

STATE OF SOUTH DAKOTA
 DEPARTMENT OF TRANSPORTATION
 PLANS FOR PROPOSED

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	012-368	1	29

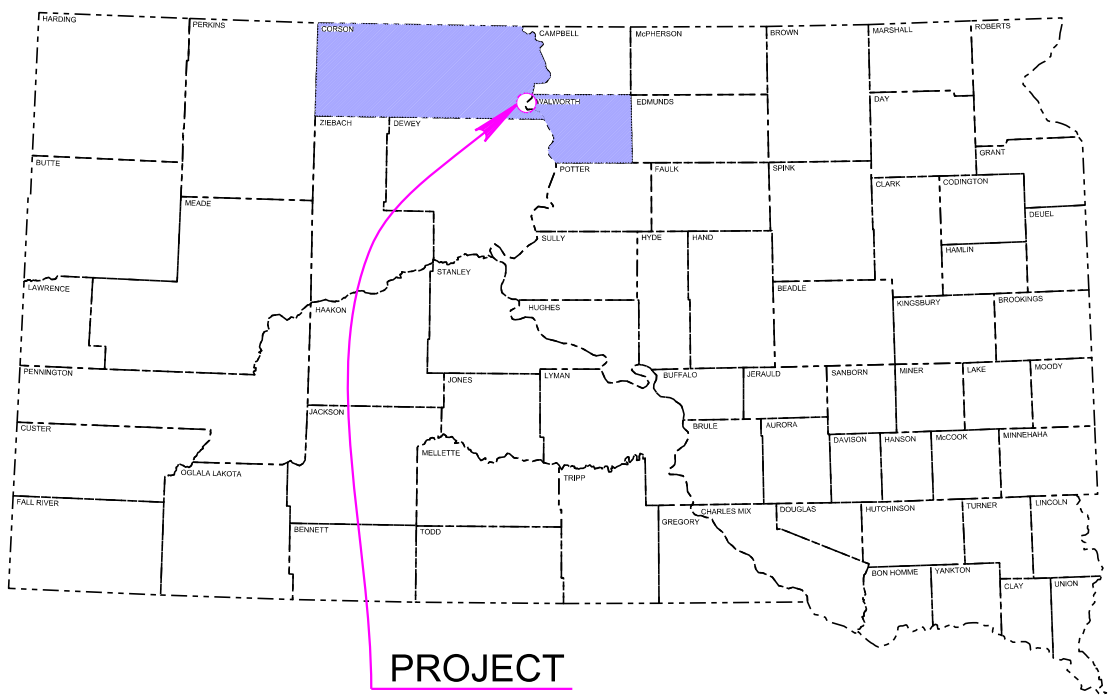
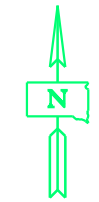
Plotting Date: 02/19/2025

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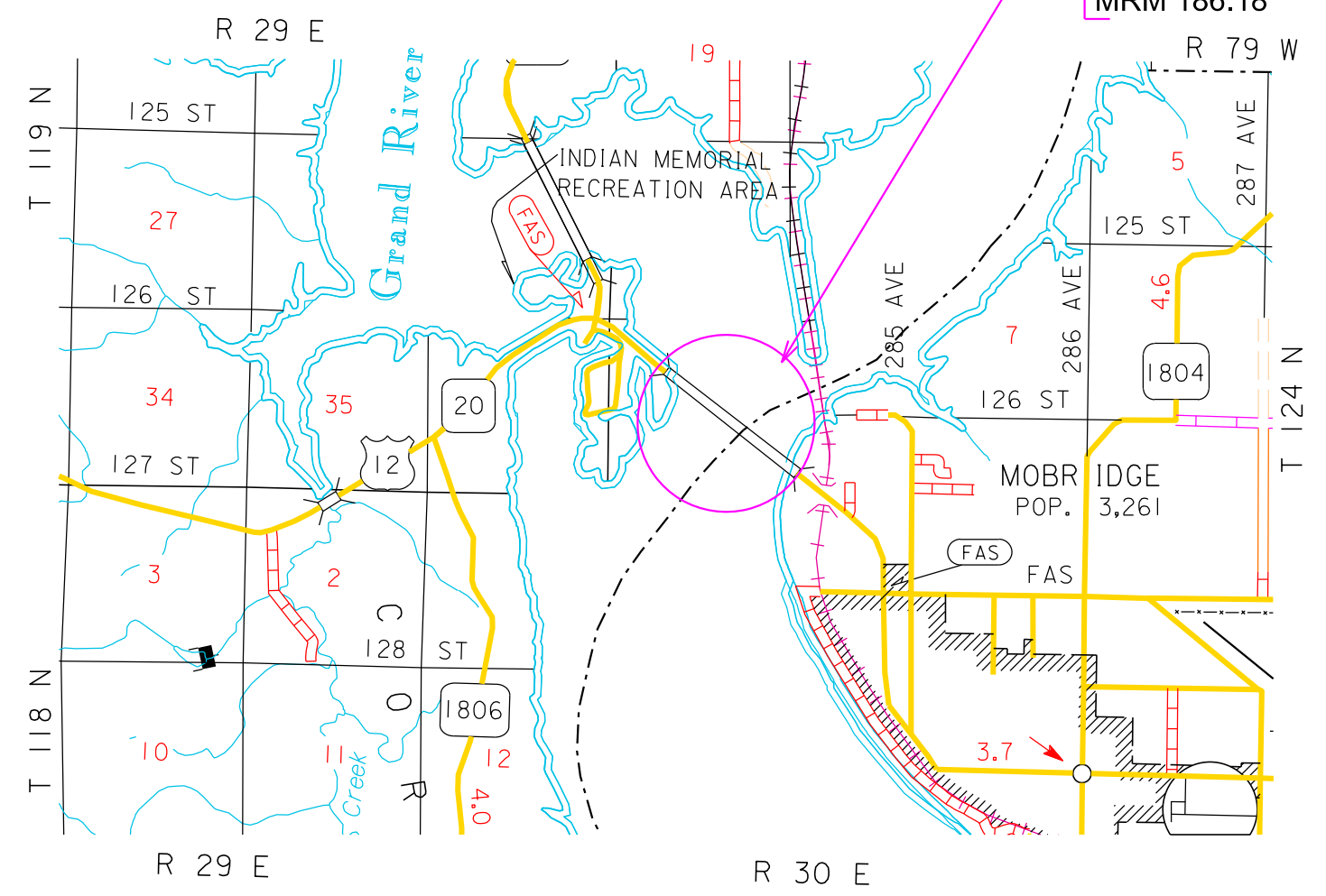
PROJECT 012-368 US HIGHWAY 12 WALWORTH & CORSON COUNTY

BRIDGE REPAIR
 PCN i7LT



PROJECT

012-368
 Str. No. 65-000-020
 over Oahe Reservoir
 MRM 186.18



DESIGN DESIGNATION

AAADT (2024)	2071
AAADT (2044)	2705
DHV	431
D	50%
DHV T%	5.3%
AAADT T%	11.7%
V	65 mph

STORM WATER PERMIT
 None Required

Plot Scale - 1:200

Plotted From - trp25299

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ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0010	Flagging	120.0	Hour
634E0110	Traffic Control Signs	147.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E1215	Contractor Furnished Portable Changeable Message Sign	4	Each

Structure No. 65-000-020:

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E0250	Heat Straighten Steel Member(s)	Lump Sum	LS
410E0320	Bolted Girder Splice	1	Each
410E0508	Field Weld	12	In
410E0512	Grind Weld	12	In
410E0515	Drill Hole in Existing Steel	1	Each
410E0520	Surface Grinding of Structural Steel	144	SqIn
410E3010	Magnetic Particle Weld Inspection	2,612	In
410E3030	Magnetic Particle Weld Inspection, Impact Damage Repair	7,808	SqIn
412E0100	Bridge Repainting, Class I	Lump Sum	LS
412E0500	Paint Residue Containment	Lump Sum	LS

SEQUENCE OF OPERATIONS

One lane of traffic will remain open on the bridge at all times, with the bridge fully open to two-way traffic during non-working hours.

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.

All construction operations will be conducted in the general direction of traffic movement.

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 pavement marking.

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 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".

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

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 two-page message:

MISSOURI
RIVER BR
12FT MAX
/
BEGINS
(DATE)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the two-page messages as detailed in the plans.

MISSOURI
RIVER BR
12FT MAX
/
7AM-7PM
MON-FRI

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W16-2P	FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
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
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			147.0

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, the Walworth & Corson County Sheriffs 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.

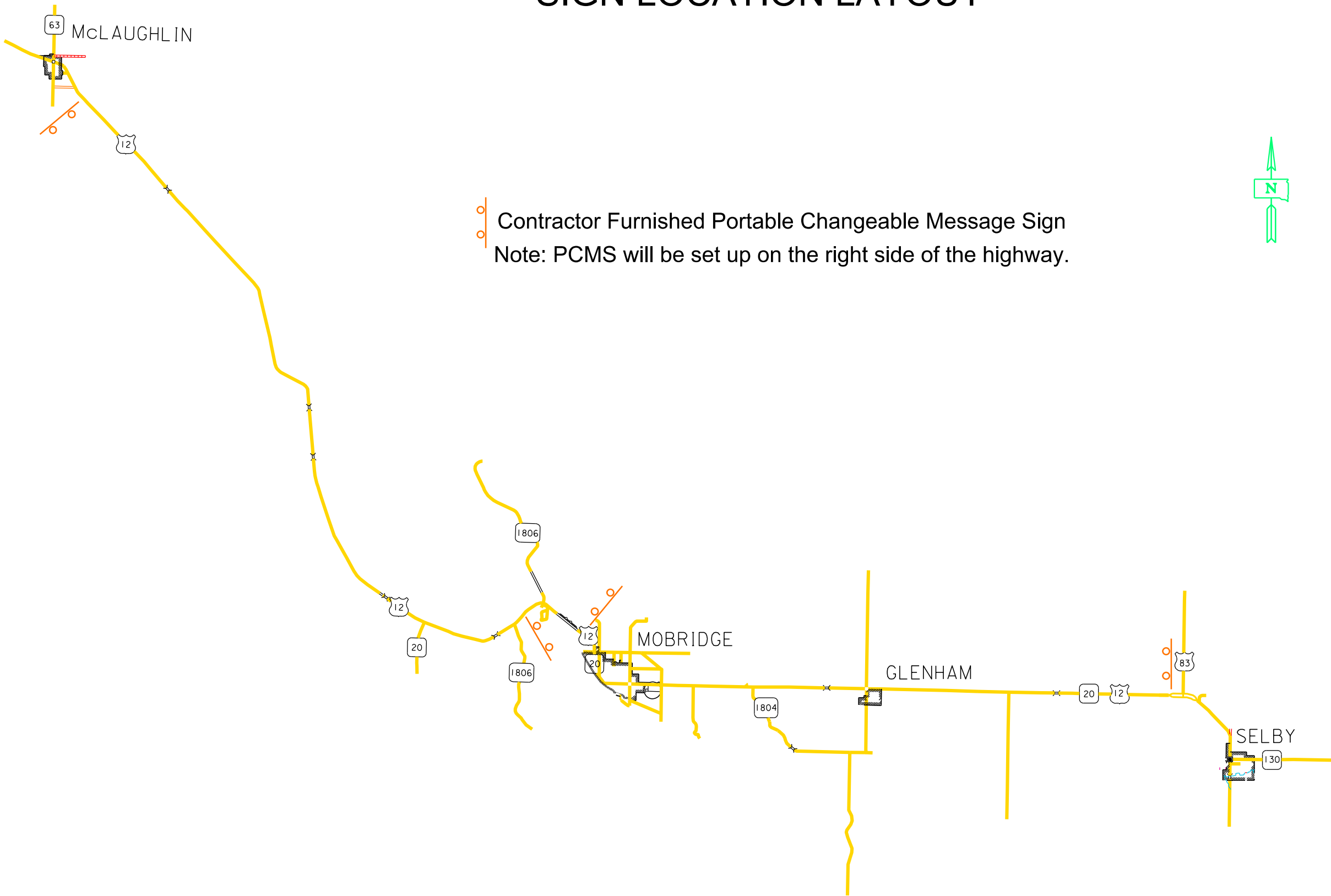
The Contractor may be required to modify messages on portable changeable message signs or relocate portable changeable message signs, and to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered and additional portable signs provided.


No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

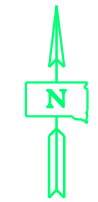
PRESS RELEASE ANNOUNCEMENTS

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.

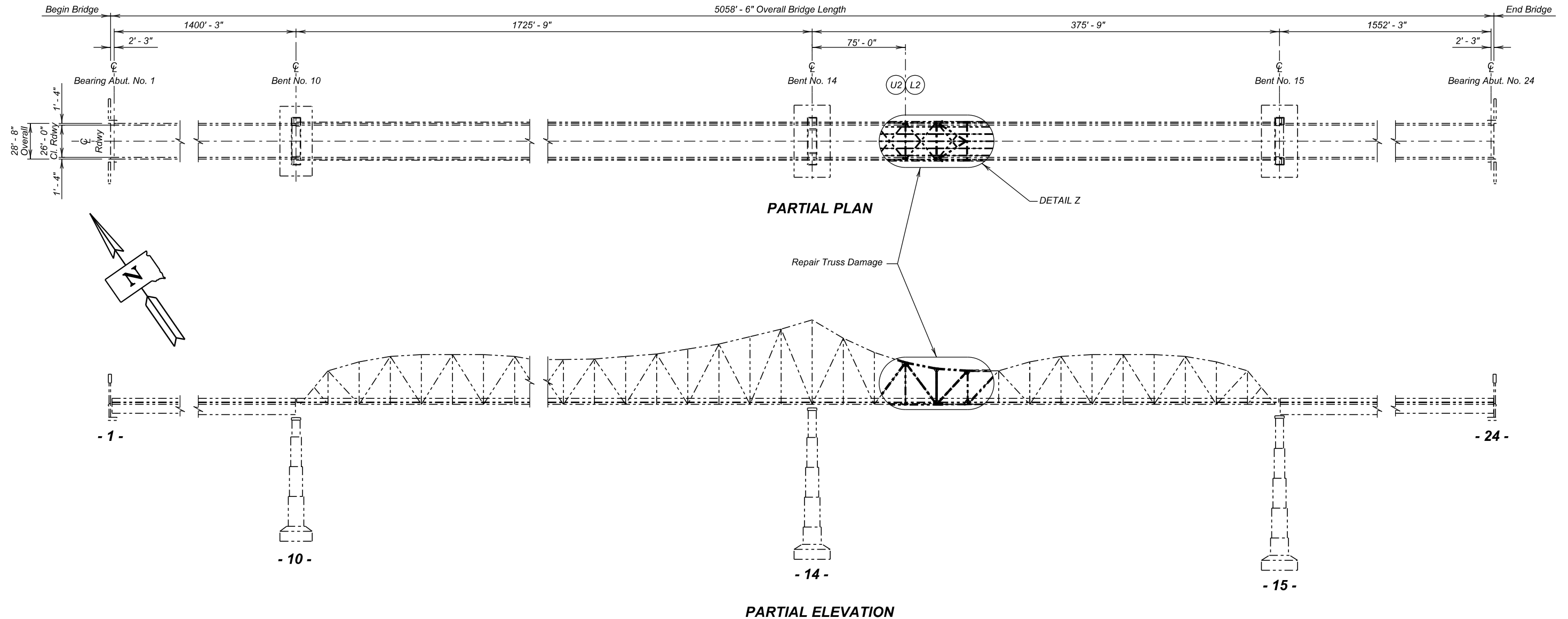
SIGN LOCATION LAYOUT



 Contractor Furnished Portable Changeable Message Sign
 Note: PCMS will be set up on the right side of the highway.



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S.D.	012-368	4	29



-X035-

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- Sheet No. 1 - Layout for Repair
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 thru 6 - Notes (Continued)
- Sheet No. 7 - Truss Repair Details (A)
- Sheet No. 8 - Truss Repair Details (B)
- Sheet No. 9 - Truss Repair Details (C)
- Sheet No. 10 - Truss Repair Details (D)
- Sheet No. 11 - Truss Member Repair Option A
- Sheet No. 12 - Truss Member Repair Option B
- Sheet No. 13 thru 24 - Original Construction Plans

LAYOUT FOR REPAIR
FOR

5058' - 6" BRIDGE OVER OAHE RESERVOIR
 26' - 0" ROADWAY 0° SKEW
 OVER OAHE RESERVOIR SEC. 13-T124N-R80W
 STR. NO. 65-000-020 012-368
 PCN i7LT

WALWORTH COUNTY
 S. D. DEPT. OF TRANSPORTATION

JANUARY 2025

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-X035-

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

DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB i7LTRA01	DRAFTED BY KR/TJM	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E0250	Heat Straighten Steel Member(s)	Lump Sum	LS
410E0320	Bolted Girder Splice	1	Each
410E0508	Field Weld	12	In
410E0512	Grind Weld	12	In
410E0515	Drill Hole in Existing Steel	1	Each
410E0520	Surface Grinding of Structural Steel	144	SqIn
410E3010	Magnetic Particle Weld Inspection	2612	In
410E3030	Magnetic Particle Weld Inspection, Impact Damage Repair	7808	SqIn
412E0100	Bridge Repainting, Class I	Lump Sum	LS
412E0500	Paint Residue Containment	Lump Sum	LS

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Load Factor Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
- All Welding and Welding Inspection will be in conformance with the latest edition of the AASHTO/AWS D1.5M/D1.5 Bridge Welding Code unless otherwise noted in this plan set.

PRECONSTRUCTION MEETING

A preconstruction meeting is required prior to beginning the repair work. The purpose of the meeting is to review the plans and procedures because of the specialty work involved. At a minimum, a representative from the Contractor and all Subcontractors will attend this meeting along with Department personnel from the Area Office and Bridge Office. The Contractor must notify the Bridge Construction Engineer and the Area Office at least three days prior to the meeting.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

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

GENERAL CONSTRUCTION

- Welder certification will be in accordance with Section 410.3 D of the Construction Specifications.
- The new steel splice plates and channel will be ASTM A709 Gr. 36 T3.

NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing structure is a paint containing lead. The Contractor should plan operations accordingly and inform employees of the hazards of lead exposure.

SCOPE OF BRIDGE WORK

All work on this structure will be accomplished under traffic with the traffic control as shown elsewhere in the plans.

The impact location on the vertical truss member is heavily distorted, reasonable effort will be made to straighten member within tolerance. If vertical truss member cannot be straightened to tolerance or if member or gusset plates start to show distress during heat straightening, the heat straightening operations on the vertical member are to be stopped and Truss Member Repair Option B is to be installed. If the vertical truss member can be straightened to tolerance, Truss Member Repair Option A will be installed. Truss Member Repair Options A and B are shown as sequence items 10 a and b for the sake of the sequence, but both are not intended to be used. Material and equipment for both options are to be on site prior to starting the work. Additionally, if any issues are seen during heat-straightening the Truss Member Repair Option B will be installed immediately and not wait for items 7 to 9. Items 7 to 10 are to be completed immediately following heat straightening on the vertical truss member, the cure time on the prime coat at the splice will be waved to expedite these steps.

- Identify and mark all yield lines, yielded zones, and surface nicks and gouges.
- Grind surface nicks and gouges.
- Clean and prepare area to be tested as specified by the Bridge Welding Code and these notes.
- Nondestructive test fillet welds, crack tips, ground areas, area around bolts and rivets, and potential crack tips at the locations shown in the plans.
- Repair crack tips and weld flaws found by nondestructive testing prior to heat straightening. No heat straightening will be performed until the nondestructive testing is complete and any necessary repairs are done for the member to be straightened.
- Heat-straighten damaged vertical truss member and cross frames.

- Perform nondestructive testing required after heat straightening and perform any repairs required.
- Perform nondestructive testing required after repairs and fix any flaw found.
- Place prime coat on area to be spliced or have C10 channels installed.
- Perform truss vertical member reinforcement.
 - Install bolted splice over repair area.
 - Install alternate vertical member support.
- Apply splice sealant to bolted splice plate or paint alternate vertical member support as applicable. Prepare and paint the work effected areas.

BOLT TESTING

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 5058' - 6" BRIDGE OVER OAHE RESERVOIR

STR. NO. 65-000-020

JANUARY 2025

2 OF 24

DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB I7LTMA02	DRAFTED BY TJM	 BRIDGE ENGINEER
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WELD INSPECTION & NONDESTRUCTIVE TESTING (NDT)

1. The Contractor will be responsible for retaining a qualified Testing Agency to perform Visual and Magnetic Particle (MT) Testing of existing and potential new welds and to locate existing and potential crack tips. Inspectors performing Visual and MT inspection and determining crack tip locations will be certified in accordance with Section 410.3 D of the Construction Specifications. The Contractor will submit the Testing Agency to the Department at the Preconstruction meeting for approval by the Bridge Construction Engineer.
2. All Nondestructive Testing (NDT), required cleaning, preparation, and inspection will be done in accordance with Clause 6 of the Bridge Welding Code. Existing paint will be removed from the steel surfaces that require NDT. Power tools used for cleaning will be in accordance with SSPC-3. The MT inspection will be performed by the yoke method using half-wave rectified direct or alternating current. MT inspection results will be reported on Form N-7 of Annex N of the Bridge Welding Code.
3. The Contractor will identify and mark all yield zones, yield lines, and associated damage and provide this information to the Engineer prior to the initiation of heat straightening and testing by either visual inspection or measurements.
4. Testing for defects and crack tips will be made prior to any heat straightening. Repair options for the defects and crack tips will be determined by the Bridge Construction Engineer—see note on Repairs for NDT Determined Flaws. Repairs will be made prior to any heat straightening.
5. As a minimum, the existing welds and locations noted below will be inspected. Defects will be clearly marked on the damaged member in accordance with the Bridge Welding Code and a written record of the defects will be given to the Engineer for transmittal to the Bridge Construction Engineer. Any suspected cracks will be verified by magnetic particle inspection with the crack tips located. Crack tip locations will be clearly marked, and a written record of the crack tip location will be given to the Engineer for transmittal to the Bridge Construction Engineer. Notify the Bridge Construction Engineer immediately if any cracks or crack tips are in the vertical truss member flange.

Test Locations:

- a. Visually Inspect 100% of the existing damaged truss member, connection of damaged truss member to main truss members and floor beam, and portions of the damaged sway frames specified. The inspection length is estimated to be 66.5 feet.
- b. MT test the web to channel welds on the damaged member, on both sides of the web for an estimated 1306 inches.
- c. MT test the area around bolts and rivets. For estimation purposes, each location was assumed to be 2" square on each face of 452 rivet and bolt locations for a total area 3616 of square inches.
- d. In the area where a hole was drilled in the web of the damaged member, MT test an area 12" x 12" centered over the hole on each face for an estimated 288 square inches.

6. The above listed quantities and areas are provided as an estimate based on field documentation of the damage. If any other areas are identified as having potential flaws or require heat straightened these areas will be tested as directed by the Engineer.
7. After heat straightening, the areas listed above will be retested to ensure no additional cracks have developed. The estimated weld length and area for re-testing is 1306 inches and 3904 square inches.
8. New fillet welds will be 100% visually inspected and 100% magnetic particle inspected. Based on the results of the magnetic particle and visual inspection, the Bridge Construction Engineer will determine the acceptability of the completed fillet welds and any recommended repairs. Rejected defects in new welds will be repaired in accordance with the Bridge Welding Code. Repaired welds will be re-inspected after all repairs are complete.
9. The plans listed quantity for nondestructive testing inspection is only an estimate. Magnetic Particle Weld Inspection, Impact Damage Repair will be measured to the nearest inch and area computed to the nearest square inch. Measurement will be approved by the Bridge Construction Engineer.
10. All costs including labor, equipment, cleaning, and any incidentals necessary to perform the visual inspection, magnetic particle inspection and crack tip location will be incidental to the contract unit price per inch for Magnetic Particle Weld Inspection.
11. All costs to remove the paint and clean all fillet welds to be nondestructive tested and remove the paint and clean all visible or potential crack tip locations will be incidental to the contract unit price per inch for Magnetic Particle Weld Inspection or contract unit price per square inch for Magnetic Particle Weld Inspection, Impact Damage Repair.

REPAIRS FOR NDT DETERMINED FLAWS

1. Repair options for weld defects and crack tips will be determined by the Bridge Construction Engineer. The welds on the connection plates are tack welds and will not require rewelding. Two potential repair options are:
 - a. Drill a 2" diameter hole in all crack tips if the location allows. If the geometry restricts the hole diameter, a minimum 1" diameter hole can be allowed as directed by the Engineer.
 - b. Repair fillet weld defects by removing the weld with grinding or the air carbon arc process and then grinding flush. Grinding will be in the longitudinal direction. Transverse grinding will not be allowed. The repair will then be re-welded in accordance with the Bridge Welding Code.

2. All labor, equipment, materials, and incidentals necessary to drill holes will be incidental to the contract unit price per each for Drill Hole in Existing Steel.
3. All labor, equipment, materials, and incidentals necessary including air carbon arc removal and grinding of welds will be incidental to the contract unit price per inch for Grind Weld.
4. All labor, equipment, materials, and incidentals necessary to re-weld the repair will be incidental to the contract unit price per inch for Field Weld.
5. Other repair options will be at the discretion of the Bridge Construction Engineer.

NOTES (CONTINUED)

FOR
5058' - 6" BRIDGE OVER OAHE RESERVOIR

STR. NO. 65-000-020

JANUARY 2025

3 OF 24

DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB I7LTMA03	DRAFTED BY TJM <i>Steve A. Johnson</i>	BRIDGE ENGINEER
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HEAT STRAIGHTENING

1. This Contract includes heat straightening of a truss bridge including: vertical members and frames portions. Heat straightening is considered specialty work, only the following contractors are permitted to perform work.

a. International Straightening Incorporated
 1218 Horsman Place
 Bismarck, ND 58501
 Contact Judd Holt
 Telephone (701) 223-5972
 (701) 751-1683
 Fax (701) 751-1683
 E-mail isisteel@gmail.com
www.steelstraightening.com

b. Flame On, Inc.
 12632 Wagner Road
 Monroe, WA 98272
 Contact Darryl Thomas
 Telephone (425) 397-7039
 (425) 501-9855
 Fax (425) 397-7002
 E-mail d.thomas@flameon.com
www.flameoninc.com

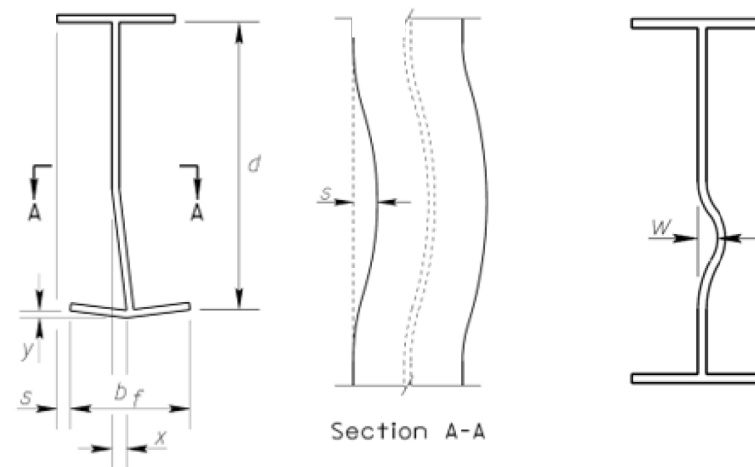
2. The equipment used for heat straightening will be an oxygen-fuel combination. The fuel will be propane or acetylene. The application of heat will be by single or multiple orifice tips only. The size of the tip will be proportional to the thickness of the heated material. As a guide, the following table shows the recommended tip sizes. No cutting torch heads are permitted.

Steel Thickness (in)	Orifice Type	Size
< 1/4	Single	3
3/8	Single	4
1/2	Single	5
5/8	Single	7
3/4	Single	8
1	Single	8
	Rosebud	3
2	Single	8
	Rosebud	4
3	Rosebud	5
>4	Rosebud	5

3. The temperature of all steel during heat straightening will not exceed 1,200°F. The Contractor will use one or more of the following methods for verifying temperatures during heat straightening:

- Temperature sensitive crayons
- Pyrometer
- Infrared non-contact thermometer

- Material should be heated in a single pass and will be allowed to air cool to below 250°F prior to re-heating.
- Hot Mechanical Straightening and Hot Working will **NOT** be allowed.
- Jacks used to aide heat straightening will be placed so that forces are relieved as straightening occurs during cooling. Jacking will be limited so that the maximum bending moment in the heated zone will be less than 50% of the plastic moment capacity of the member or 50% of yield for local forces. The yield of the material is 33 ksi.
- The final dimensions of heat straightened structural members will conform to the following tolerances where the existing channel sections are the flanges:



d = original depth of web
 b_f = original width of flange
 x = final displacement of web \leq maximum of $\frac{d}{100}$ or $\frac{1}{4}$ "
 y = final displacement of edge of flange $\leq \frac{1}{4}$ "
 w = maximum final local deformation in web $\leq \frac{1}{4}$ "
 s = sweep of flange from original edge of flange $\leq \frac{1}{2}$ " over 20 ft

The y dimension will also apply to the amount the channel flange is bent towards or away from the web.

8. All labor, materials, equipment, and any incidentals necessary to perform the required heat straightening will be incidental to the contract lump sum price for Heat Straighten Steel Member(s).

REMOVE AND REPLACE DAMAGED WELDS

1. Damaged welds, other than tack welds, found during inspection will be replaced by grinding damaged welds and re-welding. Damaged tack welds will only require grinding and MT testing following removal. Grinding will be in the longitudinal direction. Transverse grinding will not be allowed. Re-welding will be in accordance with the Bridge Welding Code.

- All repaired welds will be checked by non-destructive (MT) testing, see Weld Inspection & Nondestructive Testing (NDT) notes. Repair options for the defects found by the non-destructive testing will be determined by the Bridge Construction Engineer.
- All costs associated with grinding the damaged welds including all materials, equipment and labor will be incidental to the contract unit price per inch for Grind Weld.
- All costs associated with re-welding including all materials, equipment and labor will be incidental to the contract unit price per inch for Field Weld.

REMOVAL OF SURFACE NICKS AND GOUGES

- Grind found nicks and gouges as directed by the Engineer, to remove all sharp edges from surface nicks and gouges created by vehicle impact. The amount of material removed will be kept at the absolute minimum necessary to remove the sharp edges and to minimize the section reduction of the existing structural members. Grinding will be longitudinal. Transverse grinding will not be allowed. The grinding will be done prior to heat straightening the girder.
- All surface nicks and gouges will be checked by non-destructive MT testing after grinding--see Weld Inspection & Nondestructive Testing (NDT) note. Repair options for the defects found by the non-destructive testing will be determined by the Bridge Construction Engineer.
- The quantity provided for Surface Grinding of Structural Steel is an estimate. The payment quantity will be per square inch as determined by the Construction Engineer. This item may not be encountered and could be removed from the plans.
- All costs associated with removing sharp edges from surface nicks and gouges including all materials, equipment and labor will be incidental to the contract unit price per square inch for Surface Grinding of Structural Steel.

NOTES (CONTINUED)

FOR
 5058' - 6" BRIDGE OVER OAHE RESERVOIR

STR. NO. 65-000-020

JANUARY 2025

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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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FIELD WELDING PROCEDURES

- Approved Welding Procedure Specifications (WPS) will be required for this project, using the Shielded Metal Arc Welding (SMAW) process and an approved E7018 electrode from Table 6.1 of the Bridge Welding Code. The proposed WPSs for this project will be submitted on Form N-2, Annex N of the Bridge Welding Code, to the Bridge Construction Engineer for approval at least 2 weeks prior to construction.
- Preparation of the base metal prior to welding will be in accordance with Clause 5 of the Bridge Welding Code. Existing paint will be removed a distance of 2 inches from each side of the weld.
- Preheat will be required. Preheat and interpass temperature requirements will be in accordance with Clause 6.2 of the Bridge Welding Code. The minimum preheat and interpass temperature will be 70 degrees F for welds of the web to the flanges on the vertical member as determined from Annex F of the Bridge Welding Code for high restraint conditions. Temperature indicating crayons will be the minimum acceptable method for monitoring preheat and interpass temperatures.
- SMAW electrodes will comply with Clause 6.5 of the Bridge Welding Code. Electrodes which have been wet will not be used.
- All welds will be cleaned in accordance with Clause 5.11 of the Bridge Welding Code. Completed welds and adjacent areas will be cleaned of all weld splatter, slag, smoke and heat affected paint. No intermittent or "stitch" welds will be allowed.

TRUSS MEMBER REPAIR OPTION A

- New bolts will be 3/4" diameter ASTM F3125, Grade A325. Each bolt will be supplied with a heavy hex nut, hardened washer, and 1 direct tension indicator.
- High strength bolts, nuts, and washers will be stored in such a manner that they will be kept clean and free from any rust or foreign material.
- Contact surfaces of the bolted connections will be clean and free from all oil, paint, lacquer, and other coatings. Commercial blast cleaning of the steel-to-steel contact areas will be done to SSPC SP 6 finish.
- The Contractor will have the following options for drilling holes in splice plates and flanges:

Shop drill the splice plate for each flange splice with undersize holes of 3/16" less than nominal bolt diameters and use as templates for field drilling through the flange. Field drilling will be done with all splice components securely held in the proper position. The Contractor may elect to use a single field drilling operation in which case holes will be drilled to a maximum of 1/16" larger than the bolt's nominal diameter. As an alternate, the Contractor may elect to first subdrill and then subsequently ream the assembled splice connection to a final maximum diameter of 1/16" larger than the nominal bolt diameter. Regardless of the Contractor's preferred field drilling procedure, the splice will be disassembled, and all burrs and cuttings removed prior to assembly of the splice.

- Bolts in flanges will be placed with heads on the exterior face of the vertical member.
- The splice bolts will be tightened in a pattern that starts at the center of the splice and progresses outward in all directions.
- Bolted girder splices will be measured by each assembly furnished and accepted complete in place. The combination of flange splice at the same location on a girder constitutes a splice. Bolted girder splices measured as provided above, will be paid for at the contract price per each for Bolted Girder Splice. Such payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to satisfactorily complete this work.

TRUSS MEMBER REPAIR OPTION B

- New bolts will be 3/4" diameter ASTM F3125, Grade A325. Each bolt will be supplied with a heavy hex nut, and 2 hardened washers. Bolts will be tightened 1/3 turn past snug tight.
- High strength bolts, nuts, and washers will be stored in such a manner that they will be kept clean and free from any rust or foreign material.
- Contact surfaces of the bolted connections will be clean and free from all oil, paint, lacquer, and other coatings. Commercial blast cleaning of the steel-to-steel contact areas will be done to SSPC SP 6 finish.
- The Contractor will have the following options for drilling holes in where field drilling is specified:

Where the C10 channels connects to the existing vertical member flanges, the C10 holes can be shop drilled 3/16" less than nominal bolt diameter and used as a template for field drilling through the flange. Where the C10s connects connect to the L5s sub drilling the holes will not be possible. Field drilling will be done with all components securely held in the proper position. The Contractor may elect to use a single field drilling operation in which case holes will be drilled to a maximum of 1/16" larger than the bolt's nominal diameter. As an alternate, the Contractor may elect to first subdrill and then subsequently ream the assembled splice connection to a final maximum diameter of 1/16" larger than the nominal bolt diameter. Regardless of the Contractor's preferred field drilling procedure, the connections will be disassembled, and all burrs and cuttings removed prior to assembly of the connections.

- Bolts in the channels will be placed with heads on the exterior face of the vertical member.
- The tie bars will be 1" ϕ DYWIDAG THREADBAR conforming to the requirements of ASTM A722. The anchor plate and nut will be compatible with the tie bar and supplied by DYWIDAG.

- All cost associated with furnishing and installing Vertical Truss Member Repair B will be paid for at the contract lump sum price for Structural Steel, Miscellaneous. Such payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to satisfactorily complete this work.

NOTES (CONTINUED)

FOR

5058' - 6" BRIDGE OVER OAHE RESERVOIR

STR. NO. 65-000-020

JANUARY 2025

5 OF 24

DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB I7LTMA05	DRAFTED BY TJM <i>Steve A. Johnson</i>	BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	9	29

PAINT RESIDUE REMOVAL AND CONTAINMENT

1. Paint removal on the existing bridge will be in accordance with Section 412 of the Construction Specifications except as modified by these notes. The collected paint residue is anticipated to be less than 220 pounds.
2. The Contractor will plan operations to prevent releases of lead-containing material and other particulate matter into the surrounding air, water, and pavement. The Contractor will be responsible for any corrective actions should a spill occur.
3. Collect all visible paint particles and blasting residue containing paint at the end of each workday from the work area. Inspect outside the containment and collect any paint particles or blasting residue that escaped the work area. Collect waste material by manual means, vacuum, or another method approved by the Engineer. Do not use air pressure or streaming water to assist in the waste collection process that could disperse the waste material.
4. In the event of a spill or inadvertent release, the Contractor will immediately stop work, notify the Engineer, and report the release to the South Dakota Department of Agriculture and Natural Resources (DANR). The Contractor will be responsible for completing a spill reporting form and for all costs associated with appropriate corrective actions.

To report a release or spill, call DANR at (605) 773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at (605) 773-3231. Reporting the release to DANR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the Contractor must also contact local authorities to determine the local reporting requirements for releases. DANR recommends that spills also be reported to the National Response Center at (800) 424-8802.

5. The Contractor will haul and unload the 55-gallon containment drums with paint residue, blasting media, etc. to the SDDOT Maintenance Yard located in Mobridge, SD for temporary storage and disposal. The Mobridge DOT maintenance yard is located at 2311 West Hwy. 12, Mobridge, SD 57601. Contact number for the Mobridge maintenance yard is (605) 961-4930. All costs associated with this work will be included in the contract lump sum price for Paint Residue Containment.
6. If the Contractor elects to use containers other than 55-gallon barrels to hold paint residue the Contractor will be responsible for all testing and disposal at a permitted regional landfill. The Contractor will be responsible for compliance of laws and regulations regarding storage, handling, and shipping. Copies of all tests, shipping, and disposal documents will be provided to the Office of Bridge Design.

BRIDGE REPAINTING, CLASS I

1. All work affected areas and all new structural steel will be painted in accordance with Section 412 of the Construction Specifications.
2. All existing and new structural steel within the work affected areas will be painted. The painted areas will have a uniform paint appearance as approved by the Engineer. For informational purposes, the approximate total area under this item of repair is 380 square feet. The actual work affected area will only be known after all the nondestructive testing and heat straightening is complete.

NOTES (CONTINUED)

FOR

5058' - 6" BRIDGE OVER OAHE RESERVOIR

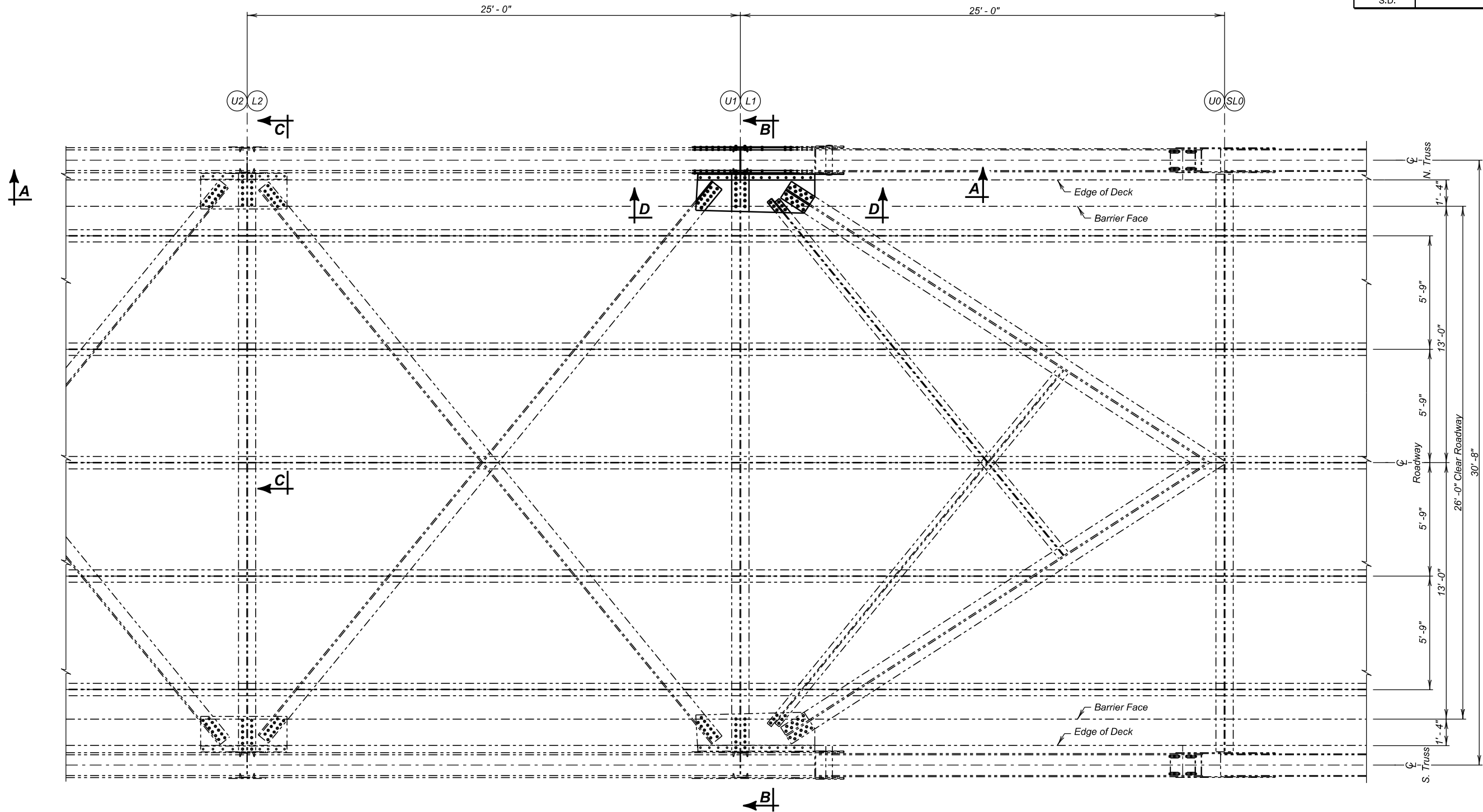
STR. NO. 65-000-020

JANUARY 2025

6 OF 24

DESIGNED BY TJM WLTHI7LT	CK. DES. BY JRB I7LTMA06	DRAFTED BY TJM	 BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	10	29



DETAIL Z
(Truss Diagonals and Cross Frames Not Shown)

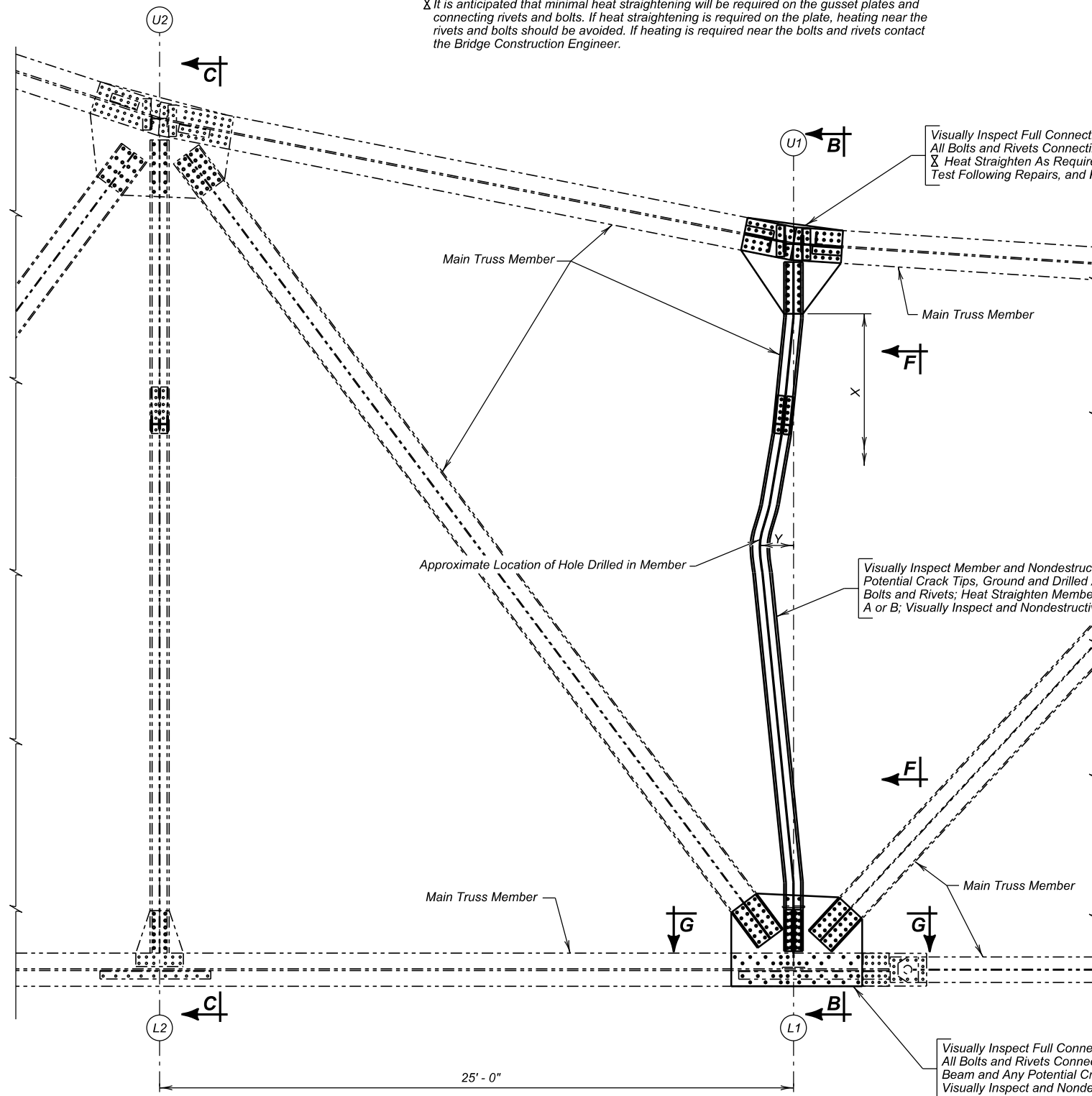
TRUSS REPAIR DETAILS (A)
675' CANTILEVER TRUSS

FOR
5058' - 6" BRIDGE OVER OAHE RESERVOIR
 26' - 0" ROADWAY 0° SKEW
 OVER OAHE RESERVOIR SEC. 13-T124N-R80W
 STR. NO. 65-000-020 012-368

WALWORTH COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2025

DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB 17LTRA07	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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⊗ It is anticipated that minimal heat straightening will be required on the gusset plates and connecting rivets and bolts. If heat straightening is required on the plate, heating near the rivets and bolts should be avoided. If heating is required near the bolts and rivets contact the Bridge Construction Engineer.



⊗ Visually Inspect Full Connection, Nondestructive Test Around All Bolts and Rivets Connecting Main Truss Members and Any Potential Cracks, ⊗ Heat Straighten As Required, Visually Inspect and Nondestructive Test Following Repairs, and Paint.

⊗ Visually Inspect Member and Nondestructive Test Fillet Welds, Potential Crack Tips, Ground and Drilled Areas, Areas around Bolts and Rivets; Heat Straighten Member; Repair Using Member Repair Detail A or B; Visually Inspect and Nondestructive Test Following Repairs; and Paint.

⊗ Visually Inspect Full Connection, Nondestructive Test Around All Bolts and Rivets Connecting Main Truss Members and Floor Beam and Any Potential Cracks, ⊗ Heat Straighten As Required, Visually Inspect and Nondestructive Test Following Repairs, and Paint.

MEMBER U1-L1 HORIZONTAL IMPACT DEFLECTED POSITION MEASUREMENTS	
X ±	Y ±
0' - 0"	0"
1' - 0"	7/8"
2' - 0"	2"
3' - 0"	3 1/2"
4' - 0"	4"
5' - 0"	5 7/8"
6' - 0"	7 1/8"
7' - 0"	10"
8' - 0"	1' - 0 3/4"
9' - 0"	1' - 4"
10' - 0"	1' - 3 1/8"
11' - 0"	1" - 1 1/8"
12' - 0"	11 3/4"
13' - 0"	10 3/8"
14' - 0"	9 1/4"
15' - 0"	8 1/2"
16' - 0"	7 3/8"
17' - 0"	6 1/8"
18' - 0"	5"
19' - 0"	4"
20' - 0"	2 3/4"
21' - 0"	1 3/8"
22' - 0"	1/2"
22' - 5"	0"

⊗ Deflections are a combination of member sweep, twist, and local flange bending. The deflected values are provided to indicate the extent and degree of damage to the girder and are not necessarily the exact deflected shape. View F - F is provided to show some of the localized deformation and twist of the damaged member.

⊗ SECTION A - A
(Barrier and Deck Not Shown)

⊗ Details shown in bold object lines and noted are the minimum testing requirements. If any potential flaws are found, additional testing will be required.



⊗ VIEW F - F

TRUSS REPAIR DETAILS (B)
675' CANTILEVER TRUSS

FOR

5058' - 6" BRIDGE OVER OAHE RESERVOIR

26' - 0" ROADWAY

0° SKEW

OVER OAHE RESERVOIR

SEC. 13-T124N-R80W

STR. NO. 65-000-020

012-368

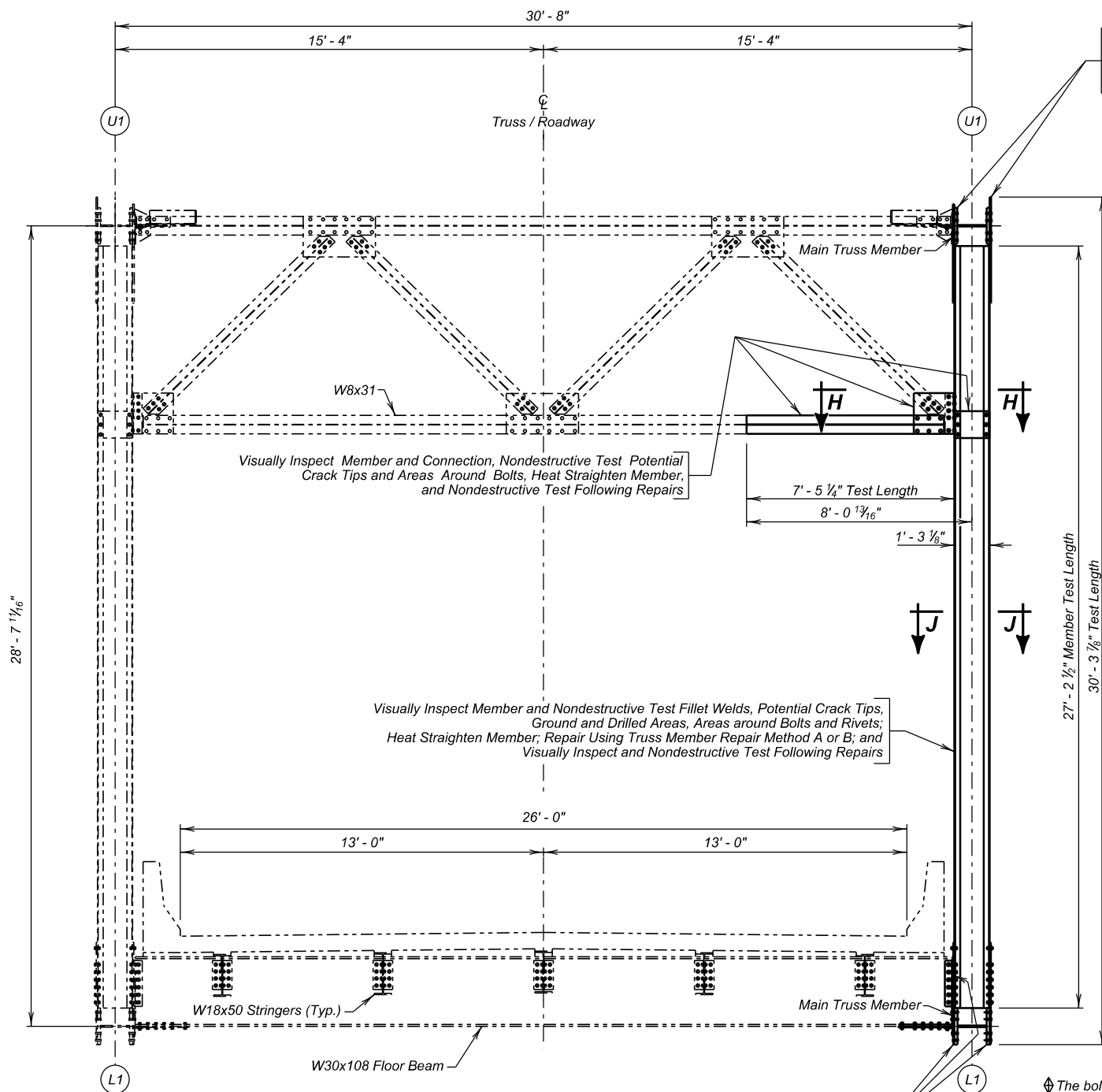
WALWORTH COUNTY

S. D. DEPT. OF TRANSPORTATION

JANUARY 2025

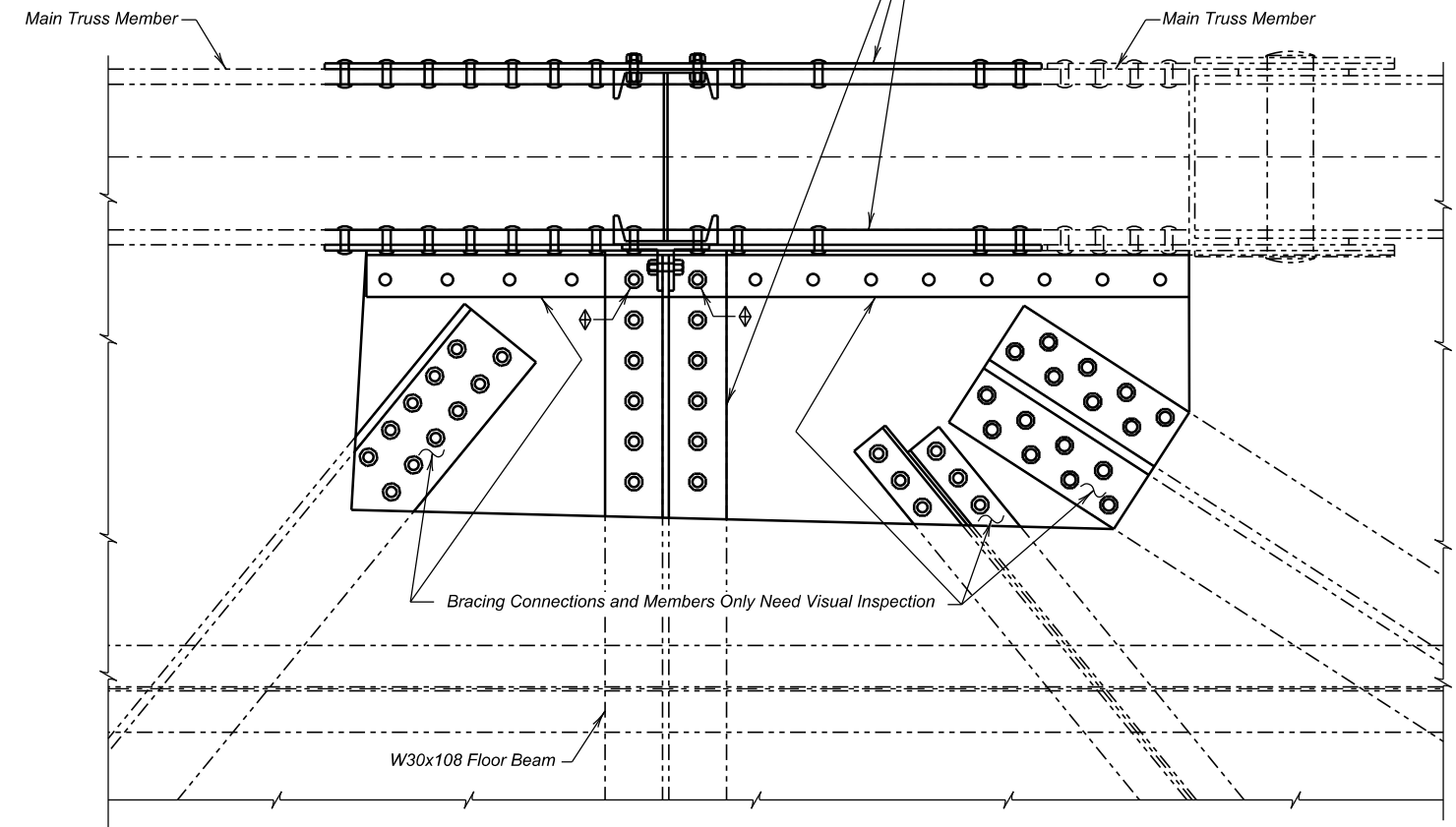
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	12	29

It is anticipated that minimal heat straightening will be required on the gusset plate and connecting rivets and bolts. If heat straightening is required on the plate, heating near the rivets and bolts should be avoided. If heating is required near the bolts and rivets contact the Bridge Construction Engineer.



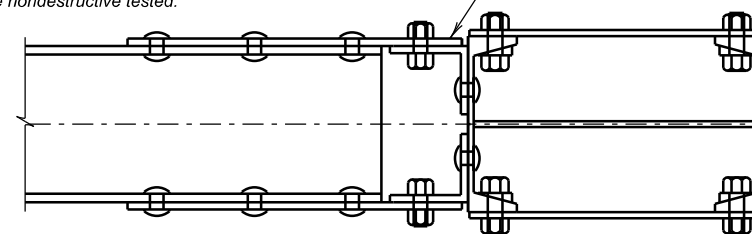
Visually Inspect Full Connection, Nondestructive Test Around All Bolts and Rivets Connecting Main Truss Members and Floor Beam and Any Potential Cracks, Heat Straighten As Required, and Visually Inspect and Nondestructive Test Following Repairs

SECTION B - B
(Deformed Section Not Shown for Clarity)
(Portions Shown in Bold Object Line Represent Test and Paint Areas, Members are Existing)



SECTION G - G
(Deck and Some Bolts and Rivets Not Shown for Clarity)
(Portions Shown in Bold Object Line Represent Test and Paint Areas, Members are Existing and/or Hidden)

The bolts in this angle under the floor beam are considered part of the main member connection and will be nondestructive tested.



SECTION H - H
(Portions Shown in Bold Object Line Represent Test and Paint Areas, Member is Existing)

Visually Inspect Member and Connection, Nondestructive Test Potential Crack Tips and Areas Around Bolts, Heat Straighten Member, and Nondestructive Test Following Repairs

TRUSS REPAIR DETAILS (C)
675' CANTILEVER TRUSS

FOR

5058' - 6" BRIDGE OVER OAHE RESERVOIR
26' - 0" ROADWAY
OVER OAHE RESERVOIR
STR. NO. 65-000-020

0° SKEW
SEC. 13-T124N-R80W
012-368

WALWORTH COUNTY
S. D. DEPT. OF TRANSPORTATION

JANUARY 2025

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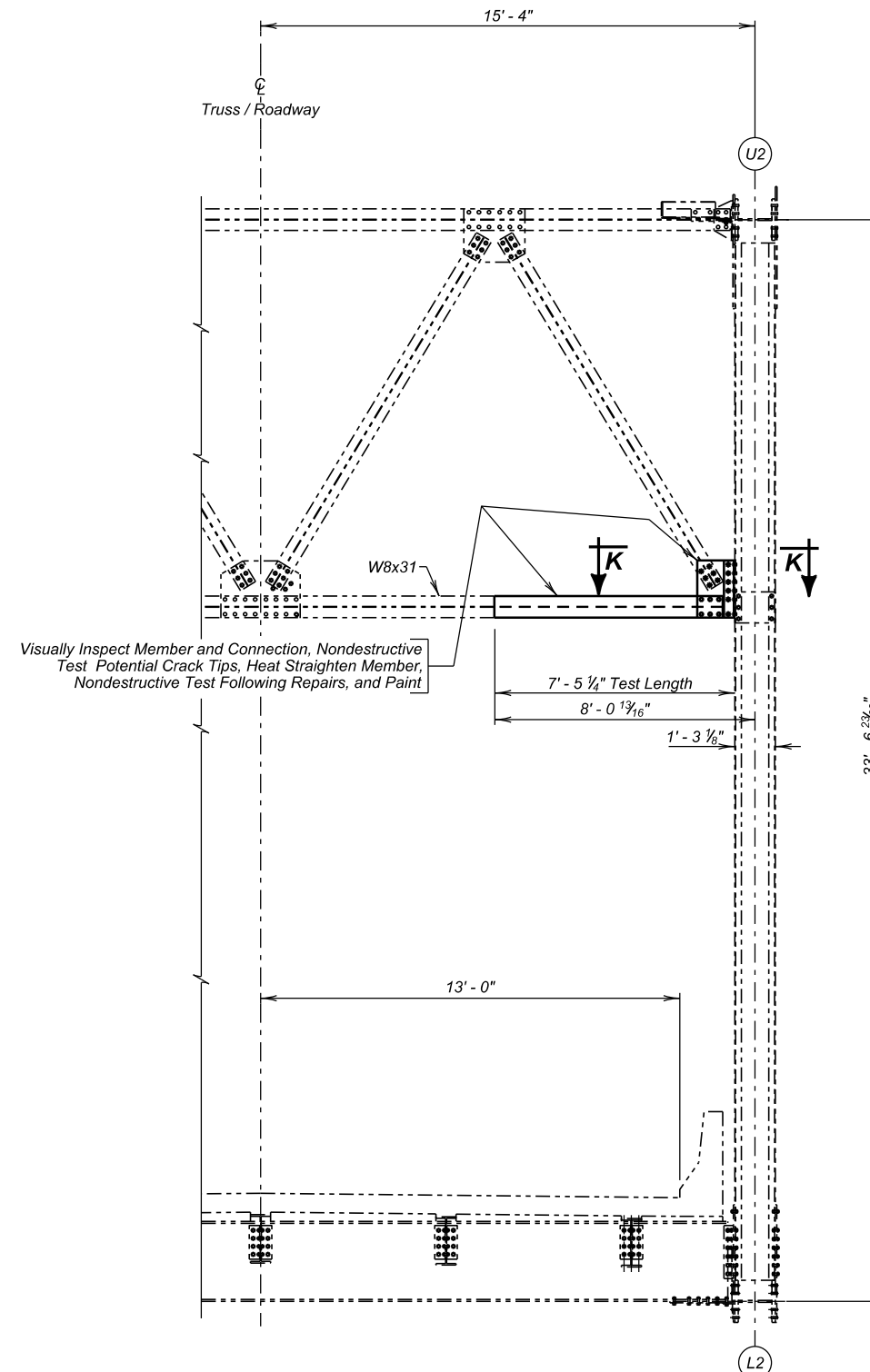
Details shown in bold object lines and noted are the minimum testing requirements. If any potential flaws are found, additional testing will be required.

DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB 7LTRA09	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	13	29

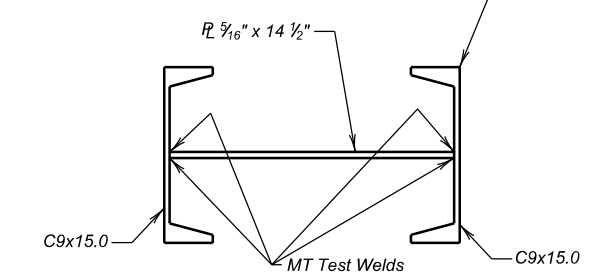


VIEW C - C



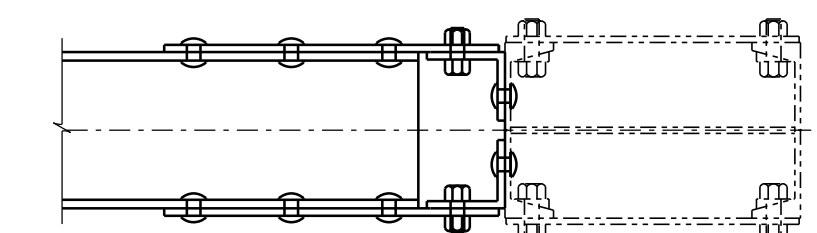
SECTION C - C
(Portions Shown in Bold Object Line Represent Test and Paint Areas, Member is Existing)

Visually Inspect Member, Nondestructive Test Potential Crack Tips, Heat Straighten Member, Repair Member using Method A or B, and Nondestructive Test Following Repairs



SECTION J - J

(Portions Shown in Bold Object Line Represent Test and Paint Areas, Member is Existing.)



SECTION K - K

(MT testing not anticipated at this connection)
(Portions Shown in Bold Object Line Represent Test and Paint Areas, Member is Existing.)

TRUSS REPAIR DETAILS (D)
675' CANTILEVER TRUSS

FOR

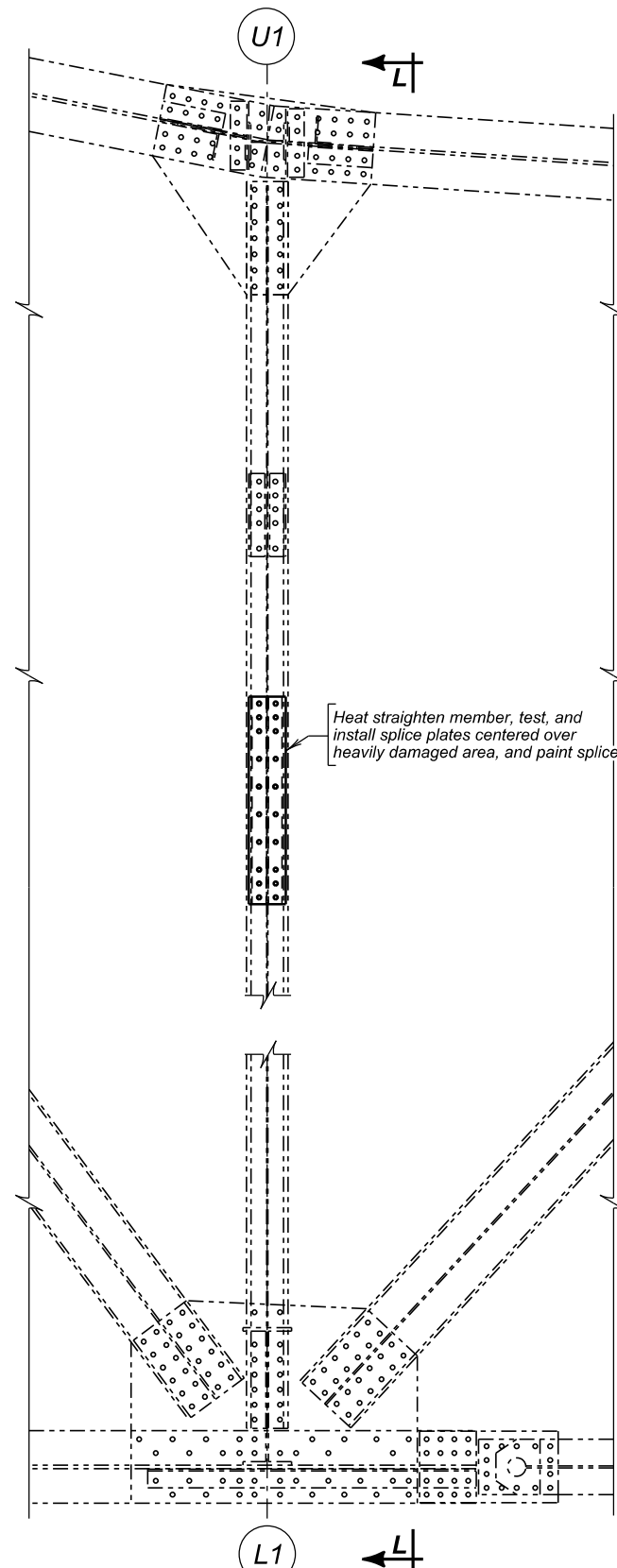
5058' - 6" BRIDGE OVER OAHE RESERVOIR
26' - 0" ROADWAY
OVER OAHE RESERVOIR
STR. NO. 65-000-020

0° SKEW
SEC. 13-T124N-R80W
012-368

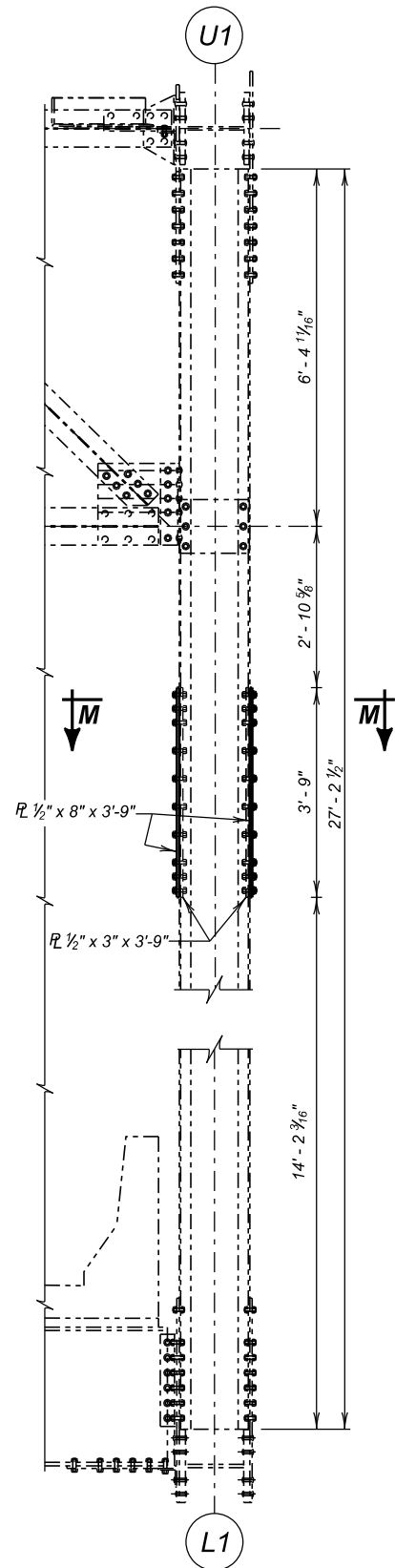
WALWORTH COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2025

⊗ Details shown in bold object lines and noted are the minimum testing requirements. If any potential flaws are found, additional testing will be required.

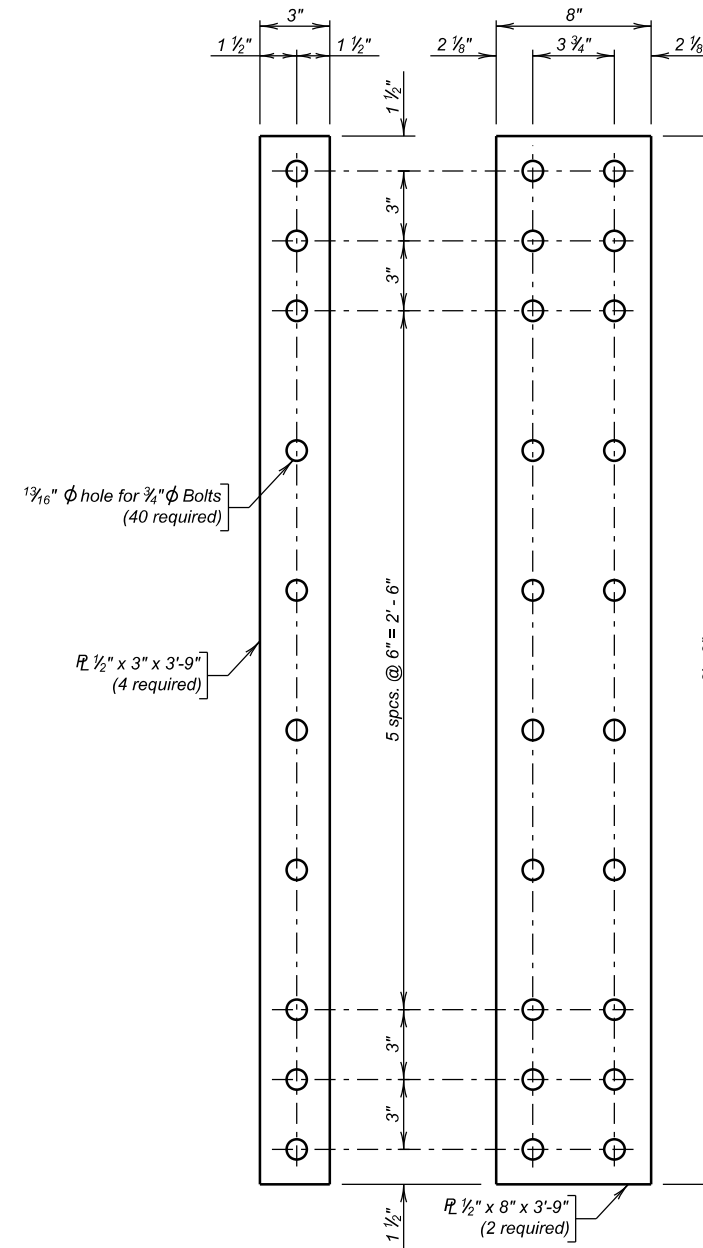
DESIGNED BY TJM WLTH7LT	CK. DES. BY JRB 17LTRA10	DRAFTED BY KR	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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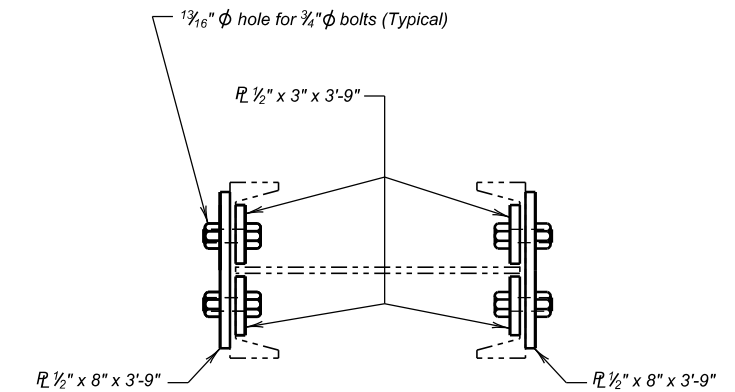
VIEW D - D



VIEW L - L



SPLICE PLATE DETAILS



VIEW M - M

(DTI and Washers Not Shown)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bolted Girder Splice	1	Each

For informational purposes the approximate weight of steel contained in Member Repair Option A is 205 pounds. Material and equipment for both repair options are to be on site prior to heat straightening.

TRUSS MEMBER REPAIR OPTION A
675' CANTILEVER TRUSS

FOR

5058' - 6" BRIDGE OVER OAHE RESERVOIR

26' - 0" ROADWAY

OVER OAHE RESERVOIR

STR. NO. 65-000-020

0° SKEW

SEC. 13-T124N-R80W

012-368

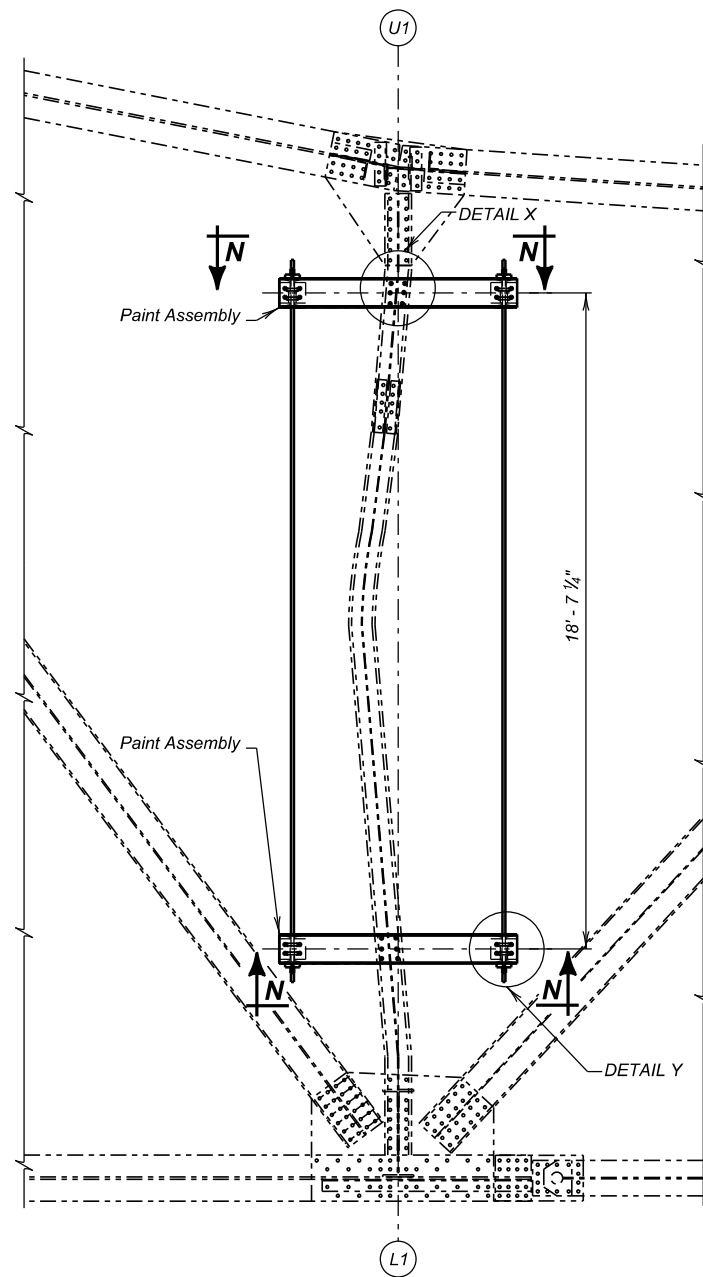
WALWORTH COUNTY

S. D. DEPT. OF TRANSPORTATION

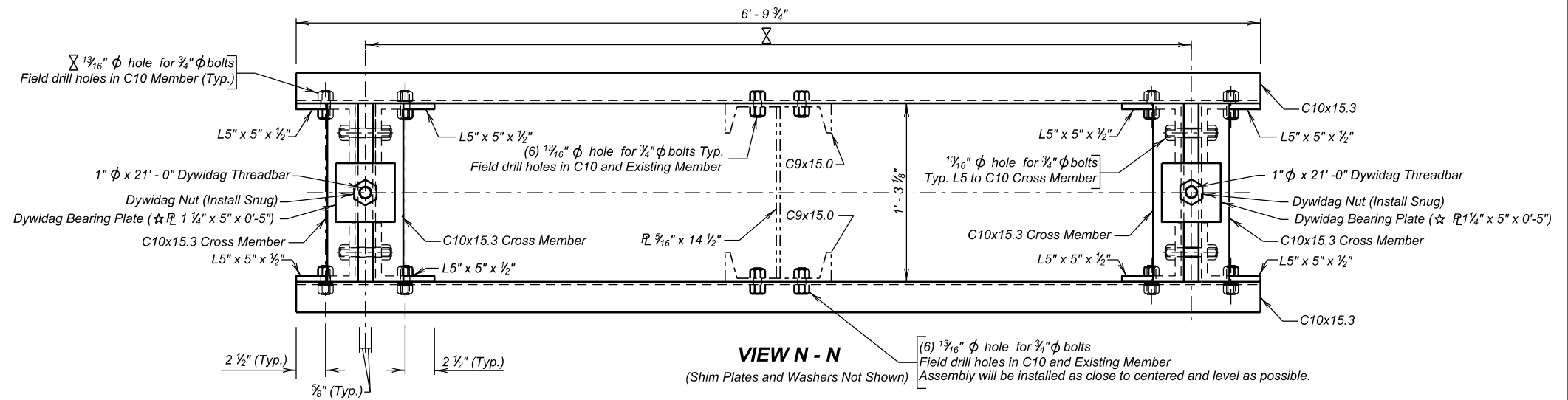
JANUARY 2025

11 OF 24

VIEW N-N shows the widest possible configuration for the installation of Repair Option B. The C10 cross members, L5s, and Dywidag assemblies are to be installed symmetric and as close as possible to the vertical truss member.

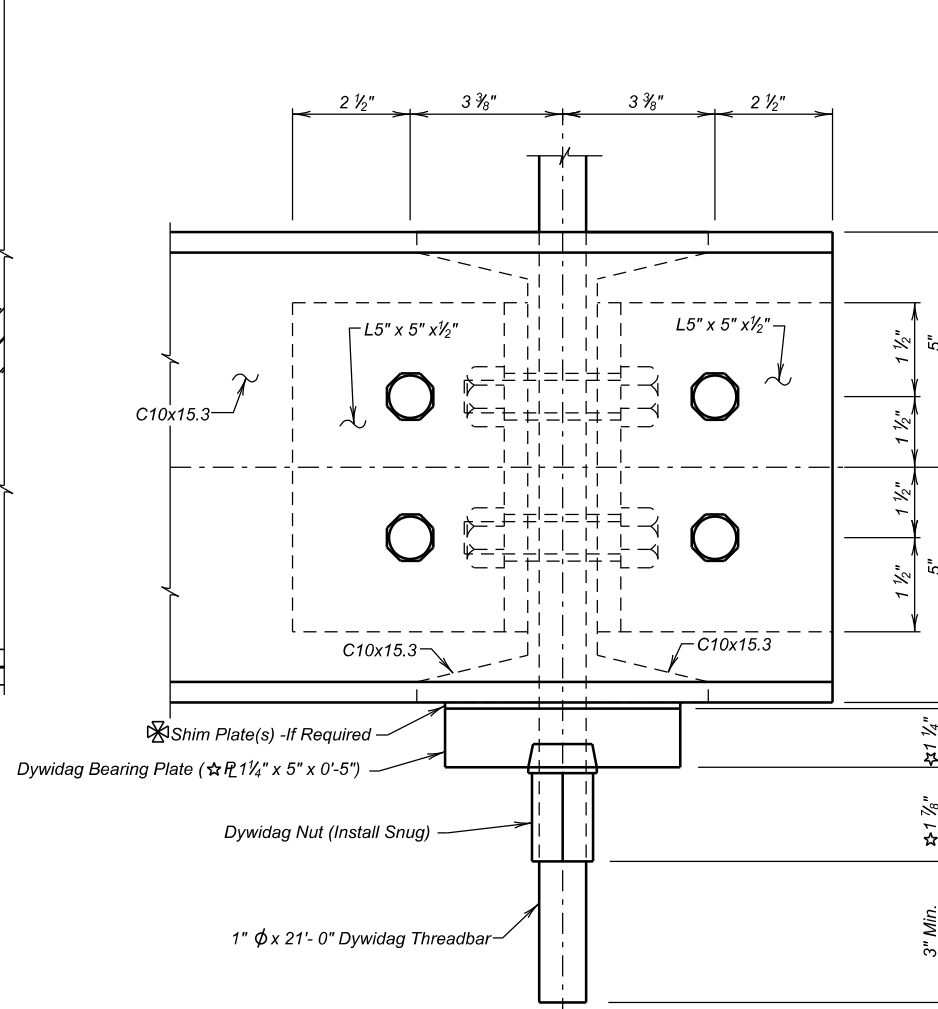


VIEW D - D

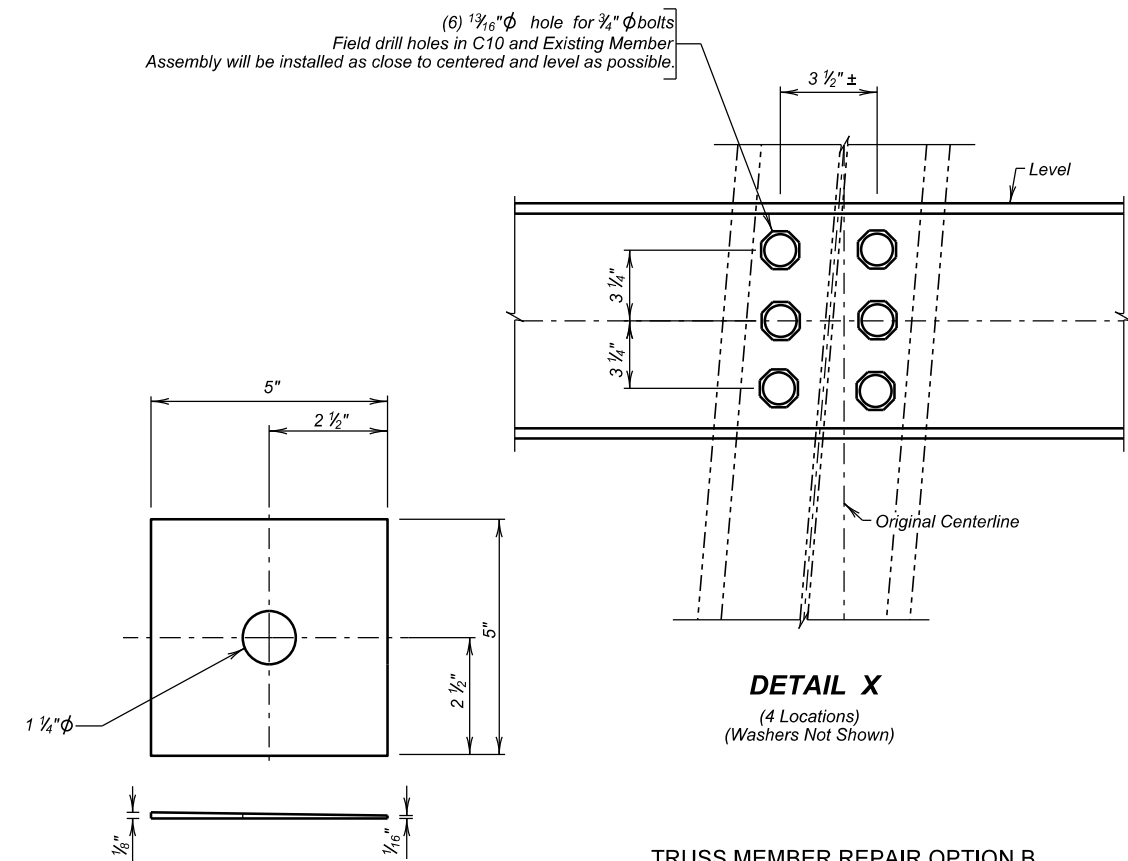


VIEW N - N
(Shim Plates and Washers Not Shown)
(6) 1 3/16" φ hole for 3/4" φ bolts
Field drill holes in C10 and Existing Member
Assembly will be installed as close to centered and level as possible.

☆ Dimensions based on Dywidag Product Information, actually dimensions may vary slightly.



DETAIL Y
(1 Location Thus, 3 locations similar)
(Washers Not Shown)



DETAIL X
(4 Locations)
(Washers Not Shown)

SHIM PLATE
(8 to be provided)

**TRUSS MEMBER REPAIR OPTION B
675' CANTILEVER TRUSS**

FOR
5058' - 6" BRIDGE OVER OAHE RESERVOIR
26' - 0" ROADWAY
OVER OAHE RESERVOIR
STR. NO. 65-000-020

0° SKEW
SEC. 13-T124N-R80W
012-368

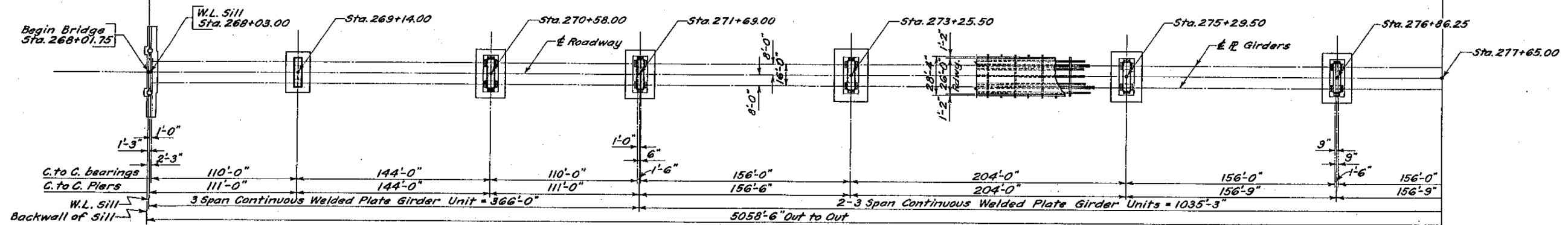
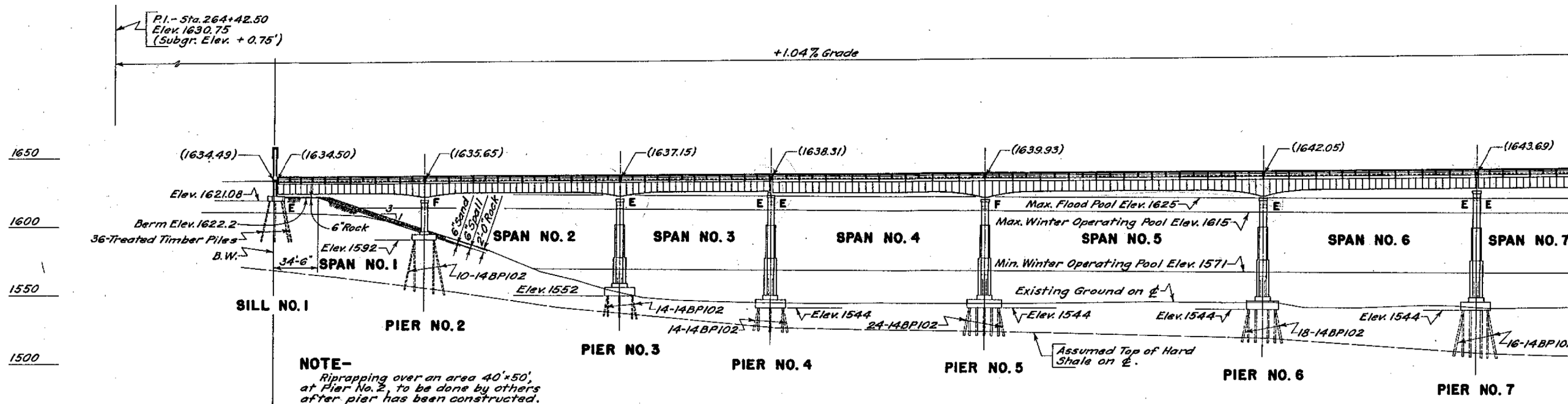
WALWORTH COUNTY
S. D. DEPT. OF TRANSPORTATION

JANUARY 2025

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Steel, Miscellaneous	LS	LumpSum

For informational purposes the approximate weight of steel contained in Truss Member Repair Option B is 805 pounds. Material and equipment for both options are to be on site prior to heat straightening.

⊗ Shim Plates are to be installed as required to keep the Dywidag Bearing Plate Level with the C10 Cross Members to help keep loading symmetric.



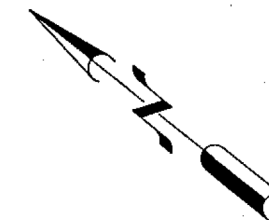
LEGEND

- (1634.49) - Elev. Top of Slab at Curb
- E - Expansion Bearing
- F - Fixed Bearing
- W.L. - Working Line
- B.W. - Back Wall

B.M. No. 31 - Elev. 1604.41
Iron Pin & Gds.
150 Lt. Sta. 262+00

B.M. No. 32 - Elev. 1610.76
Iron Pin & Gds.
150 Rt. Sta. 269+00

B.M. No. 32A - Elev. 1548.11
Iron Pin & Gds.
115 Lt. Sta. 271+00



STR. NO. 65-000-020

GENERAL DRAWING
FOR

5058'-6" BRIDGE OVER OAHÉ RESERVOIR

26'-0" ROADWAY

STA. 268+01.75 TO 318+60.25 WAR 180 (1)

ON US HWY. NO. 12 CORSON-WALWORTH COUNTIES

SOUTH DAKOTA H20-44

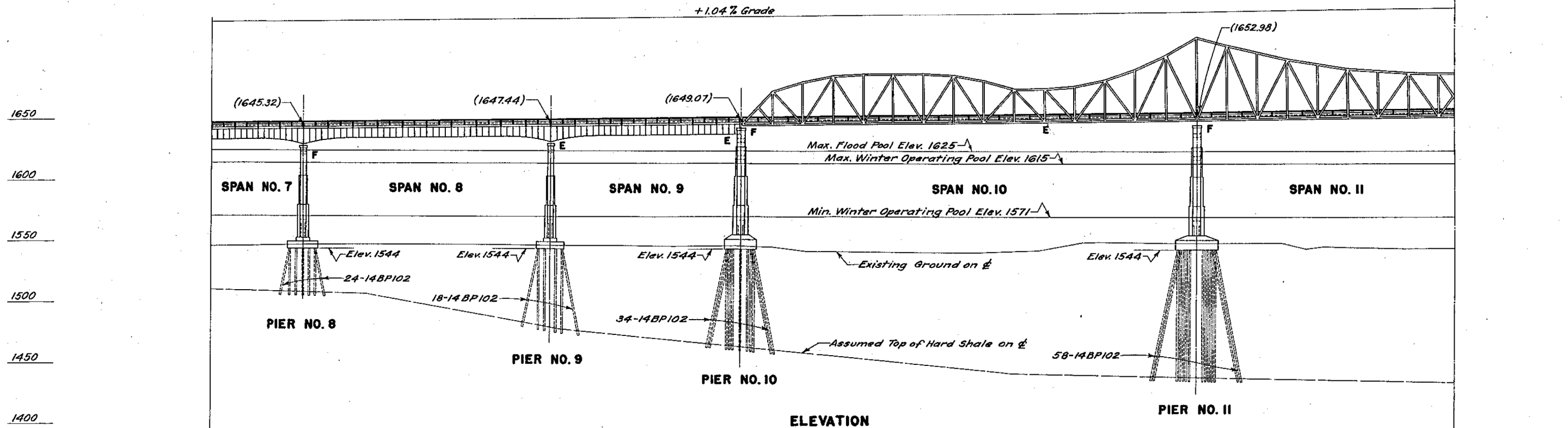
DEPARTMENT OF HIGHWAYS

MARCH 1957

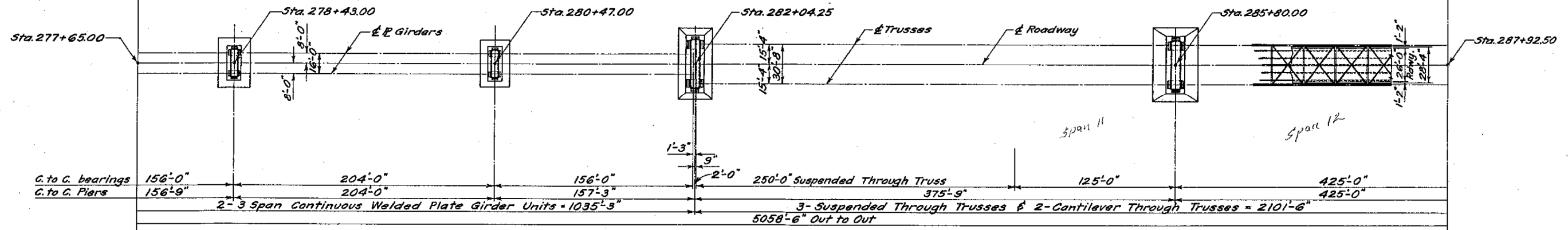
13 OF 24

ORIGINAL CONSTRUCTION PLANS

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	ASF	<i>[Signature]</i>
			BRIDGE ENGINEER



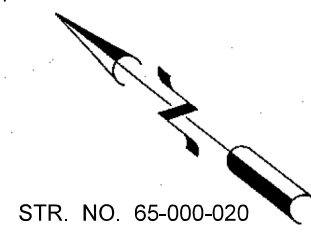
ELEVATION



PLAN

LEGEND
 (1645.32) = Elev. Top of Slab at Curb
 E = Expansion Bearing
 F = Fixed Bearing

B.M. No. 33 - Elev. 1547.91
 Iron Pin & Gds.
 125' Lt. Sta. 280+00

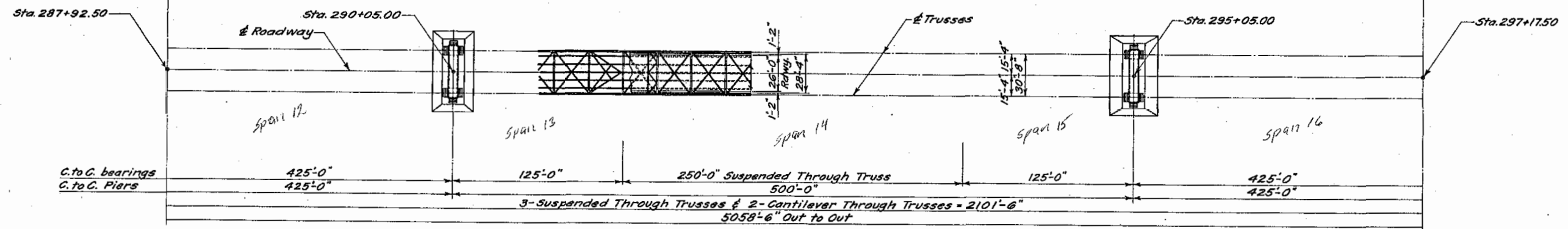
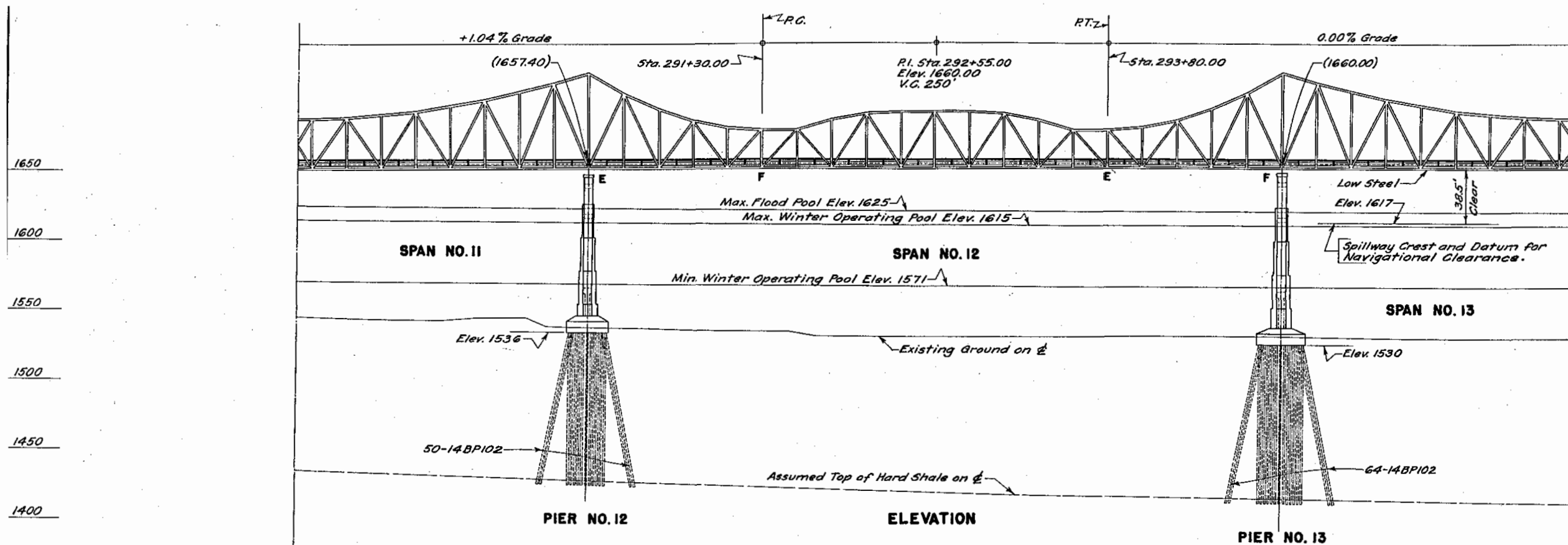


STR. NO. 65-000-020

GENERAL DRAWING
 FOR
5058'-6" BRIDGE OVER OAHÉ RESERVOIR
 26'-0" ROADWAY
 STA. 268+01.75 TO 318+60.25 WAR 180 (1)
 ON US HWY. NO. 12 CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA H20-44
 DEPARTMENT OF HIGHWAYS
 MARCH 1957 14 OF 24

ORIGINAL CONSTRUCTION PLANS

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	ASF	<i>[Signature]</i>
			BRIDGE ENGINEER

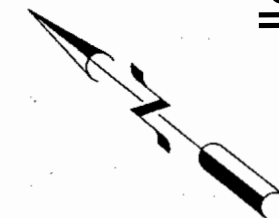


ORIGINAL CONSTRUCTION PLANS

LEGEND

(1657.40) - Elev. Top of Slab at Gurb
 E - Expansion Bearing
 F - Fixed Bearing

B.M. No. 34 - Elev. 1545.86
 Iron Pin & Gds.
 100' Rt. Sta. 289+15



GENERAL DRAWING
 FOR
5058'-6" BRIDGE OVER OAKE RESERVOIR
 26'-0" ROADWAY
 STA. 268+01.75 TO 318+60.25 WAR 180 (1)
 ON US HWY. NO. 12 GORSON-WALWORTH COUNTIES
 SOUTH DAKOTA H20-44

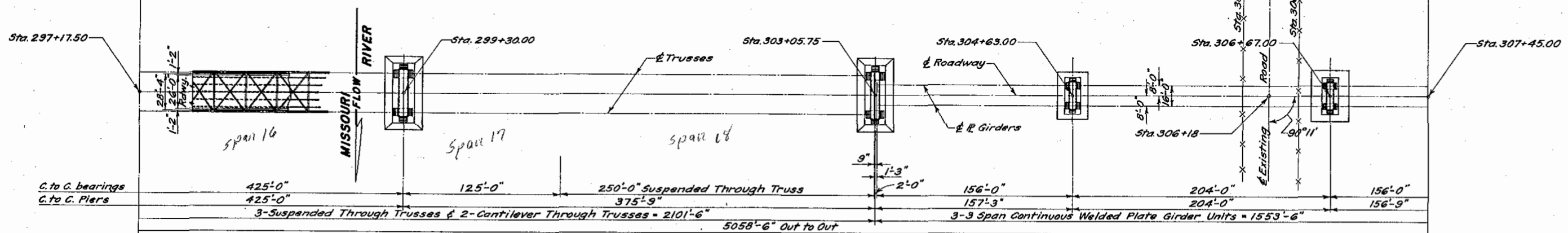
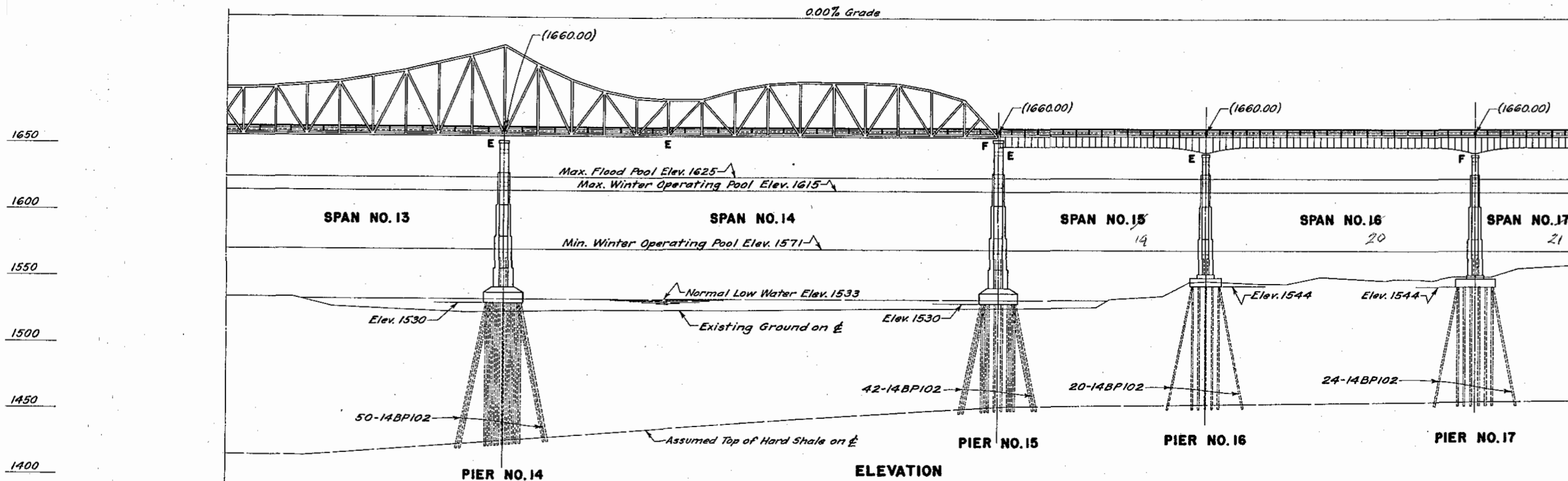
STR. NO. 65-000-020

DEPARTMENT OF HIGHWAYS

MARCH 1957

15 OF 24

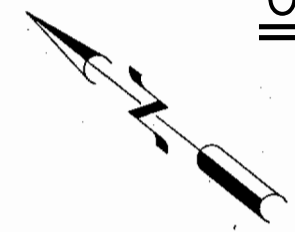
DESIGNED BY	DRAWN BY H.A.	CHECKED BY A.S.F.	APPROVED <i>[Signature]</i> BRIDGE ENGINEER
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PLAN

ORIGINAL CONSTRUCTION PLANS

LEGEND
 (1660.00) = Elev. Top of Slab at Curb
 E = Expansion Bearing
 F = Fixed Bearing

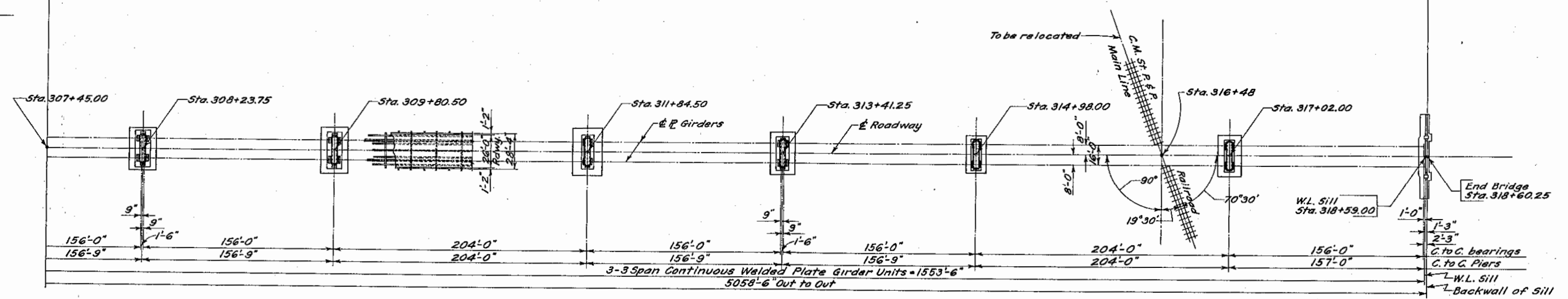
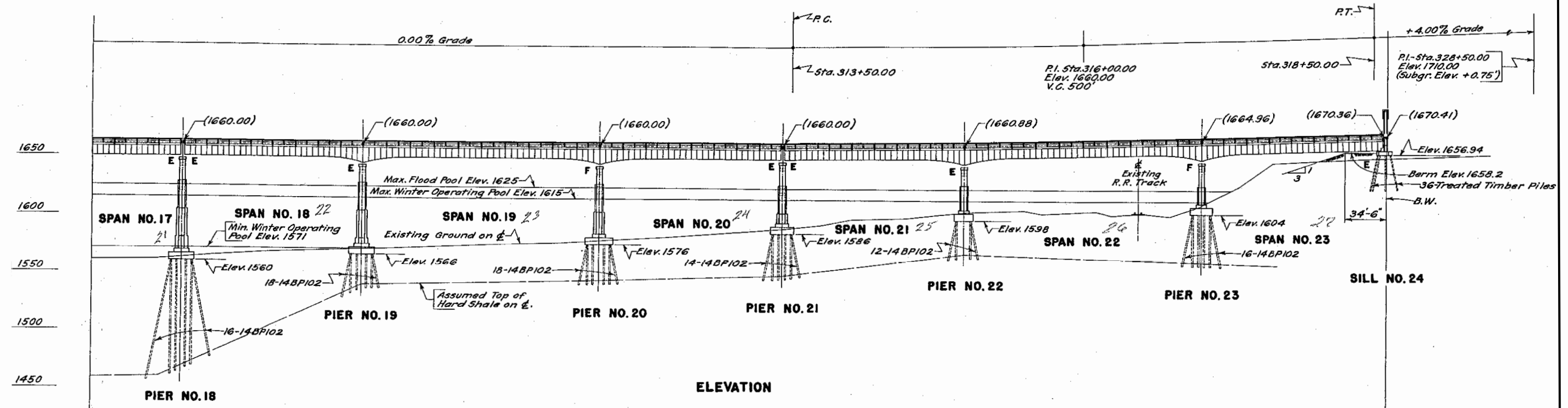


GENERAL DRAWING
 FOR
5058'-6" BRIDGE OVER OAHE RESERVOIR
 26'-0" ROADWAY
 STA. 268+01.75 TO 318+60.25 WAR 180 (1)
 ON US HWY. NO. 12 CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA H20-44
 DEPARTMENT OF HIGHWAYS

STR. NO. 65-000-020

MARCH 1957 16 OF 24

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	ASE	<i>[Signature]</i>
			BRIDGE ENGINEER



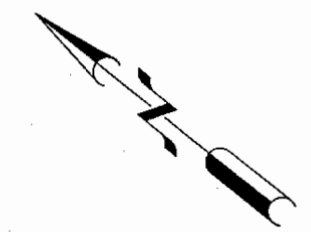
LEGEND

(1660.00) = Elev. Top of Slab at Curb
E = Expansion Bearing
F = Fixed Bearing
W.L. = Working Line
B.W. = Back Wall

B.M. No. 35 - Elev. 1578.93
Re. Bar & Gds. - In fence line
127' Rt. Sta. 312+50

B.M. No. 36 - Elev. 1654.70
Re. Bar & Gds.
100' Rt. Sta. 320+00

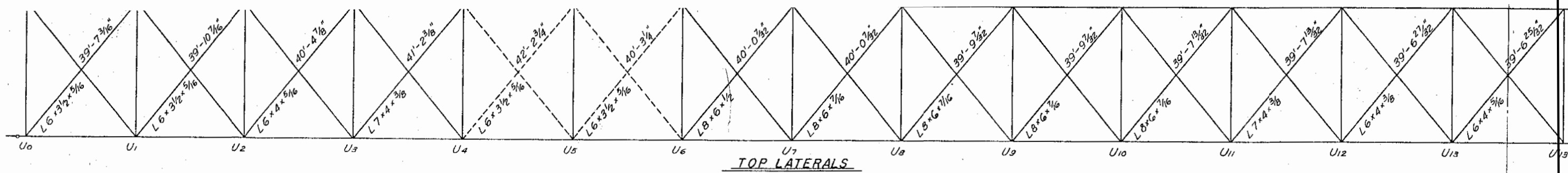
ORIGINAL CONSTRUCTION PLANS



GENERAL DRAWING
FOR
5058'-6" BRIDGE OVER OAHE RESERVOIR
26'-0" ROADWAY
STA. 268+01.75 TO 318+60.25 WAR 180 (1)
ON US HWY. NO. 12 CORSON-WALWORTH COUNTIES
SOUTH DAKOTA H20-44
DEPARTMENT OF HIGHWAYS
MARCH 1957 (17) OF (24)

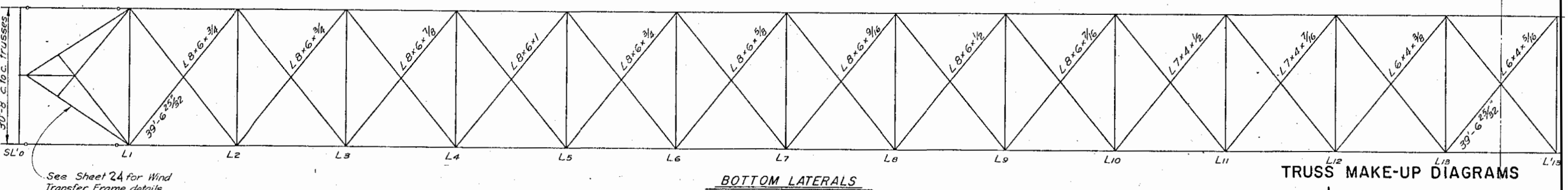
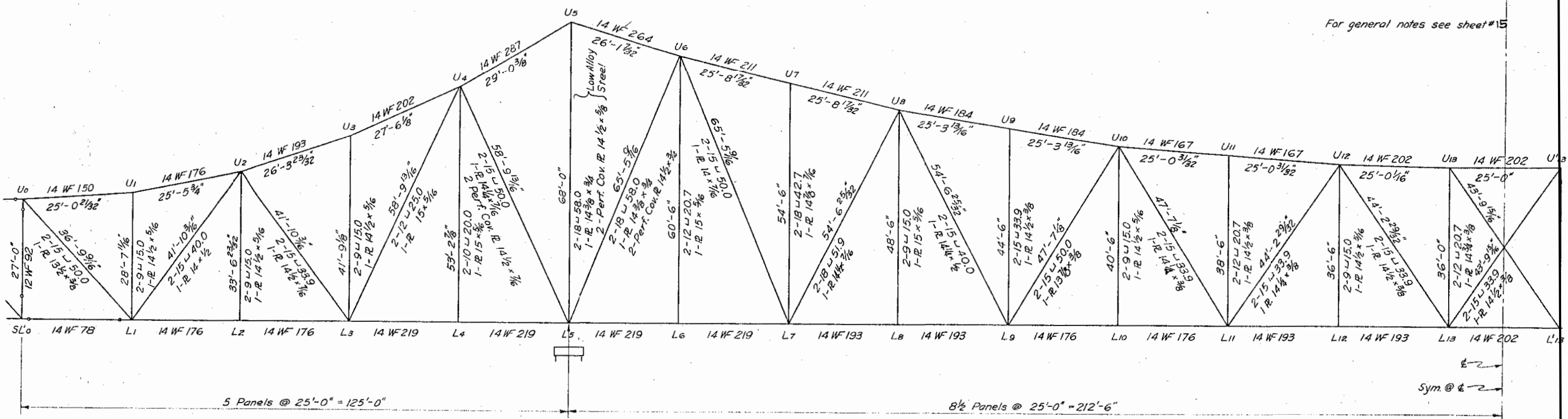
STR. NO. 65-000-020

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	ASE	R.P. Lewis
			BRIDGE ENGINEER



TOP LATERALS

For general notes see sheet #15



BOTTOM LATERALS

TRUSS MAKE-UP DIAGRAMS

675' CANTILEVER TRUSS

WAR 180 (I) CORSON-WALWORTH COUNTIES
SOUTH DAKOTA

STATE HIGHWAY COMMISSION

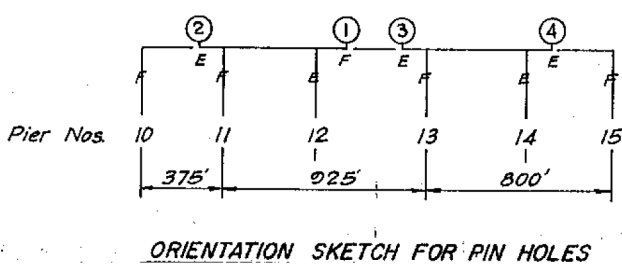
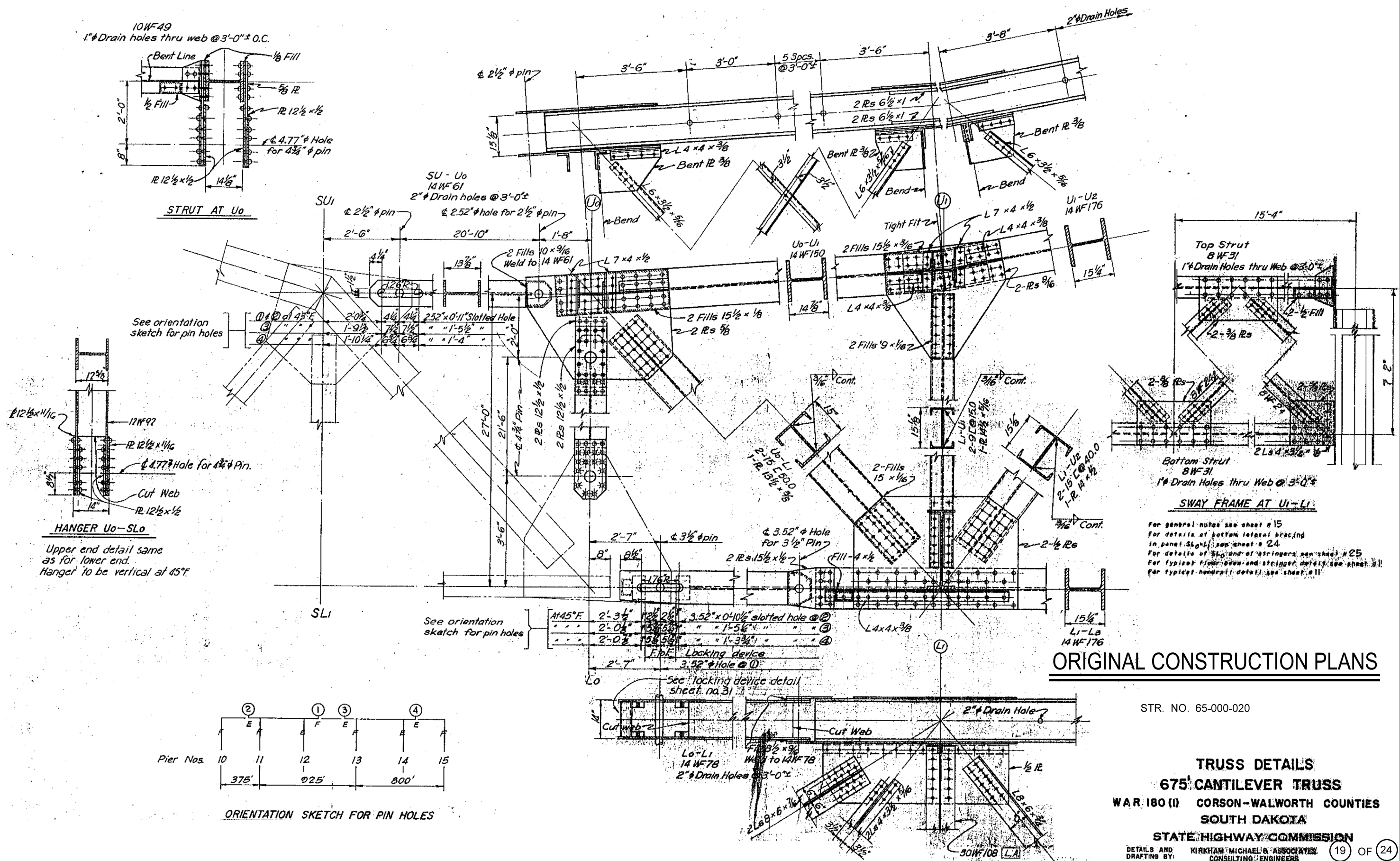
DETAILS AND DRAFTING BY: KIRKHAM, MICHAEL & ASSOCIATES CONSULTING ENGINEERS

ORIGINAL CONSTRUCTION PLANS

STR. NO. 65-000-020

Note:
Top and bottom chord members and top and bottom lateral bracing to be made of carbon steel, A-7.
All web members, except UsLs, to be made of structural steel for welding, A-373.
UsLs to be made of low-alloy steel, A-242.

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
			<i>[Signature]</i> BRIDGE ENGINEER



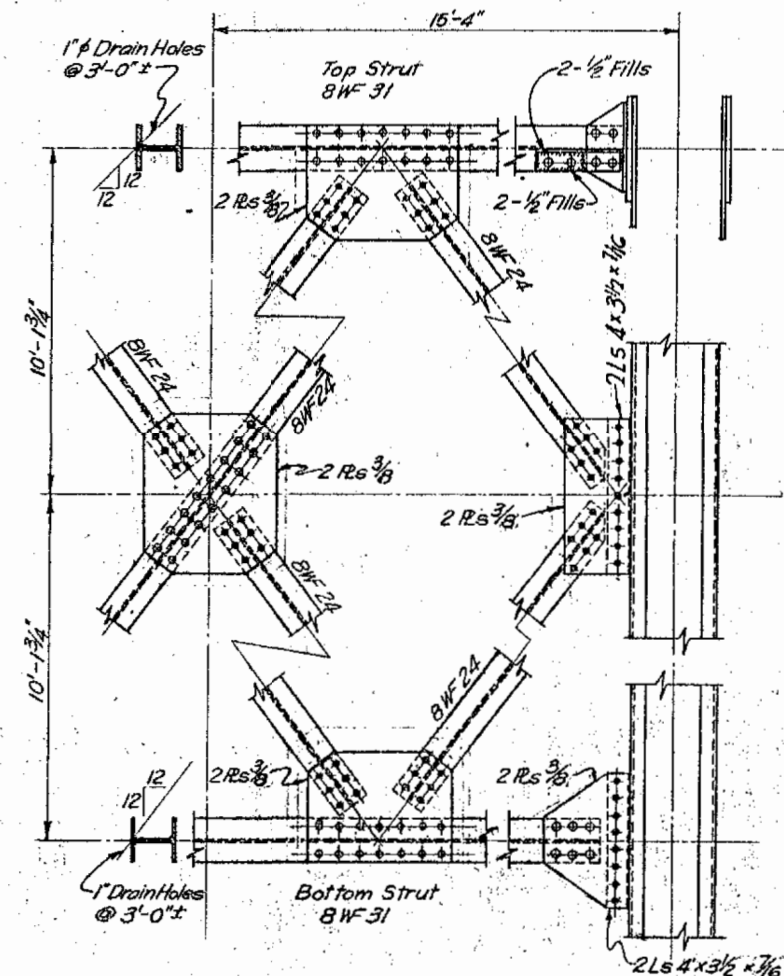
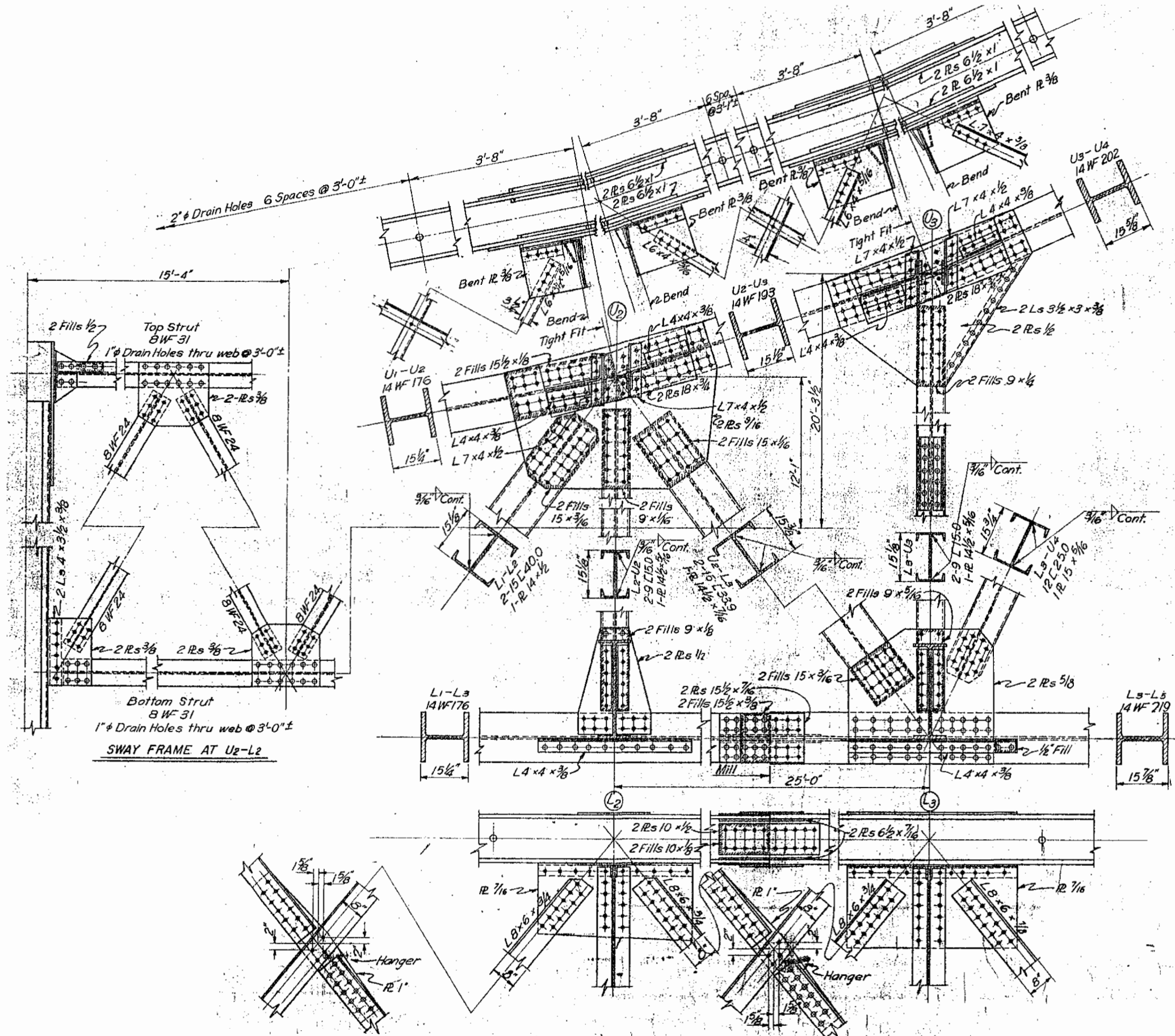
ORIGINAL CONSTRUCTION PLANS

STR. NO. 65-000-020

TRUSS DETAILS
675' CANTILEVER TRUSS
 WAR. 180 (I) CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA

STATE HIGHWAY COMMISSION
 DETAILS AND DRAFTING BY: KIRKHAM MICHAEL & ASSOCIATES CONSULTING ENGINEERS
 DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY: [Signature]
 BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	23	29



For general notes see sheet # 15.
 For detail of hanger from center stringer to bottom lateral see sheet # 22.
 For typical handrail detail see sheet # 11.
 For typical floorbeam-and-stringer details see sheet # 15.

ORIGINAL CONSTRUCTION PLANS

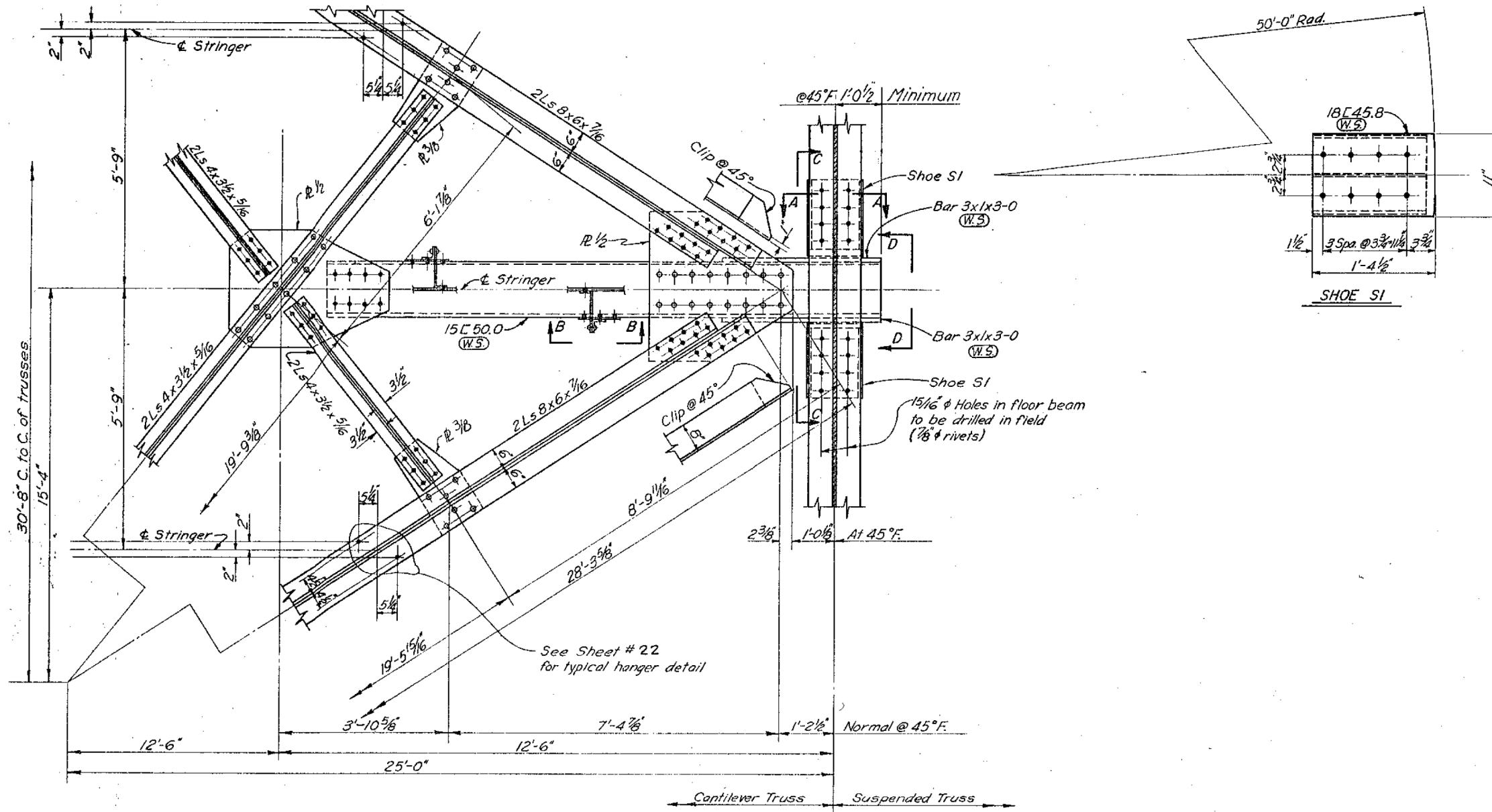
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TRUSS DETAILS
675' CANTILEVER TRUSS
 WAR 180 (I) CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA

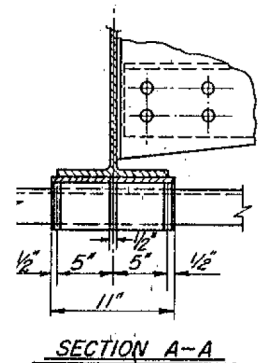
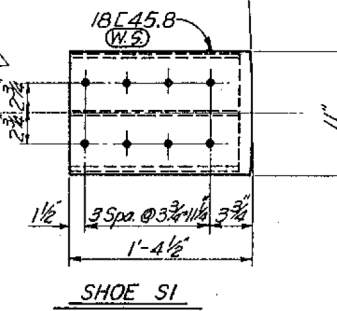
STATE HIGHWAY COMMISSION
 DETAILS AND DRAFTING BY: KIRKHAM, MICHAEL & ASSOCIATES CONSULTING ENGINEERS

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
			<i>[Signature]</i> BRIDGE ENGINEER

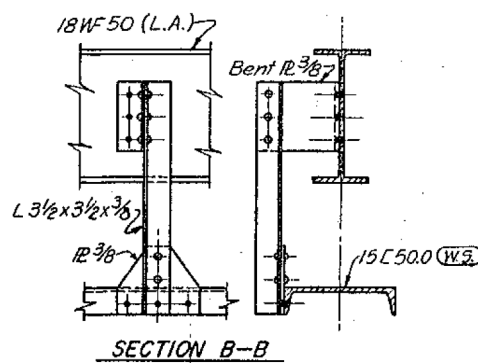
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	24	29



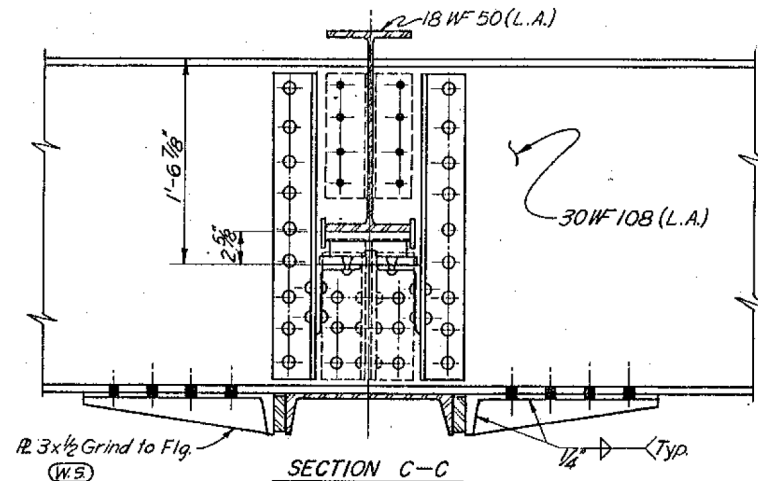
For general notes see sheet #15
 For detail hanger from stringer to bottom lateral see sheet #22
 For typical floor beam and stringer details see sheet #15
 Rivets (Carbon Steel) - 1" U.N.
 Open Holes - 1 1/16" U.N.
 Struct. Steel - Carbon Steel (A-7) U.N.
 Material marked (W.S.) shall be of Structural Carbon Steel for welding A.S.T.M. - A373-54T.



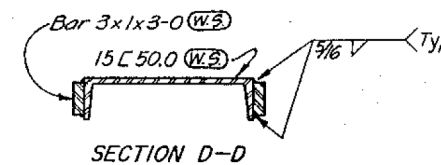
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

ORIGINAL CONSTRUCTION PLANS

STR. NO. 65-000-020

**WIND TRANSFER DETAILS
 SUSPENDED TRUSS TO CANTILEVER TRUSS**

WAR 180 (I) CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA

STATE HIGHWAY COMMISSION
 DETAILS AND DRAFTING BY: KIRKHAM MICHAEL & ASSOCIATES CONSULTING ENGINEERS 21 OF 24

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
			<i>[Signature]</i> BRIDGE ENGINEER

GENERAL NOTES (Cantilever truss)

Material
 Top and bottom chord members, top and bottom laterals, sway frames and portals, connection angles and gusset plates to be of Structural Carbon Steel A.S.T.M.-A7e30T.

Truss web members except U₅L₅ to be of Structural Carbon Steel for welding A.S.T.M.-A373-54T.

Floor system and U₅L₅ to be of Low-Alloy Steel A.S.T.M.-242-49T.

Rivets to be of Structural Rivet Steel A.S.T.M.-A141-50T.

Rivet Sizes

7/8" rivets, 15/16" open holes - top laterals sway frames and portals - U.N.

1" rivets, 1 1/16" open holes - all truss members: bottom laterals, floorbeams and stringers - U.N.

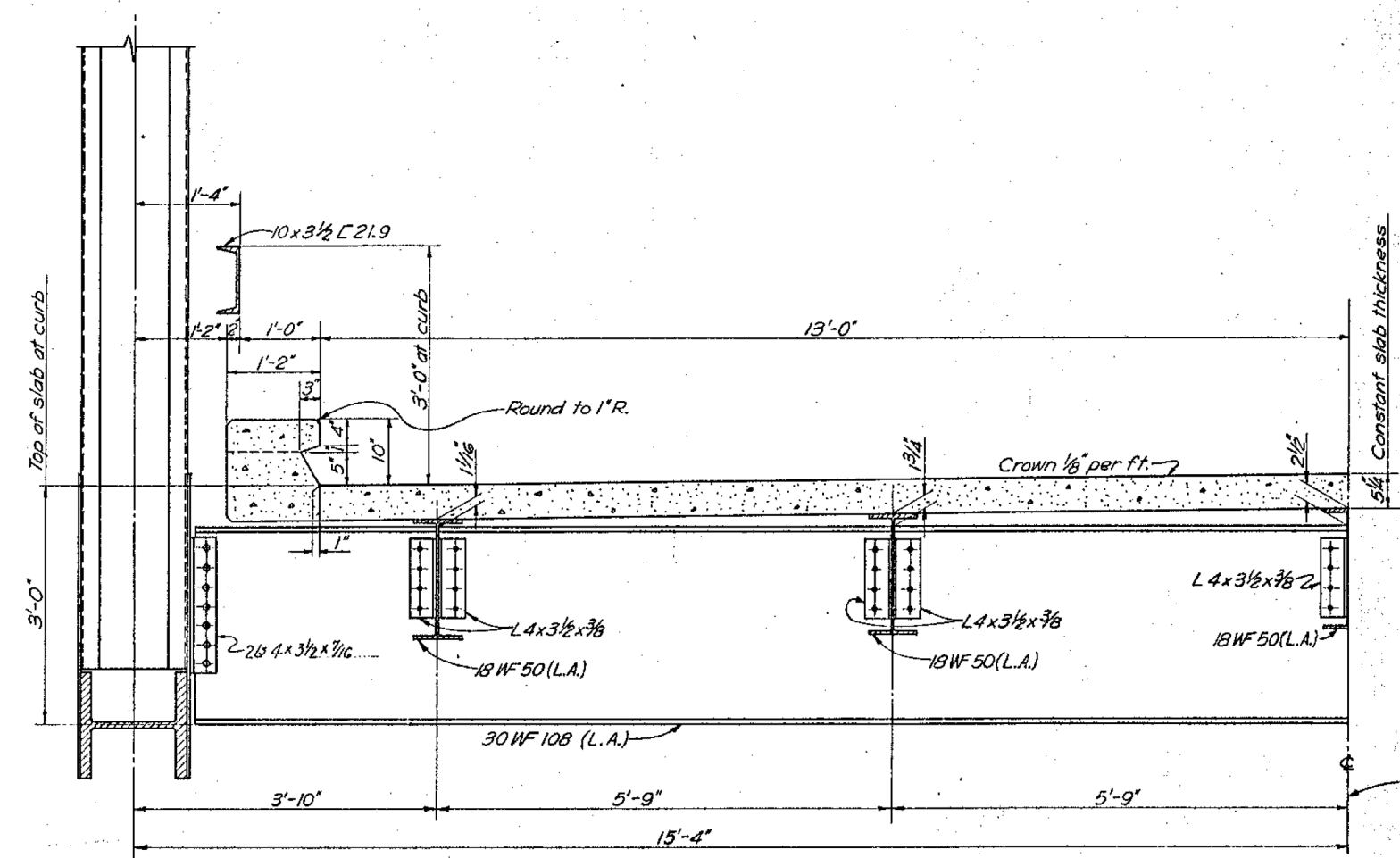
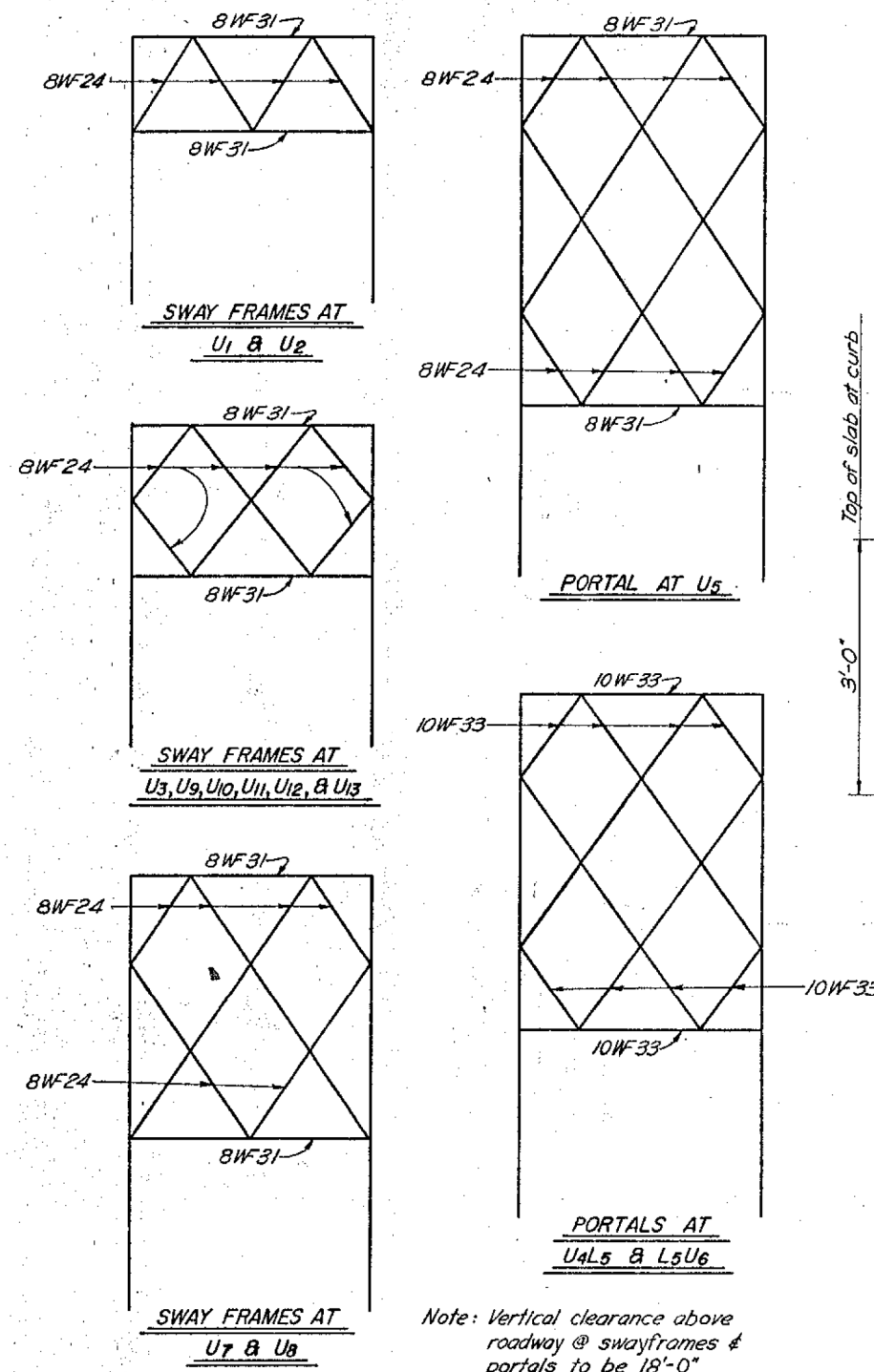
Shop and field rivets may be interchanged on these details where desired for convenience of erection.

Flanges of W members within the limits of the connections shall be true for square and parallel in shop before assembly.

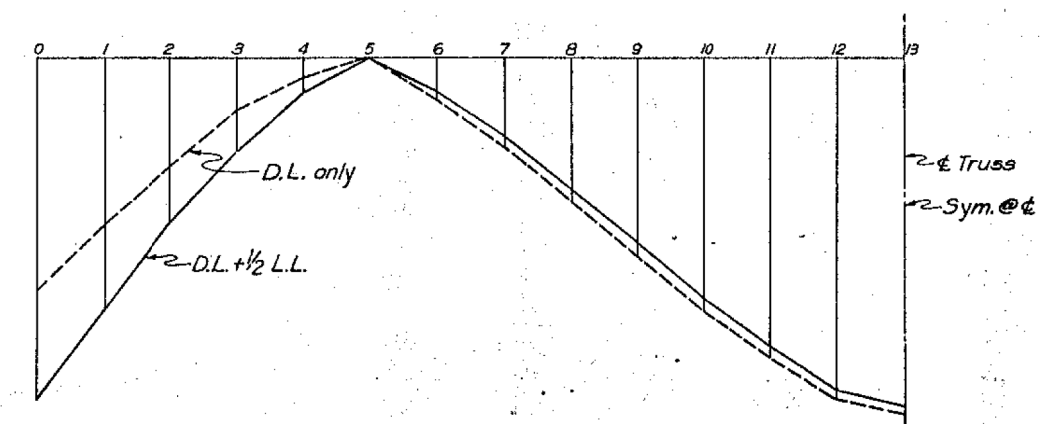
All dimensions shown are for uncambered truss at 45°F, truss shall be fabricated to camber dimensions.

All exposed steel surfaces shall be painted with one shop coat of red lead paint and two field coats of aluminum or other approved paint.

All fills not shop riveted to be tack welded.



TYPICAL CROSS SECTION AT PANEL POINTS (CANTILEVER & SUSPENDED TRUSSES)



Panel Point	0	1	2	3	4	5	6	7	8	9	10	11	12	13
D.L. only	1 9/16	1 1/8	3/4	7/16	1/8	0	1/4	5/8	1 1/16	1 5/16	1 11/16	2"	2 5/16	2 3/8
D.L. + 1/2 L.L.	2 5/16	1 11/16	1 1/8	5/8	1/4	0	7/32	9/16	7/8	1 1/4	1 3/8	1 5/16	2 1/4	2 5/16

CANTILEVER TRUSS DEFLECTION DIAGRAM

Camber dimensions equals deflection dimensions use dimensions shown for D.L. + 1/2 L.L.

ORIGINAL CONSTRUCTION PLANS

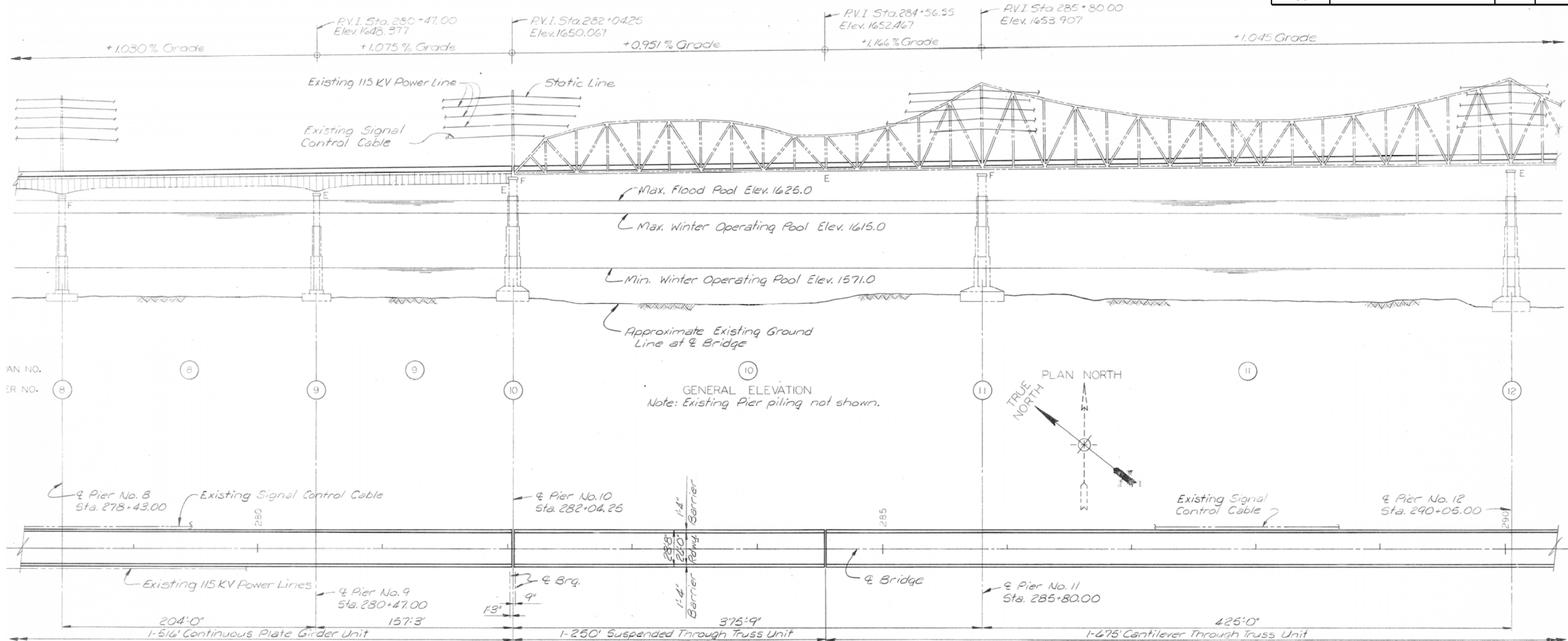
STR. NO. 65-000-020

**CROSS SECTION & PORTAL MAKE-UP
 675' CANTILEVER TRUSS
 WAR 180 (I) CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA**

STATE HIGHWAY COMMISSION
 DETAILS AND DRAFTING BY: KIRKHAM, MICHAEL & ASSOCIATES CONSULTING ENGINEERS

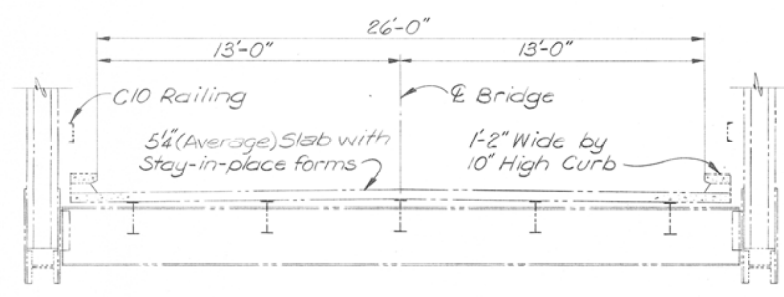
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
			<i>[Signature]</i> BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	012-368	26	29

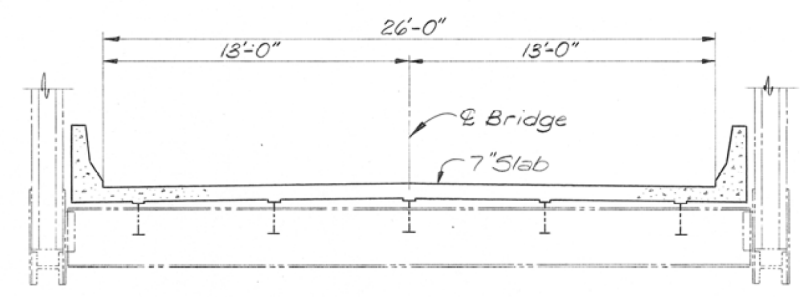


GENERAL ELEVATION
 Note: Existing Pier piling not shown.

ORIGINAL CONSTRUCTION PLANS



TYPICAL SECTION THRU TRUSS SPANS-EXISTING SLAB



TYPICAL SECTION THRU TRUSS SPANS-NEW SLAB

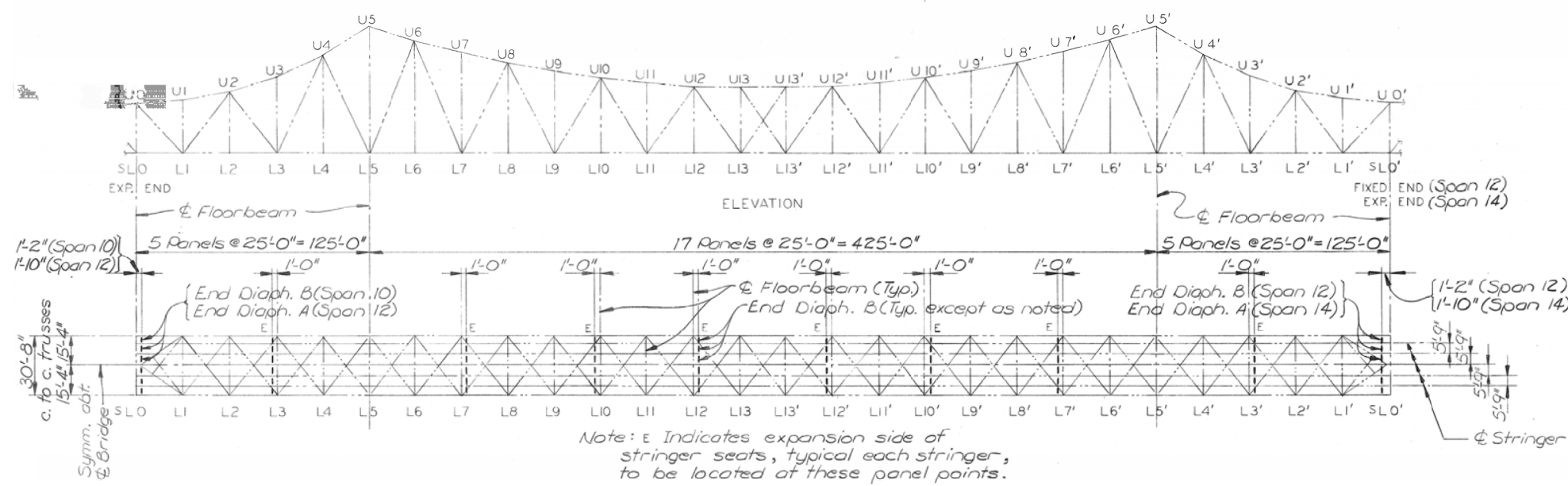
Note: For cross-section showing location of utilities and signal cable, see Sheet 5.

STR. NO. 65-000-020
 GENERAL PLAN AND ELEVATION FOR
 ALTERATIONS TO BRIDGE OVER OAHÉ RESERVOIR
 26'-0" ROADWAY
 STA. 268+01.75 TO 318+60.25
 ON U.S. HWY. NO. 12 CORSON-WALWORTH COUNTIES
 SOUTH DAKOTA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

H20-44

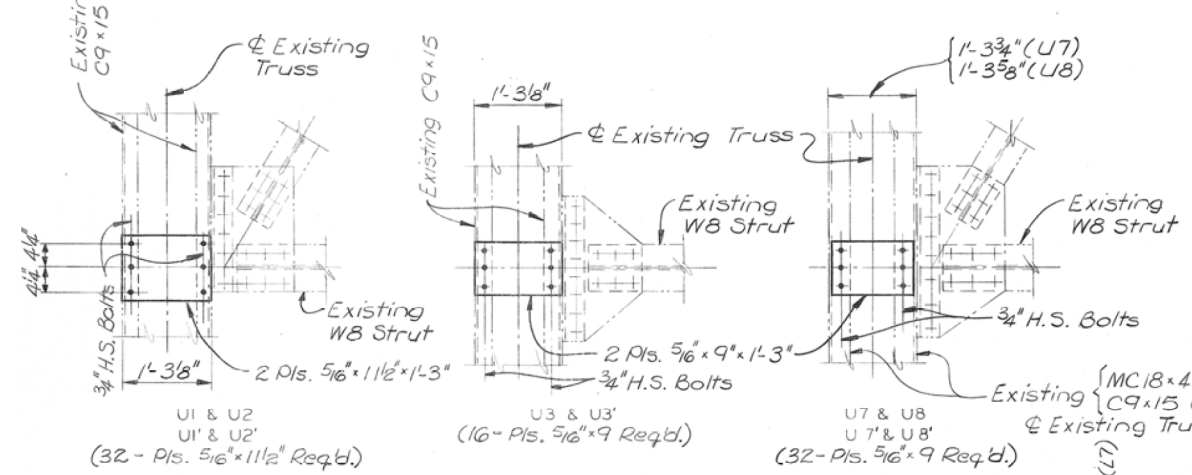
APPROVED *H.C. Wilson*
 BRIDGE ENGINEER

Drawn: O.J. Schreiner, Nov. 1976
 Checked: R.V. Butterfield, Mar. 1977

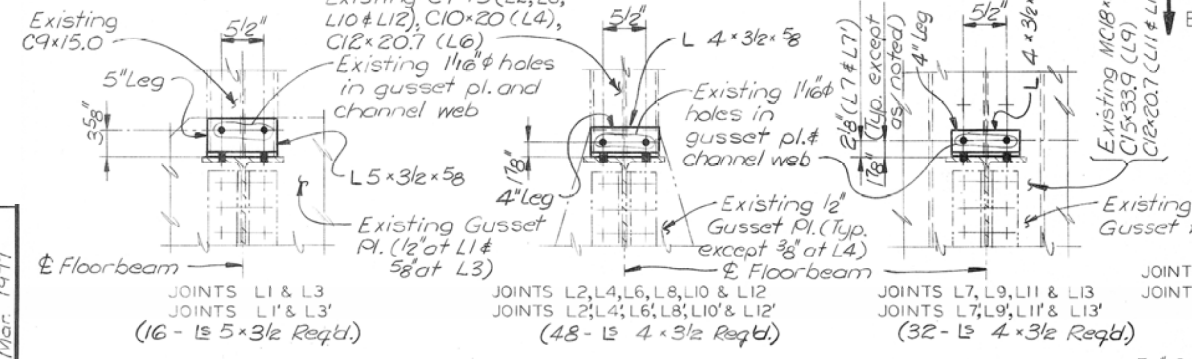


PLAN - FLOOR SYSTEM
SPAN 10
SPAN 12
SPAN 11
SPAN 13

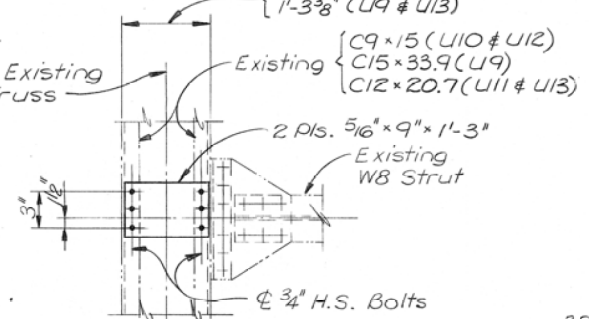
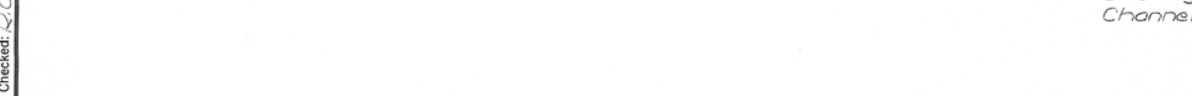
EXISTING CANTILEVER TRUSS SPANS



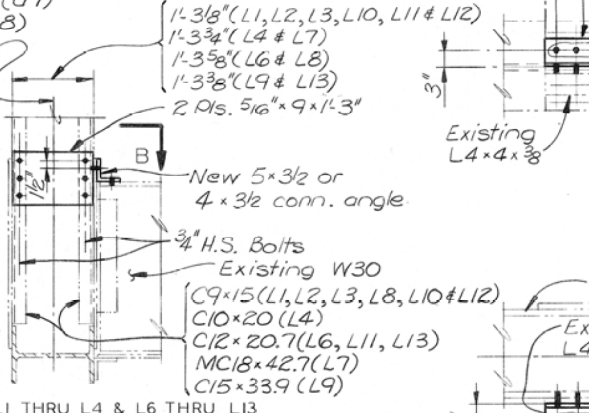
NEW STIFFENERS AT SWAY FRAMES



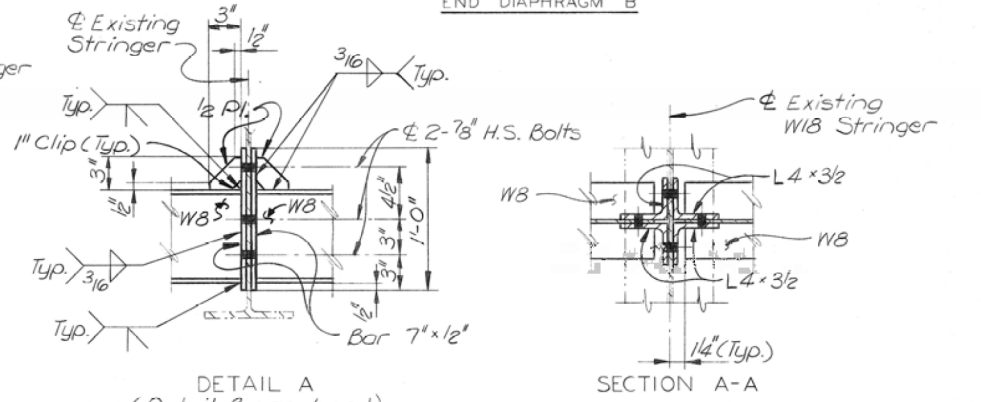
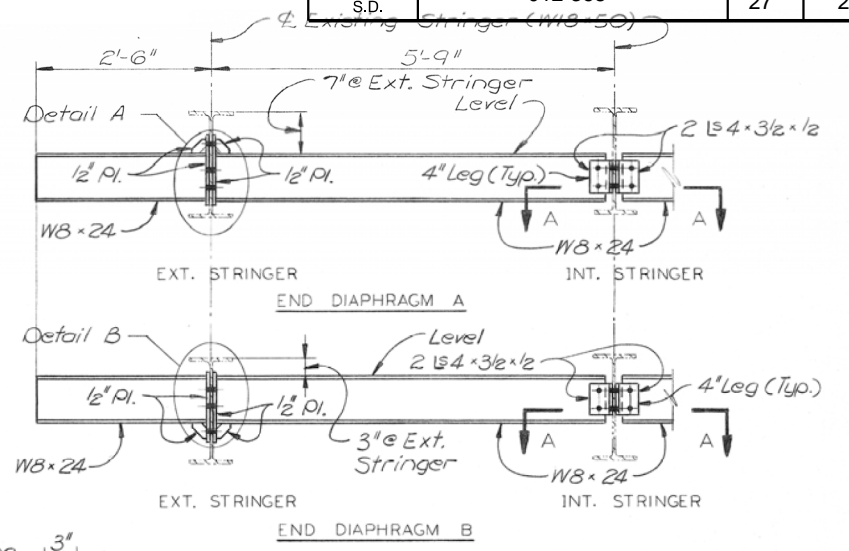
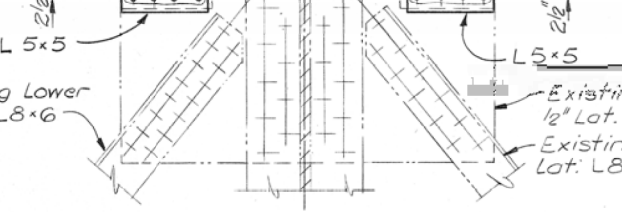
NEW CONNECTIONS - FLOORBEAM TO TRUSS



SECTION B-B



NEW CONNECTIONS AT LOWER CHORD L5 & L5'



DETAIL A (Detail B opp. hand)
NEW END DIAPHRAGM DETAILS
Note: All connections shall be 7/8" H.S. Bolts.

ORIGINAL CONSTRUCTION PLANS

NOTES

All connections shall be 1" H.S. Bolts, except as otherwise noted. For details of stringer seats, see Sheet 35.

STR. NO. 65-000-020

TRUSS DETAILS
675' CANTILEVER TRUSSES
FOR
ALTERATIONS TO BRIDGE
OVER OAKE RESERVOIR

26'-0" ROADWAY

STA. 268+01.75 TO 318+60.25

ON U.S. HWY. NO. 12 CORSON-WALWORTH COUNTIES

SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

H20-44

APPROVED *H.C. Wilson*
BRIDGE ENGINEER

Drawn: G.J. Dec., Dec. 1976
Checked: R. Olson, Mar. 1977

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

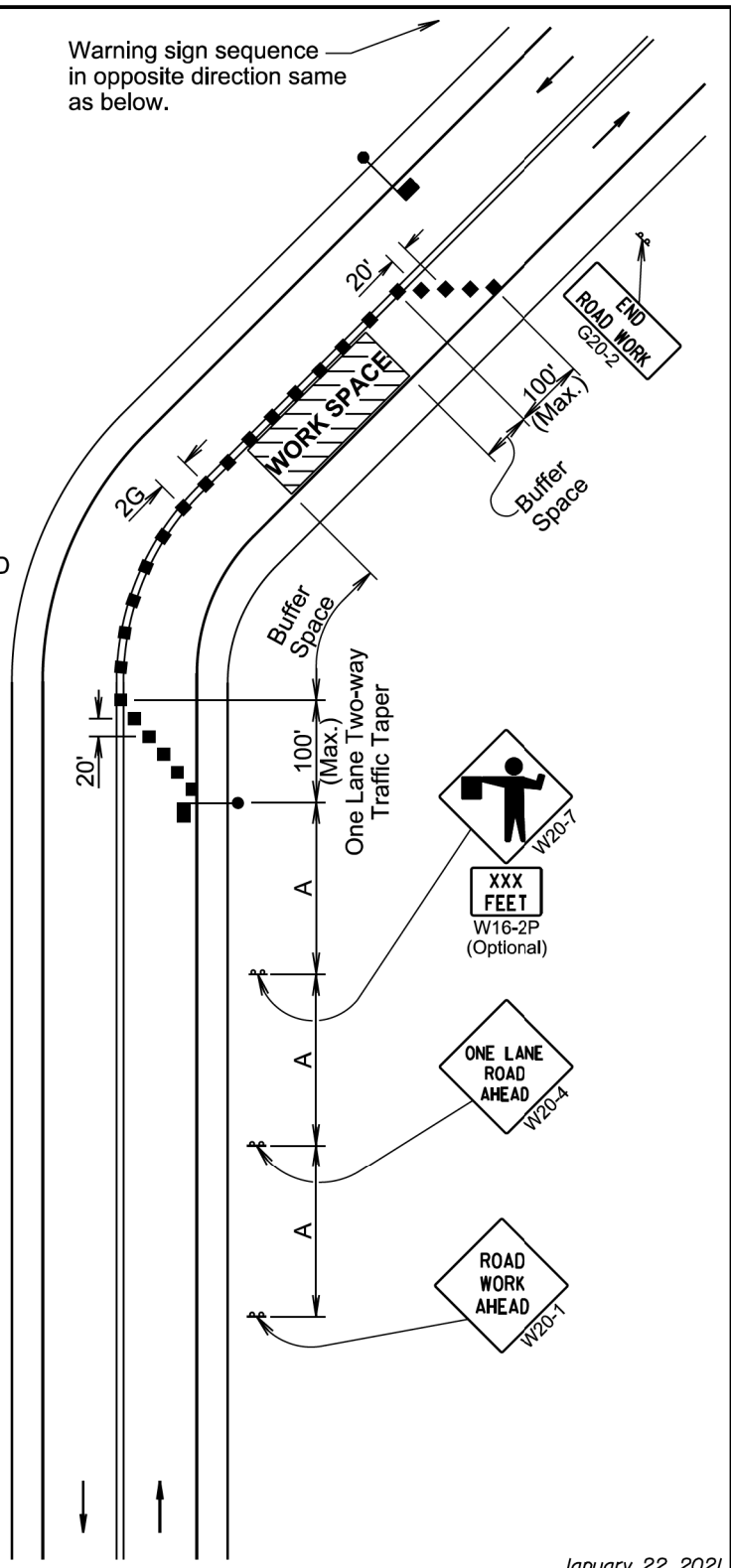
The channelizing devices will be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.

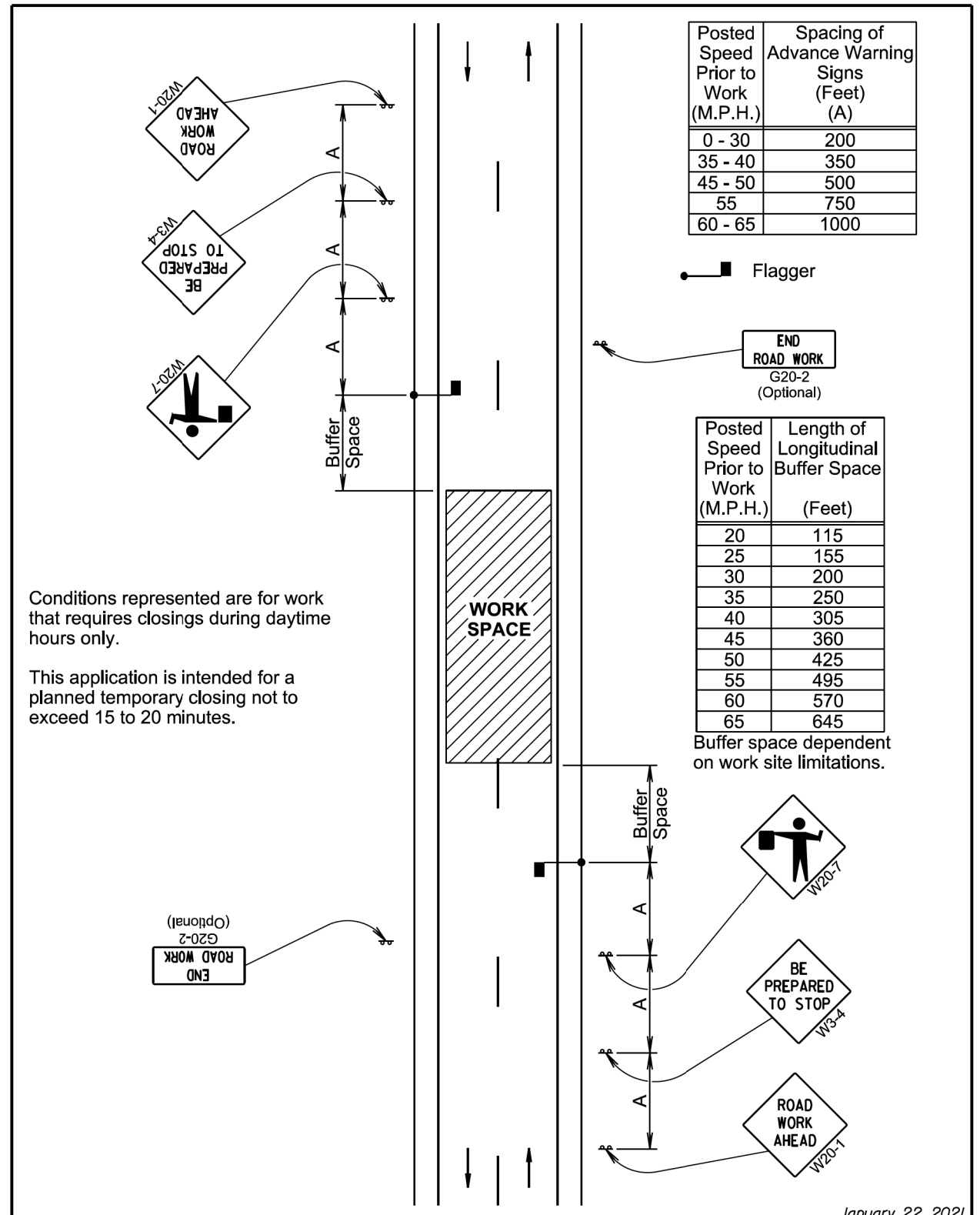


January 22, 2021

S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
	Published Date: 2025	Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000

- Flagger



Conditions represented are for work that requires closings during daytime hours only.

This application is intended for a planned temporary closing not to exceed 15 to 20 minutes.

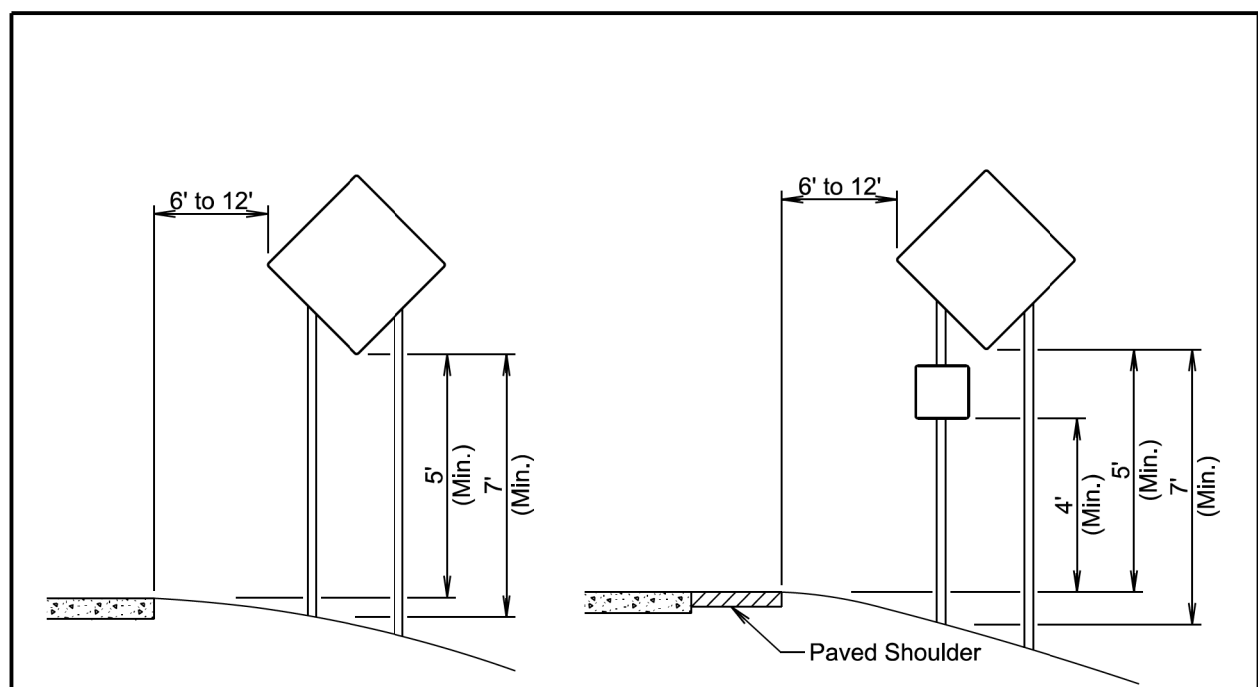
Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645

Buffer space dependent on work site limitations.

January 22, 2021

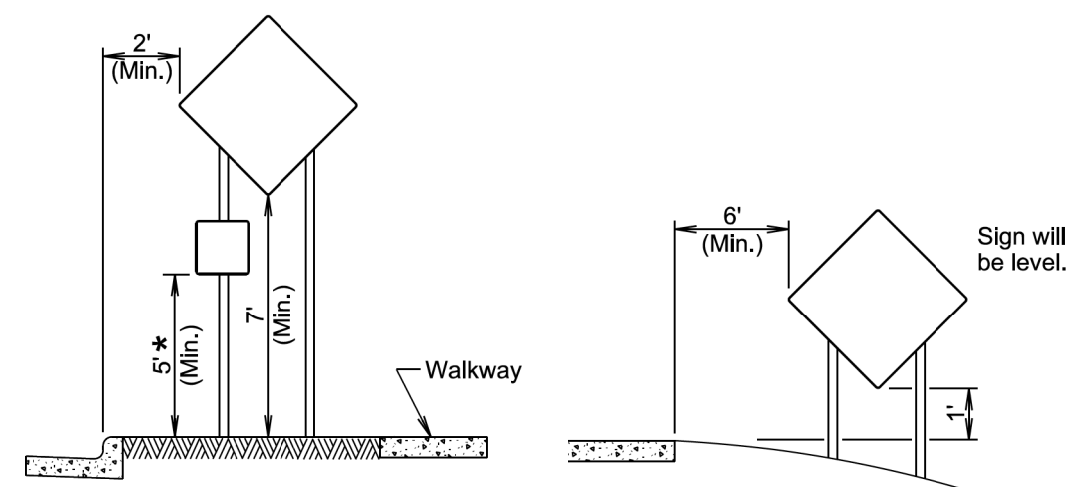
S D D O T	TEMPORARY ROAD WORK	PLATE NUMBER 634.30
	Published Date: 2025	Sheet 1 of 1

Plot Scale - 1:200



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

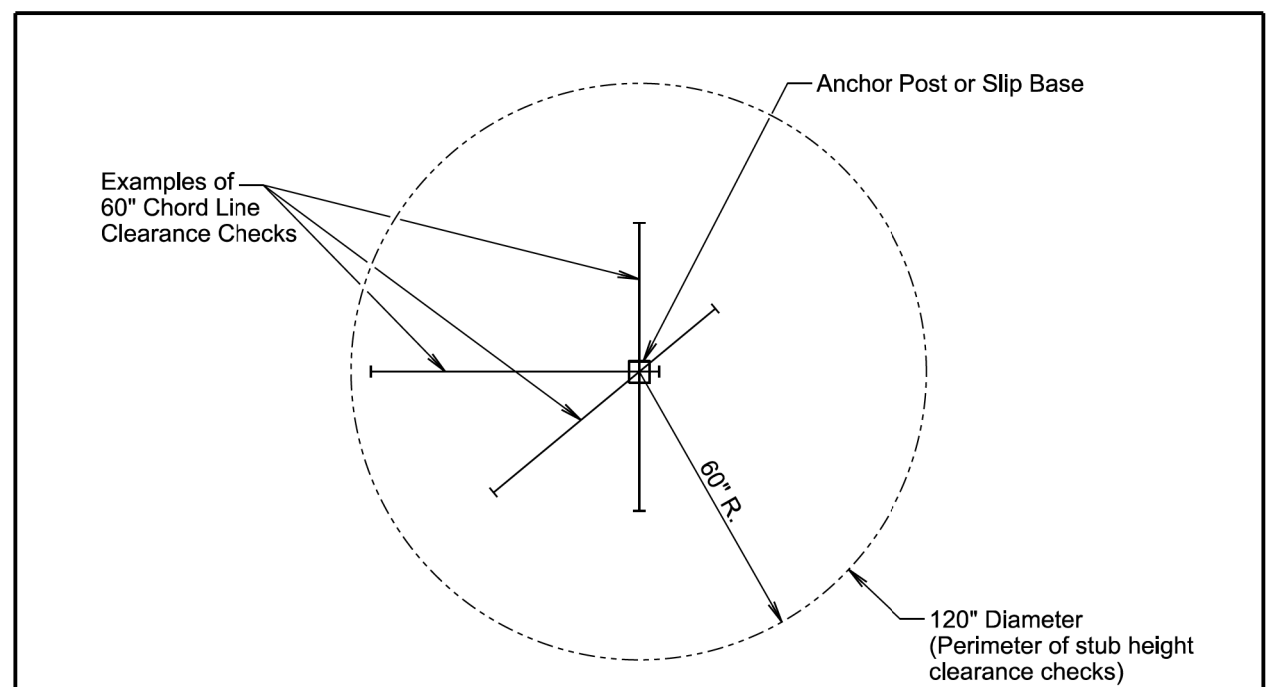
RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

* 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.

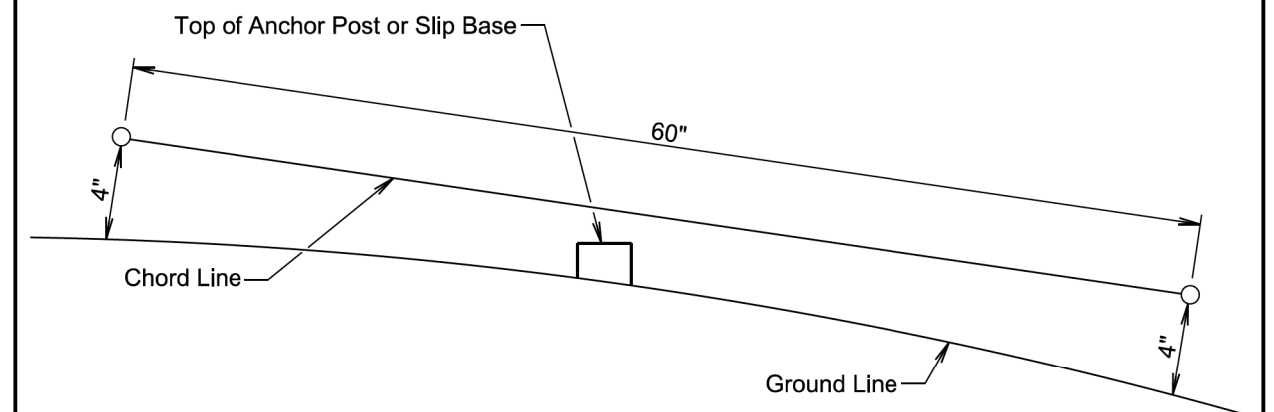
January 22, 2021

SD DOT	CRASHWORTHY SIGN SUPPORTS <i>(Typical Construction Signing)</i>	PLATE NUMBER 634.85
		Sheet 1 of 1

Published Date: 2025



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

SD DOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
		Sheet 1 of 1

Published Date: 2025

Plotted From - tpr25299

File - ...With7LT\7LT_Sig Plates.dgn