

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-288	1	14

Plotting Date: 05/14/2026

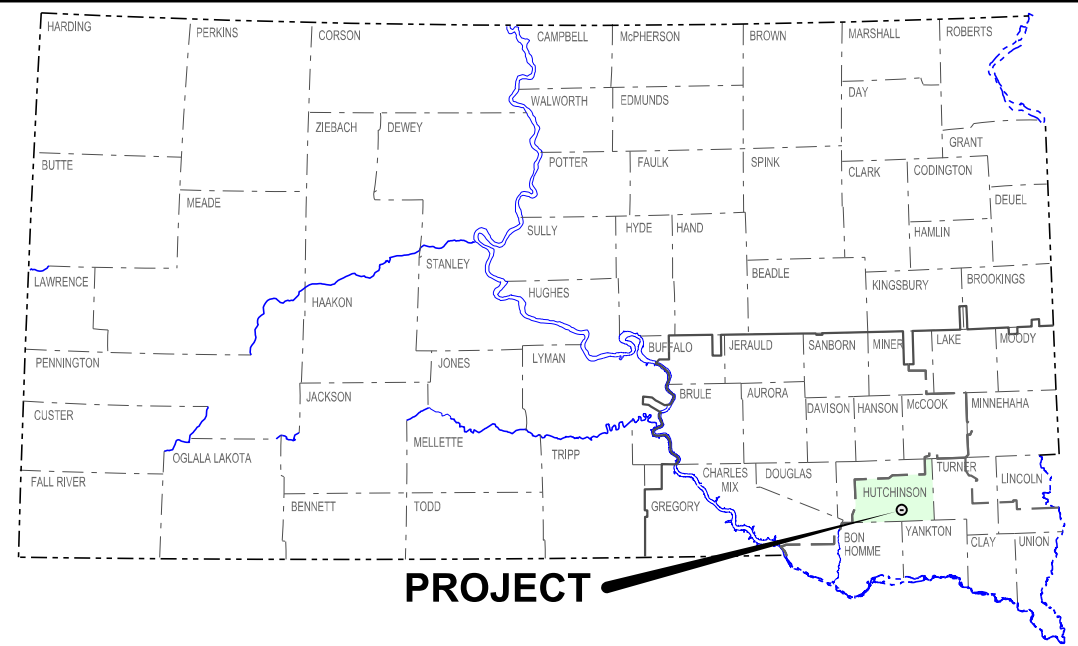
PLANS FOR PROPOSED
PROJECT 018-288
US HIGHWAY 18
HUTCHINSON COUNTY

COLUMN REPAIR
PCN I81H

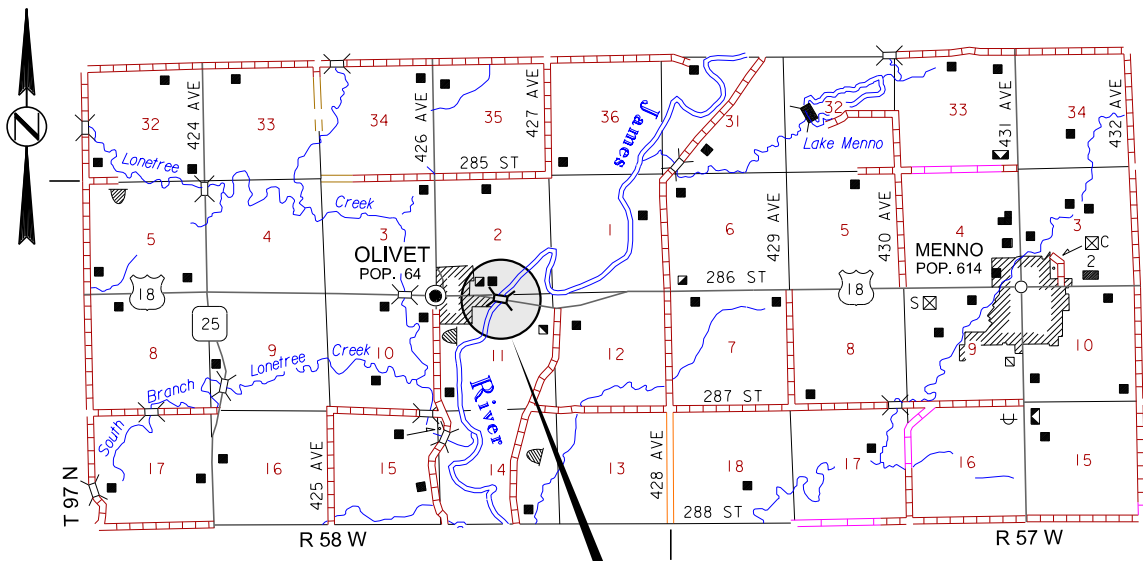
INDEX OF SHEETS

Sheet 1	Layout Map & Index of Sheets
Sheets 2 & 3	Estimates of Quantities, Environmental Commitments & Notes
Sheets 4 - 6	Traffic Control
Sheets 7 - 14	Bridge Work at Structure 34-226-180

PLOT SCALE - 1:8750



PROJECT



STR. NO. 34-226-180
I Beam Bridge
411'-6"=0.078 Mile
US18 MRM 390.27

DESIGN DESIGNATION	
ADT(2025)	671
ADT(2045)	1,066
DHV	123
D	51%
T DHV	10.8%
T ADT	23.8%
V	65 MPH

STORM WATER PERMIT
(None required)

PLOTTED FROM - TRM1INT15

PLOT NAME - I

FILE - ... \BRIDGE\HUCHI81H\TITLE_181H.DGN

ESTIMATE OF QUANTITIES & ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-288	2	14

PCN I81H

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E4100	Construction Schedule, Category I	Lump Sum	LS
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	122.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0310	Temporary Flexible Vertical Markers (Tabs)	2,200	Ft
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft

STR. NO. 34-226-180

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
460E0300	Breakout Structural Concrete	1.0	CuYd
462E0100	Class M6 Concrete	4.1	CuYd

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

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

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.

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

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 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 Agriculture 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.

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.

Cost 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.

ENVIRONMENTAL COMMITMENTS (CONTINUED) & PLAN NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-288	3	14

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans 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 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 contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

If utilities are identified near the improvement area through the SD One Call process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25; the Contractor will contact the Project Engineer to modifications that will be necessary to avoid utility impacts.

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

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

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.

During column repair, vehicles will not be allowed on the lane above the column. A lane closure using stop signs, shown on standard plate 634.25, will be used for this operation.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

It is required that the flaggers operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

TEMPORARY PAVEMENT MARKING TAPE, TYPE I

Temporary pavement marking for stop lines will consist of 4" Temporary Pavement Marking Tape Type I. Placement of each 24" white stop line will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop lines which is an equivalent of approximately 144' of 4" tape (1 workspace at 144' = 144'). Temporary pavement marking on centerline will consist of temporary flexible vertical markers (tabs) or temporary raised pavement markers and will be used as depicted on standard plate 634.25 when the stop condition must remain in place during nighttime hours, 9:00 pm to 6:00 am (Estimate 1 workspace remaining during nighttime hours x 2,200' per workspace = 2,200'). Temporary tape will be removed upon completion of the project.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					122.4

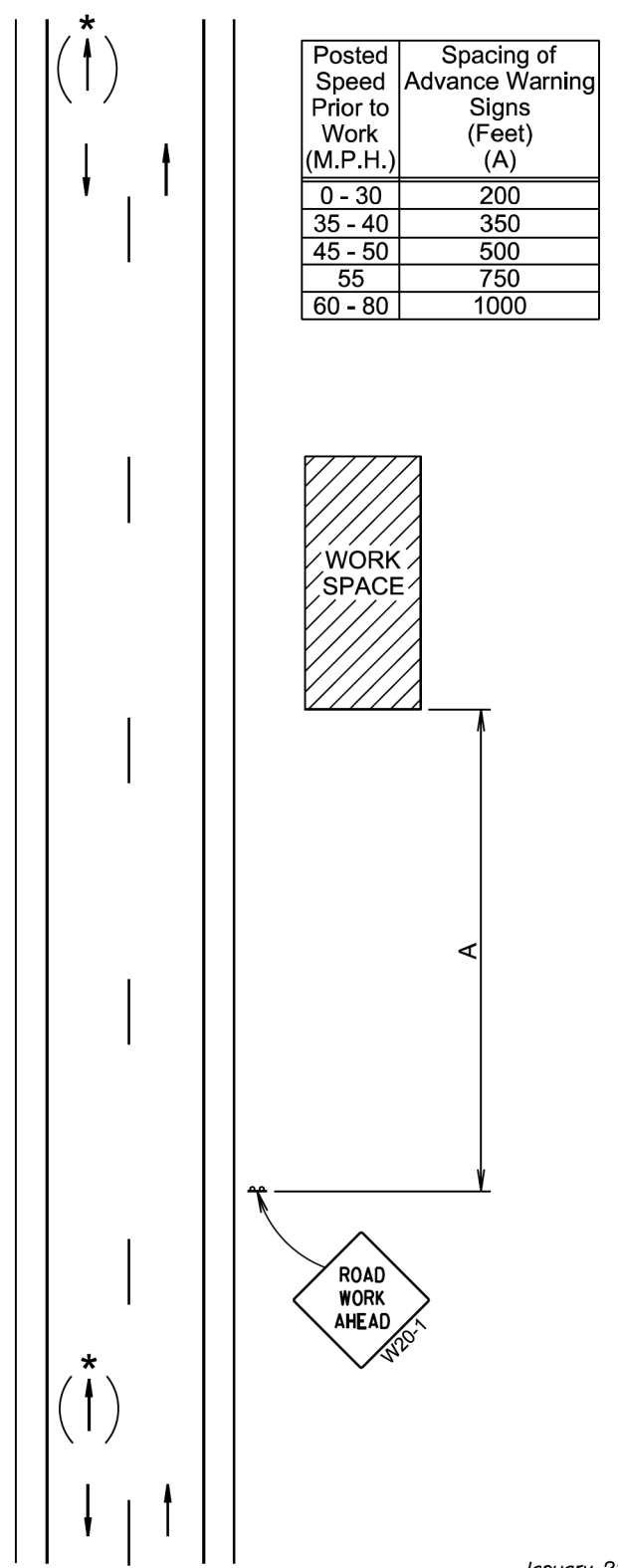
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated will be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

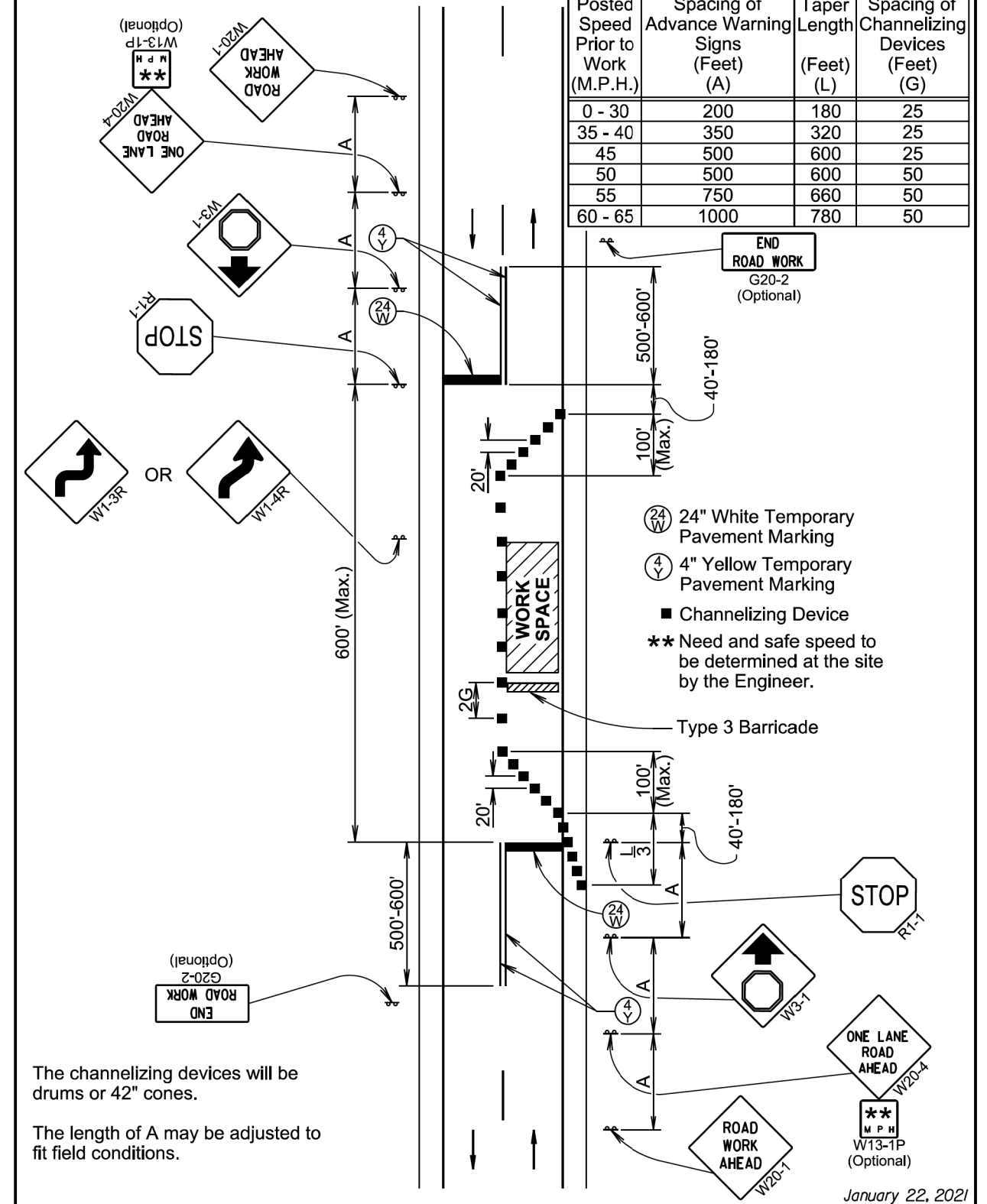
* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



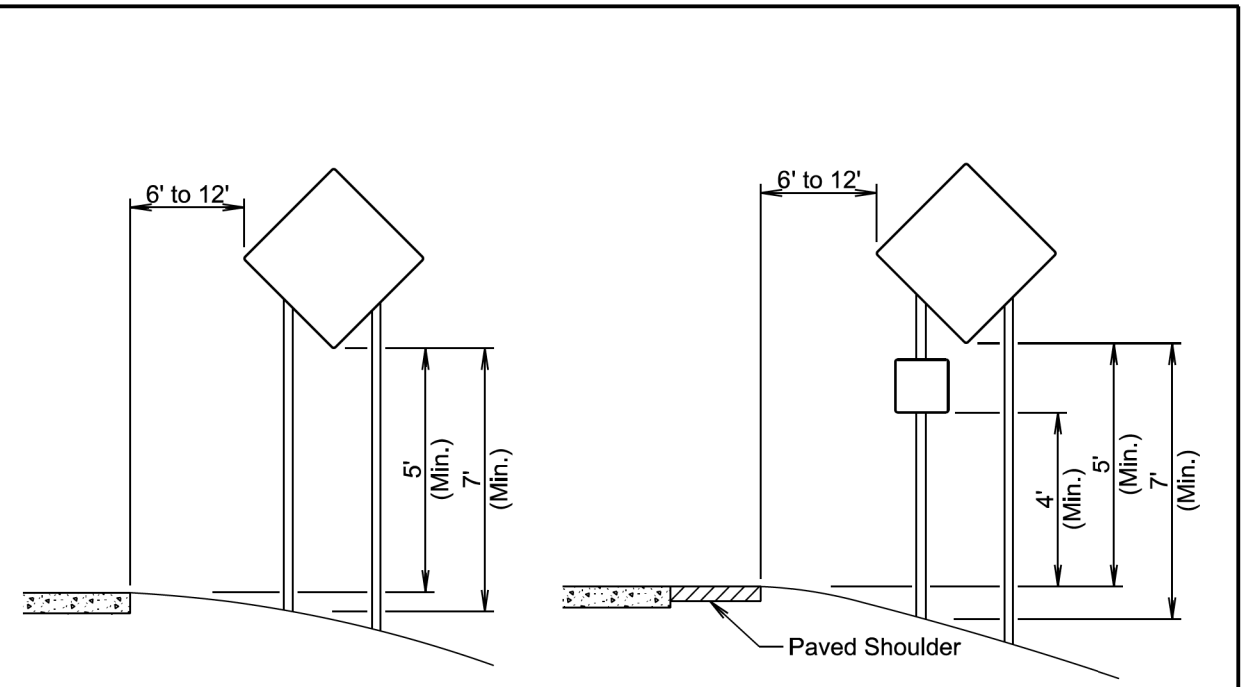
January 22, 2021

Published Date: 2026	S D D O T	WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1



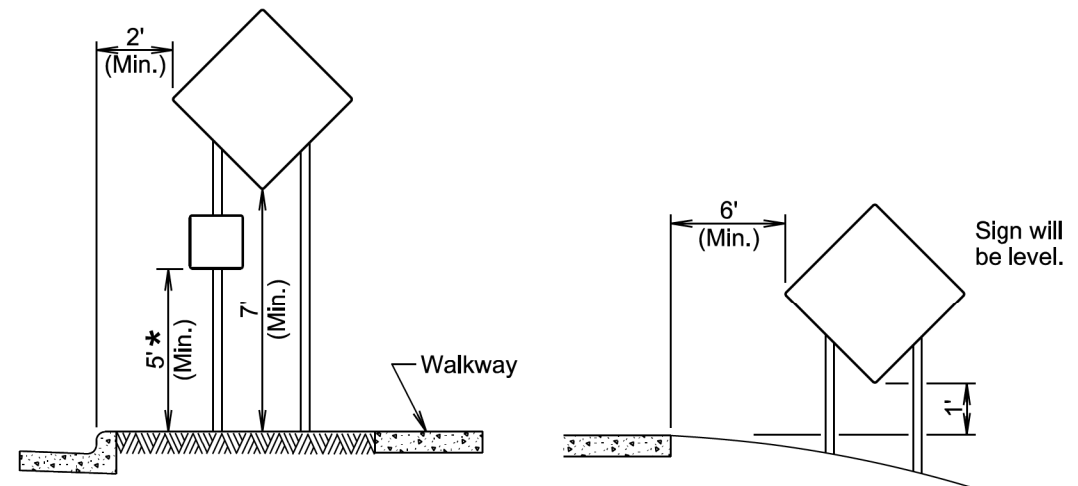
January 22, 2021

Published Date: 2026	S D D O T	LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25
			Sheet 1 of 1



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



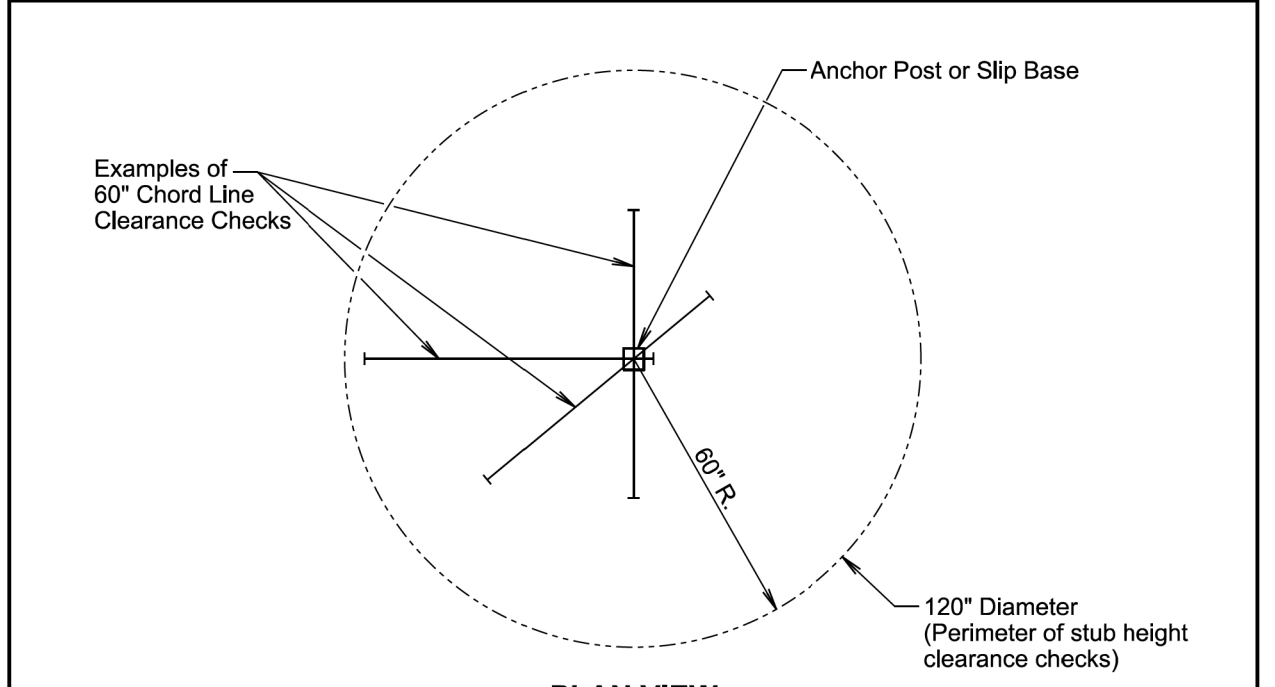
URBAN DISTRICT

RURAL DISTRICT 3 DAY MAXIMUM

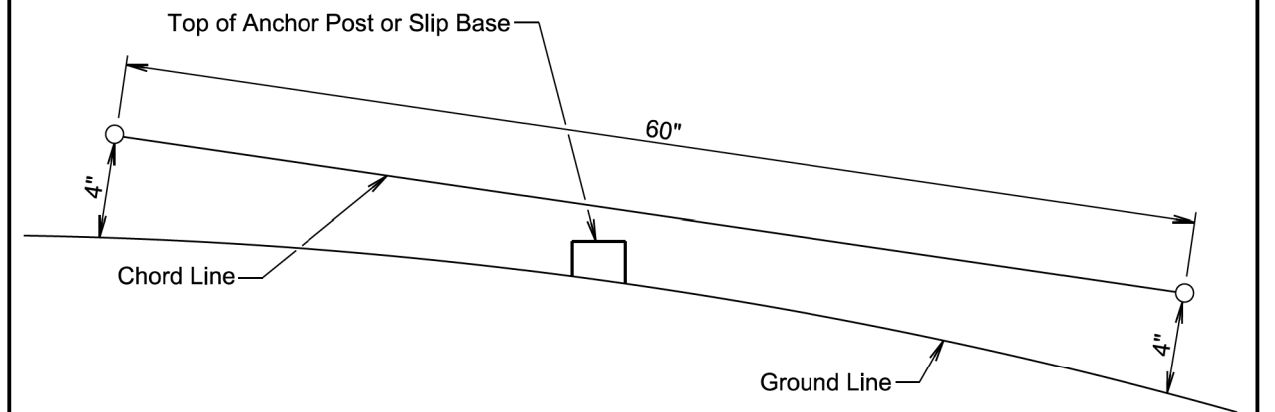
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

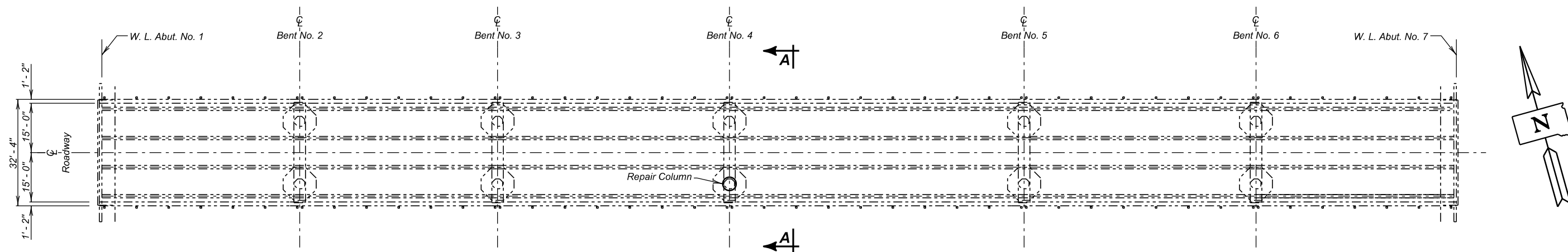
GENERAL NOTES:

- 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.

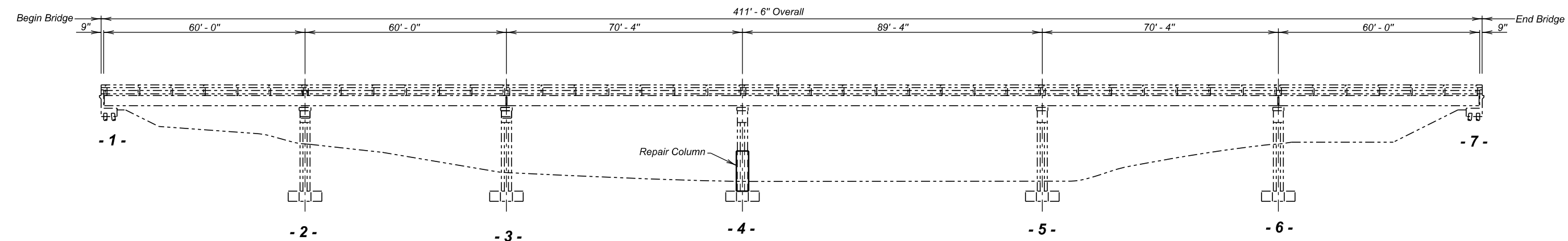
January 22, 2021

Published Date: 2026	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	018-288	7	14



PLAN



ELEVATION

LAYOUT FOR UPGRADING
FOR
411' - 6" I - BEAM VIADUCT

30' - 0" ROADWAY
OVER JAMES RIVER
STR. NO. 34-226-180
PCN i81H

0° SKEW
SEC. 11-T97N-R58W
018-288

HUTCHINSON COUNTY
S. D. DEPT. OF TRANSPORTATION

MAY 2026

1 OF 8

**- X031 -
INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Layout for Upgrading
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Concrete Breakout Details
- Sheet No. 5 - Column Encasement Details (A)
- Sheet No. 6 - Column Encasement Details (B)
- Sheet No. 7 thru 8 - Original Construction Plans

PLANS BY:
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY TJM HUCHI81H	CK. DES. BY JRB I81HMA01	DRAFTED BY TJM	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E0030	Structural Steel, Miscellaneous	LumpSum	LS
460E0300	Breakout Structural Concrete	1.0	CuYd
462E0100	Class M6 Concrete	4.1	CuYd

SPECIFICATIONS

- Construction Specifications: Standard Specifications for Roads and Bridges, 10-1-25 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.
- All Welding and Welding Inspection will be in conformance with the latest edition of the AASHTO/AWS D1.5M/D1.5 Bridge Welding Code unless otherwise noted in this plan set.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

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

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown elsewhere in the plans. Alternate sequence of operations may be submitted by the contractor for approval by the engineer a minimum of two weeks prior to the preconstruction meeting.

- Breakout delaminated concrete in designated area.
- Perform abrasive blasting and cleaning of column area to be encased.
- Place sleeve around column, dewater the sleeve, if elected, and place the concrete for the column repair.

COLUMN REPAIR

- Column No. 2 at Bent No. 4 has deteriorated sections of the column. The deteriorated column sections will be encased with concrete.
- All structural steel plates and bars for the fabricated column sleeves will conform to ASTM A709, Grade 36 or an approved equal. After all shop welding is complete, the fabricated metal column sleeves will be hot dip galvanized in accordance with ASTM A123. Areas within one inch of plan specified field welds will remain black or have the galvanizing removed prior to field welding. After all field welding is complete, the completed field welds and the work affected areas adjacent to the field welds will be coated with paint containing zinc in accordance with ASTM A780.

- The 3/4" diameter fully threaded rods and heavy hex nut will conform to ASTM F1554, Grade 36 or an approved equal. Threaded rods will be galvanized. The nuts will be welded to the inside surface of the metal column sleeves at each threaded rod location.
- When installing the column sleeve, it may be necessary to excavate the channel material around the existing column within the area of the column sleeve.
- The column sleeve used for the column encasement will be centered over the existing column and secured from movement during concrete placement. The sleeve will be watertight and will prevent concrete outflow from the bottom.
- The Contractor will have the option of dewatering and placing concrete using the free fall method or use of a tremie with underwater placement. Concrete placement will follow similar placement requirements to Sections 465.3 L or M as appropriate with the exception of the minimum inside diameter of the tremie can be 3 inches and can be nonmetallic, the 5 ft minimum embedment of the tremie into the concrete will be waived but will still need to be as low in the pour as possible and maintained in fresh concrete.
- If dewatered, the Contractor will have the option of using a commercially available column form. The form can be reusable or stay in place. The commercial form will be approved by the Bridge Construction Engineer and will be at no additional cost to the Department.
- During column repair, traffic and construction vehicles will not be allowed on the lane above the column until the concrete placed during the repair has achieved a minimum concrete strength of 3,000 psi as measured with cylinder breaks.
- All labor, equipment, materials, and incidental costs associated with placing the concrete including dewatering if elected will be incidental to the contract unit price per cubic yard for Class M6 Concrete.
- All costs associated with furnishing and installing the metal sleeves or column forms for the column encasement including all labor, materials, equipment, excavation around the column, securing the sleeve and producing a watertight seal, welding, galvanizing, and painting all work affected areas will be incidental to the lump sum contract unit price for Structural Steel, Miscellaneous.

CONCRETE BREAKOUT

- Depending on water elevation, condition of the concrete, and repair method chosen, the amount of concrete that can be removed may vary from what is shown. The Contractor will remove concrete as shown above the waterline and then to the extent possible below the waterline as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
- All broken out concrete will be disposed of by the Contractor. Any disposal of discarded material will be in accordance with the Environmental Commitments.
- During concrete removal operations, broken-out concrete will be contained and not allowed to remain in the James River.
- The concrete column length to be encased will be abrasive blasted and cleaned down to the waterline. The area below the waterline will be cleaned to the satisfaction of the Engineer. The abrasive blasting and cleaning will remove all surface laitance, and all loose and foreign materials. The abrasive blasting will expose the coarse aggregate and remove loose rust from any exposed reinforcing steel. After abrasive blasting, the surface will be cleaned by air blast using a compressor equipped with a satisfactory operating filter.
- All labor, tools, equipment, and any incidentals necessary for the removal of the existing concrete including concrete breakout, cleaning and straightening existing reinforcing steel, abrasive blasting, air blasting, cleaning the column surfaces, and disposal of all broken out material will be incidental to the contract unit price per cubic yard for Breakout Structural Concrete.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

411' - 6" I - BEAM VIADUCT

STR. NO. 34-226-180

MAY 2026

2 OF 8

DESIGNED BY TJM HUCHI81H	CK. DES. BY JRB I81HMA02	DRAFTED BY TJM	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	018-288	9	14

CLASS M6 CONCRETE

Requirements for the contract Item Class M6 Concrete will conform to the requirements of Section 462 of the Construction Specifications except as noted below.

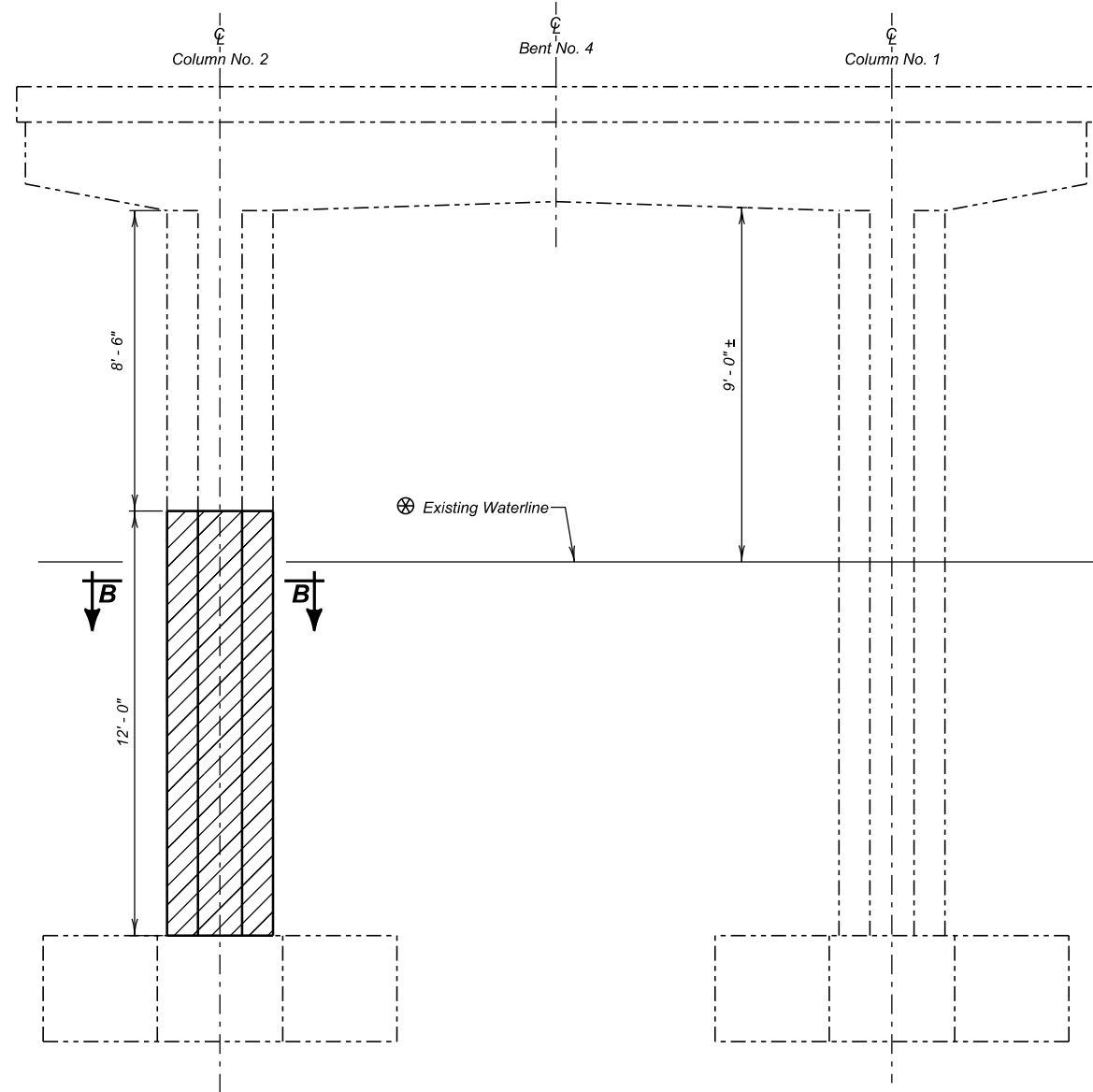
1. The minimum 28-day compressive strength will be 4500 psi.
2. Coarse Aggregate to be used in concrete will consist of either crushed quartzite or other crushed ledge rock. If crushed ledge rock other than quartzite is to be used, it will be from a source approved by the Engineer.
3. Slump of the concrete will be 6-8 inches if placed with the free-fall tremie method or 7-9 inches if pumped through the tremie.
4. Due to the remote location of the site, the Contractor may include a hydration stabilizer in the concrete mix at a dosage intended to delay set for a specified time not exceeding 2 hours. The Contractor will submit the mix design and requested delivery time extension to the Concrete Engineer for review a minimum of 14 days prior to the performance of any concrete work. An allowed amount of additional delivery time will be granted at the Concrete Engineer's discretion and noted within the mix design review.
5. The Contractor may substitute a bag mix for the Class M6 Concrete provided the bag mix meets the requirements of Section 462 and items listed above. The Contractor must submit the bag mix to the Bridge Construction Engineer for approval a minimum of fourteen days before performing any concrete work.

NOTES (CONTINUED)
FOR
411' - 6" I - BEAM VIADUCT

STR. NO. 34-226-180
MAY 2026

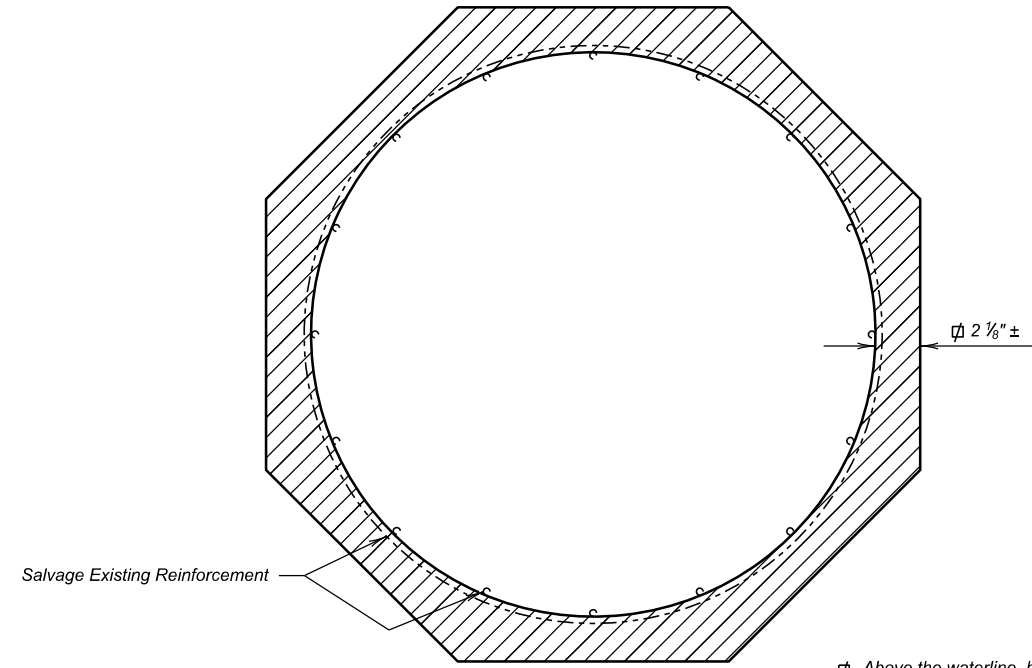
3 OF 8

DESIGNED BY TJM HUCHI81H	CK. DES. BY JRB I81HMA03	DRAFTED BY TJM	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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SECTION A - A

⊗ Waterline will vary, dimension shown is from time of inspection.



SECTION B - B

⊗ Above the waterline, breakout to the back of the existing tie reinforcement. Below the waterline, breakout will be best effort as approved by the Engineer.

 Limits of Concrete Breakout

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
* Breakout Structural Concrete	CuYd	1.0

* The breakout area shown is the ideal breakout if water is not present. Actual breakout will vary based on field conditions and Contractor methods. Quantity is based on dimensions shown in these plans.

**CONCRETE BREAKOUT DETAILS
FOR
411' - 6" I - BEAM VIADUCT**

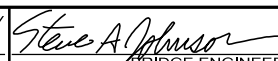
30' - 0" ROADWAY
OVER JAMES RIVER
STR. NO. 34-226-180

0° SKEW
SEC. 11-T97N-R58W
018-288

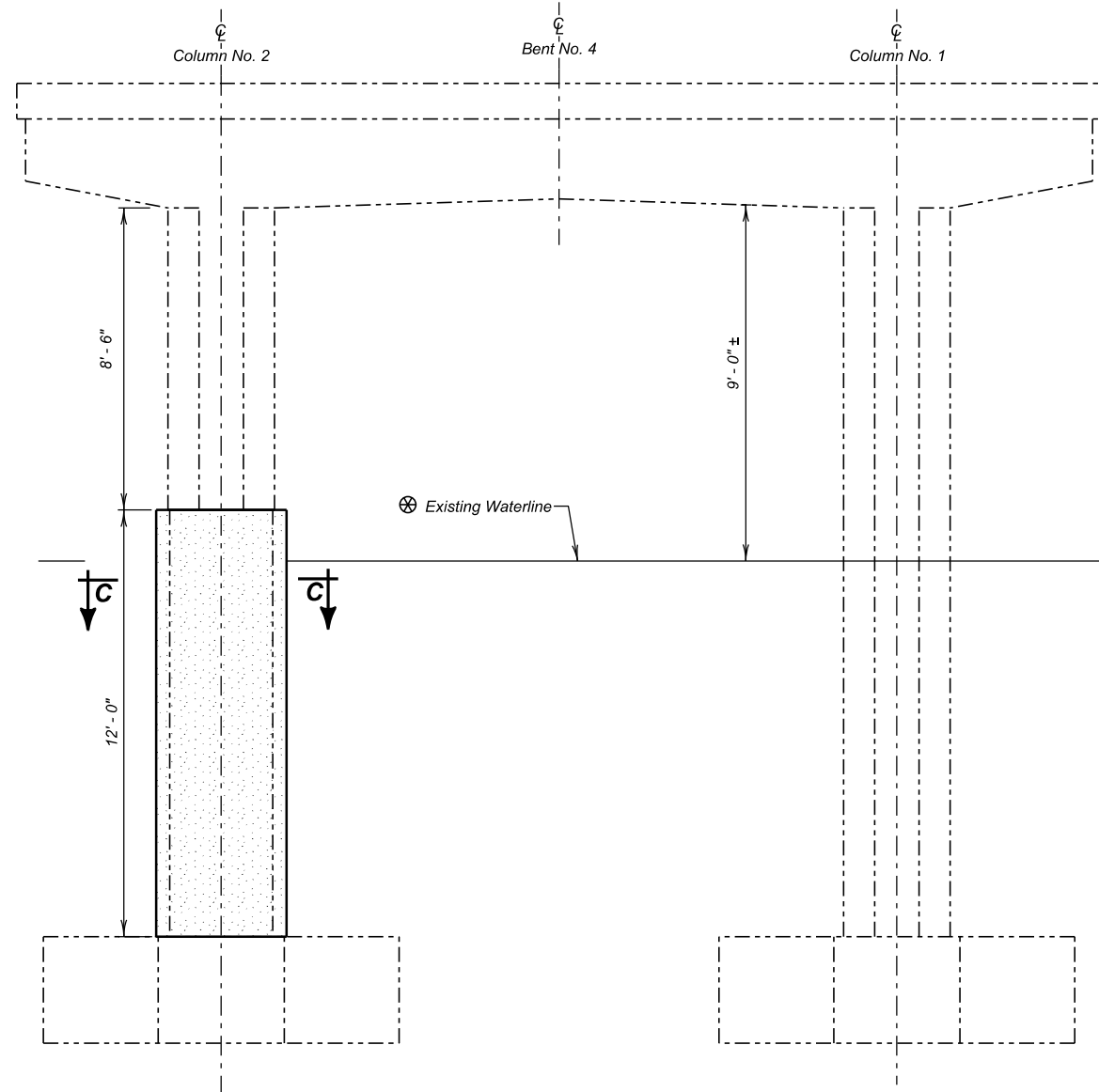
HUTCHINSON COUNTY
S. D. DEPT. OF TRANSPORTATION

MAY 2026

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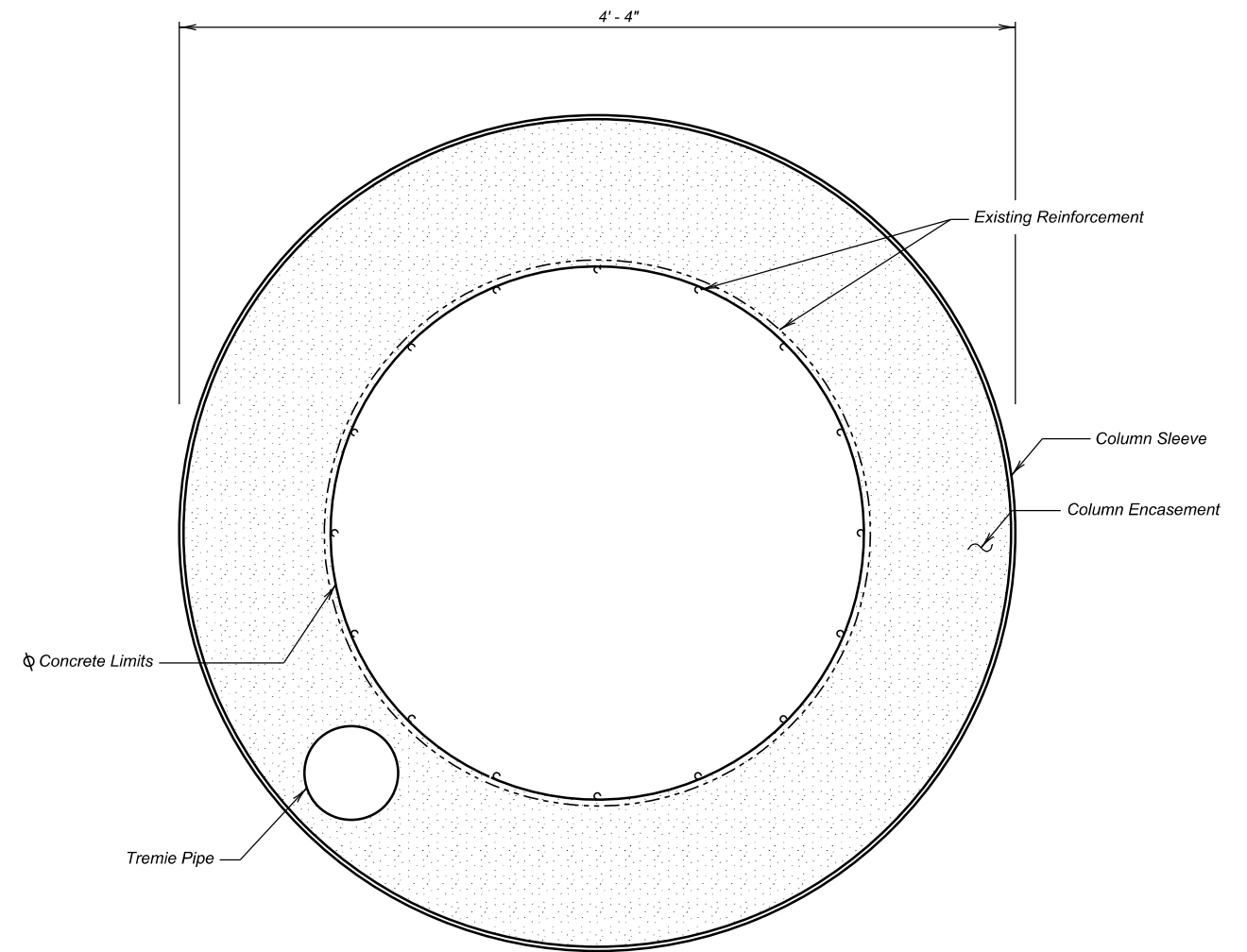
DESIGNED BY TJM HUCHI81H	CK. DES. BY JRB I81HMA04	DRAFTED BY TJM	 BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	018-288	11	14



SECTION A - A

⊗ Waterline will vary, dimension shown is from time of inspection.



SECTION C - C

⊗ Breakout configuration might vary from what is shown

COLUMN ENCASEMENT DETAILS (A)

FOR
411' - 6" I - BEAM VIADUCT
 30' - 0" ROADWAY OVER JAMES RIVER 0° SKEW
 STR. NO. 34-226-180 SEC. 11-T97N-R58W
 PCN i81H 018-288

HUTCHINSON COUNTY
 S. D. DEPT. OF TRANSPORTATION

MAY 2026

5 OF 8

DESIGNED BY TJM HUCHI81H	CK. DES. BY JRB I81HMA05	DRAFTED BY TJM	Steve A. Johnson BRIDGE ENGINEER
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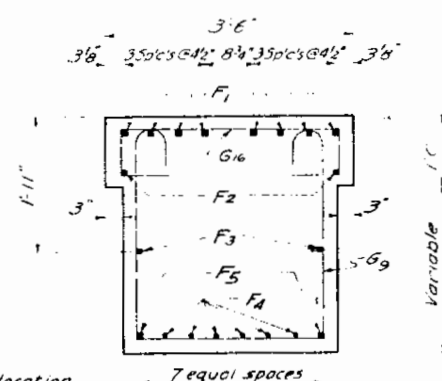
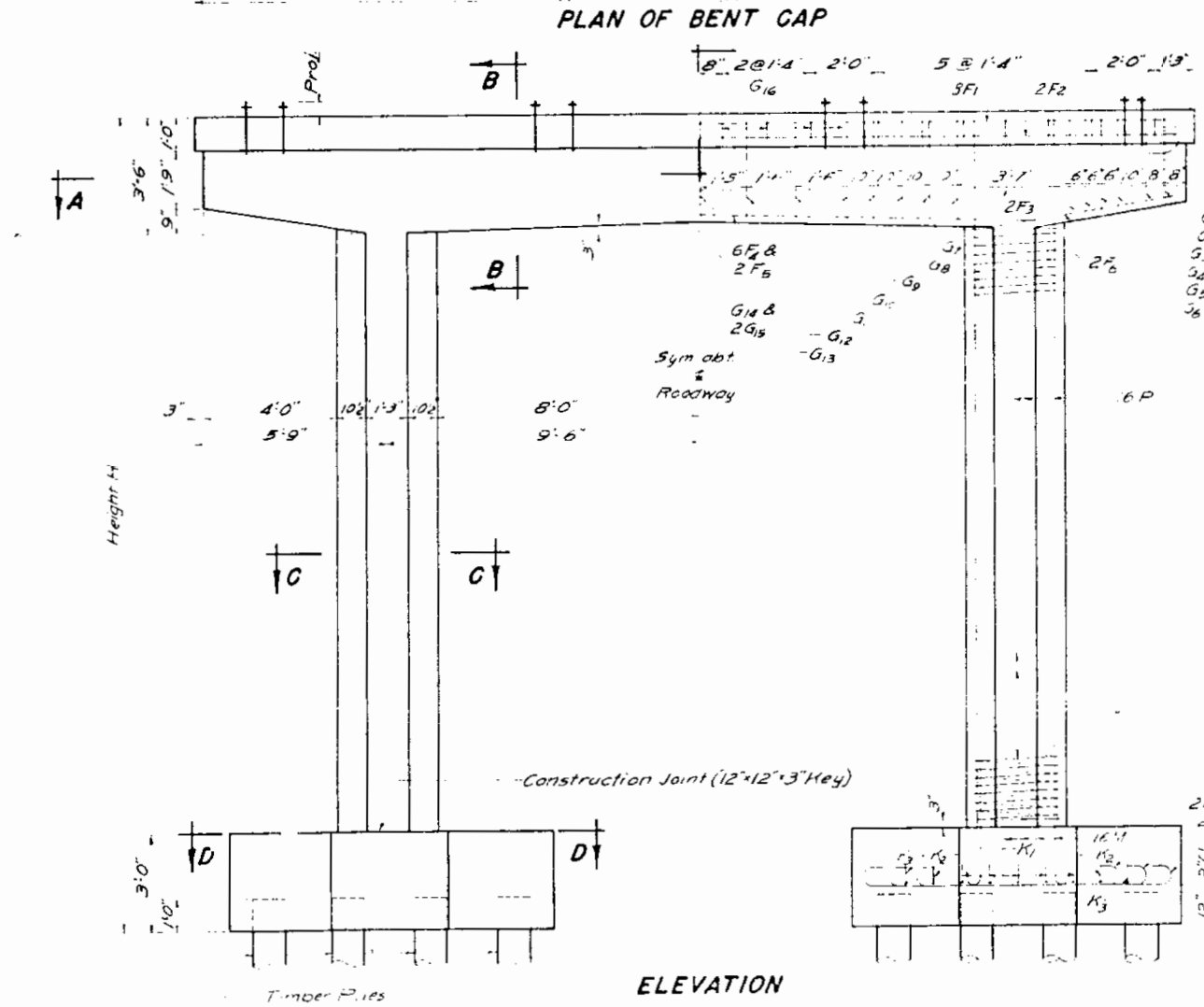
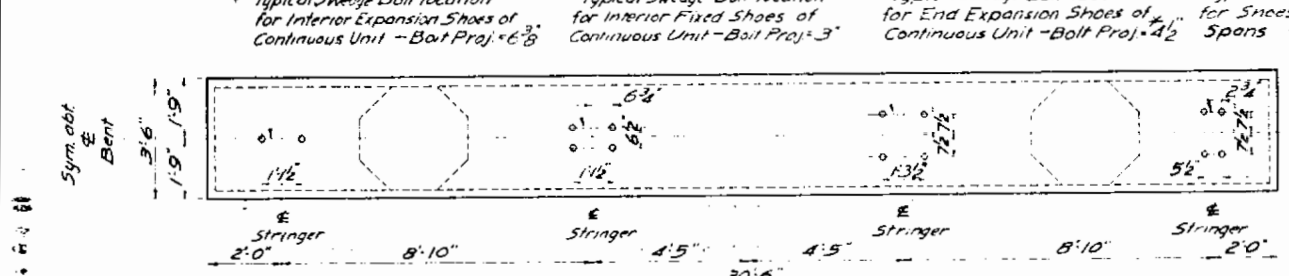
Note - See Details of Shoes on span sheets.

Typical Swedge Bolt location for Interior Expansion Shoes of Continuous Unit - Bolt Proj. = 6" 3/8

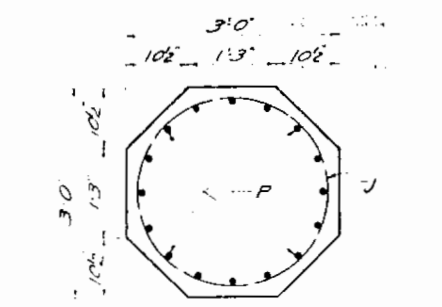
Typical Swedge Bolt location for Interior Fixed Shoes of Continuous Unit - Bolt Proj. = 3"

Typical Swedge Bolt location for End Expansion Shoes of Continuous Unit - Bolt Proj. = 4 1/2"

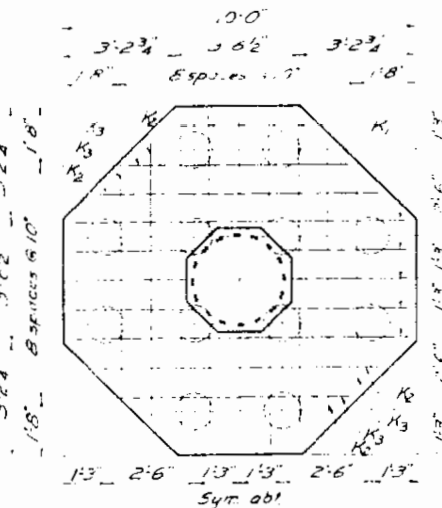
Typical Swedge Bolt location for Shoes of Simple Composite Spans - Bolt Proj. = 6" * 1/2



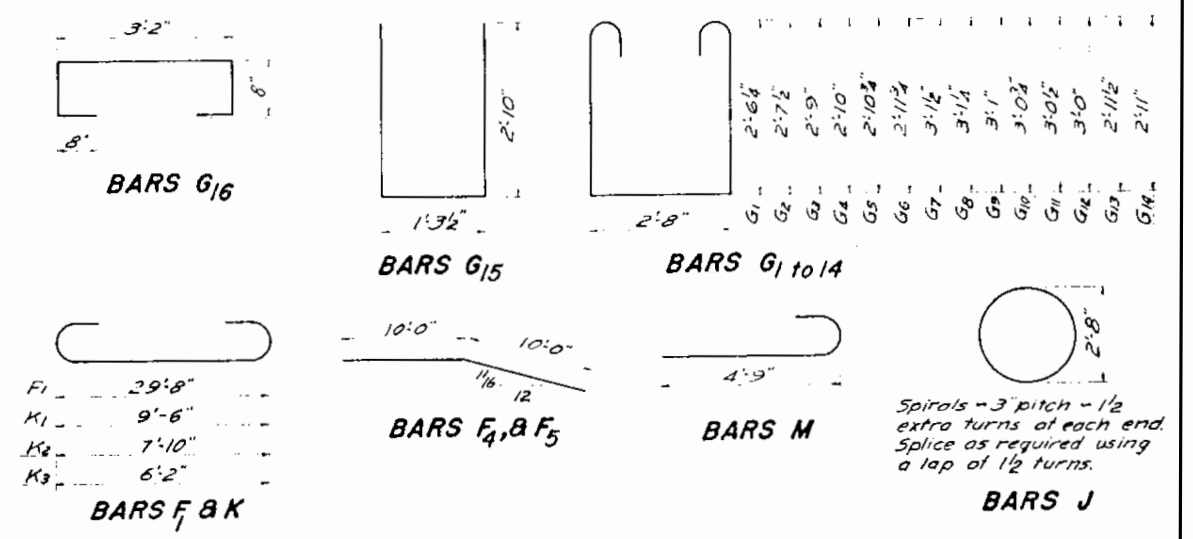
SECTION B-B



SECTION C-C



SECTION D-D



Mk.	No.	Size	Length	Weight
F1	8	1 1/2"	32'-3"	1110
F2	2	7/8"	29'-9"	122
F3	2	5/8"	29'-9"	62
F4	6	1"	20'-0"	320
F5	2	1 1/2"	20'-0"	172
F6	4	3/4"	5'-9"	35
G16	27	5/8"	Ave. 9'-8"	272
G15	2	5/8"	7'-0"	15
G16	20	1/2"	5'-9"	77
K1	20	7/8"	11'-3"	460
K2	8	7/8"	9'-6"	155
K3	8	7/8"	8'-0"	131
M	32	7/8"	5'-9"	376

Height	30'-1 1/2" Bars P	Spiral	2 1/2" Bars J	Total Quantities			
Feet	Length	Weight	No.	Length	Weight	Reinf. Steel Cu A Cont.	Cu Vol.
15	11'-9"	1004	2	258'-3"	224	4533	33.9
16	12'-8"	1089	2	331'-3"	249	4665	34.5
17	13'-9"	1175	2	364'-6"	274	4733	35.0
18	14'-9"	1260	2	397'-9"	299	4865	35.6
19	15'-9"	1346	2	430'-9"	324	4975	36.1
20	16'-9"	1431	2	464'-0"	349	5085	36.7
21	17'-9"	1517	2	497'-0"	374	5200	37.2
22	18'-9"	1602	2	530'-3"	399	5310	37.8
23	19'-9"	1687	2	563'-3"	424	5420	38.3
24	20'-9"	1773	2	596'-6"	449	5530	38.9
25	21'-9"	1858	2	629'-6"	474	5640	39.4
26	22'-9"	1944	2	662'-9"	499	5710	40.0
27	23'-9"	2029	2	695'-9"	524	5840	40.5
28	24'-9"	2115	2	729'-0"	549	5910	41.1
29	25'-9"	2200	2	762'-0"	574	6090	41.6
30	26'-9"	2286	2	795'-0"	599	6130	42.2
31	27'-9"	2371	2	828'-3"	624	6300	42.7
32	28'-9"	2457	2	861'-6"	649	6410	43.3

GENERAL NOTES.-

All edges on bent cap shall be chamfered 1/2".

Use 2" clear cover on all reinforcing except 3" clear cover on footing reinforcing.

Dimensions for reinforcing bars are out to out.

All hooks of bars 7/8" and under shall have 6 dia clear opening; hooks of bars 1" and over shall have 8 dia clear opening.

Use 3 vertical spacer bars per column for spirals. Cost of spacers shall be included in the unit price bid for reinforcing steel.

See General Drawing for Timber Piles.

Piling shall develop a minimum bearing value of 20 tons per pile.

Structural Excavation per foot of depth 85 cu yds.

Unit stresses: Concrete f'c 3500 p.s.i.

Reinf. Steel f's 20,000 p.s.i. (int. grade)

Class A Concrete shall develop a minimum allowable compressive strength of 4000 p.s.i. at 28 days.

Design loading - H20-44 (T-2-45) AASHO.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 34-226-180

DETAILS FOR

STANDARD REINFORCED CONCRETE BENT

FOR 230' CONTINUOUS I-BEAM UNIT

AND 60' SIMPLE COMPOSITE I-BEAM SPAN

30' ROADWAY 0° SKEW PILE FOOTINGS

SOUTH DAKOTA

STATE HIGHWAY COMMISSION

1947