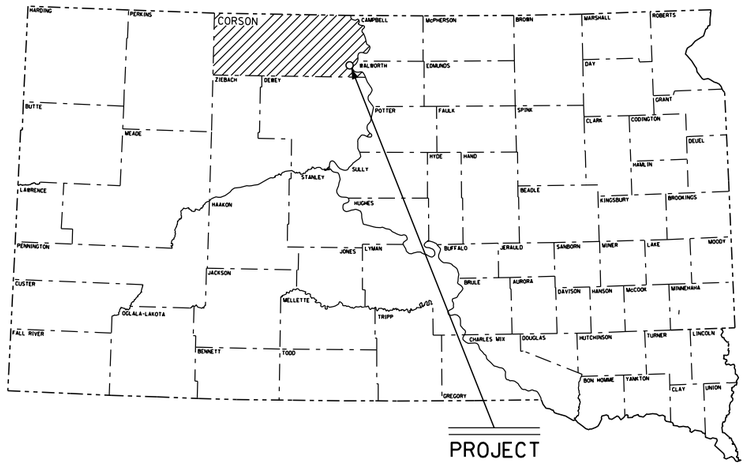
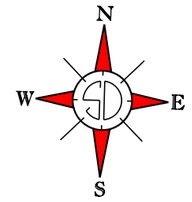
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	1	18



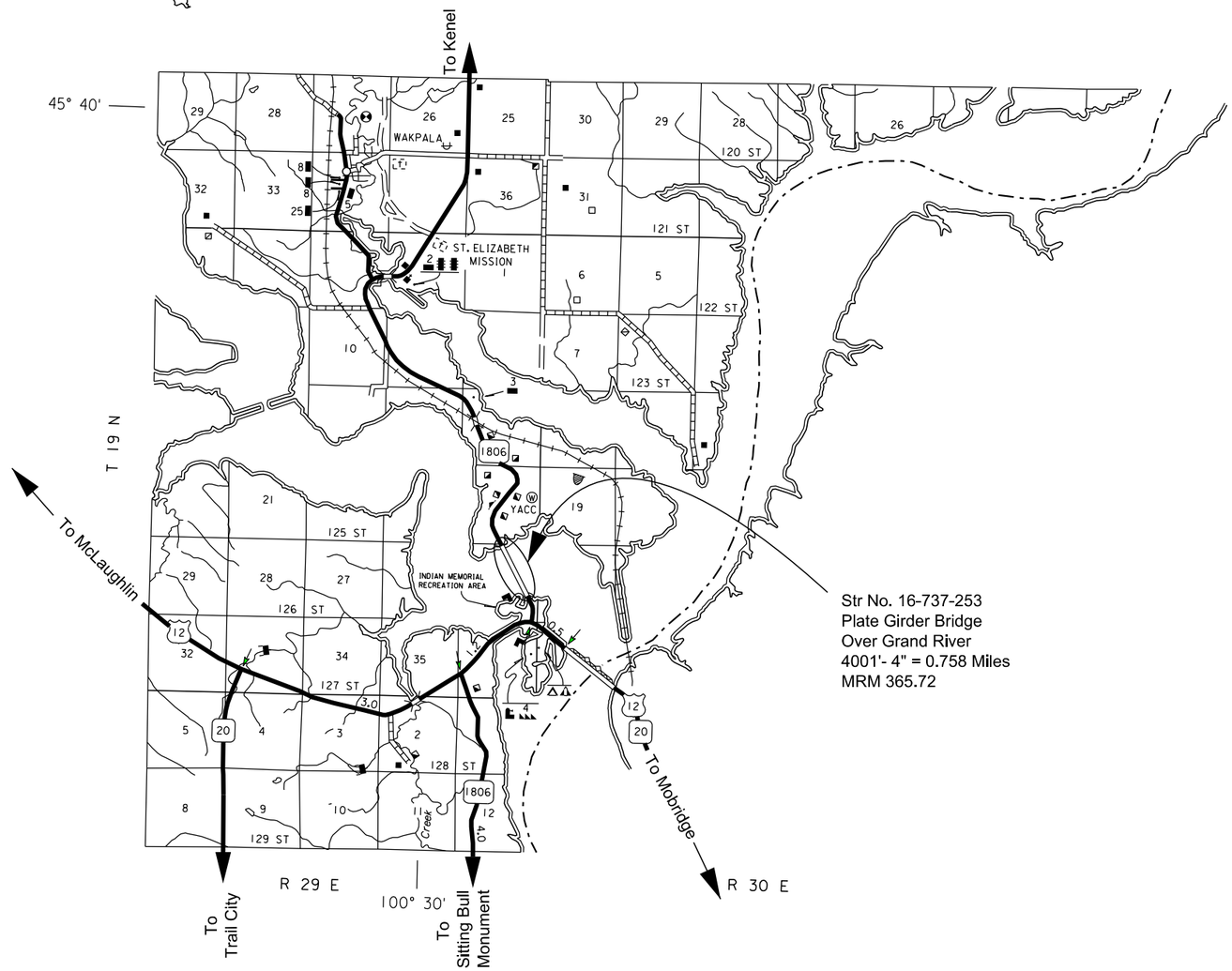
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 1806-368
SD HIGHWAY 1806
CORSON COUNTY

REPLACE THE CONCRETE RISERS AND
REPAIR BEARINGS AT PIER 5
PCN 16CN



INDEX OF SHEETS



Str No. 16-737-253
Plate Girder Bridge
Over Grand River
4001'- 4" = 0.758 Miles
MRM 365.72

DESIGN DESIGNATION

SD1806 - MRM 365.72

ADT (2020)	872
ADT (2040)	1190
DHV	190
D	50%
T DHV	4.3%
T ADT	10.5%
V	55 MPH

STORM WATER PERMIT
(None Required)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9380
RODNEY D.
RILEY
SOUTH DAKOTA
05-21-2021

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	I806-368	2	18

ESTIMATE OF QUANTITIES AND NOTES

PCN I6CN

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0110	Traffic Control Sign	218.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	12	Each
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
634E1210	State Furnished Message Sign	1	Each

STR. NO. 16-737-253

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0550	Jack Superstructure, Steel Girder Bridge	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	1.4	CuYd
460E0190	Concrete Crack Injection/Sealing	12	In
460E0300	Breakout Structural Concrete	1.9	CuYd
410E1002	Remove, Rehabilitate & Reinstall Bearing	8	Each
412E0100	Bridge Repainting Class 1	Lump Sum	LS
460E0202	Concrete Protective Coating	450	SqFt
460E0174	Concrete Patching Material, Misc.	15.6	CuFt

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 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 C: WATER SOURCE

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 Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

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

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

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9380
RODNEY D.
RILEY
SOUTH DAKOTA
05-21-2021

Specifications:

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

NOTES (CONTINUED)

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.
Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

Action Taken/Required:

All earth disturbing activities require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 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 contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1806-368	4	18

TRAFFIC CONTROL NOTES

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

The bridge will be closed to traffic during construction.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following completion of the project and reopening the bridge to traffic.

No assigned detour route will be marked for this project.

CONTACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One portable message sign will be made available to the Contractor for use on the north approach to the bridge closure. The Contractor will provide two portable message sign for the south approach to the bridge closure.

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations detailed in the plans to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

BRIDGE WORK
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the following message:

SD 1806
BRIDGE CLOSED

USE ALTERNATE
ROUTE

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous materials spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

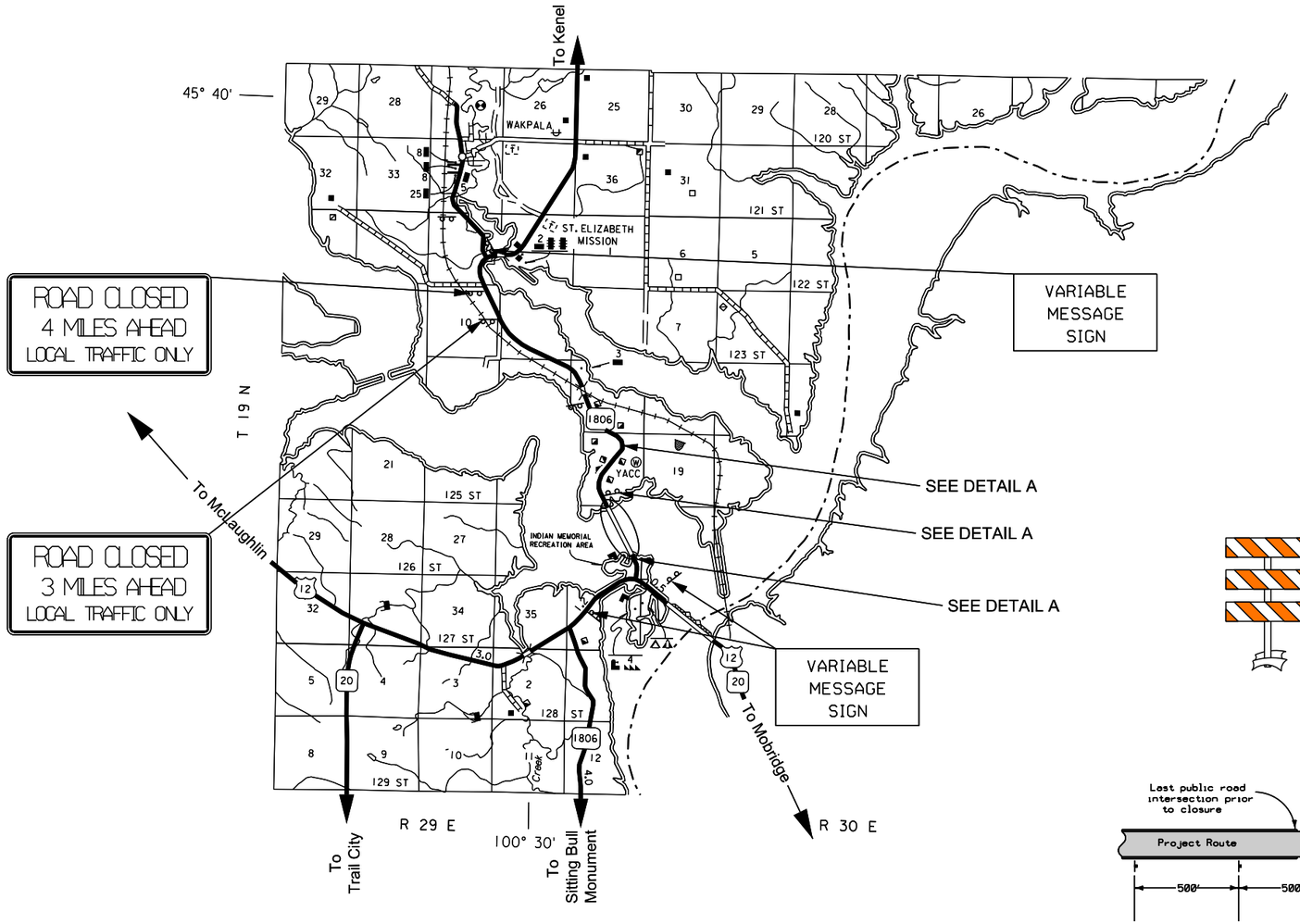
PRESS RELEASE ANNOUNCEMENTS

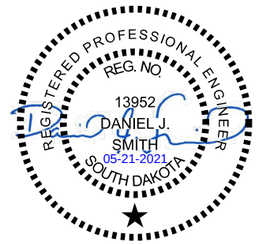
The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide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

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
13952
DANIEL J.
SMITH
05-21-2021
SOUTH DAKOTA

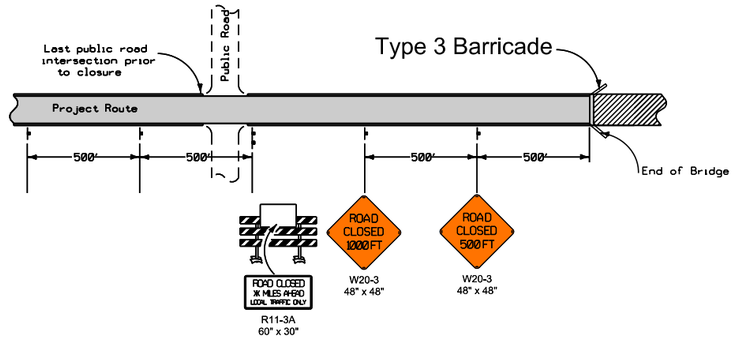
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	5	18

FIXED LOCATION SIGNING





Type 3 Barricade

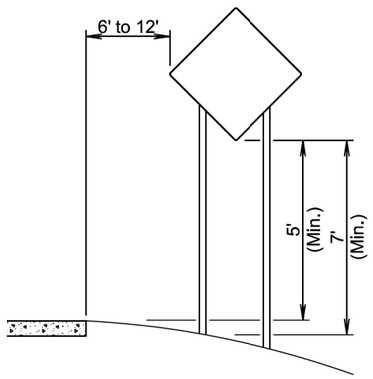


Detail A

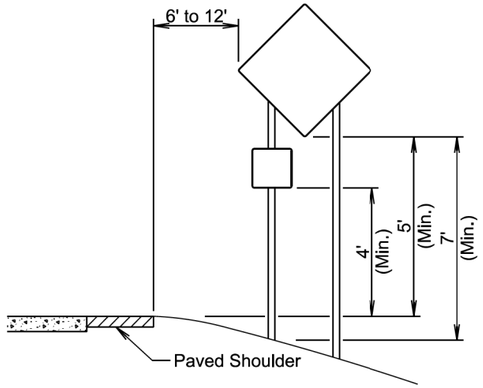
ITEMIZED LIST FOR DETOUR AND RESTRICTION SIGNING

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	3	48" x 30"	10.0	30.0
R11-3a	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY	5	60" x 30"	12.5	62.5
W16-2P	___ FEET (supplemental distance plaque)	6	30" x 24"	5.0	30.0
W20-3	ROAD CLOSED AHEAD	6	48" x 48"	16.0	96.0
		CONVENTIONAL ROAD DETOUR AND RESTRICTION SIGNING SQFT			218.5

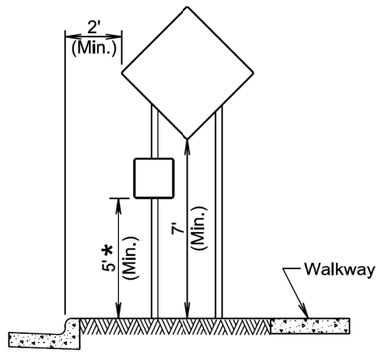
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	6	18



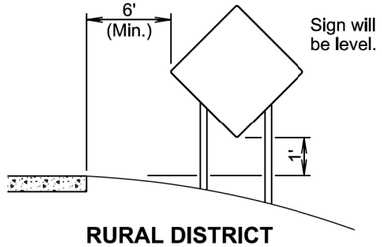
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

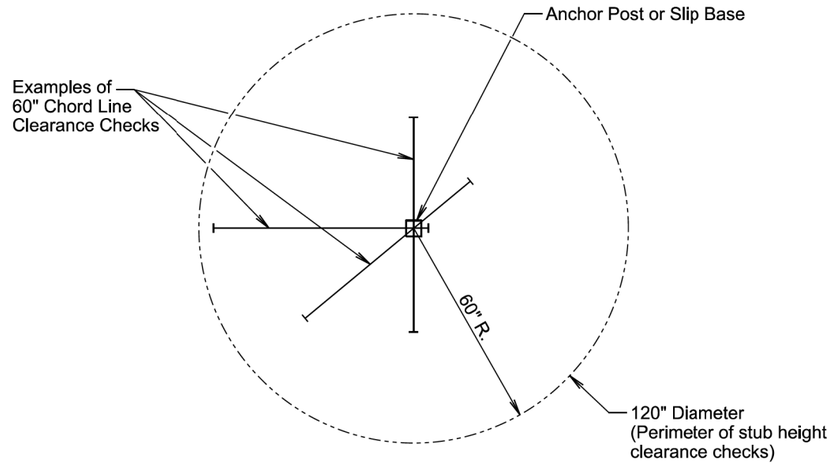


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

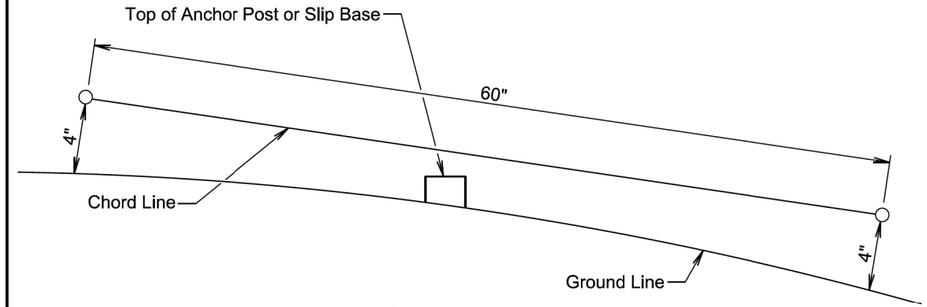
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2nd Qtr. 2021	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

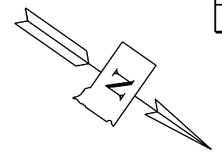
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

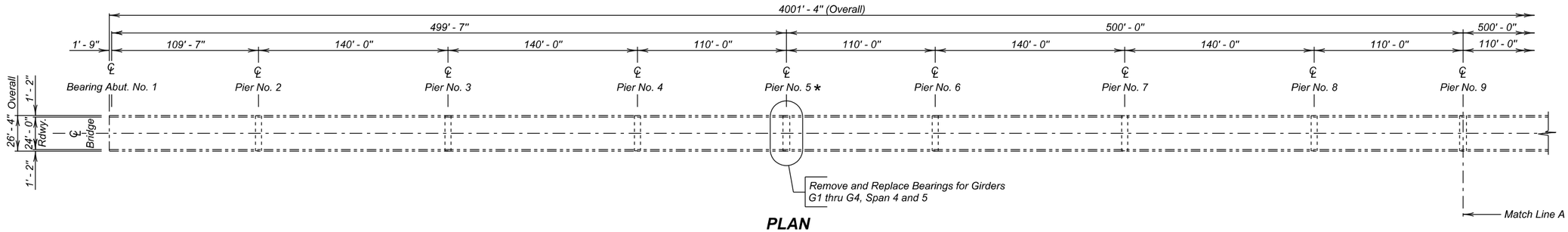
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2nd Qtr. 2021	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

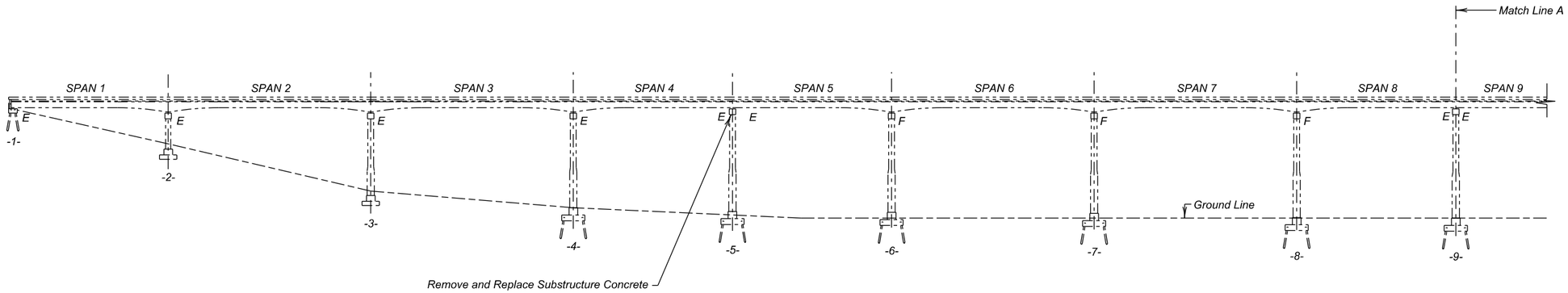
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	7	18





PLAN

✱ Pier No. 29 (Original Construction)



ELEVATION

INDEX OF BRIDGE SHEETS -

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
DAKOTA
05-21-2021

PLANS BY : JACOBS

LAYOUT FOR UPGRADING
FOR
4001'-4" PLATE GIRDER BRIDGE

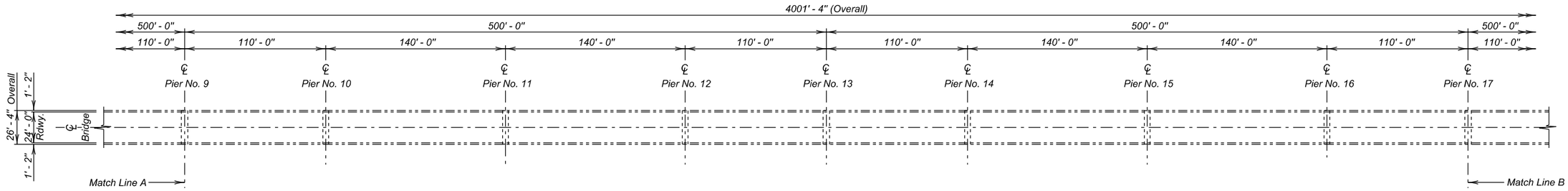
24' - 0" ROADWAY — 0° SKEW
STR. NO. 1 6-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368
PCN 16CN

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

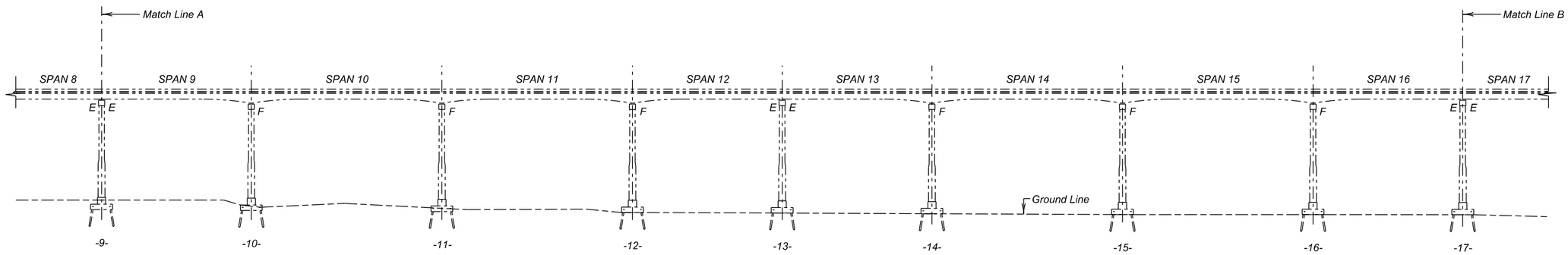
1 OF 12

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	JOS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	8	18



PLAN



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9380
RODNEY D.
RILEY
05-21-2021

PLANS BY :
JACOBS

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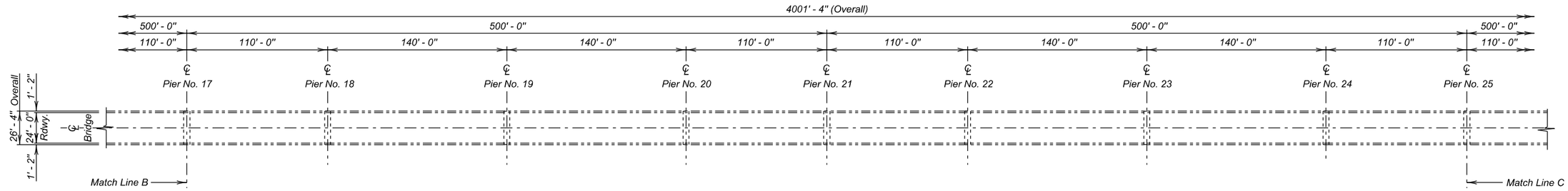
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

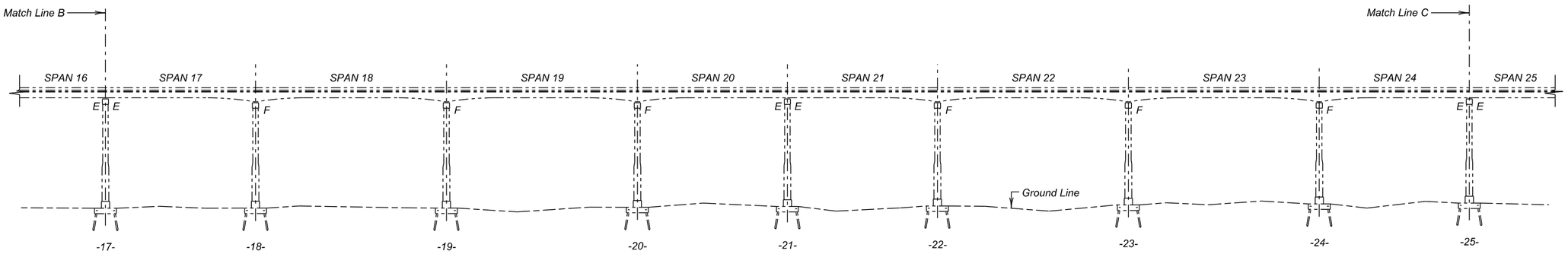
2 OF 12

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	JOS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	9	18



PLAN



ELEVATION

LAYOUT FOR UPGRADING
FOR
4001'-4" PLATE GIRDER BRIDGE

24' - 0" ROADWAY — 0° SKEW
STR. NO. 1 6-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

3 OF 12

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9380
RODNEY D. RILEY
05-21-2021

PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	JOS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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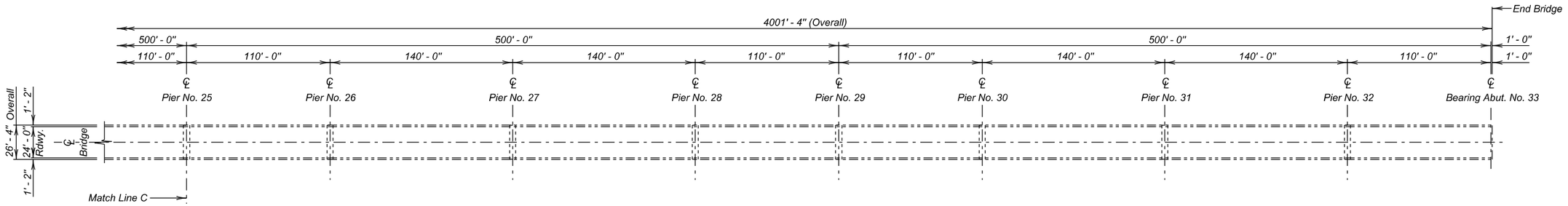
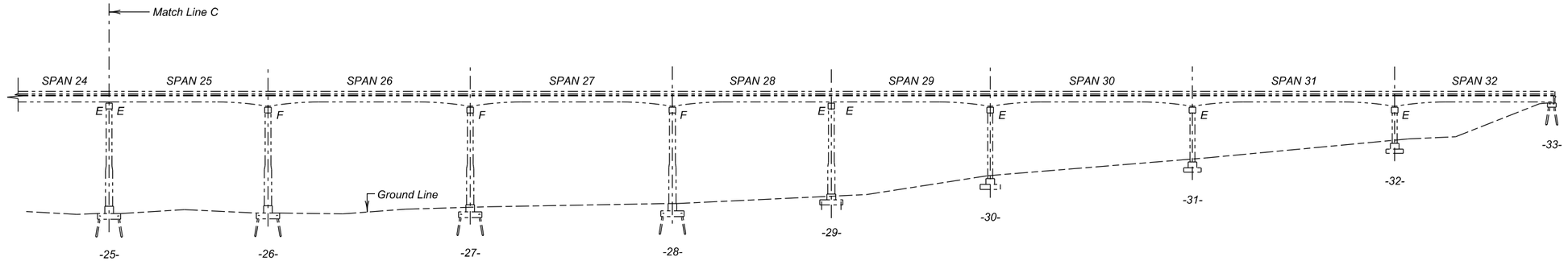


PLAN



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

PLANS BY : JACOBS

LAYOUT FOR UPGRADING
FOR
4001'-4" PLATE GIRDER BRIDGE

24' - 0" ROADWAY — 0° SKEW
STR. NO. 1 6-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

4 OF 12

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	JOS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	11	18

ESTIMATE OF STRUCTURE QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0550	Jack Superstructure, Steel Girder Bridge	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	1.4	CuYd
460E0190	Concrete Crack Injection/Sealing	12	In
460E0300	Breakout Structural Concrete	1.9	CuYd
410E1002	Remove, Rehabilitate & Reinstall Bearing	8	Each
412E0100	Bridge Repainting Class 1	Lump Sum	LS
460E0202	Concrete Protective Coating	450	SqFt
460E0174	Concrete Patching Material, Misc.	15.6	CuFt

SPECIFICATIONS

1. Design Specifications: LRFD Bridge Design Specifications, 2017 Edition
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications and/or special provisions as included in the proposal.
3. All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Bridge Welding Code D1.5M/D1.5:2020 unless otherwise noted in this plan set.

DESCRIPTION OF WORK

1. Remove Temporary Cribbing and Install jacks.
2. Remove and Replace Concrete Bearing Risers at Pier 5. Remove and Replace Anchor Bolts in Concrete Risers.
3. Patch Spalls and Seal and Fill Cracks in the Concrete Pier Cap at Pier 5.
4. Remove and Replace Masonry Plates and Threaded Rods.
5. Remove and Replace Upper Bearing Plates, While Reusing the 1½" Rocker Bearing Plates and the ¾" Self-Lubricating Bearing Plates.
6. Paint affected areas.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

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

UNIT DESIGN STRESSES

1. Design Material Strengths:

New Material:		
Class A 45 Concrete	f'c = 4500 psi	
Reinforcing Steel (ASTM A615 Gr. 60)	fy = 60000 psi	
Existing Material:		
Reinforced Concrete	f'c = 4000 psi	fc = 1600 psi
Reinforcing Steel	fs = 20000 psi	
Structural Steel	fy = 36000 psi	

2. Design unit stresses shall be as set forth in the Design Specifications.

DESIGN MIX OF CONCRETE

1. All structural concrete shall be Class A45 unless otherwise indicated.
2. Type II cement conforming to Section 750 of the Construction Specifications is required.
3. Coarse aggregate to be used in concrete shall consist of either crushed quartzite or other crushed ledge rock. If crushed ledge rock other than quartzite is to be used, it shall be from a source approved by the Engineer.

GENERAL CONSTRUCTION - BRIDGE

1. All reinforcing steel shall conform to ASTM A615, Grade 60.
2. All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise. Match existing chamfer if the existing chamfer differs.
3. Use 2" clear cover on all reinforcing steel except as shown.
4. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.
5. The Contractor shall submit to the Department for review and approval, all plans and calculations for any scaffolding or other temporary work platforms that are attached to the bridge components, that show the existing bridge components are capable of supporting such loads without damaging the existing structures or overloading certain bridge components.
6. At least 7 days prior to starting any work, the Contractor shall submit a detailed work plan to the Engineer, for review and approval, for removing the sole plates from the bottom flanges of the girders, without damaging the existing girders or surrounding components.

VERTICAL JACKS

1. The Contractor shall remove existing timber cribbing and steel plates between Girders 1 and 2 and install suitable hydraulic jacks and supports capable of safely jacking the structure, while allowing adequate room for reconstruction of the concrete bearing risers.
2. Repeat Step 1 for existing timber cribbing and steel plates between Girders 3 and 4.
3. Timber cribbing and steel plates to be salvaged and delivered to SD DOT Maintenance Shop Yard located at 2311 W. Hwy. 12 in Mobridge, SD.
4. The Contractor shall jack the structure in such an order such that the plates and bolts attaching the plates for the drainage trough under the expansion joint are not damaged. Any damage to these components shall be the responsibility of the Contractor and shall be repaired to the satisfaction of the Engineer at no cost to the Department.
5. Just prior to jacking the superstructure, the Contractor shall remove the nuts from the 2" diameter threaded rods at each bearing at Girders 1 through 4 in Span Nos. 4 and 5 at Pier No. 5.
6. Jack superstructure vertically as required to remove bearings.
7. Vertical jacks shall be used to carry the girder reactions at Pier No. 5 during the time of the bearing and riser replacement. The intent of the jacking procedure is to transfer the girder reaction to the jack while keeping the vertical movement of the girder to the minimum amount necessary, as approved by the Engineer.
8. The vertical jack shall have a lock nut for mechanical load holding with hydraulic pressure released.
9. The vertical jack shall be able to safely support a load of 100 Kips for the entire time required for the riser removal and reconstruction and the bearing repair.
10. Caution shall be exercised when transferring the girder reactions to and from the jacks to insure that no damage to any of the existing structural components will occur due to the jacking procedure. Any damage to any of the structural components of the bridge caused by the jacking procedure will be repaired as approved by the Engineer at no cost to the Department.
11. Each jack shall have a bearing plate at both ends of sufficient area and thickness to limit the bearing stress on the loaded area of concrete to not more than 1800 psi and to limit the bearing stress on the loaded area of steel to not more than 20,000 psi. Jacks to allow for expansion and contraction.
12. Jacks shall be limited to the location shown by the plan sheets.
13. The Contractor shall be required to submit a detailed set of plans outlining his jacking procedure to the Engineer a minimum of 7 days prior to use for approval by the Bridge Construction Engineer. Included in this procedure will be the name of the jack used, the load monitoring method for the jack, and details of bearing plates used to limit the bearing stress on the concrete and steel.
14. All costs for materials, labor, equipment and incidentals necessary to furnish, install, operate, remove and to perform the vertical jacking to the satisfaction of the Engineer, including removal and delivery of existing timber cribbing and steel plates, as shown by these plans shall be included in the contract lump sum price for "Jack Superstructure, Steel Girder Bridge".

REPAIR OF BEARINGS AT PIER NO. 5

1. This work consists of removing and replacing portions of the bearings for Girders Nos. 1 through 4 (Span Nos. 4 and 5) at Pier No. 5.
2. All new plates shall conform to ASTM A709, Grade 36. The sole plates shall have a Rockwell hardness value at least 100 points greater than that of the bronze alloy self-lubricating plate.
3. After properly jacking the structure, the Contractor shall significantly loosen the anchor bolt nuts such that they will be easily removed when the concrete riser is removed.
4. After demolishing the riser concrete, the Contractor shall remove the masonry plates and the anchor bolts. The Contractor shall remove the 2" diameter threaded rods from the masonry plates and deliver the masonry plates to SD DOT Maintenance Shop at 2311 W. Hwy. 12 in Mobridge, SD. The anchor bolts and rods shall be discarded.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

ESTIMATE OF QUANTITIES AND NOTES
FOR
4001'-4" PLATE GIRDER BRIDGE

24' - 0" ROADWAY — 0° SKEW
STR. NO. 1 6-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

5 OF 12

PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	SR	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	12	18

REPAIR OF BEARINGS AT PIER NO. 5 (CONTINUED)

5. After removing the masonry plates, the Contractor shall mark the rocker bearing plates and self-lubricating bearing plates such that they can be removed and re-installed in their same locations. After appropriate marking, the Contractor shall remove and store the 1 ½" rocker bearing plates and the ¾" self-lubricating bearing plates. After removal, the Contractor shall immediately inspect the self-lubricating plates for damage and notify the Engineer if any damage would prevent proper operation of the plate during re-use.

6. With the rest of the bearing removed, the Contractor shall remove the existing ¾" sole plates that are welded to the bottom flanges of the existing girders. The Contractor shall take care not to damage the existing girders or the existing reinforcing steel that will be re-used in the new concrete bearing riser. Any damage caused by the Contractor shall immediately be brought to the attention of the Engineer and shall be repaired to the satisfaction of the Engineer at no cost the Department.

7. The Contractor shall set the new anchor bolts in the new riser concrete, utilizing means and methods to guarantee their correct horizontal and vertical placement. New 1 ½" diameter anchor bolts shall conform to Section 972 of the Standard Specifications. Please note that there is only 2 ¼" between the top of the masonry plate and the underside of the sole plate, so vertical placement is key to be able to install the nuts for the anchor bolts.

8. The Contractor shall weld the new ¾" sole plates to the properly prepared girder bottom flanges in accordance with approved field welding details. The Contractor shall ensure proper placement and alignment of the sole plates prior to welding.

9. The Contractor shall install the masonry plates with the 2" diameter threaded rods already installed.

10. Prior to reinstallation of the rocker bearing plate, the Contractor shall remove any existing loose paint and rust and repaint in accordance with Section 412 of the Standard Specifications, Class I Bridge Repainting.

11. Prior to reinstallation of the self-lubricating plate, the Contractor shall again inspect all surfaces for damage and immediately notify the Engineer if any damage would prevent proper operation of the plate.

12. Following installation of the rocker bearing plate and the self-lubricating bearing plate, the Contractor shall lower the structure onto the bearing plates and again check for proper alignment of the 2" diameter threaded rods in the slots in the sole plates. If not aligned properly, jack structure back up and remove and re-weld sole plates as necessary to achieve proper alignment, followed by installing the nuts for the 2" diameter threaded rods.

13. The nuts shall be tightened on the threaded rods, leaving a ¼" –⅜" gap between the nuts and the sole plates. In the final position, the flats of the nuts shall be parallel to the edges of the girder bottom flanges.

14. The sole plates and masonry plates shall be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Standard Specifications. Areas to be welded shall have the primer removed down to bare metal prior to welding.

15. Field-welded areas shall be prepared and painted in accordance with Section 412 of the Standard Specifications, Class I Bridge Repainting.

16. After the bearings are installed and complete in-place, the exposed steel surfaces (except for the mating surface that will be in contact with the bronze lubricated sheet) shall be painted in accordance with Section 412 of the Standard Specifications.

17. After the jacks are removed, the underside of the bottom flange of the W14 jacking beams shall be cleaned, prepped and painted in accordance with Section 412 of the Standard Specifications, Class I Bridge Repainting.

18. All costs associated with removal, temporary storage, rehabilitation and replacement of the bearings, including all tools, labor, material, equipment, collection, disposal and incidentals to complete the bearing work and touch up painting of portions of the jacking beams, including all Paint Residue Containment, shall be measured and paid for on an each basis under "Remove, Rehabilitate and Reinstall Bearing".

CONCRETE CRACK INJECTION AND SEALING

1. The quantity shown for Concrete Crack Injection and Sealing in Structural Concrete is based on a 2021 condition inspection of the structure. The cracks include those greater than 15 mils.

2. The quantity shown is for the caps of Piers 5. The distribution of the estimated quantity is as follows:

Pier	Cap (Ft)	Below Cap (Ft)	Total (Ft)
5	1	0	1

3. This quantity may be adjusted up or down by the Engineer. In such case the cost will be adjusted up or down based on the contract unit price.

4. All work required to Concrete Crack Injection and Sealing in structural concrete, including labor, materials and equipment will be paid for on the linear foot basis for Concrete Crack Injection and Sealing.

5. Sealant shall meet ASTM C-920 Type S or M, Grade NS, Class 25 or higher, use NT and M. Follow manufacturer's recommendations for installation.

DEMOLITION OF PIER CAPS AND BEARING RISERS AT PIER NO. 5

1. Following jacking of the superstructure, the Contractor shall remove the existing bearing riser concrete at Pier No. 5, while supporting the existing bearing assemblies.

2. The Contractor shall remove the existing concrete bearing riser to the limits shown on Sheet 10, removing all concrete from the existing reinforcing steel bars, while avoiding causing damage to the reinforcing steel, including its ability to bond to the new concrete.

3. Following removal of the concrete, the Contractor shall remove the bearings in accordance with "Notes Regarding Repair of Bearings at Pier No. 5" and shall inspect the existing reinforcing steel for the risers. In the event that any nicks, gouges, scratches or any other damage is noted on the reinforcing steel (whether caused by the Contractor or caused by the thermal contraction event), the Office of Bridge Design shall be immediately notified. All damages caused by the Contractor shall be repaired by the Contractor as recommended by the Office of Bridge Design at no cost to the Department. Rebar damaged from the thermal contraction event shall be straightened back to its original shape and retied as needed.

4. The Contractor shall sound the faces of the pier cap concrete in the presence of the Engineer and shall come to an agreement on an appropriate saw cut line beyond the limits of concrete spalling/delamination, while trying to avoid a sawtooth appearance.

5. The Contractor shall saw cut the faces of the pier cap along these lines to a minimum depth of 1" or possibly more if recommended by the repair material manufacturer, but not so deep as to cut into the stirrup reinforcing bars.

6. Remove loose and unsound materials within the sawcut lines by the use of hand tools or pneumatic hammers weighing a nominal 35 pounds or less. Hammer weight applies to the weight of the pneumatic hammer alone. Pneumatic hammers shall be worked at an angle of 45 to 60 degrees to the plane of the concrete surface being removed. Care must be taken to ensure that no debris enters the water.

7. Where existing reinforcing steel is exposed, concrete shall be removed to a depth of no less than one inch beyond the reinforcing bars, while avoiding removing only recess at the exposed rebar areas. Existing concrete shall be removed as shown on the plan details or as directed by the Engineer, to horizontal and vertical planes only, and to sound concrete, taking care not to damage any existing reinforcing steel.

8. Where shallow spalls are delineated on the top surface of the pier caps between the risers, the Contractor shall saw cut the perimeter to a depth equal to the minimum allowed based on the manufacturer recommendations and then remove loose and unsound materials in accordance with Note 6 herein.

9. Provide a chipped surface of the exposed pier cap concrete, meeting a surface profile of CSP-9 as defined by the International Concrete Repair Institute (ICRI).

10. Following all concrete demolition, the Contractor shall capture clear digital images or photographs of all repair areas. Images shall clearly demonstrate that the area to be repaired was prepared to the proper depth and with appropriate surface preparation. Images shall include measuring devices that clearly demonstrate the length, width, and depth of the repair area. Images shall be submitted to Engineer for inclusion in project records and will be a condition for payment.

11. All costs associated with concrete demolition and surface preparation of the concrete surfaces and reinforcing steel surfaces, including all tools, labor, material, equipment, collection, disposal and incidentals to complete the demolition work and the reinforcing steel straightening work, shall be measured and paid for on a cubic yard basis under "Breakout Structural Concrete".

REHABILITATION OF PIER CAPS AND BEARING RISERS AT PIER NO. 5

1. Following acknowledgement of proper concrete and reinforcing steel surface preparation from the Engineer, exposed reinforcing steel and faces of existing concrete shall be cleaned of all dust and debris by blowing with oil-free compressed air. Following this, the Contractor shall coat the exposed portions of all existing reinforcing steel in accordance with the notes.

2. The Contractor shall again clean the faces of existing concrete of all dust and debris by blowing with oil-free compressed air and then apply a bonding agent, such as Sika Armatec 110 EpoCem or Master Builders MasterEmaco P 124 to the chipped surfaces of the pier cap concrete in accordance with manufacturer recommendations, but not apply to the bearing riser areas. Alternative products shall be submitted for approval to the Office of Bridge Design and shall include appropriate backup information to showcase equivalence.

3. Following manufacturer recommendations for wait times after applying the bonding agent, the Contractor shall apply repair materials to the pier cap repair areas with a cementitious repair material specifically suited for vertical repairs such as SikaQuick VOH or Master Builders MasterEmaco N 425 in accordance with manufacturer instructions, including maximum lift thicknesses and prep of each lift. Alternatively, the Contractor may utilize form and pour or form and pump methods of repair and if so, shall form the repair areas and utilize a repair material such as SikaQuick FNP or Master Builders MasterEmaco S 477CI. Alternative products shall be submitted for approval to the Office of Bridge Design and shall include appropriate backup information to showcase equivalence. The perimeter of the bearing riser areas shall match existing conditions.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

NOTES (CONTINUED)
FOR
4001'-4" PLATE GIRDER BRIDGE
24' - 0" ROADWAY — 0° SKEW
STR. NO. 1 6-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	SR	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	13	18

REHABILITATION OF PIER CAPS AND BEARING RISERS AT PIER NO. 5 (CONTINUED)

4. After curing of the pier cap repair concrete materials in accordance with manufacturer recommendations, the Contractor shall form the bearing riser area and apply a bonding agent, such as Sika Armatec 110 EpoCem or Master Builders MasterEmaco P124 to the exposed chipped surfaces.

5. Following manufacturer recommendations for wait times after applying the bonding agent, the Contractor set the bearing anchor bolts and shall place Class A45 concrete in the formwork for the bearing risers and cure in accordance with the Standard Specifications.

6. The estimated quantity for bidding purposes for spalled and delaminated concrete repair areas on the faces of the pier cap is based on a 2021 condition inspection of the structure and summarized below. This quantity may be adjusted up or down by the Engineer. In such case, the cost will be adjusted up or down based on the contract unit price.

   Pier 5 Cap Repair = 62 SqFt at 3 in. Avg Depth = 0.50 Cubic Yards

7. The estimated quantity for bidding purposes for concrete replacement of the bearing risers is based on the Design Plans that were let January 26, 1978 and are summarized below. This quantity may be adjusted up or down by the Engineer. In such case, the cost will be adjusted up or down based on the contract unit price.

   Pier 5 Cap Bearing Risers = 1.32 Cubic Yards

8. All costs associated with replacement of the concrete bearing risers, including all tools, labor, material, equipment, formwork, testing and incidentals to complete the work, shall be measured and paid for on a cubic yard basis under “Class A45 Concrete, Bridge Repair”.

9. All costs associated with patching of the concrete pier faces, including all tools, labor, material, equipment, formwork, testing and incidentals to complete the work, shall be measured and paid for on a cubic yard basis under “Concrete Patching Material, Misc.”.

NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing girders and bearing stiffeners has an underlying layer of paint containing lead. The Contractor should plan his/her operations accordingly, and inform, his/her employees of the hazards of lead exposure.

SHOP PLANS

1. Shop plans will be required as specified by the Construction Specifications.

2. The fabricator will submit shop plans in accordance with the Specifications. Send shop plan submittals to Jacobs Engineering, 501 N Broadway Street, St. Louis, MO 63102 (John.Finke@jacobs.com). After review, corrections (if necessary), and approval by Jacobs Engineering, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

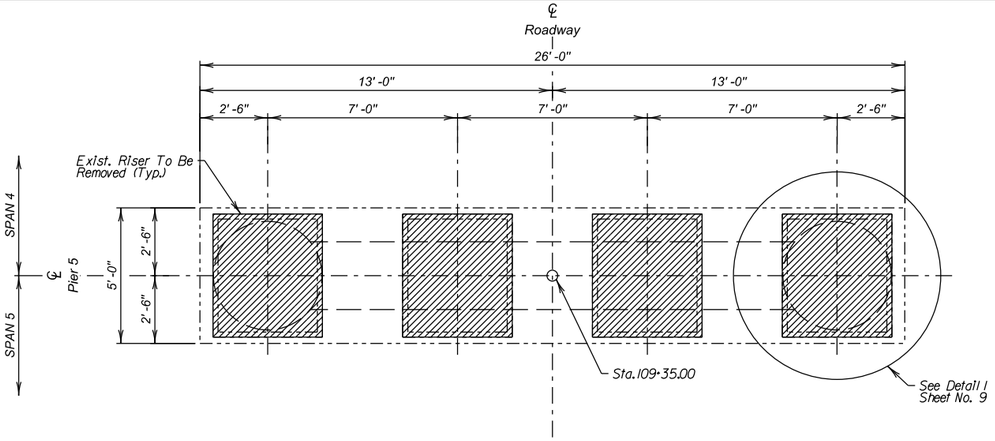
PLANS BY : JACOBS

NOTES (CONTINUED)
FOR
4001'-4" PLATE GIRDER BRIDGE
24' - 0" ROADWAY — 0° SKEW
STR. NO. 1 6-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

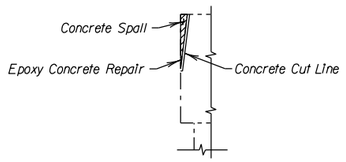
CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	SR	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	14	18



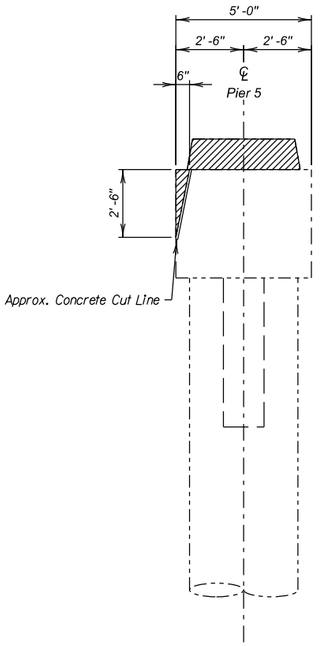
CAP PLAN



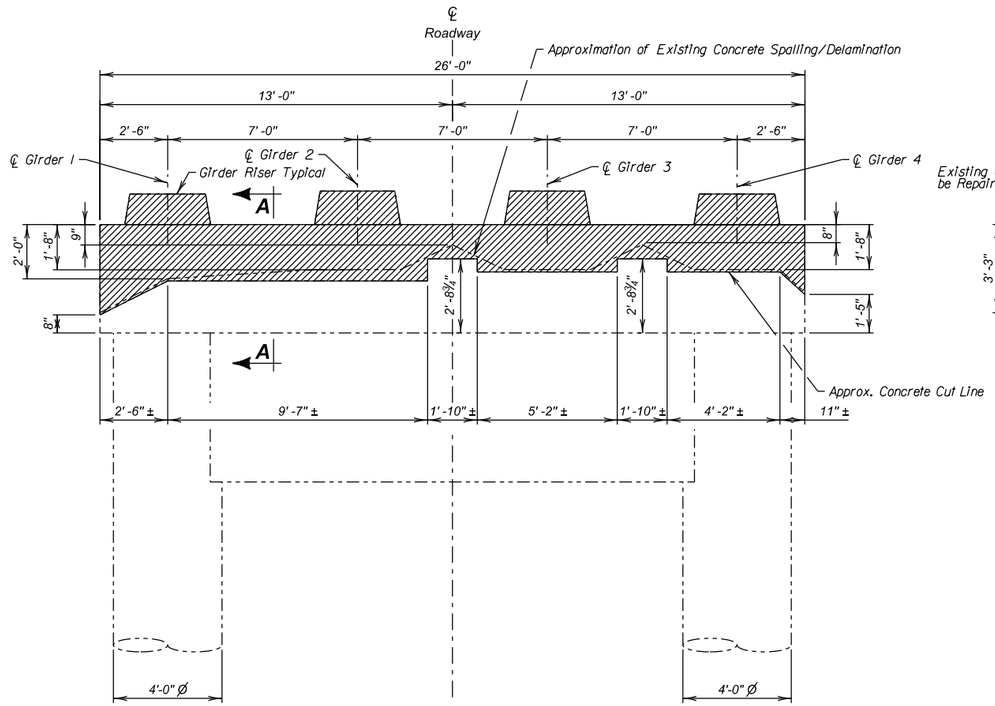
SEC. A-A

LEGEND

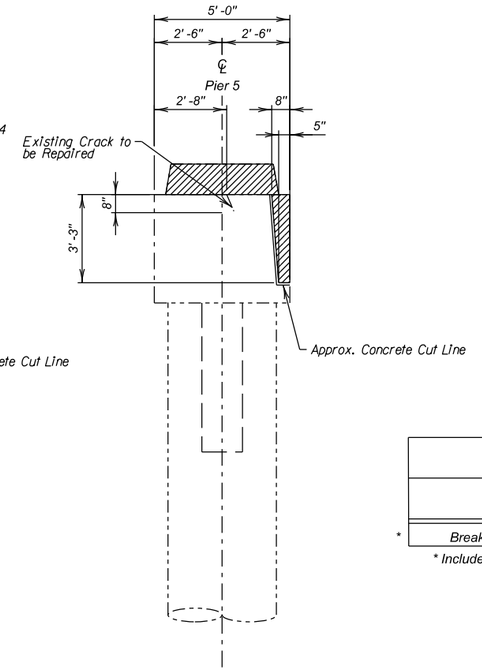
Concrete Spall Or Concrete To Be Removed



END VIEW - EAST FACE



ELEVATION - SOUTH FACE



END VIEW - WEST FACE

NOTES:

1. *Top of pier cap between Girders 1 and 2 and between Girders 3 and 4 to be sounded in prescence of Engineer following removal of jacking frames to determine repair quantities.*
2. *These areas are to be repaired after the vertical pier faces and the risers are repaired, but prior to steel components receiving final painting.*

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
* Breakout Structural Concrete	Cu. Yd.	1.9

* *Includes 1.3 yd³ in risers and 0.6 yd³ in cap faces.*

PIER 5 DEMOLITION DETAILS
FOR
4001'-4" PLATE GIRDER BRIDGE
24'-0" ROADWAY — 0° SKEW
STR. NO. 16-737-253 — SEC. 25-T1 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

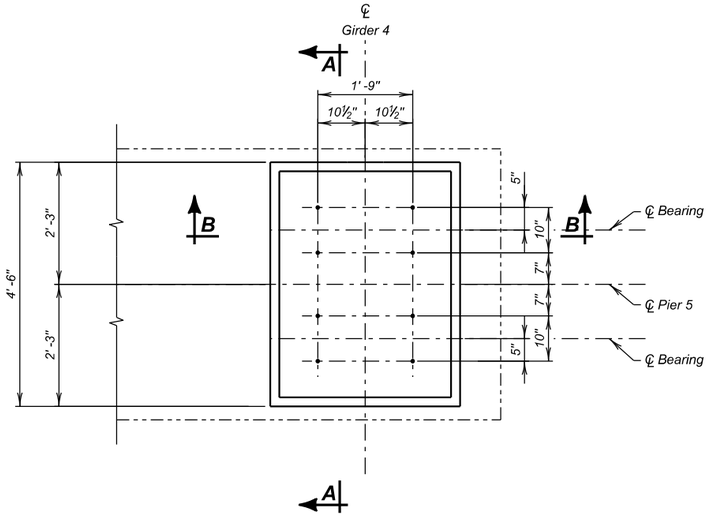
8 OF 12

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

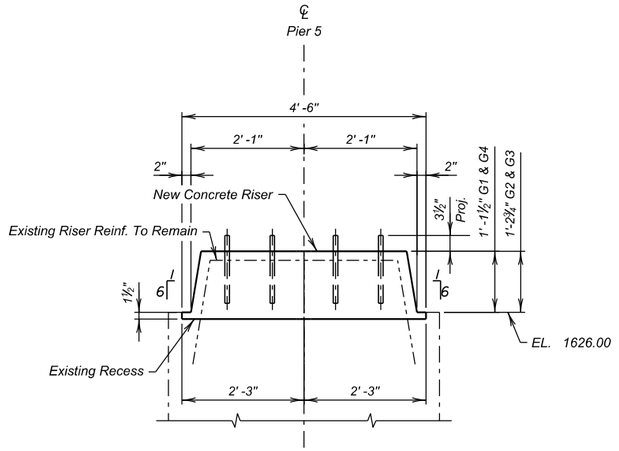
PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	DRS	BRIDGE ENGINEER

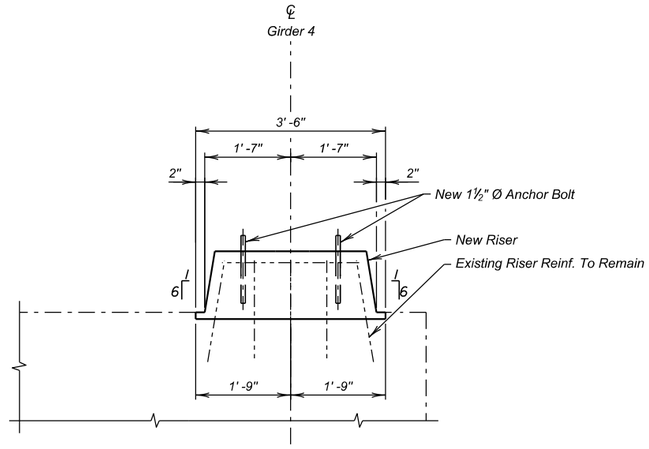
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	15	18



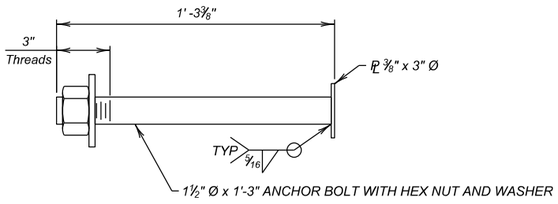
DETAIL "1"



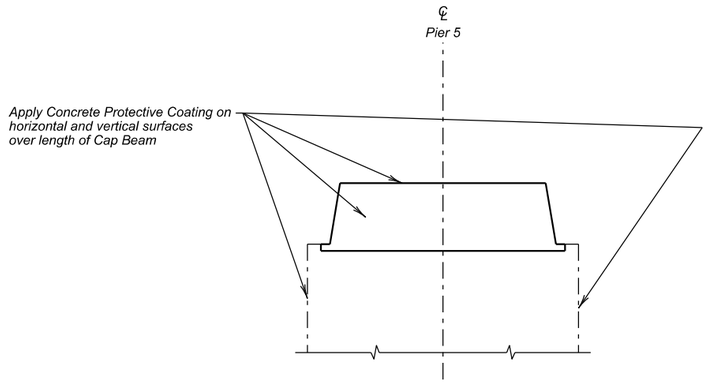
SEC. A-A



SEC. B-B



ANCHOR BOLT DETAIL



Concrete Protective Coating Limits

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Repair	Cu. Yd.	1.4
Concrete Protectve Coating	Sq. Ft.	450

PIER 5 RISER DETAILS
FOR
4001'-4" PLATE GIRDER BRIDGE

24'-0" ROADWAY — 0° SKEW
STR. NO. 16-737-253 — SEC. 25-T1 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

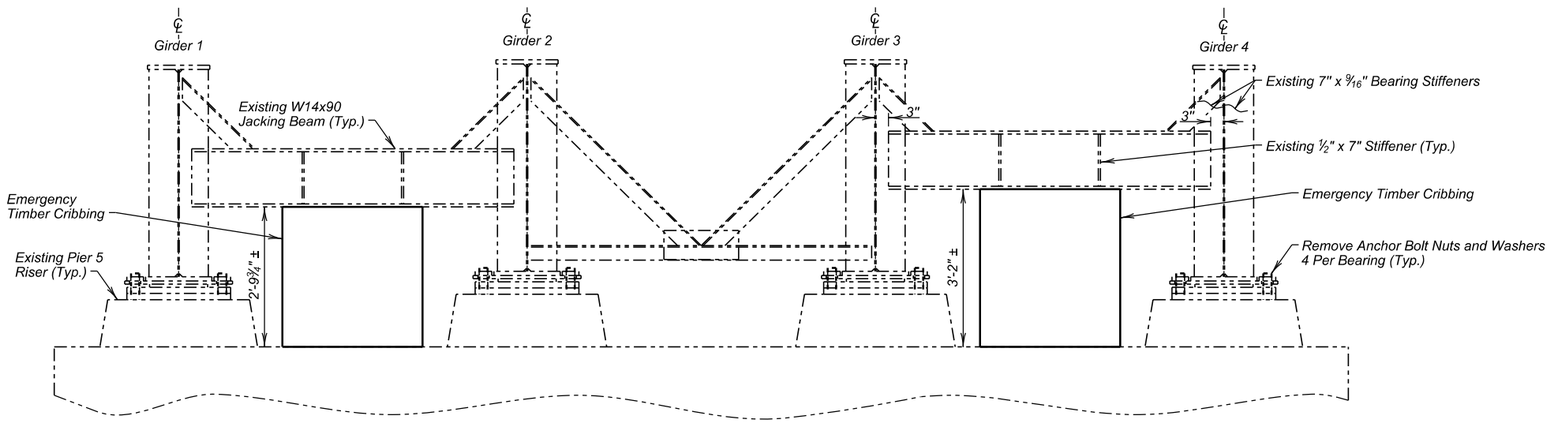
9 OF 12

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	DRS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	16	18

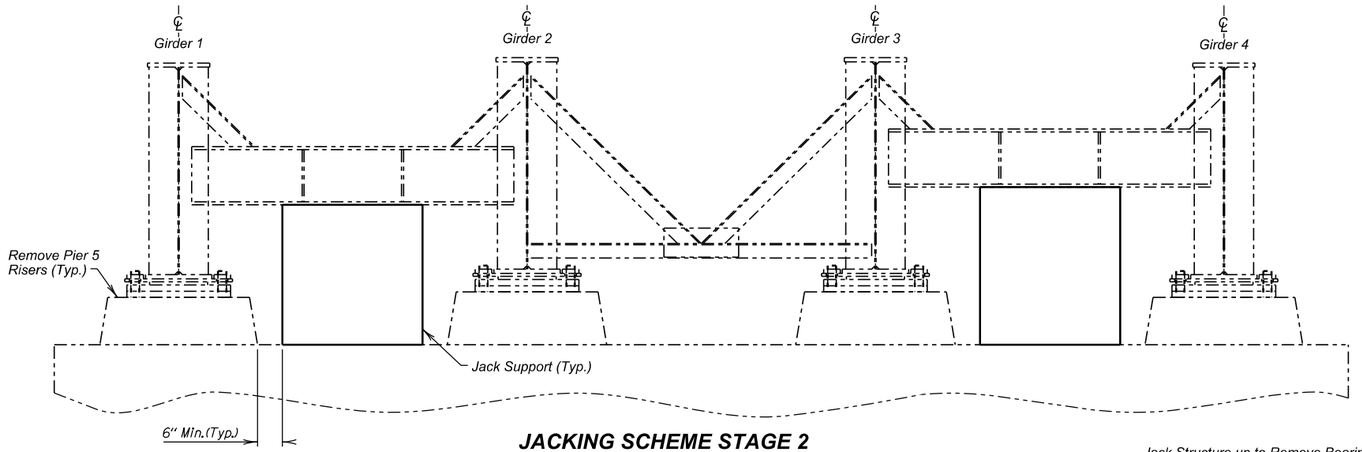


JACKING SCHEME STAGE 1

(Looking North- Deck Not Shown For Clarity)

Note: Jacking Scheme shown for Pier 5 - Span 4. Pier 5 - Span 5 similar.

1. *Remove Emergency Timber Cribbing.*
2. *Install Jack Supports, Jacks, And Cribbing.*
3. *Jack Up Structure.*

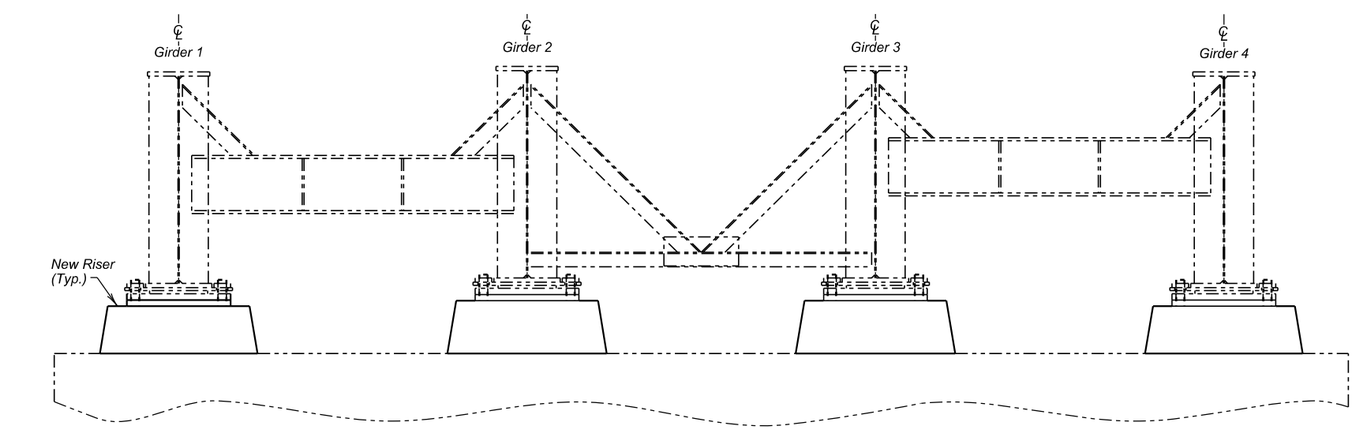


JACKING SCHEME STAGE 2

(Looking North- Deck Not Shown For Clarity)

Note: Jacking Scheme shown for Pier 5 - Span 4. Pier 5 - Span 5 similar.

Jack Structure up to Remove Bearing Plates and the Risers



JACKING SCHEME STAGE 3

(Looking North- Deck Not Shown For Clarity)

Note: Jacking Scheme shown for Pier 5 - Span 4. Pier 5 - Span 5 similar.

1. *Remove The Sole Pl. From The Exist. Girder Bottom Flange.*
2. *Remove Pier 5 Risers*
3. *Install New Pier 5 Risers.*
4. *Weld The New Bearing Sole Pl.*
5. *Install New Masonry Plates*
6. *Lower Structure Onto New Risers.*
7. *Add Anchor Bolt Washers And Nuts.*
8. *Add 2" Nut To 2" Threaded Rod*

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

NOTE:

Limit painting to new elements.

ESTIMATED QUANTITIES		
ITEM	*UNIT*	*QUANTITY*
Jack Superstructure, Steel Girder Bridge	*LS*	*Lump Sum*

PIER 5 JACKING SCHEME
FOR
4001'-4" PLATE GIRDER BRIDGE
24'-0" ROADWAY — 0° SKEW
STR. NO. 16-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

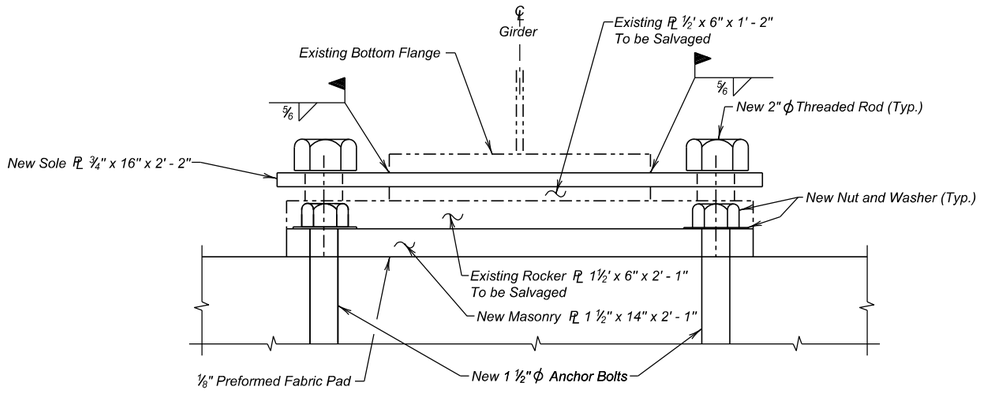
CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

10 OF 12

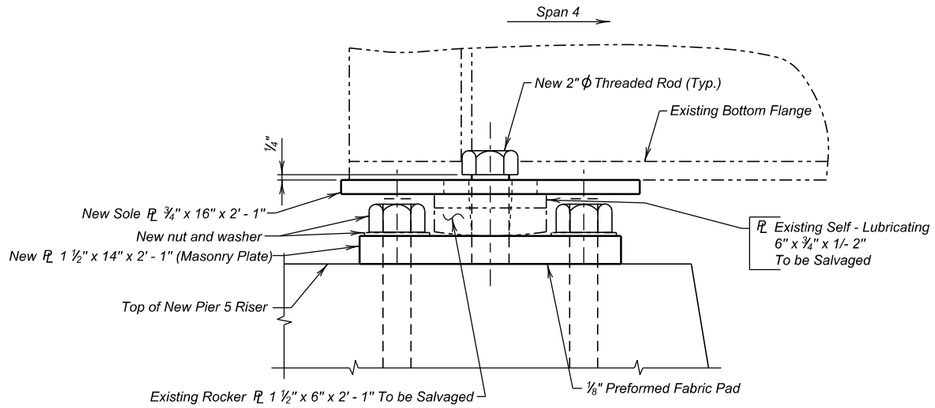
PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	DRS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	17	18



END VIEW



SIDE VIEW

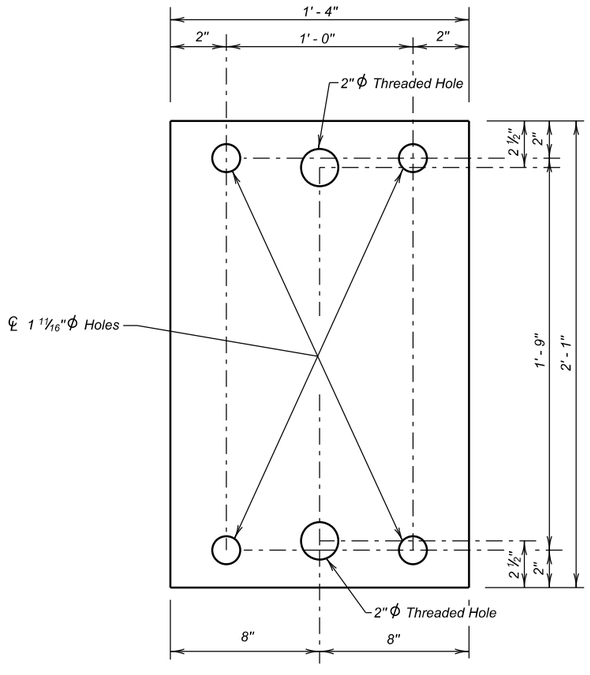
NOTE: *Side View shown for Pier 5 Span 4. Side View for Pier 5 Span 5 Opposite Hand.*

SLOT ORIENTATION TABLE - SPAN 4

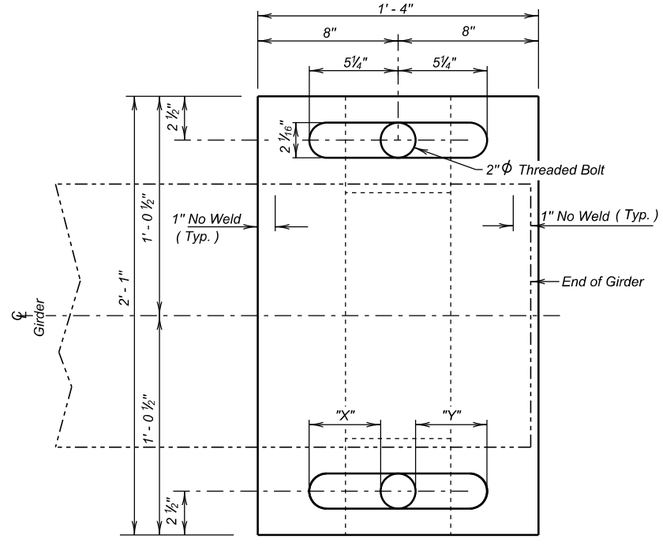
Temp. F	"X"	"Y"
120	½"	8"
105	1 3/16"	7 5/16"
95	1 1/16"	6 13/16"
85	2 1/8"	6 5/8"
75	2 5/8"	5 7/8"
65	3 1/16"	5 7/16"
55	3 9/16"	4 13/16"
45	4"	4 ½"
40	4 ¼"	4 ¼"
35	4 ½"	4"
25	4 13/16"	3 9/16"
-40	8"	½"

SLOT ORIENTATION TABLE - SPAN 5

Temp. F	"X"	"Y"
120	½"	4 ¼"
105	⅞"	3 ⅞"
95	1 1/16"	3 1/16"
85	1 9/16"	3 7/16"
75	1 9/16"	3 3/16"
65	1 13/16"	2 13/16"
55	2"	2 ¾"
45	2 ¼"	2 ½"
40	2 3/8"	2 3/8"
35	2 ½"	2 ¼"
25	2 ¾"	2"
-40	4 ¼"	½"



MASONRY PLATE DETAIL



SOLE PLATE DETAIL

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

PLANS BY : JACOBS

PIER 5 BEARING DETAILS
FOR
4001'-4" PLATE GIRDER BRIDGE

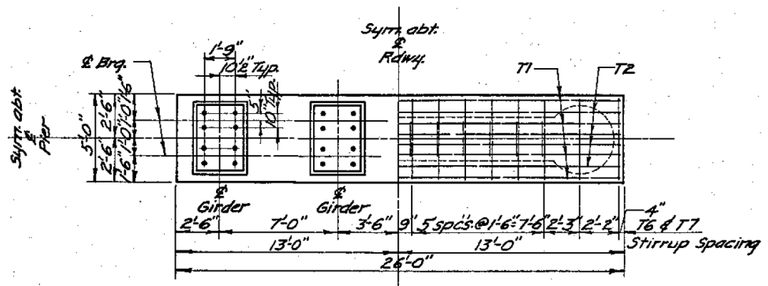
24'-0" ROADWAY — 0° SKEW
STR. NO. 16-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2021

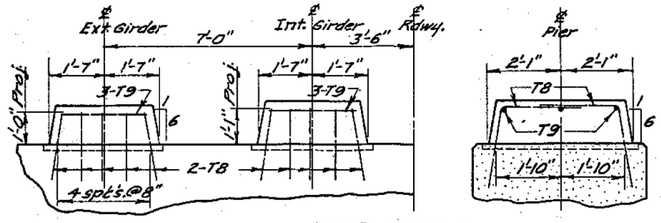
(11) OF (12)

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	JEF	DRS	BRIDGE ENGINEER

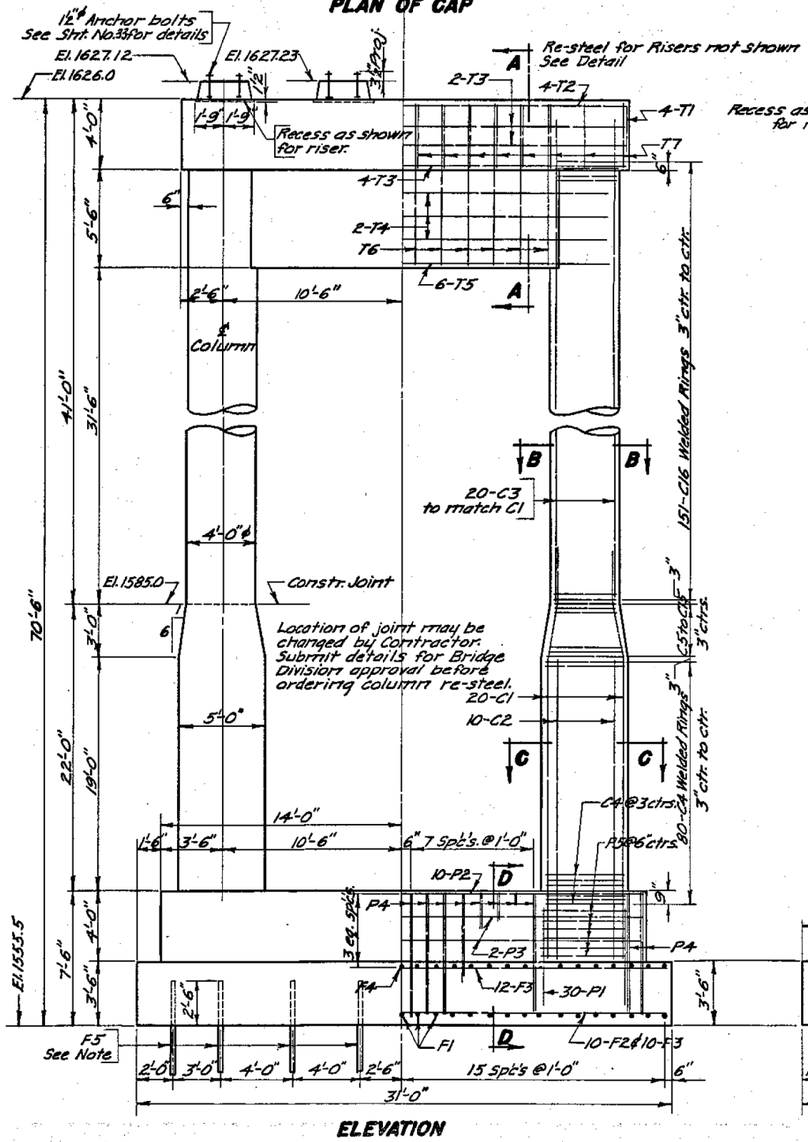
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	1806-368	18	18



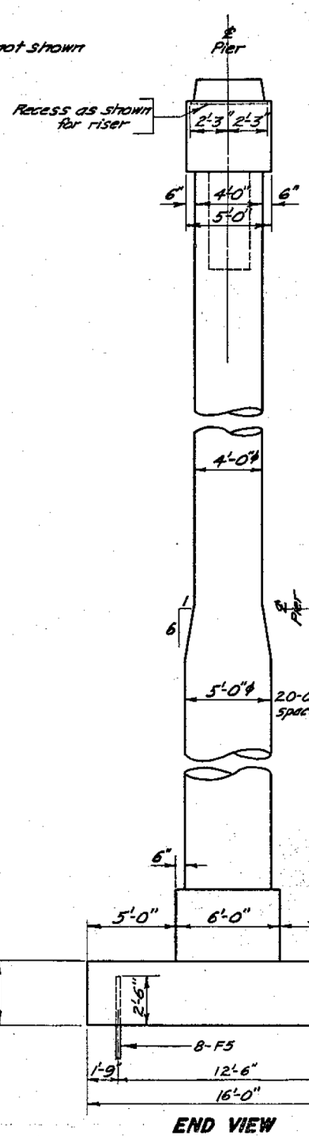
PLAN OF CAP



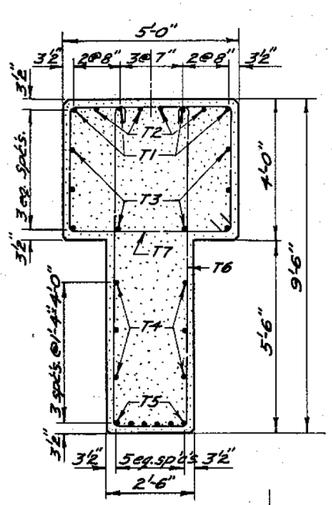
RISER DETAILS



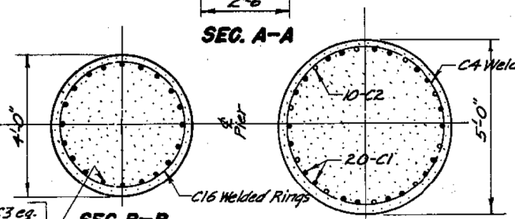
ELEVATION



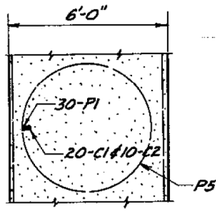
END VIEW



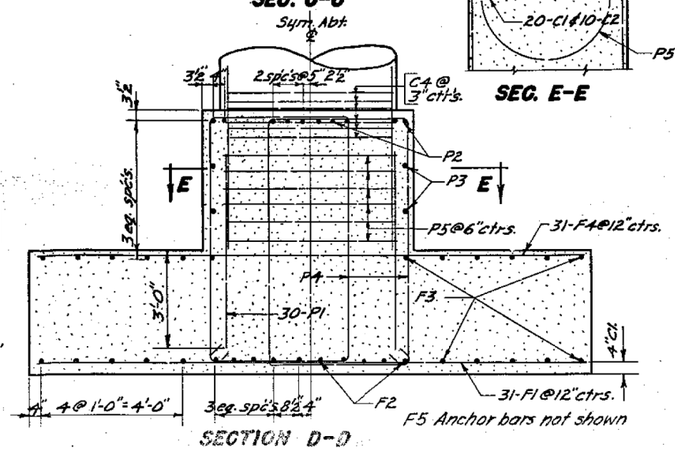
SEC. A-A



SEC. B-B **SEC. C-C**



SEC. E-E



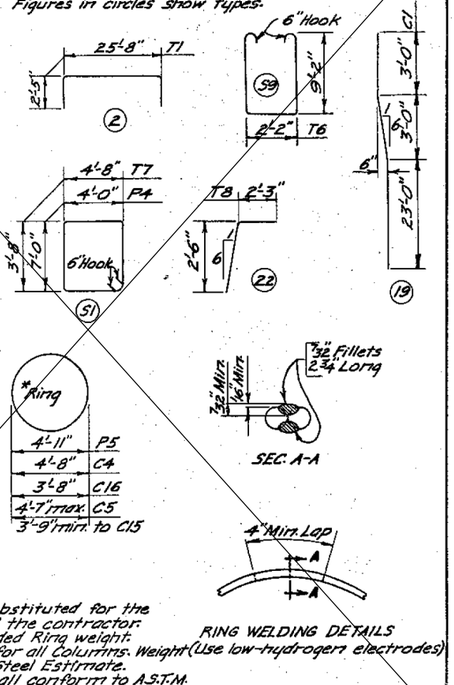
SECTION D-D

REINFORCING SCHEDULE

	Mark	No.	Size	Length	Type
CAP	T1	4	7	30'-6"	2
	T2	4	8	25'-6"	Str.
	T3	8	6	25'-6"	Str.
	T4	6	6	23'-6"	Str.
	T5	6	10	23'-6"	Str.
	T6	12	5	21'-6"	59
	T7	16	5	17'-9"	51
	T8	40	5	4'-9"	22
	T9	12	5	2'-6"	Str.
COLUMN	C1	40	11	29'-0"	19
	C2	20	11	23'-0"	Str.
	C3	40	11	40'-0"	Str.
	C4	160	5	14'-10"	*Ring
	C5 (2 each) to C15	22	5	14'-8" max. 12'-0" min. 13'-4" Av.	*Ring
	C16	302	5	11'-9"	*Ring
PEDESTAL	P1	60	11	6'-0"	Str.
	P2	10	10	27'-6"	Str.
	P3	4	6	27'-6"	Str.
	P4	40	5	23'-0"	51
	P5	12	5	15'-8"	*Ring
FOOTING	F1	31	11	15'-6"	Str.
	F2	10	8	30'-6"	Str.
	F3	22	5	30'-6"	Str.
	F4	31	5	15'-6"	Str.
	F5	16	All 7	7'-6"	Anchor

Bar Bends

All dimensions are out to out of bars. Figures in circles show types.



RING WELDING DETAILS

Continuous Spirals may be substituted for the Welded Rings, at the option of the contractor. Payment will be based on Welded Ring weight. Use 4 Vertical Spacer Bars for all Columns. Weight of Spacer Bars included in Re-Steel Estimate. All reinforcing steel bars shall conform to A.S.T.M. Specification A 305 (Current) except for Welded Rings or Spirals which may be plain bars.

NOTE—

F5 Anchor Bars shall penetrate 5'-0" below bottom of footing. Pre-bore 4" diameter holes full depth before driving bars. Rod concrete into holes around bars while pouring footing. Weight of I-beams shall be included in the reinforcing steel quantity.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9380
RODNEY D. RILEY
SOUTH DAKOTA
05-21-2021

PIER 29 ORIGINAL CONSTRUCTION PLANS

FOR

4001'-4" PLATE GIRDER BRIDGE

24'-0" ROADWAY — 0° SKEW
STR. NO. 16-737-253 — SEC. 25-TI 9N-R29E
OVER GRAND RIVER — 1806-368

CORSON COUNTY
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PLANS BY : JACOBS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
			BRIDGE ENGINEER