

July 9, 2026

ADDENDUM NO. 3

**RE: Item #1, July 29, 2026 Letting - EM-P 0044(207)290, PCN 05X0, Charles Mix, Gregory
County - Structure (5770'-6" Steel Girder) & Approach Grading**

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: **PEN AND INK CHANGE:** In the NOTICE TO CONTRACTORS, change the letting date from July 29, 2026 to August 5, 2026.

Please remove the Index of Special Provisions and replace with the attached Index of Special Provisions revised 7/6/26.

Please remove the "Special Provision for Contract Time", dated 5/1/26 and replace with the "Special Provision for Contract Time", dated 7/9/26.

Please remove the "Special Provision for Drilled Shaft Construction", dated 5/4/26 and replace with the "Special Provision for Drilled Shaft Construction", dated 7/9/26.

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 removed:
Bid Item 900E1080 "Orange Plastic Safety Fence"

PLANS: Please destroy sheets A1, A3, A4, A6, A7, B2, B31, E10, E26, E28 & E31 and replace with the enclosed sheets, dated 7/8/26 & 7/9/26.

Sheets A1 & B2: Bid Item 900E1080 "Orange Plastic Safety Fence" was removed.

Sheet A3: COMMITMENT A2: STREAMS, COMMITMENT B4: BALD AND GOLDEN EAGLE,
COMMITMENT B5: NORTHERN LONG-EARED BAT AND TRI-COLORED BAT &
COMMITMENT B6: MIGRATORY BIRDS WORK RESTRICTION notes were revised.

Sheet A4: COMMITMENT C: WATER SOURCE, COMMITMENT D2: SURFACE WATER DISCHARGE
& COMMITMENT E: STORM WATER notes were revised.

Sheet A6: COMMITMENT L: CONTAMINATED MATERIAL & COMMITMENT M1: SECTION 4(f)
PROPERTY notes were revised.

Sheet A7: COMMITMENT Q: ARCHAEOLOGICAL COORDINATION notes were revised.

Sheet B31: ESS-1 Orange Plastic Safety Fence install note was removed.

Sheet E10: SUPERSTRUCTURE note was revised.

Sheet E26: Casing embedment length and Elev. "C" were revised on DRILLED SHAFT view.

Sheets E28 & E31: Elev. "C" was revised on ELEVATION view.

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/gp

CC: Travis Dressen, Mitchell Region Engineer
Jay Peppel, Mitchell Area Engineer

REV 7/6/26

INDEX OF SPECIAL PROVISIONS

PROJECT NUMBER(S): EM-P 0044(207)290 PCN: 05X0

TYPE OF WORK: STRUCTURE (5770'-6" STEEL GIRDER) & APPROACH GRADING

COUNTIES: CHARLES MIX, GREGORY

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.

Bobbie Country, Lacey Johnson is the official in charge of the Winner Career Center for Charles Mix, Gregory Counties.

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Special Provision for Contract Time, dated 7/9/26.

Special Provision Regarding Combination Bids, dated 6/1/26.

Special Provision for On-The-Job Training Program, dated 3/10/16.

Special Provision Regarding Section 404 Permit, dated 6/4/26.

Fact Sheet #14

Special Provision for Section 408 Request Number 408-2023-0016, dated 12/20/24.

Special Provision for United States Coast Guard Bridge Permit, dated 4/3/25.

Special Provision for IRI Bridge Smoothness, dated 8/23/21.

Special Provision for Disc Bearing Assembly, dated 9/21/23.

Special Provision for Drilled Shaft Construction, dated 7/9/26.

Special Provision for Modular Expansion Joint Assembly, dated 9/21/23.

Special Provision for Stainless Reinforcing Steel, dated 8/25/25.

Special Provision for Concrete Penetrating Sealer, dated 7/30/24.

Special Provision for Mass Concrete – Protection of Mass Concrete by Controlling Heat of Hydration (Incidental), dated 5/4/26.

Special Provision for Contractor Staking with Machine Control Grading Option, dated 8/25/25.

List of Utilities.

Special Provision for Price Schedule for Miscellaneous Items, dated 2/18/26.

Special Provision for American Security Drone Act, dated 12/15/25.

Special Provision for Steel Beam Guardrail AASHTO M 180 Designation, dated 10/1/25.

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

Fuel Adjustment Affidavit, DOT form 208 dated 11/25.

Standard Title VI Assurance, dated 3/1/16.

Special Provision For EEO Affirmative Action Requirements on Federal and Federal-Aid Construction Contracts, dated 2/5/24.

Special Provision For Required Contract Provisions Federal-Aid Construction Contracts, Form FHWA 1273 (Rev. October 23, 2023), dated 10/18/23.

Required Contract Provisions Federal-Aid Construction Contracts, Form FHWA 1273 (Rev. 10/23/23).

Special Provision Regarding Minimum Wage on Federal-Aid Projects, dated 10/24/19.

Wage and Hour Division US Department of Labor Washington DC. - US Dept. of Labor Decision Number SD20260001, dated 1/30/26.

Special Provision Regarding Stormwater Discharges to Waters of the State, dated 11/5/25.

General Permit Authorizing Stormwater Discharges Associated with Construction Activities, dated 11/1/23.

<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/StormWaterConstruction.aspx>

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
CONTRACT TIME**

**PROJECT EM-P 0044(207)290, PCN 05X0
CHARLES MIX & GREGORY COUNTY**

JULY 9, 2026

Substantial Completion

The Contractor will substantially complete the project by the June 21, 2030 substantial completion date.

The Department will consider the work substantially complete when the new structure is complete and all lanes associated with the new structure are open to unimpeded traffic with final surfacing.

The Engineer will determine when the project is substantially complete.

If the Contractor does not complete the required work by the substantial completion requirement, the Department will make a disincentive assessment amounting to \$30,000 per calendar day. A contract item for incentive/disincentive pay is included in the bid schedule for the Department's use in assessing disincentives. The Department will use a negative quantity of days for assessing disincentives. If the Contractor does not substantially complete the required work by June 21, 2030, the Department will count calendar days in accordance with the first paragraph of Section 8.7 C.3 except calendar days rather than working days will be counted. Calendar days are defined as stated in the second and third paragraphs of Section 8.7 C.2.

Field Work Completion

The Contractor will complete the project by the June 20, 2031 field work completion date.

The Contractor will complete all work on the project prior to the field work completion requirement. If the Contractor does not complete all work by the field work completion requirement, the Department will assess liquidated damages in accordance with Section 8.9 Table A for each calendar day the work (project) is late until the Contractor completes all field work.

If the Contractor does not complete all field work by June 20, 2031, the Department will count calendar days in accordance with the first paragraph of Section 8.7 C.3 except calendar days rather than working days will be counted. Calendar days are defined as stated in the second and third paragraphs of Section 8.7 C.2.

**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
DRILLED SHAFT CONSTRUCTION**

**PROJECT EM-P 0044(207)290, PCN 05X0
CHARLES MIX & GREGORY COUNTY**

MAY 4, 2026 (REVISED JULY 9, 2026)

465.1 DESCRIPTION

This work consists of all labor, materials, equipment, and services required in the construction of drilled shafts.

465.2 DRILLED SHAFT CONTRACTOR AND PERSONNEL QUALIFICATIONS

The drilled shaft Contractor and its construction personnel must be experienced in this type of work. Experience must be relevant to anticipated subsurface materials, water conditions, shaft size, and special construction techniques required. Prior to the Preconstruction Conference, the Contractor must submit the following information to verify the firm's experience and the qualifications of personnel scheduled to perform the drilled shaft construction:

- A. Submit a list of at least three projects successfully completed in the last five years, in which the drilled shaft Contractor installed drilled shafts of similar diameter, length and site conditions to those shown in the plans. Include a brief description and reference for each project listed. The list of projects must contain names and phone numbers of owner's representatives who can verify the drilled shaft Contractor's participation on those projects.
- B. Provide the names and detail the experience of the on-site supervisors and drill operators for the Project. On-site supervisors must have at least five years of experience in drilled shaft construction, and drill operators must have at least three years of experience.
- C. A signed statement that the Contractor has reviewed the Geotechnical Evaluation Report and has inspected the project site and all the subsurface information including soil or rock samples that are available in the West Fargo,

ND offices of Braun Intertec. For information, contact Ezra Ballinger at 701-205-2515.

Work on any drilled shafts must not begin until the qualifications have been approved. The Engineer may suspend the drilled shaft construction if the Contractor substitutes unapproved personnel during construction. Requests for substitution of field personnel must be submitted to the Engineer for approval. Additional costs resulting from the suspension of work will be the Contractor's responsibility, and no extension of the contract completion date resulting from the suspension of work will be allowed.

The Contractor must have a minimum of one person who has fulfilled the qualifications required for drilled shaft field inspector certification on site during all drilled shaft construction activity. The representative(s) will be responsible for the Contractor's Quality Control (QC) of the drilled shafts during all phases of construction. The Contractor's QC representative(s) must have proof of certification as a Drilled Shaft Inspector by the National Highway Institute (Course No. FHWA-NHI-132070B and Course No. FHWA-NHI-132070) or an equivalent certification program approved by the Department.

465.3 MATERIALS

A. Concrete: Drilled shaft concrete will conform to the requirements of Section 460, except as modified by this Section.

B. Controlled Density Fill: Section 464

C. Casing: Casing will be smooth steel of sufficient thickness to withstand handling stresses, concrete pressure, surrounding earth and fluid pressures, and live load surcharges (if applicable), with a minimum thickness of 1.5 inches. The casing will be of the diameter specified and will have teeth at the bottom to facilitate proper seating of the casing into the plans-specified formation. Casing will be uncoated and does not need to be composed of weathering steel. Ensure that the casing is clean and watertight prior to placement in the drilled shaft excavation.

D. Access Tubes for Crosshole Sonic Log (CSL) Testing: Access tubes will be 2 inch I.D. steel pipe conforming to ASTM A53. The selected pipes must have a round diameter free of defects or obstructions, including any at the pipe joints, in order to permit a free, unobstructed passage of the source and receiver probes. The pipes must be watertight and free from corrosion with clean internal and external faces to ensure smooth passage of the probes and to secure a good bond between the concrete and tubes.

The pipes will each be fitted with a watertight shoe on the bottom, which can be penetrated from the surface to allow tip grouting, and a removable cap on the top.

- E. Grout:** Grout for filling the access tubes at the completion of the CSL tests will conform to the requirements of Section 460.2 or will consist of Portland cement, water, and a water reducing admixture mixed in the following proportions:

Portland Cement Type I or II.....	1 Sack (94 lbs.)
Water	4.5 Gallons Maximum
Water Reducing Admixture	Manufacturer's Recommendation
Fly Ash (Optional)	20 Pounds Maximum

- F. Thermal Sensors:** Supply and install embedded thermal sensors conforming to ASTM D7949-14. Embedded thermal sensors must extend the full length of the drilled shaft and be attached securely to the reinforcing steel cage.

465.4 CONSTRUCTION REQUIREMENTS

- A. Concrete Quality and Proportioning:** The Contractor will design and be responsible for the performance of the concrete mix. Not less than 30 calendar days before beginning drilled shaft construction, the Contractor will submit the proposed concrete mix for review by the Department's Concrete Engineer. The concrete mix will have the following characteristics:

1. Minimum cementitious content of 680 pounds per cubic yard. The maximum cementitious content (total cement, fly ash, and other cementitious admixture) content will be 800 pounds per cubic yard. The Contractor will substitute a portion of the cement with Class F modified fly ash in accordance with Section 605. The amount of cement to be replaced will be 20% to 30% by weight. The ratio of substitution of fly ash to cement will be 1:1 by weight;
2. Coarse aggregate will conform to Section 820 and be either size #1, #1A, or #15;
3. Minimum 28 day compressive strength of 4500 psi;
4. Slump at time of placement will be between 6 and 8 inches for concrete that is placed by the tremie method. The slump at the time of placement will be between 7 and 9 inches for concrete that is pumped through a closed tremie. In addition, the slump will be maintained above 4 inches for 8 hours from the time of batching regardless of the placement method. Slump loss will be tested within 30 days prior to placing concrete in each shaft. Slump loss will be tested in accordance with SD 423 with the following modifications: test the slump at 4, 6 and 8 hours after batching;

5. Initial set of the concrete, as determined by the Engineer, will be obtained within 20 hours of completion of placing concrete for each drilled shaft;
6. Entrained air content of 6.5% with an allowable tolerance of +2.0% to -2.0%;
7. The mix design will establish a maximum water cementitious material ratio for the concrete mix (never to exceed 0.44).

The use of a water reducer will be required to achieve the above properties. Water reducers conforming to AASHTO M 194 Type C (Accelerating) and Type E (Water-Reducing and Accelerating) will not be permitted.

B. Drilled Shaft Installation Plan: Not less than 30 calendar days before beginning drilled shaft construction, the Contractor will submit an installation plan to the Department for the Department's opportunity for review. Any review by the Department of the installation plan is limited to general conformance with the contract plans and specifications only. The Contractor will send an email with the installation plan attached as a PDF to the Project Engineer and Office of Bridge Design. Upon request, the Project Engineer will provide the Contractor the appropriate email addresses. Within 14 calendar days of receiving the installation plan, the Office of Bridge Design will respond to the Contractor in one of the following ways: 1) No Exceptions Noted or 2) Returned for Revision. If the Department's response states "Returned for Revision", the Contractor must make the revisions and resubmit the installation plan for review as specified above. The Contractor will not begin drilled shaft construction until the Department has confirmed, in writing, a completed review with a response of "No Exceptions Noted". A response of "No Exceptions Noted" given by the Department will be subject to trial in the field and will not relieve the Contractor of the responsibility to satisfactorily complete the work. The Contractor must submit requests for modification of adopted procedures to the Engineer. The installation plan will provide the following information:

1. A list of all proposed equipment to be used and available on site including, but not limited to, barges, cranes, casing, drill augers, pilot bits, bailing buckets, final cleaning equipment, air lifts, dewatering pumps, tremies, concrete pumps, etc. Include the casing diameter and wall thickness in the equipment list. The drilling equipment must have adequate capacity, including power, torque and down-thrust, to create a shaft excavation of the maximum diameter specified to a depth up to 10 feet beyond the depths shown on the plans;

2. Details of the overall shaft construction sequence in each substructure unit or group of drilled shafts;
3. A detailed explanation of how the casing is to be installed;
4. A review of equipment suitability based on the Contractor's understanding of the site subsurface conditions. Include a project history of the drilling equipment that demonstrates the successful use of the equipment for drilled shafts of equal or greater size in similar subsurface conditions. List proposed equipment with manufacturer's specification and catalog data including cranes, drills, augers, bailing buckets, casing oscillators, casing twistors, vibratory hammers, final cleaning equipment, desanding equipment, tremies or concrete pumps, casing, etc.;
5. Details of shaft excavation methods to be used, including how to address sloping bedrock and methods of removing any obstructions such as boulders, details for any preboring of foundation material, and a disposal plan for excavated material;
6. Details and methods for advancing the casing into the chalk formation without damaging the surrounding rock, or the casing itself;
7. Methods to be used to clean the shaft excavation and for checking the cleanliness and soundness of the rock socket sidewalls and bearing surface;
8. Details of the proposed method(s) for ensuring drilled shaft stability during excavation and concrete placement.
9. Method of monitoring plumbness and location of the shaft during construction;
10. Details of reinforcement centering devices and their spacing;
11. Details and methods for supporting and lifting reinforcing steel cages;
12. Details of the tremie tube that is to be used. Include all other details of concrete placement such as pumping, slicking the tremie, etc. Details for the disposal of contaminated concrete from a wet excavation will also be included;

13. The Contractor will verify all existing ground and water elevations and establish the elevations of any work platforms, etc. that may be used. These elevations will be included in the drilled shaft installation plan; and,

14. CSL Testing Organization and Personnel: The Contractor will submit the name of the independent testing organization and the names of the personnel conducting the CSL tests. The submittal will include documentation that the qualifications specified below are satisfied. The independent testing organization and the testing personnel will meet the following minimum qualifications:

- a. The testing organization will have performed CSL tests on a minimum of three deep foundation projects in the last two years.
- b. Personnel conducting the tests for the testing organization will have a minimum of two years' experience in CSL testing and interpretation.

C. General Requirements: A drilled shaft preconstruction meeting is required to be held a minimum of 5 working days prior to beginning drilled shaft construction. The meeting cannot be held before the Department has returned the Drilled Shaft Installation Plan with a "No Exceptions Noted" response. A representative from the bridge Contractor, drilled shaft subcontractor, concrete supplier, Area Office, and Office of Bridge Design is required to attend this meeting. The drilled shaft installation plan will be discussed at the meeting and the responsibilities of each of the parties involved clearly identified.

The Contractor will perform the excavation for the shafts through the various types of materials that are encountered. Once drilling into the chalk commences, the Contractor must provide a full crew and continuous operations to complete the excavation to the elevations and diameters shown in the plans, clean the shaft, perform the SQUID inspection, place the rebar cage (including CSL tubes and TIP cables), and fill the excavation to at least the bottom of the casing without delay. This requirement shall not be construed to mean construction joints are allowed in the drilled shafts. The chalk must not be exposed for more than 96 hours once final diameter is achieved along any portion of the rock socket, and continuous operations will be required to complete the required work within this timeframe. The maximum prebore diameter in the foundation material is 9'-6". In the event the chalk will be exposed for more than 96 hours, drilled shaft operations will cease, and the office of Bridge Design will be immediately notified. To preserve the design capacity of the chalk, the Contractor may be required to fill the excavation with Controlled Density Fill at no additional cost to the Department. The 96-hour

requirement may be waived if the Contractor receives notice of a successfully reviewed procedure to protect the design capacity of the chalk for a period of time exceeding 96 hours.

For Drilled Shaft Concrete pours, fresh concrete shall be tested at the rate of one test per 10 cubic yards for the first 30 cubic yards of concrete placed. The first three concrete tests (one test for each 10 yards delivered) shall be taken before placing any concrete in the Drilled Shaft. Thereafter, one test shall be conducted for each 50 cubic yards of concrete placed for the duration of the concrete pour.

Contractor methods and equipment will be suitable for the intended purpose and materials encountered. All the equipment listed in the drilled shaft installation plan will be on the project site prior to the start of work. The following equipment is required to be available for use on the project site at all times during drilled shaft construction:

1. Tremie of sufficient length to reach the bottom of the drilled shaft;
2. Cleanout bucket of the proper size;
3. Graduated measuring device to determine excavation and water depth;
4. Pilot bit capable of drilling through rock;
5. A pump of sufficient discharge rate to remove the displaced water during underwater placement of concrete; and,

Upon completion of the excavation of a drilled shaft, a cleanout bucket no less than 12 inches smaller than the final diameter of the shaft will be used to remove all loose material from the bottom of the shaft. Wet shaft excavations will be cleaned using an air lift system. After the shaft has been tested and meets base cleanliness criteria, the reinforcing steel will immediately be installed and the concrete placed prior to start of excavation for another drilled shaft.

Vibrations caused by any work activities that may be detrimental to the freshly placed concrete will not be allowed for at least 96 hours after placement or until the concrete has attained a minimum compressive strength of 1600 psi. If the Engineer suspects that construction activities may be causing excessive vibration, a 2 x 4 will be laid across the top of the permanent casing containing the freshly placed concrete. A small container of water will then be placed on top of the 2 x 4. If the water surface remains calm, the construction activity will be allowed to continue. When the water surface shows any movement, vibrations are reaching the freshly placed concrete and the construction

activities will be either stopped or altered such that vibrations at the freshly placed concrete are eliminated.

- D. Permanent Casing Construction Method:** The permanent casing construction method will be used for all drilled shafts on this project. This method consists of placing a continuous casing to a prescribed depth before excavation begins.

The Contractor shall advance the casing through the alluvium and into the chalk formation using means and methods that satisfy the following criteria, which must be described in the Drilled Shaft Installation Plan:

1. Ability to advance the casing through any boulders encountered;
2. Levels a sloping chalk surface encountered at the top of the chalk formation to ensure that the casing seats uniformly;
3. Prevents damaging the integrity of the surrounding chalk formation that results in an inability to create a seal as described below;
4. Creates a seal adequate to prevent intrusion of soil or other materials into the casing during drilled shaft construction.

Upon completion of excavation, casing advancement and cleaning, the Contractor will cut off the permanent casing to the plan shown cutoff elevation.

- E. Excavation and Drilling Equipment:** The Contractor will use excavation techniques that are technically adequate based on the geologic conditions encountered at the site. Excavation and drilling equipment will have adequate capacity including power, torque, and downward force. All excavation tools (whether for soil or rock) will be of adequate design, size, and strength to perform the work shown in the plans and described in this specification.

- F. Reinforcing Steel Cage Construction and Placement:** The reinforcing steel cage (consisting of longitudinal bars, spirals or tie bars, cage stiffener bars, spacers, reinforcing splices, crosshole sonic log (CSL) access tubes, embedded thermal sensors, and centralizers) will be a continuous unit in the excavated shaft. Placement of the reinforcing steel cage will take place immediately after the shaft excavation is inspected and approved by the Engineer and before concrete placement.

The reinforcing steel cage will be tied and supported in the shaft so the cage will remain within the specified tolerances. Welding of the reinforcing steel cage will not be allowed. Concrete centralizers or other approved noncorrosive centering devices will be used within 1 foot of the bottom. Centralizers will also be used at intervals not exceeding 5 feet along the length of the shaft. Each level of centralizers will be rotated 45 degrees in the horizontal plane relative

to the level below. Concrete centralizers will be constructed of concrete equal in quality and durability to the concrete specified for the shaft. The concrete centralizers will have the ends beveled to minimize the potential for catching on obstructions during reinforcing steel placement and they will have a minimum of two tie wires cast in the concrete. Wrapping wires around the concrete centralizers to hold them in place is not an acceptable method of attachment. Any type of steel used as centralizers will be epoxy coated. The reinforcing steel cage will not be in contact with the bottom of the shaft.

The elevation of the top of the reinforcing steel cage will be checked before and after the concrete is placed. If the reinforcing steel cage is not maintained within the specified tolerances, corrections to the cage support will be made by the Contractor, as required by the Engineer. No additional shafts will be constructed until the Contractor has modified the reinforcing steel cage support to prevent vertical movement, in a manner satisfactory to the Engineer.

G. Installation of Crosshole Sonic Log (CSL) Access Tubes: The Contractor will install access tubes as detailed in the plans for CSL testing in all specified drilled shafts to permit access for the CSL test probes. The access tubes will be evenly spaced and securely attached to the interior of the reinforcement cage of the shaft as shown in the plans. The tubes will be as near to vertical and parallel as possible. Even moderate bending of the tubes will result in large regional variations of the data. The tubes will extend from 3 inches above the bottom of the drilled shaft to at least 4 feet above the construction joint. If the plans bottom of drilled shaft is lowered during drilling, the CSL tubes will also be extended. Under no circumstances should the tubes be allowed to rest on the bottom of the drilled excavation. During placement of the reinforcement cage, care will be exercised as to not damage the tubes.

After placement of the reinforcement cage, the tubes will be filled with clean water as soon as possible and the tube tops capped to keep debris out. The tubes must be filled with water and capped before the pouring of the concrete, otherwise debonding of the access tubes from the concrete will occur resulting in data which indicates poor quality concrete. The Contractor will ensure the tubes remain filled until grouting occurs. Care will be taken during the removal of the caps from the pipes after installation so as not to apply excess torque, hammering, or other stresses which could break the bond between the tubes and the concrete.

Upon completion of the CSL testing and acceptance of the drilled shaft by the Engineer, access tubes and any holes will then be completely filled with grout. The access tubes will be filled using grout tubes that extend to the bottom of hole. The access tubes will be cut off flush with the top of the drilled shaft.

H. Concrete Placement: Concrete must be continuously agitated in the hauling unit and be discharged within 135 minutes after the cement has been placed in

contact with the aggregates. When the concrete temperature is 80°F or above, the time limitation will be reduced to 105 minutes. The interval between batches will not exceed 30 minutes.

The drilled shaft concrete will be placed immediately after the reinforcing steel cage is placed.

Concrete placement will be continuous until the shaft is full and uncontaminated concrete flows out of the top of the shaft, as determined by the Engineer. The use of spud vibrators or other vibrating tools in the drilled shaft concrete will not be permitted.

I. Underwater Placement of Concrete:

Tremie: The tremie pipe will be constructed of steel, and will be sized by the Contractor to continuously discharge concrete at the shaft base elevation in an operation lasting no longer than the time specified in the installation plan. Tremie pipes will have a minimum wall thickness of 0.500 inch, and a minimum inside diameter of 14 inches. The tremie pipe will be smooth and thoroughly cleaned of any hardened concrete, rust, and all other contaminants. The tremie pipe will be marked to allow determination of depth to the mouth of the tremie. Joints between sections of tremie pipe will be gasketed and bolted to be watertight under placement conditions. Instead of bolted joints, welded joints may be used if a smooth finish is maintained on the inside of the tremie pipe at the weld location.

A crane or other lifting device will be available to remove the tremie from the water for resealing or horizontal relocation.

Placement of underwater concrete will be a continuous operation. If an interruption of placement occurs, the interruption will not exceed 30 minutes without removal of the tremie and restarting the concrete placement according to the paragraph below. An interruption in concrete placement will not exceed the time for the concrete to change to a 4" slump or less. If the concrete attains a slump of 4" or less before the concrete placement is completed, concrete placement will cease and the concrete in the shaft will be rejected and removed from the shaft.

Starting/Restarting of the concrete placement by tremie will begin by sealing the bottom of the tremie with a watertight seal before placing the tremie into the water. The watertight seal will prevent water from entering the tremie, yet will be dislodged when concrete flow is initiated. The empty tremie pipe will be sufficiently heavy to be negatively buoyant when empty. The tremie pipe will be sealed, lowered to the bottom of the shaft or embedded at least

15 feet into the concrete, and completely filled with concrete. Fill the tremie slowly to avoid entrapped air and bridging. When full, the tremie will be slowly lifted 6 inches off the bottom to start concrete flow. The concrete supply will be continuous until soundings indicate the tremie has the required embedment. After being dislodged, the sealing device will either remain on the bottom or be retrieved by the Contractor.

The mouth of the tremie will always remain embedded in the fresh concrete a minimum of 15 feet unless the tremie is being completely removed from the water. At no time will the concrete be allowed to fall through water.

A tremie will not be moved horizontally while concrete is flowing through it. To relocate a tremie, lift it from the water, reseal, relocate, and restart as required above.

All vertical movements of the tremie will be made slowly and will be carefully controlled to prevent loss of seal. If loss of seal occurs, placement through that tremie will be halted immediately. The tremie will be removed, resealed, replaced, and restarted as directed above.

J. CSL Testing: All equipment, testing, and reporting procedures will be provided and performed in accordance with ASTM D6760 and the following.

1. Testing: The testing and analysis will be performed by an independent testing organization proposed by the Contractor and approved by the Engineer.

The CSL testing will be performed after the shaft concrete has cured at least 96 hours. Additional curing time prior to testing may be required if the shaft concrete contains admixtures, such as set retarding admixture or water reducing admixture. The additional curing time prior to testing required under these circumstances will not be grounds for additional compensation or extension of time to the Contractor.

After placing the shaft concrete and before beginning CSL testing of a shaft, the Contractor will inspect the access tubes. Each access tube that the test probe cannot pass through will be replaced, at the Contractor's expense, with a 2 inch diameter hole cored through the concrete for the entire length of the shaft. Location of the core hole will be determined by the CSL testing firm and will not damage the shaft reinforcement. Descriptions of inclusions and voids in cored holes will be logged and a copy of the log will be submitted to the Engineer. Findings from cored holes will be preserved, identified as to location, and made available for inspection by the Engineer.

2. Equipment: CSL equipment will consist of the following components:

A digitizing card for conversion of analog CSL data to digital;

A microprocessor based CSL system for recording, processing, analyzing, displaying and log printing of digitally converted CSL data;

Ultrasonic source and receiver probes capable of logging 2 inch I.D. pipes;

An ultrasonic voltage pulser to excite the source combined with a synchronized triggering system to prompt the recording system;

A depth measuring device used to correlate records with depth; and,

Appropriate filter/amplification and cable systems for CSL testing.

3. Procedure: For the CSL test, information on the shaft bottom and top elevations and length, along with construction dates must be provided to the testing organization before or at the time of testing. Ultrasonic transmitter/receiver probes are then lowered to the bottom of a pair of access tubes. All slack is removed from the cable to assure accurate depth measurements. The two probes are then pulled simultaneously as to maintain a near horizontal ray path between them. Measurement will be made at 0.2 foot intervals or less as the probes ascend the tube pairs. This process is repeated for all test paths along the outer perimeter as well as across the inner diagonals of the shaft. The data is analyzed and anomalies/defects characterized by longer travel times and lower signal amplitudes will be reported to the Engineer at the time of testing.

4. CSL Results: The CSL results will be presented in report form. Digitized raw data files will also be submitted with the report. This report will contain CSL logs and waterfall diagrams for each tube pair tested combined with an analysis of the first arrival time and compressional wave velocity along with the signal amplitude of the pulse versus depth. Any anomaly/defect zones will be discussed in the report where appropriate.

The report will identify and provide detailed discussion of each anomalous zone detected by the CSL. Anomalous zones are areas where velocity reduction exceeds 20% of the shaft average velocity. Within these zones collect and process additional data to construct three-dimensional color-coded tomographic images with two-dimensional cross-sections between tubes within the anomalous zone.

K. Thermal Integrity Profiling (TIP) Testing of Drilled Shafts: All equipment, testing, and reporting procedures will be provided and performed in accordance with ASTM D7949-14 and the following.

1. **Testing:** The testing and analysis will be performed by an independent testing organization proposed by the Contractor and approved by the Engineer. The independent testing organization must have a licensed professional engineer supervising the testing and interpretation of results.
 2. **Equipment:** Supply all equipment required to perform TIP tests including a computer-based TIP data acquisition system to monitor and record temperature versus time after casting. The equipment must have the ability to collect and record data at user-defined time intervals (usually 15 to 60 minutes).
 3. **Procedure:** Conform to testing procedures in ASTM D7949-14, using Method B. Data acquisition and recording must begin as soon as practical after concrete casting has begun and must occur for a minimum of 48 hours. The supervising engineer for the TIP testing is responsible for starting time and duration of data acquisition and recording in a manner that achieves the desired results.
 4. **TIP Testing Results:** The TIP testing results will be presented in report form submitted within five working days of completion of testing. The report must contain, for each shaft, the following information:
 - Graphical displays of all temperature measurements versus depth with elevations for top of shaft, bottom of casing and bottom of shaft noted;
 - Indication of unusual temperatures, particularly significantly cooler local deviations of the average at any depth from the overall average over the entire length;
 - Overall average temperature for use in determining shaft radius at any point;
 - Variations between embedded thermal sensors at each depth for use in determining reinforcing cage alignment.
- L. Construction Method Log:** The Contractor must maintain a construction method log during shaft excavation and concreting of each drilled shaft. This record must be available for the Engineer's inspection as directed. The log must contain, for each shaft, the following information:
- Shaft number, date and time of installation;
 - Description and approximate top and bottom elevation of each soil or rock material, and final tip elevation;
 - Level and variation of the piezometric surface;
 - Excavation procedures and method used to stabilize the sides of the shaft and any seepage of groundwater;
 - Quantity, type of obstruction material and drilling rate;
 - Diameter of the as-built shafts;

- Plumbness and deviation of shaft location;
- Type, diameter and length of any casing left in place;
- Time, method and duration of placement of concrete;
- A chart showing quantity of concrete placed versus depth or elevation of top of concrete in shaft during placement;
- Other pertinent data relative to the installation.

M. Acceptance of CSL and TIP Tested Drilled Shafts: The acceptance of each drilled shaft will be the decision of the Engineer, based on the results of the CSL and TIP reports and other information about the shaft placement. Acceptance criteria will be as described in the most current edition of FHWA GEC-15, *Acceptance Procedures for Structural Foundations of Transportation Structures*. De-watering and grouting of the access tubes and any subsequent work above the construction joint of the drilled shaft will not be done until after the acceptance of each shaft. The Engineer will provide a response to the Contractor within 5 business days after receiving the test results and analysis submittal. Rejection of the shaft based on CSL will require conclusive evidence that a defect exists in the shaft which will result in inadequate or unsafe performance under service loads. If the CSL records are complex or inconclusive the Engineer may require coring or excavation of the shaft to verify shaft conditions. If no defect is encountered, the state will pay for all coring or excavation costs, including the grouting of all core holes.

In the case that any shaft is determined to be unacceptable, the Contractor will submit a plan for remedial action to the Engineer for review. Any modifications to the foundation shafts and load transfer mechanisms caused by the remedial action will require calculations and working drawings stamped by a SD registered Professional Engineer for all foundation elements affected. All labor and materials required to perform remedial shaft action will be provided at no cost to the Department and with no extension of the contract time.

N. Drilled Shaft Base Cleanliness: Drilled shaft base cleanliness requirements will consist of the following:

- 1. Summary of Work:** The Specialty Testing Consultant hired by the Contractor will perform drilled shaft base cleanliness tests prior to concrete placement. The base cleanliness tests will be performed no more than 2 hours prior to commencing the shaft concrete pour.
- 2. Base Cleanliness Equipment:** A Shaft Quantitative Inspection Device (SQUID) will be used to assess the drilled shaft base cleanliness. The device will record and provide information regarding the drilled shaft base cleanliness upon completion of the drilling and cleaning process. The device will include the following components:

SQUID Unit. Unless updated by the equipment manufacturer, the SQUID Unit will be a hexagonal shaped device with a height of approximately 25 inches, a diagonal of approximately 26 inches, and a weight of approximately 415 lbs. The unit will include three penetrometers each having a surface area of 1.55 in² to measure force and three displacement plates each having a diameter of 6 inches and a weight of 14.9 lbs to determine displacements. The unit will also be supplied with two downhole data transmission cables and two transmitter boxes for signal conditioning.

Kelly Bar Adapter. Drill rig Kelly bar dimensions vary depending upon the manufacturer and require an adapter to attach to the SQUID unit. For each drilling rig on the project, the Contractor will submit a completed Figure 1 to the SQUID equipment supplier two weeks prior to installing the initial drilled shaft with that drill rig.

Kelly Bar Adapter Sizing

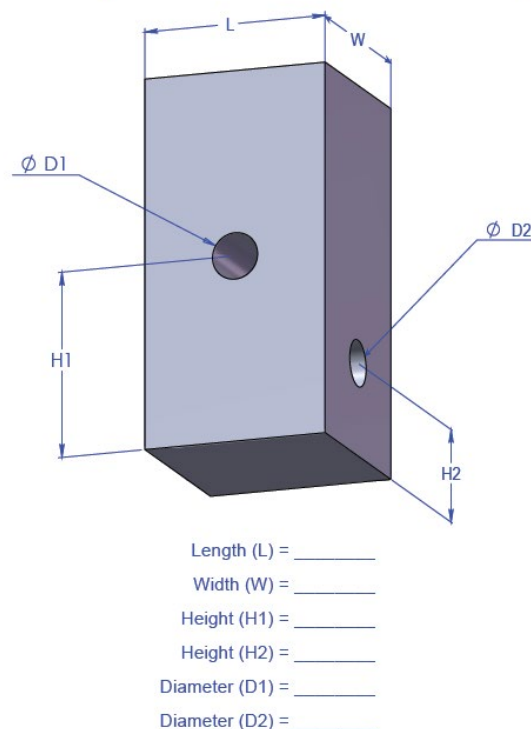


Figure 1. Kelly Bar Adapter Details

SQUID Tablet. The SQUID Tablet will have a sunlight readable display screen with a minimum screen resolution of 1024 x 768. The SQUID computer tablet will provide numerical and graphical display of all penetrometer and displacement plate results as well as a minimum 60 GB of internal memory storage. The Tablet will also be capable of remote operation via a high-speed internet connection.

The SQUID system is manufactured by Pile Dynamics, Inc., 30725 Aurora Road, Cleveland, OH 44139, USA. The manufacturer can be contacted at www.pile.com/pdi; email: info@pile.com; phone: +1 216-831-6131; fax +1 216-831-0916.

- 3. Test Procedure:** The SQUID Unit will be pin-connected to the Kelly bar using a properly sized adapter provided by the SQUID equipment supplier or contractor. After the pin-connection and prior to testing, the verticality of the SQUID Unit will be checked and confirmed. The signal transmission from the SQUID Unit to the SQUID Tablet will also be confirmed prior to commencing the test. Signal transmission will be checked by manually lifting each displacement plate and observing the increasing displacement on the SQUID Tablet. After verticality and signal transmission checks are completed, the SQUID Unit will be moved over the open shaft excavation and lowered without rotation until the unit is approximately 2 feet above the shaft base.

The test will proceed by slowly lowering the Kelly bar without rotation until the entire weight of the Kelly bar is transferred to, and is resting on, the SQUID Unit. Penetrometer force and plate displacement measurements will be continuously acquired, displayed, and stored on the SQUID Tablet during the test process. A test run will be terminated once two of the three penetrometers have registered a force greater than 0.5 kips or the maximum penetrometer travel of 6 inches is reached for any one of the penetrometers.

With a shaft base diameter greater than three feet, SQUID runs will be performed in the center of the shaft as well as in four quadrants surrounding the shaft center. The SQUID Unit will be repositioned in one of the four perimeter quadrants (North, South, East, or West) around the shaft center and the process described above repeated. For each SQUID run, the average debris thickness determined using the force versus displacement results from a minimum of two penetrometers will be used to determine if the drilled shaft base condition meets the specified base cleanliness criteria or whether additional cleaning and retesting is required.

- 4. Base Cleanliness Criteria:** Sediment, loose material, or debris at the base of the shaft is defined as a material that has a minimum resistance to penetrometer force of 0.020 kips. Natural soils are defined as materials that have a resistance to penetrometer force greater than 0.160 kips. The thickness of sediment, loose material, or debris at the base of the drilled shaft is defined as the difference in the displacement plate measurements that occurs between a penetrometer force of 0.020 kips to 0.160 kips.

A drilled shaft base often contains irregularities from a level surface due to pilot holes or grooves from cutting teeth on drilling tools. Therefore, a

SQUID run will be considered complete provided the debris thickness can be determined from a minimum of two force versus displacement plots.

A minimum of 50% of the drilled shaft base area will have a debris thickness less than 0.5 inch, and the maximum debris thickness at any location will not exceed 1.5 inches.

- 5. Reporting:** SQUID test results will be reviewed by qualified personnel on-site or remotely connected by the internet to the SQUID unit prior to removing the SQUID unit from the drilled shaft excavation. Within one hour of completing the base cleanliness tests, a base cleanliness field report will be submitted to the Engineer for the tested drilled shaft. As a minimum, the base cleanliness field report will include the approximate location of the tests, the test date and time, a plot of the penetrometer force versus plate displacement for each SQUID run, the calculated debris thickness, and whether the shaft base cleanliness meets the specification requirements.

O. Construction Tolerances: The following tolerances apply to drilled shafts:

The drilled shaft will be within one twelfth of the shaft diameter or 3 inches, whichever is less, of the plan shown horizontal position, at the plan elevation of the top of the shaft.

The bottom of the shaft will be drilled to the plan shown elevation, within a tolerance of minus 0 inch, plus 18 inches.

The vertical alignment of the shaft excavation will not vary from the plan alignment by more than 1/4 inch per 1 foot of depth or 1.5% of total shaft length, whichever is less.

After all concrete is placed, the top of the reinforcing steel cage will be no more than 6 inches above nor more than 3 inches below plan position.

The diameter of the completed shaft will be the plan diameter with a tolerance of minus 0 inch, plus 2 inches.

The top of the shaft will be built to plan elevation with a tolerance of plus or minus 1 inch. The plan shown elevation of the top of shaft will not be changed without prior permission from the Office of Bridge Design.

Excavation equipment and methods will be designed so the completed shaft excavation will have a relatively flat bottom.

465.5 METHOD OF MEASUREMENT

- A. Class A45 Concrete, Drilled Shaft:** The plan quantity will be the quantity paid for unless a change is ordered in writing. If a change is ordered, measurement

will be according to neat line dimensions specified in the change and quantities computed to the nearest 0.1 cubic yard.

- B. Drilled Shaft Excavation:** The plan quantity will be the quantity paid for unless a change is ordered in writing. If a change is ordered, measurement will be according to the neat line dimensions specified in the change and quantities computed to the nearest 0.1 cubic yard.
- C. Permanent Casing:** The length of casing from the plan shown cutoff elevation to the bottom of the casing unless otherwise specified in the plans. Permanent Casing will be measured to the nearest 0.1 linear foot, for each specified size of casing.
- D. Crosshole Sonic Log (CSL) Test:** will be measured by the number of shafts tested. CSL testing will only be measured once per shaft tested.
- E. Thermal Integrity Profiling (TIP) Test:** will be measured by the number of shafts tested. TIP testing will only be measured once per shaft tested.

465.6 BASIS OF PAYMENT

- A. Class A45 Concrete Drilled Shaft:** The accepted quantities of concrete will be paid for at the contract unit price per cubic yard. Payment will be full compensation for labor, equipment, tools, materials, and all incidentals required. All costs for furnishing, installing, cutting off, and grouting the CSL access tubes will be incidental to the contract unit price per cubic yard for Class A45 Concrete Drilled Shaft. Payment will be for plan quantity regardless of the amount placed. If a change is ordered, payment will be for the changed quantity at the contract unit price.
- B. Drilled Shaft Excavation:** The accepted quantities of excavation will be paid for at the contract unit price per cubic yard. Payment will be full compensation for labor, equipment, tools, materials, base cleanliness testing, specialty testing consultant(s), and all incidentals required, including blasting equipment and temporary casings. Payment will be for plan quantity regardless of the amount placed. If a change is ordered, payment will be for the changed quantity at the contract unit price
- C. Permanent Casing:** The accepted quantities of casing will be paid for at the contract unit price per linear foot, for each specified size. Payment will be full compensation for labor, equipment, tools, materials, and all incidentals required.
- D. Crosshole Sonic Log (CSL) Test:** The accepted quantity of CSL tests will be paid at the contract unit price per each test. Payment will be full compensation for all labor, equipment, tools, materials, services, and incidentals required to

perform the tests and analyze the results. Payment will be made only once per shaft tested.

E. Thermal Integrity Profiling (TIP) Test: The accepted quantity of TIP tests will be paid at the contract unit price per each test. Payment will be full compensation for all labor, equipment, tools, materials, services, and incidentals required to perform the tests and analyze the results. Payment will be made only once per shaft tested.

F. Large Boulder Removal: Boulders encountered during drilled shaft excavation, with a maximum dimension greater than 4 feet, that prevent further advancement of the drilled shaft will be considered obstructions. If an obstruction is encountered, the Contractor must immediately notify the Engineer, and within 2 business days of discovery, submit a written proposal describing the method for removing the obstruction. Payment for removal of this type of obstruction will be made on a Force Account Basis in accordance with Section 9.4D of the Specifications. Failure to provide the Engineer notification, access to the work, or assistance in record keeping constitutes waiver of additional compensation or a time extension for related claims filed under Section 5.17.

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ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(228)290	A1	A7

Rev 07/08/2026 BDW

Section B - Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	52	Each
009E3225	Reestablish Public Land Survey System Corner	1	Each
009E3230	Grade Staking	3.079	Mile
009E3250	Miscellaneous Staking	3.079	Mile
009E3280	Slope Staking	3.079	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4300	Construction Schedule, Category III	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0210	Remove Building(s)	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	180	Ft
110E0400	Remove Drop Inlet	4	Each
110E0550	Remove Cattle Guard	1	Each
110E0600	Remove Fence	7,445	Ft
110E0730	Remove Beam Guardrail	368.0	Ft
110E1010	Remove Asphalt Concrete Pavement	38,238.2	SqYd
110E1970	Remove Water Main	3,648	Ft
120E0010	Unclassified Excavation	605,992	CuYd
120E0600	Contractor Furnished Borrow Excavation	56,331	CuYd
120E1000	Muck Excavation	2,978	CuYd
120E2000	Undercutting	36,050	CuYd
120E6100	Water for Embankment	4,406.5	MGal
240E0010	Obliterate Old Road	21	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
450E0122	18" RCP Class 2, Furnish	190	Ft
450E0130	18" RCP, Install	190	Ft
450E0142	24" RCP Class 2, Furnish	190	Ft
450E0150	24" RCP, Install	190	Ft
450E0164	30" RCP Class 4, Furnish	144	Ft
450E0170	30" RCP, Install	144	Ft
450E2008	18" RCP Flared End, Furnish	8	Each
450E2009	18" RCP Flared End, Install	8	Each
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E4768	24" CMP 14 Gauge, Furnish	158	Ft
450E4770	24" CMP, Install	158	Ft
450E4778	30" CMP 14 Gauge, Furnish	88	Ft
450E4780	30" CMP, Install	88	Ft

Section B – Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5310	24" CMP Sloped End, Furnish	1	Each
450E5311	24" CMP Sloped End, Install	1	Each
450E5314	30" CMP Sloped End, Furnish	1	Each
450E5315	30" CMP Sloped End, Install	1	Each
450E5414	30" CMP Safety End, Furnish	2	Each
450E5417	30" CMP Safety End, Install	2	Each
450E8014	24" RCP to CMP Transition, Furnish	1	Each
450E8015	24" Pipe Transition, Install	1	Each
451E3103	3" Pipe Cap	2	Each
451E7510	Verify Utilities	2	Each
464E0100	Controlled Density Fill	62.0	CuYd
600E0200	Type II Field Laboratory	1	Each
610E0012	12' Cattle Guard	1	Each
620E0020	Type 2 Right-of-Way Fence	7,385	Ft
620E0510	Type 1 Temporary Fence	900	Ft
620E1020	2 Post Panel	46	Each
620E1030	3 Post Panel	11	Each
620E2016	16' Tubular Gate	1	Each
630E0500	Type 1 MGS	225.0	Ft
630E1500	Type 1 Guardrail Transition	4	Each
630E2019	MGS Tangent End Terminal	4	Each
671E7010	Adjust Manhole	1	Each
680E0224	4" PVC Outlet Pipe	165	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	770	Ft
680E2000	Concrete Headwall for Underdrain	4	Each
680E2500	Porous Backfill	326.0	Ton
700E0110	Class A Riprap	308.0	Ton
700E0210	Class B Riprap	6,097.2	Ton
831E0110	Type B Drainage Fabric	5,866	SqYd
900E0010	Refurbish Single Mailbox	1	Each
900E0012	Refurbish Double Mailbox	1	Each
900E5815	Channel Cross Section Survey	Lump Sum	LS

Section C - Traffic Control

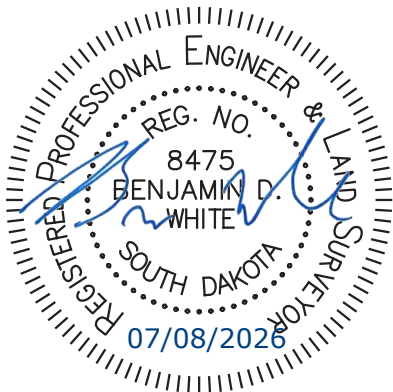
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0010	Flagging	300.0	Hour
634E0020	Pilot Car	125.0	Hour
634E0110	Traffic Control Signs	618.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E1002	Detour and Restriction Signing	384.0	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

Section D - Erosion and Sediment Control

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1690	Remove Sediment	12.3	CuYd
110E1700	Remove Silt Fence	1,488	Ft
230E0010	Placing Topsoil	34,000	CuYd
730E0210	Type F Permanent Seed Mixture	1,586	Lb
731E0200	Fertilizing	45.73	Ton
732E0100	Mulching	130.6	Ton
732E0300	Bonded Fiber Matrix	18.0	Ton
734E0103	Type 3 Erosion Control Blanket	28,100	SqYd
734E0132	Type 2 Turf Reinforcement Mat	365.0	SqYd
734E0154	12" Diameter Erosion Control Wattle	5,700	Ft
734E0165	Remove and Reset Erosion Control Wattle	1,425	Ft
734E0325	Surface Roughening	8.8	Acre
734E0510	Shaping for Erosion Control Blanket	4,973	Ft
734E0602	Low Flow Silt Fence	5,700	Ft
734E0604	High Flow Silt Fence	250	Ft
734E0610	Mucking Silt Fence	413	CuYd
734E0620	Repair Silt Fence	1,488	Ft
734E0630	Floating Silt Curtain	1,170	Ft
900E1310	Concrete Washout Facility	1	Each
900E1320	Construction Entrance	4	Each

INDEX OF SHEETS

A1 and A2 Estimate of Quantities for Sections B, C, D, E, F, M, and S
A3 to A7 Environmental Commitments



ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <<https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A2: STREAMS

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 18.03 acres of stream (includes temporary and permanent) becoming impacted. Refer to Grading Plans for location and boundaries of the impacted streams.

Table of Impacted Streams

Stream Name	Station	Perm. Impact (Acres)	Temp. Impact (Acres)	Total Impact (Acres)
Missouri River (Lake Francis Case Reservoir)	878+00 to 931+50	0.37	17.66	18.03

Action Taken/Required:

It has been determined that project impacts do not require mitigation. Temporary impacts identified in the Table of Impacted Streams will not be mitigated as the finished ground under the bridge will be shaped to match the upstream channel and flood plain and the existing low water channel will be maintained as near as practical to the existing location as designated in the Section B - Grading Plans.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any stream. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any streams beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT B4: BALD AND GOLDEN EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT B5: NORTHERN LONG-EARED AND TRI-COLORED BAT

This project is within the range of suitable habitat for the Northern Long-Eared Bat (NLEB) and project work will avoid conflicts with NLEB and/or TCB roosting habitat.

Action Taken/Required:

Project activities that include tree removal should not occur within the location(s) listed below during the NLEB and/or TCB seasonal work restriction timeframe without approval from the SDDOT Environmental Office.

Table of Bat Seasonal Restrictions

Station	NLEB/TCB Seasonal Work Restriction
848+00 to 966+91	April 15 to October 31

Tree removal will occur between November 1st and April 14th.

If project activities cannot be conducted outside of the seasonal restriction the Contractor will notify the Project Engineer and the Environmental Office (605-773-3309) to schedule a presence/absence survey.

If bats are observed roosting on trees or infrastructure within the project area prior to and/or during construction, the contractor will halt all on-site activities. The contractor will notify the Project Engineer and the Environmental Office (605-773- 3309 or 605-773-5679) of the observed bat presence.

COMMITMENT B6: MIGRATORY BIRDS WORK RESTRICTION

Migratory birds are known to use the project area for nesting, which occurs from March through August.

Action Taken/Required:

All Swallows are state and federally protected under the Migratory Bird Treaty Act of 1918. It is illegal for any person to take, possess, transport, sell, or purchase them or their parts, such as feathers, nests, or eggs, without a permit. Active nests with eggs or chicks inside may not be touched or destroyed without a permit from the U.S. Fish and Wildlife Service (USFWS). Inactive (empty) nests do not require a permit to destroy. Nest or bird removal applications must be justified with strong, compelling reasons such as a health or safety hazard towards humans and/or birds or damage to property.

Construction activities should not occur in the locations listed in the table below during the migratory bird work restriction without prior approval from the SDDOT Environmental Office to avoid conflicts with nesting migratory birds.

Table of Migratory Bird Restrictions

Station	Migratory Bird Restrictions
848+00 to 966+91	April 1- August 31

If necessary, you may do the following to prevent birds from nesting:

Before birds arrive:
Remove old nests and any traces of mud. Since old nests can be reused, remove any potential nests before the birds arrive from winter migration.

Place physical barriers on potential nesting sites to prevent birds from nesting. You may use products such as coroplast, polytetrafluoroethylene (Teflon), Bird Slide™, plexiglass, plastic sheeting, or silicon-based paint coated to the surface. Physical barriers may be a permanent deterrent in preventing birds from nesting in nuisance locations.

After birds arrive:
Remove mud nests frequently, in between nest construction. They may eventually give up on that site if they are not successful in building a nest. You may only destroy nests that do not have eggs or chicks within.

Play sounds of alarm and distress calls of cliff and barn swallows to disrupt nest construction.

If project activities cannot be conducted outside of the seasonal restriction the Contractor will notify the Project Engineer and the Environmental Office Biologist (605-773-3309) to coordinate with the USFWS.



COMMITMENT C: WATER SOURCE

If a Contractor needs access to state waters for extraction, the Contractor must obtain a water right, through the application of a Temporary Permit to Use Public Waters before work begins.

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (SDDANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Temporary permit to use public waters for highway construction purposes application can be found on the SDDANR website:
<https://danr.sd.gov/OfficeOfWater/WaterRights/PermitForms/default.aspx>

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< <https://sdleastwanted.sd.gov/maps/default.aspx> >

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:
< <https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04> >

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

The Lake Francis Case Reservoir is classified as a warm water permanent fishery with a total suspended solids standard of less than 90 mg/L 30-day average, less than 158 mg/L daily maximum.

Action Taken/Required:

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as cold water permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as cold water permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the SDDANR using the following form:

<<https://dot.sd.gov/doing-business/environmental/forms/>>

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:
<<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx>>

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance and/or work in a waterway.

Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the “Special Provision Regarding Storm Water Discharges to Waters of the State.” The Contractor will complete the DANR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at:
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAappendixCCA2018Fillable.pdf>

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

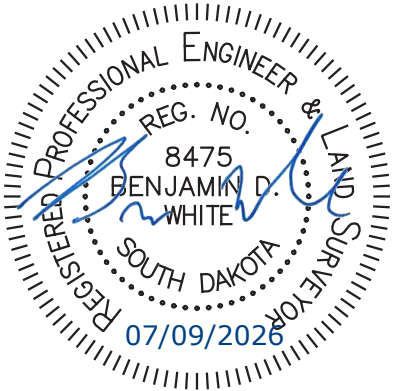
The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly, and sediment is not tracked off the site.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT: <<https://dot.sd.gov/doing-business/environmental/stormwater>>

DANR:<<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx>>

EPA: <<https://www.epa.gov/npdes>>



COMMITMENT L: CONTAMINATED MATERIAL

Contaminated materials are located within the project limits. The likely presence of lead paint on the existing bridge structural steel requires that the lead-based paint and related debris must be disposed of in accordance with all applicable federal, state and local laws governing such disposal. All necessary measures and precautions shall be taken to ensure worker safety for work involving potential release of lead particles. Contaminated material may be located at the following sites:

Table of Contaminated Material Locations

Description	Station	L / R
Lead Paint on Structure 12-085-080	876+00 to 933+00	R
Human waste is expected to be found within the soils and septic system concrete surrounding existing RV waste dump station underground holding tank.	946+50	L
Human waste is expected to be found with in the Park Residence Septic Tank	945+13	L

Action Taken/Required:

The Contractor will give notice to the Engineer when contaminated soil is encountered on the project. The Engineer will contact the Environmental Office so that contact with the DANR and consultant to inspect and monitor removal of any contaminated soil can be initiated.

Painted steel components are excluded from waste disposal requirements provided they are recycled as scrap metal.

If lead-based paint is removed from the substrate the contractor is responsible for proper disposal according to federal and state hazardous and solid waste requirements. The contractor must notify the Project Engineer to coordinate with the Environmental Office and DANR, Hazardous Waste Section, 605.773.3153, prior to lead-based paint removal. Removal operations will need to plan for potential lead exposure and employees informed of the hazards of lead exposure.

Human waste contaminated soil may be disposed of at the following permitted solid waste facilities: City of Platte Landfill – 605-337-3921, City of Winner Landfill – 605-842-2606, and Tri-County Landfill – 605-894-4535 (Pukwana, SD). Materials with dry lead paint may be disposed of at the Tri-County Landfill only

COMMITMENT M: SECTION 4(f)/6(f) RESOURCES

COMMITMENT M1: SECTION 4(f) PROPERTY

A Section 4(f) Evaluation concluded there are no feasible and prudent alternatives to avoiding Section 4(f) property located within the project.

Station	Section 4(f) Property
876+00 to 933+00	Platte-Winner Bridge

932+95 to 933+91	ESS-1
930+55 to 933+04	ESS-2
865+00 to 877+40	West Bridge Recreation Area
850+00 to 877+60	Buryanek Game Production Area
931+10 to 960+30	Snake Creek Recreation Area
871+30	West Platte Game Production Area

Action Taken/Required:

The sanitary dump/water station location transfer will occur within the West Platte GPA as mitigation for transportation impacts to Snake Creek Recreation Area. .

Access to Buryanek Game Production Area, West Bridge Recreation Area (and associated boat launch to remain open during construction), Snake Creek Recreation Area, & West Platte Game Production Area shall always be maintained during construction activities via flagging operations and/or an approved detour.

Construction plan sheets will address the location adjacent to proposed construction limits to protect ESS #1. Fill material will be used to build on top of the existing ground for the new roadway to avoid impacts to ESS #1. Any fill material sources from an outside location will be obtained from a location for which the Section 106 consultation process has been completed. SDDOT will require the contractor to document compliance with this requirement. Construction activities near ESS #1 will be monitored during construction, including ground-disturbing activities and geotechnical borings on the west and east banks of the river. Within ESS-2 geotextile fabric covered by a minimum of 24 inches of fill will be placed over work areas. Following construction of the east abutment, riprap will be placed along the cut bank to prevent further erosion around the abutment and to protect the remaining portion ESS-2. Riprap will be placed from an elevation of approximately 1,360 feet to an elevation of approximately 1,390 feet. Due to the elevation of the upper reaches of the riprap, riprap will not be “knifed in” to the original ground surface near the edge of the cut bank. Sheet piling along the edge of the temporary causeway at elevations below 1,365 feet may be used to prevent expansion of the causeway footprint further and to provide support and protection to the fill material. The SDDOT will ensure that an archaeologist meeting the Secretary of the Interior’s Professional Qualification Standards for Archaeologists (48 CFR 44738-9) and tribal monitor representatives on behalf of the Yankton Sioux Tribe and Rosebud Sioux Tribe will be present to monitor ground-disturbing activities. For ESS #1, the Contractor shall be required to closely coordinate the construction schedule with SDDOT prior to the start of construction activities.

The Contractor is not permitted to stage equipment or materials outside of the project limits within Snake Creek Recreation Area, West Bridge Recreation Area, Buryanek Game Production Area, or the West Platte Game Production Area. The Contractor will notify the Project Engineer if additional easement is needed to complete the work adjacent to any Section 4(f) property. The Project Engineer will obtain an appropriate course of action from the

Environmental Office before proceeding with construction activities that affect any Section 4(f) property.

COMMITMENT M2: SECTION 6(f) PROPERTY

National Park Service concurrence has been obtained for project impacts to the following resource(s) acquired and developed through a Land and Water Conservation Fund grant.

Station	Section 6(f) Property
931+00 to 950+00	Snake Creek Recreation Area support facilities
931+00 to 950+00	Snake Creek Recreation Area picnic areas, swimming facilities, and support facilities
931+00 to 950+00	Snake Creek Recreation Area support facilities
931+00 to 950+00	Snake Creek Recreation Area RV electric pedestals, service panels, and underground wiring

Action Taken/Required:

Snake Creek Recreation Area Park services and public access to park facilities will continue throughout the duration of the construction project.

The following actions are required to ensure 6(f) replacement lands of equal value and usefulness are achieved:

- 4.2 acres of existing roadway and right of way will be converted to recreation use and coordinated with SDGFP.

The Contractor is not permitted to stage equipment or materials outside of the project limits within Snake Creek Recreation Area. The Contractor will notify the Project Engineer if additional easement is needed to complete the work adjacent to any Section 6(f) property. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any Section 6(f) property.

COMMITMENT N: SECTION 404, SECTION 10, & SECTION 408 PERMITS

The SDDOT has obtained Section 404 Clean Water Act, Section 10 Rivers and Harbors Act, and Section 408 Clean Water Act permits from the USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404, Section 10, and Section 408 permits.

The Contractor will also be responsible for obtaining a Section 404, Section 10, and Section 408 permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

Completely remove the existing piers and pilings down to two feet below the existing streambed elevation at the pier or piling.

Fill from temporary causeways and other temporary features associated with the new bridge construction and old bridge demolition will not exceed fill volumes within the following Lake Francis Case Reservoir storage zones:

Storage Zone	Elevation (feet, NAVD 88)	Temporary Fill Volume (acre-feet)
Zone A – Carryover Multiple Use	1321.0 to 1351.0	-
Zone B – Annual Flood Control and Multiple Use	1351.0 to 1366.0	13
Zone C – Exclusive Flood Control	1366.0 to 1376.0	7
Zone D – Maximum Reservoir Elevation	1376.0 to 1380.3	2

The Contractor is responsible for removal of all temporary fills and the existing bridge at the end of construction. Work areas will be surveyed prior to construction beginning and again after construction is complete to ensure the removal of all temporary fill and the existing bridge has been achieved.

Surveys should extend the entire width of the flow area and include below water hydrographic surveys of the channel bottom. High density ground scan Lidar and multi-beam underwater will be used. The surveys will provide a minimum of one foot contour accuracy within the entire work area.

The Contractor will compare the pre-construction and post-construction topography and bathymetry data that was gathered to confirm complete removal of the existing bridge and all temporary fill. Surveys will be submitted to SDDOT and Project Engineer for review and submittal to USACE.

All costs associated with these surveys will be incidental to the lump sum contract unit price for “Channel Cross Section Survey”.

COMMITMENT Q: ARCHAEOLOGICAL COORDINATION

As a result of a Cultural Resources Survey, historic properties have been identified within and/or adjacent to the project rights-of-way.

The following historic properties have been identified that require avoidance of construction activities:

Table of Historic Properties

Station	Offset (Ft.)	L/R	Environmental Sensitive Site	Action
932+95 to 933+91	17	R	ESS-1	Monitor
930+55 to 933+04	27	R	ESS-2	Monitor. Geotextile fabric is required to be placed over the site with a 24” minimal fill to minimize impacts to the site. No sheet piling within ESS-2 above eroded beach elevation of 1,365.0 feet. Temporary fill below 1,380.4 will be removed after construction.

The locations and boundaries of the site(s) for avoidance are shown in Section B - Grading Plans.

Action Taken/Required:

If evidence for cultural resources is uncovered during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will consult with the Archaeological Research Center (ARC), the Yankton Sioux THPO and SHPO, and FHWA, to determine the appropriate course of action.

All artifacts, features, or other items of interest uncovered by project construction activities will not be displaced unless the landowner and the SHPO consent to it.

The Contractor will give written notice to the Engineer seven (7) days prior to the commencement of earth disturbing activities near listed sites identified in the Table of Historic/Archaeological Site so the Engineer may notify ARC of the day work will start. ARC and YST are to be present during earth disturbing activities to monitor the removal of topsoil identify any culturally sensitive sites that may be uncovered.

These identified sites cannot be used for material sources, storage areas, waste sites, and/or any other project related activities outside the plan work limits.

SDDOT will provide monitoring for the site(s) identified in the above table.

Prior to the pre-construction meeting, the Contractor will contact ARC (Phone: 605-394-1936) to be present at the meeting for the purposes of coordinating the monitoring schedule of the site(s) listed in the Table of Historic Properties.

Work within vicinity of the site(s) will not begin until monitors are present at the site(s).

COMMITMENT T: USCG Bridge Permit

The SDDOT has obtained a Bridge Permit from the United States Coast Guard for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the USCG Bridge Permit. The Contractor will also be responsible for obtaining a USCG Bridge Permit for any bridge structure within the Lake Francis Case Reservoir outside the plan work limits that affect the navigation channel.

The construction of falsework, pilings, cofferdams or other obstructions, and the scheme for constructing the bridge shall be in accordance with plans submitted to and approved by the USCG District Commander, prior to construction of the bridge. All work shall be so conducted that the free navigation of the waterway is not unreasonably interfered with and the present navigable depths are not impaired. Timely notice of any and all events that may affect navigation shall be given to the USCG District Commander during construction of the bridge.

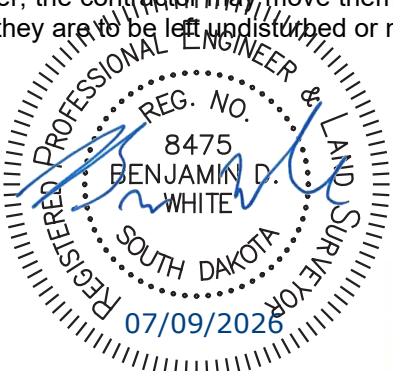
COMMITMENT U: STATE LISTED THREATENED AND ENDANGERED SPECIES

False map turtles (*Graptemys pseudogeographica*), a state threatened species riverine species, has been recorded adjacent to the project area and is assumed present.

Action Taken/Required:

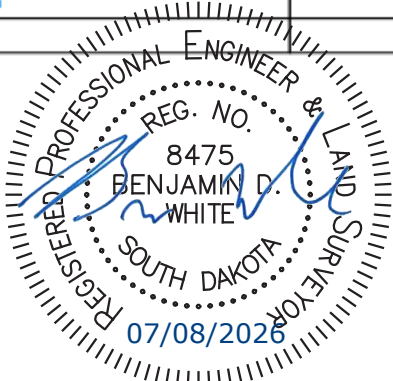
If false map turtles or other state listed species are sighted within the project, borrow pits, or staging areas associated with the project, cease construction activities and contact the Project Engineer. The Project Engineer will contact the SDDOT Environmental Office so that the sighting can be reported to SDGFP.

1. A scientific collectors permit and a state listed species authorization are required to survey for and to handle the False Map Turtles.
2. A qualified biologist is required to complete visual surveys for False Map Turtles if staging of construction materials will occur along barren sandy habitats during nesting seasons in May and June.
3. Remove any False Map Turtles from the construction area prior to staging of construction materials along barren, sandy habitats to avoid crushing turtles or their nests.
4. Use the minimum amount of rip-rap necessary for bank stabilization structure protection.
5. If turtles are in imminent danger, the contractor may move them by hand out of harm's way; otherwise, they are to be left undisturbed or moved by a qualified biologist.



SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	52	Each
009E3225	Reestablish Public Land Survey System Corner	1	Each
009E3230	Grade Staking	3.079	Mile
009E3250	Miscellaneous Staking	3.079	Mile
009E3280	Slope Staking	3.079	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4300	Construction Schedule, Category III	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0210	Remove Building(s)	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	180	Ft
110E0400	Remove Drop Inlet	4	Each
110E0550	Remove Cattle Guard	1	Each
110E0600	Remove Fence	7,445	Ft
110E0730	Remove Beam Guardrail	368.0	Ft
110E1010	Remove Asphalt Concrete Pavement	38,238.2	SqYd
110E1970	Remove Water Main	3,648	Ft
120E0010	Unclassified Excavation	605,992	CuYd
120E0600	Contractor Furnished Borrow Excavation	56,331	CuYd
120E1000	Muck Excavation	2,978	CuYd
120E2000	Undercutting	36,050	CuYd
120E6100	Water for Embankment	4,406.5	MGal
240E0010	Obliterate Old Road	21	Sta
250E0020	Incidental Work, Grading	Lump Sum	LS
450E0122	18" RCP Class 2, Furnish	190	Ft
450E0130	18" RCP, Install	190	Ft
450E0142	24" RCP Class 2, Furnish	190	Ft
450E0150	24" RCP, Install	190	Ft
450E0164	30" RCP Class 4, Furnish	144	Ft
450E0170	30" RCP, Install	144	Ft
450E2008	18" RCP Flared End, Furnish	8	Each
450E2009	18" RCP Flared End, Install	8	Each
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E4768	24" CMP 14 Gauge, Furnish	158	Ft
450E4770	24" CMP, Install	158	Ft
450E4778	30" CMP 14 Gauge, Furnish	88	Ft
450E4780	30" CMP, Install	88	Ft



BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5310	24" CMP Sloped End, Furnish	1	Each
450E5311	24" CMP Sloped End, Install	1	Each
450E5314	30" CMP Sloped End, Furnish	1	Each
450E5315	30" CMP Sloped End, Install	1	Each
450E5414	30" CMP Safety End, Furnish	2	Each
450E5417	30" CMP Safety End, Install	2	Each
450E8014	24" RCP to CMP Transition, Furnish	1	Each
450E8015	24" Pipe Transition, Install	1	Each
451E3103	3" Pipe Cap	2	Each
451E7510	Verify Utilities	2	Each
464E0100	Controlled Density Fill	62.0	CuYd
600E0200	Type II Field Laboratory	1	Each
610E0012	12' Cattle Guard	1	Each
620E0020	Type 2 Right-of-Way Fence	7,385	Ft
620E0510	Type 1 Temporary Fence	900	Ft
620E1020	2 Post Panel	46	Each
620E1030	3 Post Panel	11	Each
620E2016	16' Tubular Gate	1	Each
630E0500	Type 1 MGS	225.0	Ft
630E1500	Type 1 Guardrail Transition	4	Each
630E2019	MGS Tangent End Terminal	4	Each
671E7010	Adjust Manhole	1	Each
680E0224	4" PVC Outlet Pipe	165	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	770	Ft
680E2000	Concrete Headwall for Underdrain	4	Each
680E2500	Porous Backfill	326.0	Ton
700E0110	Class A Riprap	308.0	Ton
700E0210	Class B Riprap	6,097.2	Ton
831E0110	Type B Drainage Fabric	5,866	SqYd
900E0010	Refurbish Single Mailbox	1	Each
900E0012	Refurbish Double Mailbox	1	Each
900E5815	Channel Cross Section Survey	Lump Sum	LS

COORDINATION BETWEEN CONTRACTORS

A separate SD GF&P project to relocate the existing park residence structure to state property on the south side of SD Highway 44 is anticipated to bid in summer of 2026 with an anticipated completion date of fall 2026 / spring 2027.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed by other Contractors on the project described above.

GRADING OPERATIONS

For embankment soil with an optimum moisture of 20% or greater, the Density Specification (Percent of Maximum Dry Density) will be 92% to 98% and the Moisture Specification (Percent of Optimum Moisture) will be -2% to +3%.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(207)290	B2	B94

Rev 07/08/2026 BDW

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste.

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

Special ditch grades and other sections of the roadway different than the typical section(s) will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 20-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

Permanent fence will be placed ahead of the grading operation unless otherwise directed by the Engineer.

TYPE II FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 20 Mbps unless limited by job location and approved by the DOT.

Prior to installing the wireless router, the Contractor will submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items will be incidental to the contract unit price per each for "Type II Field Laboratory".

UTILITIES

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

EMBANKMENT CONSTRUCTION

Embankment construction will not begin until all unstable compressible materials have been excavated from the embankment footprint to the satisfaction of the Engineer. A suitable embankment foundation consists of compacted soil which does not pump, rut, or otherwise displace when traveled over with construction equipment. Each embankment will be benched into the existing slopes in accordance with Section 120.3.B.2 of the Specifications.



931+77-215' R to 934+90-191' L
Install Class B Riprap (5378.5 tons)
and Type B Drainage Fabric (5132.0 SY)

933+28.08 to 935+37.78 L
Install Type 1 Guardrail Transition
& 100' Type 1 MGS Guardrail
& MGS Tangent End Terminal

933+28.08 to 934+50.30 R
Install Type 1 Guardrail Transition
& 12.5' Type 1 MGS Guardrail
& MGS Tangent End Terminal

Remove Steel Guardrail
at following locations:
932+69-246' R to 933+89-240' R
932+69-275' R to 933+50-284' R

932+76-279' R to 933+21-280' R
Take Out Concrete Curb and Gutter

932+77-253' R to 933+22-253' R
Take Out Concrete Curb and Gutter

932+83-275' R
Take Out Drop Inlet

932+83-326' R
Take Out 1 End Section
(Incidental Work, Grading)

932+83-326' R to 932+85-286' R
Fill 12" - 40" CMP
with Controlled Density Fill

932+83-247' R
Take Out Drop Inlet

933+20-213' R
Take Out 1 End Section
(Incidental Work, Grading)

932+85-245' R to 933+20-213' R
Fill 12" - 48" CMP
with Controlled Density Fill

933+36-85' R
Do Not Disturb
Environmental Sensor Station

934+07-103' R
Remove Wayside Chapel
(Remove Building)

937+90-117' L
Remove Septic Tank and
Drainfield
(Remove Building)

935+78-53' L to 936+28-54' L
Install Class B Riprap and
Type B Drainage Fabric
(Riprap Dimensions: 30'x50'x2'-3")

STATE OF SOUTH DAKOTA	PROJECT EM-P 0044(207)290	SHEET B31	TOTAL SHEETS B94
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Plotting Date: 7/9/2026
Rev 07/09/2026 BDW

SEC. 15 - T99N-R70W

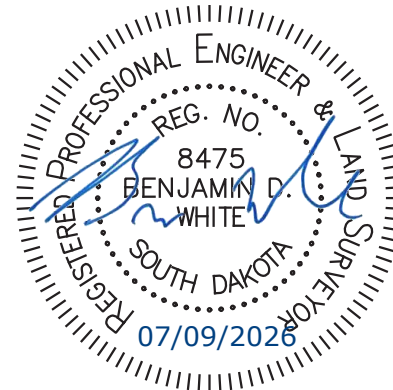
SW1/4

United States of America
(United States ACOE)

Parcel 5 & 5A

Sec. 16 - T99N - R70W

Government Lot 3

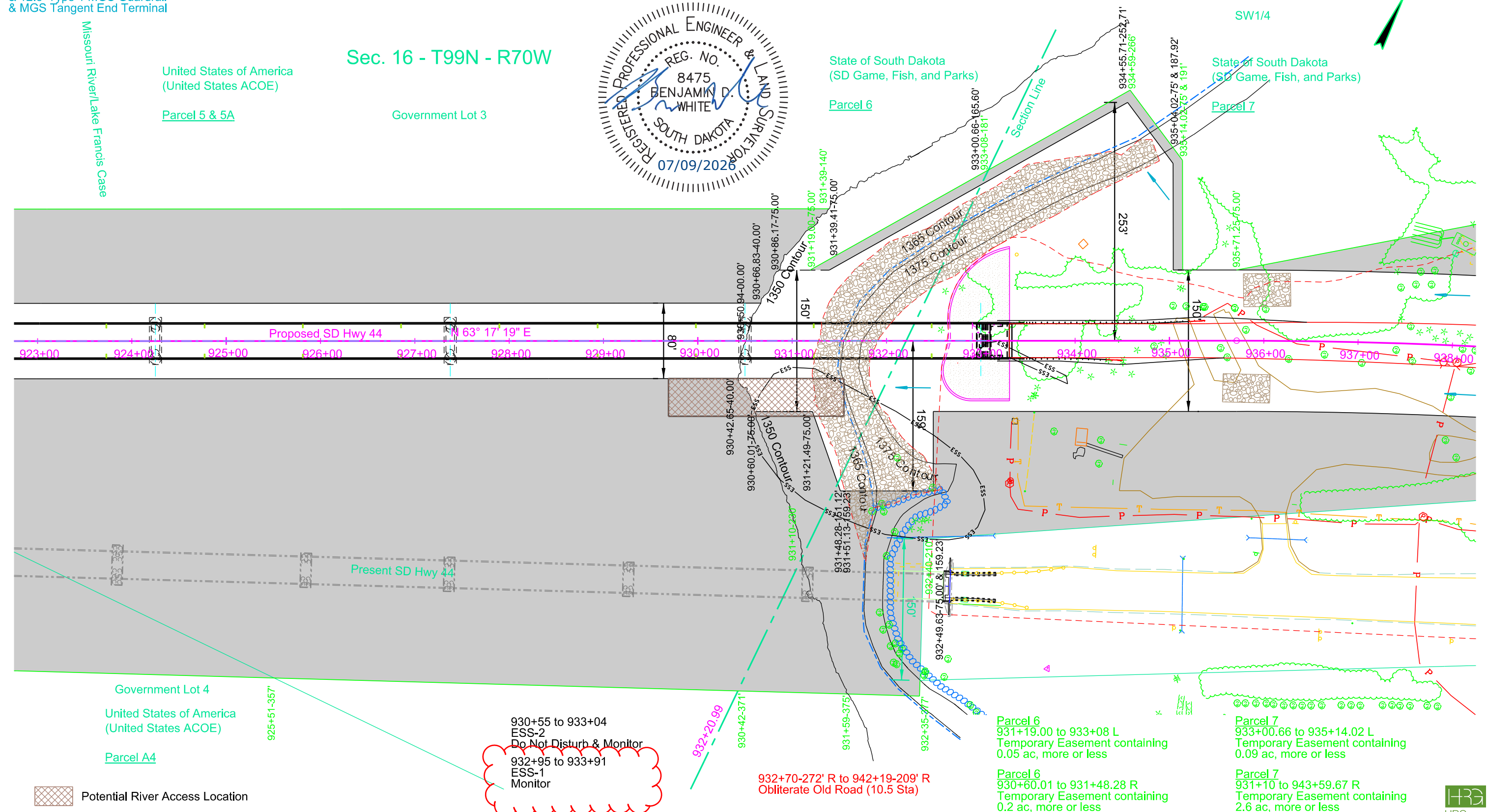


State of South Dakota
(SD Game, Fish, and Parks)

Parcel 6

State of South Dakota
(SD Game, Fish, and Parks)

Parcel 7



SUPERSTRUCTURE

9.

The concrete bridge deck will be placed and finished at a minimum rate of 60 feet of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. If a header is required sometime during the pour operation, its location will be at or as near as possible to the three-quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 60 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.
10.

All latent grout, concrete, and other debris from bridge deck pouring operations shall be cleaned from finished surfaces of the structure.
11.

Dead Load camber will be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.
12.

All structural steel surfaces of the superstructure will be blast cleaned to a commercial finish, in accordance with SSPC SP6, at the fabricator. Abrasives used for blast cleaning will be clean dry sand, steel shot, mineral grit or manufactured grit. Fins, tears, slivers, and burred or sharp edges will be removed by grinding and then re-blasted to achieve the specified finish.
13.

If the substructure units are not protected from precipitation running off of the girders during construction, the concrete surfaces may become stained. If staining of the substructure units does occur, it will be removed to the satisfaction of the Engineer. The Contractor will absorb all costs associated with removal of any stains.
1.

Structural steel will conform to ASTM A709 Gr. 50WT2 or HPS 70WT2. Steel for diaphragms will conform to ASTM A709 Gr. 50W. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.
2.

Bolts, nuts and washers will conform to ASTM F3125, Grade A325, Type 3.
3.

All butt-welded girder splices will be ultrasonically inspected.
4.

The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel.
5.

All flame cut edges will be chamfered or rounded 1/16".
6.

15'-0" from each end of the girders and all diaphragms and stiffeners within that region will be painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045) to match the weathering color of the steel.
7.

Structural steel used in all girder web plates, girder flanges, and girder splice plates will comply with the Charpy-V-Notch toughness requirements set forth in Section 970 of the Construction Specifications. Material greater than 1 1/2 inches in thickness will require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension and stress reversal areas of girder flanges.
8.

The use of an approved deck finishing machine will be required during placement of bridge deck concrete. The deck finishing machine will be adjusted and operated in such a manner that the screed or screeds are parallel with the centerline of the bridge. The finish machine and concrete placement will be parallel to the skew of the bridge.

14.

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.
15.

The Contractor is required to submit a detailed plan showing the proposed girder erection. The girder erection plan will be designed and stamped by a Professional Engineer registered with the State of South Dakota. The plan must be submitted 30 days prior to the start of work for approval by the Office of Bridge Design. The plan will include, but not be limited to, complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details, and temporary bracing details.
16.

All single girder segments will be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully installed and bolts fully tightened. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected.
17.

See Special Provision for Concrete Penetrating Sealer.

2" RIGID GALVANIZED STEEL CONDUIT

1.

Conduit, with expansion fittings, junction boxes and pull tape shall be provided at the location detailed in the plans.
2.

Expansion devices are required at each Abutment and at Bents No. 6, 11 and 16. Fittings will be waterproof with insulating bushings and bonding jumper. Expansion devices will accommodate the full range of bridge joint movement shown in the plans. Junction boxes shall be provided at spacing not to exceed 1000 ft.
3.

Pull tape will be 1" tubular wave polyester pull tape with a minimum breaking strength of 6000 lbs.
4.

Cast in place concrete inserts for conduit attachment will be Dayton Superior 1/4" bolt diameter stainless steel F-42 Loop Ferrule Inserts with 1/4" stainless steel bolts conforming to ASTM F593.
5.

Conduit, fittings and attaching hardware will meet the requirements of NFPA 70 National Electrical Code (NEC). All steel components shall be hot dip galvanized in accordance with ASTM A123 or A153 as applicable. Isolate the galvanized conduit brackets from the stainless steel insert and bolt with fiber washers.
6.

All costs to provide the 2" diameter conduit, including concrete inserts, conduit, attaching hardware, junction boxes, expansion devices, pull tape, labor, equipment and any incidentals necessary to install the conduit will be included in the contract unit price per foot for 2" Rigid Galvanized Steel Conduit.

FIELD BOLTED GIRDER SPLICES

1.

Steel for splice and filler plates will conform to ASTM A709 Gr. 50WT2.
2.

Bolts in flange splices will be placed with the heads down.
3.

Bolts in web splices of exterior girders will be placed with the heads on the exterior face of girders.
4.

All bolts will be fully tightened prior to removing temporary supports.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(207)290	E10	E86

Rev 07/09/2026 KJB

WELDING AND WELD INSPECTION

Main members referred to in Section 6.7 Nondestructive Testing of the Bridge Welding Code are identified as follows: girder webs, girder flanges, and bearing stiffeners. Ultrasonic testing of groove welds will be used in lieu of radiography. See girder layout for locations of tension and stress reversal areas of the girder flanges.

BEARINGS

See Special Provision for Disc Bearing Assembly.

FALL PROTECTION

1.

The Contractor will install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system will be installed. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.
2.

Modifications to any bridge components used to accommodate the Fall Protection System will be shown on the Falsework Plans and the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System will be incidental to the other contract items.

BOLT TESTING

The certified mill test reports for all bolts used on the project will include the test results for all the testing specified in section 972.2 D of the Construction Specifications. Some of these tests are supplemental tests that must be requested at the time the bolts are ordered. It is the responsibility of the Contractor to notify the bolt supplier of these requirements.

CLASS B COMMERCIAL TEXTURE FINISH

1.

A Class B commercial texture finish will be applied to the following areas:

a.

Barrier: all exposed surfaces (Back*,top** and Front**).

b.

Slab: edge of slab*.

*

Color will be AMS - STD - 595 36622 Pearl Gray

**

Color will be AMS - STD - 595 37875 Pearl White
2.

The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications.

NOTES (CONTINUED)
FOR

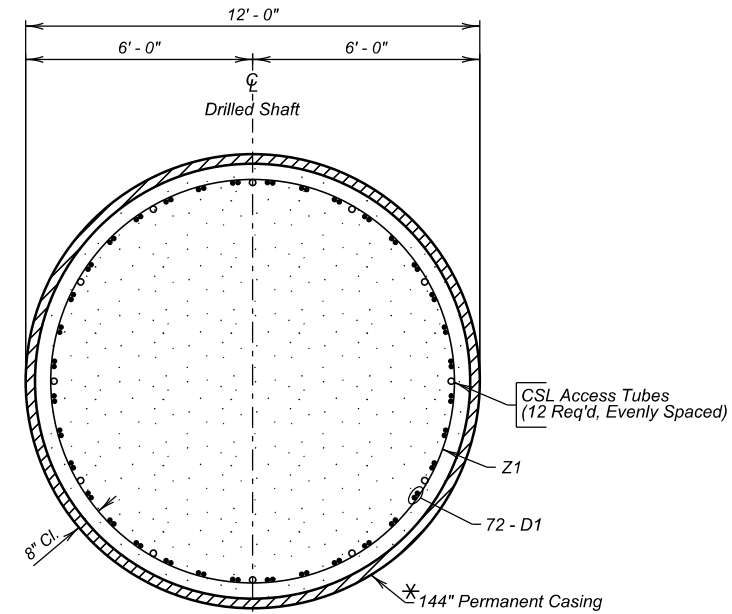
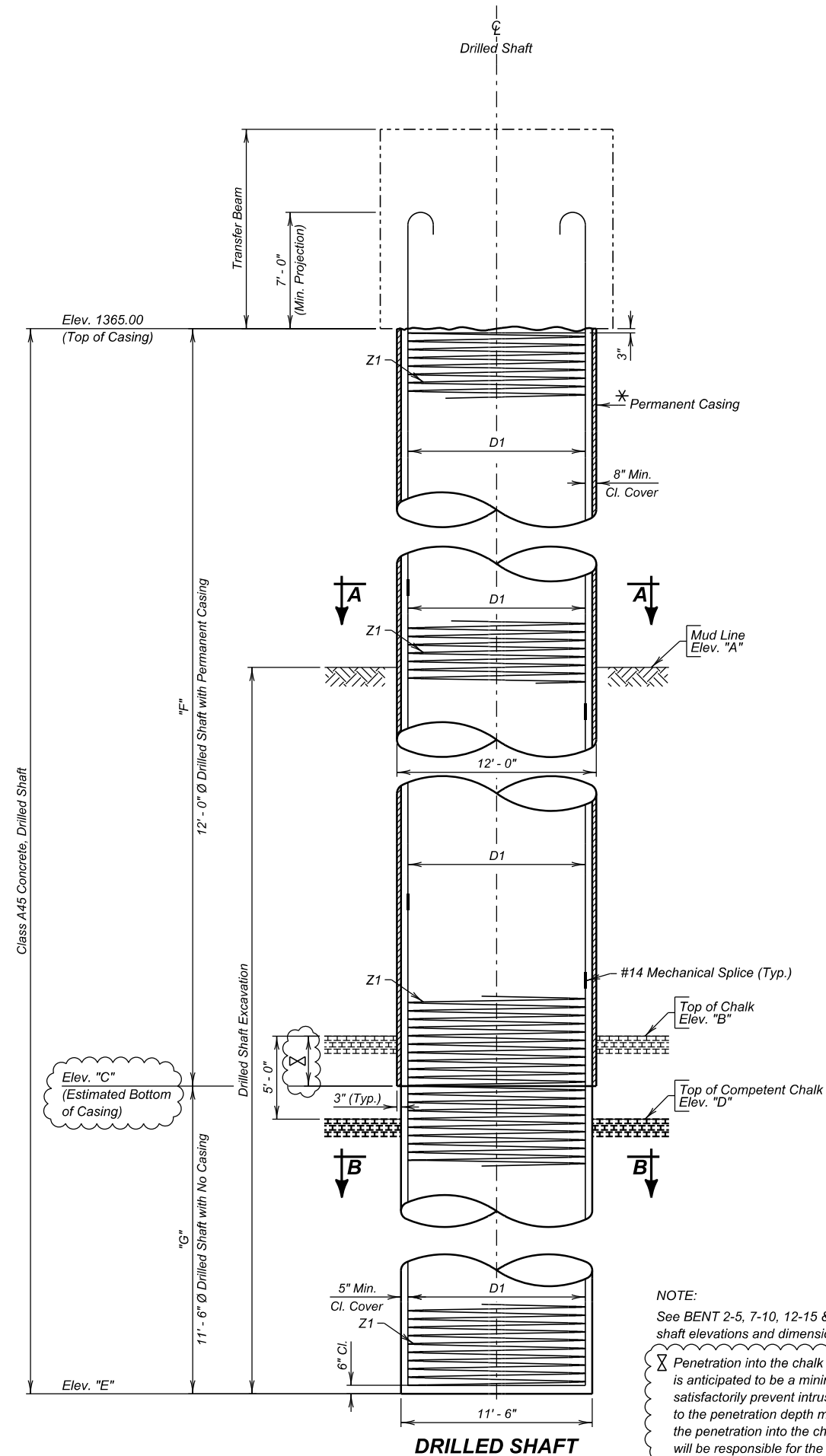
5770' - 6" CONT. COMP. GIRDER BRIDGE

STR. NO. 12-089-076
DECEMBER 2023

8 OF 84

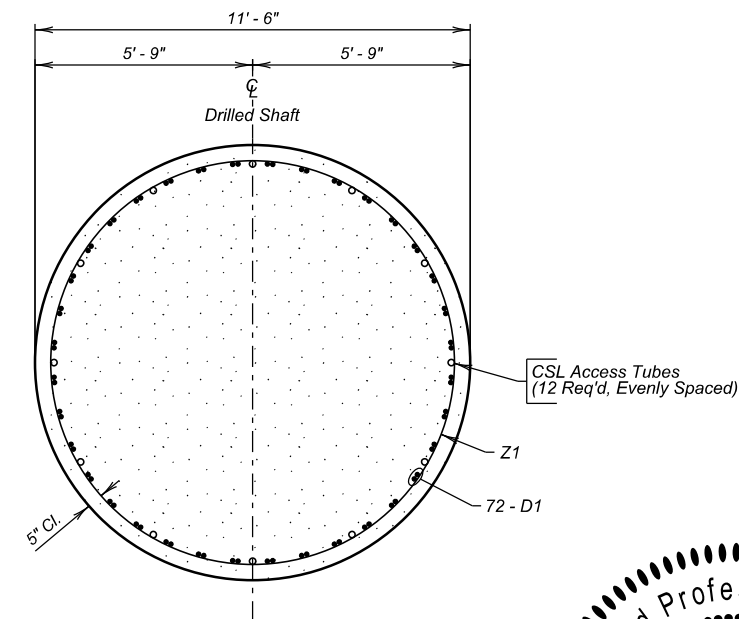


DESIGNED BY KJB	CK. DES. BY JL	DRAFTED BY EM	BRIDGE ENGINEER
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SEC. A - A

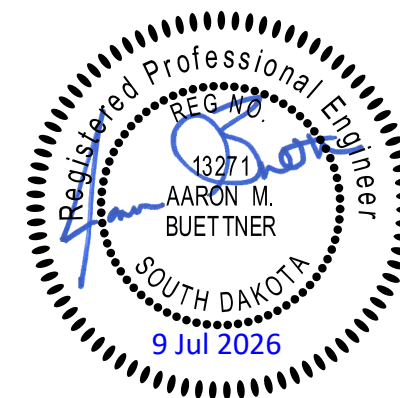
* 1½" Minimum Wall Thickness



SEC. B - B

NOTE:
See BENT 2-5, 7-10, 12-15 & 17-20 DETAILS (A) and BENT 6, 11 & 16 DETAILS (A) for drilled shaft elevations and dimensions.

Penetration into the chalk formation necessary to prevent intrusion of soil or other materials is anticipated to be a minimum of 3'-0". The penetration depth may be modified as required to satisfactorily prevent intrusion of soil or other materials into the excavation. Modifications to the penetration depth may be proposed by the Contractor and accepted by the Engineer, but the penetration into the chalk formation must in no case be less than 1'-0". The Contractor will be responsible for the performance of the modified penetration depth.



DRILLED SHAFT DETAILS (A)

FOR

5770' - 6" CONT. COMP. GIRDER BRIDGE

36' - 0" ROADWAY 0° SKEW
OVER MISSOURI RIVER SEC. 16/20/21-T99N-R70W
(LAKE FRANCIS CASE) P 0044(207)290
STA. 875 + 39.75 TO STA. 933 + 10.25 HL-93
STR. NO. 12-089-076

GREGORY & CHARLES MIX COUNTIES

S. D. DEPT. OF TRANSPORTATION

DECEMBER 2023

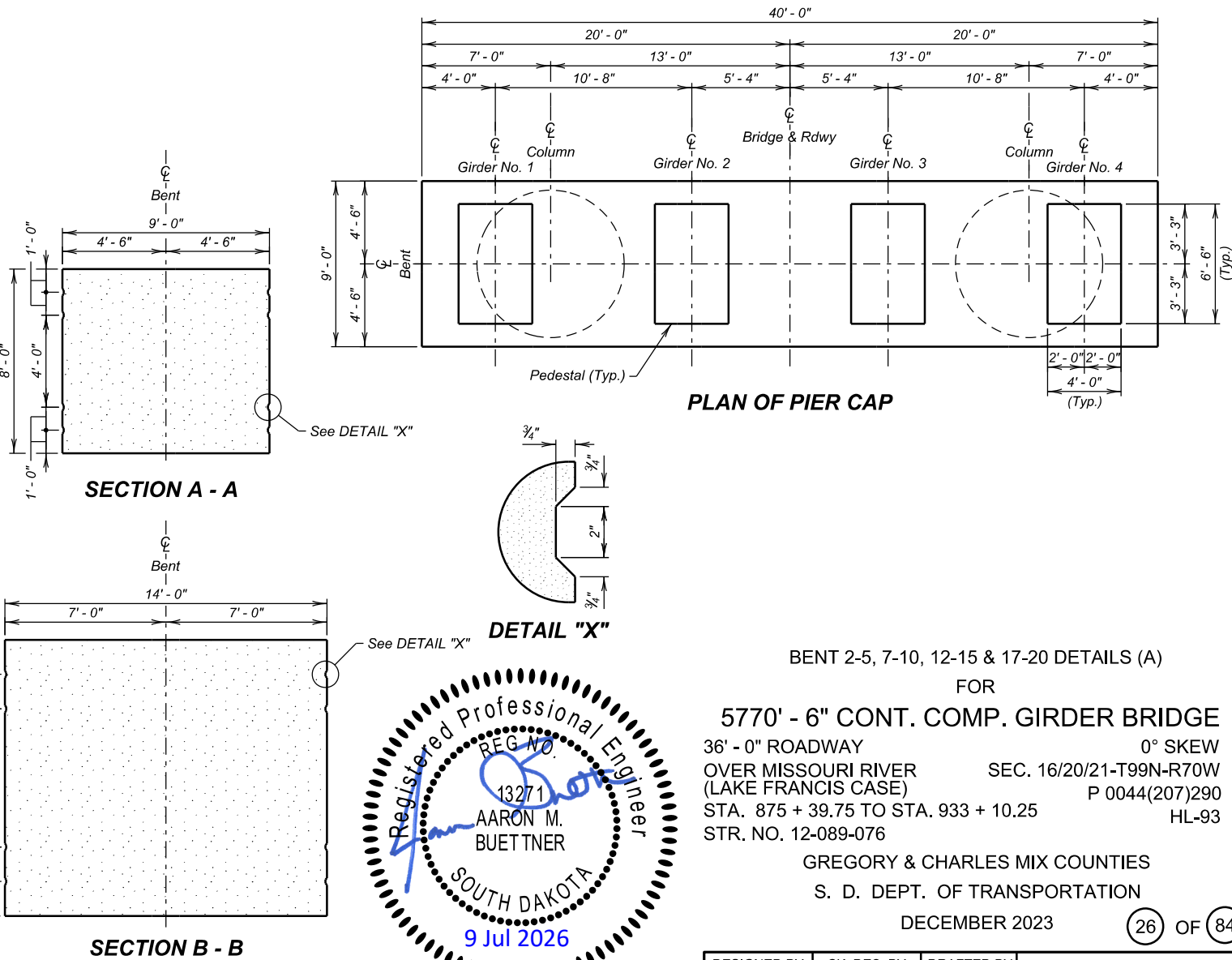
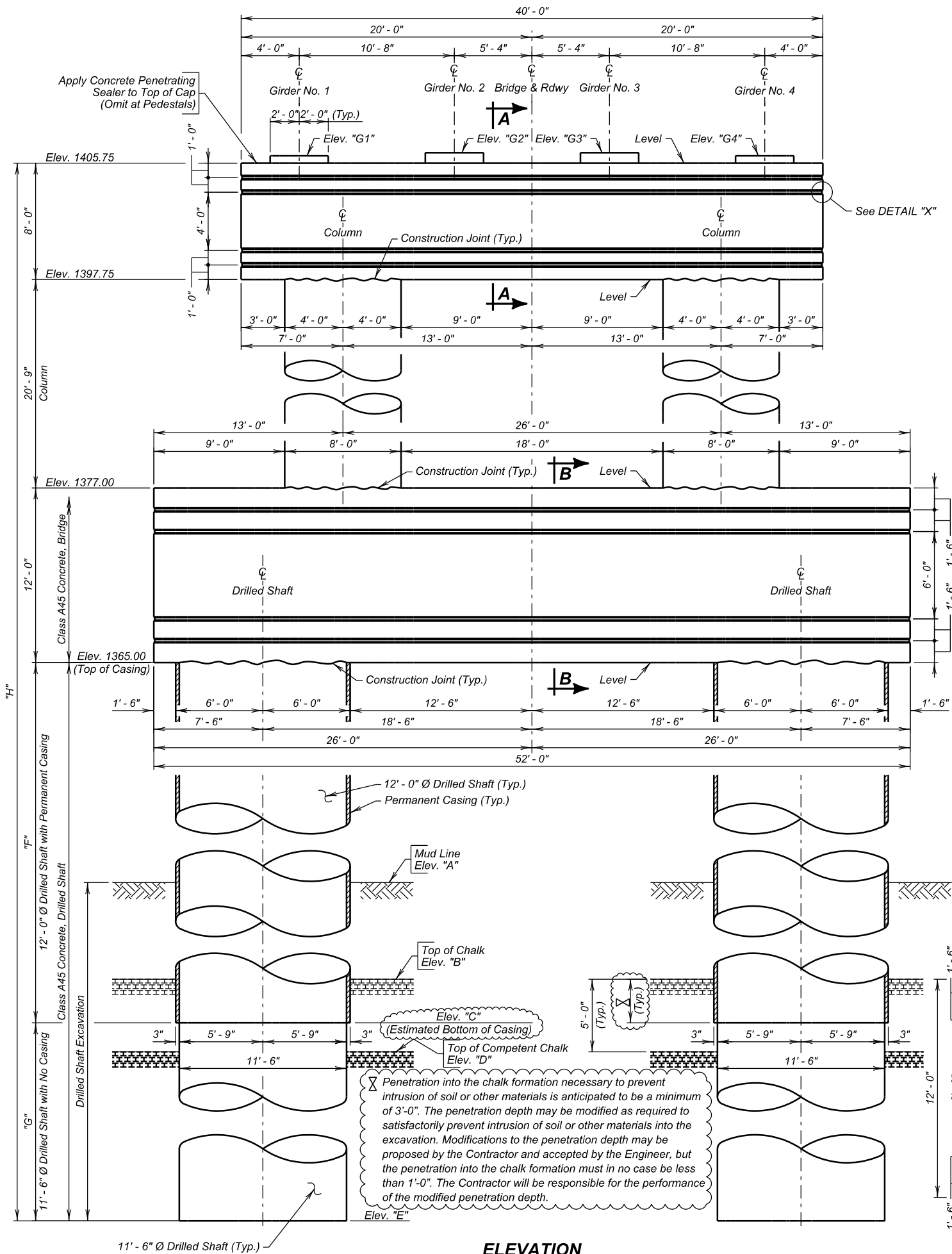
24) OF 84

DESIGNED BY MJK	CK. DES. BY CJC	DRAFTED BY NTF	BRIDGE ENGINEER
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TABLE OF ELEVATIONS & DIMENSIONS

Bent No.	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	"F"	"G"	"H"	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"
2	1342.00	1316.50	1313.50	1311.50	1292.50	51' - 6"	21' - 0"	113' - 3"	1406.18	1406.39	1406.39	1406.18
3	1327.00	1262.00	1259.00	1257.00	1234.00	106' - 0"	25' - 0"	171' - 9"	1406.34	1406.55	1406.55	1406.34
4	1306.00	1255.00	1252.00	1250.00	1226.00	113' - 0"	26' - 0"	179' - 9"	1406.34	1406.55	1406.55	1406.34
5	1312.00	1235.00	1232.00	1230.00	1205.00	133' - 0"	27' - 0"	200' - 9"	1406.18	1406.39	1406.39	1406.18
7	1308.00	1213.00	1210.00	1208.00	1181.00	155' - 0"	29' - 0"	224' - 9"	1406.18	1406.39	1406.39	1406.18
8	1305.50	1205.00	1202.00	1200.00	1173.00	163' - 0"	29' - 0"	232' - 9"	1406.34	1406.55	1406.55	1406.34
9	1295.00	1192.00	1189.00	1187.00	1159.00	176' - 0"	30' - 0"	246' - 9"	1406.34	1406.55	1406.55	1406.34
10	1293.00	1191.00	1188.00	1186.00	1158.00	177' - 0"	30' - 0"	247' - 9"	1406.18	1406.39	1406.39	1406.18
12	1285.40	1185.00	1182.00	1180.00	1151.00	183' - 0"	31' - 0"	254' - 9"	1406.18	1406.39	1406.39	1406.18
13	1295.50	1189.00	1186.00	1184.00	1155.00	179' - 0"	31' - 0"	250' - 9"	1406.34	1406.55	1406.55	1406.34
14	1294.00	1193.00	1190.00	1188.00	1160.00	175' - 0"	30' - 0"	245' - 9"	1406.34	1406.55	1406.55	1406.34
15	1295.50	1206.00	1203.00	1201.00	1174.00	162' - 0"	29' - 0"	231' - 9"	1406.18	1406.39	1406.39	1406.18
17	1301.50	1227.00	1224.00	1222.00	1196.00	141' - 0"	28' - 0"	209' - 9"	1406.18	1406.39	1406.39	1406.18
18	1302.50	1254.00	1251.00	1249.00	1226.00	114' - 0"	25' - 0"	179' - 9"	1406.34	1406.55	1406.55	1406.34
19	1312.00	1253.00	1250.00	1248.00	1225.00	115' - 0"	25' - 0"	180' - 9"	1406.34	1406.55	1406.55	1406.34
20	1347.70	1334.00	1331.00	1329.00	1311.00	34' - 0"	20' - 0"	94' - 9"	1406.18	1406.39	1406.39	1406.18

NOTE - Elev. G1, G2, G3 and G4 are top of pedestal elevations at C Bent.



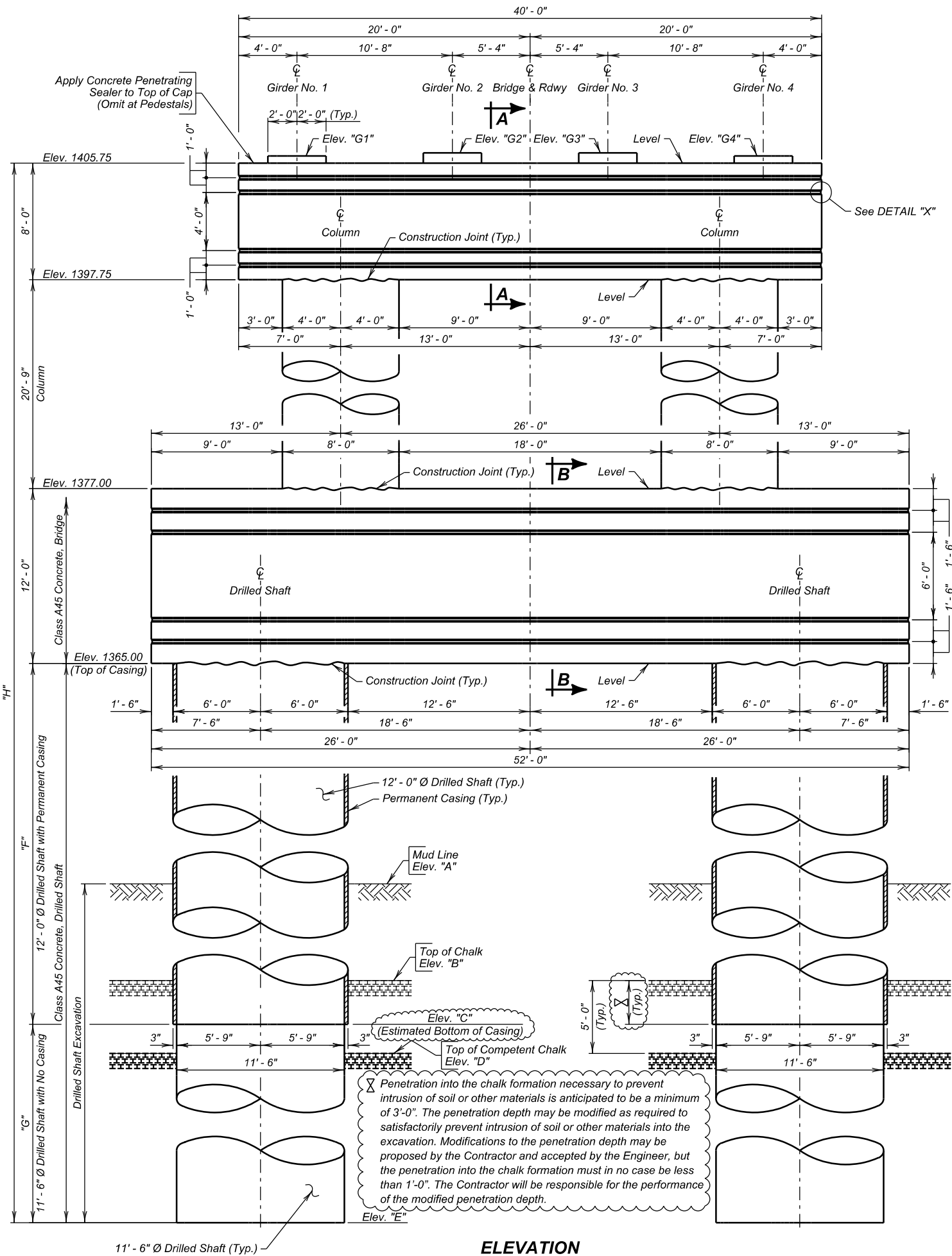
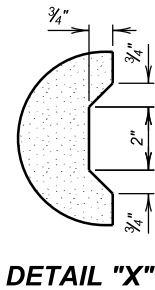
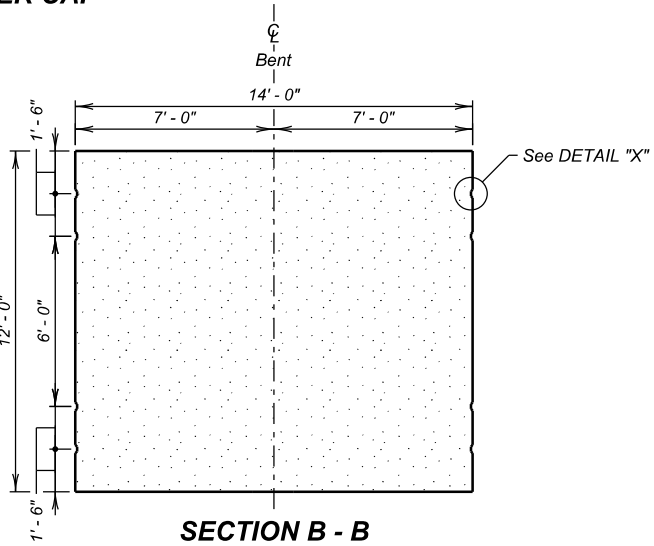
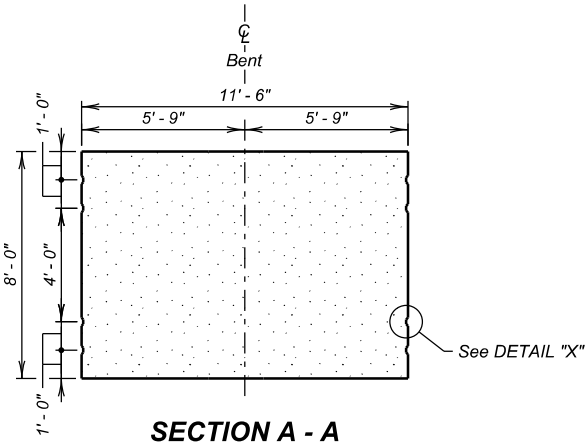
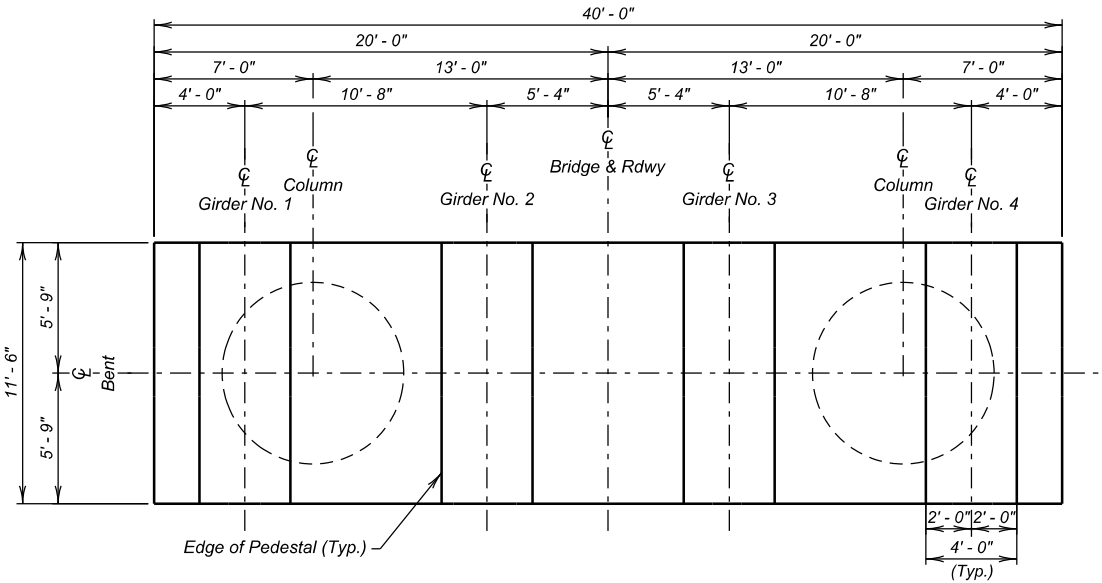


TABLE OF ELEVATIONS & DIMENSIONS												
Bent No.	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	"F"	"G"	"H"	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"
6	1311.00	1222.00	1219.00	1217.00	1192.00	146' - 0"	27' - 0"	213' - 9"	1406.45	1406.66	1406.66	1406.45
11	1295.00	1194.00	1191.00	1189.00	1162.00	174' - 0"	29' - 0"	243' - 9"	1406.45	1406.66	1406.66	1406.45
16	1296.00	1216.00	1213.00	1211.00	1186.00	152' - 0"	27' - 0"	219' - 9"	1406.45	1406.66	1406.66	1406.45

NOTE - Elev. G1, G2, G3 and G4 are top of Pedestal elevations at $\bar{C}$ Bent.



BENT 6, 11 & 16 DETAILS (A)
FOR
5770' - 6" CONT. COMP. GIRDER BRIDGE
36' - 0" ROADWAY 0° SKEW
OVER MISSOURI RIVER SEC. 16/20/21-T99N-R70W
(LAKE FRANCIS CASE) P 0044(207)290
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