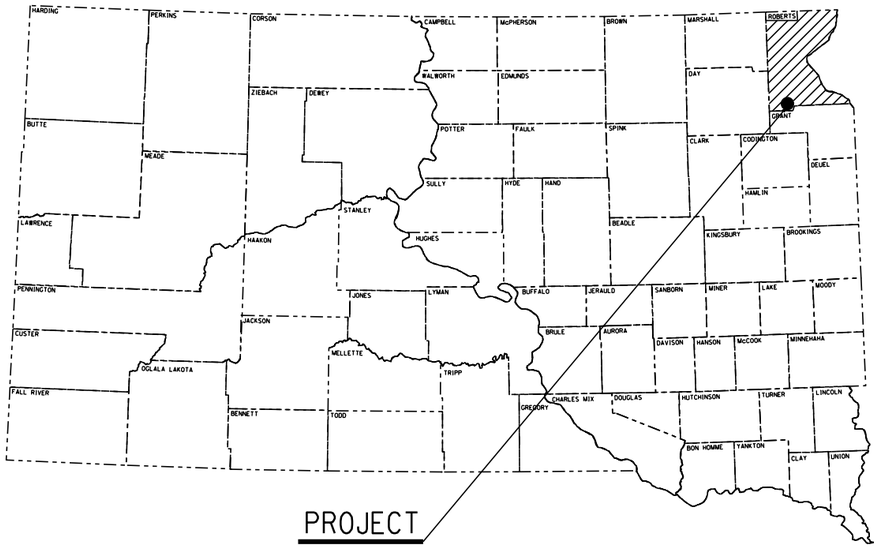
PLOT SCALE - 1:5000



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 029S-168 & 029N-168
INTERSTATE 29 N&S
ROBERTS COUNTY

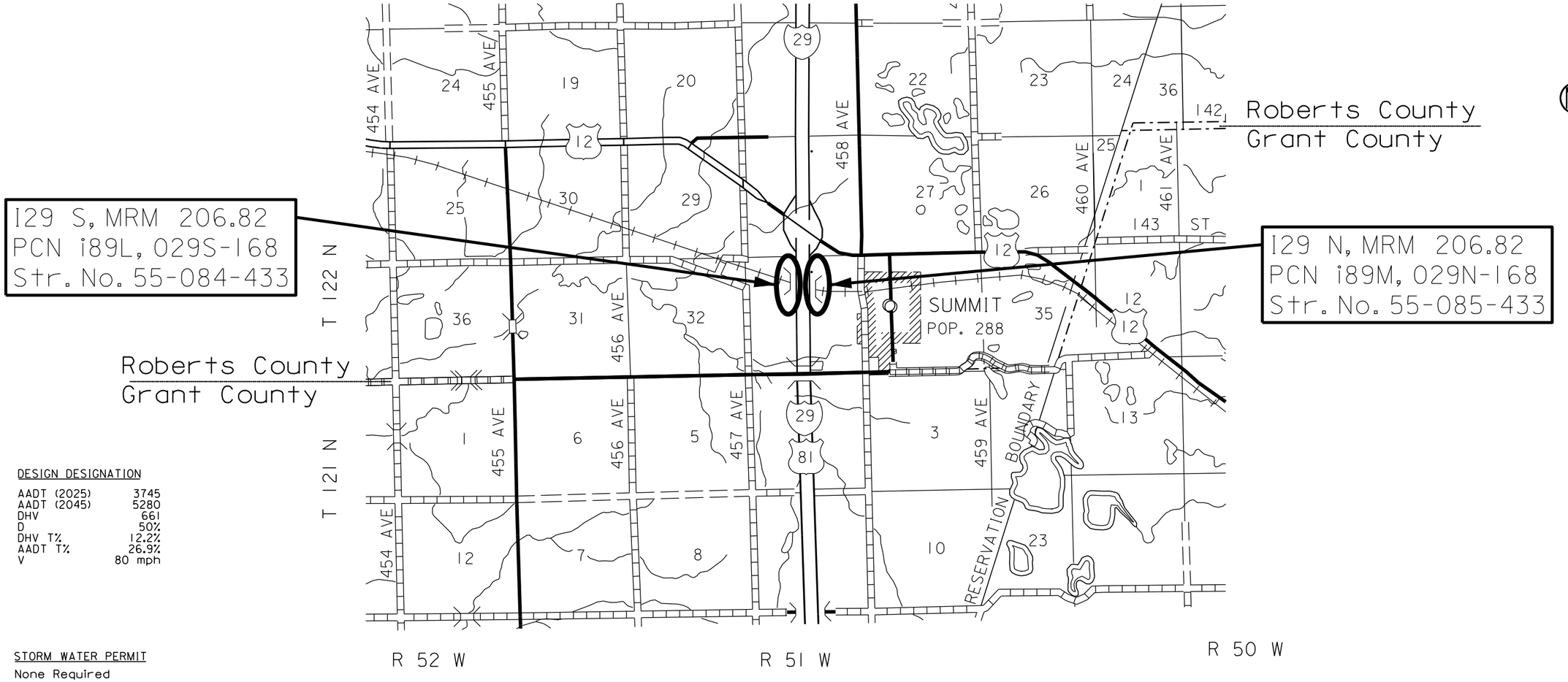
Bent Cap Repair
PCN i89L, i89M

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	1	34

Plotting Date: 10/18/2026

INDEX OF SHEETS

Sheet 1: Title sheet & map layout
Sheet 2-4: Estimate of Quantities & Enviromental Commitments
Sheet 5: Plan Notes
Sheet 6-8: Traffic Control
Sheet 9-21: Structure No. 55-084-433 Plans
Sheet 22-34: Structure No. 55-085-433 Plans



DESIGN DESIGNATION

AADT (2025)	3745
AADT (2045)	5280
DHV	661
D	50%
DHV T%	12.2%
AADT T%	26.9%
V	80 mph

STORM WATER PERMIT
None Required

PLOTTED FROM - TRAB17882

PLOT NAME - 1

FILE - ....\ROBT189L\189L_TITLE.DGN

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	2	34
Plotting Date: 09/28/2026			

PCN i89L Quantities

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E4100	Construction Schedule, Category I	Lump Sum	LS
634E0010	Flagging	5.0	Hour
634E0110	Traffic Control Signs	224.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0640	Temporary Pavement Marking	960	Ft
634E1255	Contractor Furnished Vehicle Speed Feedback Sign	1	Each
998E0100	Railroad Protective Insurance	Lump Sum	LS

Structure No. 55-084-433

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0550	Jack Superstructure, Steel Girder Bridge	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.7	CuYd
460E0230	Concrete Penetrating Sealer	9.7	SqYd
460E0300	Breakout Structural Concrete	0.7	CuYd
460E0310	Breakout and Replace Grout Pad	2	Each
480E5000	Galvanic Anode	33	Each

PCN i89M Quantities

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E4100	Construction Schedule, Category I	Lump Sum	LS
634E0010	Flagging	5.0	Hour
634E0110	Traffic Control Signs	224.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0640	Temporary Pavement Marking	960	Ft
634E1255	Contractor Furnished Vehicle Speed Feedback Sign	1	Each
998E0100	Railroad Protective Insurance	Lump Sum	LS

Structure No. 55-085-433

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0550	Jack Superstructure, Steel Girder Bridge	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.3	CuYd
460E0230	Concrete Penetrating Sealer	9.7	SqYd
460E0300	Breakout Structural Concrete	0.3	CuYd
460E0310	Breakout and Replace Grout Pad	1	Each
480E5000	Galvanic Anode	13	Each

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 10-7-2026 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.

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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/doing-business/environmental/about-environmental/>

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 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.

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

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COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 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.

The Contractor is responsible 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.

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SEQUENCE OF OPERATIONS AND SCOPE OF WORK

Scope of work can be found in the Structure sheets.

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate 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. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

PCN i89L

1. Install Traffic Control devices.
2. Complete Phase 1 of the bridge work (see structure sheets).
3. Switch Traffic Control and repeat steps 1 through 5 for Phase 2 of the bridge work.
4. Remove jacks for Phase 2 of the bridge work.
5. Apply concrete penetrating sealer as specified in structure sheets.
6. Remove Traffic Control and finish any other project cleanup.

PCN i89M

1. Install Traffic Control devices.
2. Complete bridge work (see structure sheets).
3. Remove Traffic Control and finish any other project cleanup.

MAINTENANCE OF TRAFFIC

A 16' lane of travel will be maintained at all times across the Structures. Traffic control will be as per Standard Plate 634.63.

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 temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

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 application of concrete penetrating sealer.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

If inappropriate or conflicting pavement markings exist, the markings will be removed and replaced with applicable temporary pavement markings when the work duration is more than 3 days. When the work duration is less than 3 days, the channelizing devices in the area where the pavement markings conflict will be placed at one-half of the normal channelizing device spacing. Pavement marking removals will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous". Temporary pavement marking will be paid for at the contract unit price per foot for "Temporary Pavement Marking". The additional channelizing devices will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans.

Construction vehicles will exit or enter the construction work zone at locations identified by the Engineer. At no time will construction vehicles utilize the maintenance crossovers or the Interstate median to exit or enter Interstate traffic.

LANE CLOSURES

The length of lane closures for structure work on interstate should be limited to one structure or 1 mile. Structures should be done separately unless they are within 2 miles of another structure.

Interstate lane closures will be removed when work will not be occurring for a period of 3 or more calendar days. Activities that do not involve workers being present, such as curing time for concrete, constitute work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for each site. Payment will only be for those signs used on each site.

WORK ZONE SPEED REDUCTION

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63. To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

CONTRACTOR FURNISHED VEHICLE SPEED FEEDBACK SIGN

The Contractor will provide 2 vehicle speed feedback signs to monitor traffic speeds on designated routes at locations specified in the field by the Engineer.

The vehicle speed feedback sign assembly will include a speed limit sign mounted in conjunction with the vehicle speed feedback display. The speed display will not flash vehicle speeds exceeding the speed limit nor any other messages.

All costs associated with furnishing, maintaining, transporting, relocating if necessary, and removing the vehicle speed feedback signs from locations specified by the Engineer will be incidental to the contract unit price per each for "Contractor Furnished Vehicle Speed Feedback Sign".

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 Roberts County Sheriff 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 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.

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.

PLOT SCALE - 1:200

PLOT NAME - 2

PCN i89L ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 65	3	36" x 48"	12.0	36.0
R2-1	SPEED LIMIT 80	1	36" x 48"	12.0	12.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	1	48" x 48"	16.0	16.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	1	48" x 24"	8.0	8.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			**224.0**

PCN i89M ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 65	3	36" x 48"	12.0	36.0
R2-1	SPEED LIMIT 80	1	36" x 48"	12.0	12.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	1	48" x 48"	16.0	16.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	1	48" x 24"	8.0	8.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			**224.0**

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Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000
	(A) (B) (C)
70 - 80	1000 1500 2640

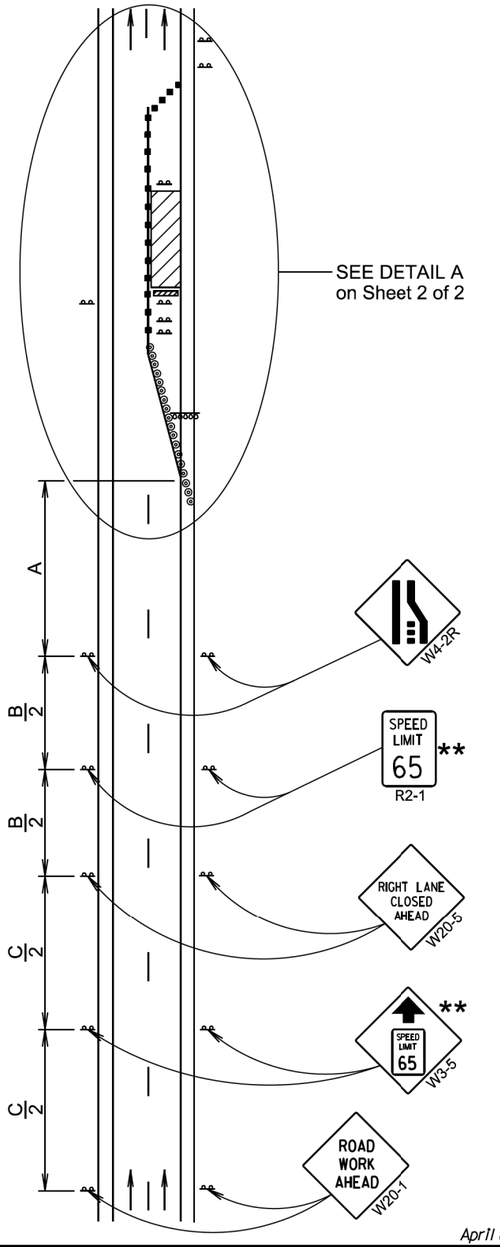
** Speed appropriate for location.

◎ Reflectorized Drum

■ Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



April 8, 2025

Published Date: 2027	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 -30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

*** Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.

◎ Reflectorized Drum

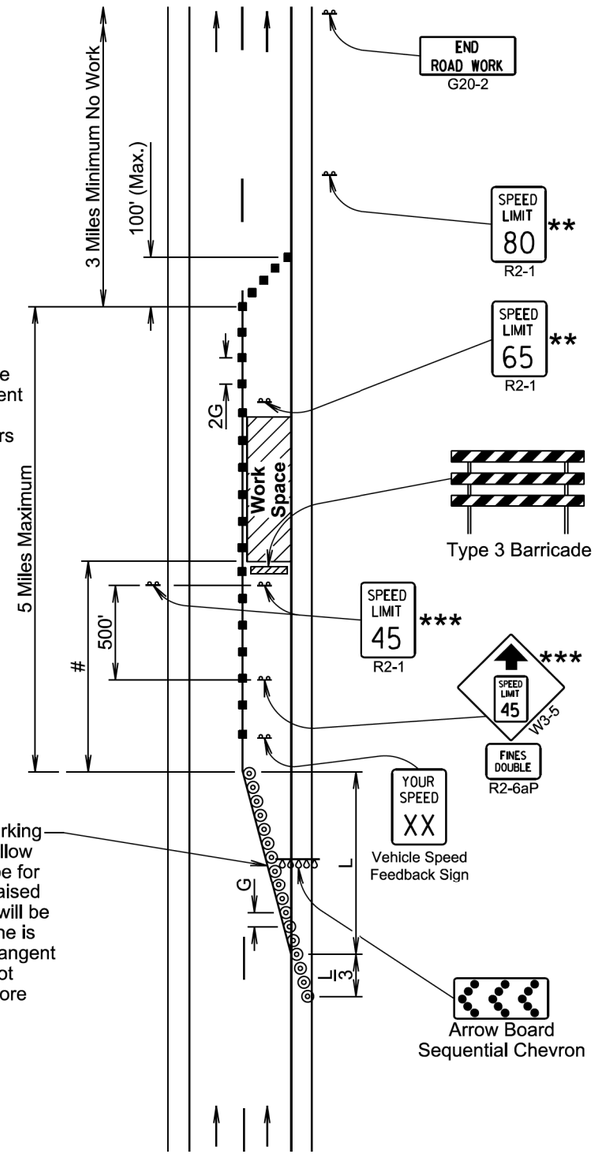
■ Channelizing Device

The Work Space will be a minimum of 500' from the end of the taper.

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



DETAIL A

April 8, 2025

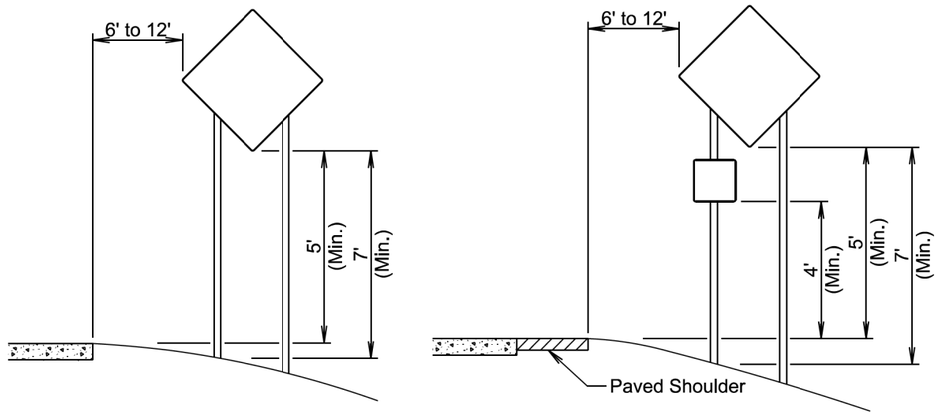
Published Date: 2027	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2

PLOT SCALE - 1:200

PLOTTED FROM - TRAB17882

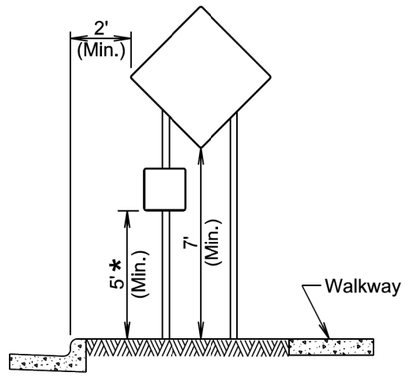
PLOT NAME - 3

FILE - ...\ROBT189L\63463_&_63463.DGN

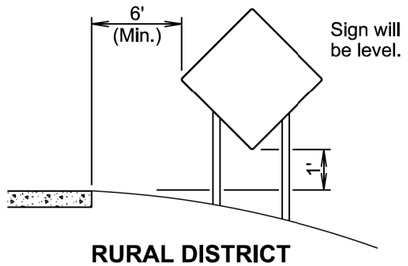


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

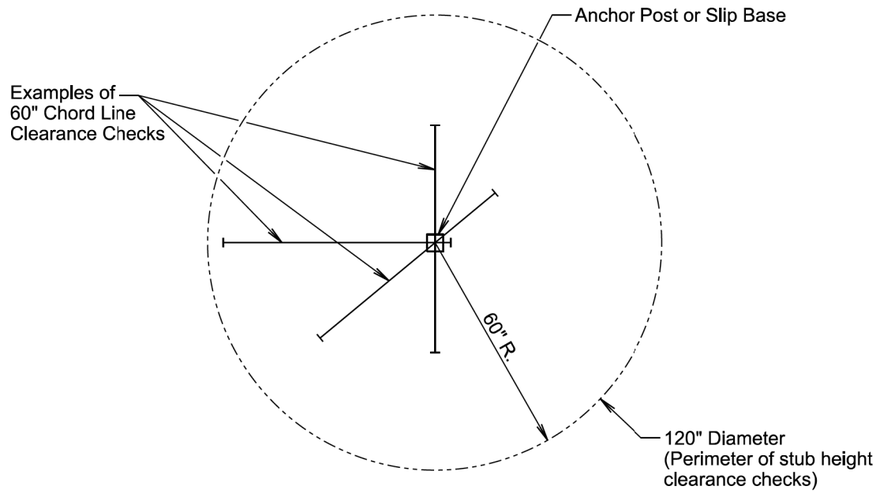


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

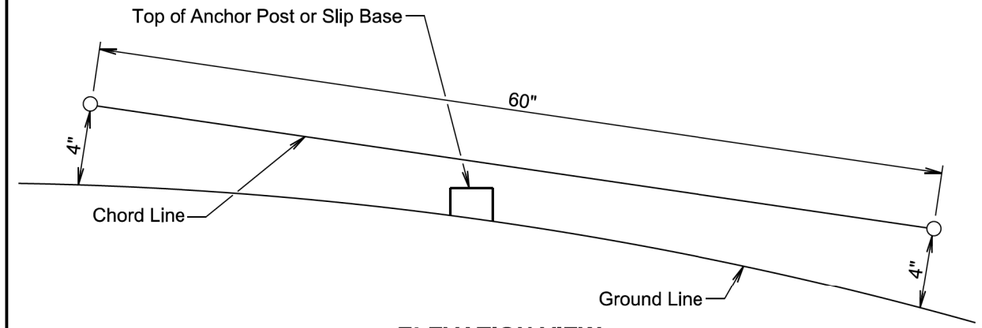
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2027	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

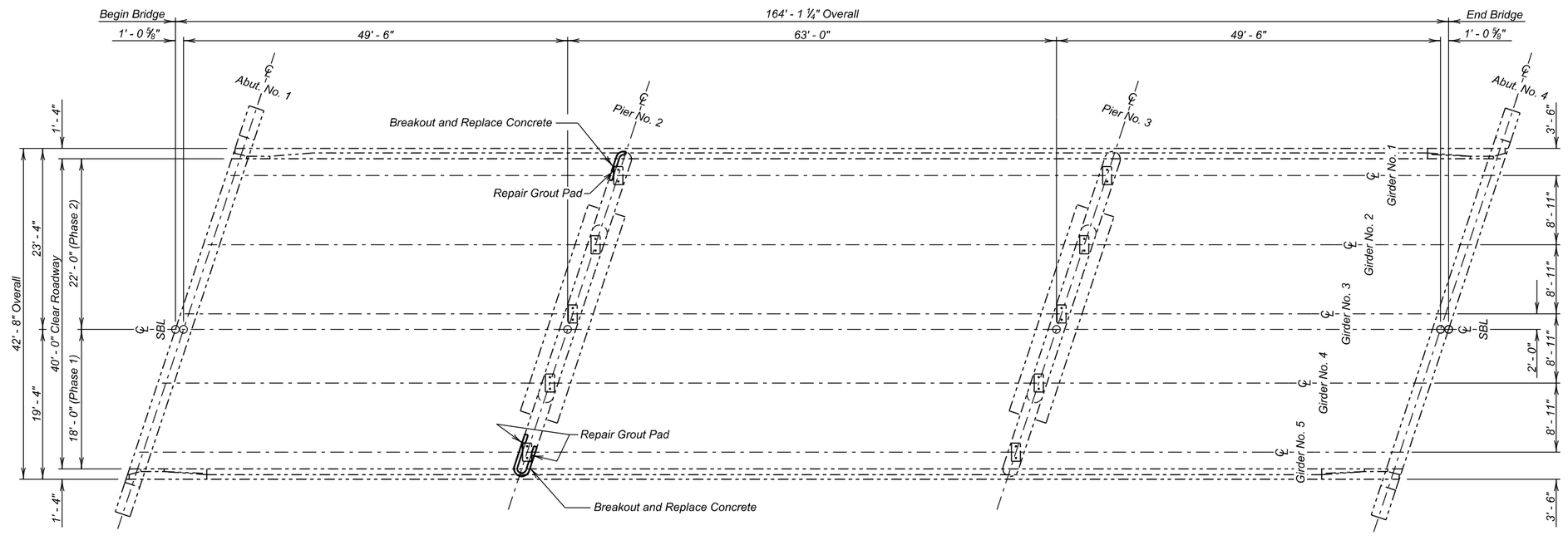
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

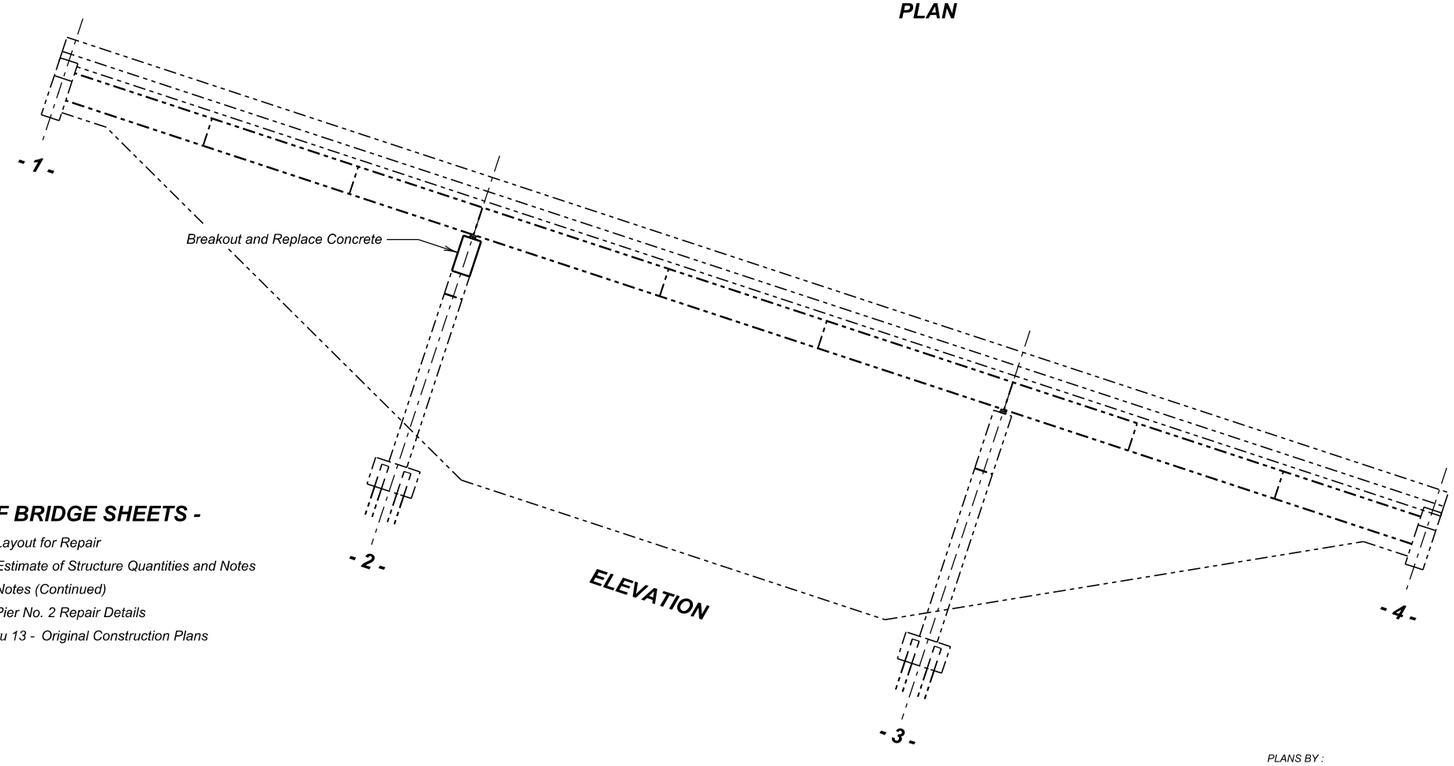
Published Date: 2027	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

PLOT SCALE - 1:200
PLOT NAME - 4
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-PLOTTED FROM - TRAB17982

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	9	34



PLAN



- X171 -
INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Layout for Repair
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Notes (Continued)
Sheet No. 4 - Pier No. 2 Repair Details
Sheet No. 5 thru 13 - Original Construction Plans

(SOUTH BOUND LANES)
LAYOUT FOR REPAIR

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433
PCN I89L

18°14' SKEW L.H.F.
SEC. 33 - T122N - R51W
029 S-168

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2026

-X171-

1 OF 13

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	JB	Steve A Johnson
ROBTI89L	I89LBA01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E0550	Jack Superstructure, Steel Girder Bridge	LumpSum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.7	CuYd
460E0230	Concrete Penetrating Sealer	9.7	SqYd
460E0300	Breakout Structural Concrete	0.7	CuYd
460E0310	Breakout and Replace Grout Pad	2	Each
480E5000	Galvanic Anode	33	Each

SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 10th Edition.

2. Construction Specifications: Standard Specifications for Roads and Bridges, 10-7-26 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.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

1. 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.

2. The stationing shown in the original construction plans is reversed from the current project. As such, labels for the begin and end of bridge as well as the substructure units are reversed.

COORDINATION WITH RAILROAD

During the repair, the Contractor will not interfere with the operating railroad train movements. Construction activity must not take place within 25 ft. of the centerline track when train movements are occurring through the construction site and construction equipment will be removed from this zone prior to arrival of any train.

SCOPE OF BRIDGE WORK

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

1. Move traffic off the repair area. Remove the temporary supports and install jacks for the first phase of construction.

2. Breakout and remove concrete to the limits specified in the plans and any additional delaminated concrete or patching material in the repair area for the first phase of construction. Remove any remaining pieces of the existing fiber reinforced polymer wrap from the affected areas shown in the plans.

3. Install galvanic anodes in the repair area for the first phase of construction.

4. Form the bent cap as needed and place new A45 concrete in the repair area for the first phase of construction.

5. Repair the grout pad for the first phase of construction.

6. Remove the jacks and switch traffic. Complete steps 1 through 5 for the second phase of construction.

7. Apply concrete penetrating sealer to the top of the bent cap and grout pads.

JACKING SUPERSTRUCTURE

1. Vertical jacks will be used to support the girder at the plan specified locations until the concrete is repaired and grout pad reaches a minimum of 2000 psi or the concrete forms are removed whichever is later.

2. The vertical jacks will have a lock nut for mechanical load holding with hydraulic pressure released and calibrated gauges, which indicate jack load.

3. Each jack will have a bearing plate at both ends of sufficient area and thickness to limit the bearing stress on the loaded areas of concrete to not more than 1,600 psi and to limit the bearing stress on the loaded area of steel to not more than 20,000 psi.

4. Caution will be exercised when transferring the girder reactions to and from the jacks to ensure that no damage to any of the existing structural components will occur due to the jacking procedure. Any damage to any of the structural components of the bridge caused by the jacking procedure will be repaired as approved by the Engineer at no cost to the Department.

5. The Contractor will be required to submit a detailed jacking plan. The jacking procedure will be submitted 7 days prior to the start of work for the approval by the Office of Bridge Design. Included in this procedure will be the bearing plates; type, number, size, and positioning of jacks; temporary support details; load monitoring method; and method of synchronization between multiple jacks.

6. All costs for materials, labor, equipment and incidentals necessary to perform the vertical jacking as shown by these plans will be included in the contract lump sum price for Jack Superstructure, Steel Girder Bridge.

CONCRETE BREAKOUT

1. The pier concrete removal shown in the plans will be the minimum removal limits. All the poor-quality patching material and delaminated concrete will be removed from repair area. If the breakout limits expose more than one of the top #10 reinforcing bars in the cap, contact the Bridge Construction Engineer prior to proceeding. Breakout limits will be defined with a 3/4" deep sawcut, where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken 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.

2. The existing fiber wrap will only need removed from the repair areas or as needed for the removal and replacement operations.

3. All broken out concrete and any existing anodes will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.

4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, removal of portions of fiber wraps, cleaning and straightening reinforcing steel, and disposal of all broken out material.

CLASS A45 CONCRETE, BRIDGE REPAIR

The Class A45 Concrete, Bridge Repair will meet the requirements for A45 concrete used in pier caps including requirements for form removal and application of live load.

(SOUTH BOUND LANES)
ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE
STR. NO. 55-084-433
SEPTEMBER 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	TJM	BRIDGE ENGINEER
ROBTI89L	I89LMA02		

SD DOT	PROJECT	SHEET	TOTAL SHEETS
	029S-168 029N-168	11	34

GALVANIC ANODE

1. The Contractor will furnish and place galvanic anodes in the concrete repair areas specified in this plan set.

2. The galvanic anodes will be supplied as one of the following:

   a. Galvashield XP2
   Vector Corrosion Technologies
   800 Winchester Road, Suite 175
   Lexington, KY 40505
   Phone: (612) 248-5651

   b. Sentinel Silver
   Euclid Chemical Company
   19215 Redwood Road
   Cleveland, OH 44110
   Phone: (800) 321-7628

   c. Sika FerroGard 670
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (201) 933-8800

3. The anodes will be placed in accordance with manufacturer's recommendations and as approved by the Engineer. The anodes have not been shown on the drawings. The Contractor will provide drawings of the galvanic anode installation including locations of the individual anodes to the Office of Bridge Design.

4. The anodes will be placed with a minimum ¾" cover and will be set in embedding mortar per the manufacturer's recommendations. The anodes will be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket will be chipped out behind the anode to provide minimum cover. The Contractor may need to chip around the reinforcing bar locally at the anode installation to make the electrical connection. The reinforcing steel at the connection location will be cleaned per the manufacturer's recommendations to provide electrical connection and mechanical bond.

5. The electrical continuity of the connections and reinforcing steel will be confirmed per the manufacturer's recommendations.

6. The Contractor will provide manufacturer's product literature and installation instructions to the Engineer 10 days prior to installation.

7. All costs associated with placing anodes including labor, equipment, materials, and incidentals will be included in the contract unit price per each for Galvanic Anode.

(SOUTH BOUND LANES)

NOTES (CONTINUED)

FOR

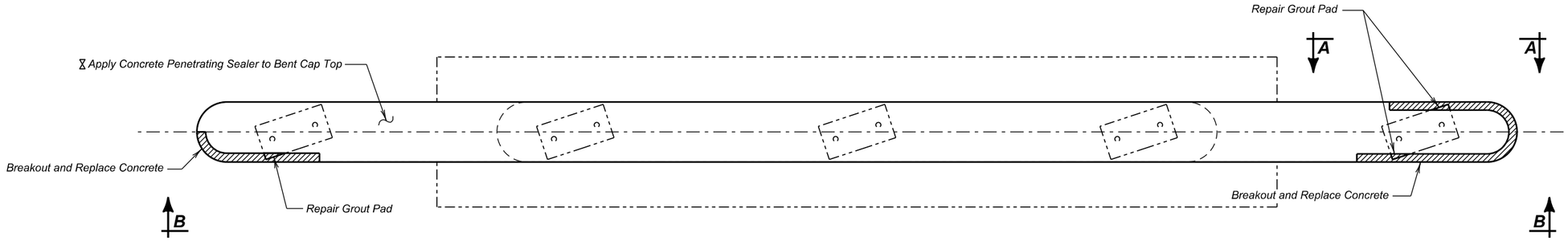
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

STR. NO. 55-084-433

SEPTEMBER 2026

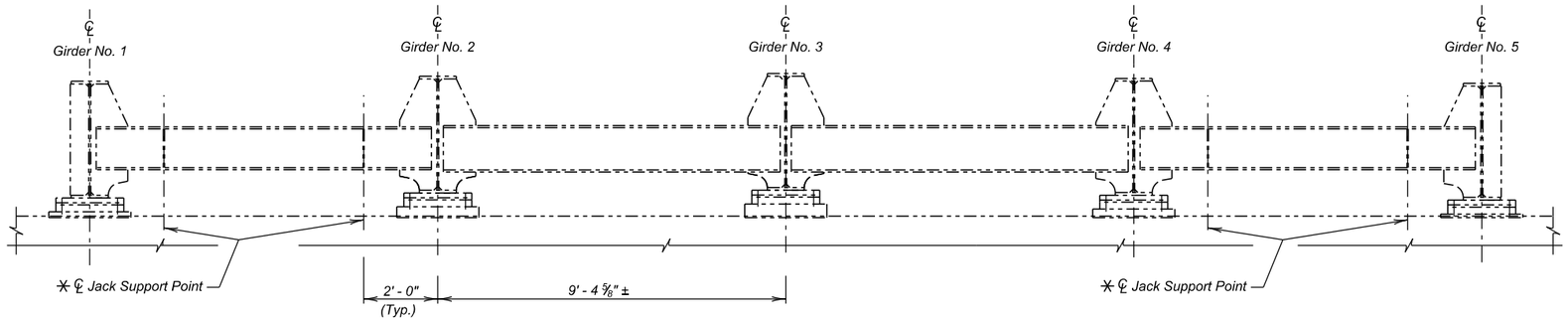
DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM ROBTI89L	JKI i89LMA03	TJM	Steve A Johnson BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	12	34



PLAN

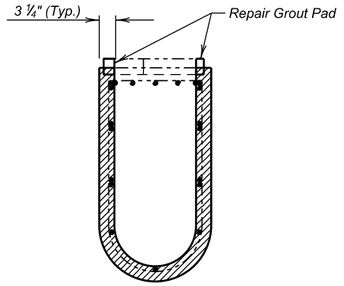
⧖ *The quantity of sealer shown is the area of the whole bent cap, some portion will be covered with fiber wrap. The sealer is to be applied on any exposed concrete or grout pad. Some of the fiber wrap has already been removed, any additional fiber removal will be as needed for the repairs.*



ELEVATION
(Deck not Shown for Clarity)

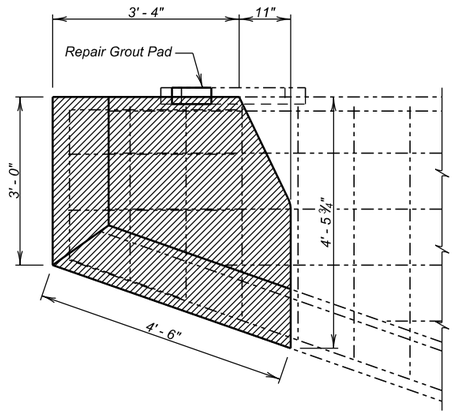
Legend:

Shaded Area indicates area to be broken out and replaced

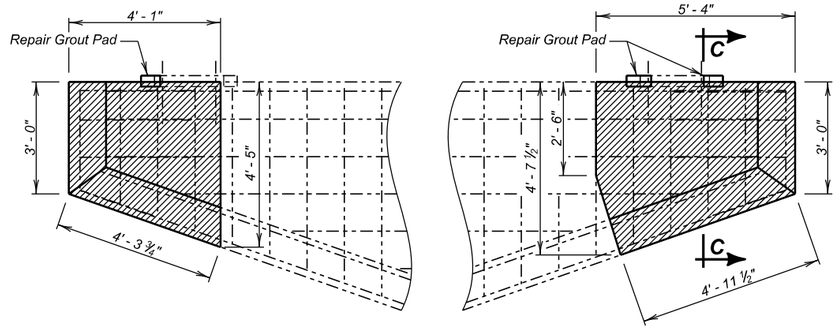


SECTION C - C

⚹ *Jack will be capable of supporting a load of 90 Kips.*



VIEW A - A
(North Face)



VIEW B - B
(South Face)

ESTIMATED QUANTITIES			
		QUANTITY	
ITEM	UNIT	PHASE 1	PHASE 2
Jack Superstructure, Steel Girder Bridge	LS	Lump Sum	Lump Sum
Class A45 Concrete, Bridge Repair	CuYd	0.5	0.2
⧖ Concrete Penetrating Sealer	Sqyd	-	9.7
Breakout Structural Concrete	CuYd	0.5	0.2
Breakout and Replace Grout Pad	Each	1	1
Galvanic Anode	Each	23	10

(SOUTH BOUND LANES)
PIER NO. 2 REPAIR DETAILS

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

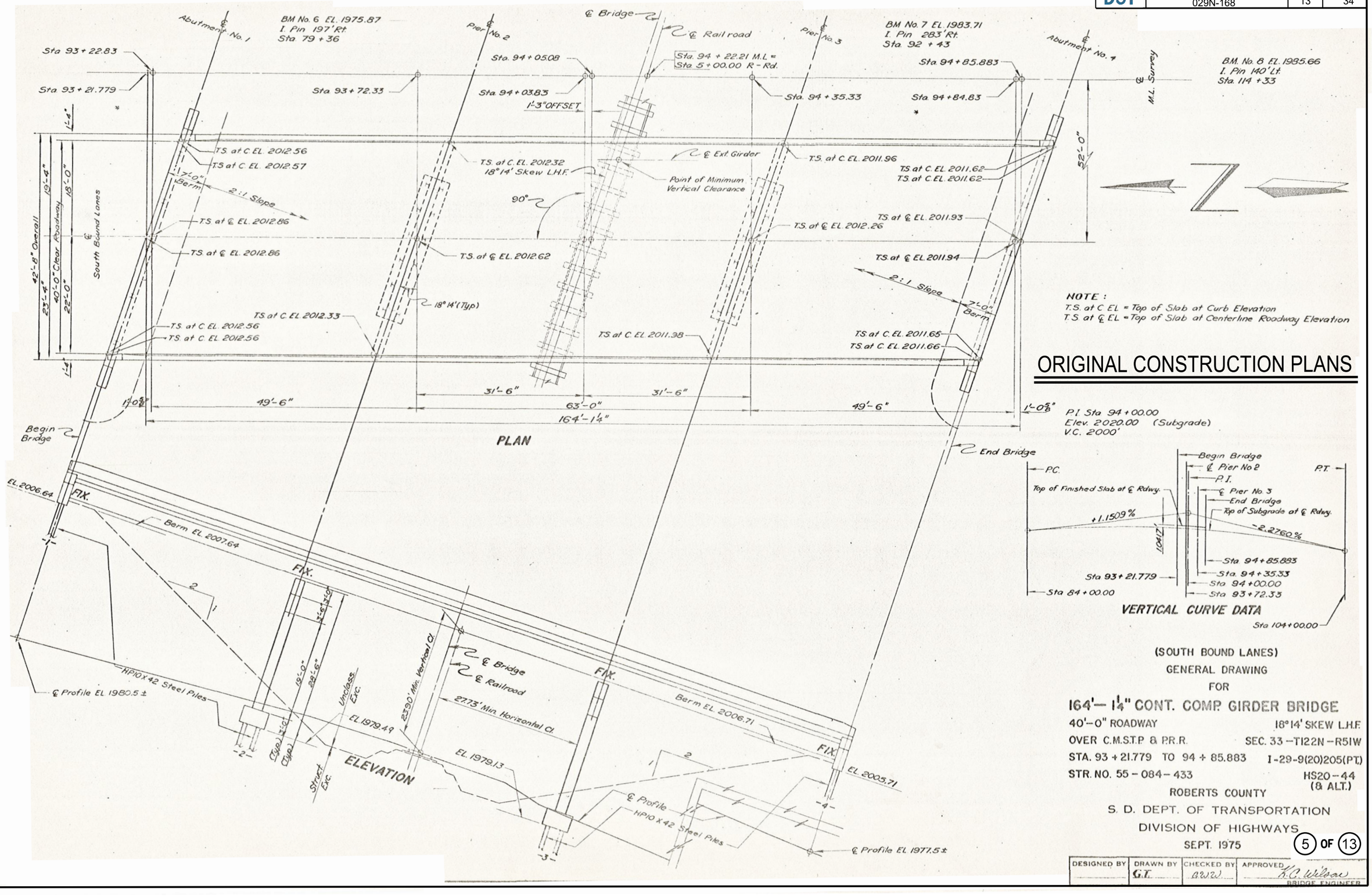
40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433

18°14' SKEW L.H.F.
SEC. 33 - T122N - R51W
029 S-168

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM ROBTI89L	JKI I89LBA04	JB	Steve A. Johnson BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	13	34



ORIGINAL CONSTRUCTION PLANS

(SOUTH BOUND LANES)

GENERAL DRAWING

FOR

164'—1¼" CONT. COMP. GIRDER BRIDGE

40'—0" ROADWAY — 18°14' SKEW L.H.F.

OVER C.M.ST.P. & P.R.R. — SEC. 33—T122N—R51W

STA. 93 + 21.779 TO 94 + 85.883 — I-29-9(20)205(PT.)

STR. NO. 55 — 084 — 433 — HS20—44 (& ALT.)

ROBERTS COUNTY

S. D. DEPT. OF TRANSPORTATION

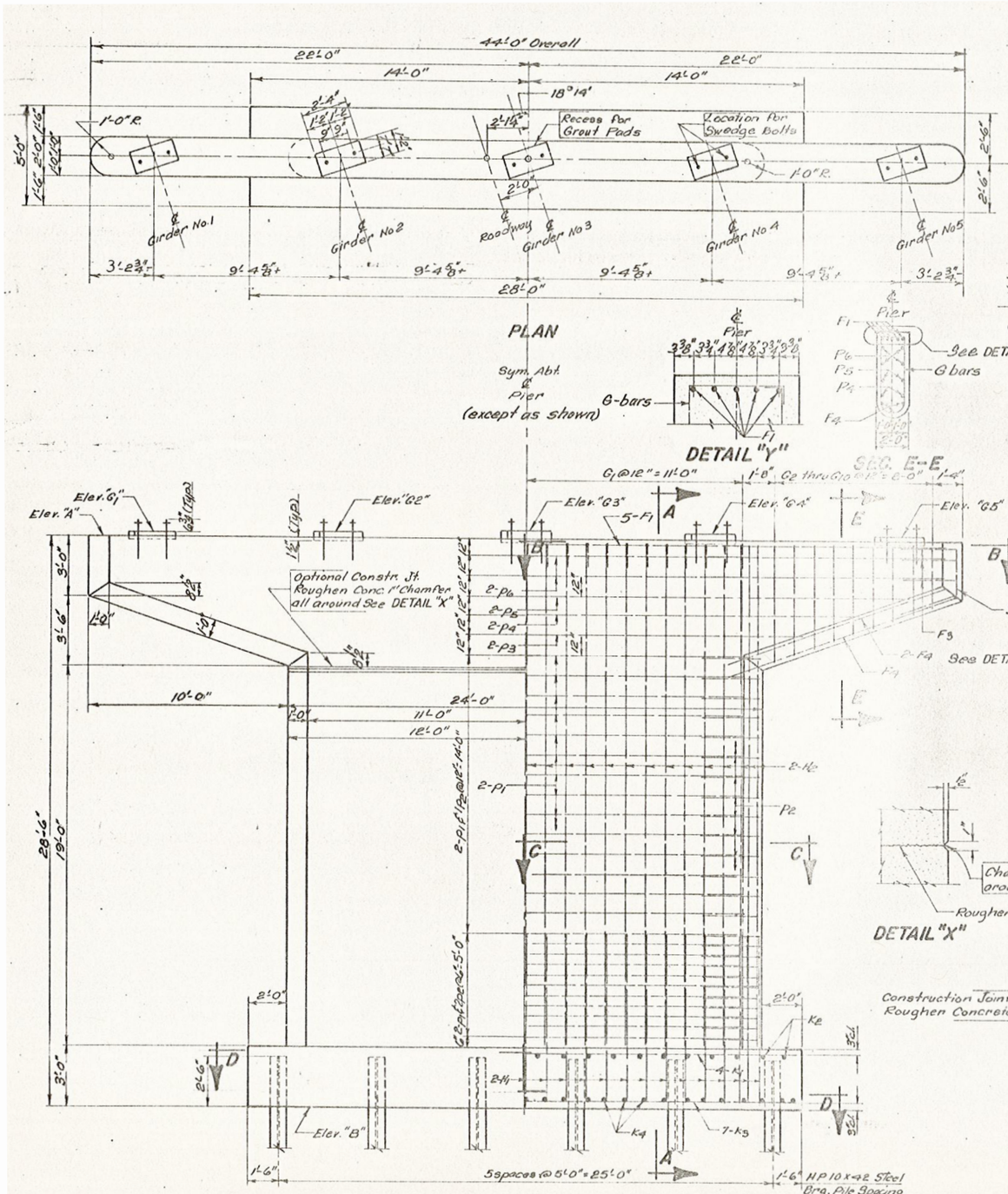
DIVISION OF HIGHWAYS

SEPT. 1975

5 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	G.T.	G.W.W.	K.O. Wilson BRIDGE ENGINEER

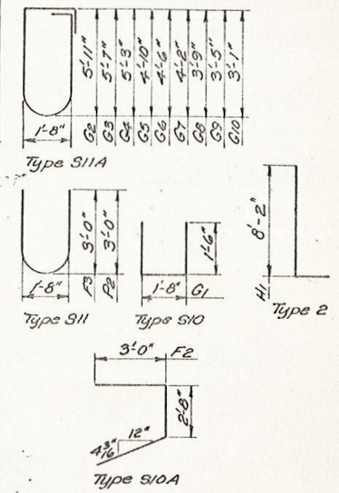
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	14	34



REINFORCING SCHEDULE
(For One Pier)

Mk	No.	Size	Length	Type
F1	5	10	42'-0"	Str.
F2	6	5	7'-9"	S10A
F3	6	6	7'-0"	S11
F4	6	4	12'-0"	Str.
G1	29	5	4'-8"	S10
G2	2	5	15'-5"	S11A
G3	2	5	14'-9"	
G4	2	5	14'-1"	
G5	2	5	13'-4"	
G6	2	5	12'-7"	
G7	2	5	11'-11"	
G8	2	5	11'-1"	
G9	2	5	10'-5"	
G10	2	5	9'-9"	S11A
H1	54	10	9'-2"	2
H2	54	10	25'-2"	Str.
K1	4	4	27'-8"	
K2	22	4	4'-8"	
K3	7	5	27'-8"	
K4	29	5	4'-8"	
P1	50	4	22'-0"	Str.
P2	50	4	7'-0"	S11
P3	2	4	26'-3"	Str.
P4	2	4	32'-1"	
P5	2	4	37'-10"	
P6	4	4	42'-0"	Str.

Bending Details



NOTE: All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	"Class A" Concrete Bridge	Reinforcement Conc. Masonry	Structure Excavation Bridge	Furnish Steel Piles Test Piles HP10x42	Drive Steel Piles Test Piles HP10x42	Furnish Steel Piles HP10x42	Drive Steel Piles HP10x42
UNIT	Cu Yd	Lb.	Cu Yd.	L.F.	L.F.	L.F.	L.F.
Pier No.2	680	11,084	70	1653'-53'	1653'-53'	11648'-528'	11648'-528'
Pier No.3	680	11,084	65	1655'-55'	1655'-55'	11650'-550'	11650'-550'

ØIncludes 0.1 cu. Yds. Per Grout Pads.
*Structure Excavation per foot of depth equals 9.2 cu Yds.

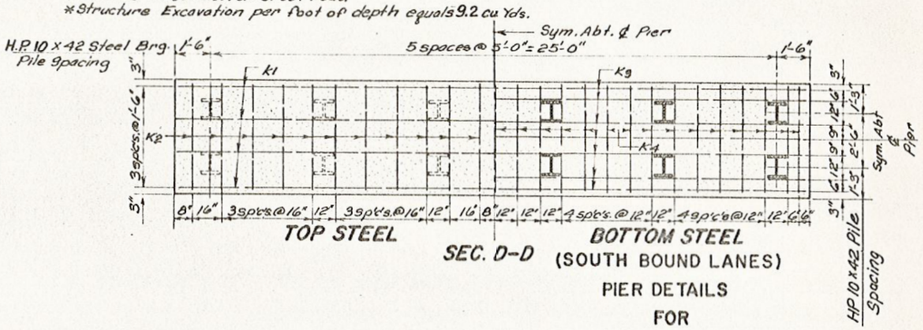


TABLE OF ELEVATIONS

Point	Pier No. 2	Pier No. 3
Elev. "A"	2007.99	2007.63
Elev. "B"	1979.49	1979.13
Elev. "G1"	2008.119	2007.755
Elev. "G2"	2008.268	2007.907
Elev. "G3"	2008.357	2007.999
Elev. "G4"	2008.238	2007.884
Elev. "G5"	2008.120	2007.768

164'-1/4" CONT. COMP. GIRDER BRIDGE

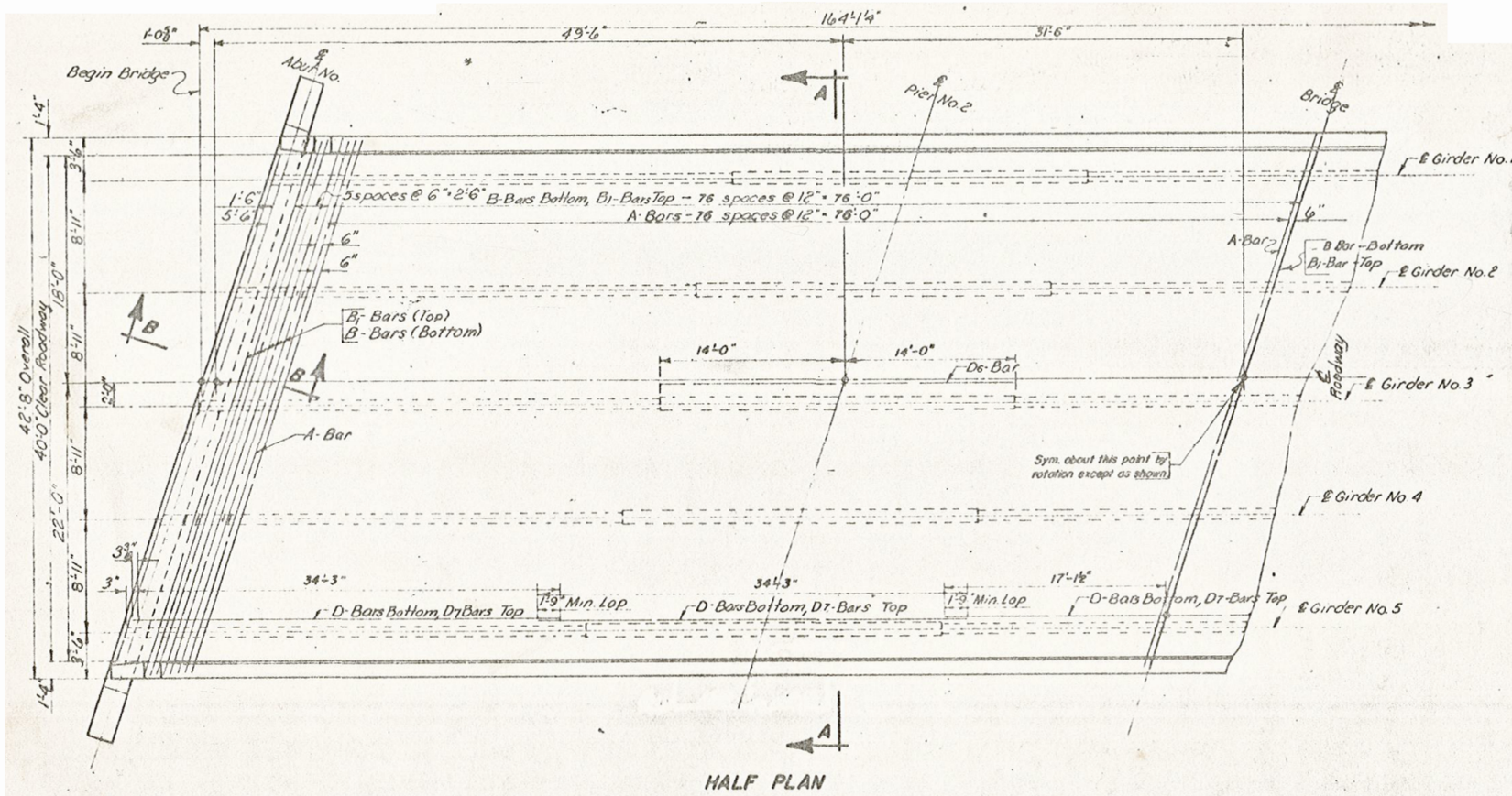
40'-0" ROADWAY — 18° 14' SKEW L.H.F.
OVER C.M. ST. P. & P.R.R. — SEC. 33-T122N-R51W
STA. 93+21.779 TO 94.+85.883 — I-29-9(20)205(PT)
STR. NO. 55-084-433 — HS20-44 (& ALT.)
ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
SEPT. 1975

ORIGINAL CONSTRUCTION PLANS

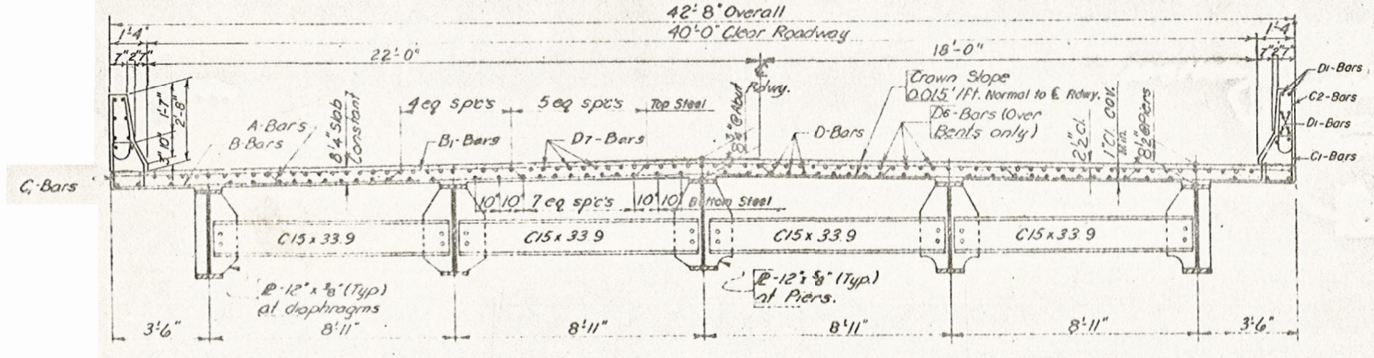
6 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	C.L.R.	G.A.	H.C. Wilson, BRIDGE ENGINEER

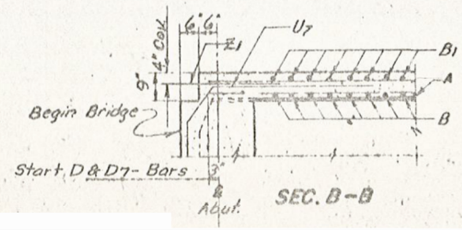
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	15	34



HALF PLAN



SEC. A-A



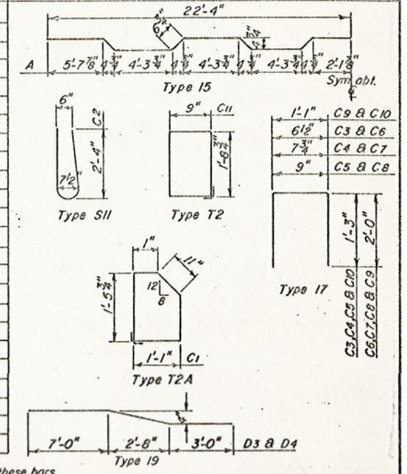
SEC. B-B

NOTE -
* Dimensions are at ℄ Bearings. At other points along the Girders this dimension shall be computed as shown on the ERECTION DATA SHEET.

REINFORCING SCHEDULE

Mk	No.	Size	Length	Type
◊A	154	5	46'-0"	15
B	165	5	44'-8"	Str.
◊B1	165	5	44'-8"	Str.
△C1	422	4	5'-7"	T2A
△C2	386	4	5'-0"	S11
△C3	4	4	3'-1"	17
△C4	4	4	3'-2"	17
△C5	36	4	3'-3"	17
△C6	4	4	4'-7"	17
△C7	4	4	4'-8"	17
△C8	36	4	4'-9"	17
△C9	8	4	5'-1"	17
△C10	8	4	3'-7"	17
△C11	16	4	5'-5"	T2
D	290	5	34'-3"	Str.
D1	48	4	38'-3"	Str.
△D2	12	4	9'-10"	Str.
△D3	12	8	12'-9"	19
△D4	8	4	12'-9"	19
△D5	16	4	1'-3"	Str.
◊D6	80	5	28'-0"	Str.
◊D7	205	5	34'-3"	Str.
★Z1	112	7	4'-0"	Str.

Bending Details



△ See Sheet No. 10 for positioning of these bars.
★ See Sheet No. 16 for positioning of Z1 bars.
◊ All A, B1, D6 and D7 bars are to be Epoxy Coated.
NOTE: All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class "A" Concrete - Bridge	Cu. Yd.	207.4
Reinforcement Concrete Masonry	Lb.	23,959
Structural Steel	L.S.	Lump Sum
Oil Treatment for Concrete Surfaces	Gal.	32
Epoxy Coated Reinforcing Steel	Lb.	24,735

For informational purposes, the estimated weight of the Structural Steel in Superstructure is 105,075 pounds.

In lieu of the bent epoxy coated "A" reinforcing bars, the Contractor has the option of substituting for each "A" bar one straight "B" bar and one straight epoxy coated "B1" bar, with the epoxy coated "B1" bar being placed in the top mat of reinforcing steel.

If the Contractor elects to substitute "B" and "B1" bars for the "A" bars, he shall do so at no additional cost to the State. For payment, weight will be based on that of "A" bars without regard to the weight of bars that may be substituted for them.

ORIGINAL CONSTRUCTION PLANS

(ALTERNATE "B")
(SOUTH BOUND LANES)
SLAB DETAILS
FOR

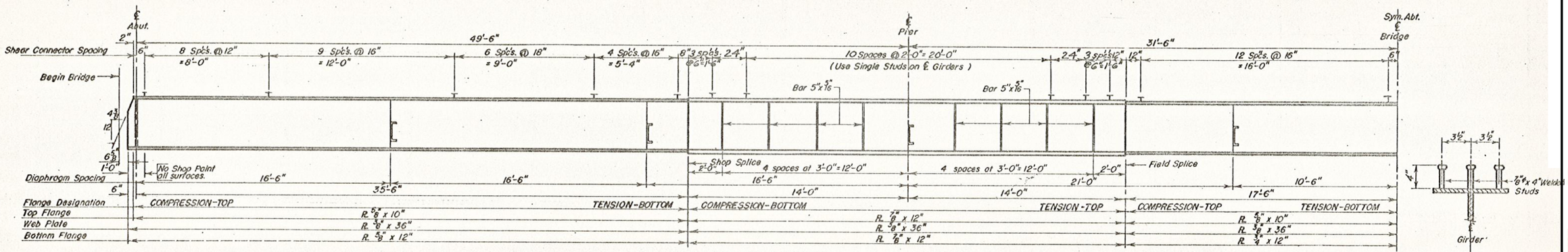
164'-1¼" CONT. COMP. GIRDER BRIDGE

40'-0" ROADWAY — 18°14' SKEW L.H.F.
OVER C.M. ST. P. & P. R.R. — SEC. 33-T122N-R51W
STA. 93+21.779 TO 94+85.883 — I-29-9(20)205(PT.)
STR. NO. 55-084-433 — HS20-44 (B ALT.)
ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
AUG. 1975

7 OF 13

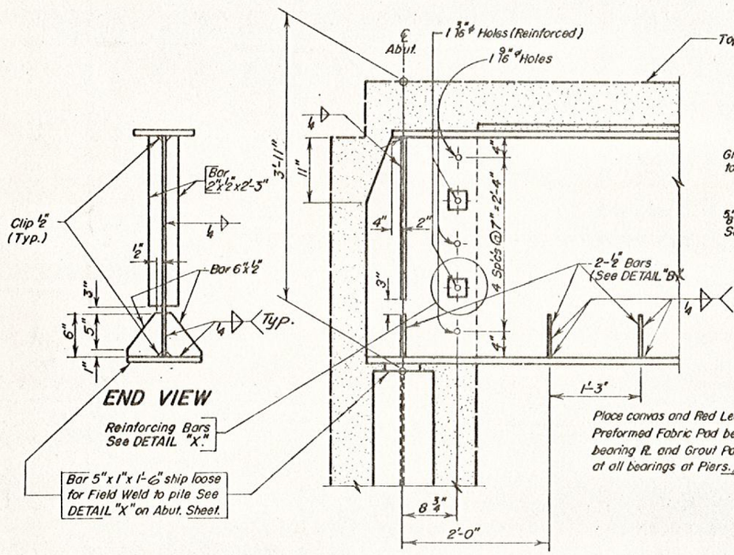
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	S.H.	C.A.	H.C. Wilson, BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	16	34



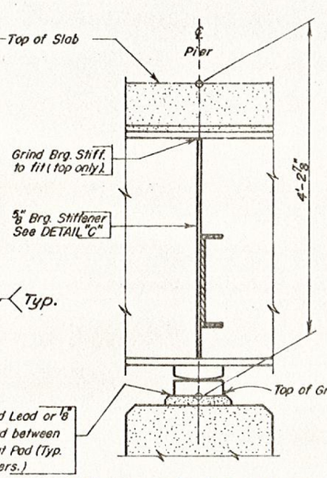
GIRDER LAYOUT
(Interior Girder Shown.)

SHEAR CONNECTOR DETAILS
Welded stud shear connectors are spaced as shown on GIRDER LAYOUT. Shear Connectors will be paid for as Structural Steel based on the weight of welded studs.

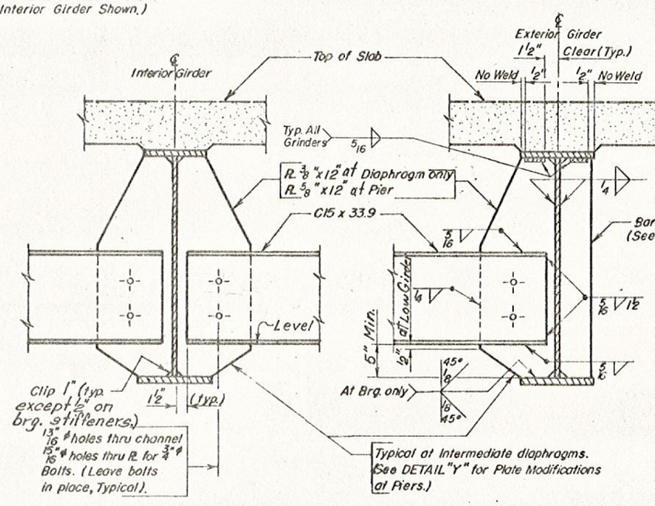


END VIEW

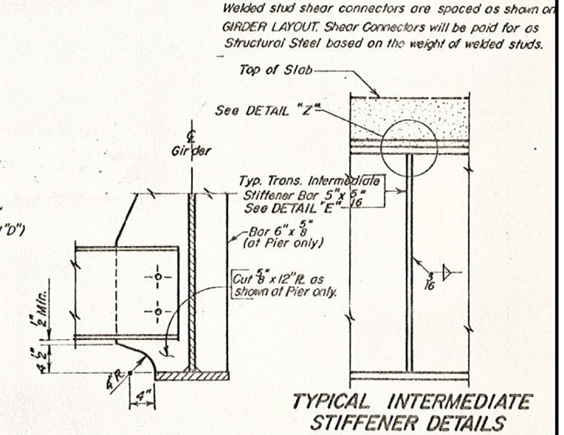
TYPICAL SECTION AT ABUT'S.



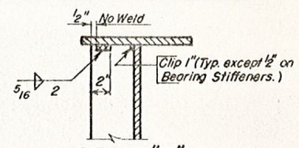
TYPICAL SECTION AT PIERS



DIAPHRAGM CONNECTIONS



DETAIL "Y"

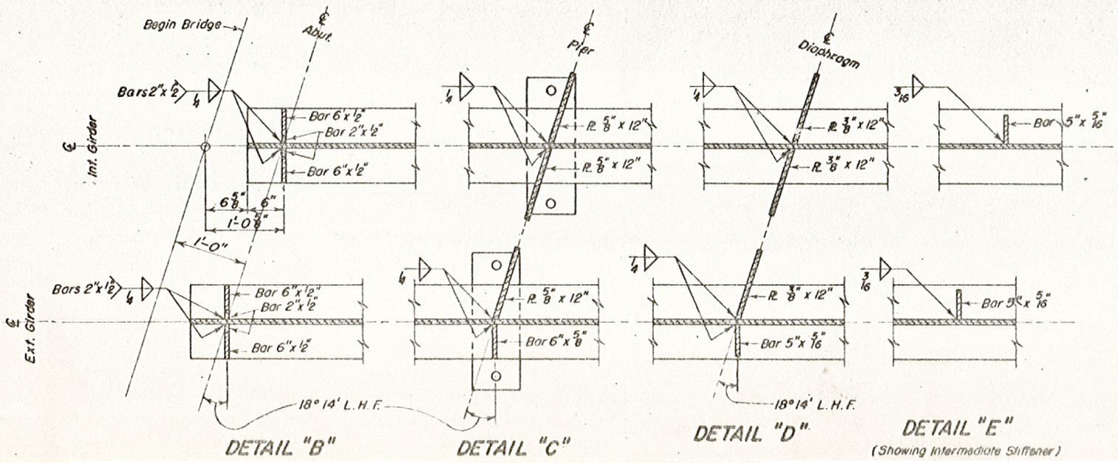


TYPICAL INTERMEDIATE STIFFENER DETAILS

DETAIL "Z"

When stiffener plates are used on one side only they shall be attached to the outstanding leg of the compression flange as shown. See GIRDER LAYOUT for location of compression flange.

ORIGINAL CONSTRUCTION PLANS



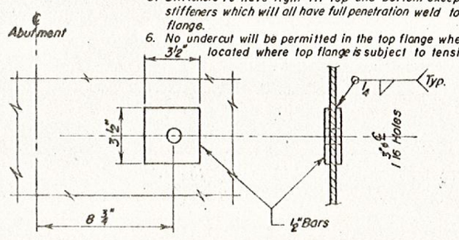
DETAIL "B"

DETAIL "C"

DETAIL "D"

DETAIL "E"
(Showing Intermediate Stiffener)

NOTES —
1. All dimensions shown are horizontal or vertical.
2. All Stiffeners and girder ends shall be made normal to flanges.
3. See "FRAMING DIAGRAM" Sheet No.11 for spacing of Diaphragms and Stiffeners.
4. Tension Flanges located on GIRDER LAYOUT.
5. Stiffeners to have tight fit top and bottom except bearing stiffeners which will all have full penetration weld to bottom flange.
6. No undercut will be permitted in the top flange when welding stiffeners located where top flange is subject to tension stresses.



DETAIL "F"

FLANGE TO WEB WELDS	
Flange Thickness	Fillet Welds
5/8 and 3/4	1/4"
7/8	5/16"

(SOUTH BOUND LANES)

GIRDER LAYOUT & DETAILS

FOR

164'-1 1/4" CONT. COMP. GIRDER BRIDGE

40'-0" ROADWAY — 18° 14' SKEW L.H.F.

OVER C.M. ST. P. & P. R.R. — SEC. 33-T122N-R51W

STA. 93+21.779 TO 94+85.883 — I-29-9(20)205(PT.)

STR. NO. 55-084-433 — HS20-44 (8 ALT.)

ROBERTS COUNTY

S. D. DEPT. OF TRANSPORTATION

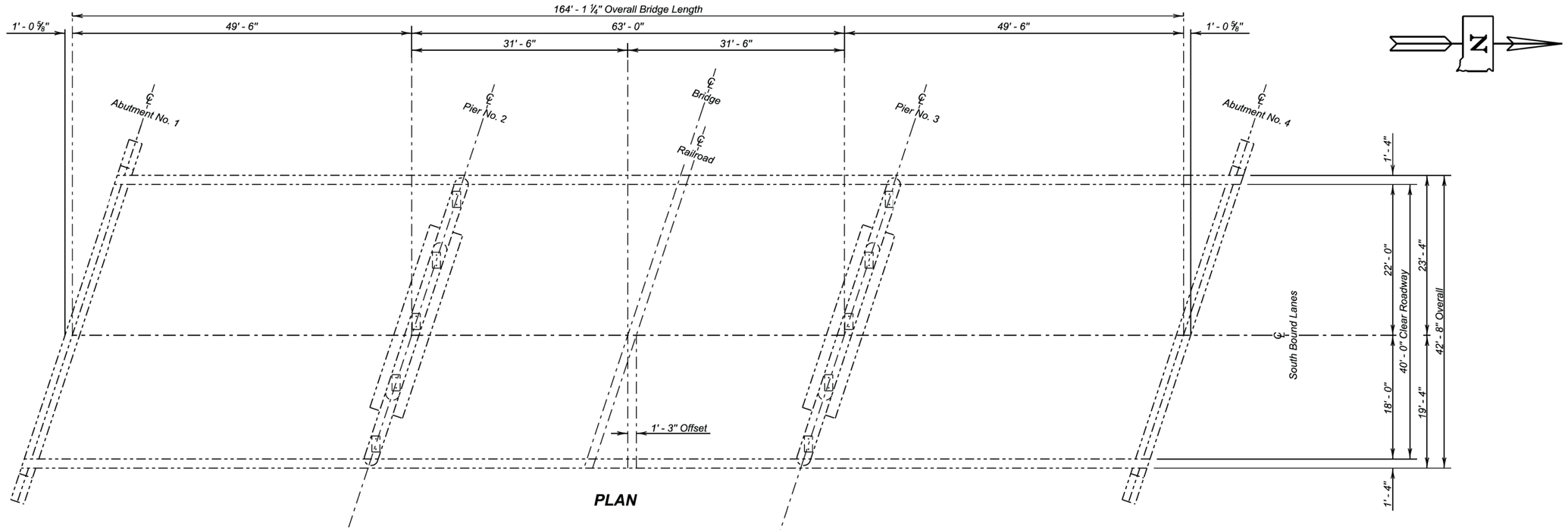
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AUG. 1975

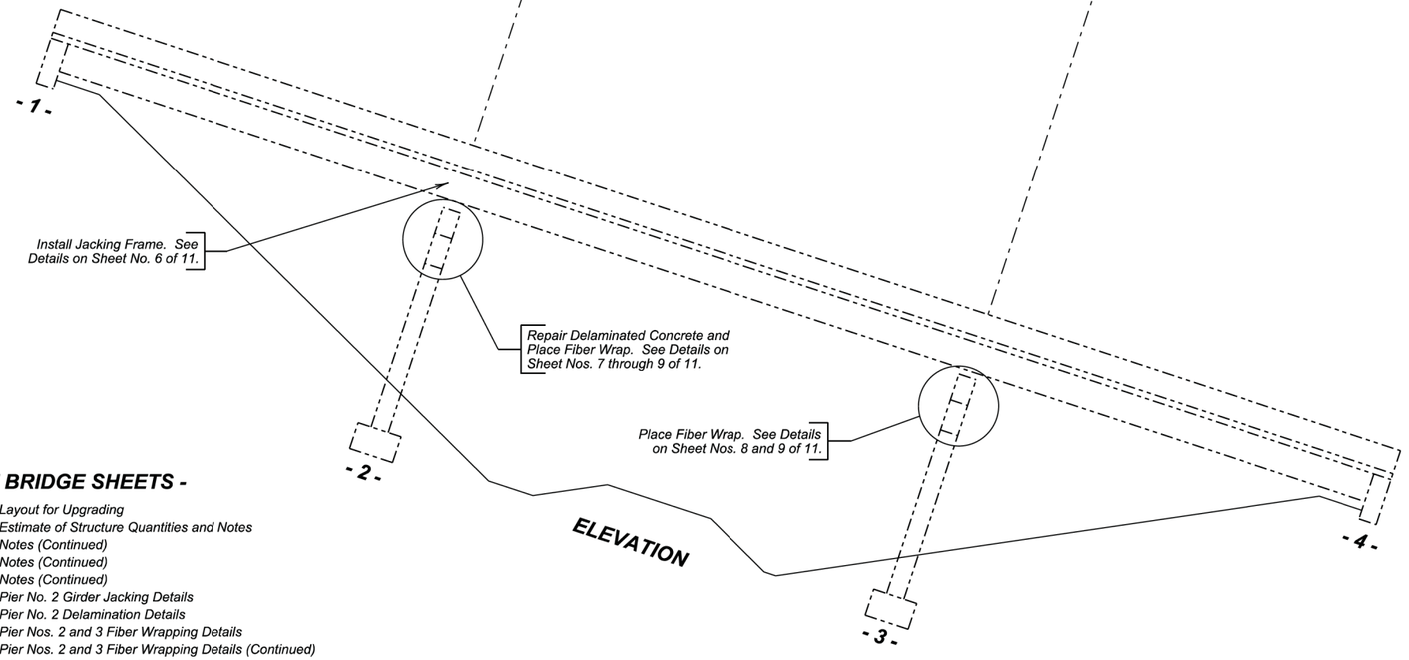
8 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	I.O.K.	GA	H.C. Wilson, BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	17	34



PLAN



ELEVATION

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 - Notes (Continued)
Sheet No. 5 - Notes (Continued)
Sheet No. 6 - Pier No. 2 Girder Jacking Details
Sheet No. 7 - Pier No. 2 Delamination Details
Sheet No. 8 - Pier Nos. 2 and 3 Fiber Wrapping Details
Sheet No. 9 - Pier Nos. 2 and 3 Fiber Wrapping Details (Continued)
Sheet No. 10 - Original Construction Plans
Sheet No. 11 - Original Construction Plans

ORIGINAL CONSTRUCTION PLANS

(SOUTH BOUND LANES)
LAYOUT FOR UPGRADING

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433
PCN 03R3

18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY

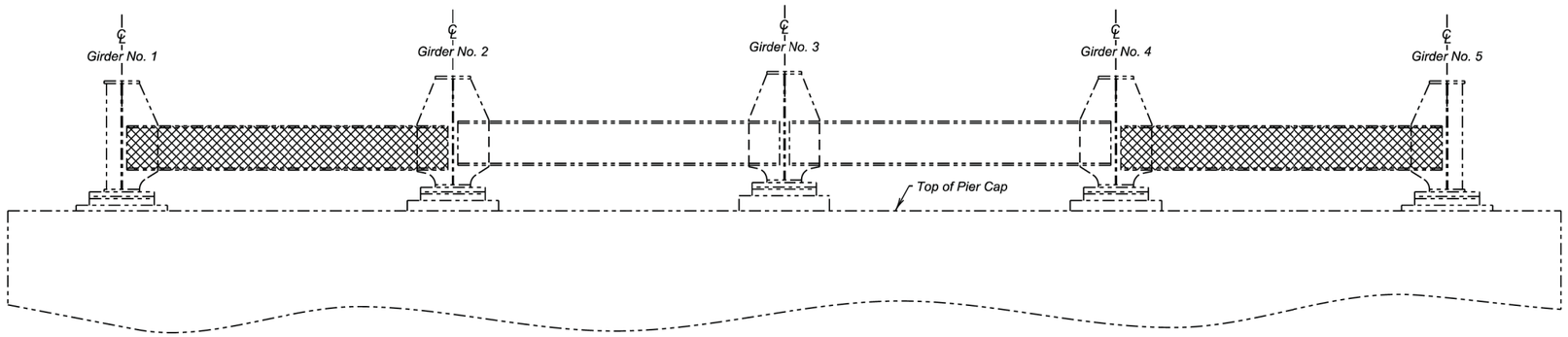
S. D. DEPT. OF TRANSPORTATION

MARCH 2014

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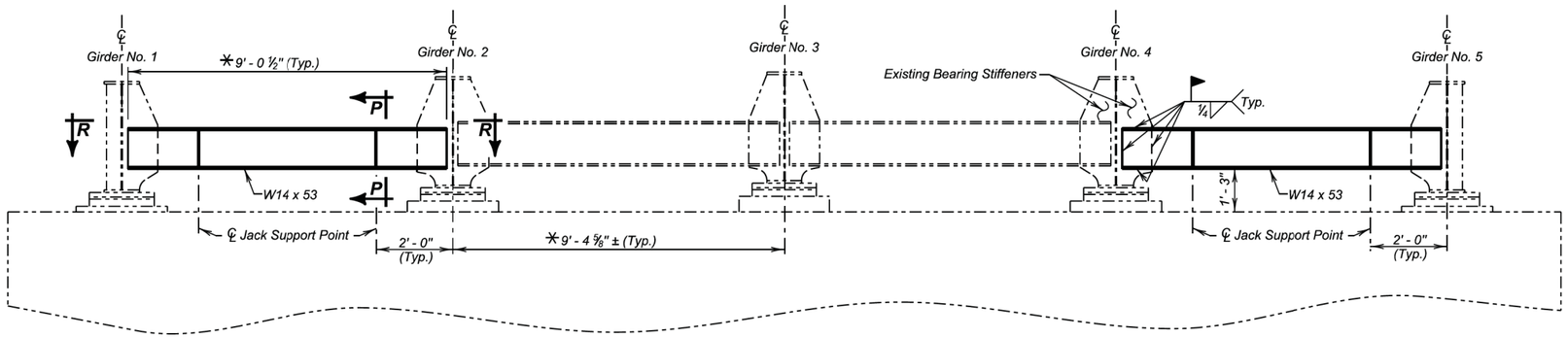
PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP	KSK	KR	Kevin N. Goeden
ROBT03R3	03R3SA01		BRIDGE ENGINEER



Existing C Channels to be Removed by Air Carbon Arc.

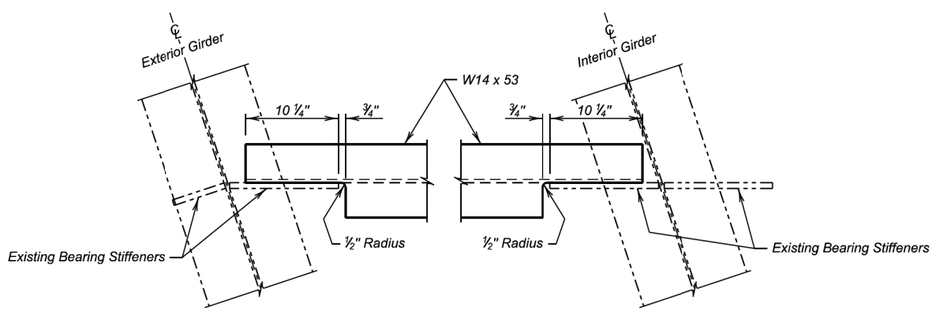
ELEVATION - PIER NO. 2
(Showing Removal)
(Deck not Shown for Clarity)



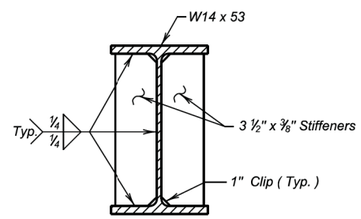
ELEVATION - PIER NO. 2
(Showing New Jacking Frame)
(Deck not Shown for Clarity)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Jack Superstructure, Steel Girder Bridge	LS	Lump Sum
☆ Structural Steel, Miscellaneous	LS	Lump Sum
Bridge Repainting, Class 1	LS	Lump Sum

☆For informational purposes, the total amount of structural steel for the jacking frames is 977 lbs.



SECTION R - R



SECTION P - P

ORIGINAL CONSTRUCTION PLANS

(SOUTH BOUND LANES)
PIER NO. 2 GIRDER JACKING DETAILS
FOR
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433

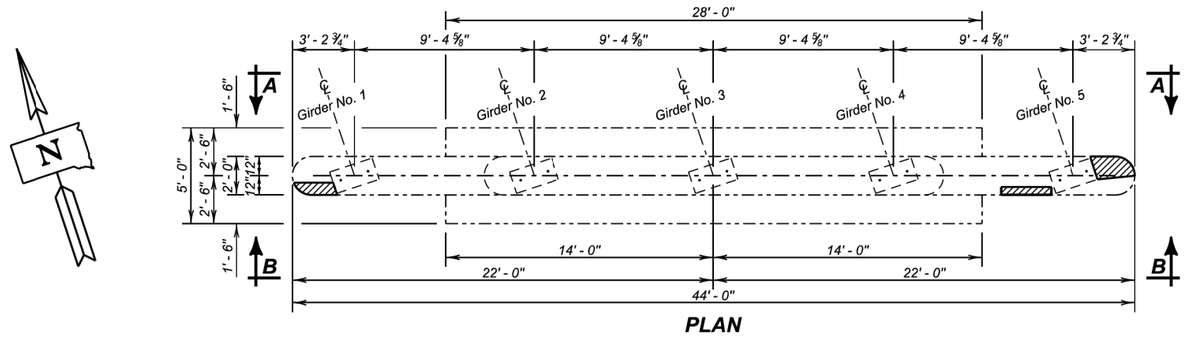
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SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

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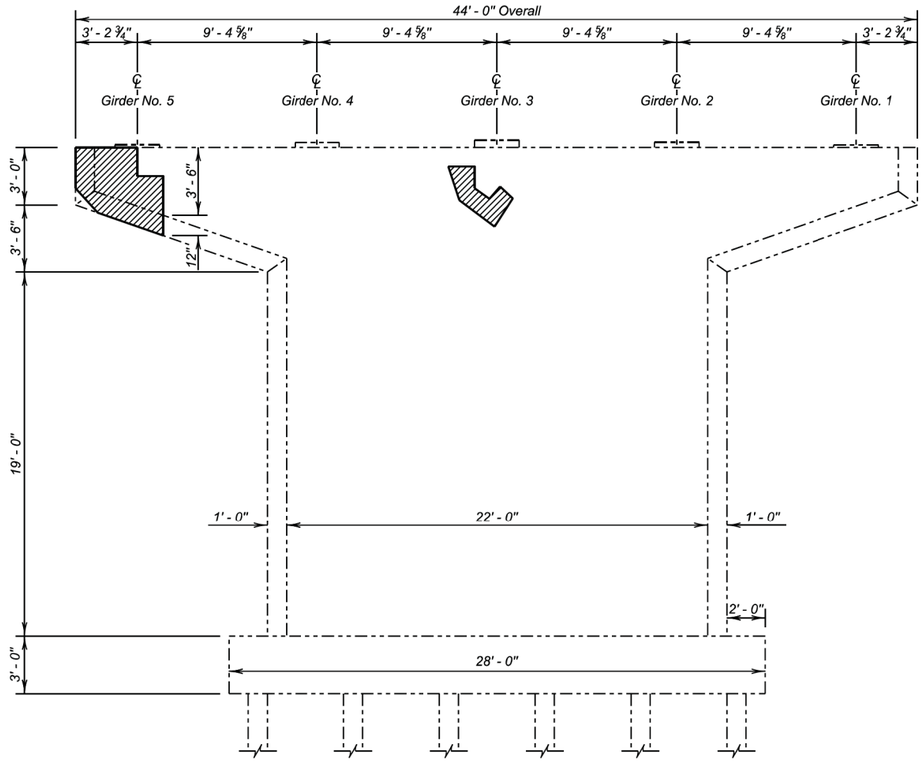
DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP	KSK	KR	Kevin N. Goeden BRIDGE ENGINEER
ROBT03R3	03R3RA06		

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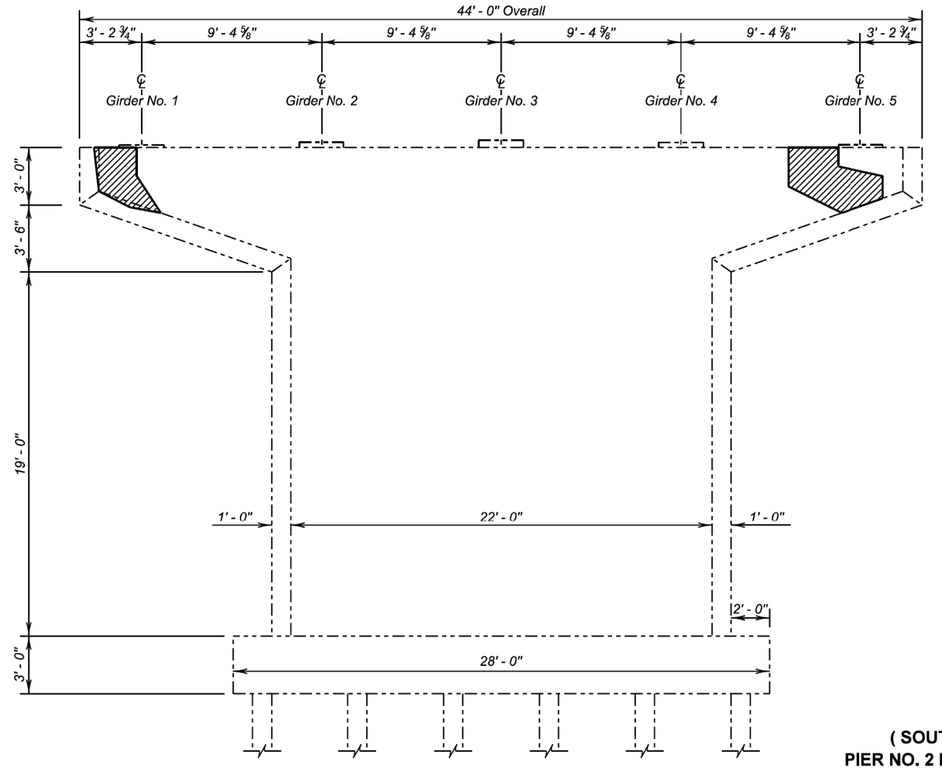


PLAN

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Patching Material, Miscellaneous	Cu Ft	18.2
Breakout Structural Concrete	Cu Yd	0.6
Galvanic Anode	Each	11



SECTION A - A
(NORTH FACE)



SECTION B - B
(SOUTH FACE)

ORIGINAL CONSTRUCTION PLANS

LEGEND -

Shaded areas indicate locations concrete removal and patching.

(SOUTH BOUND LANES)
PIER NO. 2 DELAMINATION DETAILS
FOR
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433

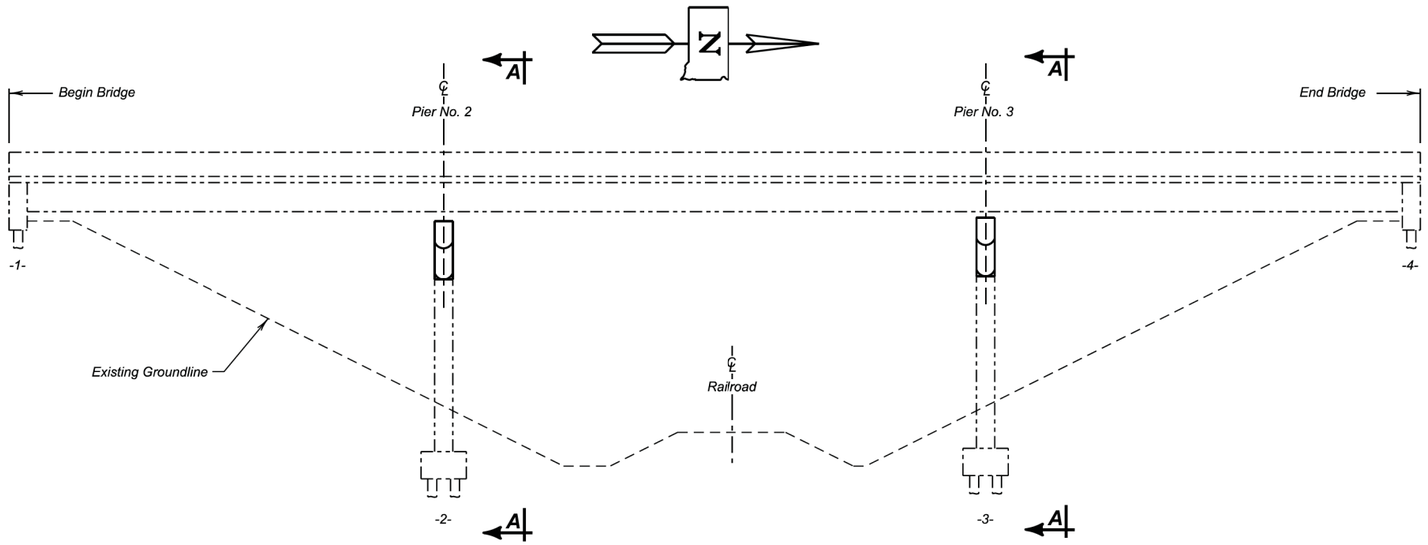
18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

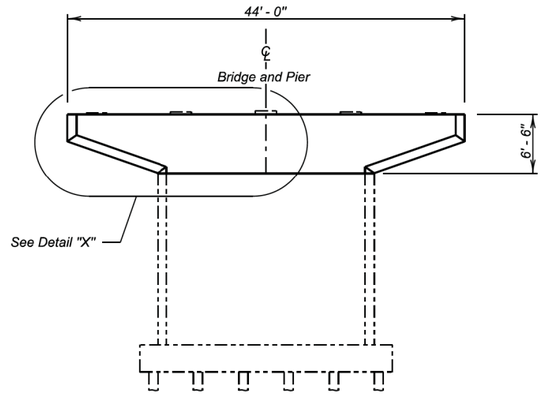
11 OF 13

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NP	KSK	KR	Kevin N. Goeden
ROBT03R3	03R3RA07		BRIDGE ENGINEER

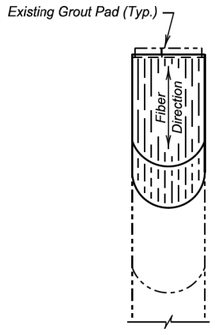
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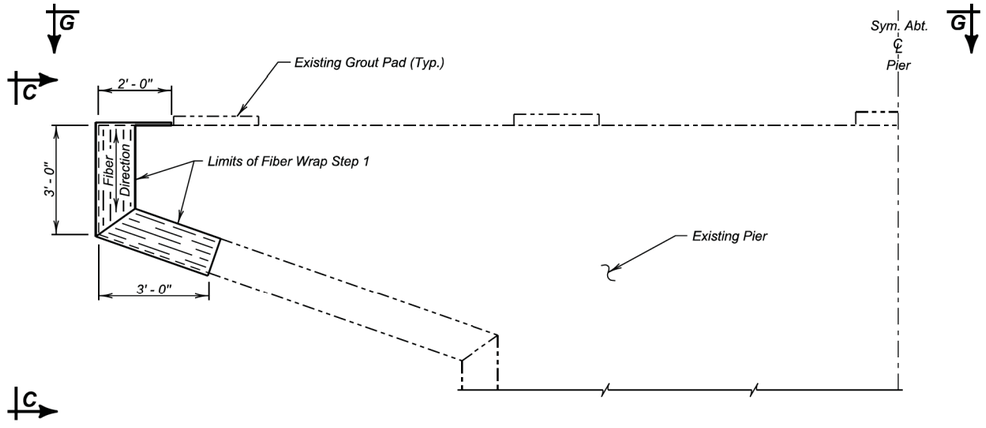
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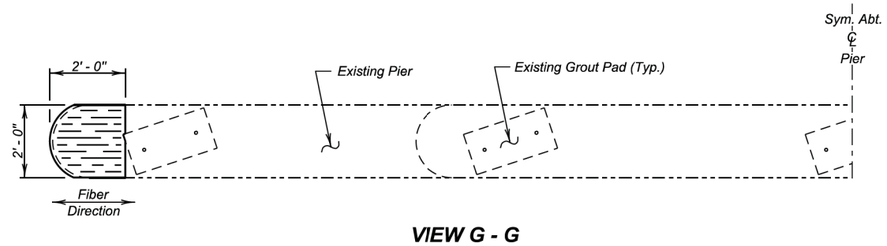
SECTION A - A
(North Face of Pier Shown - South Face Similar by Rotation)



VIEW C - C
(Fiber Wrap - Step 1)



DETAIL "X"
(Fiber Wrap - Step 1)



VIEW G - G
(Fiber Wrap - Step 1)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Composite Fabric Wrap, Concrete Repair	SqFt	1217

LEGEND -

Indicates limits and fiber direction of Composite Fiber Wrap.

ORIGINAL CONSTRUCTION PLANS

(SOUTH BOUND LANES)
PIER NOS. 2 AND 3 FIBER WRAPPING DETAILS
FOR
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433

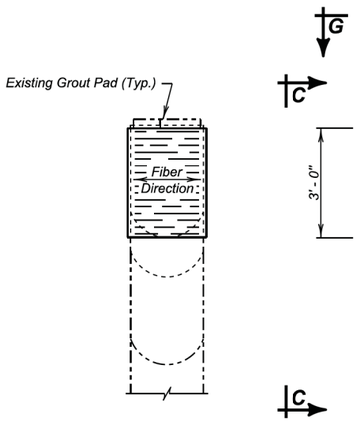
18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

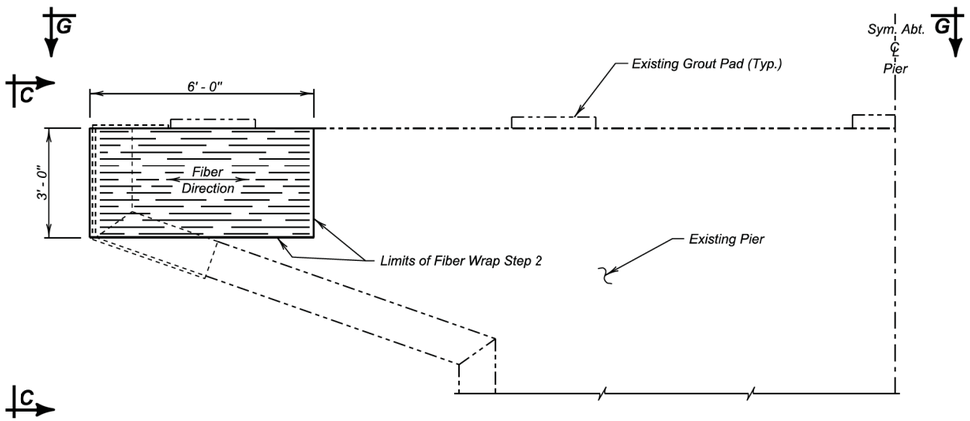
12 OF 13

DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP ROBT03R3	KSK 03R3RA08	KR	Kevin N. Goeden BRIDGE ENGINEER

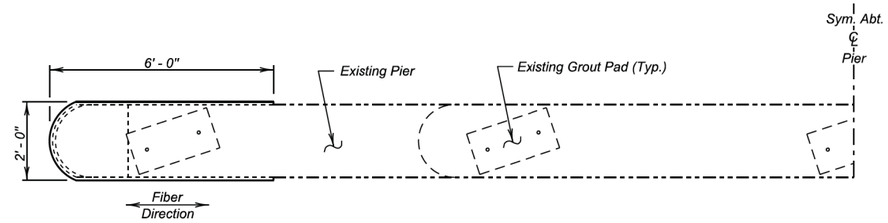
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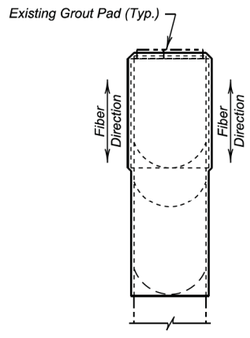
VIEW C - C
(Fiber Wrap - Step 2)



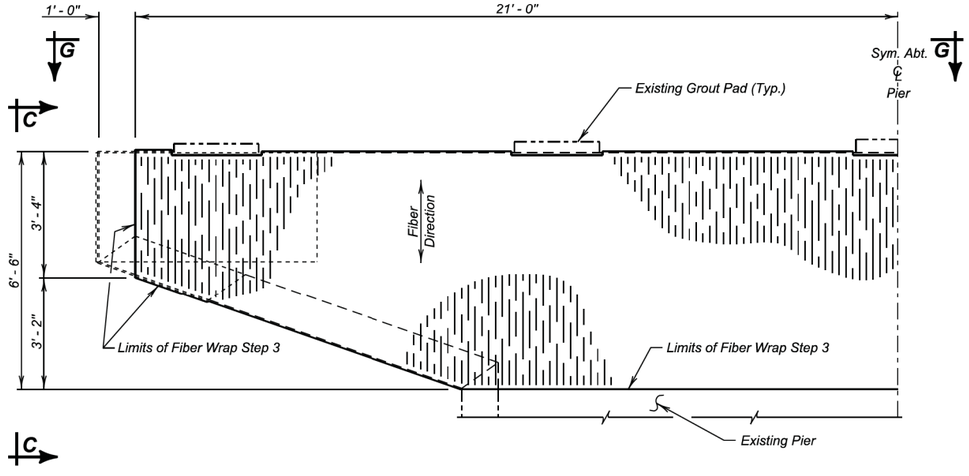
DETAIL "X"
(Fiber Wrap - Step 2)



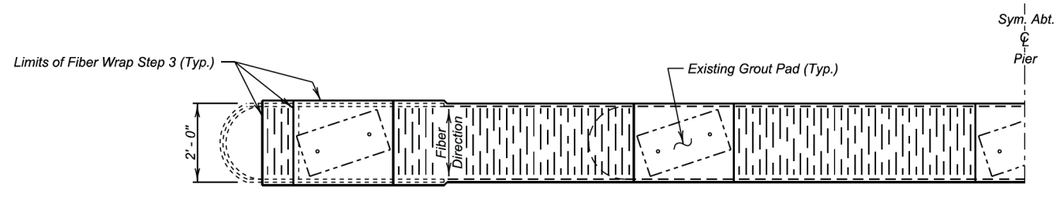
VIEW G - G
(Fiber Wrap - Step 2)



VIEW C - C
(Fiber Wrap - Step 3)



DETAIL "X"
(Fiber Wrap - Step 3)



VIEW G - G
(Fiber Wrap - Step 3)

LEGEND -

Indicates limits and fiber direction of Composite Fiber Wrap.

ORIGINAL CONSTRUCTION PLANS

(SOUTH BOUND LANES)
PIER NOS. 2 AND 3 FIBER WRAPPING DETAILS (CONTINUED)

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-084-433

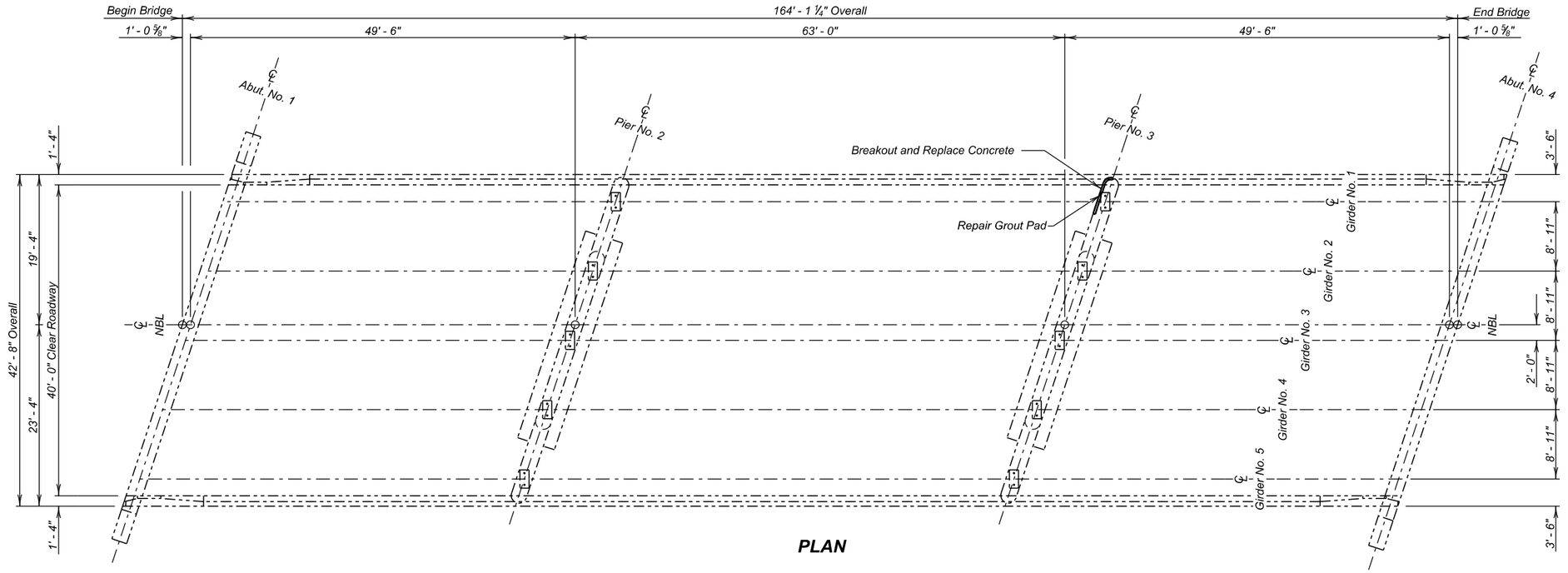
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SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

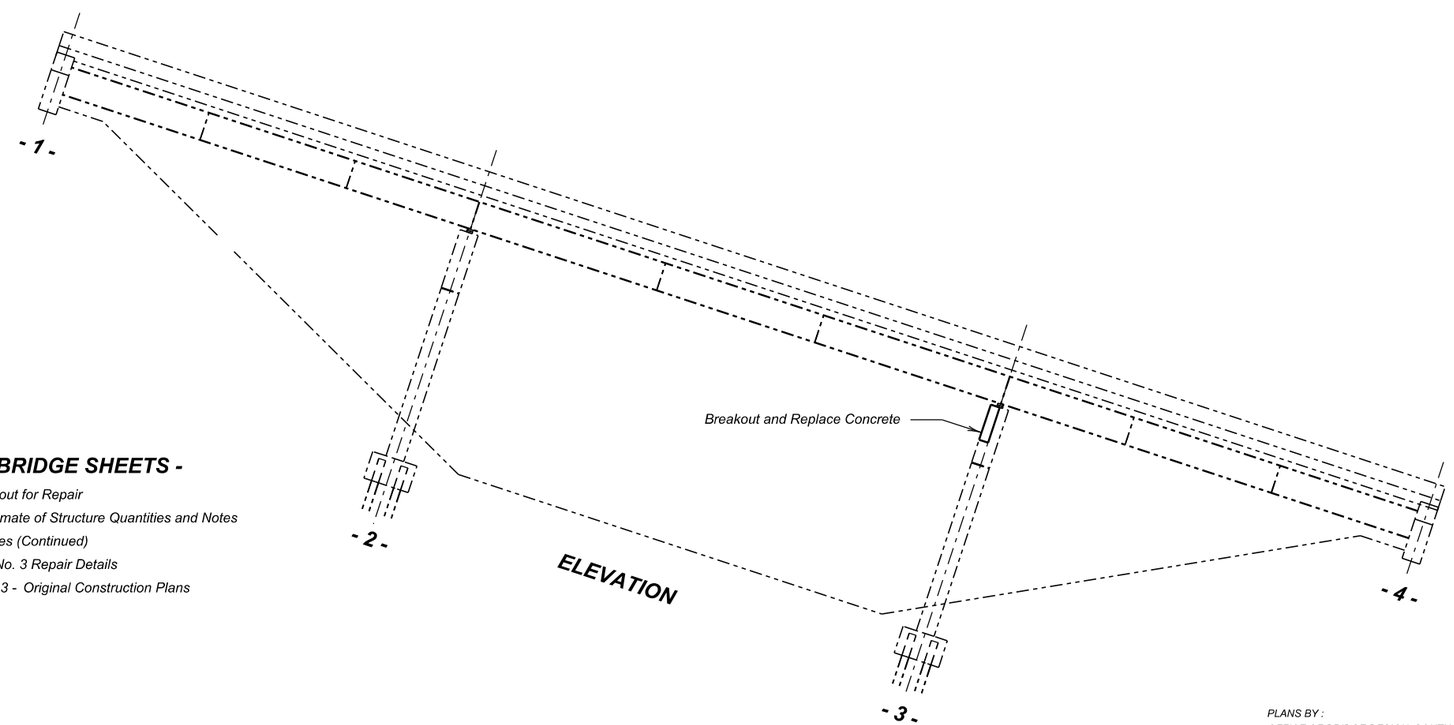
13 OF 13

DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP	KSK	KR	Kevin M. Goeden BRIDGE ENGINEER
ROBT03R3	03R3RA09		

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	22	34



PLAN



ELEVATION

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INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Layout for Repair
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Notes (Continued)
Sheet No. 4 Pier No. 3 Repair Details
Sheet No. 5 thru 13 - Original Construction Plans

(NORTH BOUND LANES)
LAYOUT FOR REPAIR

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433
PCN I89M

18°14' SKEW L.H.F.
SEC. 33 - T122N - R51W
029 N-168

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2026

-X171-

1 OF 13

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	JB	Steve A Johnson BRIDGE ENGINEER
ROBTI89M	I89MBA01		

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E0550	Jack Superstructure, Steel Girder Bridge	LumpSum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.3	CuYd
460E0230	Concrete Penetrating Sealer	9.7	SqYd
460E0300	Breakout Structural Concrete	0.3	CuYd
460E0310	Breakout and Replace Grout Pad	1	Each
480E5000	Galvanic Anode	13	Each

SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 10th Edition.

2. Construction Specifications: Standard Specifications for Roads and Bridges, 10-7-26 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.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

1. 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.

2. The stationing shown in the original construction plans is reversed from the current project. As such, labels for the begin and end of bridge as well as the substructure units are reversed.

COORDINATION WITH RAILROAD

During the repair, the Contractor will not interfere with the operating railroad train movements. Construction activity must not take place within 25 ft. of the centerline track when train movements are occurring through the construction site and construction equipment will be removed from this zone prior to arrival of any train.

SCOPE OF BRIDGE WORK

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

1. Move traffic off the repair area. Remove the temporary supports and install jacks.

2. Breakout and remove concrete to the limits specified in the plans and any additional delaminated concrete or patching material in the repair area.

3. Install galvanic anodes in the repair area.

4. Form the bent cap as needed and place new A45 Concrete in the repair area.

5. Repair the grout pad and remove the jacks.

6. Apply concrete penetrating sealer to the top of the bent cap and grout pads.

JACKING SUPERSTRUCTURE

1. Vertical jacks will be used to support the girder at the plan specified locations until the concrete is repaired and grout pad reaches a minimum of 2000 psi or the concrete forms are removed whichever is later.

2. The vertical jacks will have a lock nut for mechanical load holding with hydraulic pressure released and calibrated gauges, which indicate jack load.

3. Each jack will have a bearing plate at both ends of sufficient area and thickness to limit the bearing stress on the loaded areas of concrete to not more than 1,600 psi and to limit the bearing stress on the loaded area of steel to not more than 20,000 psi.

4. Caution will be exercised when transferring the girder reactions to and from the jacks to ensure that no damage to any of the existing structural components will occur due to the jacking procedure. Any damage to any of the structural components of the bridge caused by the jacking procedure will be repaired as approved by the Engineer at no cost to the Department.

5. The Contractor will be required to submit a detailed jacking plan. The jacking procedure will be submitted 7 days prior to the start of work for the approval by the Office of Bridge Design. Included in this procedure will be the bearing plates; type, number, size, and positioning of jacks; temporary support details; load monitoring method; and method of synchronization between multiple jacks.

6. All costs for materials, labor, equipment and incidentals necessary to perform the vertical jacking as shown by these plans will be included in the contract lump sum price for Jack Superstructure, Steel Girder Bridge.

CONCRETE BREAKOUT

1. The pier cap concrete removal shown in the plans will be the minimum removal limits. All the poor-quality patching material and delaminated concrete will be removed from repair area. If the breakout limits expose more than one of the top #10 reinforcing bars in the cap, contact the Bridge Construction Engineer prior to proceeding. Breakout limits will be defined with a 3/4" deep sawcut, where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken 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.

2. The existing fiber wrap will only need removed from the repair areas or as needed for the removal and replacement operations.

3. All broken out concrete and any existing anodes will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.

4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, removal of portions of fiber wraps, cleaning and straightening reinforcing steel, and disposal of all broken out material.

CLASS A45 CONCRETE, BRIDGE REPAIR

The Class A45 Concrete, Bridge Repair will meet the requirements for A45 concrete used in pier caps including requirements for form removal and application of live load.

(NORTH BOUND LANES)

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

STR. NO. 55-085-433

SEPTEMBER 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	TJM	Steve A Johnson BRIDGE ENGINEER
ROBTI89M	I89MMA02		

GALVANIC ANODE

1. The Contractor will furnish and place galvanic anodes in the concrete repair areas specified in this plan set.

2. The galvanic anodes will be supplied as one of the following:

   a. Galvashield XP2
   Vector Corrosion Technologies
   800 Winchester Road, Suite 175
   Lexington, KY 40505
   Phone: (612) 248-5651

   b. Sentinel Silver
   Euclid Chemical Company
   19215 Redwood Road
   Cleveland, OH 44110
   Phone: (800) 321-7628

   c. Sika FerroGard 670
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (201) 933-8800

3. The anodes will be placed in accordance with manufacturer's recommendations and as approved by the Engineer. The anodes have not been shown on the drawings. The Contractor will provide drawings of the galvanic anode installation including locations of the individual anodes to the Office of Bridge Design.

4. The anodes will be placed with a minimum ¾" cover and will be set in embedding mortar per the manufacturer's recommendations. The anodes will be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket will be chipped out behind the anode to provide minimum cover. The Contractor may need to chip around the reinforcing bar locally at the anode installation to make the electrical connection. The reinforcing steel at the connection location will be cleaned per the manufacturer's recommendations to provide electrical connection and mechanical bond.

5. The electrical continuity of the connections and reinforcing steel will be confirmed per the manufacturer's recommendations.

6. The Contractor will provide manufacturer's product literature and installation instructions to the Engineer 10 days prior to installation.

7. All costs associated with placing anodes including labor, equipment, materials, and incidentals will be included in the contract unit price per each for Galvanic Anode.

(NORTH BOUND LANES)

NOTES (CONTINUED)

FOR

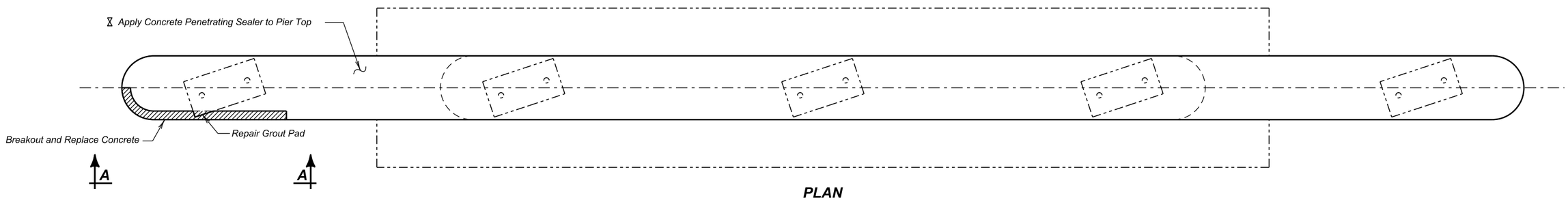
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

STR. NO. 55-085-433

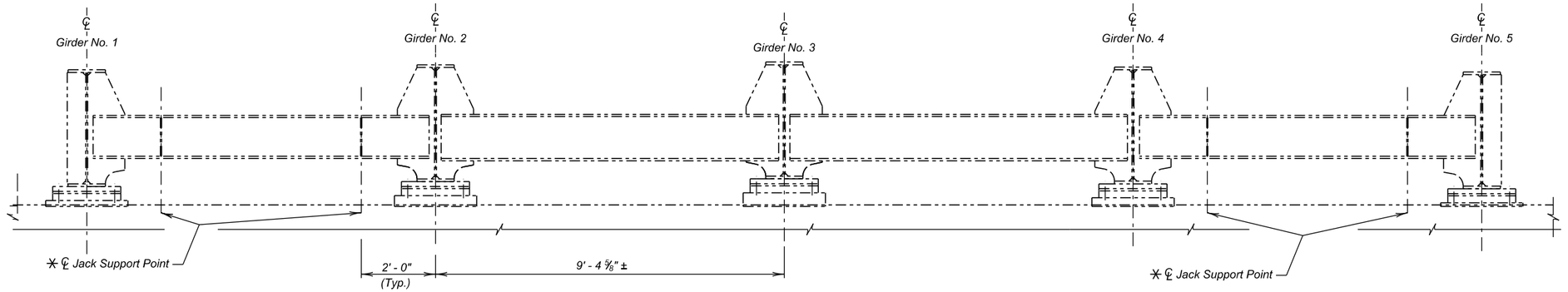
SEPTEMBER 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	TJM	Steve A. Johnson BRIDGE ENGINEER
ROBTI89M	i89MMA03		

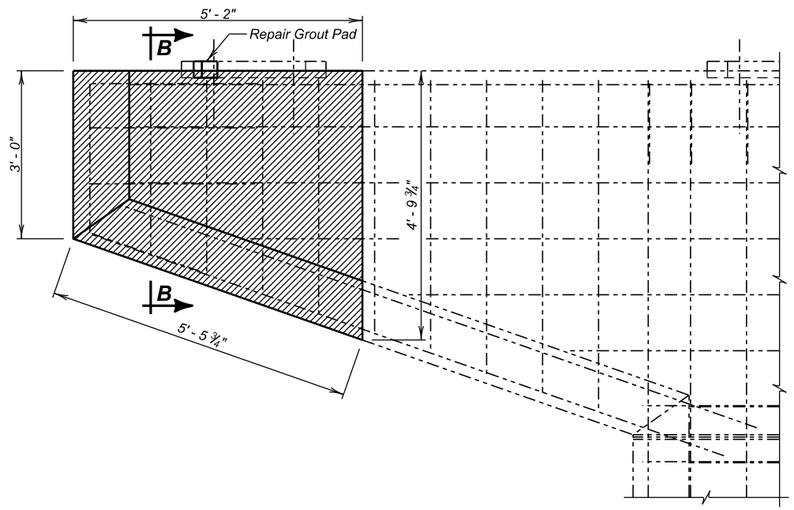
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	029S-168 029N-168	25	34



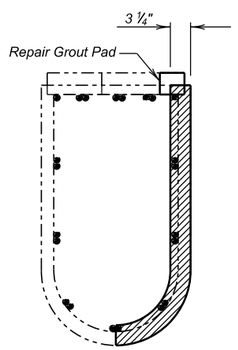
PLAN



ELEVATION
(Deck not Shown for Clarity)



VIEW A - A
(South Face)



SECTION B - B

⚹ *Jack will be capable of supporting a load of 90 Kips.*

⧖ *The quantity of sealer shown is the area of the whole bent cap, some portion will be covered with fiber wrap. The sealer is to be applied on any exposed concrete or grout pad. Some of the fiber wrap has already been removed, any additional fiber removal will be as needed for the repairs.*

Legend:

Shaded area indicates area to be broken out and replaced.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Jack Superstructure, Steel Girder Bridge	LS	Lump Sum
Class A45 Concrete, Bridge Repair	CuYd	0.3
⧖ Concrete Penetrating Sealer	Sqyd	9.7
Breakout Structural Concrete	CuYd	0.3
Breakout and Replace Grout Pad	Each	1
Galvanic Anode	Each	13

(NORTH BOUND LANES)
PIER NO. 3 REPAIR DETAILS

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

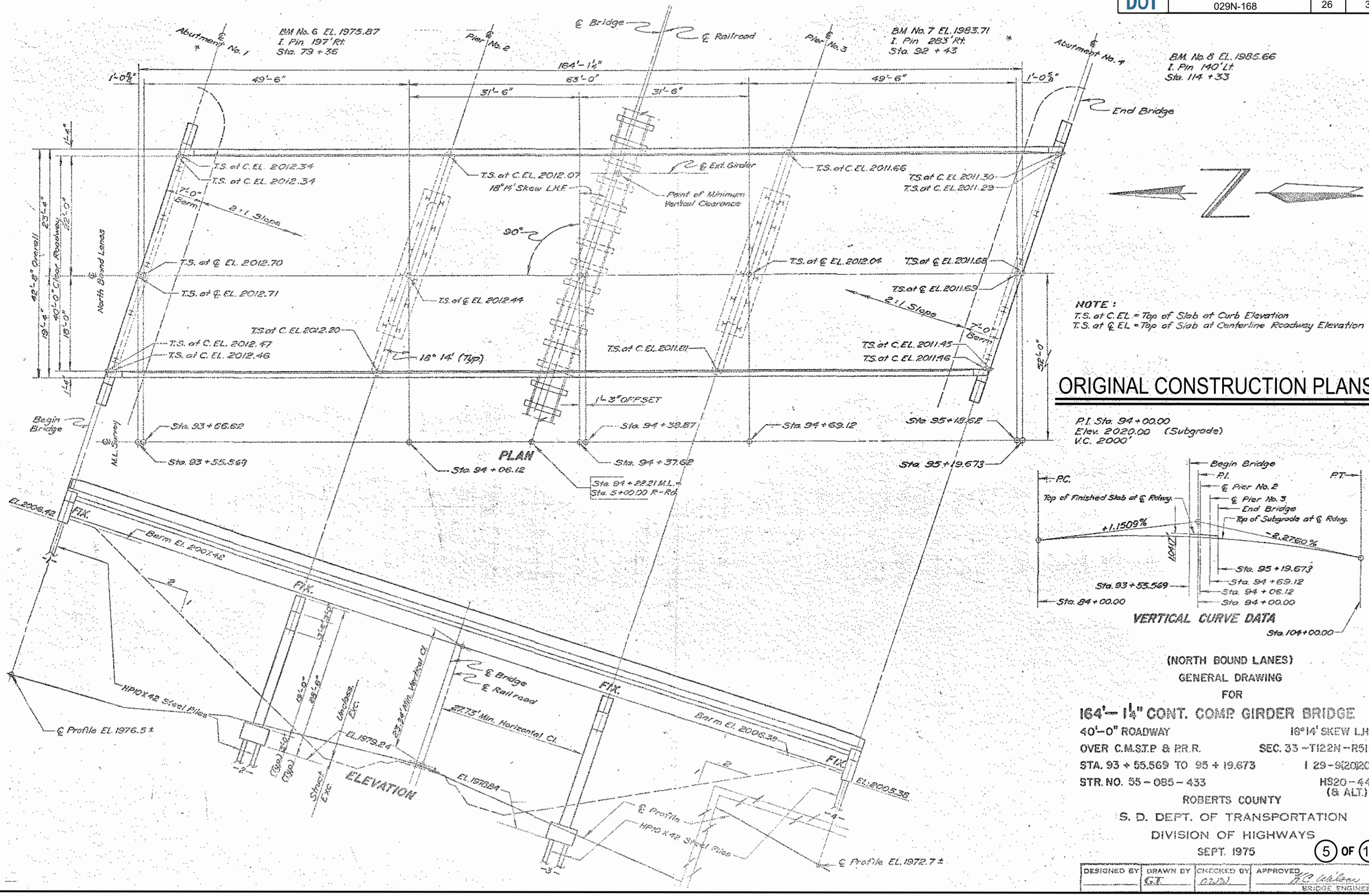
40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433

18°14' SKEW L.H.F.
SEC. 33 - T122N - R51W
029 N-168

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
TJM	JKI	JB	Steve A. Johnson BRIDGE ENGINEER
ROBTI89M	I89MBA04		

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	26	34



NOTE :
T.S. at C.EL. = Top of Slab at Curb Elevation
T.S. at ℄ EL. = Top of Slab at Centerline Roadway Elevation

ORIGINAL CONSTRUCTION PLANS

P.I. Sta. 94 + 00.00
Elev. 2020.00 (Subgrade)
V.C. 2000'

VERTICAL CURVE DATA

(NORTH BOUND LANES)
GENERAL DRAWING
FOR

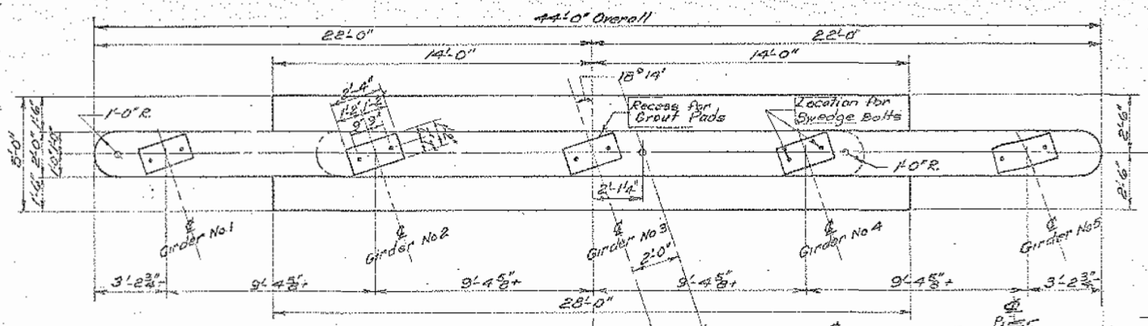
164'-1¼" CONT. COMP. GIRDER BRIDGE

40'-0" ROADWAY — 18°14' SKEW L.H.F.
OVER C.M.ST.P. & P.R.R. — SEC. 33-T122N-R51W
STA. 93 + 55.569 TO 95 + 19.673 — I 29-9(202)058
STR. NO. 55-085-433 — HS20-44 (& ALT.)
ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
SEPT. 1975

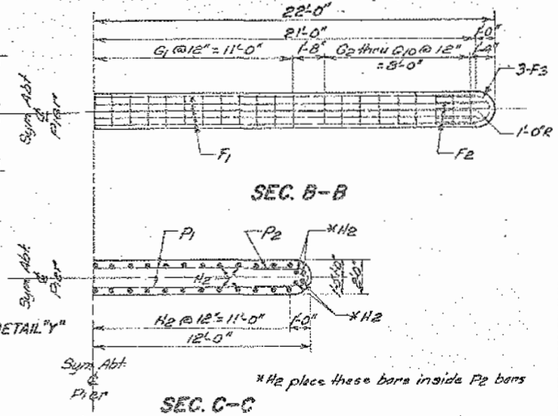
5 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	G.T.	C.D.J.	H.C. Wilson, BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	27	34

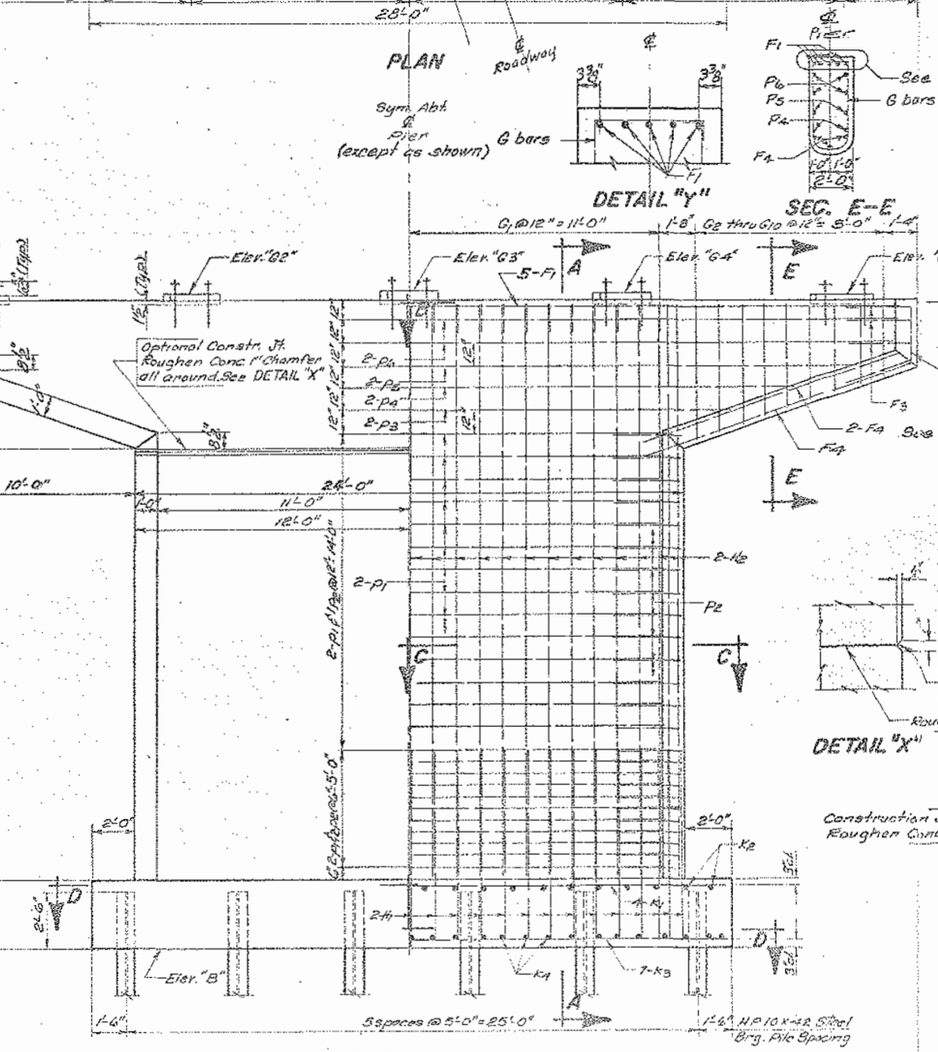


PLAN

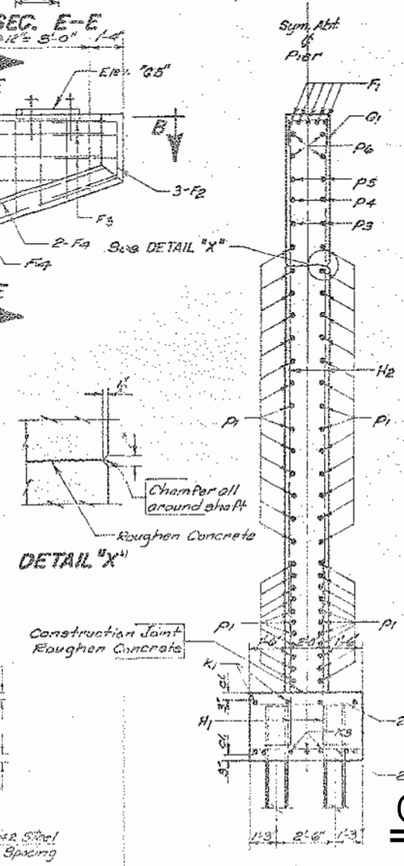


SEC. B-B

SEC. C-C



ELEVATION



SEC. A-A

DETAIL "X"

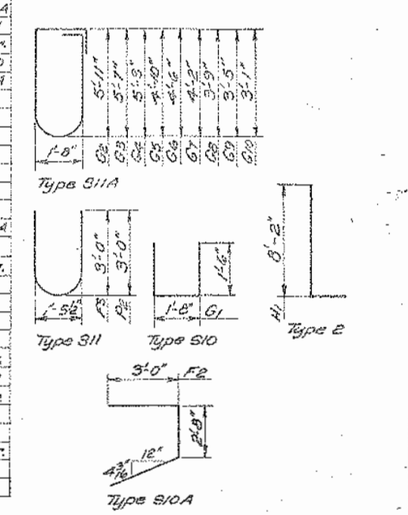
DETAIL "Y"

SEC. E-E

REINFORCING SCHEDULE
(For One Pier)

Mk	No.	Size	Length	Type
F1	5	10	42'-0"	Str.
F2	6	5	7'-9"	S10A
F3	6	6	7'-0"	S11
F4	6	4	12'-0"	Str.
G1	23	5	4'-8"	S10
G2	2	5	15'-5"	S11A
G3	2	5	14'-9"	
G4	2	5	14'-1"	
G5	2	5	13'-4"	
G6	2	5	12'-7"	
G7	2	5	11'-11"	
G8	2	5	11'-1"	
G9	2	5	10'-5"	
G10	2	5	9'-9"	S11A
H1	54	10	9'-2"	2
H2	54	10	25'-2"	Str.
K1	4	4	27'-8"	
K2	22	4	4'-8"	
K3	7	5	27'-8"	
K4	29	5	4'-8"	
P1	50	4	22'-0"	Str.
P2	50	4	7'-0"	S11
P3	2	4	24'-3"	Str.
P4	2	4	32'-1"	
P5	2	4	37'-10"	
P6	4	4	42'-0"	Str.

Bending Details

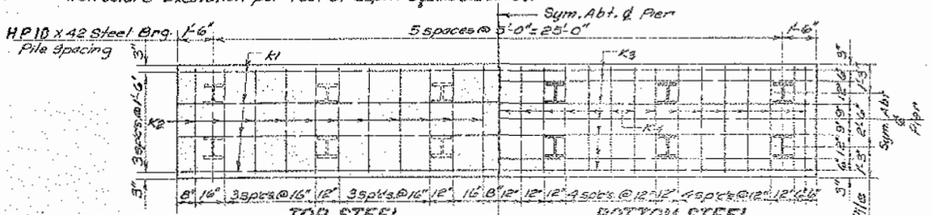


NOTE: All dimensions are cut to cut off bars.

ESTIMATED QUANTITIES

ITEM	℄ Class "A" Concrete Bridge	Reinforcement Bars	*Structure Excavation Bridge	Furnish Steel Test Piles	Drive Steel Test Piles	Furnish Steel Piles	Drive Steel Piles
UNIT	Cu.Yd.	Lb.	Cu.Yd.	L.F.	L.F.	L.F.	L.F.
Pier No.2	69.0	11,084	70	1453'-53"	1453'-53"	1448'-5268'	1448'-5268'
Pier No.3	69.0	11,084	70	1455'-35"	1455'-35"	1450'-5268'	1450'-5268'

℄ Includes 0.1 cu. Yds. Per Grout Pads.
* Structure Excavation per foot of depth equals 9.2 cu Yds.



SEC. D-D

(NORTH BOUND LANES)

PIER DETAILS

FOR

164'-1¼" CONT. COMP. GIRDER BRIDGE

40'-0" ROADWAY — 18° 14' SKEW L.H.F.

OVER C.M. ST. P. & P.R.R. — SEC. 33-T122N-R51W

STA. 93+55.569 TO 95+19.673 — I-29-9(20)205(PT

STR. NO. 55-085-433 — HS20-44 (8 ALT.)

ROBERTS COUNTY

S. D. DEPT. OF TRANSPORTATION

DIVISION OF HIGHWAYS

SEPT. 1975

TABLE OF ELEVATIONS

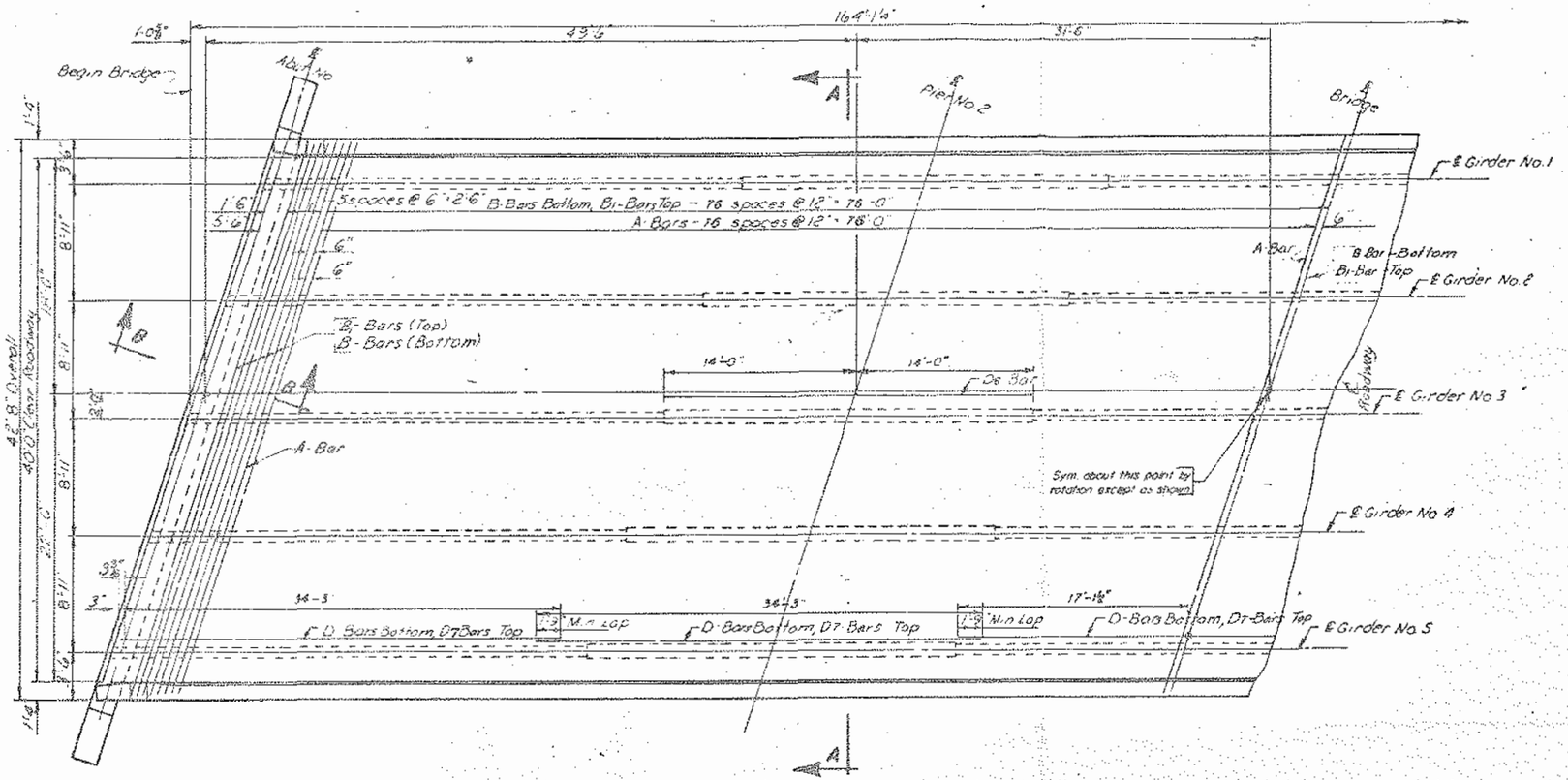
Point	Pier No.2	Pier No.3
Elev. "A"	2007.74	2007.34
Elev. "B"	1979.24	1978.84
Elev. "G1"	2007.864	2007.462
Elev. "G2"	2008.015	2007.616
Elev. "G3"	2008.166	2007.770
Elev. "G4"	2008.109	2007.717
Elev. "G5"	2007.992	2007.603

ORIGINAL CONSTRUCTION PLANS

6 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	RJB	JJA	BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	28	34



HALF PLAN

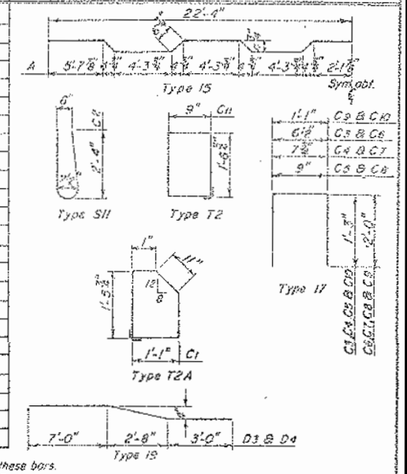
SEC. A–A

SEC. B–B

REINFORCING SCHEDULE

MK	No.	Size	Length	Type
ϕA	154	5	46'-0"	15
B	165	5	44'-8"	Str.
ϕBi	165	5	44'-8"	Str.
△C1	422	4	5'-7"	T2A
△C2	396	4	5'-0"	S11
△C3	4	4	3'-1"	17
△C4	4	4	3'-2"	17
△C5	36	4	3'-3"	17
△C6	4	4	4'-7"	17
△C7	4	4	4'-8"	17
△C8	36	4	4'-9"	17
△C9	8	4	5'-1"	17
△C10	8	4	3'-7"	17
△C11	16	4	5'-5"	T2
D	290	5	34'-3"	Str.
D1	48	4	36'-3"	Str.
△D2	12	4	5'-10"	Str.
△D3	12	8	12'-9"	19
△D4	5	4	12'-9"	19
△D5	16	4	1'-3"	Str.
ϕD6	80	5	28'-0"	Str.
ϕD7	205	5	34'-3"	Str.
☆Z1	112	7	4'-0"	Str.

Bending Details



△ See Sheet No. 10 for positioning of these bars.
☆ See Sheet No. 16 for positioning of Z1 bars.
ϕ All A, Bi, D5 and D7 bars are to be Epoxy Coated.
NOTE: All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class 'A' Concrete, Piling	Cu. Yd.	8.1
Portland Cement Concrete Pavement	Lb.	23,849
Structural Steel	L.S.	Lump Sum
Bit. Treatment for Concrete Surfaces	Sq. Yd.	32
Epoxy Coated Reinforcing Steel	Lb.	84,155

* For informational purposes, the estimated weight of the Structural Steel in Superstructure is 105,075 pounds.

In lieu of the bent epoxy coated "A" reinforcing bars, the Contractor has the option of substituting for each "A" bar one straight "B" bar and one straight epoxy coated "Bi" bar, with the epoxy coated "Bi" bar being placed in the top mat of reinforcing steel.

If the Contractor elects to substitute "B" and "Bi" bars for the "A" bars, he shall do so at no additional cost to the State. For payment, weight will be based on that of "A" bars without regard to the weight of bars that may be substituted for them.

NOTE –
* Dimensions are at ℄ Bearings At other points along the Girders this dimension shall be computed as shown on the ERECTION DATA SHEET.

ORIGINAL CONSTRUCTION PLANS

(ALTERNATE "B")

(NORTH BOUND LANES)

SLAB DETAILS

FOR

164'-1¼" CONT. COMP. GIRDER BRIDGE

40'-0" ROADWAY — 18°14' SKEW L.H.F.

OVER C.M. ST. P. & P. R.R. — SEC. 33-T122N-R51W

STA. 93+55.569 TO 95+19.673 — I-29-9(20)205(PT.)

STR. NO. 55-085-433 — HS20-44 (S ALT.)

ROBERTS COUNTY

S. D. DEPT. OF TRANSPORTATION

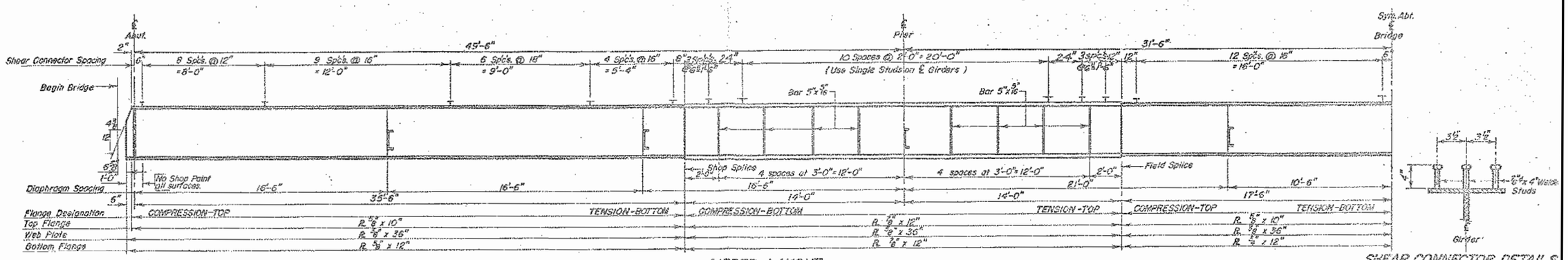
DIVISION OF HIGHWAYS

AUG. 1975

7 OF 13

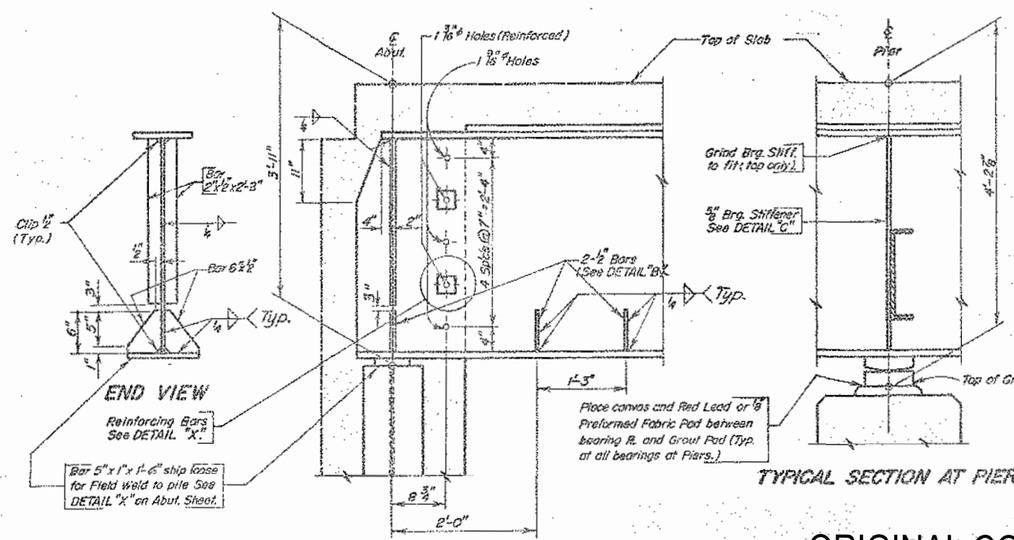
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	S.W.		

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	29	34



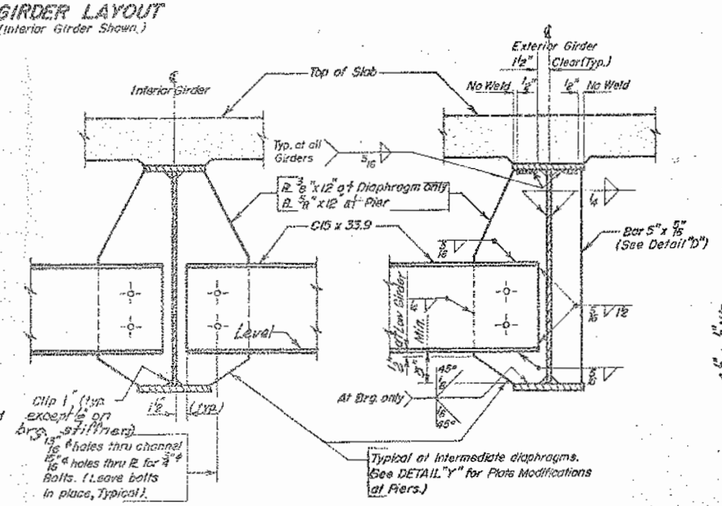
GIRDER LAYOUT
(Interior Girder Shown.)

SHEAR CONNECTOR DETAILS
Welded stud shear connectors are spaced as shown on GIRDER LAYOUT. Shear Connectors will be paid for as Structural Steel based on the weight of welded studs.

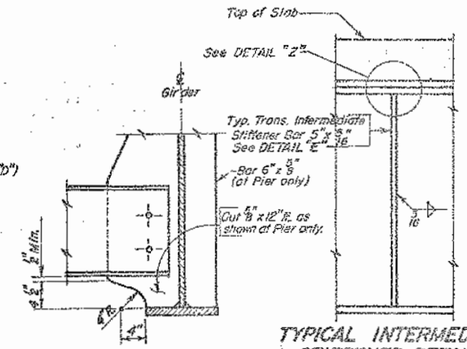


TYPICAL SECTION AT ABUT'S.

TYPICAL SECTION AT PIERS

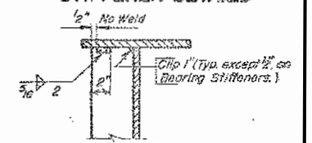


DIAPHRAGM CONNECTIONS



DETAIL "Y"

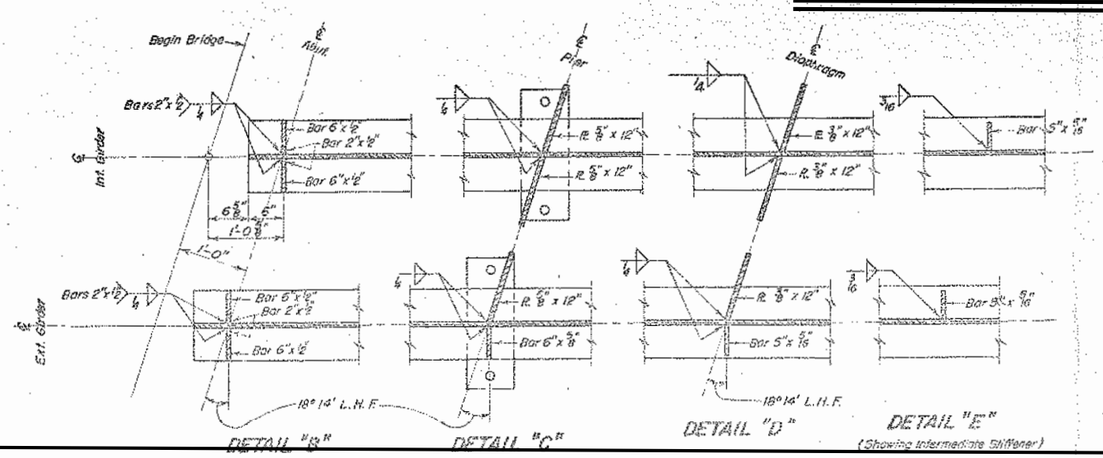
TYPICAL INTERMEDIATE STIFFENER DETAILS



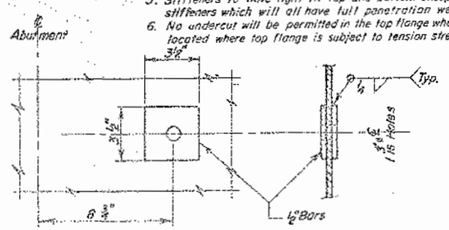
DETAIL "Z"

When stiffener plates are used on one side only they shall be attached to the outstanding leg of the compression flange as shown. See GIRDER LAYOUT for location of compression flange.

ORIGINAL CONSTRUCTION PLANS



DETAIL "B" DETAIL "C" DETAIL "D" DETAIL "E"
(Showing Intermediate Stiffener)



DETAIL "F"

NOTES —
1. All dimensions shown are horizontal or vertical.
2. All Stiffeners and girder ends shall be made normal to flanges.
3. See "FRAMING DIAGRAM" Sheet No.11 for spacing of Diaphragms and Stiffeners.
4. Tension Flanges located on GIRDER LAYOUT.
5. Stiffeners to have tight fit top and bottom except bearing stiffeners which will all have full penetration weld to bottom flange.
6. No undercut will be permitted in the top flange when welding stiffeners located where top flange is subject to tension stresses.

FLANGE TO WEB WELDS

Flange Thickness	Fillet Welds
⅜ and ½	7/16
⅝	5/16

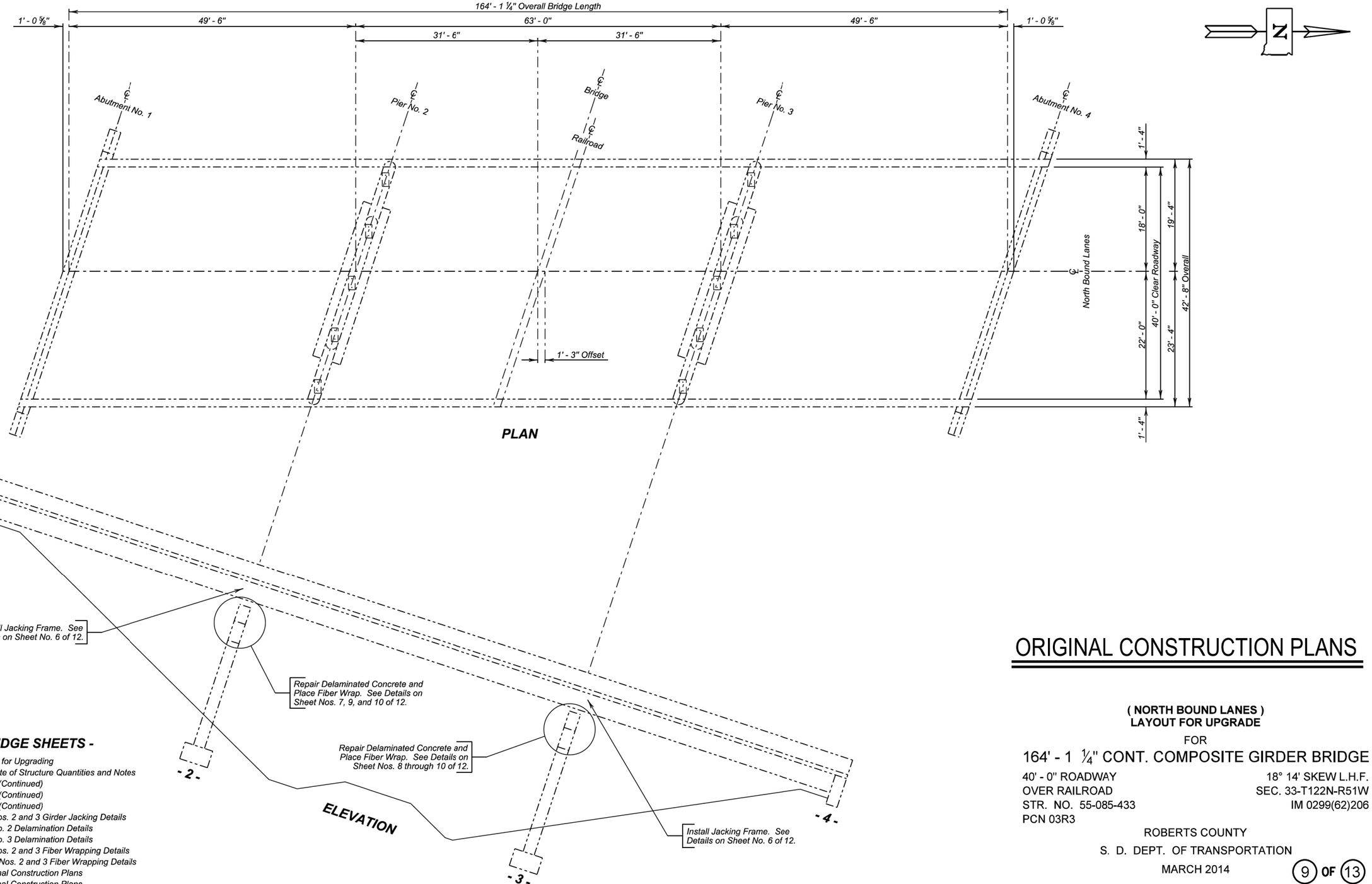
(NORTH BOUND LANES)
GIRDER LAYOUT & DETAILS
FOR
164'-1¼" CONT. COMP. GIRDER BRIDGE

40'-0" ROADWAY — 18°14' SKEW L.H.F.
OVER C.M. ST. P. & P.R.R. — SEC. 33-T122N-R51W
STA. 93+55.569 TO 95+19.673 — J-29-9(20)205(PT)
STR. NO. 55-065-433 — HS20-44 (8 ALT.)
ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
AUG. 1975

8 OF 13

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	L.G.K.	Cpl	BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	30	34



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 - Notes (Continued)
Sheet No. 5 - Notes (Continued)
Sheet No. 6 - Pier Nos. 2 and 3 Girder Jacking Details
Sheet No. 7 - Pier No. 2 Delamination Details
Sheet No. 8 - Pier No. 3 Delamination Details
Sheet No. 9 - Pier Nos. 2 and 3 Fiber Wrapping Details
Sheet No. 10 - Bent Nos. 2 and 3 Fiber Wrapping Details
Sheet No. 11 - Original Construction Plans
Sheet No. 12 - Original Construction Plans

ORIGINAL CONSTRUCTION PLANS

(NORTH BOUND LANES)
LAYOUT FOR UPGRADE

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433
PCN 03R3

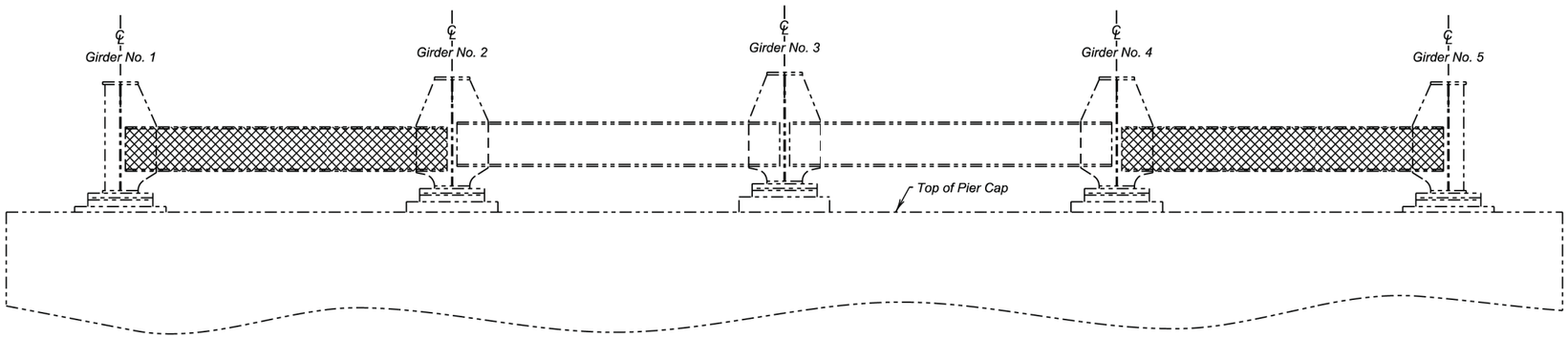
18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

9 OF 13

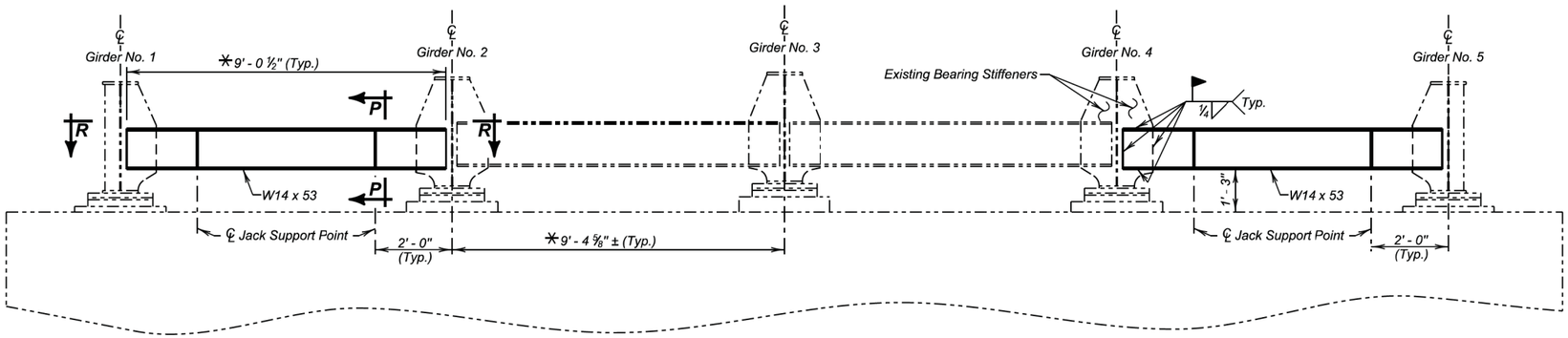
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NP	KSK	KR	Kevin N. Goeden
ROBT03R3	03R3SB01		BRIDGE ENGINEER

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	31	34



Existing C Channels to be Removed by Air Carbon Arc.

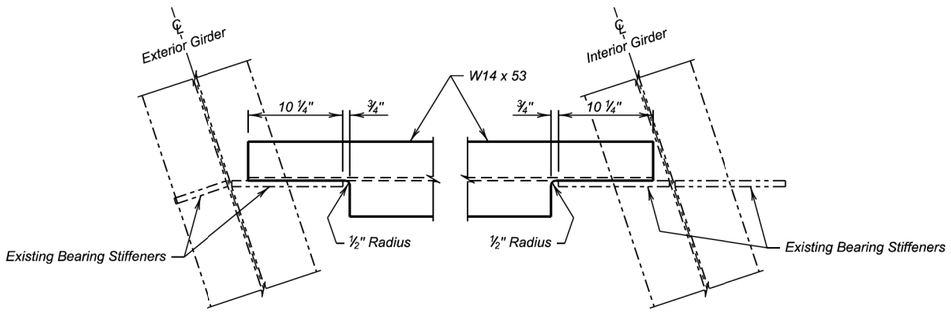
ELEVATION - PIER NOS. 2 AND 3
(Showing Removal)
(Deck not Shown for Clarity)



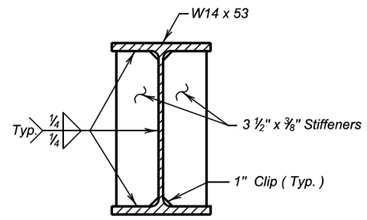
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Jack Superstructure, Steel Girder Bridge	LS	Lump Sum
☆ Structural Steel, Miscellaneous	LS	Lump Sum
Bridge Repainting, Class 1	LS	Lump Sum

☆For informational purposes, the total amount of structural steel for the jacking frames is 1954 lbs.

ELEVATION - PIER NOS. 2 AND 3
(Showing New Jacking Frame)
(Deck not Shown for Clarity)



SECTION R - R



SECTION P - P

ORIGINAL CONSTRUCTION PLANS

(NORTH BOUND LANES)
PIER NOS. 2 AND 3 GIRDER JACKING DETAILS
FOR
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433

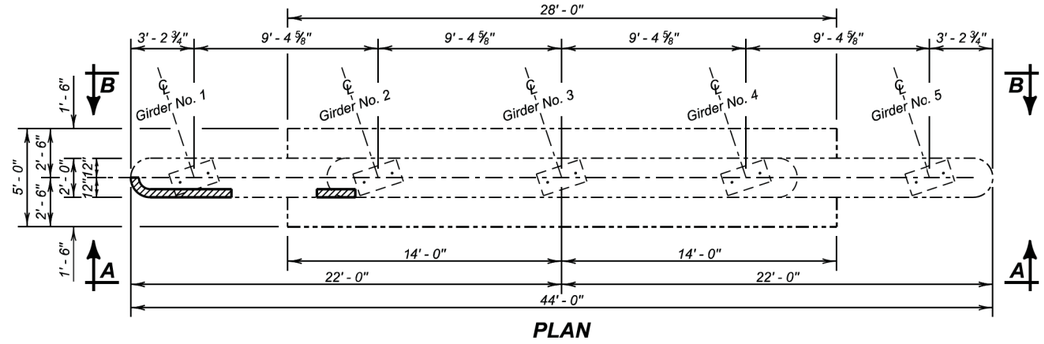
18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

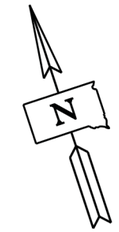
10 OF 13

DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP	KSK	KR	Kevin N Goeden BRIDGE ENGINEER
ROBT03R3	03R3RB06		

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	32	34

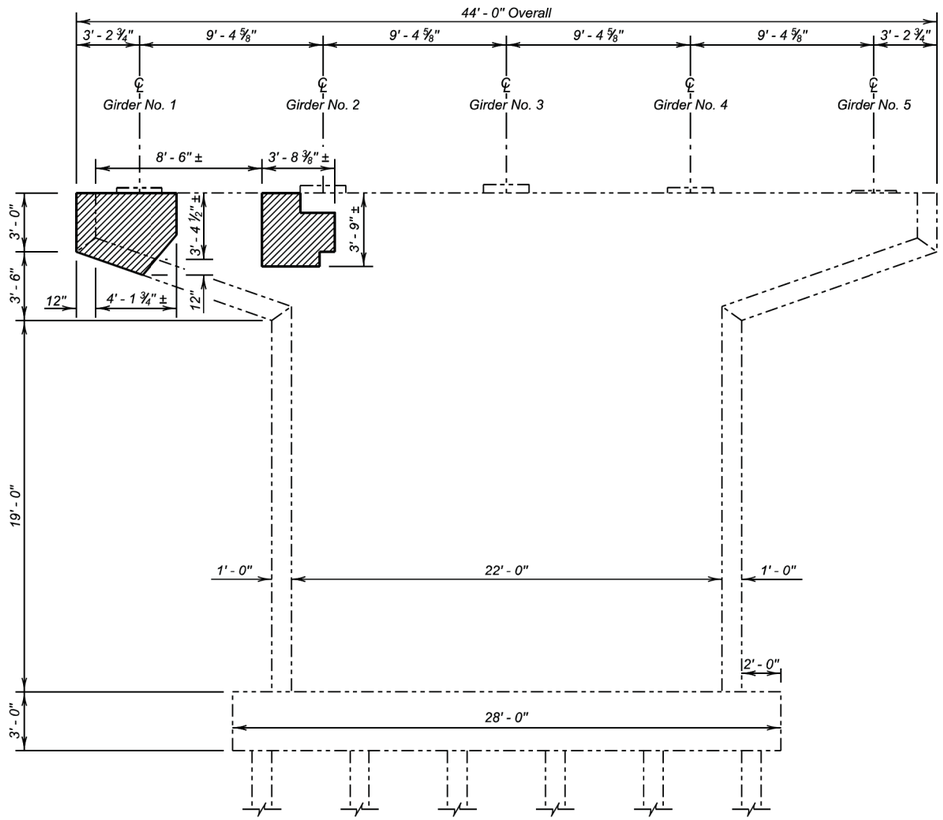


PLAN

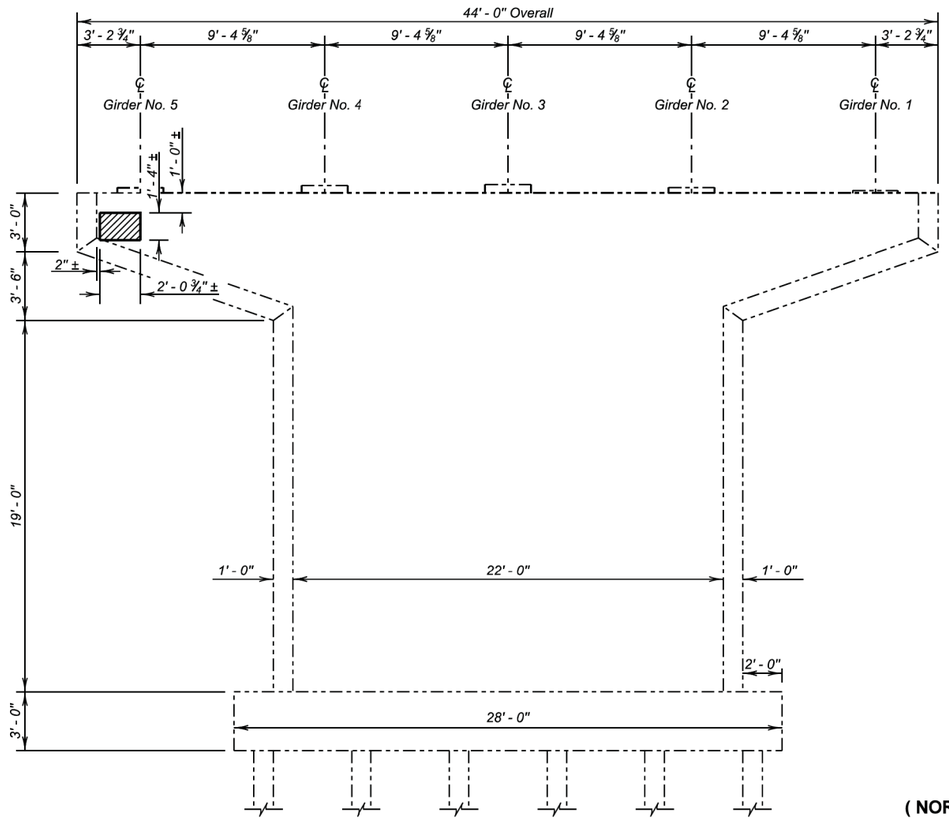


ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Concrete Patching Material, Miscellaneous	Cu Ft	13.4
Breakout Structural Concrete	Cu Yd	0.5
Galvanic Anode	Each	10



SECTION A - A
(SOUTH FACE)



SECTION B - B
(NORTH FACE)

ORIGINAL CONSTRUCTION PLANS

LEGEND -

Shaded areas indicate locations concrete removal and patching.

(NORTH BOUND LANES)
PIER NO. 3 DELAMINATION DETAILS
FOR
164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

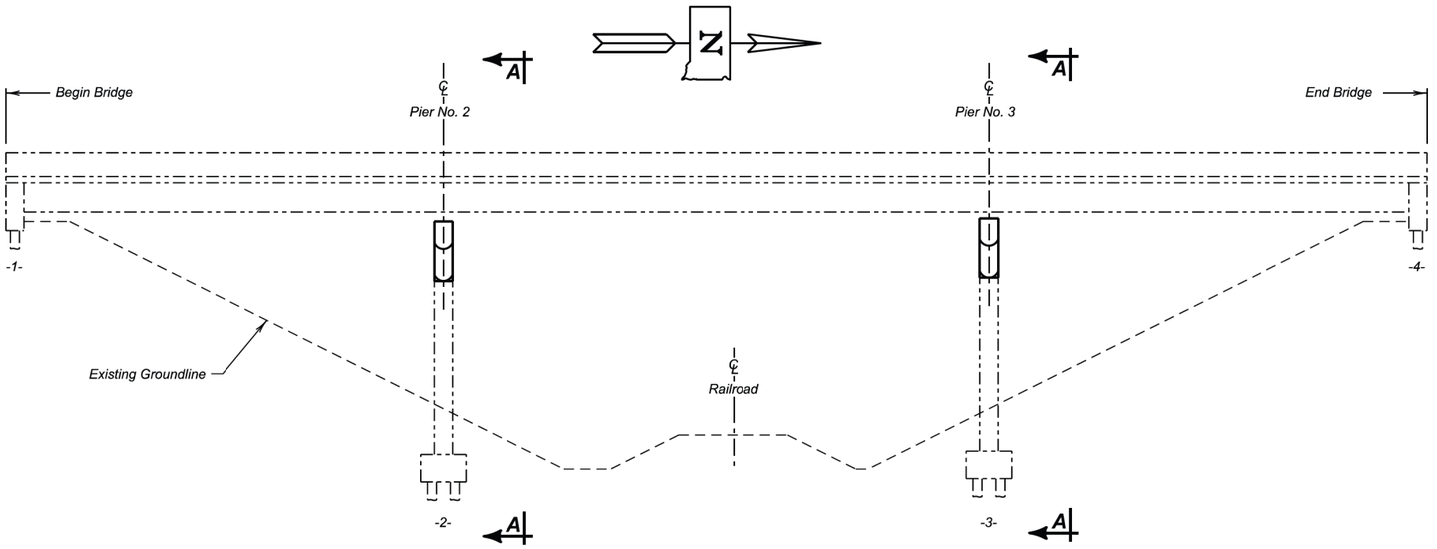
40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433

18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

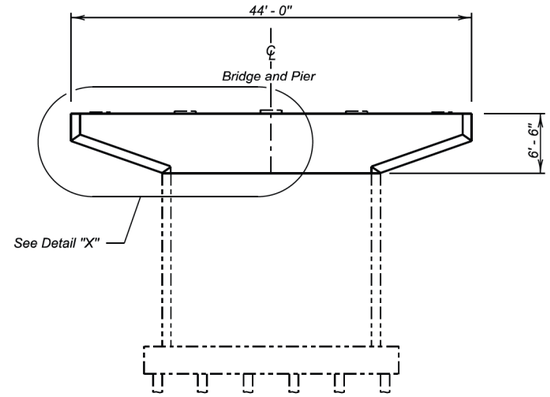
ROBERTS COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2014

DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP	KSK	KR	Kevin N. Boeder BRIDGE ENGINEER
ROBT03R3	03R3SB08		

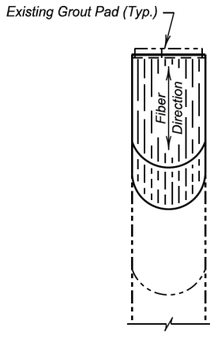
SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	33	34



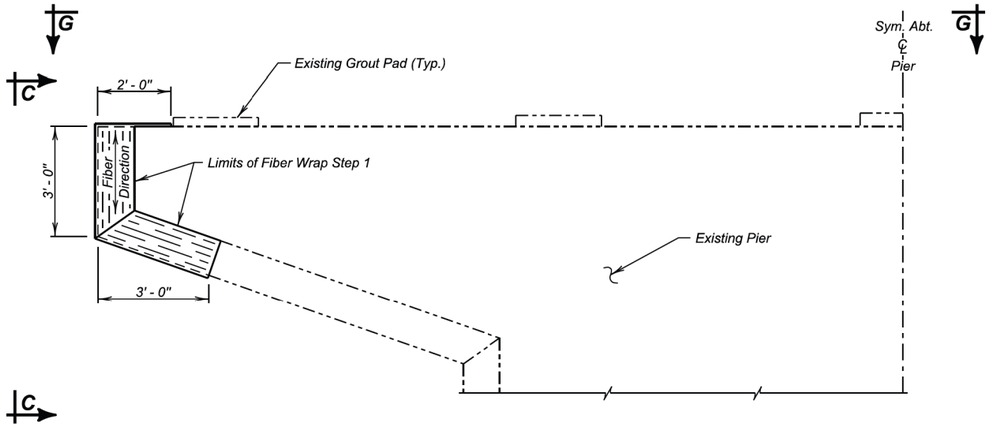
ELEVATION



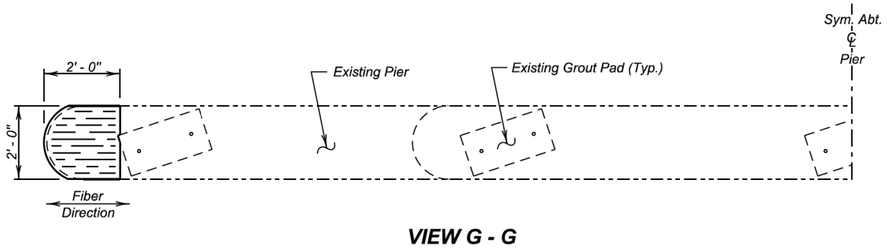
SECTION A - A
(North Face of Pier Shown - South Face Similar by Rotation)



VIEW C - C
(Fiber Wrap - Step 1)



DETAIL "X"
(Fiber Wrap - Step 1)



VIEW G - G
(Fiber Wrap - Step 1)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Composite Fabric Wrap, Concrete Repair	SqFt	1217

LEGEND -

Indicates limits and fiber direction of Composite Fiber Wrap.

ORIGINAL CONSTRUCTION PLANS

(NORTH BOUND LANES)

PIER NOS. 2 AND 3 FIBER WRAPPING DETAILS

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433

18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY

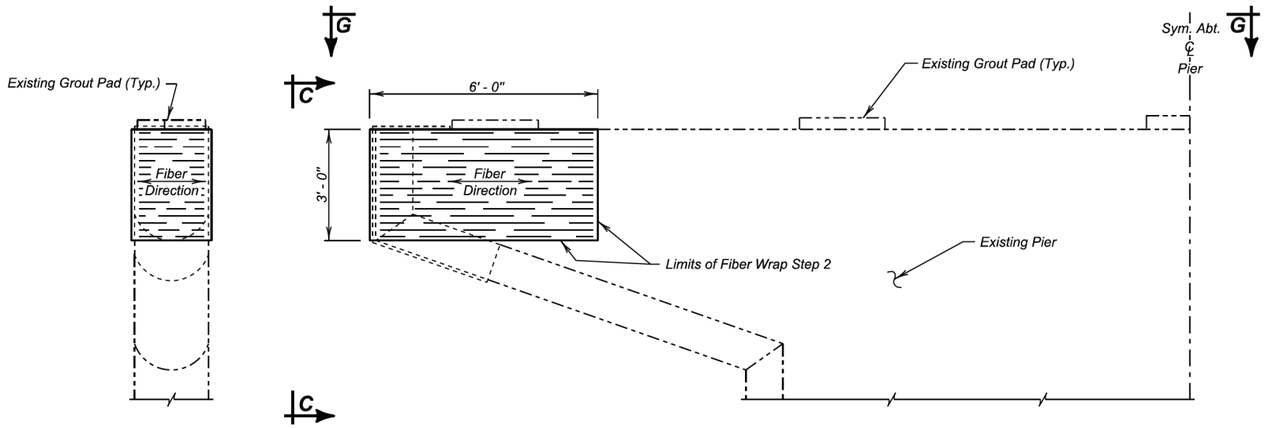
S. D. DEPT. OF TRANSPORTATION

MARCH 2014

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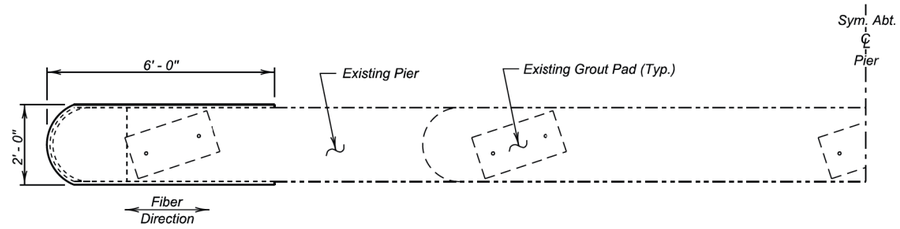
DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP	KSK	KR	Kevin N. Goeden BRIDGE ENGINEER
RQBT03R3	03R3RB09		

SD DOT	PROJECT	SHEET NO.	TOTAL SHEETS
	029S-168 029N-168	34	34

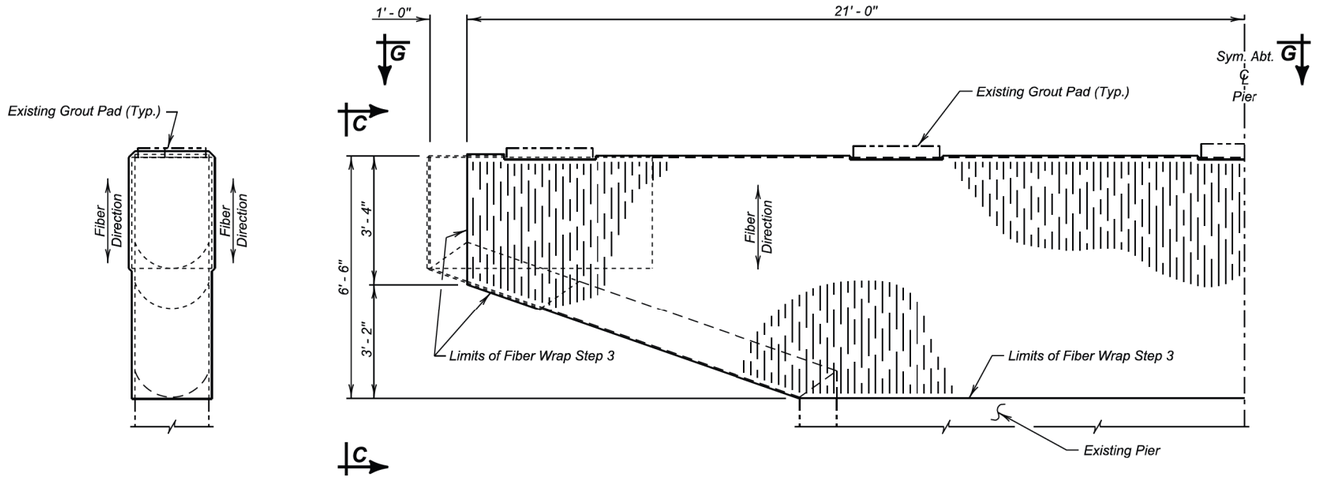


VIEW C - C
(Fiber Wrap - Step 2)

DETAIL "X"
(Fiber Wrap - Step 2)

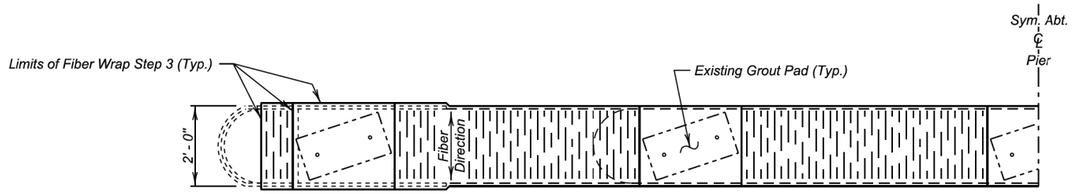


VIEW G - G
(Fiber Wrap - Step 2)



VIEW C - C
(Fiber Wrap - Step 3)

DETAIL "X"
(Fiber Wrap - Step 3)



VIEW G - G
(Fiber Wrap - Step 3)

LEGEND -

Indicates limits and fiber direction of Composite Fiber Wrap.

ORIGINAL CONSTRUCTION PLANS

(NORTH BOUND LANES)

PIER NOS. 2 AND 3 FIBER WRAPPING DETAILS (CONTINUED)

FOR

164' - 1 ¼" CONT. COMPOSITE GIRDER BRIDGE

40' - 0" ROADWAY
OVER RAILROAD
STR. NO. 55-085-433

18° 14' SKEW L.H.F.
SEC. 33-T122N-R51W
IM 0299(62)206

ROBERTS COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2014

13 OF 13

DESIGNED BY	CK. DES. BY	DRAFTED BY	
NP ROBT03R3	KSK 03R3RB10	KR	Kevin N. Goeden BRIDGE ENGINEER