</tr>
<tr>
<td>Install Dowel in Concrete Each</td>
<td></td>
<td>8 Phase 1</td>
</tr>
<tr>
<td>Epoxy Coated Reinforcing Steel Lb</td>
<td></td>
<td>32 Phase 1</td>
</tr>
</tbody>
</table>

*(Does not include the following quantities for e1 bars as these are incidental to the contract cost price per each for Install Dowel in Concrete.)*

PHASE 1                PHASE 2
21 Lb. 21 Lb.

PAVING NOTCH MODIFICATION DETAILS

FOR 119' - 1½" CONTINUOUS CONCRETE BRIDGE
32' - 0" ROADWAY
OVER ANTELOPE CREEK
STR. NO. 59-493-326
P 1806(12)189

STANLEY COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2020

DESIGNED BY CK. DES. BY DRAFTED BY KSK KHISMV CJD STAN038Z 038ZDA05
**DECK PROFILES FOR LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY**

FOR

**119' - 1½" CONTINUOUS CONCRETE BRIDGE DECK OVERLAY**

**FOR**

32'-0" ROADWAY

OVER ANTELOPE CREEK

STR. NO. 58-493-328

STANLEY COUNTY

S. D. DEPT. OF TRANSPORTATION

JANUARY 2020

**ESTIMATED QUANTITIES**

<table>
<thead>
<tr>
<th>ITEM DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Slump Dense Concrete Bridge Deck Overlay</td>
<td>Cu. Yd.</td>
<td>20.5</td>
</tr>
<tr>
<td>Concrete Removal Type A</td>
<td>Cu. Yd.</td>
<td>18.5</td>
</tr>
<tr>
<td>Concrete Removal Type B</td>
<td>Cu. Yd.</td>
<td>18.5</td>
</tr>
<tr>
<td>Concrete Removal Type C</td>
<td>Cu. Yd.</td>
<td>18.5</td>
</tr>
<tr>
<td>Concrete Removal Type D</td>
<td>Cu. Yd.</td>
<td>18.5</td>
</tr>
<tr>
<td>Class B42 Concrete Filler</td>
<td>Cu. Yd.</td>
<td>6.6</td>
</tr>
<tr>
<td>Digging and Compacting</td>
<td>Cu. Yd.</td>
<td>211.8</td>
</tr>
</tbody>
</table>

**TYPICAL SECTION**

NOTE:

Add 1450.00 to all elevations shown on profiles.

Grade line after scarification should be at least 0.5" below the finished grade.

**BENCHMARK DESCRIPTION:**

Map scale in 20 Wingwall Elevation 1452.34

**VERTICAL SCALE**

1.00' = 0.50'
NOTE: The Contractor shall be responsible for producing the As-Built Elevation Survey soon after construction is complete and before the bridge is completely opened to traffic. The As-Built Elevations of the overlay shall be based on the National Geodetic Survey North American Vertical Datum of 1988 and shall be taken and recorded at the locations shown by the table on this sheet. The completed table shall be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Region Bridge Specialist.

**BENCHMARK DESCRIPTION:**

Mag nail in SE Wingwall
Elevation 1457.54

**Table of Elevations - Approach Roadway**

<table>
<thead>
<tr>
<th>Location</th>
<th>Rod Reading</th>
<th>Elevation</th>
<th>Location</th>
<th>Rod Reading</th>
<th>Elevation</th>
<th>Location</th>
<th>Rod Reading</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>27L</td>
<td>27C</td>
<td></td>
<td>27R</td>
<td></td>
<td></td>
<td>1L</td>
<td>2L</td>
<td>2C</td>
</tr>
<tr>
<td>28L</td>
<td>28C</td>
<td></td>
<td>28R</td>
<td></td>
<td></td>
<td>2L</td>
<td>2L</td>
<td>3R</td>
</tr>
<tr>
<td>29L</td>
<td>29C</td>
<td></td>
<td>29R</td>
<td></td>
<td></td>
<td>4L</td>
<td>4C</td>
<td>4R</td>
</tr>
<tr>
<td>30L</td>
<td>30C</td>
<td></td>
<td>30R</td>
<td></td>
<td></td>
<td>5L</td>
<td>5C</td>
<td>5R</td>
</tr>
<tr>
<td>31L</td>
<td>31C</td>
<td></td>
<td>31R</td>
<td></td>
<td></td>
<td>6L</td>
<td>6C</td>
<td>6R</td>
</tr>
<tr>
<td>32L</td>
<td>32C</td>
<td></td>
<td>32R</td>
<td></td>
<td></td>
<td>7L</td>
<td>7C</td>
<td>7R</td>
</tr>
<tr>
<td>33L</td>
<td>33C</td>
<td></td>
<td>33R</td>
<td></td>
<td></td>
<td>8L</td>
<td>8C</td>
<td>8R</td>
</tr>
<tr>
<td>34L</td>
<td>34C</td>
<td></td>
<td>34R</td>
<td></td>
<td></td>
<td>9L</td>
<td>9C</td>
<td>9R</td>
</tr>
<tr>
<td>35L</td>
<td>35C</td>
<td></td>
<td>35R</td>
<td></td>
<td></td>
<td>36R</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table of Elevations - Bridge Deck**

<table>
<thead>
<tr>
<th>Location</th>
<th>Rod Reading</th>
<th>Elevation</th>
<th>Location</th>
<th>Rod Reading</th>
<th>Elevation</th>
<th>Location</th>
<th>Rod Reading</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Location</td>
<td>Location</td>
<td>Location</td>
<td>Location</td>
<td>Location</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**AS-BUILT ELEVATION SURVEY (A)**

FOR
119° - 1½" CONTINUOUS CONCRETE BRIDGE
32' - 0" ROADWAY
OVER ANTELOPE CREEK
STR. NO. 59-493-328
STANLEY COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2020
Table of Elevations - Bridge Deck

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation</th>
<th>Location</th>
<th>Elevation</th>
<th>Location</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>9L</td>
<td>9C</td>
<td>9R</td>
<td>9L</td>
<td>9C</td>
<td>9R</td>
</tr>
<tr>
<td>10L</td>
<td>10C</td>
<td>10R</td>
<td>10L</td>
<td>10C</td>
<td>10R</td>
</tr>
<tr>
<td>11L</td>
<td>11C</td>
<td>11R</td>
<td>11L</td>
<td>11C</td>
<td>11R</td>
</tr>
<tr>
<td>12L</td>
<td>12C</td>
<td>12R</td>
<td>12L</td>
<td>12C</td>
<td>12R</td>
</tr>
<tr>
<td>13L</td>
<td>13C</td>
<td>13R</td>
<td>13L</td>
<td>13C</td>
<td>13R</td>
</tr>
<tr>
<td>14L</td>
<td>14C</td>
<td>14R</td>
<td>14L</td>
<td>14C</td>
<td>14R</td>
</tr>
<tr>
<td>15L</td>
<td>16C</td>
<td>16R</td>
<td>15L</td>
<td>16C</td>
<td>16R</td>
</tr>
<tr>
<td>16L</td>
<td>17C</td>
<td>17R</td>
<td>16L</td>
<td>17C</td>
<td>17R</td>
</tr>
</tbody>
</table>

Table of Elevations - Approach Roadway

<table>
<thead>
<tr>
<th>Location</th>
<th>Elevation</th>
<th>Location</th>
<th>Elevation</th>
<th>Location</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>16L</td>
<td>10C</td>
<td>10R</td>
<td>16L</td>
<td>10C</td>
<td>10R</td>
</tr>
<tr>
<td>18L</td>
<td>11C</td>
<td>11R</td>
<td>18L</td>
<td>11C</td>
<td>11R</td>
</tr>
<tr>
<td>19L</td>
<td>12C</td>
<td>12R</td>
<td>19L</td>
<td>12C</td>
<td>12R</td>
</tr>
<tr>
<td>20L</td>
<td>13C</td>
<td>13R</td>
<td>20L</td>
<td>13C</td>
<td>13R</td>
</tr>
<tr>
<td>21L</td>
<td>14C</td>
<td>14R</td>
<td>21L</td>
<td>14C</td>
<td>14R</td>
</tr>
<tr>
<td>22L</td>
<td>16C</td>
<td>16R</td>
<td>22L</td>
<td>16C</td>
<td>16R</td>
</tr>
<tr>
<td>23L</td>
<td>17C</td>
<td>17R</td>
<td>23L</td>
<td>17C</td>
<td>17R</td>
</tr>
<tr>
<td>26L</td>
<td>26C</td>
<td>26R</td>
<td>26L</td>
<td>26C</td>
<td>26R</td>
</tr>
</tbody>
</table>

Benchmark Description:
Mag Nail in SE Wingwall
Elevation 1457.54

DESIGNED BY
KSK
CK.
DES. BY
KSHIM
DRAFTED BY
G.S.
Curvature and Elevations

Elevations indicated with a = top of finished slab at left curb, and with * = top of slab at centerline, and with a = top of finished slab at right curb. Center for Small Load Designation. Plastic Flow shown on Sheet No. 2 of Bridge Street. And have included in the elevations shown above.

Original Construction Plans

General Drawing

Plan for 119-1/2" Continuous Concrete Bridge

32'-0" Roadway

20° Skew R. H. F.

Over Antelope Creek

Sec. 17 - T 4¼ - R 33E

STA. 147+85.438 to STA. 149+04.562

Ross 10-167

Str. No. 51 - 493-326

HS 20 - 44

(Alt.)

Stanley County

S. D. Dept. of Transportation

Division of Highways

OCT. 1979

-2020-

INDEX OF BRIDGE SHEETS

Sheet No. 1 - General Drawing
Sheet No. 2 - Elevation of Structure and Notes
Sheet No. 3 - Substructure Investigations and Piling Details
Sheet No. 4 - Details of Abutment No. 1
Sheet No. 5 - Details of Abutment No. 2
Sheet No. 6 - Details of Abutment No. 3
Sheet No. 7 - Superstructure Details
Sheet No. 8 - End Block and Barrier Details
Sheet No. 9 - Details of Bridge End Details
Sheet No. 10 - Standard Plans No. 303 and No. 305
Sheet No. 11 - Standard Plans No. 301 and No. 303.

Original Construction Plans

General Drawing

For 119-1/2" Continuous Concrete Bridge

32'-0" Roadway

20° Skew R. H. F.

Over Antelope Creek

Sec. 17 - T 4¼ - R 33E

STA. 147+85.438 to STA. 149+04.562

Ross 10-167

Str. No. 51 - 493-326

HS 20 - 44

(Alt.)

Stanley County

S. D. Dept. of Transportation

Division of Highways

OCT. 1979

-2020-

INDEX OF BRIDGE SHEETS

Sheet No. 1 - General Drawing
Sheet No. 2 - Elevation of Structure and Notes
Sheet No. 3 - Substructure Investigations and Piling Details
Sheet No. 4 - Details of Abutment No. 1
Sheet No. 5 - Details of Abutment No. 2
Sheet No. 6 - Details of Abutment No. 3
Sheet No. 7 - Superstructure Details
Sheet No. 8 - End Block and Barrier Details
Sheet No. 9 - Details of Bridge End Details
Sheet No. 10 - Standard Plans No. 303 and No. 305
Sheet No. 11 - Standard Plans No. 301 and No. 303.
REFORCING SCHEDULE

SUPERSTRUCTURE DETAILS

FOR
II9-1/2" CONTINUOUS CONCRETE BRIDGE
32'-0" ROADWAY  20° SKEW R.H.F.
OVER ANTALOP. CREEK SEC. 16-T  R 339
STA. 147+85'-0" TO STA. 149+04.562 RS 3806 (03) 167

STANLEY COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
OCT. 1979

ORIGINAL CONSTRUCTION PLANS

SHEET TOTAL
E12 E12