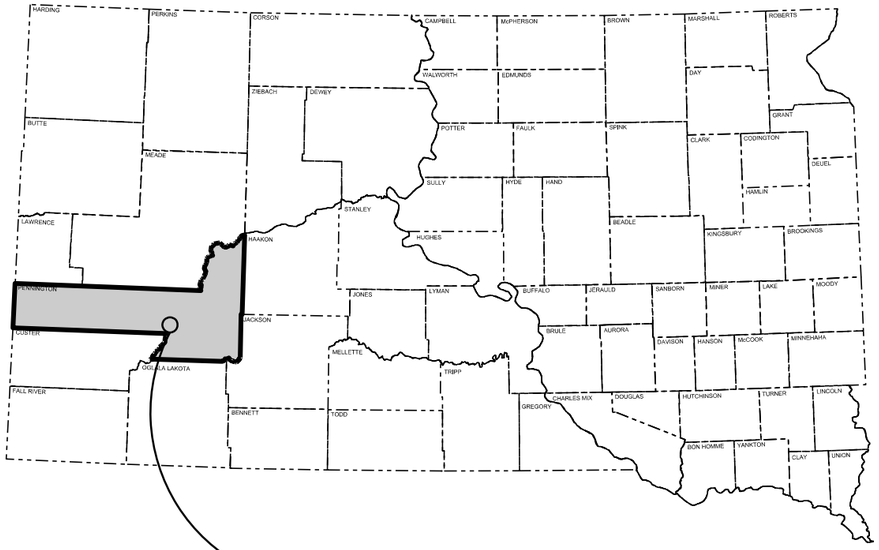
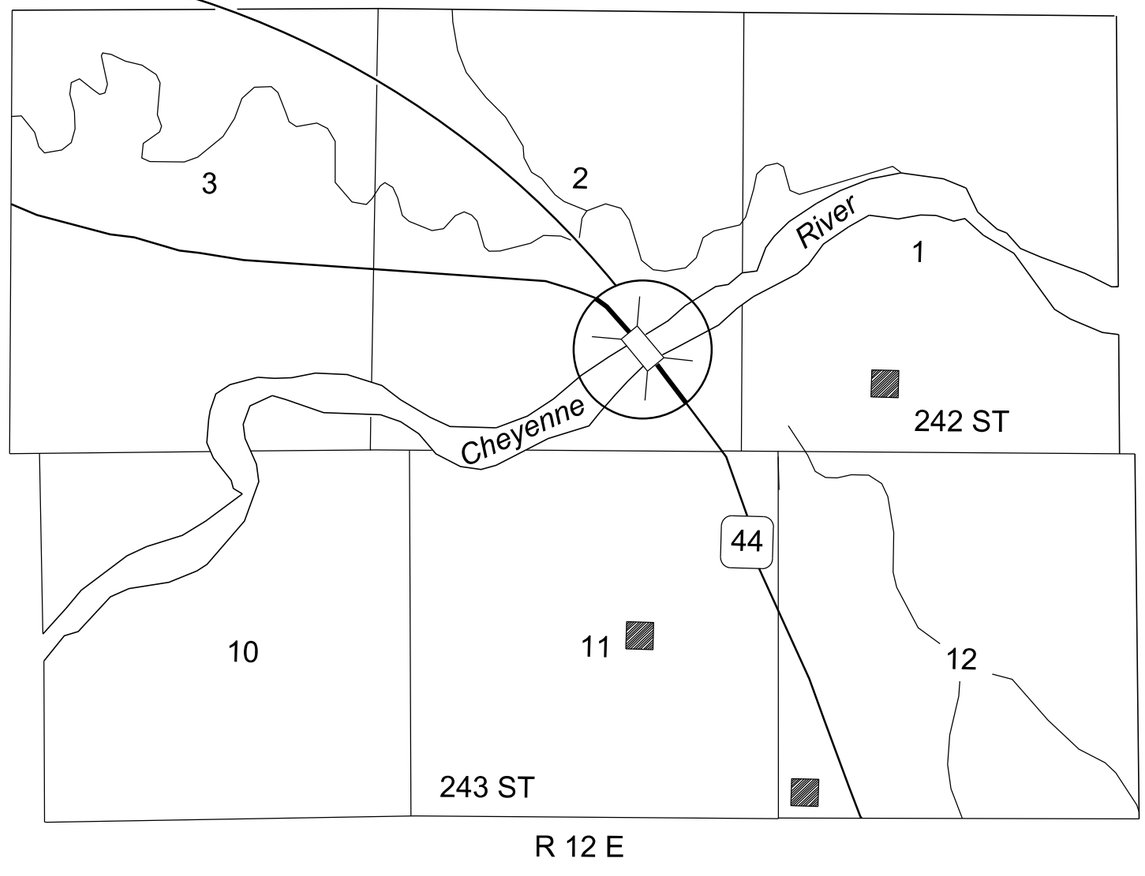


PROJECT
SD HIGHWAY 44
MRM 78.23
STR. NO. 52-708-42A



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT P 0044(173)78
SD HIGHWAY 44
PENNINGTON COUNTY

POLYMER CHIP SEAL, JOINT WORK, & ZONE PAINTING
PCN 03A5

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(173)78	1	38

Plotting Date: 12/16/2015

INDEX OF SHEETS

DESIGN DESIGNATION

ADT (2013)	1242
ADT (2033)	1802
DHV	216
D	50%
T DHV	3.3%
T ADT	7.2%
V	65 mph

STORM WATER PERMIT

No Storm Water Permit required

5

Plot Scale - 1:200
Plotted From - TRRC12608
File - ...\prj\Penn03A5\03A5_Title.dgn

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	200.0	Hour
634E0110	Traffic Control Signs	178	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	2	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	8,000	Ft
634E0640	Temporary Pavement Marking	8,000	Ft
634E0900	Portable Temporary Traffic Control Signal	2	Unit

Structure 52-708-42A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0700	Abutment Joint Drain	2	Each
410E2100	Finger Type Expansion Joint Assembly	2	Each
412E0100	Bridge Repainting, Class I	Lump Sum	LS
460E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
480E5000	Galvanic Anode	64	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	2,624.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	2,624.4	SqYd
491E0120	Bridge Deck Grinding	2,624.4	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
900E7020	Bridge Cleaning	Lump Sum	LS

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived 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. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

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 shall 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 State ROW.

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

The waste disposal site(s) shall 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 Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of 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 of time not to exceed the duration of the project. Prior to project completion, the waste shall 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) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. 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 shall arrange and pay for a cultural resource survey and/or records search. 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; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on 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 shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). 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.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

TRAFFIC CONTROL – GENERAL NOTES

1. Requests to deviate from the sequence of operations shall 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 shall be submitted for review a minimum of one week prior to potential implementation.

2. Unless otherwise stated in these plans, no work will be allowed during hours of darkness.

3. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage of the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

4. Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.

5. Non-applicable traffic control devices shall be completely covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 48 hours.

6. Construction signing mounted on portable supports shall not be used for a duration of more than 3 days, unless approved by the Engineer. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted, breakaway supports.

7. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

8. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.

9. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

10. All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.

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

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

13. A 16' width restriction will be put in place for this project. A 14' width restriction during working hours will be allowed provided flaggers are used and traffic control is adjusted to allow a 16' wide load to pass. Payment for moving traffic control to allow for a 16' wide load shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

14. The Rapid City Region Traffic Engineer will provide the signal timings for the Portable Temporary Traffic Control Signal.

SEQUENCE OF OPERATIONS

The following requirements/restrictions shall apply:

- Standard Plate 634.26 shall be used for traffic control

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R10-6	STOP HERE ON RED	2	24" x 36"	6	12
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16	16
W3-3	SIGNAL AHEAD (symbol)	2	48" x 48"	16	32
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6	12
W20-1	ROAD WORK AHEAD	2	48" x 48"	16	32
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16	32
W20-7	FLAGGER (symbol)	2	48" x 48"	16	32
G20-2	END ROAD WORK	2	36" x 18"	5	10
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			178

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	2 Each

PRESS RELEASE ANNOUNCEMENTS

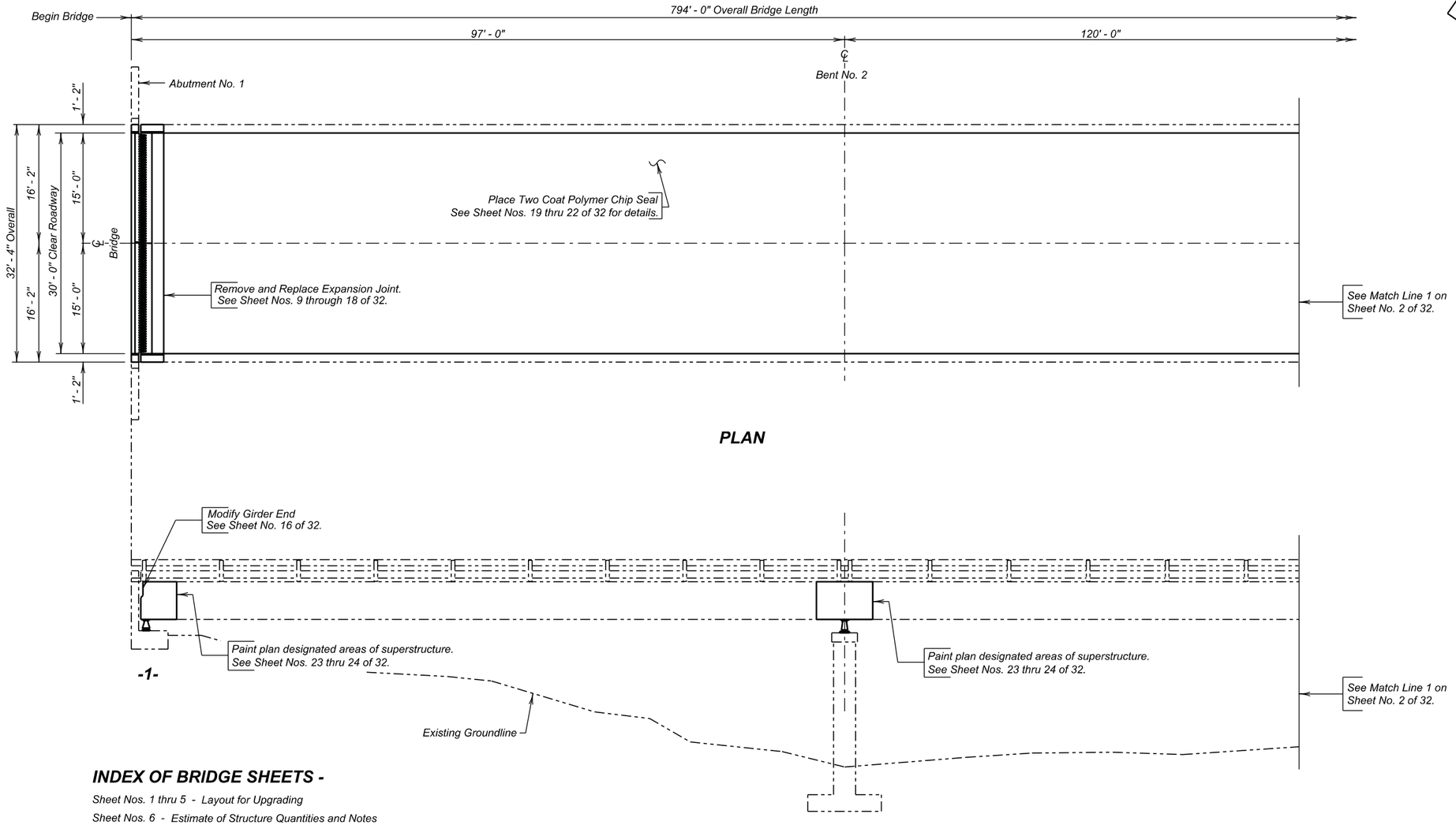
The SDDOT will prepare a Press Release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor shall provide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

TRUCK OR TRAILER MOUNTED CRASH ATTENUATOR

A Truck or Trailer Mounted Crash Attenuator shall be utilized at the beginning of the work area. The attenuator shall be used when workers are present and shall be removed from the roadway at the end of each working day. A Type 3 Barricade shall be placed in front of the work area in the absence of the Truck or Trailer Mounted Crash Attenuator. The crash attenuator shall meet or exceed NCHRP 350 Test Level 3 or current MASH requirements.

The Attenuator will remain the property of the Contractor at the end of the project. The cost for the Truck or trailer Mounted Crash Attenuator shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	5	38



INDEX OF BRIDGE SHEETS -

LAYOUT FOR UPGRADING

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

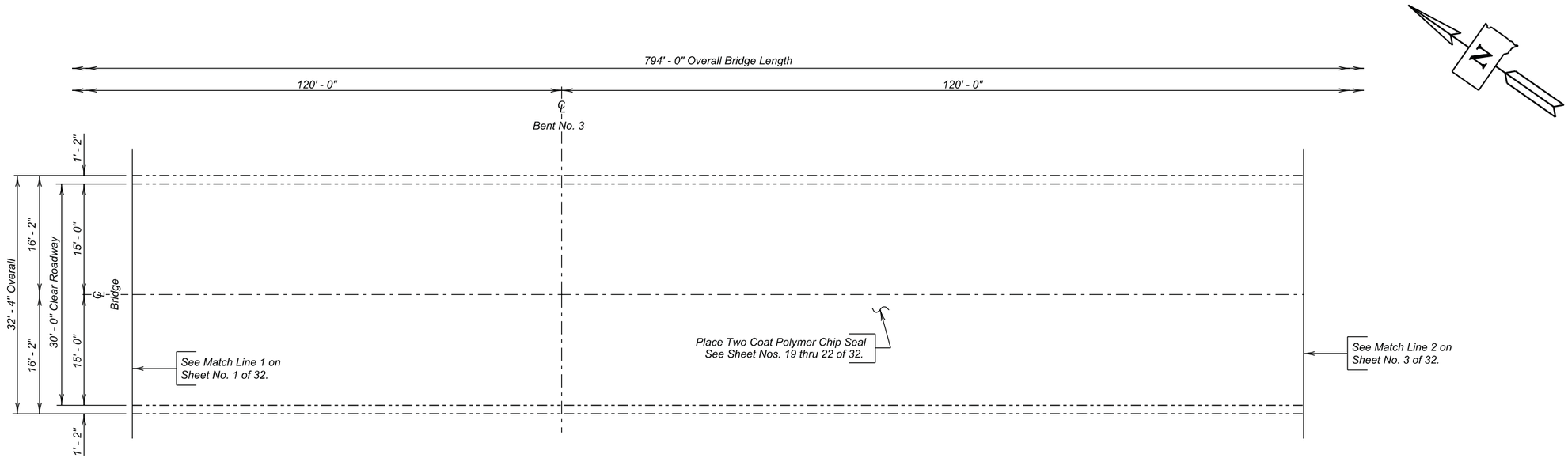
30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	6	38



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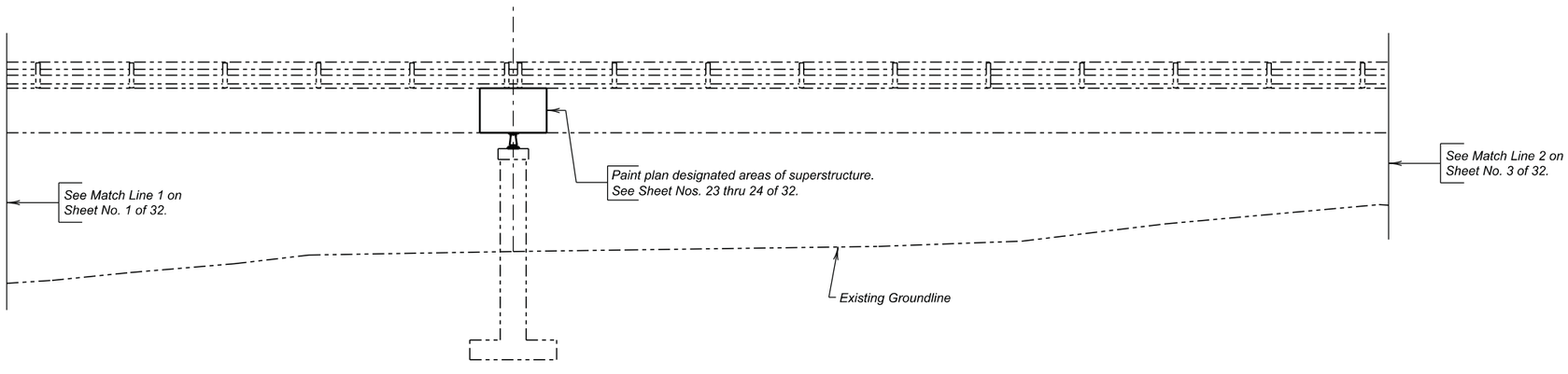

ELEVATION

LAYOUT OF REPAIRS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA02		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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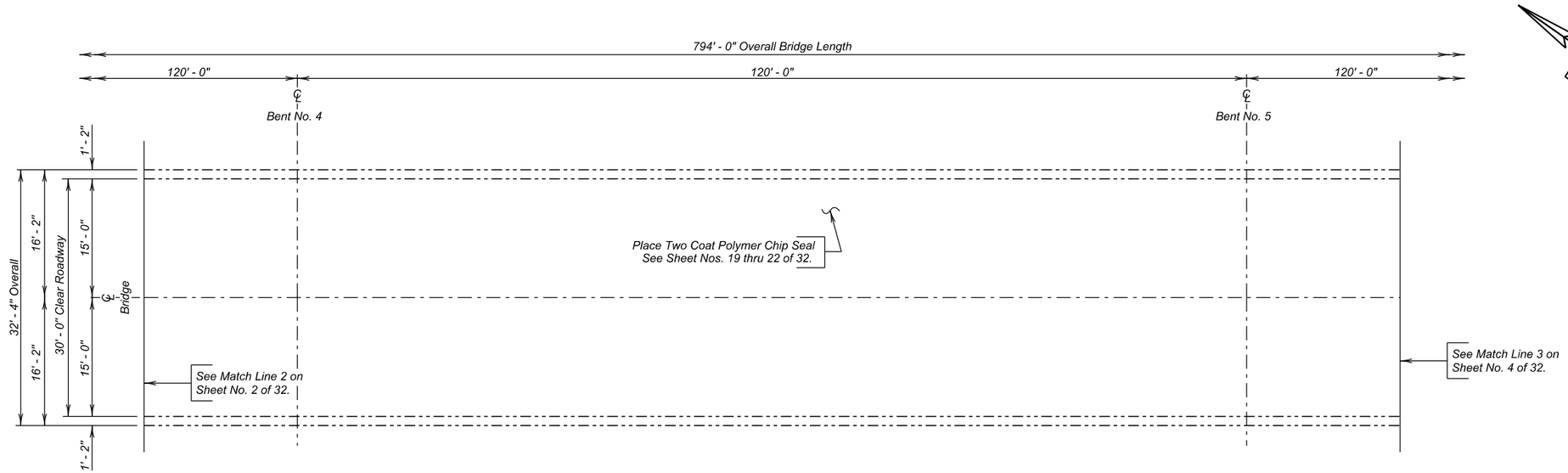

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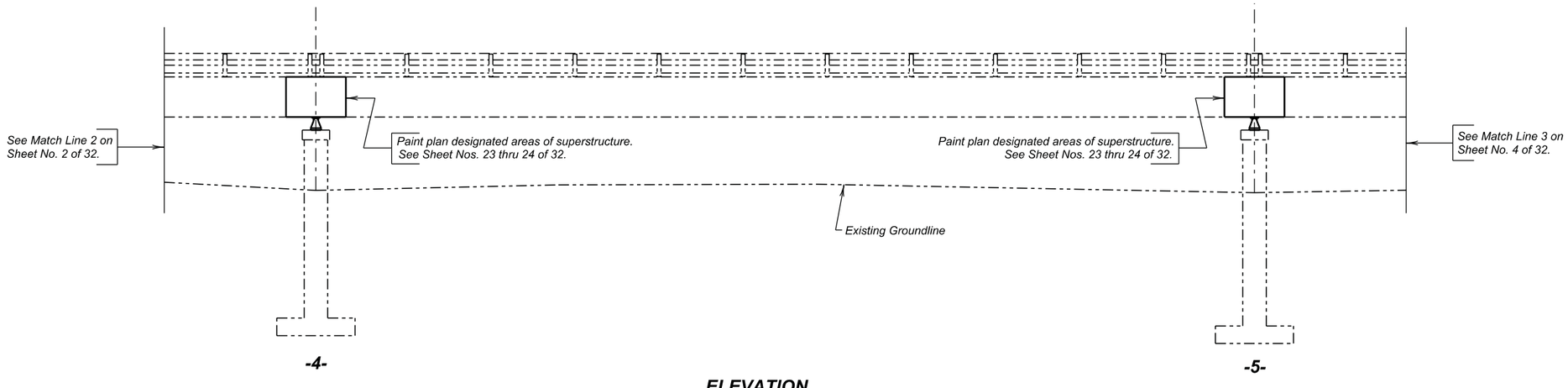

ELEVATION

LAYOUT OF REPAIRS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW

OVER CHEYENNE RIVER — SEC. 2-T2S-R12E

STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

3 OF 32

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA03		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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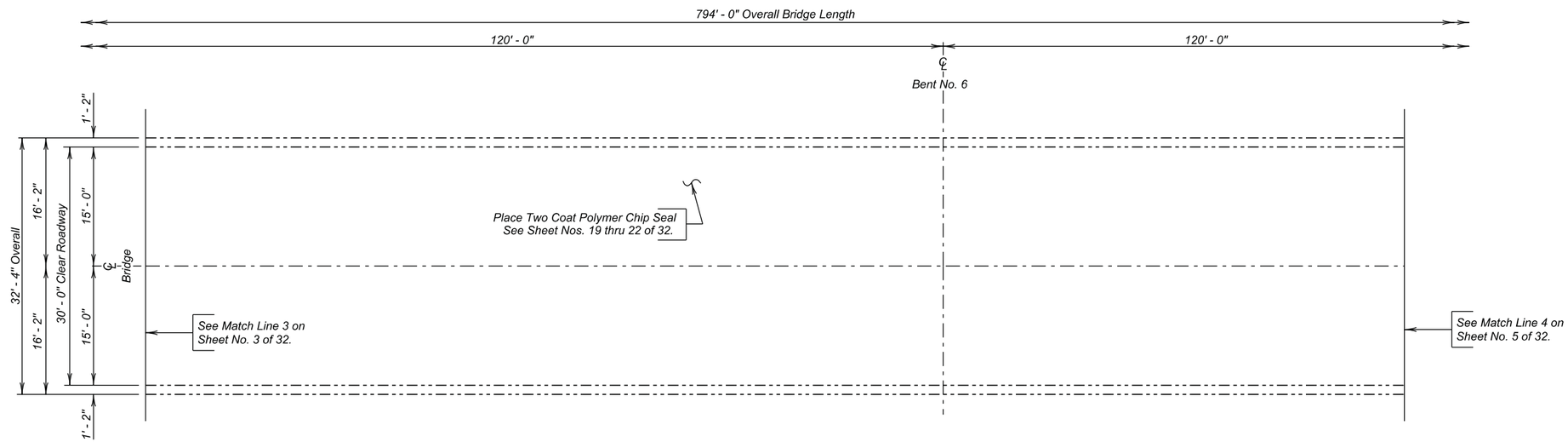

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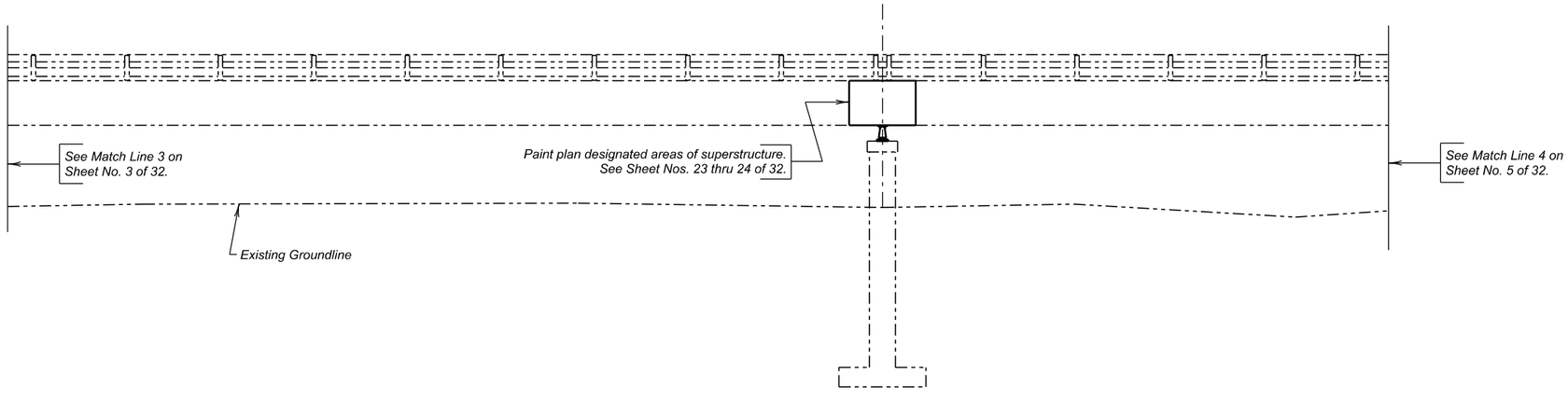

ELEVATION

LAYOUT OF REPAIRS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW

OVER CHEYENNE RIVER — SEC. 2-T2S-R12E

STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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PENN03A5	03A5KA04		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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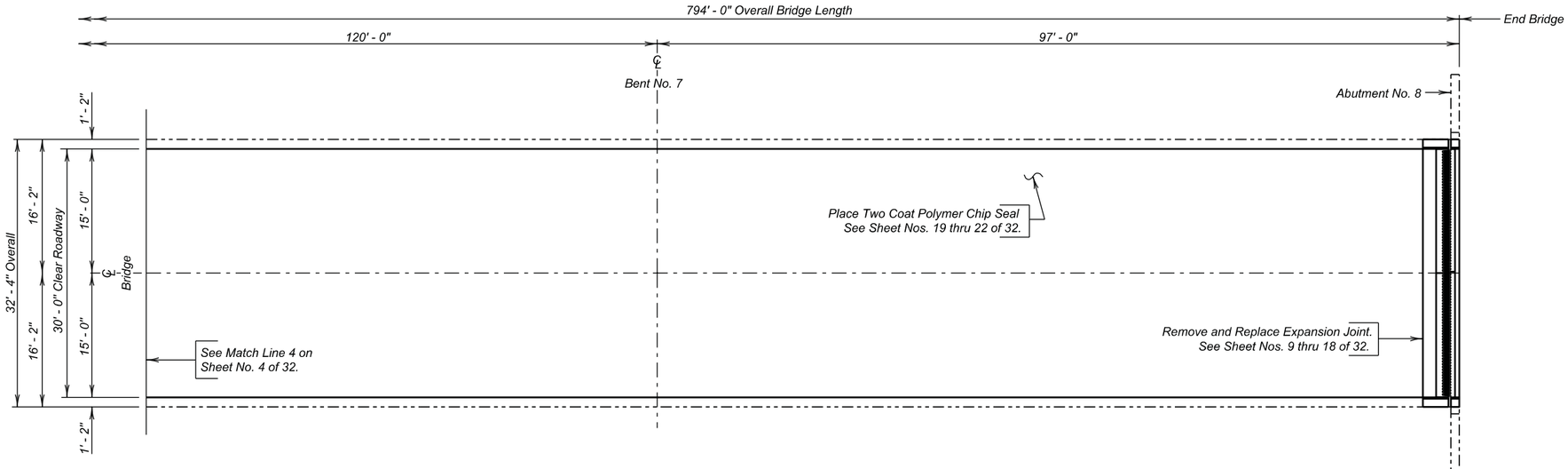

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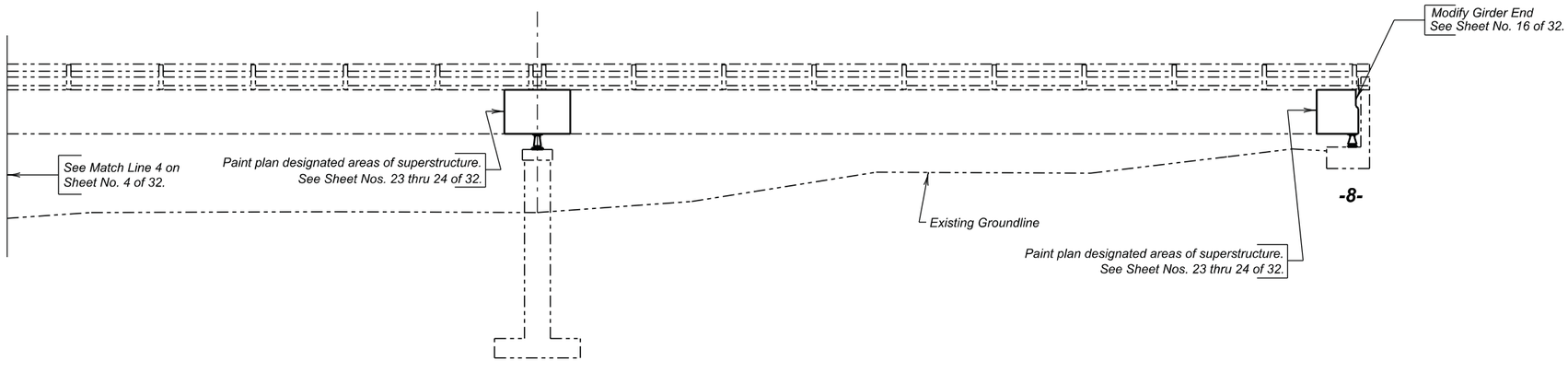


ELEVATION

LAYOUT OF REPAIRS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW

OVER CHEYENNE RIVER — SEC. 2-T2S-R12E

STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

5 OF 32

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA05		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
410E0700	Abutment Joint Drain	2	Each
410E2100	Finger Type Expansion Joint Assembly	2	Each
412E0100	Bridge Repainting, Class I	Lump Sum	LS
460E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
480E5000	Galvanic Anode	64	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	2624.4	SqYd
491E0110	Abrasive Blasting of Bridge Deck	2624.4	SqYd
491E0120	Bridge Deck Grinding	2624.4	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
900E7020	Bridge Cleaning	Lump Sum	LS

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 17th Edition with 2003 Interim using Working Stress Design.

2. 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.

3. All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Bridge Welding Code D1.5M/D1.5:2010 unless otherwise noted in this plan set.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge contained in these plans are based on the original construction plans and shop plans 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.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

1. Remove the existing bridge deck expansion device at both abutments for the first phase of construction.

2. Install new finger joint expansion device at both abutments for the first phase of construction.

3. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.

4. Perform bridge deck grinding for the first phase of construction bridge deck.

5. Clean the bridge deck surface with abrasive blasting for the first phase of construction.

6. Place the Two Coat Polymer Bridge Deck Chip Seal for the first phase of construction.

7. Switch traffic and repeat steps 1 through 6 for the second phase of construction.

8. Clean and paint girders as detailed in plans.

GENERAL CONSTRUCTION – BRIDGE

1. All mild reinforcing steel shall conform to ASTM A615, Grade 60.

2. Use 2" clear cover on all reinforcing steel except as shown otherwise.

3. All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise in the plans.

4. The Contractor shall only imprint one year plate on the structure. The year plate shall contain the date the existing bridge was built and shall be located as specified and detailed on Standard Plate No. 460.03.

5. Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

6. Surfaces of fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.

SHOP PLANS

Shop plans shall be required as specified by Section 410.3 A. of the Construction Specifications.

BRIDGE CLEANING

1. The following locations on the bridge shall be cleaned of bird guano, bird nests, sand, gravel and loose debris:

   Top flange, bottom flange, and webs of the girders.
   The tops of the bent caps and abutment seats.
   Bridge Bearings.
   Horizontal surfaces of the diaphragms where bird guano is present.
   Bridge deck soffit

2. The cleaning method shall remove external debris only and will not be used to remove stains, grease or paint. The cleaning operation shall not damage or remove tightly adhering paint. The cleaning method shall be provided by the Contractor and approved by the Engineer. Prior to widespread use on the structure, the Contractor shall test clean an area to demonstrate that the cleaning method will remove external debris without damaging the tightly adhering paint.

3. Measurement for the contract item Bridge Cleaning shall not be made. All costs associated with cleaning the locations specified in note number 1, including all labor, equipment, materials and incidentals shall be incidental to the contract lump sum price for Bridge Cleaning.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The Two Coat Bridge Deck Polymer Chip Seal shall be applied in accordance with the Construction Specifications.

BRIDGE REPAINTING, CLASS I

1. The areas shown in the plans shall be painted in accordance with Section 412 of the Construction Specifications and in accordance with SSPC Standard PA1. T

2. For informational purposes, 4928 square feet of structural steel will require painting.

3. Paint color

   Top Coat - The paint color shall be an approved grey color. Prior to ordering the paint, a paint chip of the grey color shall be submitted to the Department for color approval.

   Primer Coat - Color shall sharply contrast with the top coat.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
794' - 0" COMPOSITE GIRDER BRIDGE

STR. NO. 52-708-42A
MARCH 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	BWS	Kevin N. Goeden
PENN03A5	03A5KA06		BRIDGE ENGINEER

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 his/her operations accordingly, and inform his/her employees of the hazards of lead exposure.

PAINT RESIDUE REMOVAL AND CONTAINMENT

Paint removal on the existing bridge shall be in accordance with Section 412.3 B.1 of the Construction Specifications.

MECHANICAL REBAR SPLICES

The mechanical rebar splices shall be in accordance with Section 480 of the Construction Specifications.

CONCRETE BREAKOUT

1. The existing deck, barrier curb and portions of the abutment shall be broken out to the limits shown on the plans. Breakout limits shall be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned and straightened to the satisfaction of the Engineer. Care shall 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 shall be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.

2. Extreme care shall be used not to nick, gouge, scratch, or damage in any other way, the existing steel girders when breaking out the concrete deck and curbs. Prior to deck removal, the limits of the girder top flanges shall be marked on top of the bridge deck. The Contractor shall not be allowed to use any impact type breakout equipment larger than power driven hand tools for slab removal within six inches of the actual limits of the top flange. At no time shall the use of any breakout method that will nick, gouge, or scratch the flange, or any other structural steel component to be reused, be allowed. In the event that any nicks, gouges, scratches, or other damage occur, the Office of Bridge Design shall be immediately notified. All damage shall be repaired by the Contractor as recommended by the Office of Bridge Design. All costs involved in repairing any damage, including any non-destructive testing that may be required, shall be at the expense of the Contractor.

3. All broken out concrete, discarded reinforcing bars and expansion devices shall be disposed of by the Contractor. Any disposal of discarded material shall be in accordance with the environmental commitment notes.

4. During concrete removal operations, no broken out concrete shall be allowed to fall into the Cheyenne River.

5. The contract unit price for "Finger Type Expansion Joint Assembly" shall include breaking out concrete, cleaning, straightening existing reinforcing steel, removal of the existing armored device, and disposal of all broken out material.

FINGER EXPANSION JOINT

1. Components of the Finger expansion joint assembly will include all plates shown on sheets 11 through 14 of 32. This will include the top finger plates and all other plates attached to the top finger plate.

2. All steel components, bolts, nuts, washers, steel plates, bars and structural shapes shall be galvanized after shop welding in accordance with ASTM A123.

3. All new structural steel shall conform to ASTM A709 Gr. 50. Material less than 1/4 inch thick may be ASTM A1011, Grade 36. The 5/8" inch diameter end welded deformed bar anchors shall be a commercially available Fluxed Deformed Bar Anchor Stud, automatically end welded, with material conforming to ASTM A496.

4. The finger expansion joint and drain system under the fingers will be installed one-half roadway width at a time while allowing for one-way traffic at all times.

5. Due to work on one-half of the deck at a time, splices in the joint will be required at the centerline of the roadway. Welded field splice details, the procedures for preparing the surfaces of the entire fabricated joint for welding and the procedures for repairing the galvanizing after welding shall be included in the shop plans. Repair of the galvanizing shall be by the zinc-based solder method in conformance with ASTM A780.

7. The phase limits for construction prevent sufficient room for a lap splice at centerline. Therefore, the transverse reinforcing steel shall be spliced with mechanical splice devices. The mechanical rebar splices shall be in accordance with Section 480 of the Construction Specifications.

8. The finger joint shall be shimmed as necessary, with shims detailed in the plans, to match the roadway slope. The finger joint shall be bolted to the girders using ¾" diameter A449 heavy hex bolts.

9. Each finger joint bolt shall include one 5/16" plate washer detailed in this plan set, one standard washer, and one heavy hex nut.

10. The two halves of the finger expansion joint shall be placed parallel to each other and shall be set at correct grade and crown. The top surfaces of the two sides of the finger expansion joint shall be level with one another. The gap between the fingers shall be set using the Joint Installation Table shown on the plan sheet. Strict adherence to these openings at the specified installation temperature is required for the joint to function properly.

11. The new concrete surfaces of the bridge deck in the area of the finger joint placement shall be finished in accordance with Section 460.3.M 4.b of the Construction Specifications. The portion of the abutment in the location of the finger joint shall be finished in accordance with Sections 460.3 M4.b and 460.3 M4.c of the Construction Specifications.

12. All costs associated with the replacement of the existing finger joint will be incidental to the contract unit price per each for Finger Type Expansion Joint Assembly. This will include new reinforcement, mechanical splices, new A45 concrete, and all structural steel and accessories associated with finger joint.

ABUTMENT JOINT DRAIN

1. Drainage assembly consists of plates U, V, X, Y and T, and also the neoprene sheet, drainage trough and riprap. This includes any plates bolted to the finger joint or attached to the abutment backwall/seat.

2. All steel components, steel plates, bars and structural shapes shall be galvanized after shop welding in accordance with ASTM A123 except as stated in the following notes.

3. The threads of all nuts and bolts to be galvanized shall be protected to ensure that a bolt or nut can still be fully threaded after the galvanizing process.

4. All new structural steel plates and bars shall conform to ASTM A709, Grade 36. Material less than 1/4 inch thick may be ASTM A1011, Grade 36 except as specified in notes below.

5. Plates U, V, X and Y shall be bolted to the Finger Expansion Joint using 3/8" diameter bolts. Each bolt shall include two standard washers, and one standard nut. The bolts, nuts and washers shall be either hot-dipped galvanized according to ASTM F2329 or made of corrosion resistant material

NOTES (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

STR. NO. 52-708-42A

MARCH 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	BWS	Kevin N. Goeden
PENN03A5	03A5KA07		BRIDGE ENGINEER

ABUTMENT JOINT DRAIN (CONTINUED)

6. The Neoprene sheet shall be EPDM Cloth Inserted Rubber. The material shall have the following physical properties:

Durometer:	70 A Nominal
Tensile Strength:	1500 psi
Temperature Range:	-40° F to 245° F
Elongation:	100 %
UV Rating:	Excellent

7. Class A riprap shall conform to the Specifications. The cost for furnishing and installing the rip rap shall be incidental to the contract unit price per each for Abutment Joint Drain.

8. Material for the 3/8" diameter x 2 3/4" commercially available steel wedge-type anchor bolts, nuts and washers shall be at the option of the contractor. The bolts, nuts and washers shall be either hot-dipped galvanized according to ASTM F2329 or made of corrosion resistant material. The wedge type anchors shall be installed in accordance with the manufacturer's recommendations.

9. The 3/8" diameter bolts, nuts and washers shall conform to ASTM A307 and be galvanized in accordance with ASTM F2329 or made of some other corrosion resistant material.

10. Welding of drainage plates at centerline will not be required if the contractor fully seals the gap between the two plates with a silicon sealer approved by the Bridge Construction Engineer.

11. The placement of the drainage channel is necessary to drain the water from the finger joint and diaper system away from the bridge. Should it be necessary, it shall be at the Engineer's option to adjust the gutter from the plans location to meet this requirement.

12. After the drain length and slope are determined for each location, and approved by the Engineer, sketches of same shall be sent to the Office of Bridge Design and to the fabricator.

13. All costs associated with furnishing and installing the Abutment Joint Drain will be included in the contract unit price per each for Abutment Joint Drain.

GIRDER END MODIFICATION AT ABUTMENTS

1. This work shall consist of the removal of a section of the girder ends at the abutments.

2. The girder removal method shall be oxyacetylene cutting. Any other method shall meet the approval of the Bridge Construction Engineer.

3. All costs for labor and any incidentals necessary to modify the girder end shall be incidental to the contract unit price per each for "Abutment Joint Drain".

4. Removal of work affected paint and repainting the work affected areas will be incidental to the contract lump sum price for Bridge Repainting, Class I.

GALVANIC ANODE

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

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

   a. Galvashield XP2
   Vector Corrosion Technologies
   13312 N 56th St, Suite 102
   Tampa, FL 33617
   Phone: (813) 830-7566
   Website: www.vector-corrosion.com

   b. Sentinel Silver
   Euclid Chemical Company
   19218 Redwood Road
   Cleveland, OH 44110
   Phone: (800) 321-7628
   Website: www.euclidchemical.com

   c. Sika Galvashield XP+
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (800) 933-7452
   Website: http://usa.sika.com

3. The anodes shall 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 shall provide shop drawings of the galvanic anode installation including locations of the individual anodes to the Office of Bridge Design.

4. The anodes shall be placed with a minimum ¾" cover and shall be set in Embedding Mortar per the manufacturer's recommendations. The anodes shall be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket shall be chipped out behind the anode to provide sufficient 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 shall be cleaned per the manufacturer's recommendations to provide sufficient electrical connection and mechanical bond.

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

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

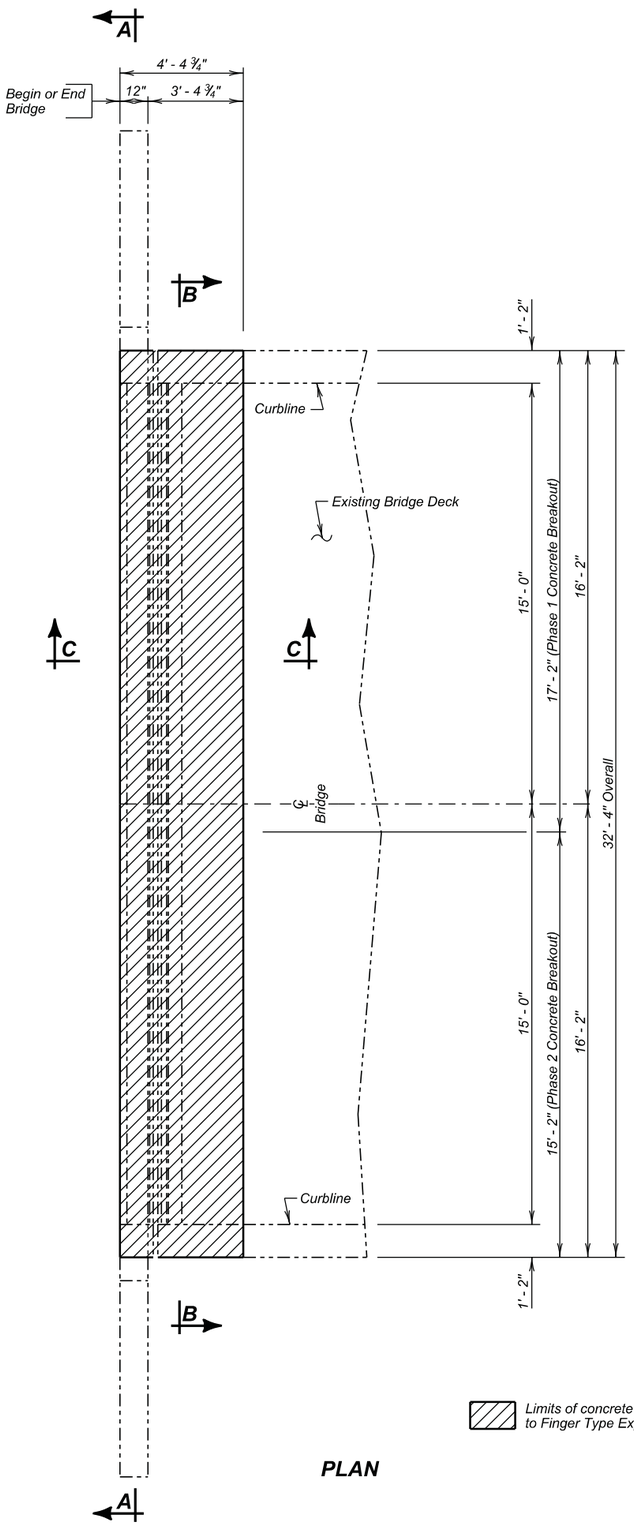
7. All costs associated with placing anodes including labor, equipment, materials and incidentals shall be included in the contract unit price per each for "Galvanic Anode".

NOTES (CONTINUED)
FOR
794' - 0" COMPOSITE GIRDER BRIDGE

STR. NO. 52-708-42A
MARCH 2016

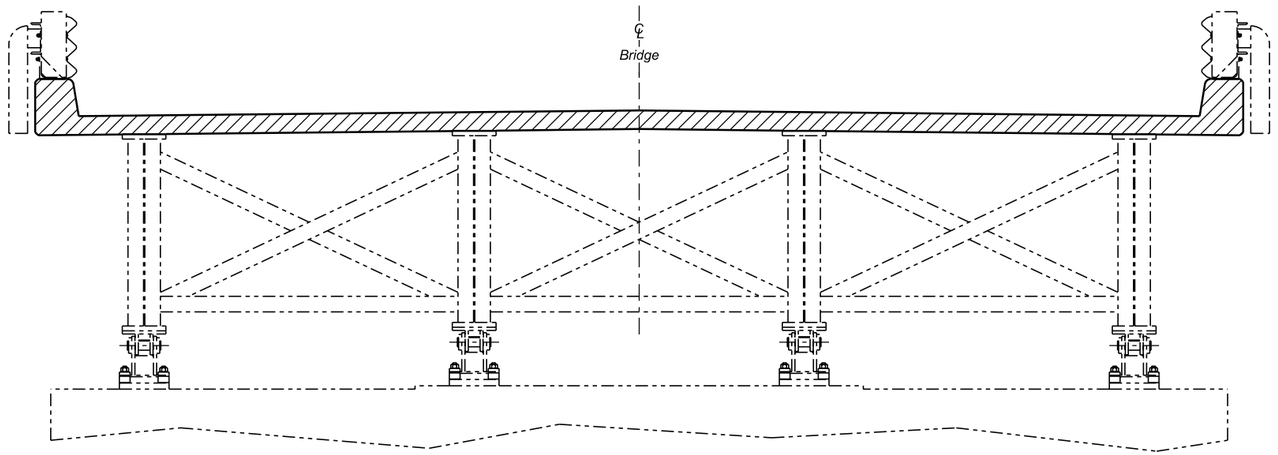
DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	BWS	Kevin N. Goeden
PENN03A5	03A5KA08		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	13	38

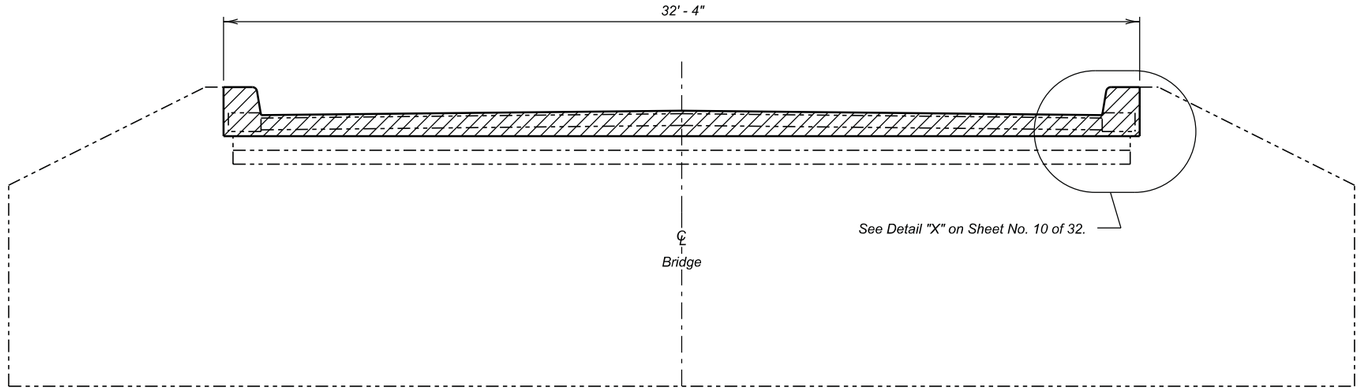


Limits of concrete removal incidental to Finger Type Expansion Joint Assembly

PLAN



SECTION B - B
(Reinforcing Steel not shown for clarity)



SECTION A - A
(Reinforcing Steel not shown for clarity)

Notes:
Sheets 9 and 10 of 32 shall be used in conjuction with each other.

CONCRETE BREAKOUT FOR JOINT REPLACEMENT

FOR

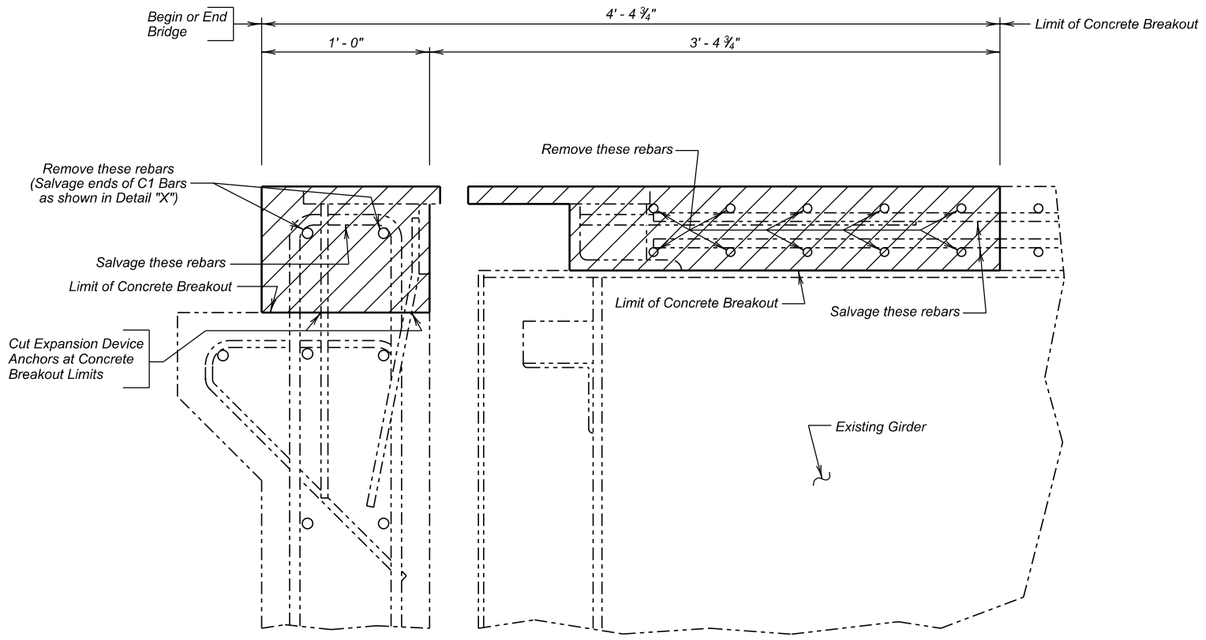
794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

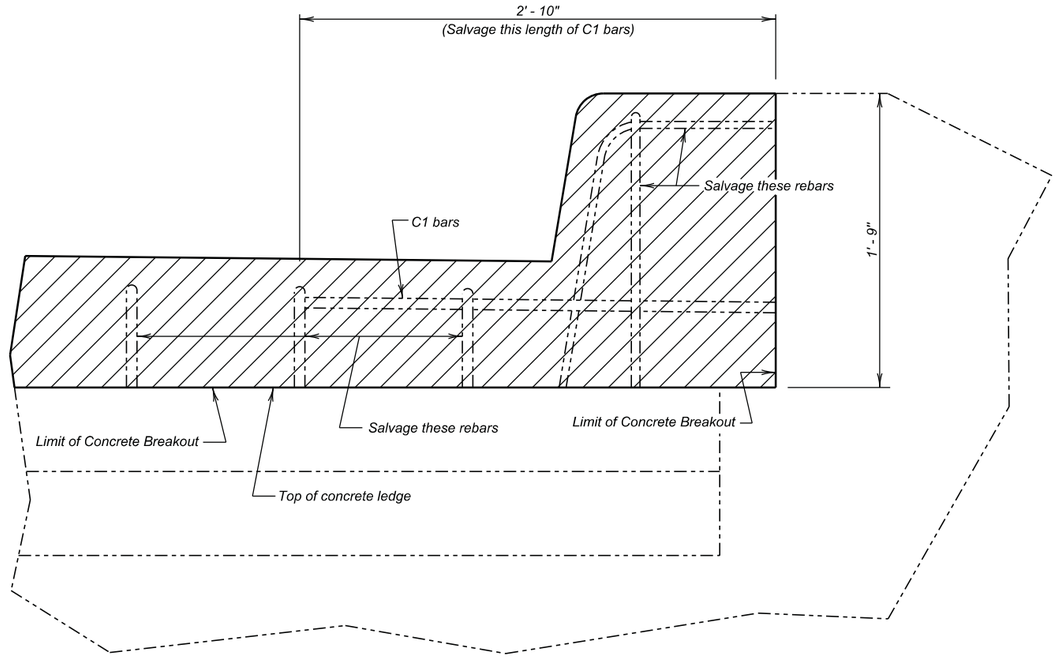
PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden BRIDGE ENGINEER
PENN03A5	03A5KA09		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	14	38



SECTION C - C



DETAIL "X"
(Railing not shown)

Notes:
Sheets 9 and 10 of 32 shall be used in conjuction with each other.

CONCRETE BREAKOUT FOR JOINT REPLACEMENT (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

10 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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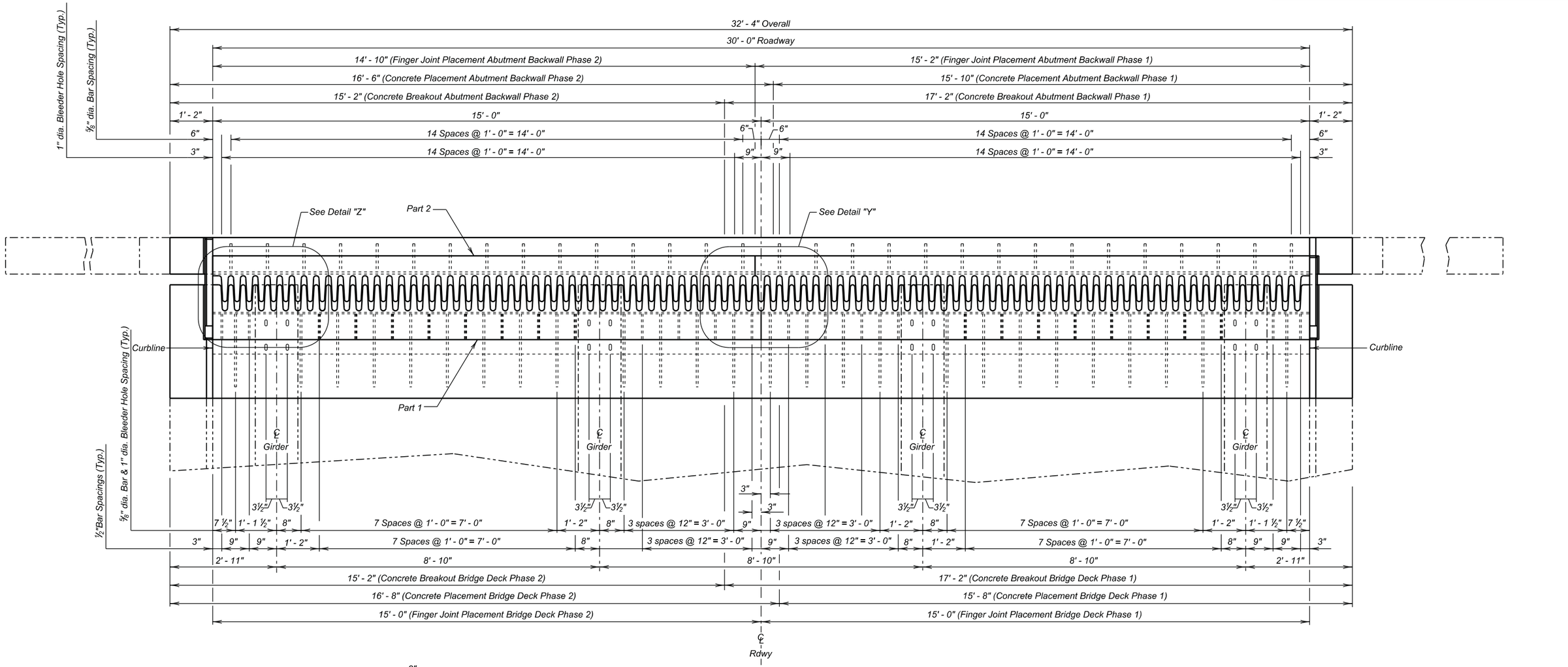
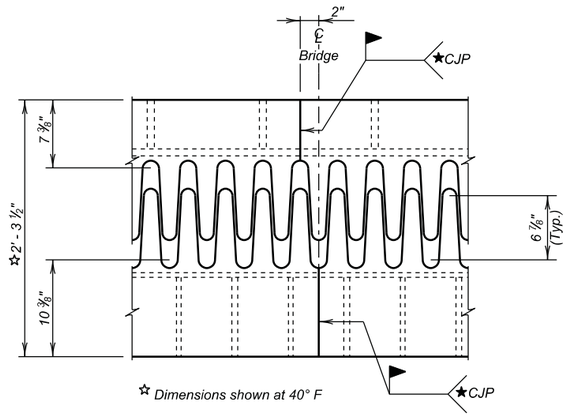
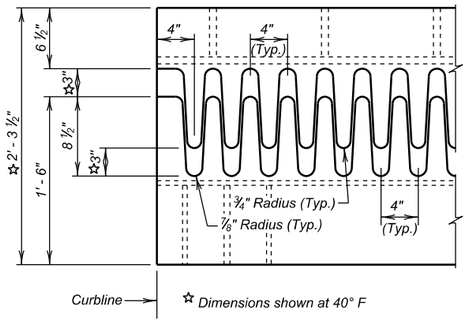
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	15	38



PLAN



DETAIL "Y"



DETAIL "Z"

★Complete Joint Penetration, Butt splice to be shown on shop plans for approval.

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

JOINT REPLACEMENT AT ABUTMENT NO. 1

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

11 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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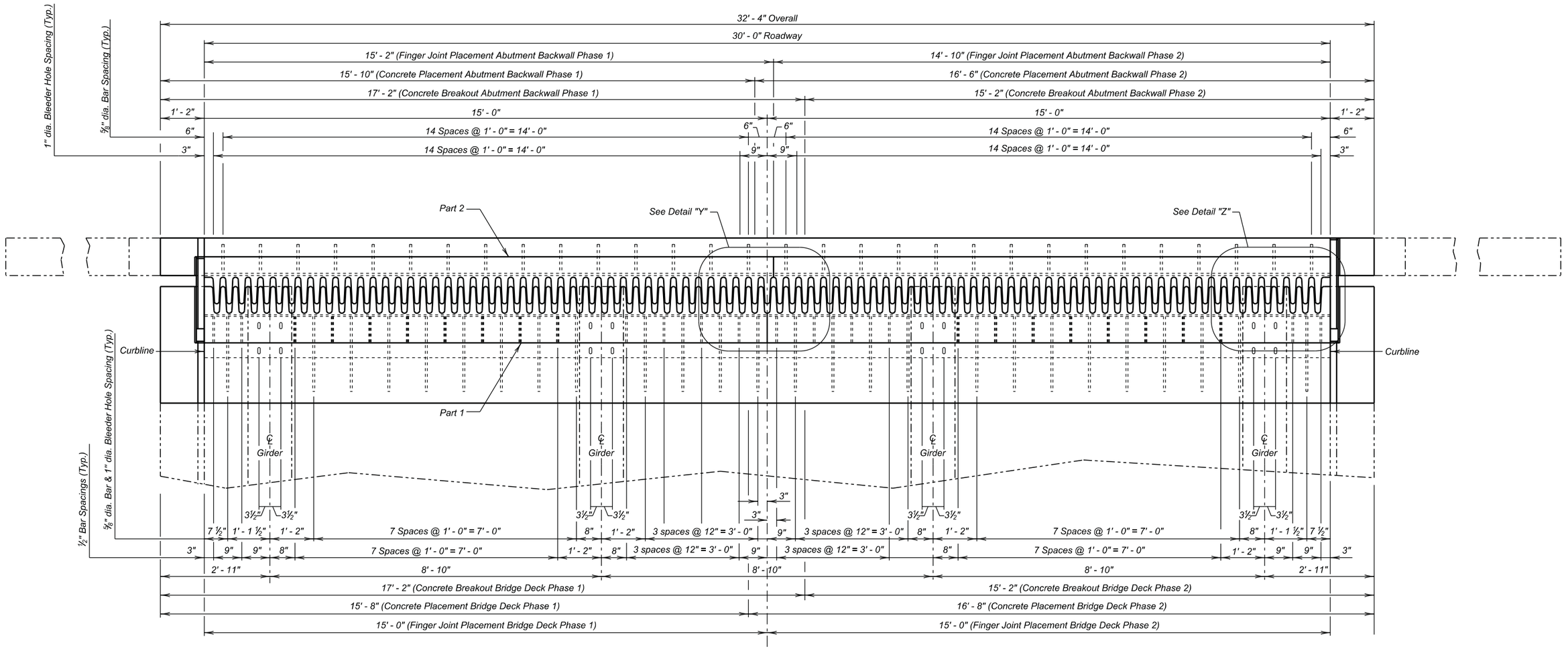
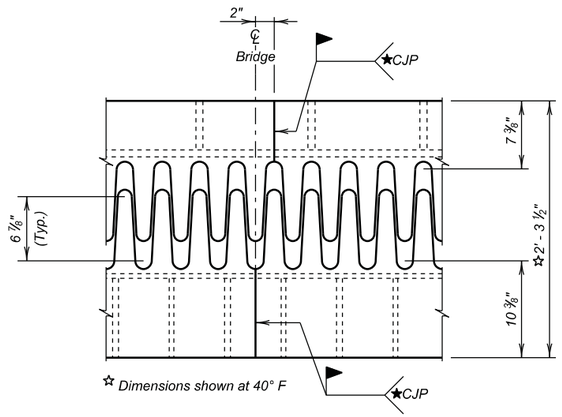
PENN03A5	03A5KA11		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	16	38



PLAN



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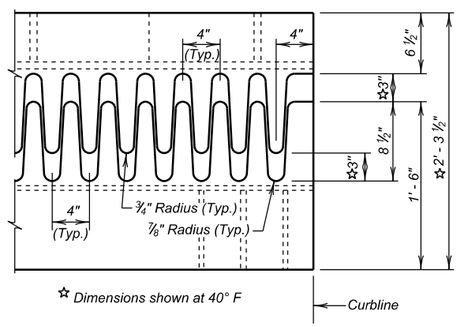

DETAIL "Z"

★Complete Joint Penetration, Butt splice to be shown on shop plans for approval.

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

JOINT REPLACEMENT AT ABUTMENT NO. 8

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

12 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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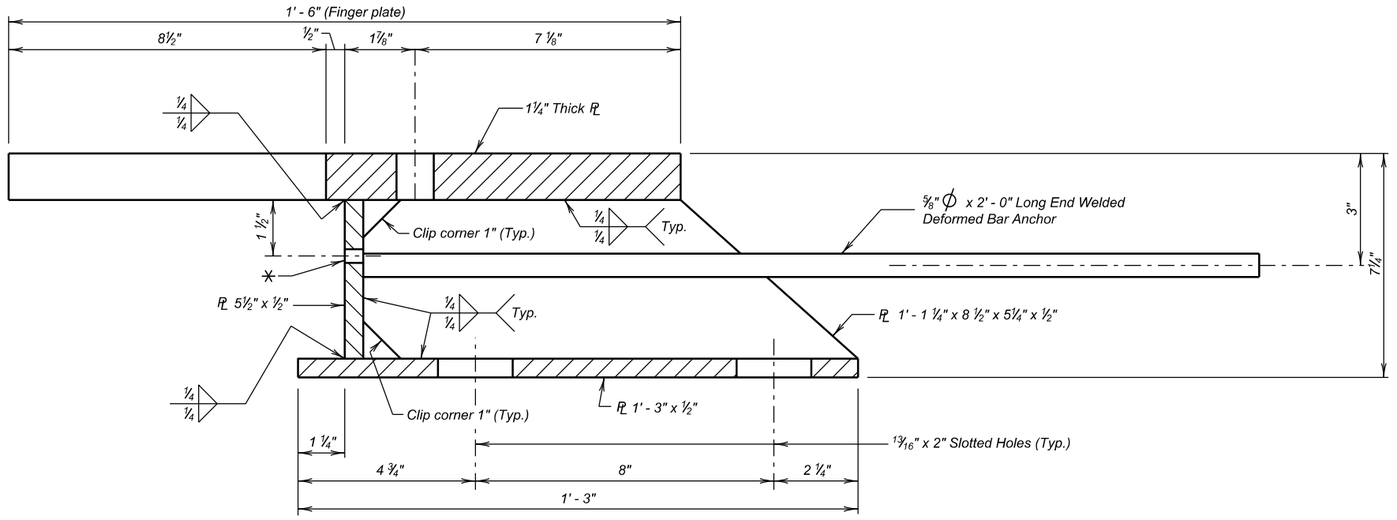
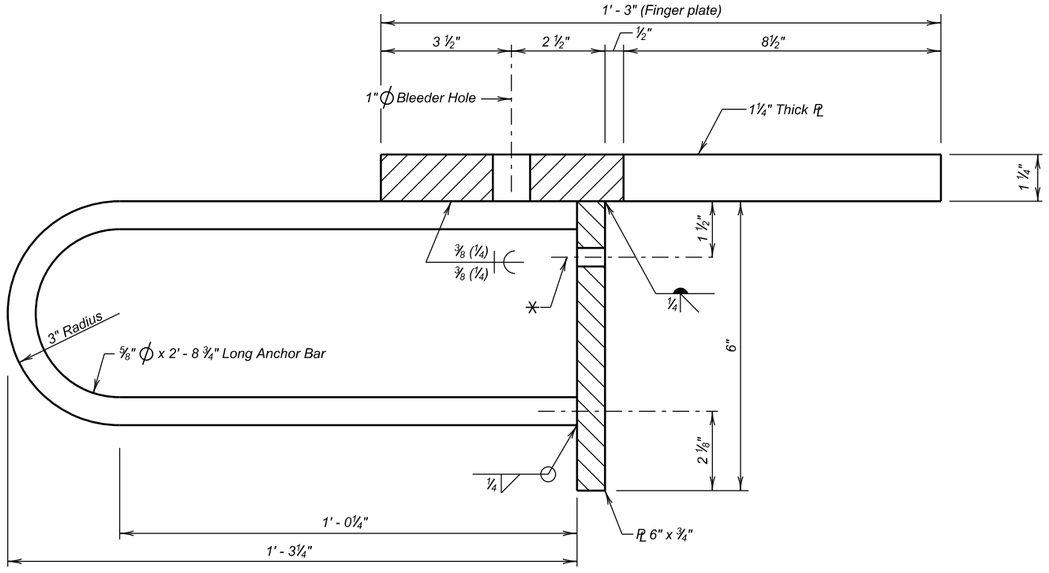
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	17	38

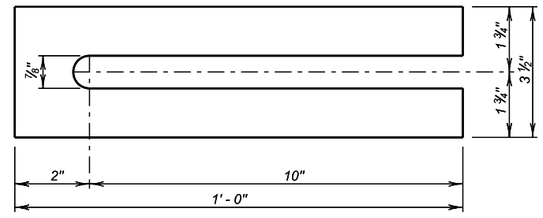


PART 1
(Finger Joint Device)

✳ ½"ϕ *Hole for Drain Attachment.*
See Sheet Nos. 16 & 17 of 32 for spacing.



PART 2
(Finger Joint Device)



SHIM DETAIL

Provide : ½" = 16
¼" = 16
⅛" = 32
1/16" = 64

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

FINGER JOINT DEVICE DETAILS

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

13 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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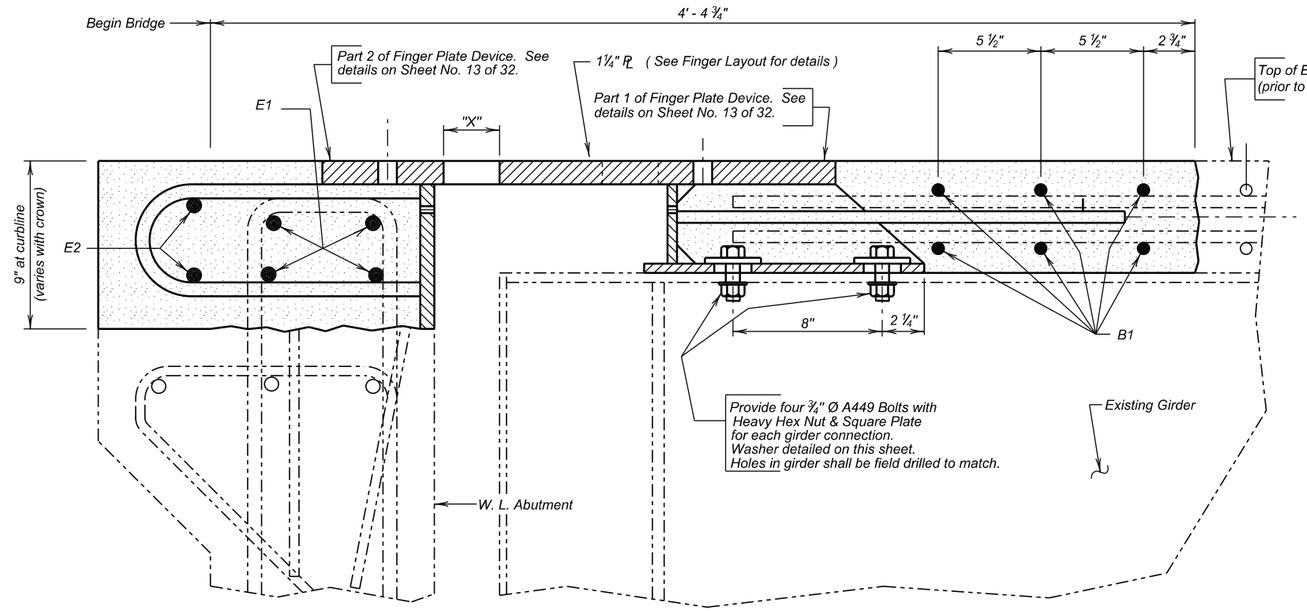
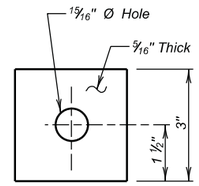
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	18	38



Section E - E

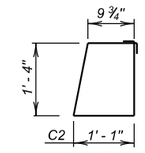


SQUARE PLATE WASHER

REINFORCING SCHEDULE
(For Both Joint Modifications)

	Mk.	No.	Size	Length	Type
PHASE 1	B1	12	6	16' - 0"	Str.
	C2	8	5	5' - 8"	T7
	E1	8	5	16' - 0"	Str.
	E2	4	5	15' - 10"	Str.
PHASE 2	B1	12	6	16' - 0"	Str.
	C2	8	5	5' - 8"	T7
	E1	8	5	16' - 0"	Str.
	E2	4	5	15' - 10"	Str.

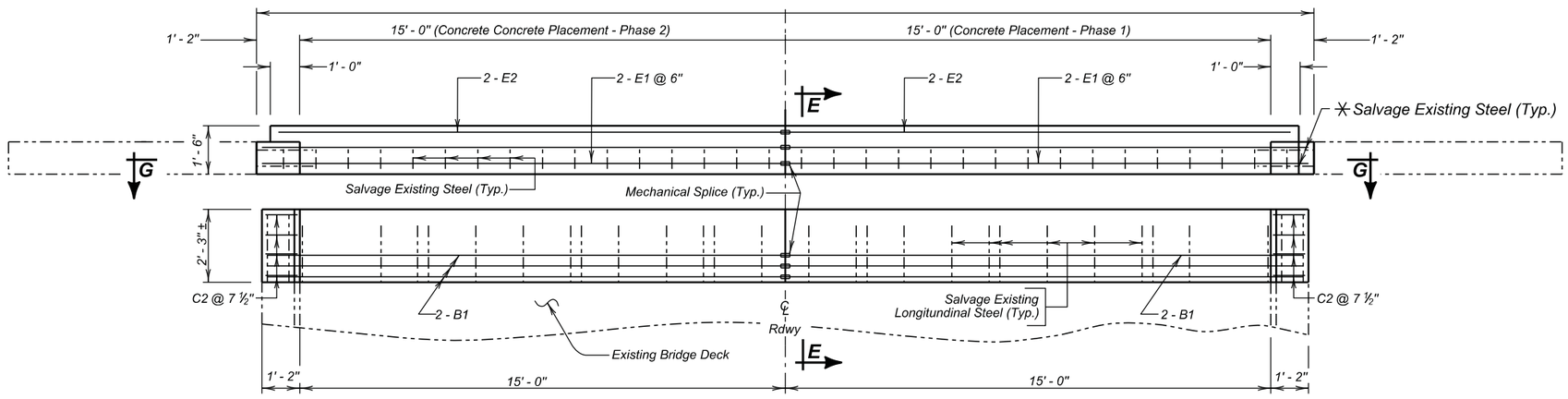
Bending Details



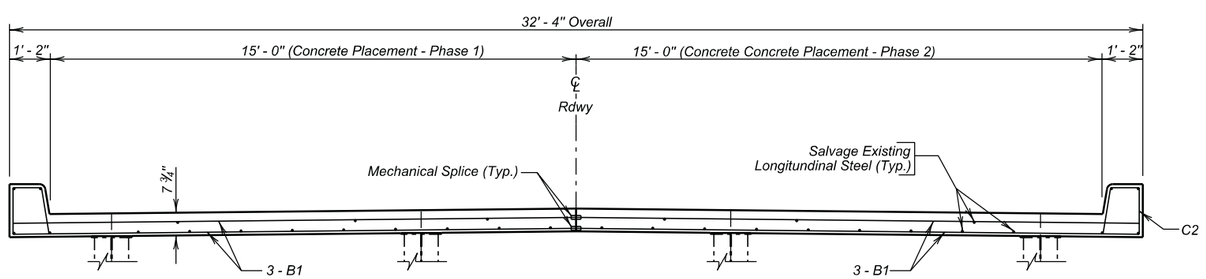
NOTES --
All dimensions are out to out of bars.
All reinforcing steel is to be epoxy coated.

TABLE - B	
Temp.	**Dimension "X"**
30°	3¼"
40°	3"
50°	2¾"
60°	2½"
70°	2⅜16"
80°	1 15/16"
90°	1 11/16"
100°	1 7/16"

Note: Temperature in above Table Corresponds to Interior Girder Temperature.



PLAN
(Finger Joint and Rail not shown for clarity)



SECTION G - G
(Concrete Placement and Resteel Shown)

ESTIMATED QUANTITIES

ITEM	UNIT	Quantity
Finger Type Expansion Joint Assembly	Each	2

Items 1 thru 5 are approximate quantities contained in the above bid item for Abutment Nos. 1 and 8 and are for information only.

	PHASE 1	PHASE 2
1. Class A45 Concrete	3.1 Cu.Yd.	3.1 Cu.Yd.
2. Structural Steel	5290 Lb.	5290 Lb.
3. Concrete Breakout	3.2 Cu.Yd.	3.0 Cu.Yd.
4. No. 5 Rebar Splice	12 Ea.	-
5. No. 6 Rebar Splice	12 Ea.	-
6. Epoxy Coated Reinforcing Steel	534.5 Lb.	534.5 Lb.
7. Galvanic Anode	32 Ea.	32 Ea.

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

JOINT REPLACEMENT AT ABUTMENTS

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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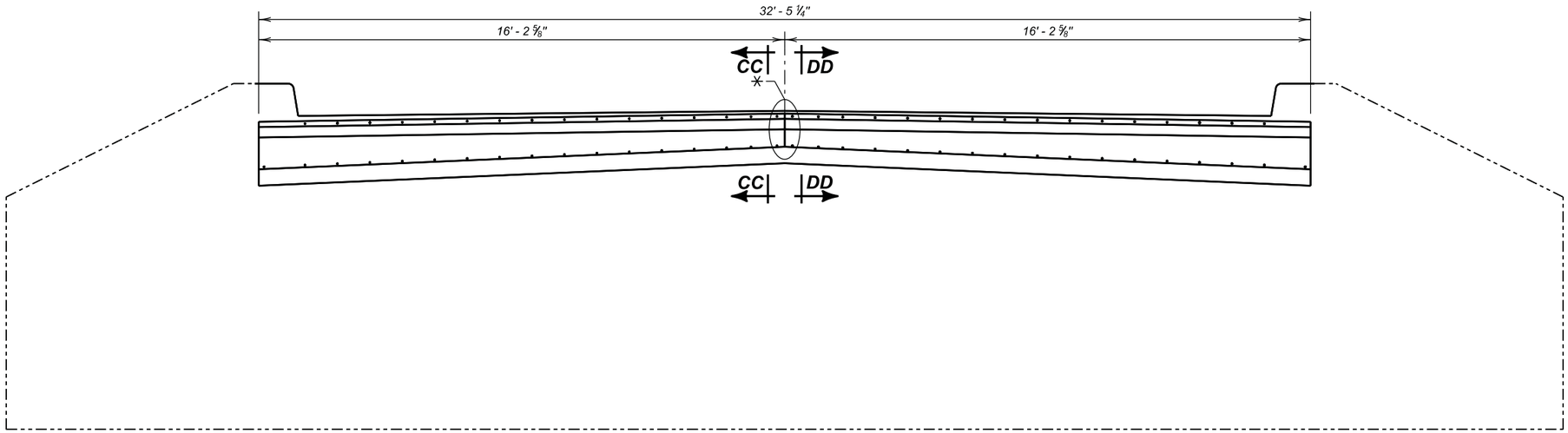
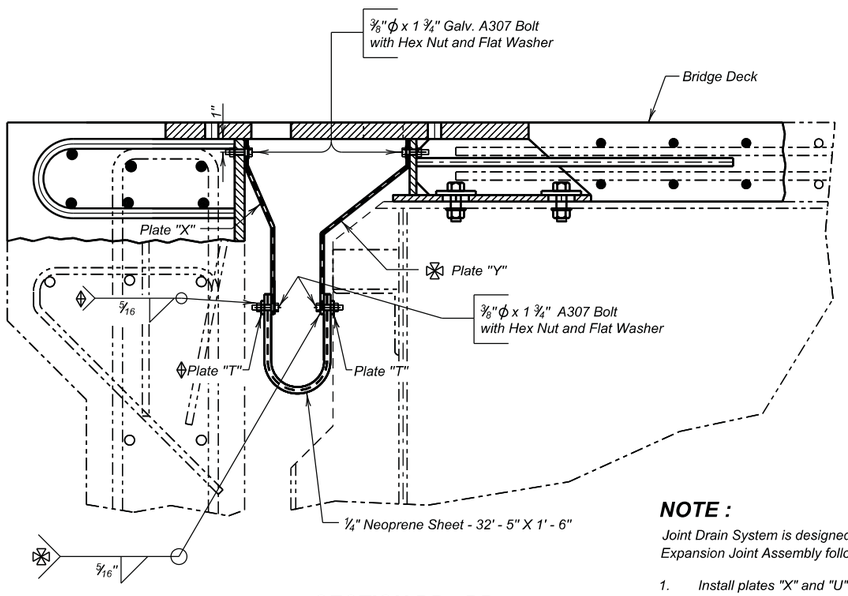
PENN03A5	03A5KA14		

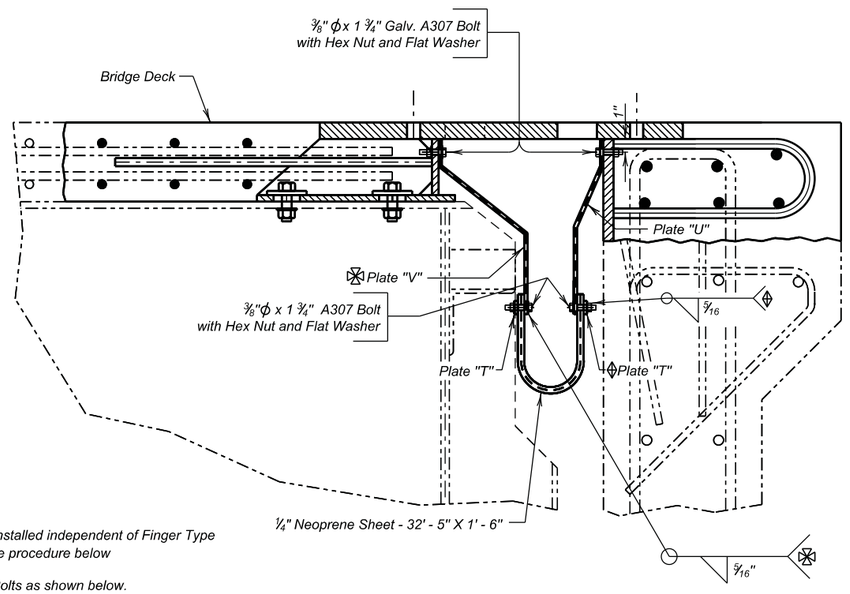
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	19	38



JOINT DRAIN LAYOUT



SECTION DD - DD

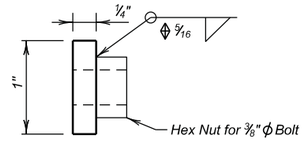


SECTION CC - CC

NOTE :

Joint Drain System is designed to be installed independent of Finger Type Expansion Joint Assembly following the procedure below

1. *Install plates "X" and "U" using Bolts as shown below.*
2. *Install Neoprene Sheet and Plate "T" (with welded hardware) by inserting bolts through Plate "X" or "U" and threading bolts into nuts welded to plate "T" as shown below.*
3. *Install plates "Y" and "V" using Bolts as shown below.*
4. *Place Neoprene Sheet and Plate "T" on bolts welded to Plates "Y" or "V" and tighten nuts as shown below*



SECTION LL - LL

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

- *Bolts shall be welded to Plate "V" and Plate "Y" as shown on Deck side only*
- *Nuts shall be welded to Plate "T" as shown on abutment side only*
- *Due to phased construction, the steel drain plates shall meet in the field at the location shown above. Entire interface shall be sealed with silicone sealer as approved by the Engineer.*

JOINT DRAIN DETAILS

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

15 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR	Kevin N. Goeden
PENN03A5	03A5KA15		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	20	38

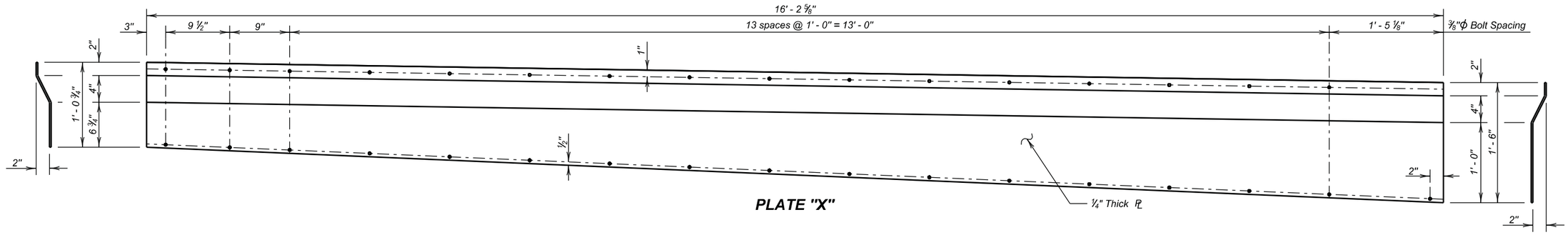


PLATE "X"

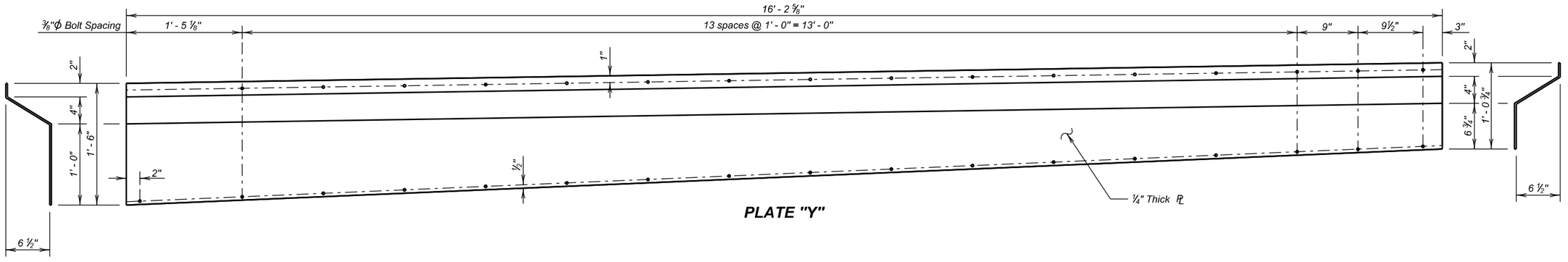
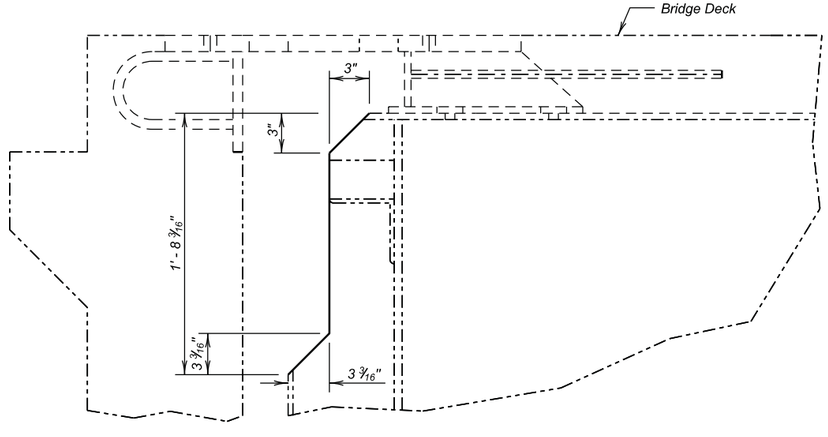


PLATE "Y"



GIRDER TRIMMING DETAIL

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

JOINT DRAIN DETAILS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR	Kevin N. Goeden BRIDGE ENGINEER
PENN03A5	03A5KA16		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	21	38

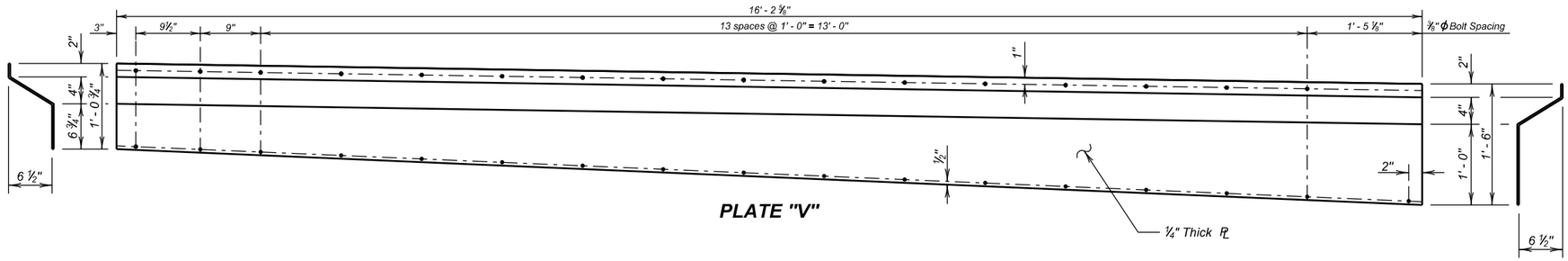


PLATE "V"

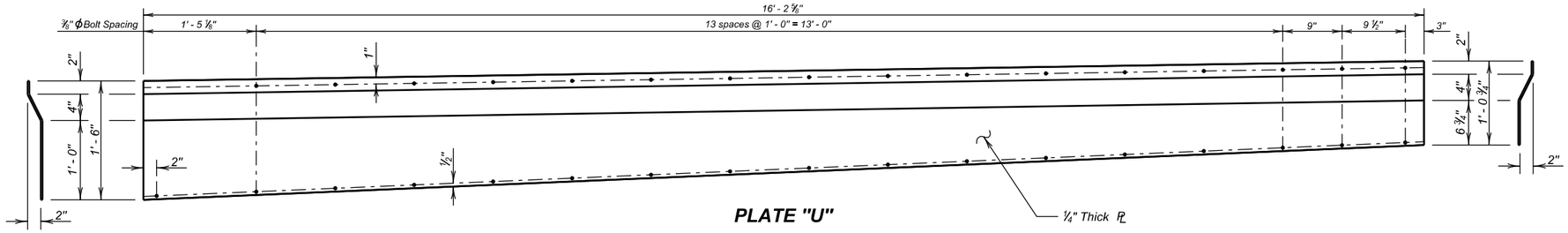


PLATE "U"

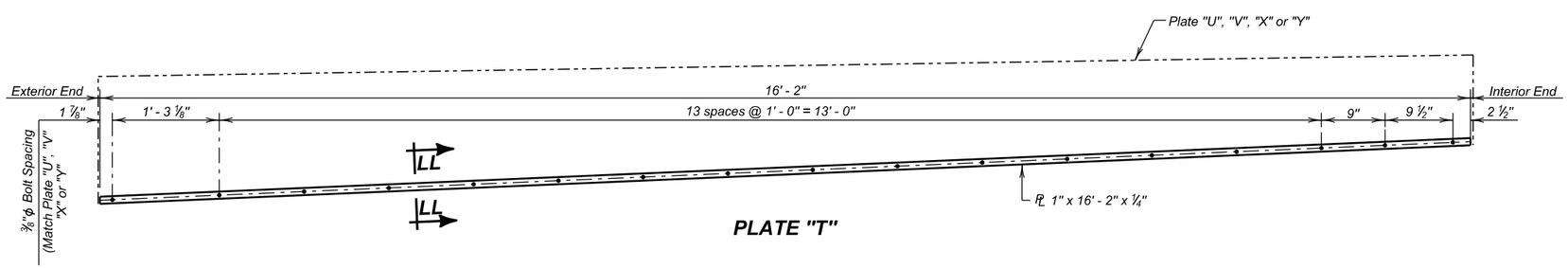


PLATE "T"

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

JOINT DRAIN DETAILS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

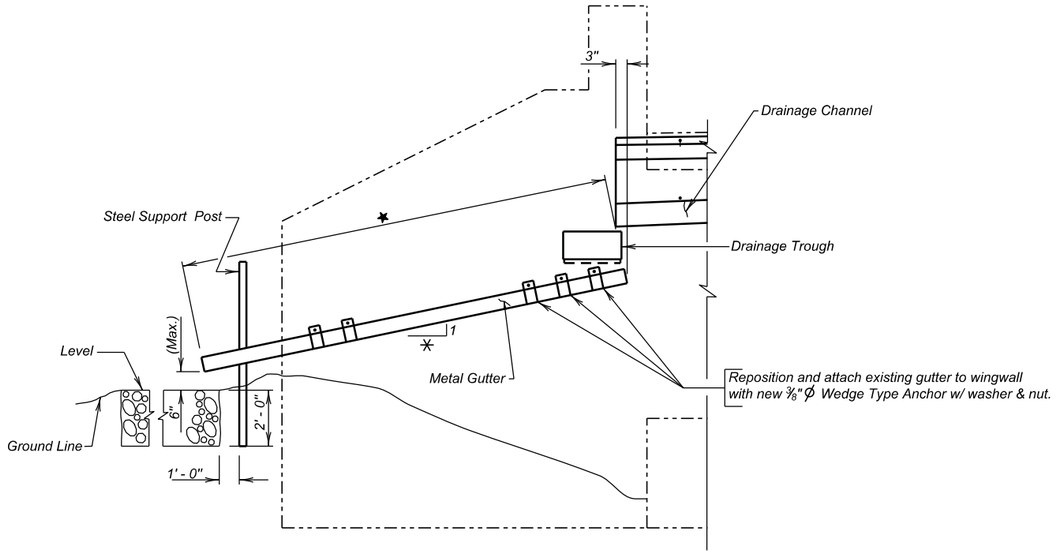
S. D. DEPT. OF TRANSPORTATION

MARCH 2016

17 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR	Kevin N. Goeden BRIDGE ENGINEER
PENN03A5	03A5KA17		

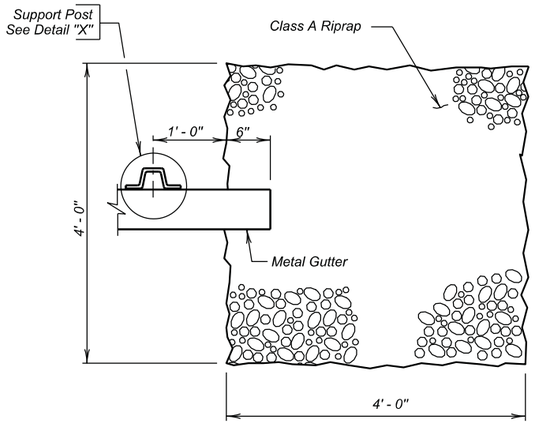
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	22	38



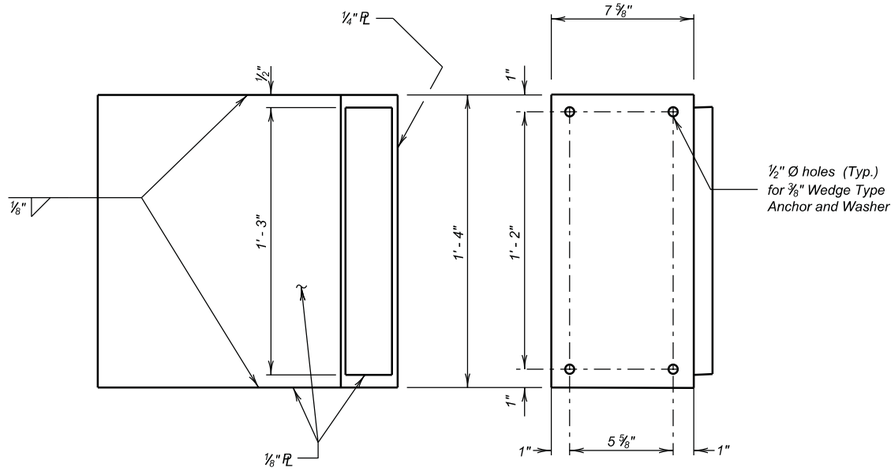
DRAIN DETAIL AT ABUTMENT WINGWALL

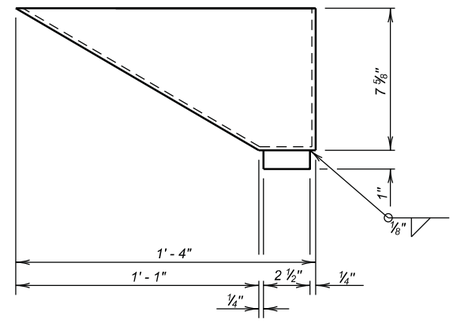
★ *The existing gutter will be detached and remounted. The position and length of the gutter at each location shall be determined in the field to the satisfaction of the engineer.*

✳ *Slope will be set in the field to clear the existing berm spill cone.*

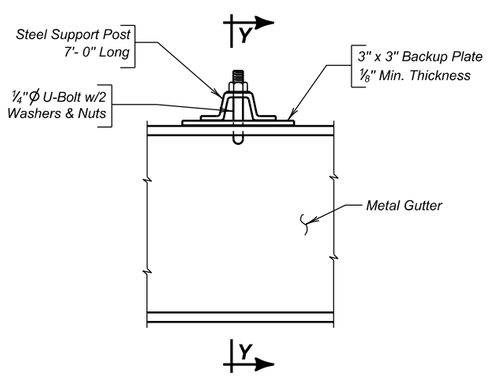


RIPRAP PLAN

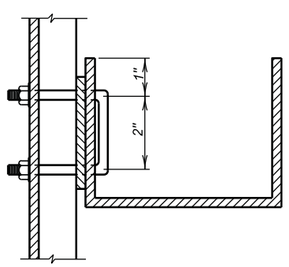




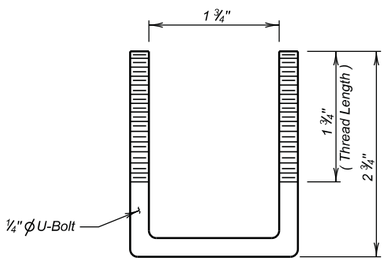
DRAINAGE TROUGH DETAILS



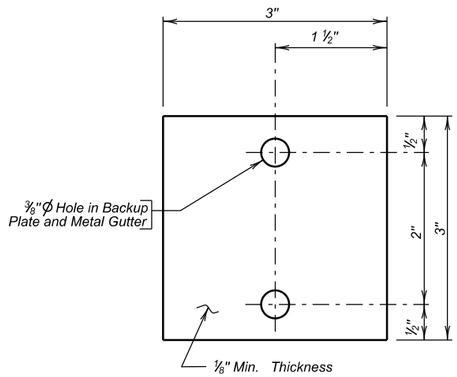
DETAIL "X"



SEC. Y - Y



U - BOLT



BACKUP PLATE

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Abutment Joint Drain	Each	2

The following item is an approximate quantity contained in the above bid item and is for information only.

	PHASE 1	PHASE 2
1. Neoprene Sheet	-----	97.6 Sq.ft.
2. Structural Steel	719 Lbs.	719 Lbs.

Notes:
Sheets 11 though 18 of 32 shall be used in conjuction with each other.

JOINT DRAIN DETAILS (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

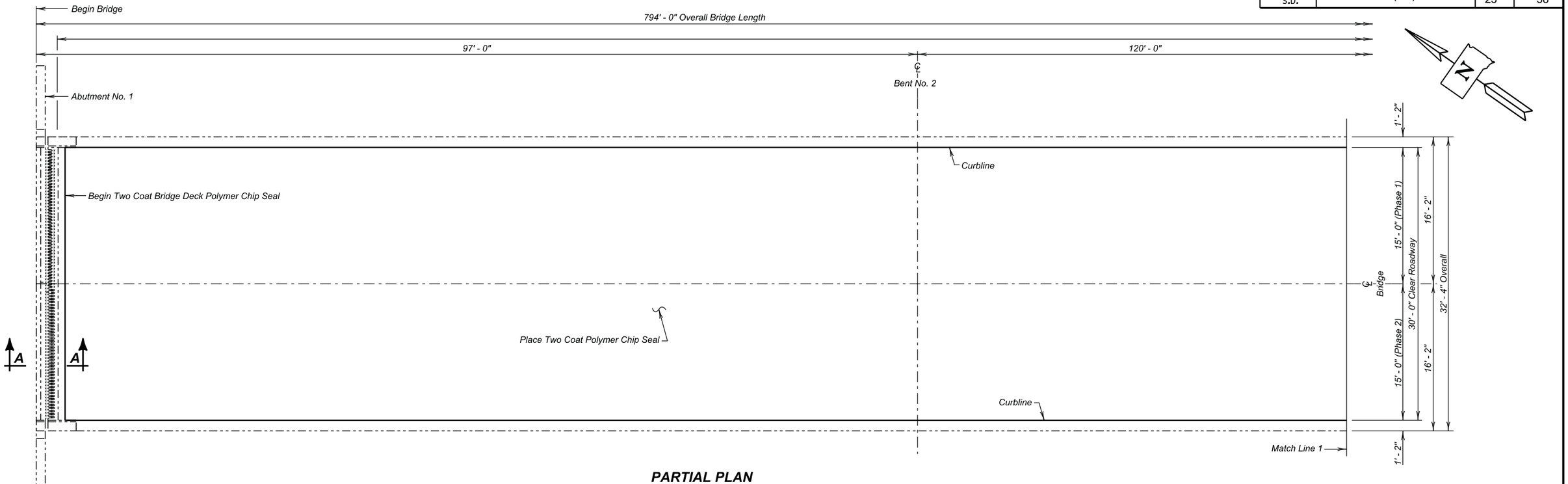
30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

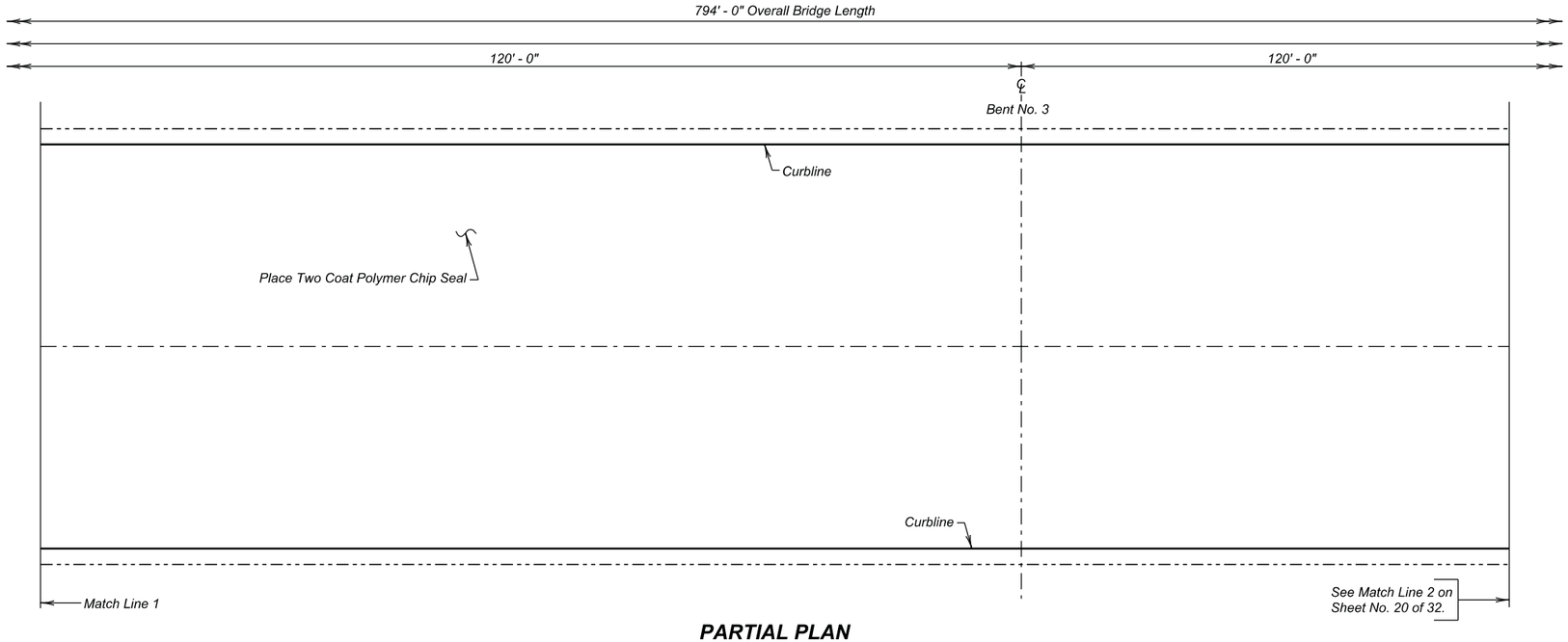
18 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR	Kevin N. Boeder
PENN03A5	03A5KA18		BRIDGE ENGINEER

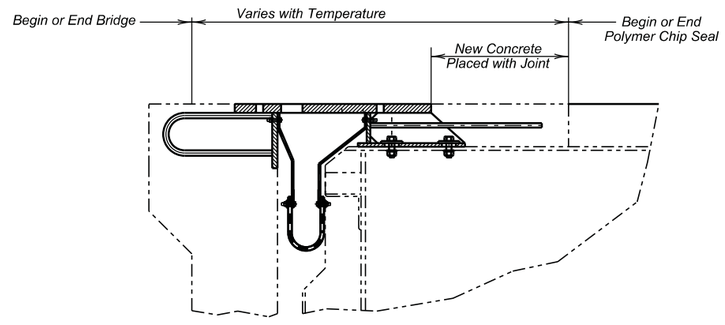
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	23	38



PARTIAL PLAN



PARTIAL PLAN



SECTION A - A

(Abutment 8 Similar by rotation)

Notes:
Sheets 19 though 22 of 32 shall be used in conjuction with each other.

POLYMER CHIP SEAL LAYOUT

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

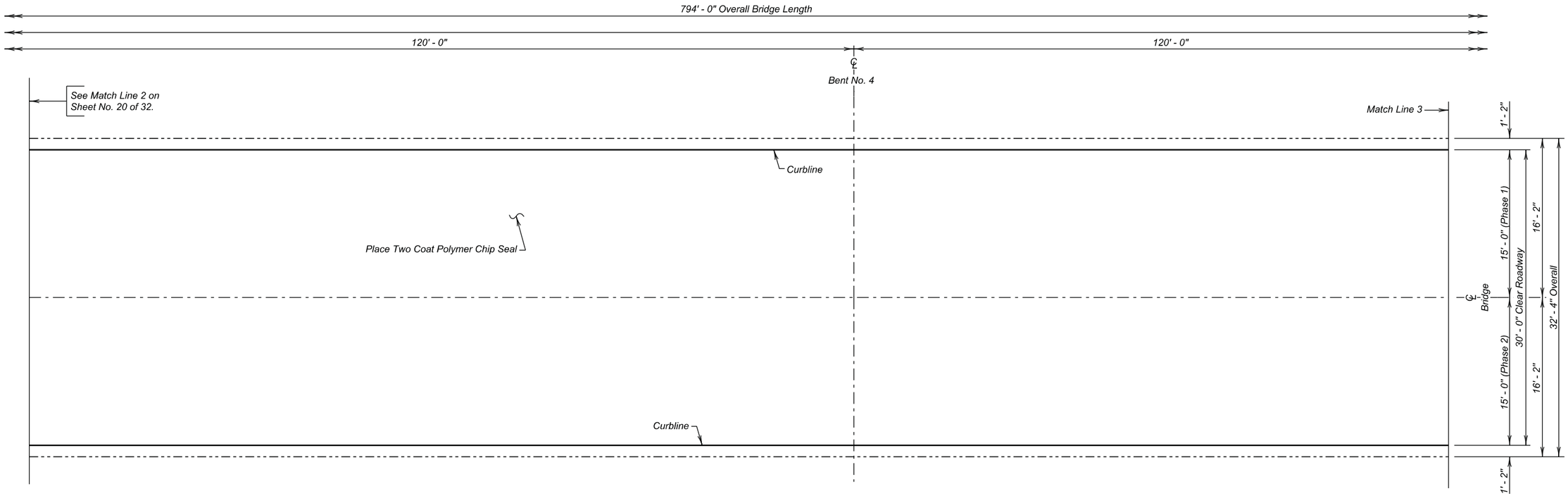
S. D. DEPT. OF TRANSPORTATION

MARCH 2016

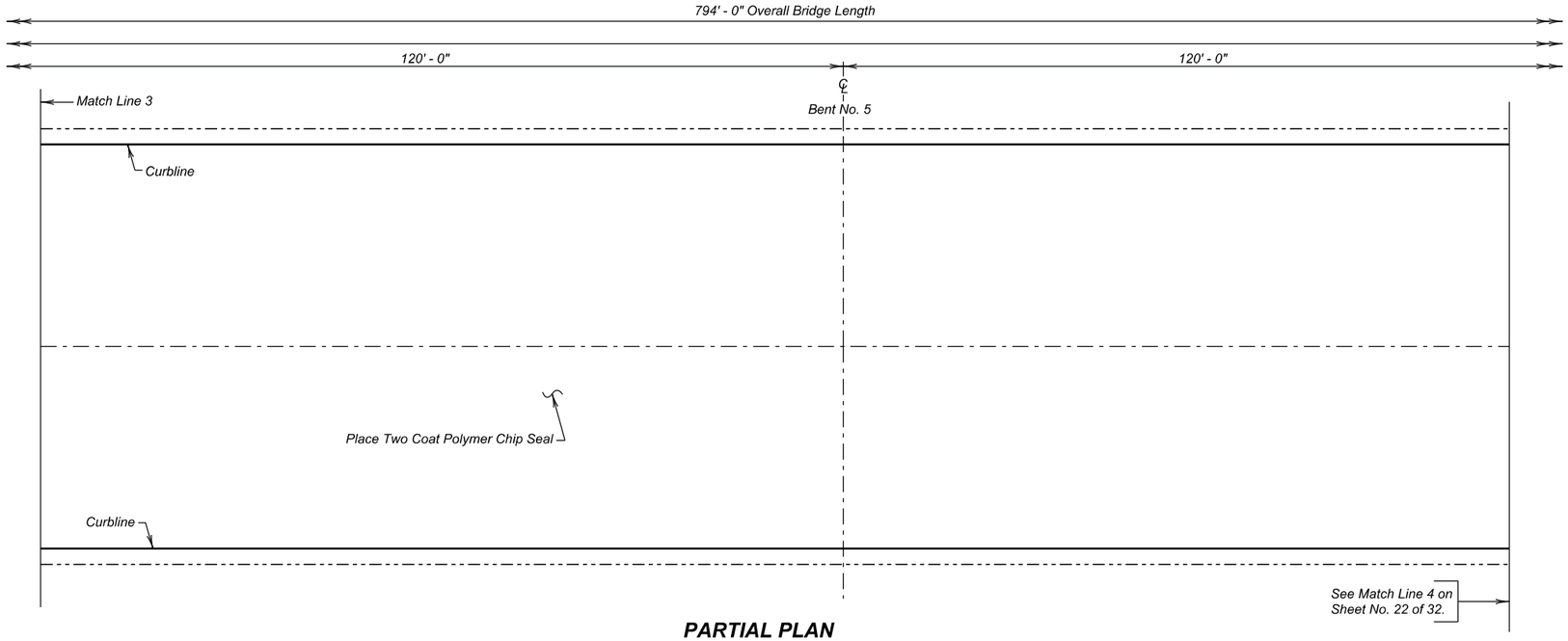
19 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden BRIDGE ENGINEER
PENN03A5	03A5KA19		

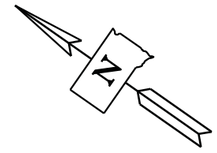
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	24	38



PARTIAL PLAN



PARTIAL PLAN



Notes:
Sheets 19 though 22 of 32 shall be used in conjuction with each other.

POLYMER CHIP SEAL LAYOUT (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

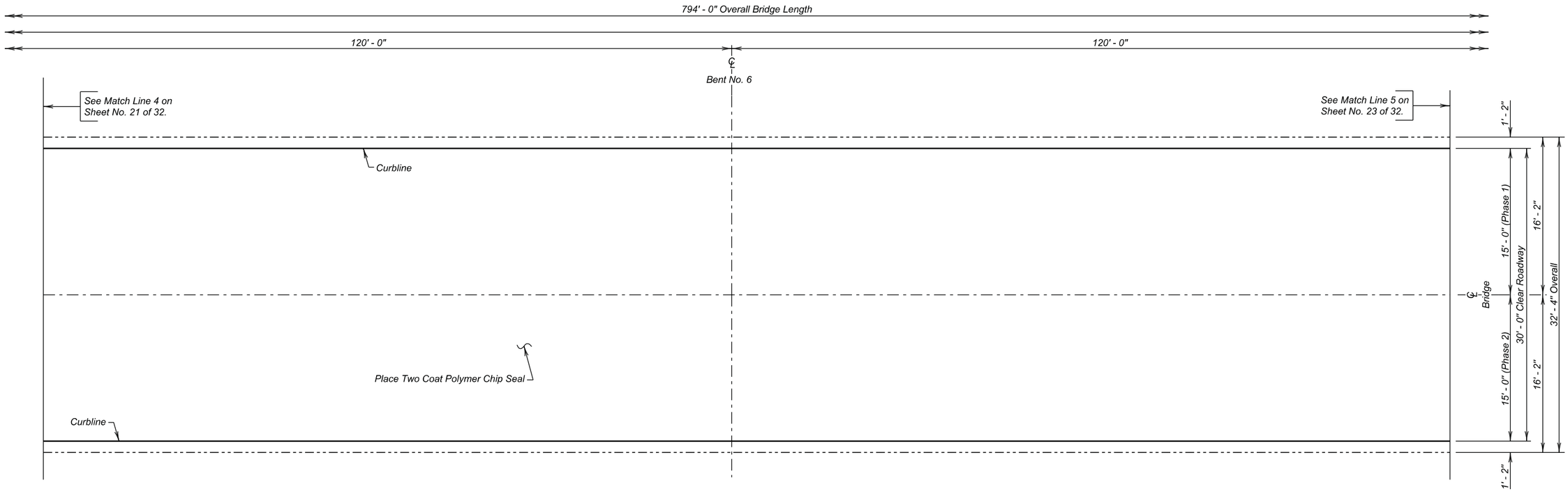
S. D. DEPT. OF TRANSPORTATION

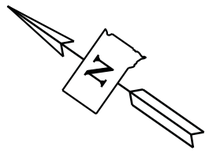
MARCH 2016

20 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden BRIDGE ENGINEER
PENN03A5	03A5KA20		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	25	38





PARTIAL PLAN

Notes:
Sheets 19 though 22 of 32 shall be used in conjuction with each other.

POLYMER CHIP SEAL LAYOUT (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

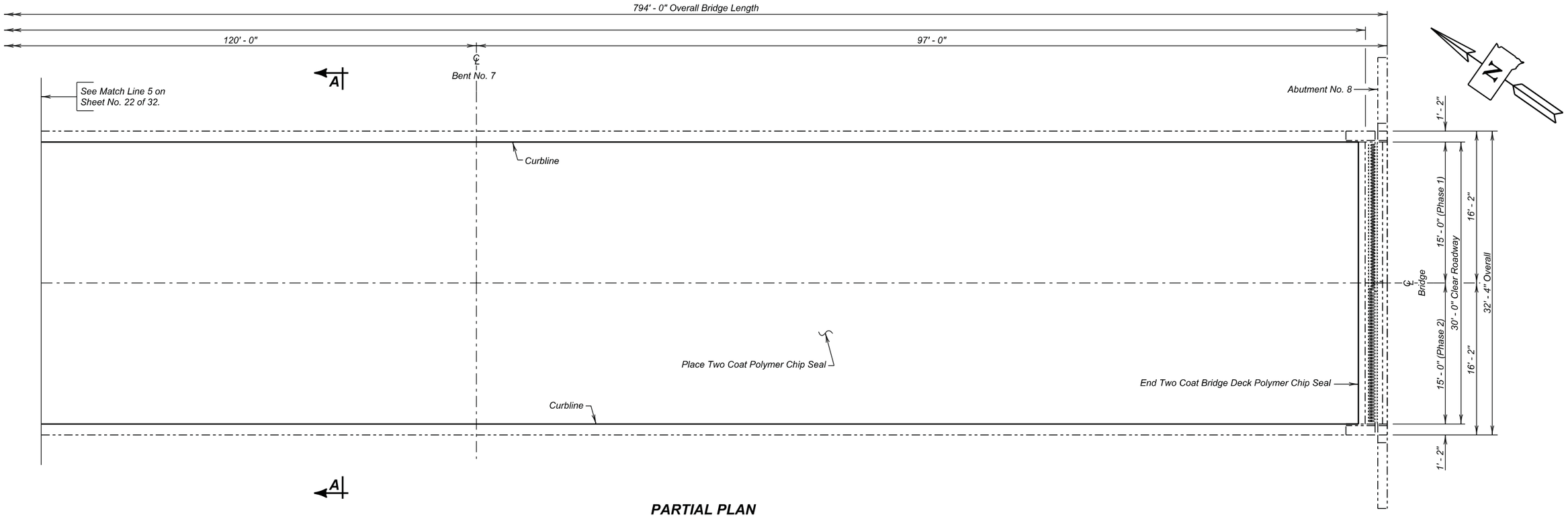
S. D. DEPT. OF TRANSPORTATION

MARCH 2016

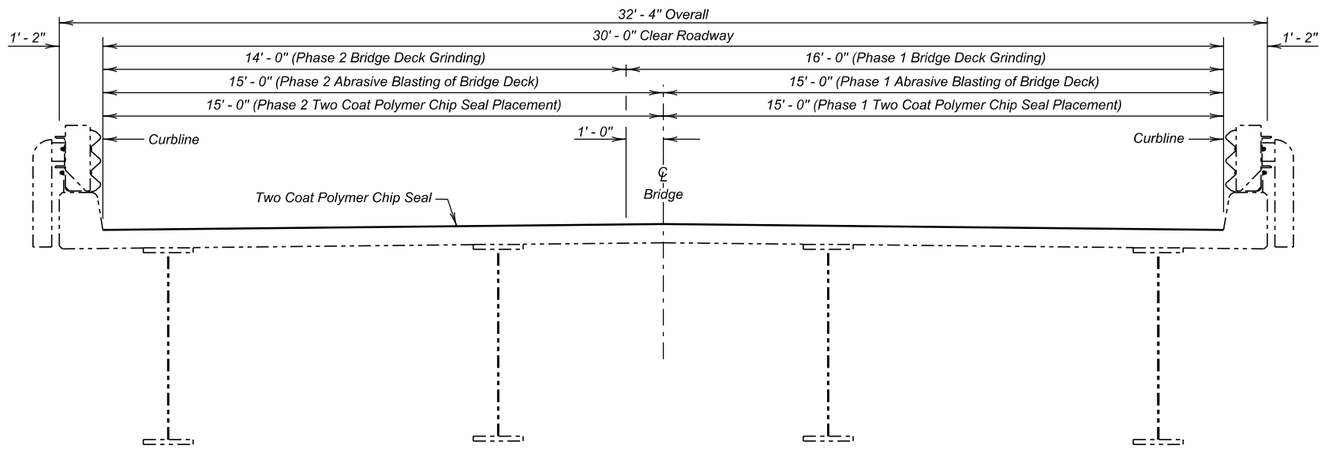
21 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA21		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	26	38



PARTIAL PLAN



SECTION A - A

Notes:
Sheets 19 though 22 of 32 shall be used in conjuction with each other.

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY	
			Phase I	Phase 2
✳	Concrete Patching Material, Bridge Deck	Cu. Ft.	12.0	12.0
	Two Coat Polymer Bridge Deck Chip Seal	Sq. Yd.	1312.2	1312.2
	Abrasive Blasting of Bridge Deck	Sq. Yd.	1312.2	1312.2
	Bridge Deck Grinding	Sq. Yd.	1399.8	1224.6
✳	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
✳	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

✳ *Concrete Patching Material, Bridge Deck; Concrete Removal, Class A; and Concrete Removal, Class B may not be encountered and may be removed from the project at the direction of the Engineer.*

POLYMER CHIP SEAL LAYOUT (CONTINUED)

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

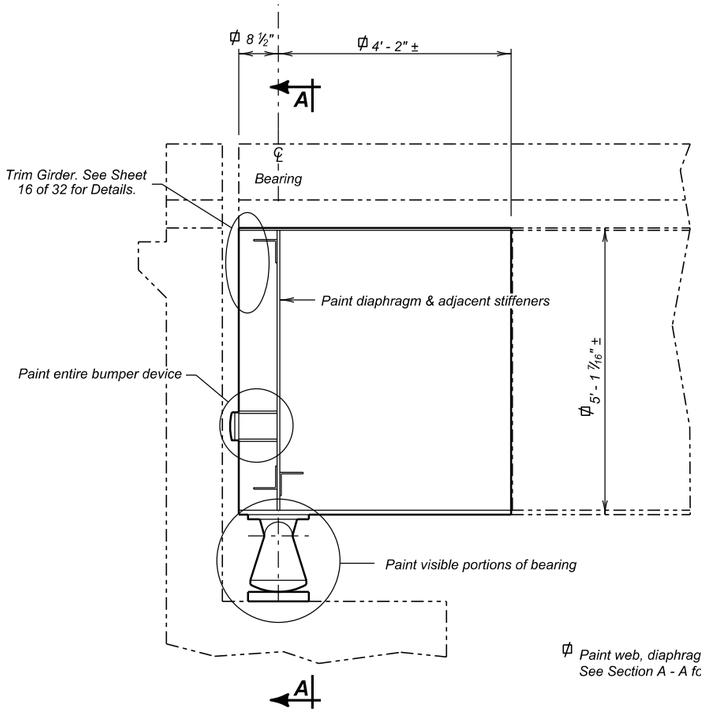
PENNINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

MARCH 2016

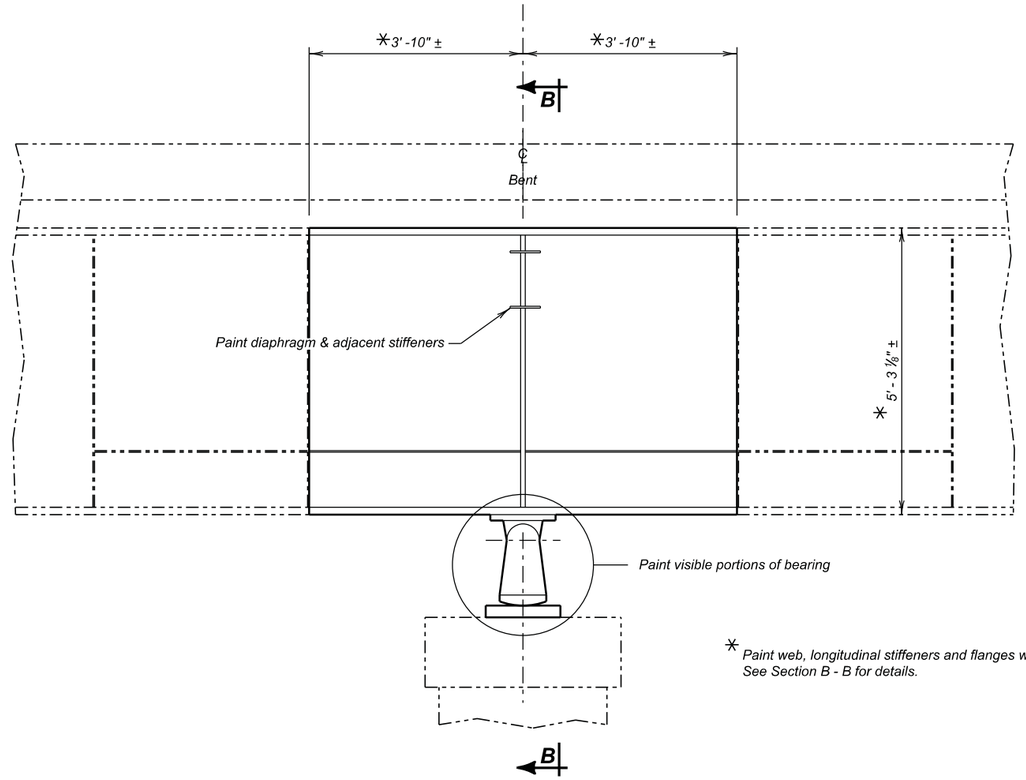
DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA22		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	27	38



⌀ *Paint web, diaphragm, stiffeners and flanges within this distance. See Section A - A for details.*

TYPICAL ELEVATION AT ABUTMENT



✳ *Paint web, longitudinal stiffeners and flanges within this distance. See Section B - B for details.*

TYPICAL ELEVATION AT BENT

Notes:
Sheets 23 and 24 of 32 shall be used in conjuction with each other.

GIRDER PAINT AREAS AT ABUTMENTS AND BENTS

FOR

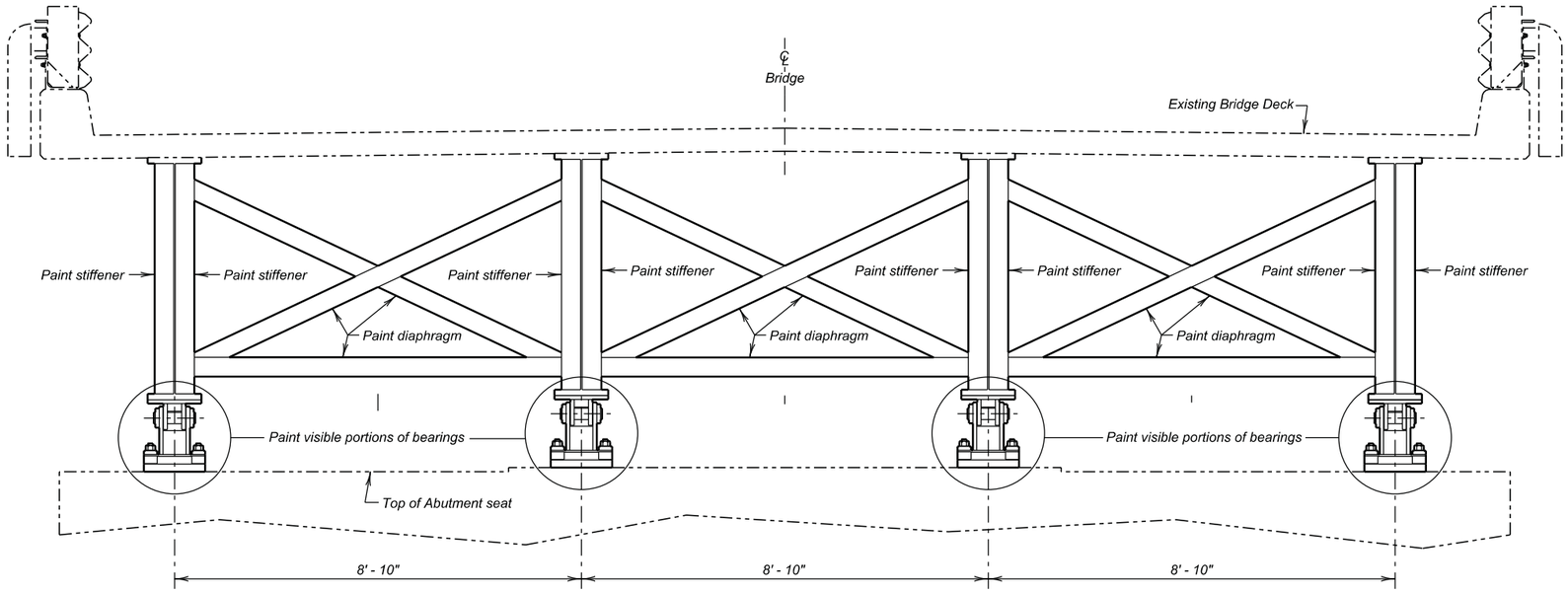
794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

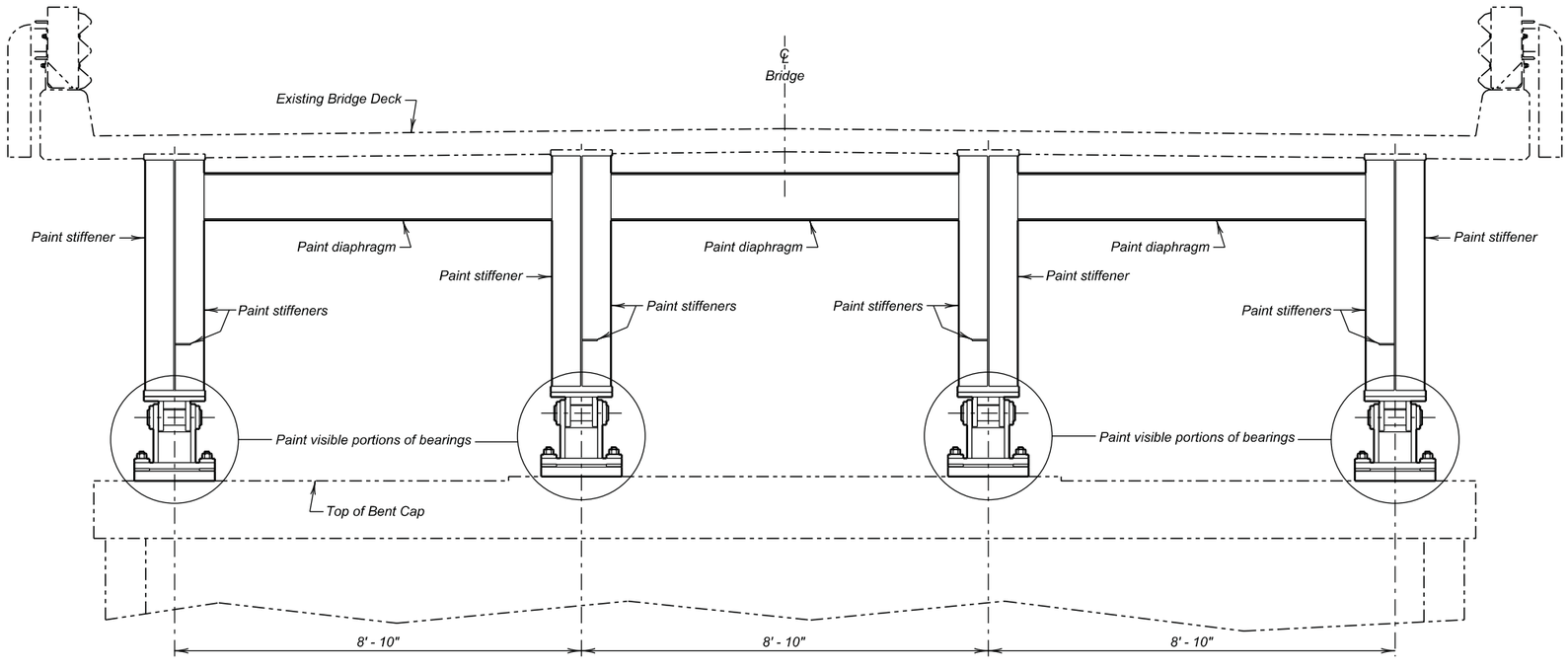
PENNINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA23		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	28	38



SECTION A - A



SECTION B - B

Notes:
Sheets 23 and 24 of 32 shall be used in conjuction with each other.

SUPERSTRUCTURE PAINT AREAS AT ABUTMENTS AND BENTS

FOR

794' - 0" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STR. NO. 52-708-42A — P 0044(173)78

PENNINGTON COUNTY

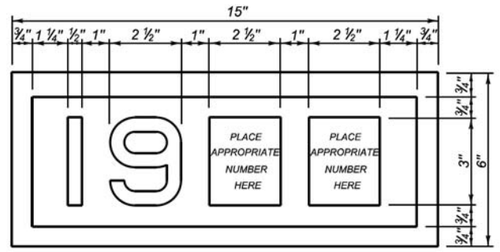
S. D. DEPT. OF TRANSPORTATION

MARCH 2016

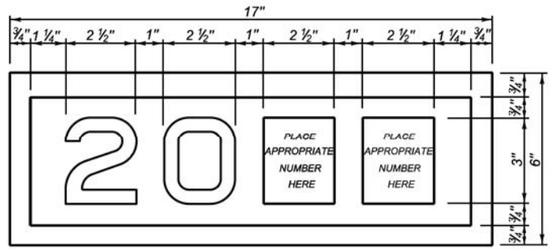
24 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
EJA/BWS	EJA/BWS	KR/EJA	Kevin N. Goeden
PENN03A5	03A5KA24		BRIDGE ENGINEER

YEAR PLATE DETAILS FOR ORIGINAL CONSTRUCTION

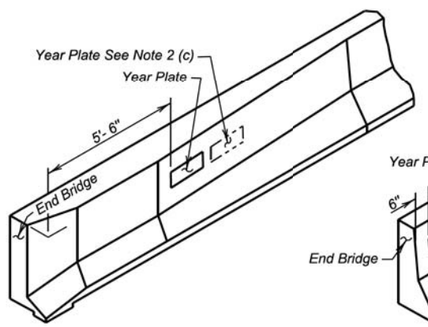


YEAR PLATE DETAILS FOR NEW CONSTRUCTION

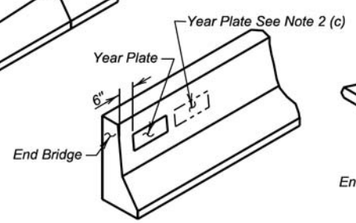


GENERAL NOTES:

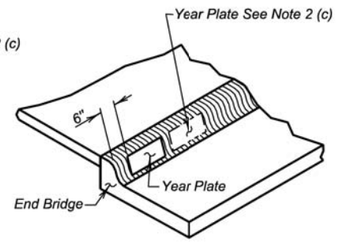
1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (½) inch in depth.
2. Year plates shall be located on structure(s) as follows:
   a. On cast-in-place box culverts the year plates shall be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
   b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'- 6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



JERSEY BARRIER
(With Endblock)



JERSEY BARRIER



TYPE B CURB

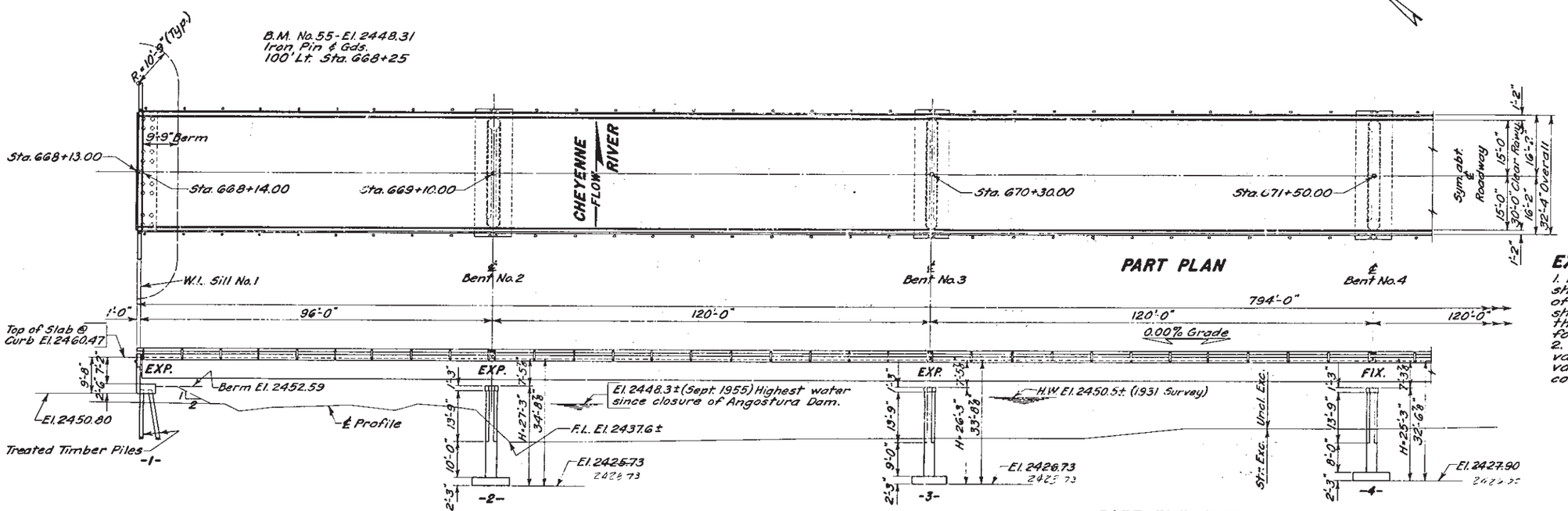
June 26, 2012

Published Date: 4th Qtr. 2015	SDDOT	DUAL DATE YEAR PLATE DETAILS	PLATE NUMBER 460.03 Sheet 1 of 1

-X031-

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)178	30	38

INDEX OF BRIDGE SHEETS—



PART ELEVATION

EXCAVATION NOTES—

1. Footings shall be cast against solid undisturbed shale and carried into same a minimum depth of 1'. Limits of shale excavation for footings shall be bounded as nearly as practicable by the neat lines as shown in the details for footings.
2. Shale shall develop a minimum bearing value of 3.0 tons per sq. ft. If the bearing value is less than 3.0 tons per sq. ft. communicate with the BRIDGE DIVISION.

Q	43,000 c.f.s.
A	4,740 Sq. ft.
V	9.5 ft./sec.

ESTIMATED QUANTITIES

ITEM	C.Y. Conc. Cu. Yds.	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type RA-1 Steel Railing - Lin. Ft.	Tr'td Timber Piles - # Lin. Ft.	Pile Shoes ⊡ No.	Excavation, C.Y.'s. Struct.	Excavation, C.Y.'s. *Unclass.
Superstructure	542.9	12,725	644,215	1580.2				
Substr. - Sill No. 1	29.3	3,170			16 @ 25'-400	16	20	
" - Sill No. 8	29.3	3,170			16 @ 25'-400	16	20	
" - Bent No. 2	82.9	14,385					275	
" - Bent No. 3	89.0	13,940					165	
" - Bent No. 4	86.3	13,605					230	
" - Bent No. 5	89.0	14,045					265	
" - Bent No. 6	99.4	16,180					320	
" - Bent No. 7	88.6	13,940					385	
Totals	1148.8	214,160	644,215	1580.2	⌀ 800	⊡ —	1650	★ —

⌀ One Treated Timber Test Pile shall be driven at Sills No. 1 and No. 8 before the remaining piles are ordered.
★ See Grading Plans for Unclassified Excavation.
⊡ American No. 1 All Steel Pile Shoes or equivalent shall be used. The cost shall be included in the unit price bid for Treated Timber Piles.

GENERAL NOTES—

1. Use current South Dakota Standard Specifications for Roads and Bridges.
2. Final Footing Elevations for Bents No. 2, No. 3, No. 4, No. 5, No. 6 & No. 7 shall be established before ordering column reinforcing steel for the respective bents.

ORIGINAL CONSTRUCTION PLANS

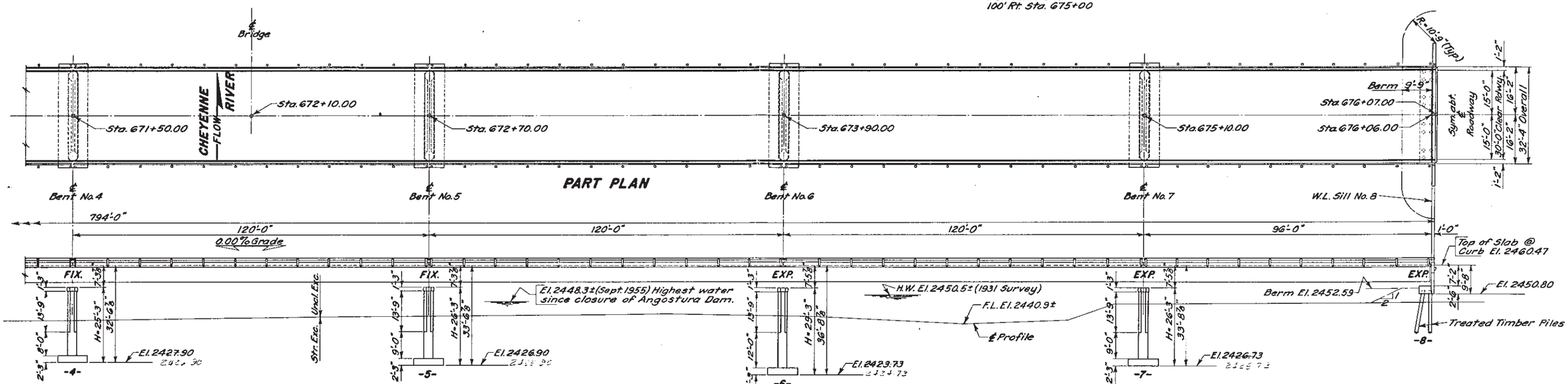
GENERAL DRAWING AND QUANTITIES
FOR
794'-0" COMP. GIRDER VIADUCT
30'-0" ROADWAY
OVER CHEYENNE RIVER **SEC. 2-T2S-R12E**
STA. 668+13.00 TO 676+07.00 **S 1041(1)**
PENNINGTON COUNTY
STR. NO. 52-708-42A SOUTH DAKOTA **H20-44**
DEPARTMENT OF HIGHWAYS
FEB. 1959

-X031-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	R.K.	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	31	38

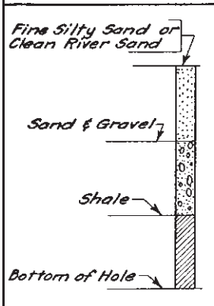
B.M. No. 56 - El. 2447.74
Iron Pin & Gds.
100' Rt. Sta. 675+00



PART PLAN

PART ELEVATION

TEST HOLE DATA



Typical Test Hole

Station	Distance from ℄	Elevations: Fine Silty Sand	Clean River Sand	Sand & Gravel	Shale	Bottom of Hole
668+04	0'	2448.1±	—	2444.1±	2432.1±	—
668+14	2' Rt.	2448.0±	—	2443.5±	2432.5±	2426.0±
670+84	0'	—	2441.1±	2438.1±	2431.1±	—
671+50	0'	—	2442.0±	2438.5±	2431.5±	—
671+61	0'	—	2441.7±	2438.5±	2431.5±	2426.7±
672+70	0'	—	2443.8±	2441.8±	2431.5±	—
673+90	4' Lt.	—	2443.5±	2440.5±	2432.5±	2423.5±
673+90	0'	—	2443.8±	2441.6±	2432.8±	—
675+14	7' Rt.	2447.3±	—	2441.1±	2432.9±	—
676+06	0'	2447.6±	—	2440.5±	2432.0±	—
676+13	7' Lt.	2447.7±	—	2441.0±	2432.0±	2428.7±

ORIGINAL CONSTRUCTION PLANS

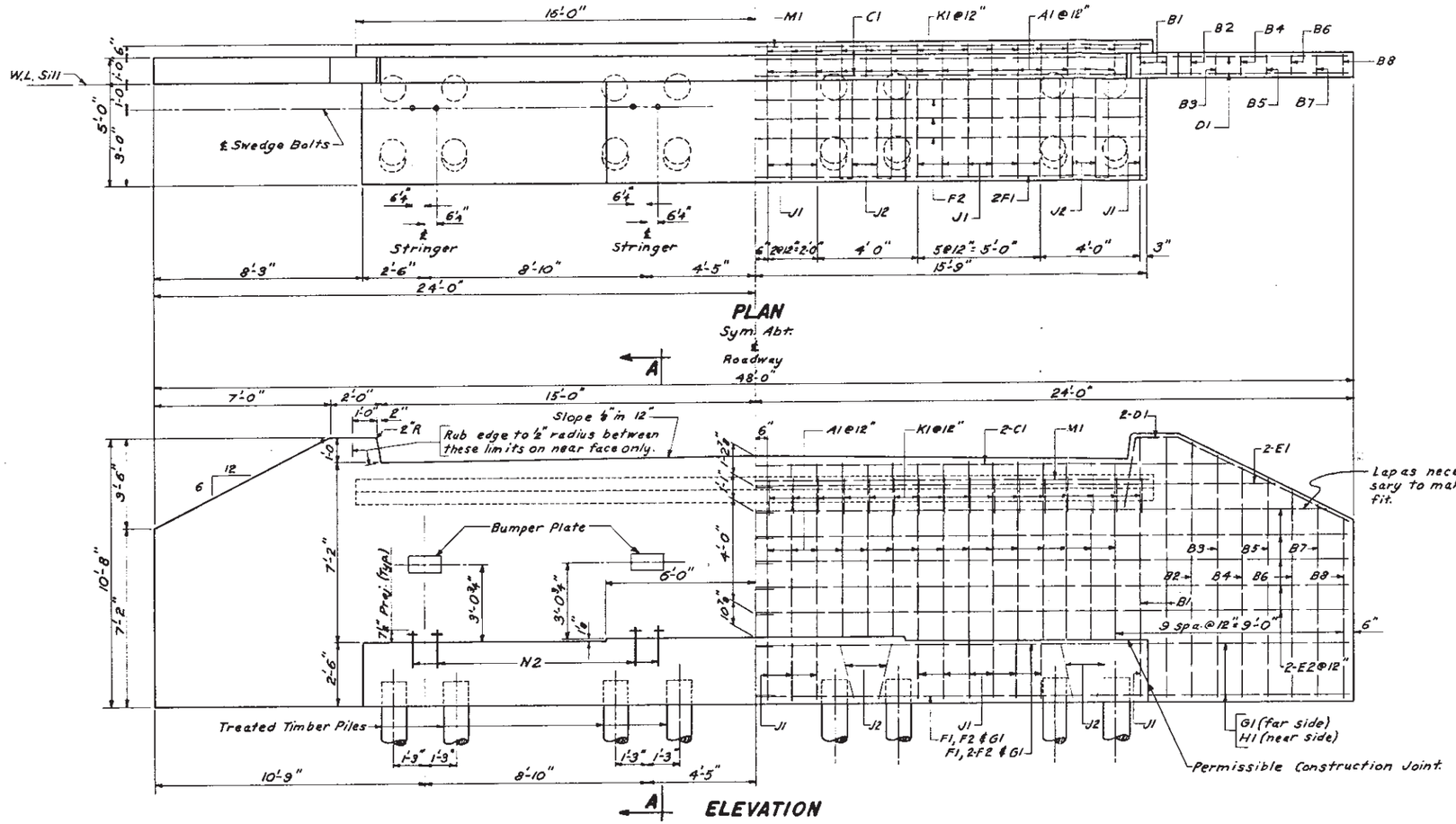
GENERAL DRAWING AND QUANTITIES
FOR
794'-0" COMP. GIRDER VIADUCT
30'-0" ROADWAY
OVER CHEYENNE RIVER — SEC. 2-T2S-R12E
STA. 668+13.00 TO 676+07.00 — S 1041(1)
PENNINGTON COUNTY
STR. NO. 52-708-42A SOUTH DAKOTA — H20-44
DEPARTMENT OF HIGHWAYS
FEB. 1959

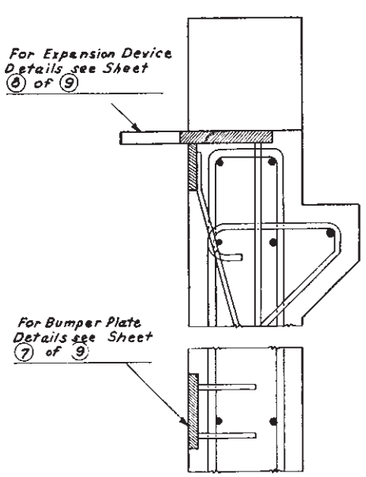
-X031-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	R.K.	H. B. Kleun, BRIDGE ENGINEER

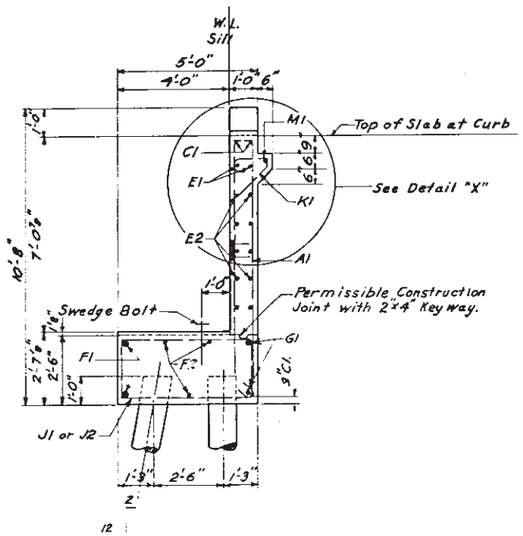
27 OF 32

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)178	32	38





DETAIL "X"

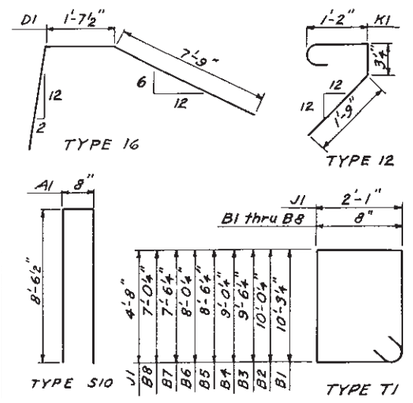


SECTION A-A

REINFORCING SCHEDULE

Mark	No.	Size	Length	Type
A1	30	6	17'-9"	S10
B1	4	5	22'-9"	T1
B2	2	5	22'-3"	T1
B3	2	5	21'-3"	T1
B4	2	5	20'-3"	T1
B5	2	5	19'-3"	T1
B6	2	5	18'-3"	T1
B7	2	5	17'-3"	T1
B8	2	5	16'-3"	T1
E1	4	5	21'-9"	Str.
E2	20	5	24'-6"	Str.
F1	2	9	31'-3"	Str.
F2	3	5	31'-3"	Str.
G1	4	9	25'-0"	Str.
H1	4	4	9'-3"	Str.
J1	20	4	14'-3"	T1
J2	8	6	14'-3"	T2
K1	32	4	3'-9"	12
N1	1	4	31'-6"	Str.
*N2	8	1¼"ø	1'-9"	Str.
C1	2	6	38'-3"	Str.
D1	4	6	12'-3"	16

Bending Details



*Swedge bolt with heavy hex nut and Cut Washer.

Reinforcing steel dimensions are out to out of steel bars.

ESTIMATED QUANTITIES

ITEM		QUANTITY
Class "A" Concrete	cu. yds.	29.8
Reinforcing Steel	lbs.	3170
Structure Excavation	cu. yds.	20
Treated Timber Piles	NO.	18

GENERAL NOTES.-

All exposed edges shall be chamfered 1" except as shown.
Use 2" clear cover on all reinforcing steel except as shown.
See General Drawing for length of Treated Timber Piles.
Piling shall develop a minimum bearing value of 18 Tons per pile.
Unit Stresses: Concrete f_c = 1600 p.s.i.
Reinf. Steel f_s = 20,000 p.s.i. (Interm. Grade)
Design Loading: H20-44 (Current) A.A.S.H.O.
All reinforcing steel bars shall conform to A.S.T.M. A305 (Current) and A15(Current) (Intermediate Grade).
Weight of Expansion Device and Bumper Plate included in Superstructure Structural Steel Quantities.

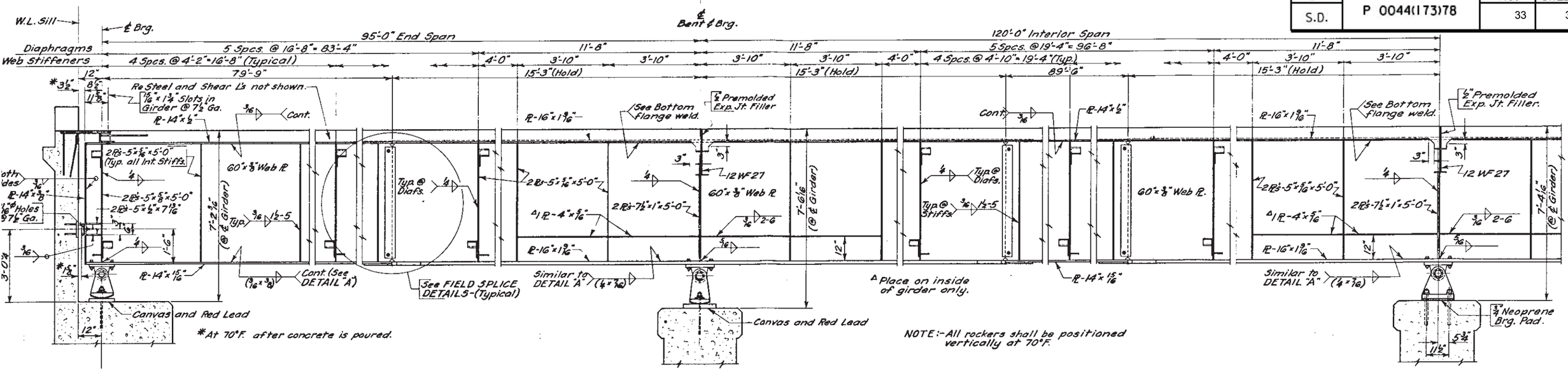
ORIGINAL CONSTRUCTION PLANS

DETAILS OF SILL
FOR
794'-0" COMP. GIRDER VIADUCT
30'-0" ROADWAY
OVER CHEYENNE RIVER **SEC.2-T2S-R12E**
STA.668+13.00 TO 676+07.00 **S 1041(1)**
PENNINGTON COUNTY
STR. NO. 52-708-42A SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS
FEB. 1959

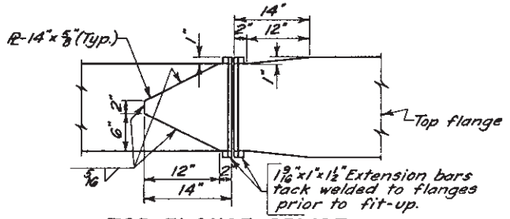
28 OF 32

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	TRACED BY M.C.A.	H.A.F.R.	BRIDGE ENGINEER

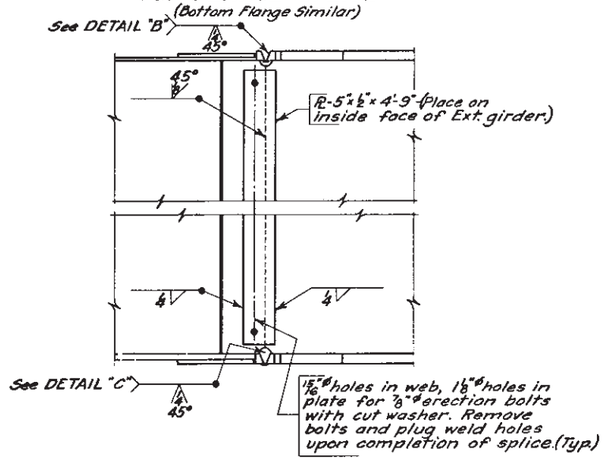
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	33	38



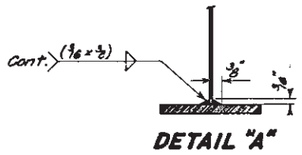
SECTION C-C
(on 0.00% Grade)



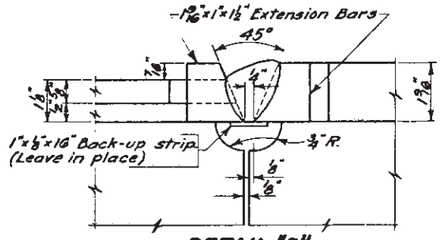
TOP FLANGE SPLICE
(Bottom Flange Similar)



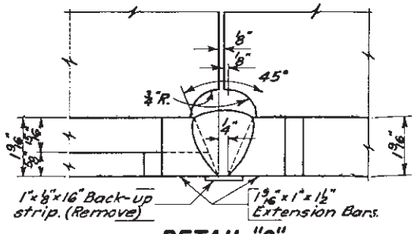
FIELD SPLICE DETAILS



DETAIL "A"



DETAIL "B"



DETAIL "C"

NOTE:-All welds on flange shall start and stop on extension bars. The bars shall be of mild steel. After weld is completed, extension bars shall be burned off flush.

STRUCTURAL STEEL NOTE—

Structural Steel for beams, top and bottom cover plates, and web splices for continuous girders, and for shoes and joints shall conform to Structural Steel for Welding of the A.S.T.M.-A373 (Current) Steel. Steel, which possesses the physical and chemical properties of A373 (Current) Steel, will be accepted for use when the latter is specified. All other steel shall conform to Structural Carbon Steel of the A.S.T.M.-A7 (Current), except pins. Steel for pins shall conform to Structural Steel A.S.T.M. 235 (Current) or equivalent.

ORIGINAL CONSTRUCTION PLANS

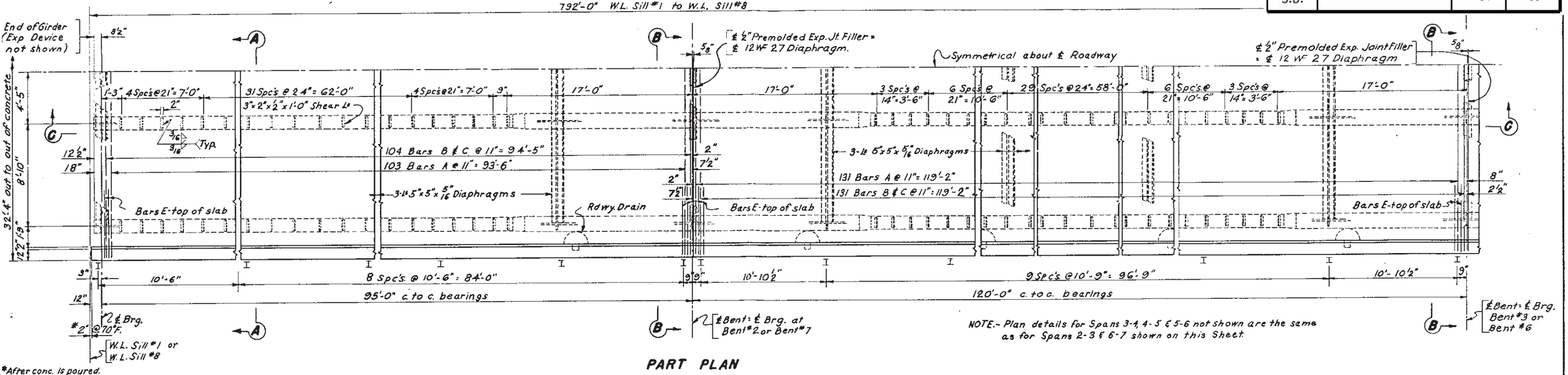
DETAILS OF SUPERSTRUCTURE
FOR
794'-0" COMP. GIRDER VIADUCT
30'-0" ROADWAY
OVER CHEYENNE RIVER **SEC. 2-T2S-R12E**
STA. 668+13.00 TO 676+07.00 **S 1041(1)**
PENNINGTON COUNTY

STR. NO. 52-708-42A SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS
FEB. 1959

29 OF 32

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	H.A.	R.K.	BRIDGE ENGINEER

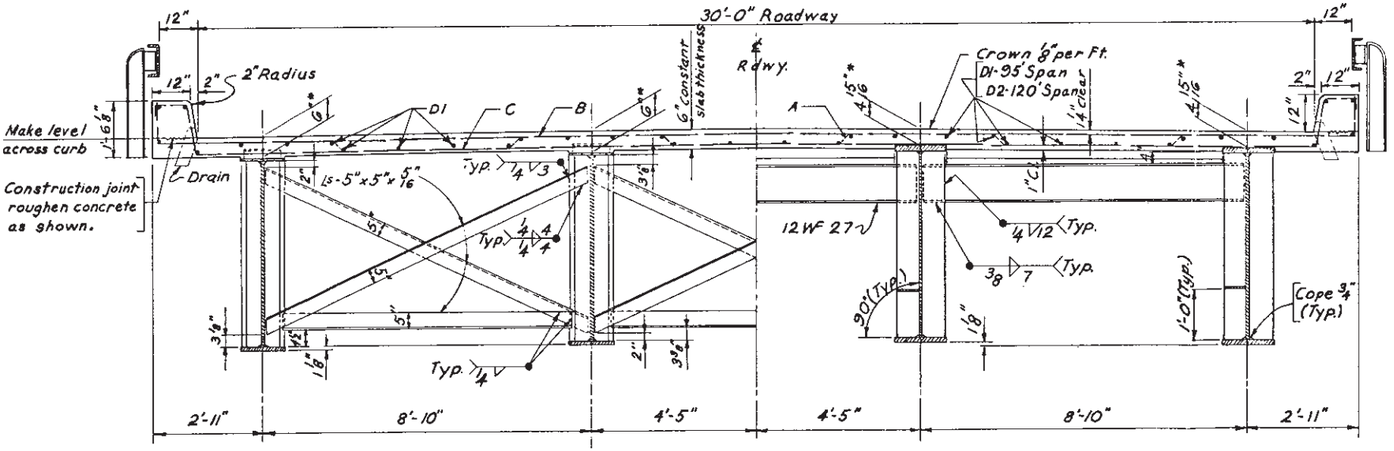
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	34	38



*After conc. is poured.

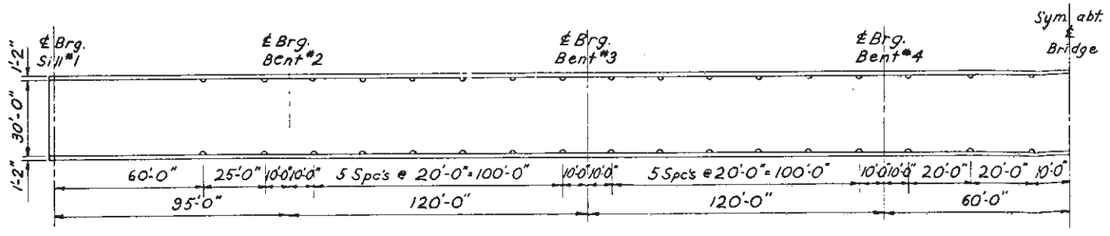
PART PLAN

NOTE:- Plan details for Spans 3-4, 4-5 & 5-6 not shown are the same as for Spans 2-3 & 6-7 shown on this Sheet.



SECTION A-A **SECTION B-B**

* Dimensions shown apply only at ℄ of bearings. At intermediate points, dimensions must be corrected according to the ERECTION DIAGRAM FOR DEAD LOAD DEFLECTIONS as shown on Sheet No. 7.

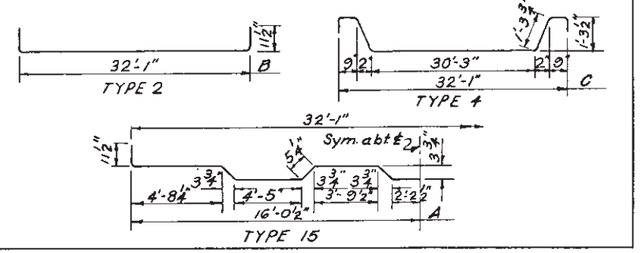


HALF PLAN OF DRAIN SPACING

REINFORCING SCHEDULE

Mark	No.	Size	Length	Type
A	861	5	34'-9"	15
B	863	5	34'-0"	2
C	863	5	34'-9"	1
D1	204	5	32'-9"	Str.
D2	680	5	31'-3"	Str.
E	56	6	6'-0"	Str.

Bar Bends



Note: Dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class "A" Concrete	cu. yds.	542.8
Reinforcing Steel	lbs.	122,725
Structural Steel	lbs.	664,215
Railing	Lin. Ft.	1590.2

GENERAL NOTES.-

Cost of welding shall be absorbed in the unit price bid for structural steel.

Cost of canvas and red lead shall be absorbed in the unit price bid for Class "A" Concrete.

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 exposed concrete edges shall be chamfered 1" unless otherwise noted.

Design Loading: H20-44 (Current) A.A.S.H.O.
Unit Stresses: Concrete f'c = 1500 p.s.i.
Re-steel fs = 20,000 p.s.i (Intermediate Grade)

See Standard Railing Sheet for details of Railing, Railing Anchors and Roadway Drains.

⅛"-7 ply "Fabreeka" as manufactured by Fabreeka Products Company, Boston, Mass., or equal, may be used in lieu of canvas and red lead under masonry plates. Payment as specified for canvas and red lead shall govern.

NOTE: Work this Sheet with Sheet No. 6, No. 7 & No. 8.

ORIGINAL CONSTRUCTION PLANS

DETAILS OF SUPERSTRUCTURE

FOR

794'-0" COMP. GIRDER VIADUCT

30'-0" ROADWAY

OVER CHEYENNE RIVER **SEC. 2-T2S-R12E**

STA. 668+13.00 TO 676+07.00 **S 1041 (1)**

PENNINGTON COUNTY

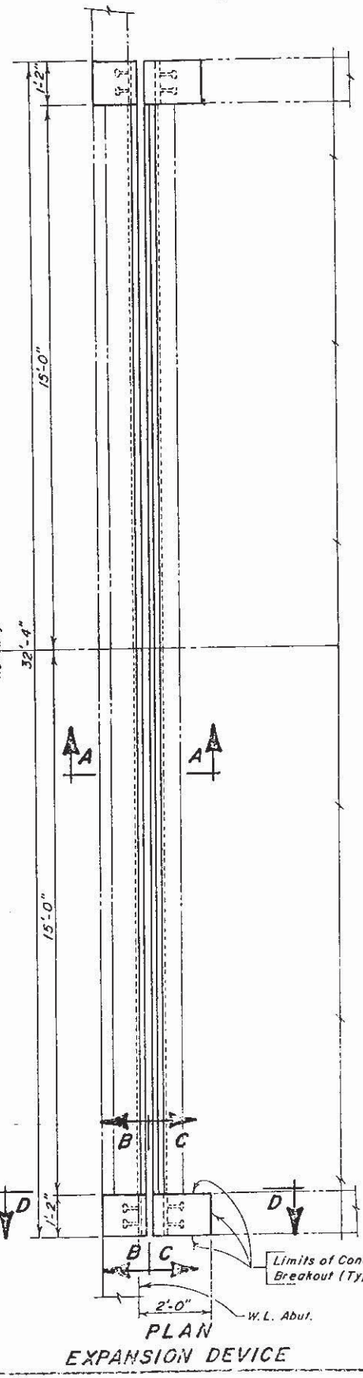
STR. NO. 52-708-42A SOUTH DAKOTA DEPARTMENT OF HIGHWAYS

FEB. 1959

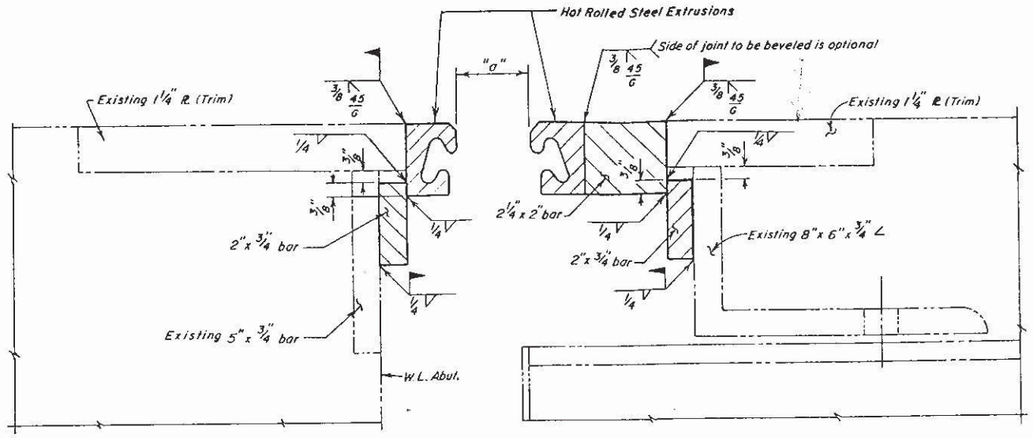
30 OF 32

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	TRACED BY W.C.P.	R.K.	BRIDGE ENGINEER

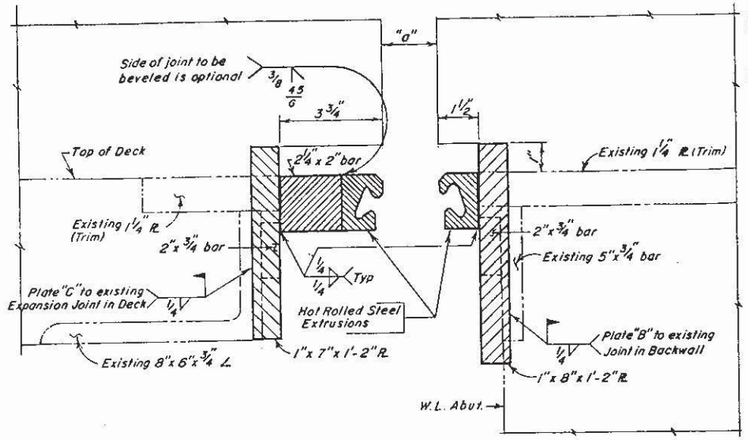
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	35	38



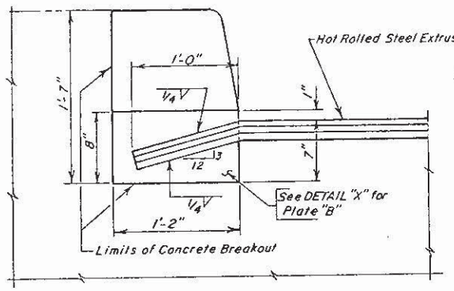
PLAN
EXPANSION DEVICE



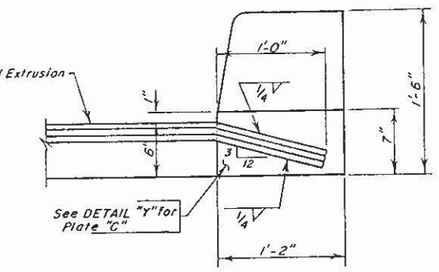
SEC. A-A



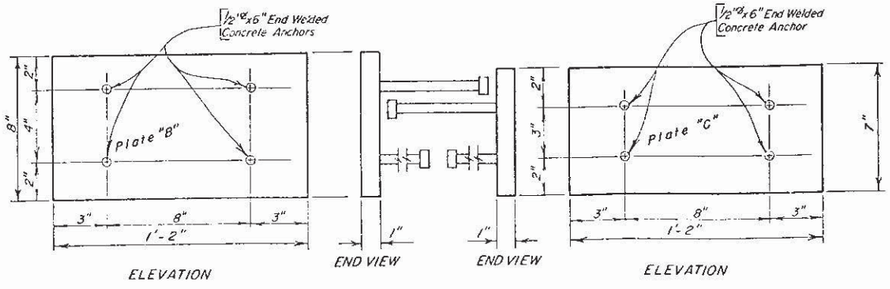
SEC. D-D



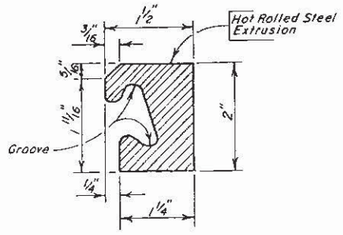
VIEW B-B



VIEW C-C



DETAIL "X" DETAIL "Y"



HOT ROLLED STEEL EXTRUSION

DETAIL "E"

Neoprene Seal shall have a 5" movement capability.

INSTALLATION TABLE

Temperature	"a"
120°	1/16"
90°	1⅜"
70°	2"
50°	2⅝"
30°	3¼"
0°	4⅛"
-30°	5 1/16"

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Modify Expansion Device	Each	2

For informational purposes only, the estimated quantity of structural steel contained in

ORIGINAL CONSTRUCTION PLANS

MODIFICATION OF EXPANSION DEVICE AT ABUTMENTS

FOR

794'-0" COMP. GIRDER BRIDGE

30'-0" ROADWAY

OVER CHEYENNE RIVER SEC. 2-T2S-R12E

STA. 668+13.00 TO 676+07.00 F0044(51)78

STR. NO. 52-708-42A

PENNINGTON COUNTY

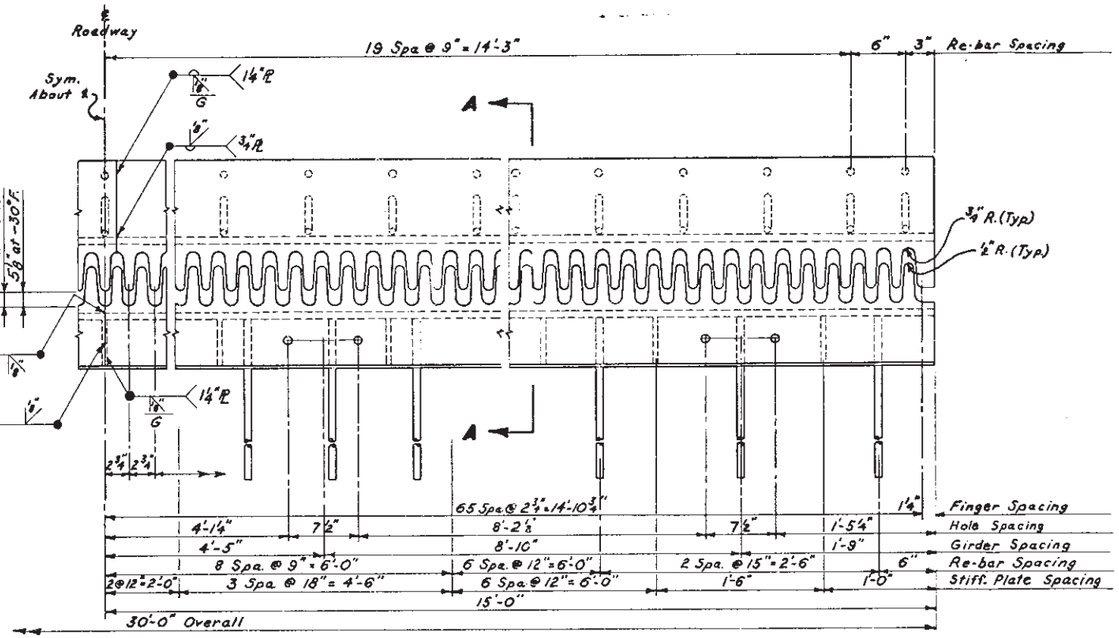
S. D. DEPT. OF TRANSPORTATION

SEPT. 1988

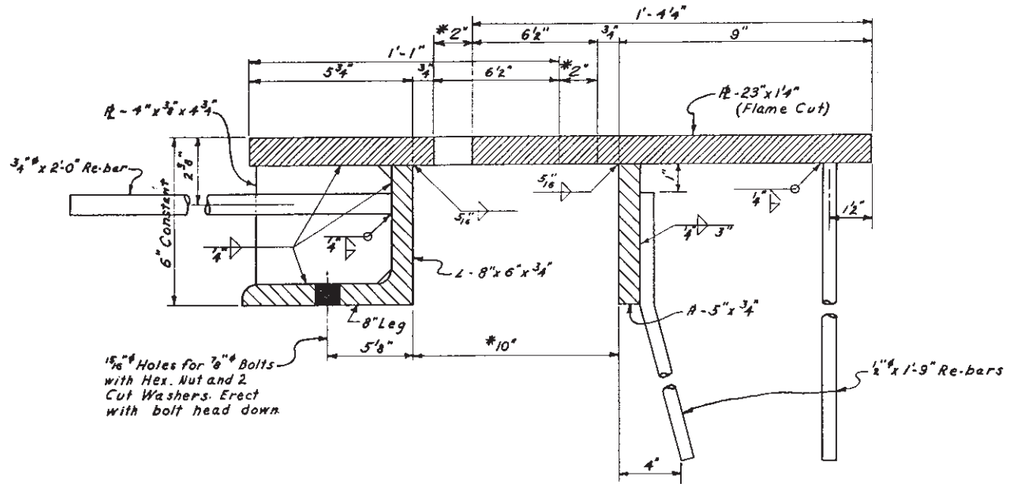
31 OF 32

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
TW	f.a.k.	LAS	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0044(173)78	36	38

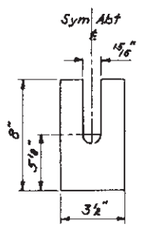


PART PLAN OF EXPANSION DEVICE AT SILLS



SECTION A-A

*At 70°F after conc. is poured



SHIMS

Note: Provide 1/8" and 1/16" thick shims, 8 of each thickness for Girders.

GENERAL NOTES:—

The expansion device shall be completely shop assembled, adjusted to the position it will take in the final structure, and the pieces match marked for field erection.

The top surface of the expansion device shall conform to the roadway crown.

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.

Cost of welding shall be absorbed in the unit price bid for structural steel.

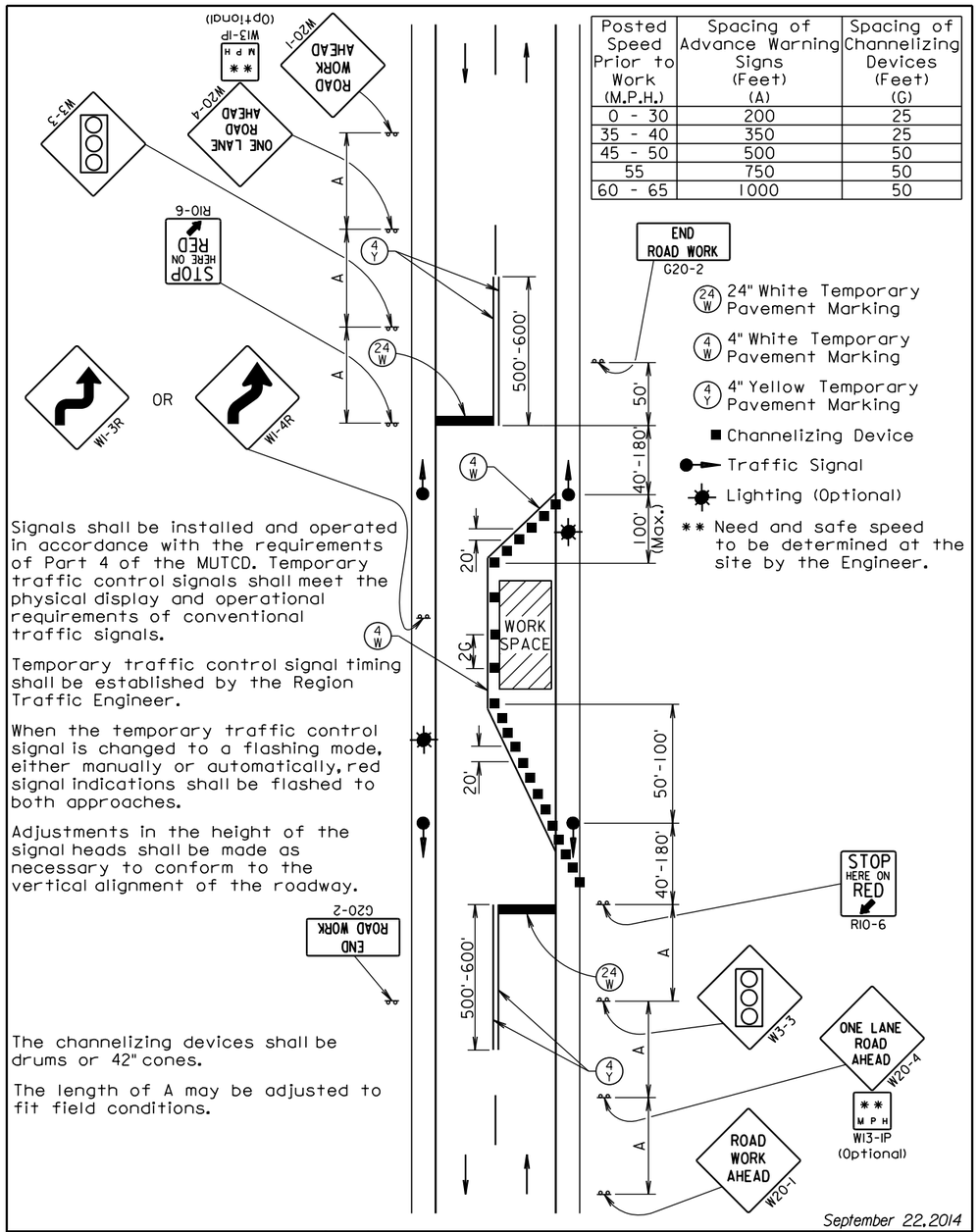
ORIGINAL CONSTRUCTION PLANS

DETAILS OF EXPANSION DEVICE
FOR
794'-0" COMP. GIRDER VIADUCT
30'-0" ROADWAY
OVER CHEYENNE RIVER **SEC.2-T2S-R12E**
STA.668+13.00 TO 676+07.00 **S1041(1)**
PENNINGTON COUNTY

STR. NO. 52-708-42A SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS
FEB. 1959

32 OF 32

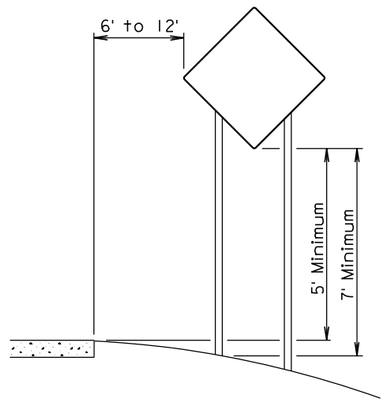
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	TRACED BY W.C.P.	H.A. & R.K.	BRIDGE ENGINEER



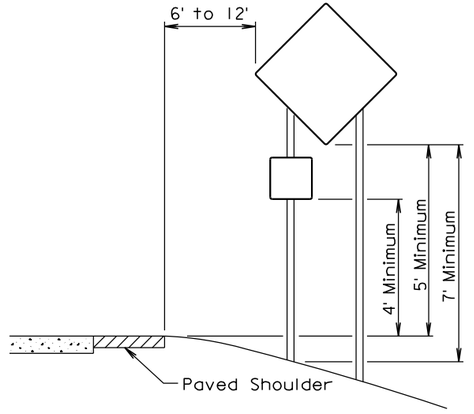
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50

September 22, 2014

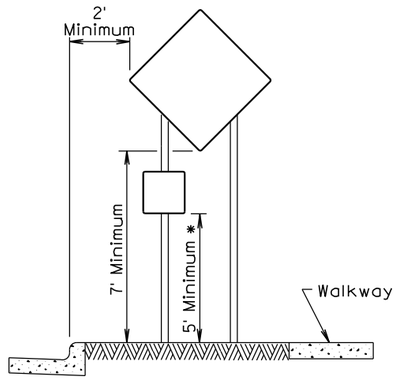
Published Date: 4th Qtr. 2015	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING TRAFFIC SIGNALS	PLATE NUMBER 634.26
			Sheet 1 of 1



RURAL DISTRICT

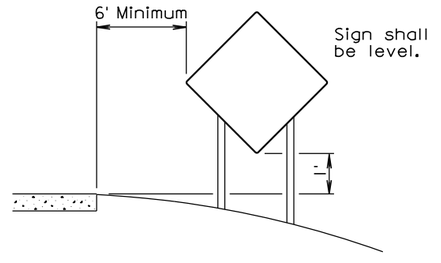


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

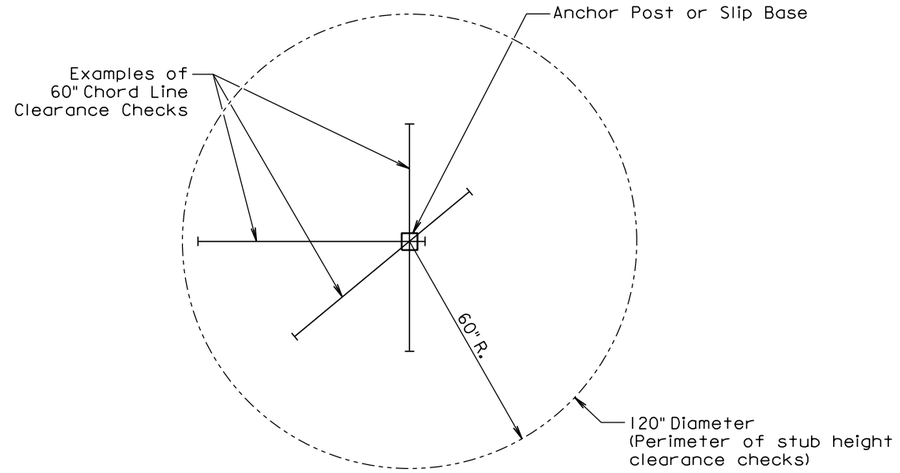
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



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

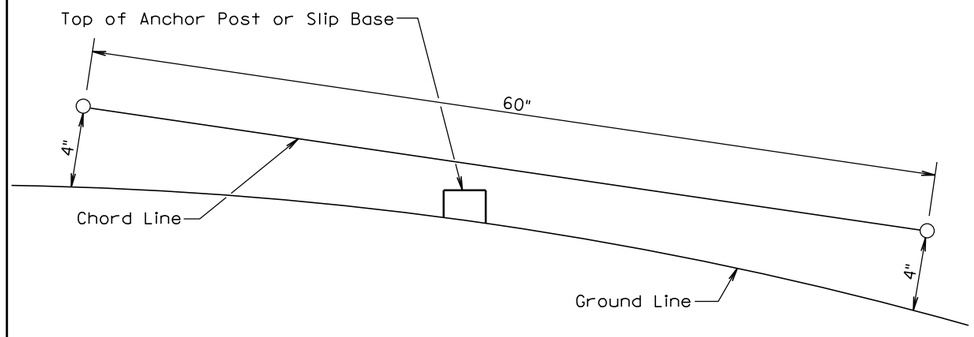
September 22, 2014

Published Date: 4th Qtr. 2015	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 SHALL 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 shall 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.

July 1, 2005

Published Date: 4th Qtr. 2015	**SDDOT**	***BREAKAWAY SUPPORT STUB CLEARANCE***	***PLATE NUMBER*** *634.99*
			Sheet 1 of 1