

Plot Scale - 1:200

Plotted From - ttrc11610

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 073-468
SD HIGHWAY 73
MEADE COUNTY

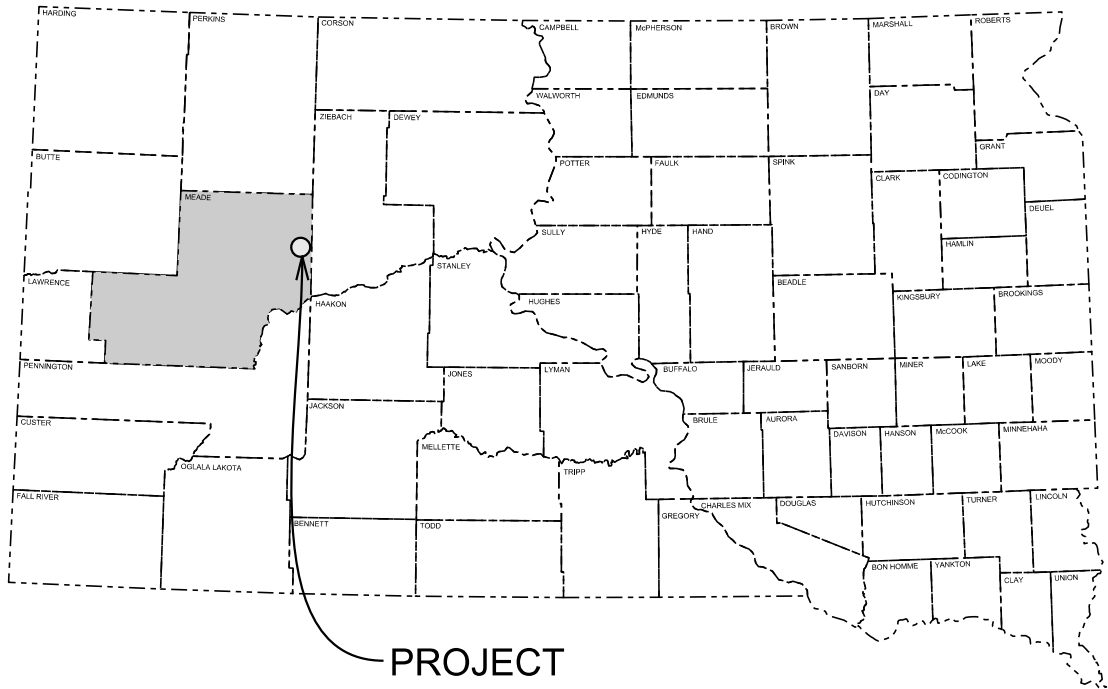
BRIDGE REPAIR
PCN i42d

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-468	1	22

Plotting Date: 06/03/2016

INDEX OF SHEETS

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PROJECT

PROJECT 073-468
Str. No. 47-755-203
MRM 154.91

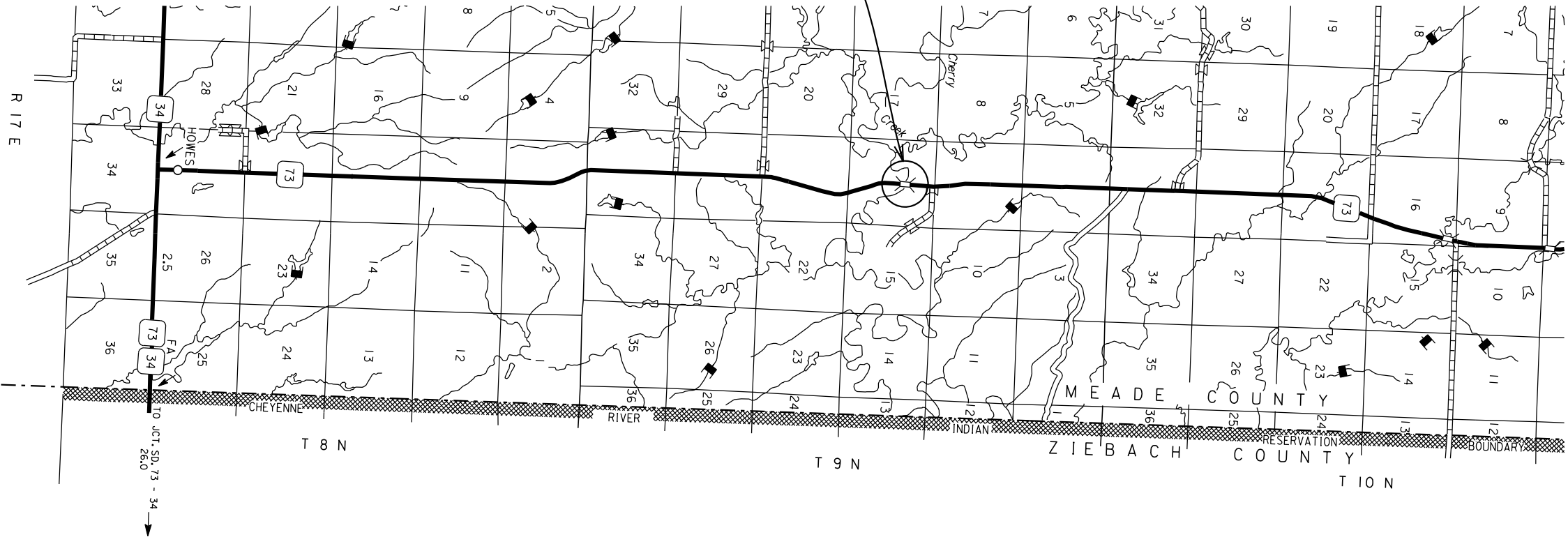


DESIGN DESIGNATION

ADT (2015)	518
ADT (2035)	694
DHV	108
D	50%
T DHV	11.5%
T ADT	25.2%
V	65 mph

STORM WATER PERMIT

None Required



ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E6220	Remove Double W Beam Guardrail for Reset	12.5	Ft
110E6300	Remove Rubrail for Reset	12.0	Ft
630E5170	Reset Double W Beam Rail	12.5	Ft
630E5220	Reset Rubrail	12.0	Ft
632E1345	Furnish 2.5"x2.5" Perforated Tube Post	20.0	Ft
632E3203	Flat Aluminum Sign, Nonremovable Copy High Intensity	3.7	SqFt
634E0110	Traffic Control Signs	144.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS

STRUCTURE 47-755-203 QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0010	Incidental Work	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	8.9	CuYd
460E0172	Concrete Patching Material, Bridge Deck	12.4	CuFt
460E0300	Breakout Structural Concrete	8.9	CuYd
460E0510	Extend Deck Drain	6	Each
480E0200	Epoxy Coated Reinforcing Steel	1,305	Lb
491E0005	Two Coat Bridge Deck Polymer Chip Seal	58.7	SqYd
491E0110	Abrasive Blasting of Bridge Deck	58.7	SqYd
491E0130	Concrete Removal, Class A	2.0	SqYd
491E0140	Concrete Removal, Class B	2.0	SqYd

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 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 Public 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 Public 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 Public 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.

REMOVE & RESET DOUBLE W BEAM GUARDRAIL & RUBRAIL

Included in the Estimate of Quantities is 12.5' of double W beam guardrail and 12' of Rubrail to be removed for reset to accommodate the concrete endblock removal and reconstruction. The double W beam guardrail & Rubrail shall be reset using the existing post and block.

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. 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.
4. 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 2 calendar days.
5. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.
6. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.
7. Vehicles working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions. 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.
8. All construction operations shall be conducted in the general direction of traffic movement.
9. 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.
10. Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

TABLE OF TRAFFIC CONTROL DEVICES

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		144.0			

PERMANENT SIGNING

The Contractor shall install new 2.5" x 2.5" Perforated Tube Post and the new Flat Aluminum Sign (30"x18") as shown on the sign detail sheet at MRM 154.00+0.797 facing northbound traffic.

The Contractor shall furnish all signs, posts, stiffeners, bases, hardware, and labor for installation of permanent signs in size, type, and quantity as shown in these plans and/or as required by the Engineer.

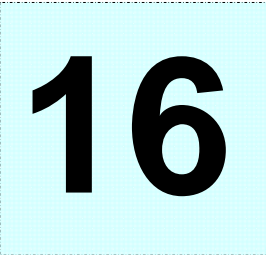
The Contractor shall provide all labor and equipment necessary to install permanent signing, as detailed in these plans and/or as required by the Engineer. Payment for furnishing and installing permanent signs will be paid for at the contract unit price per square foot for each type of sign based on sheeting requirements. All signs shall have ASTM D4956 Type IV (High Intensity). Payment for new signposts, hardware, bases, and labor will be made at the contract unit price per foot for the associated size Perforated Tube Post or Steel Post. Breakaway post details regarding posts, hardware, and bases shall be followed as per the manufacturer's recommendations. The sign post contract items shall include post bases and all hardware. The lengths of the posts in the Estimate of Quantities are approximate lengths only. The post lengths shall be verified by the Contractor. The Contractor is urged to cut posts to length on job site after site by site verification of post length.

The Contractor shall use Telespar brand (or equivalent) posts and bases on all new standard highway signs with perforated tube posts as approved by the Engineer. All post materials shall conform to Section 982 of the Specifications, and be in accordance with ASTM specifications. The height of the post shall not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign shall be cut off. No separate payment will be made for cutting the post or for that length cut off. All posts and bases shall be accompanied by Certificates of Compliance and shall meet all safety standards as set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

The Contractor shall stake the signs and the Engineer will verify the location prior to installation. The lateral distance from the roadway and the height of the sign shall be established by the Contractor according to the Permanent Signing Typicals, as well as the MUTCD.

DATE DECAL

Each decal is approximately 2" X 2" with black numerals on a white background. The date decal displays the last two digits of the year the sign was manufactured (as illustrated).



Cost for installing the date decal on new signs shall be incidental to the contract unit price for the various signing bid items.

PERFORATED TUBE POST

Payment for 2.5" x 2.5" Perforated Tube Post shall include all costs for labor, equipment, and materials necessary to complete the following work:

- 1. Furnish all posts, stiffeners, breakaway bases, soil stabilizers, and hardware.
- 2. Assembly and installation of breakaway base sign supports as per details shown in these plans.
- 3. Assembly of sign(s) to sign post as per erection details for Highway Signs as shown in these plans.
- 4. Installation of signpost and sign(s).

FURNISH & INSTALL FLAT ALUMINUM SIGNS / NON-REMOVABLE COPY HIGH INTENSITY

Measurement of sign areas will include payment for the entire sign blank before trimming for rounded corners. The square unit measurement for each sign shall be as shown in the table for Permanent Signing. The payment shall include all labor (including installing date decals), equipment, and materials to complete the work, and shall be paid for at the contract unit price per square foot for Flat Aluminum Sign, Non-Removable Copy High Intensity.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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SHEETING REQUIREMENTS

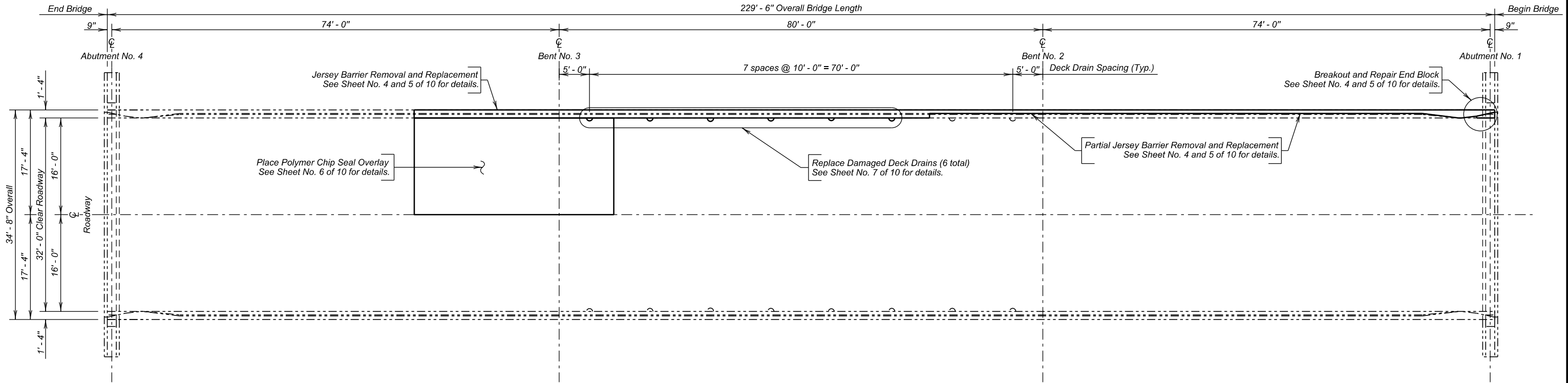
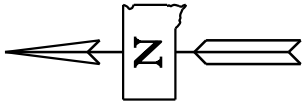
All signs in the table for permanent signing that call for "Type IV" sheeting shall have High Intensity Prismatic retro-reflective background, Type IV as per AASHTO designation M 268 (ASTM D4956).

SIGN LEGEND, BORDER, BACKGROUND, AND MOUNTING

All sign material shall comply with Section 982 of the Specifications.

All other sign colors shall be as stipulated in the MUTCD.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	073-468	5	22



PLAN

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- Sheet No. 1 - Layout for Upgrading
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Barrier Repair Details
- Sheet No. 5 - Barrier Repair Details (Continued)
- Sheet No. 6 - Polymer Chip Seal Overlay Details
- Sheet No. 7 - Deck Drains Repair Details
- Sheet No. 8 thru 10 - Original Construction Plans

LAYOUT FOR UPGRADING
FOR
229' - 6" PRESTRESSED CONCRETE
GIRDER BRIDGE
32' - 0" ROADWAY
OVER CHERRY CREEK
STR. NO. 47-755-203
PCN I42D
0° SKEW
SEC. 16-T9N-R17E
073-468
MEADE COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2016
1 OF 10

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

DESIGNED BY TB MEAD142D	CK. DES. BY BWS I42DRA01	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
250E0010	Incidental Work	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	8.9	CuYd
480E0200	Epoxy Coated Reinforcing Steel	1305	Lb
460E0300	Breakout Structural Concrete	8.9	CuYd
491E0005	Two Coat Bridge Deck Polymer Chip Seal	58.7	SqYd
491E0110	Abrasive Blasting of Bridge Deck	58.7	SqYd
460E0172	Concrete Patching Material, Bridge Deck	12.4	CuFt
491E0130	Concrete Removal, Class A	2.0	SqYd
491E0140	Concrete Removal, Class B	2.0	SqYd
460E0510	Extend Deck Drain	6	Each

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 17th Edition with 2003 Interim using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

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.

- Breakout concrete barrier and endblock to limits shown in plans.
- Place new barrier and endblock as shown in plans.
- Remove damaged area of two coat polymer chip seal, repair deck if necessary, and prepare deck surface for Placement of Two Coat Bridge Deck Polymer Chip Seal to the limits shown in plans.
- Apply polymer chip seal to bridge deck.
- Replace missing deck drains as detailed in plans.

GENERAL CONSTRUCTION - BRIDGE

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

- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
- Use 2" clear cover on all reinforcing steel except as shown otherwise.
- Barrier Curbs and End blocks shall be built normal to the grade.
- 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.
- 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.
- Snap ties, if used in the barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The concrete barriers shall be cured in accordance with Section 460.3 M. of the Construction Specifications except that no curing compounds shall be allowed.

DECK DRAIN EXTENSIONS

- Some of the deck drain extensions are missing on this structure and shall be replaced according to the following notes. Drain Extensions shall be replaced at the direction of the Engineer.
- All angles shall conform to ASTM A709, Grade 36 and shall be galvanized in accordance with ASTM A123.
- The 3/8" diameter x 2 3/4" long wedge-type anchors shall be commercially available steel wedge-type anchor bolts, nuts and washers, set in concrete in accordance with the recommendations of the manufacturer. The Contractor shall obtain from the manufacturer and submit to the Engineer, certification indicating the material is either stainless steel or the finish is galvanized.
- The 3/8" diameter bolts, nuts and washers shall conform to ASTM A307 and shall be galvanized in accordance with ASTM A153.
- The 4" diameter pipes shall be Schedule 40 Acrylonitrile Butadiene-Styrene (ABS) Plastic Pipe conforming to the requirements of ASTM – D2661 or Schedule 40 ABS Plastic Pipe conforming to the requirements of ASTM – F628.
- The Sheet Metal strap shall be fabricated from hot-rolled carbon steel conforming to ASTM A1011 Gr.36 and shall be galvanized according to ASTM A653.

- The method used to attach the ABS pipe to the 16 gauge galvanized sheet metal straps shall be at the option of the Contractor as approved by the Engineer.
- The deck drain extensions shall be paid for at the contract unit price per each for "Extend Deck Drain" for each drain in place requiring extension. This payment shall be full compensation for furnishing all specified materials, labor, and any incidentals required to construct the deck drain extensions as stated in these plans.

REPAIR POLYMER CHIP SEAL

- This work consists of the following:
 - Removal of existing polymer chip seal in damaged areas as detailed in plans.
 - Preparation of the bridge deck surface.
 - Furnishing and placing a new Two Coat Bridge Deck Polymer Chip Seal on the bridge deck.
- The polymer chip seal shall be applied in accordance with Section 491 of the Construction Specifications. The polymer chip seal shall be a Type 1 material as described in the approved product list.
- The following procedure shall be used for preparation of repair area:
 - Remove the existing polymer chip seal (when present) in areas as detailed in plans. Remove all of the polymer until only the concrete of the deck surface is visible in the removed area. Payment for the existing polymer chip seal removal shall be incidental to the contract lump sum for "Incidental Work".
 - Check the concrete in the repair area for any concrete delaminations. Delaminations shall be repaired as directed by the Bridge Construction Engineer.
 - Clean and prepare the deck surface for the polymer chip seal patch by abrasive blasting. The abrasive blasting shall remove all surface laitance and shall expose the coarse aggregate to the satisfaction of the Engineer. After abrasive blasting, the repair area shall be blown clean with dry compressed air to remove all dust and debris. Abrasive blasting and cleaning shall be done no more than 24 hours prior to the placement of the polymer chip seal patch.
 - Spot repairs shall be allowed to cure for the amount of time as specified by the manufacturer prior to placement of the second polymer chip seal coat.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
229' - 6" PRESTRESSED CONCRETE
GIRDER BRIDGE

STR. NO. 47-755-203

APRIL 2016

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REPAIR POLYMER CHIP SEAL(CONTINUED)

4. Two Coat Bridge Deck Polymer Chip Seal will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment, materials, and all incidental work required furnish and install the Two Coat Bridge Deck Polymer Chip Seal including the removal and disposal of the excess cover aggregate.

CONCRETE BREAKOUT

1. The existing barrier and endblock 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. 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 Commitments.
3. During concrete removal operations, no broken out concrete shall be allowed to fall into Cherry Creek.
4. The contract unit price per cubic yard for "Breakout Structural Concrete" shall include breaking out concrete, cleaning, straightening existing reinforcing steel and disposal of all broken out material.
5. The existing reinforcing steel in the barrier and endblock is epoxy coated. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned of all adhering concrete and rust (if present) with a wire brush and straightened to the satisfaction of the Engineer. 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. After all concrete removal and rebar straightening, the Contractor shall visually inspect the epoxy coating on the salvaged reinforcing steel with the Engineer and repair all areas of damaged epoxy coating as approved by the Engineer. The damaged coating areas shall be repaired with a touch up coating material supplied by an epoxy coating manufacturer who supplies coating material for new epoxy coated reinforcing steel. This coating shall be inert in concrete and compatible with the existing coating on the reinforcing steel. The coating shall be allowed to cure for 24 hours or as per the manufacturer's recommendations, whichever is more stringent, before concrete can be placed. These bars shall be clean and free from all surface contaminants before coating. The cost of cleaning and placing the epoxy touch up coating to the existing reinforcing steel shall be incidental to the various bid items.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
229' - 6" PRESTRESSED CONCRETE
GIRDER BRIDGE

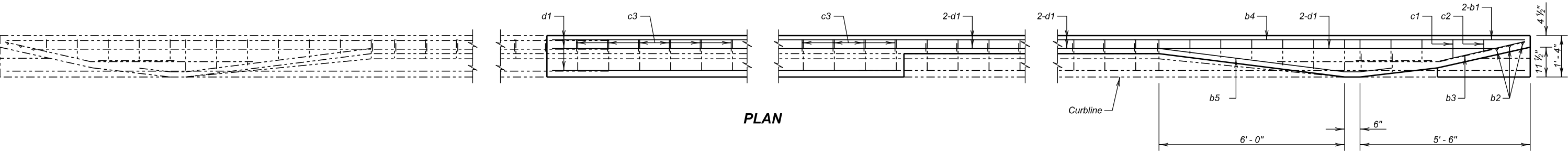
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APRIL 2016

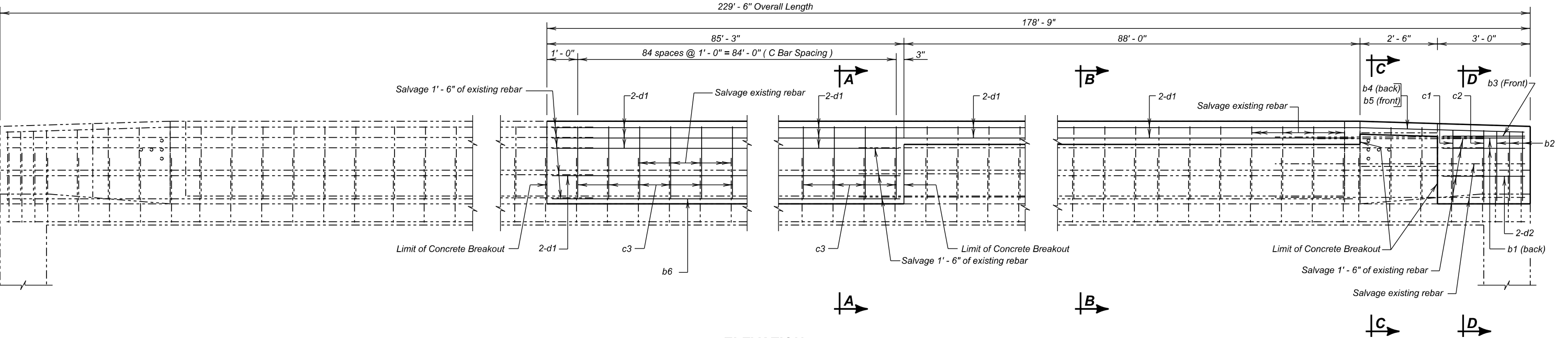
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DESIGNED BY BWS MEAD42D	CK. DES. BY TB I42DRA02	DRAFTED BY KR	 BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	073-468	8	22



PLAN



ELEVATION

BARRIER REPAIR DETAILS
FOR
229' - 6" PRESTRESSED CONCRETE
GIRDER BRIDGE

32' - 0" ROADWAY
OVER CHERRY CREEK
STR. NO. 47-755-203

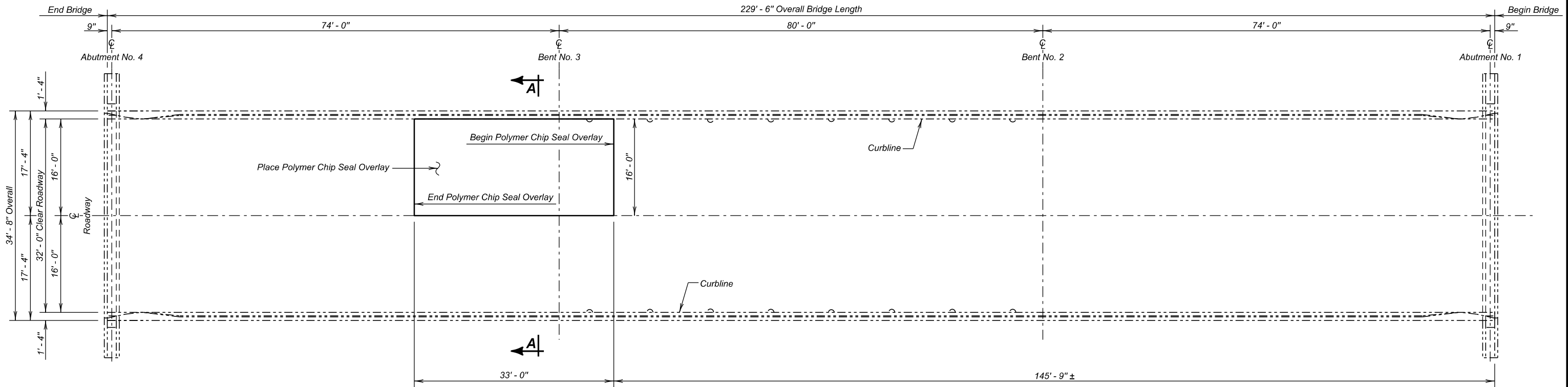
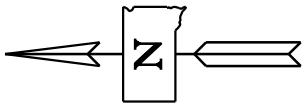
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SEC. 16-T9N-R17E
073-468

MEADE COUNTY
S. D. DEPT. OF TRANSPORTATION

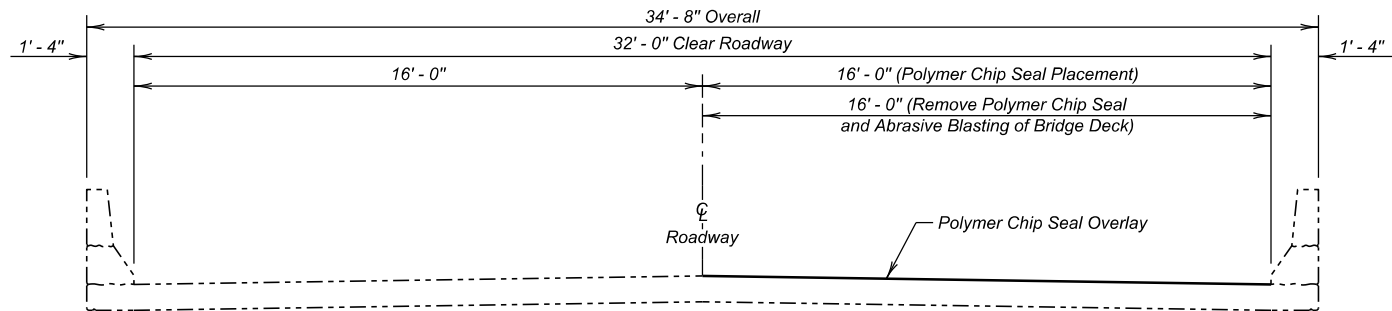
APRIL 2016

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DESIGNED BY TB MEADI42D	CK. DES. BY BWS 142DRA04	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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PLAN



SECTION A - A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	58.7
Abrasive Blasting of Bridge Deck	Sq. Yd.	58.7
* Concrete Patching Material, Bridge Deck	Cu. Ft.	12.4
* Concrete Removal, Class A	Sq. Yd.	2.0
* Concrete Removal, Class B	Sq. Yd.	2.0

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

POLYMER CHIP SEAL OVERLAY REPAIR DETAILS
FOR
229' - 6" PRESTRESSED CONCRETE
GIRDER BRIDGE

32' - 0" ROADWAY
OVER CHERRY CREEK
STR. NO. 47-755-203

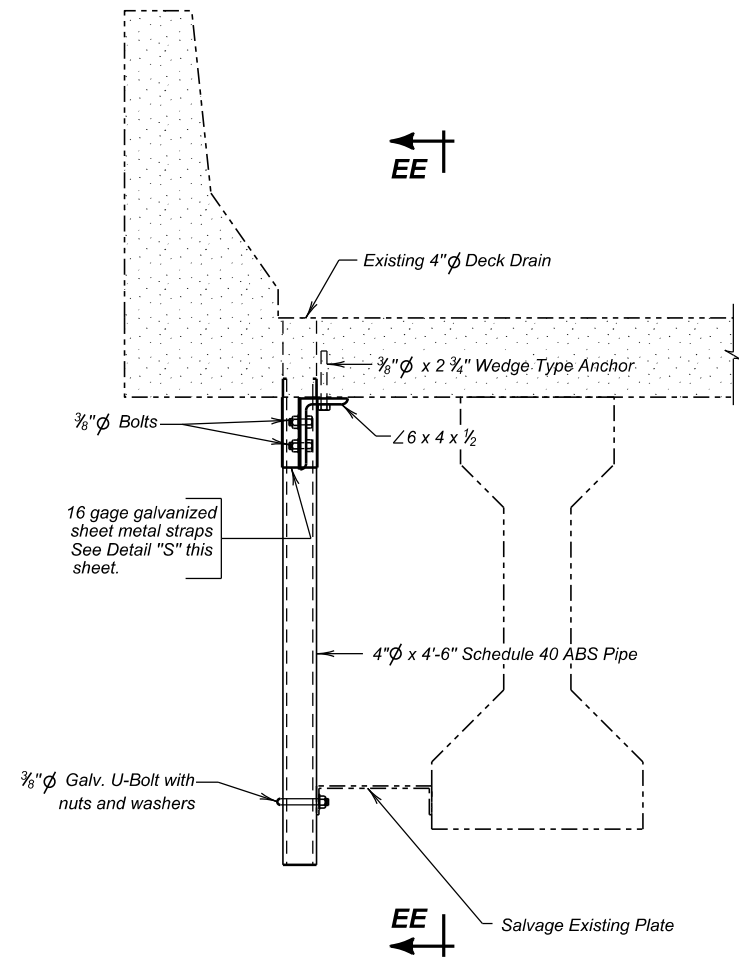
0° SKEW
SEC. 16-T9N-R17E
073-468

MEADE COUNTY
S. D. DEPT. OF TRANSPORTATION

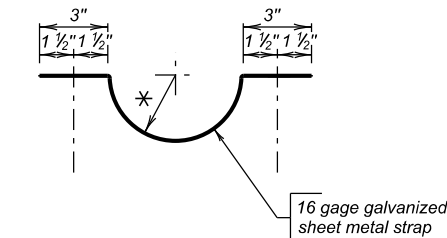
APRIL 2016

6 OF 10

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	073-468	11	22

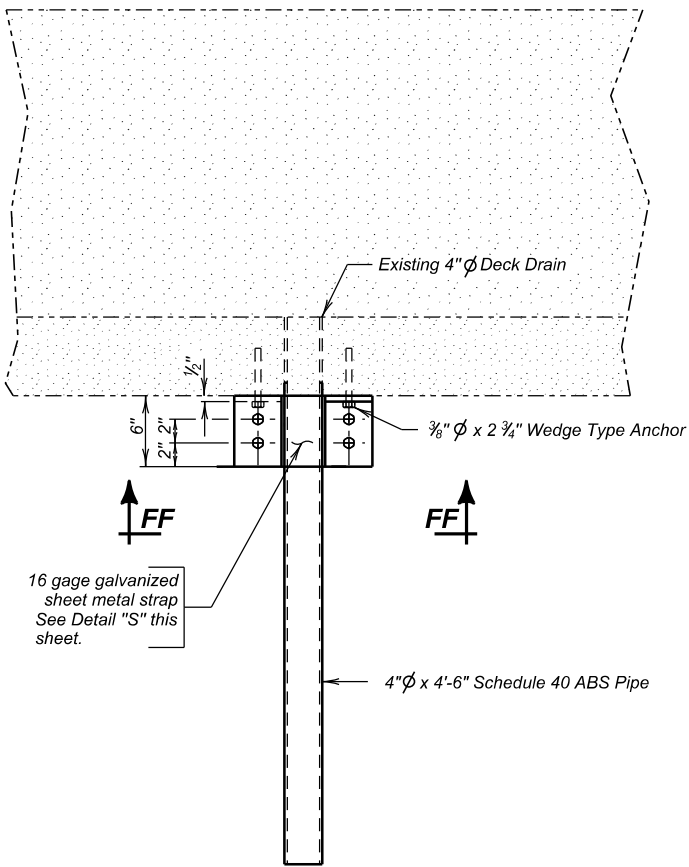


TYPICAL SECTION

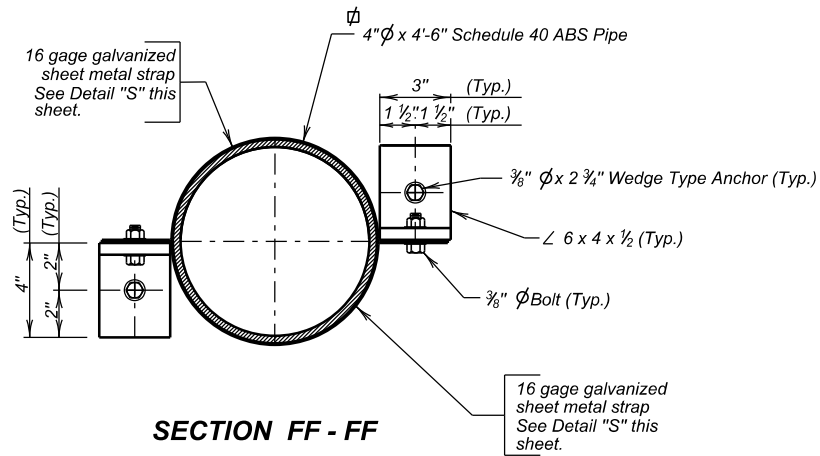


DETAIL "S"

* Inside radius of 16 gage metal strap shall be 1/16" less than the outside radius of the 4" ϕ ABS Plastic Pipe



SECTION EE - EE



SECTION FF - FF

\varnothing Insert 4" ϕ x 4'-6" Schedule 40 ABS Pipe into existing deck drain.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Extend Deck Drain	Each	6

DECK DRAIN EXTENSION DETAILS

FOR

229' - 6" PRESTRESSED CONCRETE GIRDER BRIDGE

32' - 0" ROADWAY
OVER CHERRY CREEK
STR. NO. 47-755-203

0° SKEW
SEC. 16-T9N-R17E
073-468

MEADE COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2016

7 OF 10

DESIGNED BY
BWS
MEAD142D

DRAWN BY
BWS
142DA03

CHECKED BY
TB

Steve A. Johnson
BRIDGE ENGINEER

B.M.#4 Elev.2228.67
Iron Pin and Guards
201' Lt. Sta.30+00.00 (Survey Line)

USGS B.M.#C-126-1934
Brass Cap N.E. Corner of Existing Bridge
Elevation 2196.12

B.M.#5 Elev.2177.37
Iron Pin and Guards
200' Rt. Sta.36+56.89 (Survey Line)

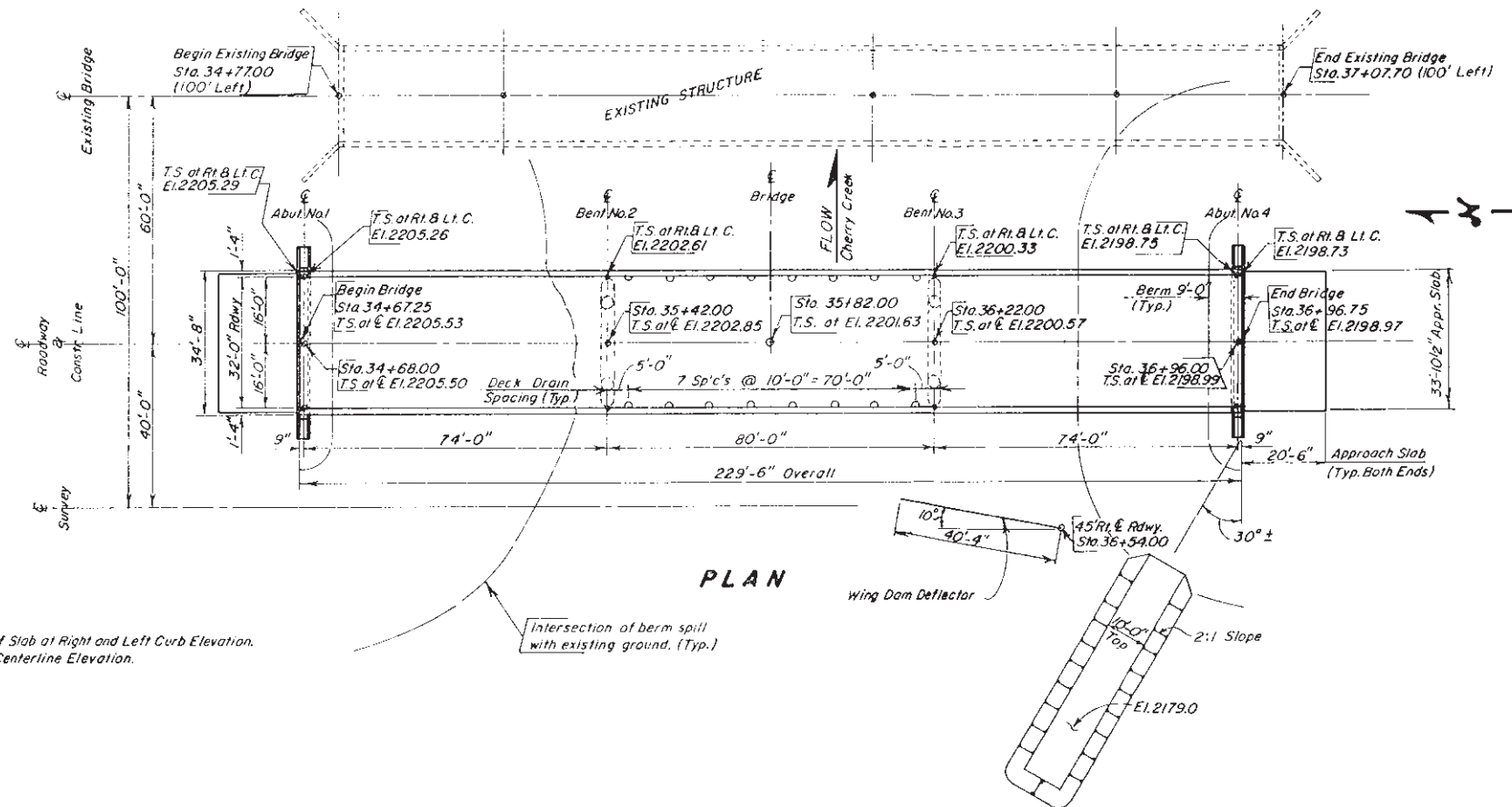
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	073-468	12	22

INDEX OF BRIDGE SHEETS —

Sheet No.1 - General Drawing.
Sheet No.2 - Estimate of Structure Quantities and Notes
Sheet No.3 - Subsurface Investigation and Piling Layout
Sheet No.4 - Abutment Details.
Sheet No.5 - Bent Details.
Sheet No.6 - Superstructure Details.
Sheet No.7 - End Block, Barrier Curb and Drain Details
Sheet No.8 - Girder Details
Sheet No.9 - Erection Data
Sheet No.10 - Details of Bridge End Backfill
Sheet No.11 - Details of Approach Slab Adjacent Abut. No. 1
Sheet No.12 - Details of Approach Slab Adjacent Abut. No. 4
Sheet No.13 - Wing Dam Details
Sheet No.14 - Std. Plates 302 & 305
Sheet No.15 - Std. Plates 308 & 4-Bolt Insert Assembly

LEGEND —

T.S. at Rt. & Lt. C. El. = Top of Slab at Right and Left Curb Elevation.
T.S. at C. El. = Top of Slab at Centerline Elevation.



PLAN

HYDRAULIC DATA

Qd	15,600 c.f.s.
Ad	1222.5 sq.ft.
Vd	12.76 f.p.s.
QF	15,600 c.f.s.
Q100	21,600 c.f.s.

Qd = design discharge for the proposed bridge based on 50 year frequency. Elev. 2179.7 ±

QF = designated peak discharge for the basin approaching proposed project based on 50 year frequency.

Q100 = computed discharge for the basin approaching proposed project based on 100 year frequency. Elev. 2182.9

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING

FOR

229'-6" PRESTR. CONC. GIRDER BRIDGE

32'-0" ROADWAY

0° SKEW

OVER CHERRY CREEK

SEC.16-T9N-R17E

STA. 34+67.25 TO 36+96.75

BRF0073(5)154

STR. NO. 47-755-203

HS 20-44

PCEMS NO. 4707 MEADE COUNTY

(8 ALT.)

S. D. DEPT. OF TRANSPORTATION

FEB. 1984

(8) OF (10)

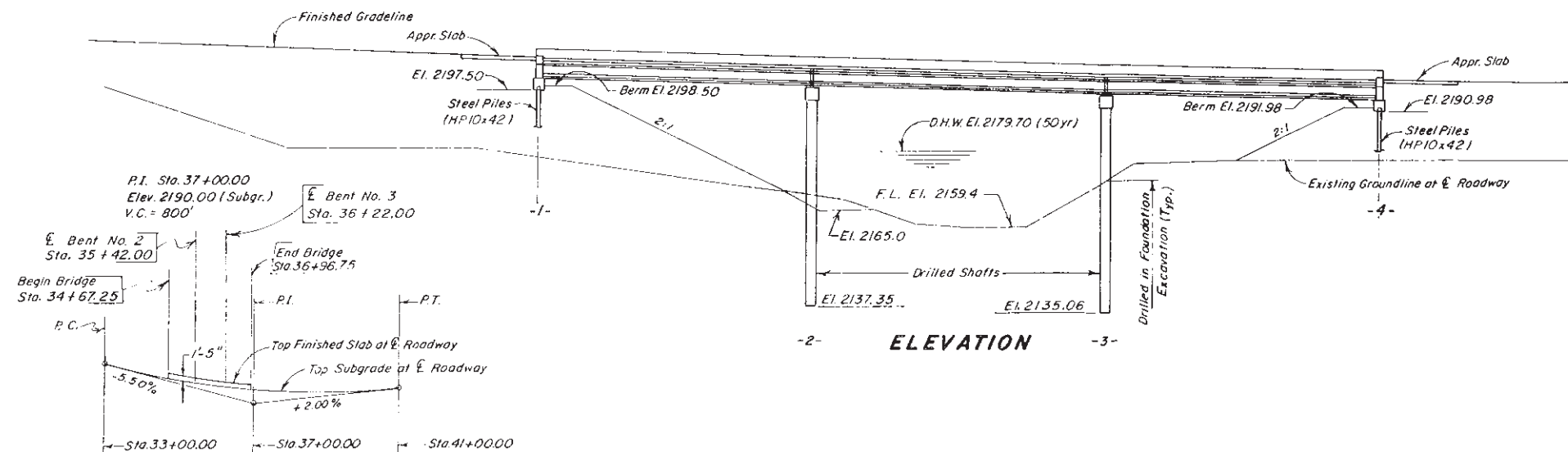
-X081-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
KNS/T.R.	f.e.h.		

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

BRIDGE ENGINEER

VERTICAL CURVE DATA

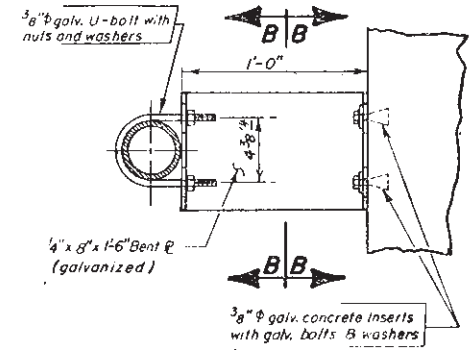
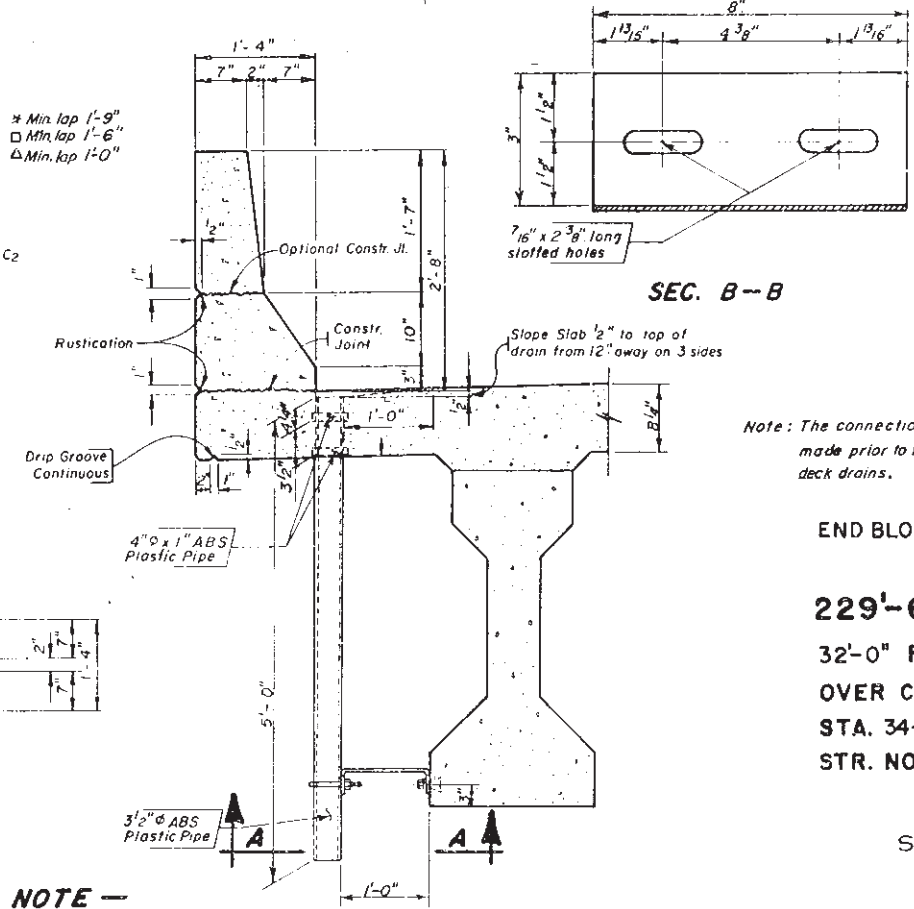
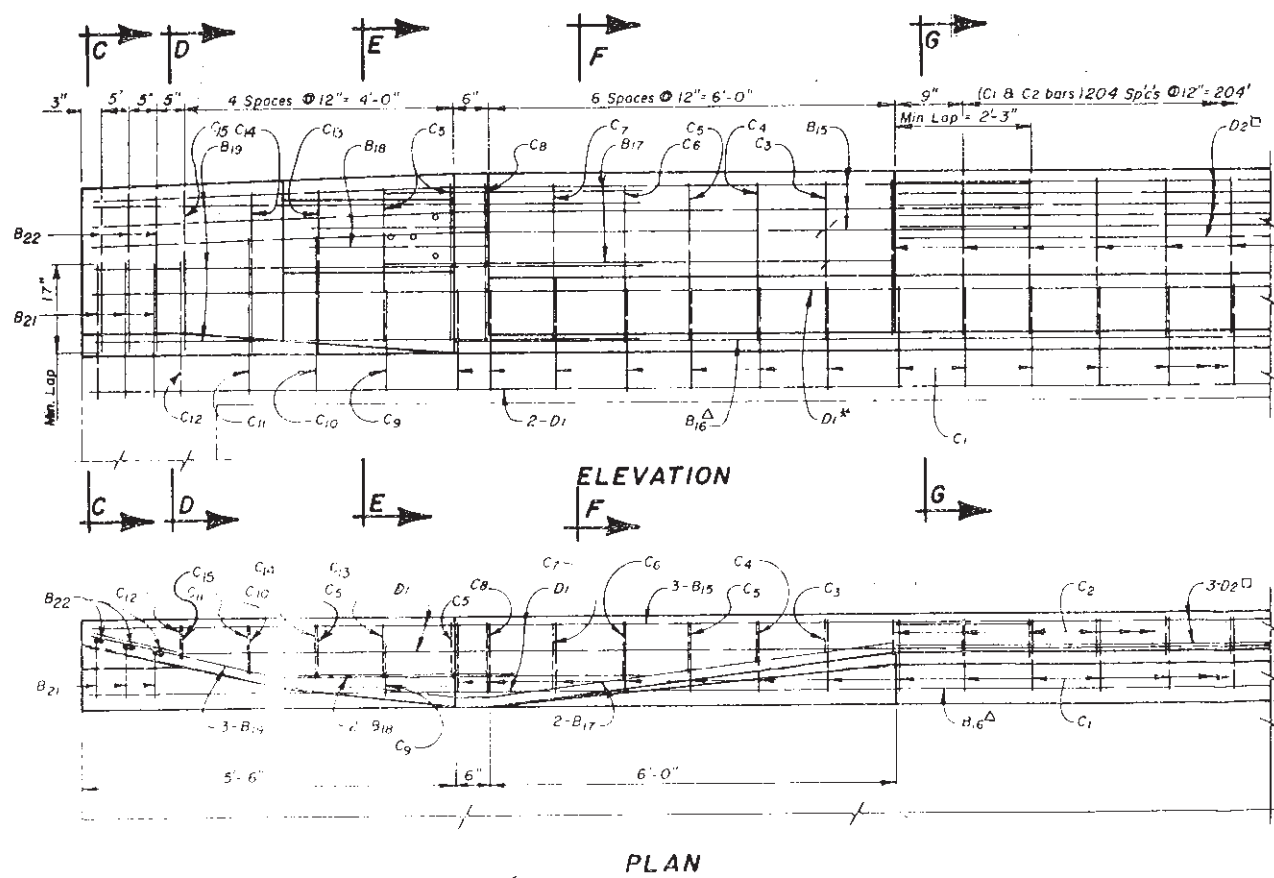
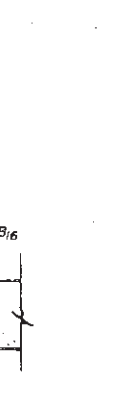
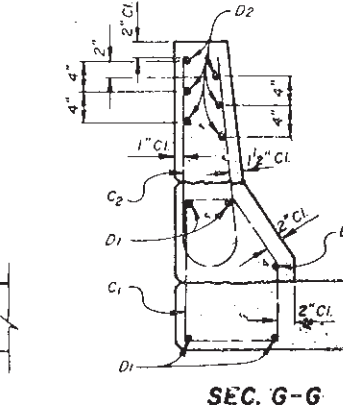
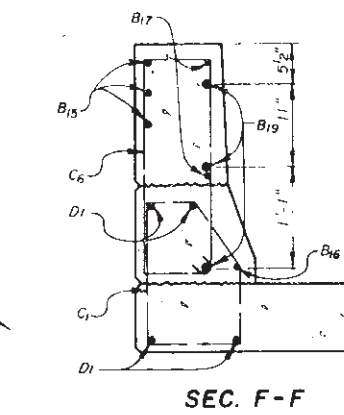
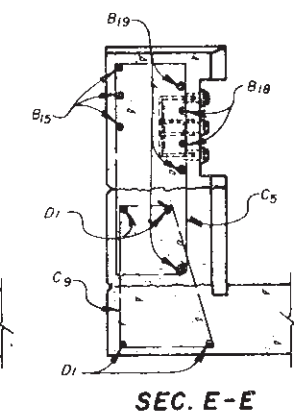
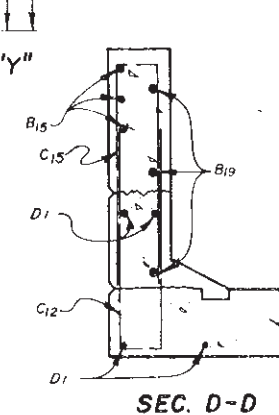
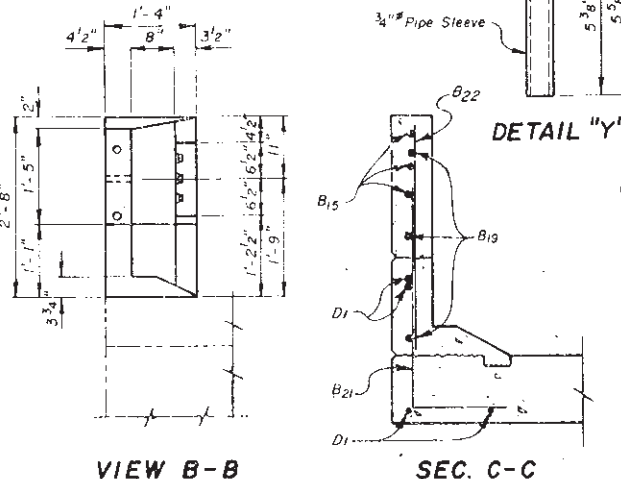
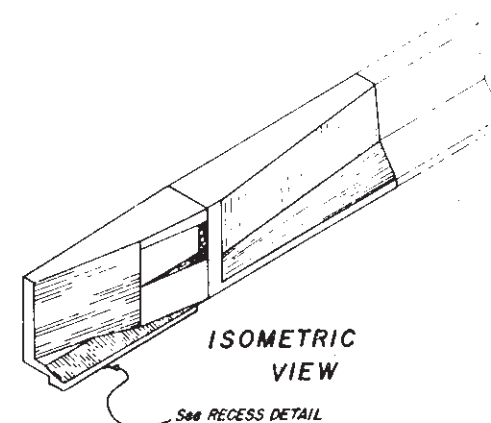
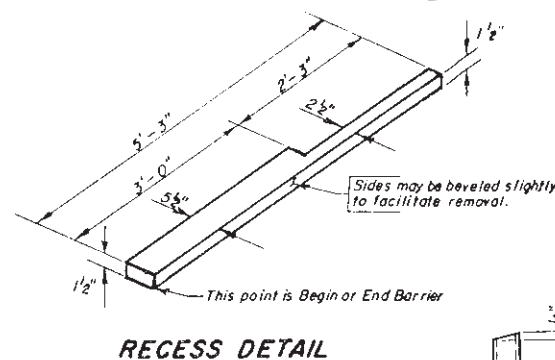
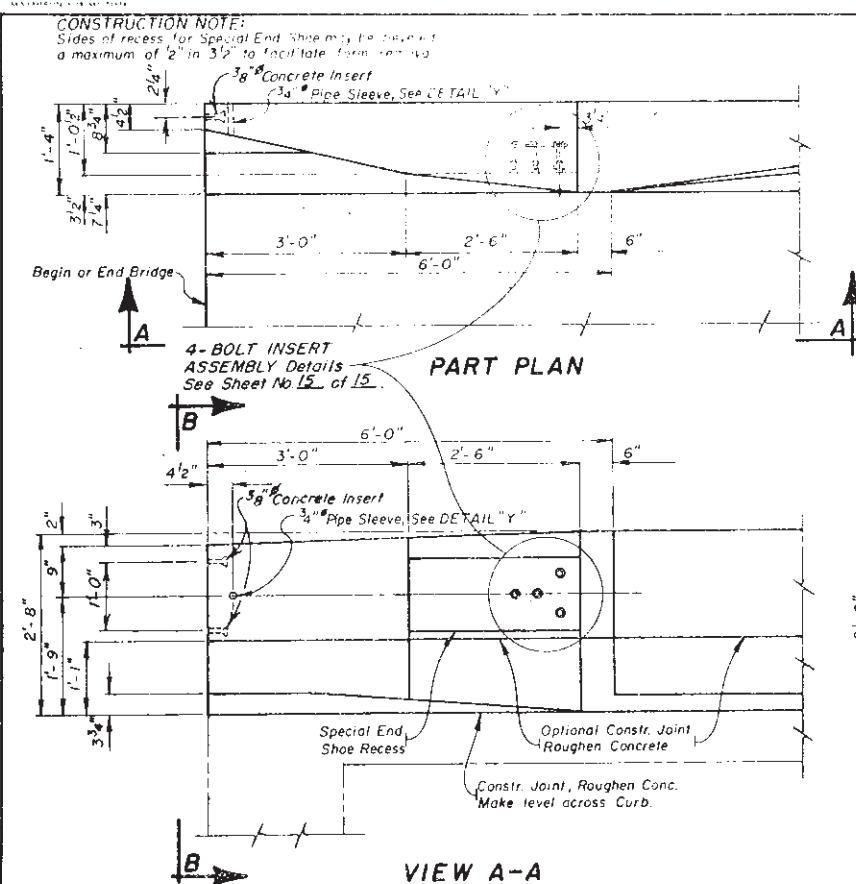


ELEVATION

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	073-468	13	22

GENERAL

1. Use 1/2" Clear Cover on all bars except as shown.
2. Reinforcing Steel shall conform to A.S.T.M. - A615, Grade 60.
3. End Blocks shall be built normal to grade.
4. The Cost of the 4-Bolt Insert Assembly complete in place, including welding and galvanizing, shall be absorbed in the unit price bid for "Class A Concrete, Bridge Deck".
5. 3/8" Concrete Inserts shall be internally threaded for use with a standard machine bolt and shall be of such design that when installed in the concrete it will be capable of sustaining an ultimate load in tension of 2,500 pounds. The inserts shall either be galvanized or made of a corrosion resistant material. The cost of furnishing and installing the inserts shall be absorbed in the unit price bid for Reinforcing Steel except the inserts placed in the beams for attachment of Deck Drain supports shall be included in the unit price bid for Prestressed Concrete Beams.
6. The 3/4" Pipe Sleeve shall be standard galvanized pipe conforming to A.S.T.M. - A53 Grade B, A120 or A500 Grade B. The cost of furnishing and installing pipe sleeves shall be absorbed in the unit price bid for "Class A Concrete, Bridge Deck".



Note: The connection between the drop tube and bottom flange of girder shall be made prior to the placing of the deck slab. See sheet 1 of 15 for spacing of deck drains.

ORIGINAL CONSTRUCTION PLANS

END BLOCK, BARRIER CURB AND DRAIN DETAILS

FOR 229'-6" PRESTR. CONC. GIRDER BRIDGE

32'-0" ROADWAY 0° SKEW
OVER CHERRY CREEK SEC. 16-T9N-R17E
STA. 34+67.25 TO 36+96.75 BRFO073(5) 154
STR. NO. 47-755-203 HS 20-44
(8 ALT.)

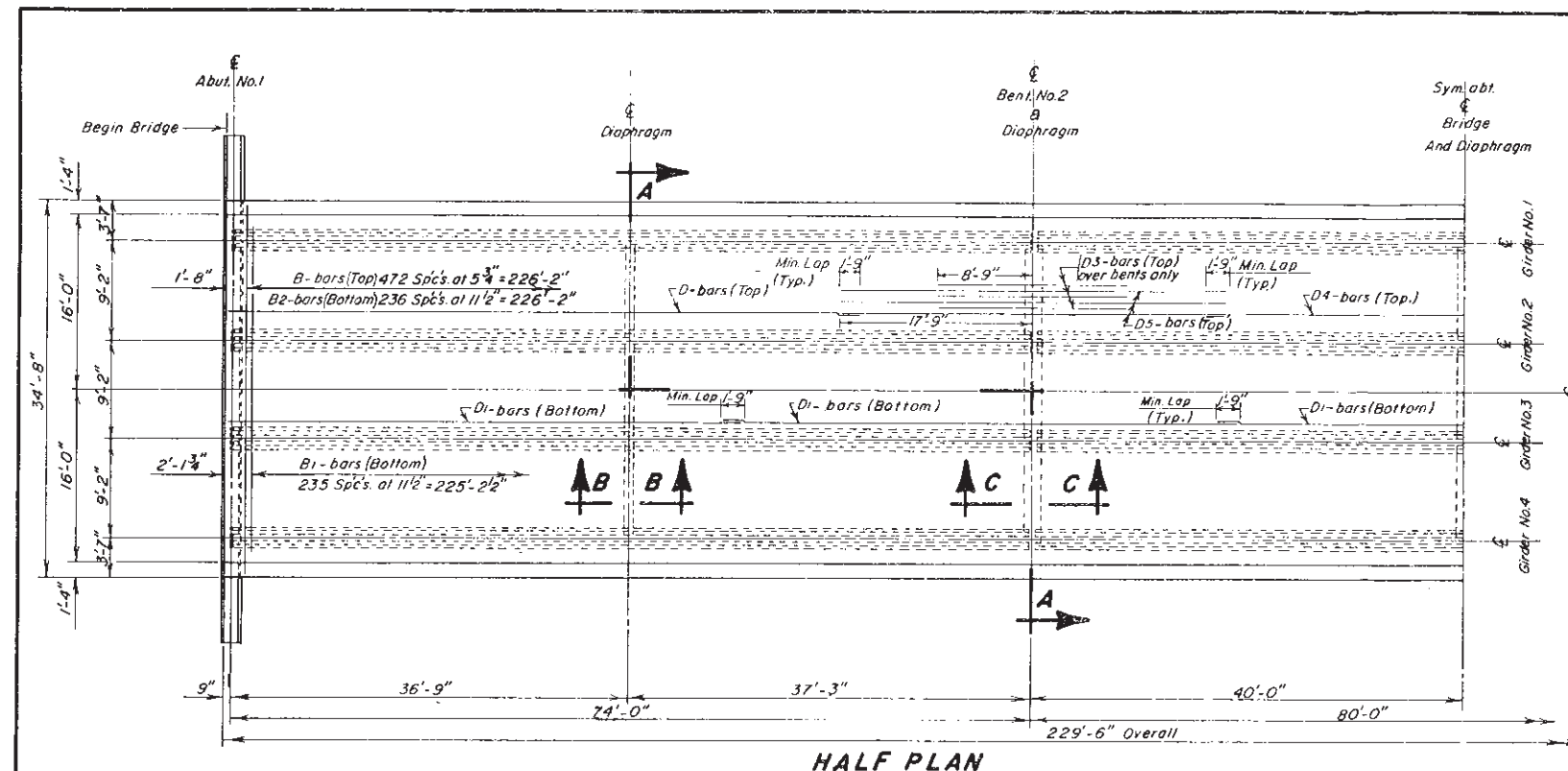
MEADE COUNTY
S. D. DEPT. OF TRANSPORTATION

FEB. 1984 9 OF 10

NOTE -
For listing of re-bars See Reinforcing Schedule on Sheet No. 6 of 15.

DECK DRAIN DETAILS

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	LAK	KCP	
			BRIDGE ENGINEER



GENERAL NOTES—

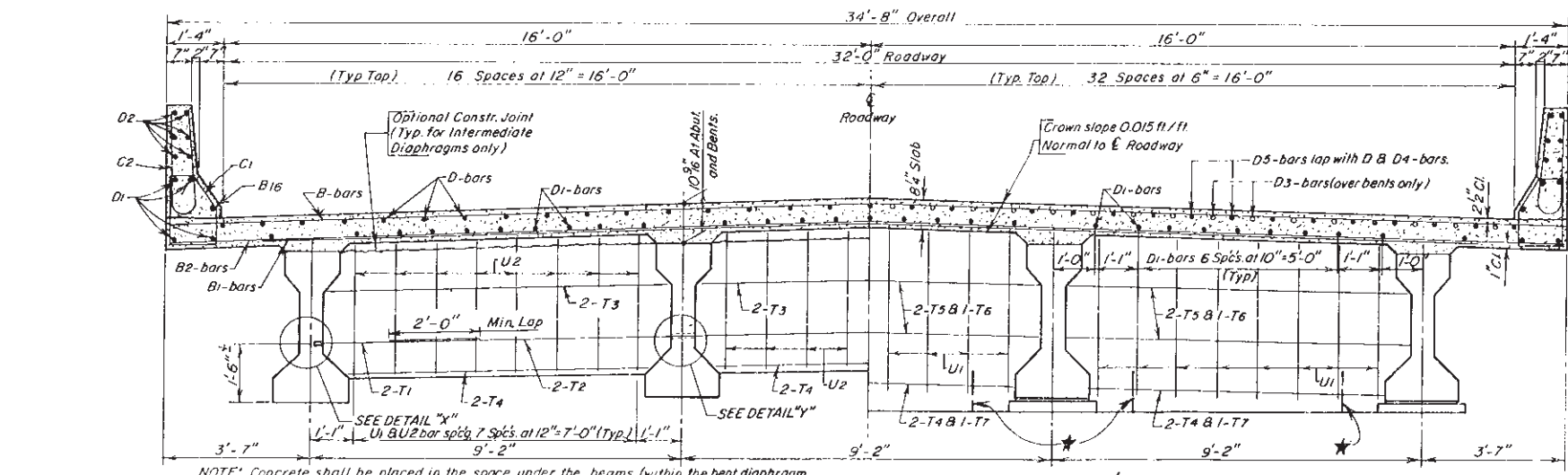
- 1- Insert T2 bars before placing final outer girder in each span.
- 2- Holes and Inserts to accommodate the diaphragm bars shall be provided in the girders at locations shown on this sheet and on sheet No. 8 of 15.
- 3- Holes which are left when the form supports are removed shall be filled with mortar.
- 4- Cost of furnishing and installing 1" inserts shall be included in the unit price bid for the Prestressed Concrete Beams.
- 5- See Sheet No. 11 & 12 of 15 for placement of Z1 bars.
- 6- For locations and details of deck drains see sheets 1 and 7 of 15 respectively.
- 7- The diaphragms at Bent No. 2, 3 and the abut. backwalls shall be poured integrally with the deck slab.
- 8- T1 bars shall be #8 deformed bars. Alternately #7 Richmond Threaded Dowel Bars with rolled threads to fit 1" inserts may be used.

REINFORCING SCHEDULE

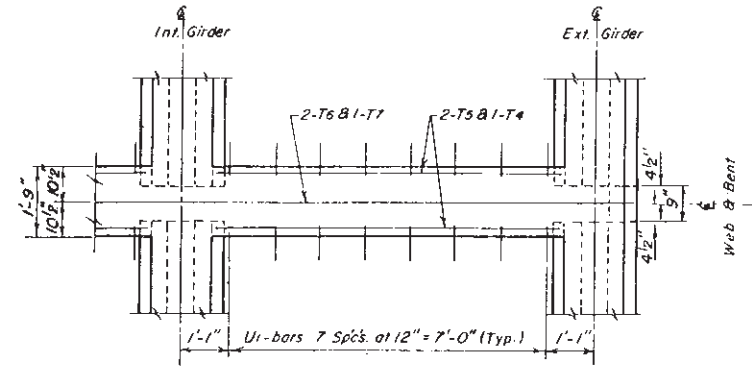
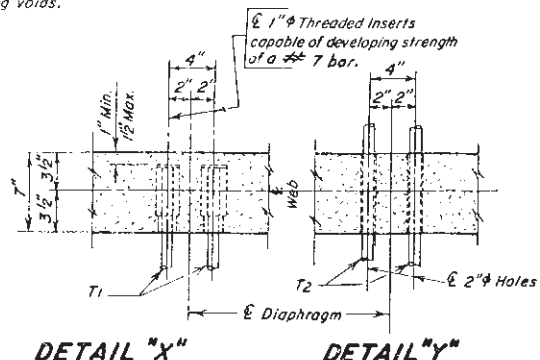
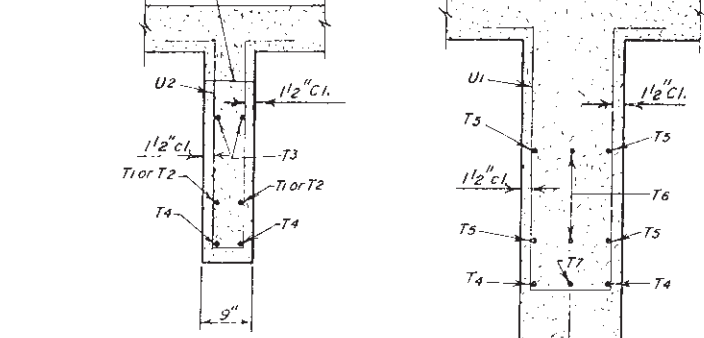
Mk.	No.	Size	Length	Type
ΔB15	12	5	14'-3"	Str.
ΔB16	10	4	44'-6"	Str.
ΔB17	8	4	7'-7"	19A
ΔB18	8	4	2'-6"	Str.
ΔB19	12	8	8'-1"	19B
ΔB20	12	6	3'-2"	17A
ΔB22	12	5	2'-3"	Str.
ΔC1	442	5	5'-10"	T2A
ΔC2	414	5	5'-1"	S11
ΔC3	4	5	6'-7"	T1
ΔC4	4	5	6'-10"	T1
ΔC5	12	5	7'-1"	T1
ΔC6	4	5	7'-4"	T1
ΔC7	4	5	7'-7"	T1
ΔC8	4	5	7'-9"	T1
ΔC9	4	5	5'-9"	T7
ΔC10	4	6	4'-11"	17
ΔC11	4	6	4'-9"	17
ΔC12	4	6	4'-7"	17
ΔC13	4	5	5'-5"	17
ΔC14	4	5	5'-4"	17
ΔC15	4	5	5'-1"	17
ΔD	66	5	58'-7"	Str.
ΔD1	185	5	47'-4"	Str.
ΔD2	48	4	22'-6"	Str.
ΔD3	64	7	17'-6"	Str.
ΔD4	33	5	48'-0"	Str.
ΔD5	66	7	35'-6"	Str.
U1	48	4	11'-4"	S4
U2	72	4	8'-4"	S4
T1	12	8	4'-0"	Str.
T2	6	7	23'-10"	Str.
T3	18	4	8'-3"	Str.
T4	30	5	7'-0"	Str.
T5	24	5	8'-3"	Str.
T6	4	6	27'-9"	Str.
T7	2	4	29'-0"	Str.
ΔB	473	5	34'-4"	Str.
ΔB1	236	5	28'-6"	Str.
ΔB2	237	4	34'-4"	Str.
ΔZ1	90	7	4'-0"	Str.

Bending Details:

NOTE—
All dimensions are out to out of bars.
Δ Bars to be Epoxy Coated. See Sheet No. 11 and 12 of 15 for location of Z1 bars.



NOTE: Concrete shall be placed in the space under the beams (within the bent diaphragm width) during the diaphragm pour. Care shall be taken to get the concrete vibrated into this area. If upon form removal the space is not completely filled and consolidated, the contractor shall grout in the remaining voids.



ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
*Class "A" Concrete - Bridge Deck	Cu. Yds.	290.3
① Reinforcement for Concrete Masonry	Lbs.	1,915
② Epoxy Coated Reinforcement for Concrete Masonry	Lbs.	59,877
Prest. Concrete Beam Type III (73'-9")	Each	8
Prest. Concrete Beam Type III (79'-3")	Each	4
Deck Drains (Girder Bridge)	Each	16

*Includes quantities for Diaphragms, Barrier Curbs, Abutment backwalls and Slab.
①Includes quantities for Diaphragms, Barrier Curbs and Slab.

ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS

FOR
229'-6" PRESTR. CONC. GIRDER BRIDGE
32'-0" ROADWAY
OVER CHERRY CREEK
STA. 34+67.25 TO 36+96.75
STR. NO. 47-755-203

0° SKEW
SEC. 16-T9N-R17E
BRF0073 (5) 154
HS 20-44
(8 ALT.)

MEADE COUNTY
S. D. DEPT. OF TRANSPORTATION
FEB. 1984

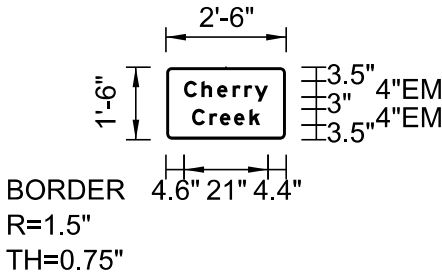
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	f.o.k		
			BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-468	15	22

Plotting Date: 06/03/2016

SIGN DETAIL

SIGN DETAIL
1:50



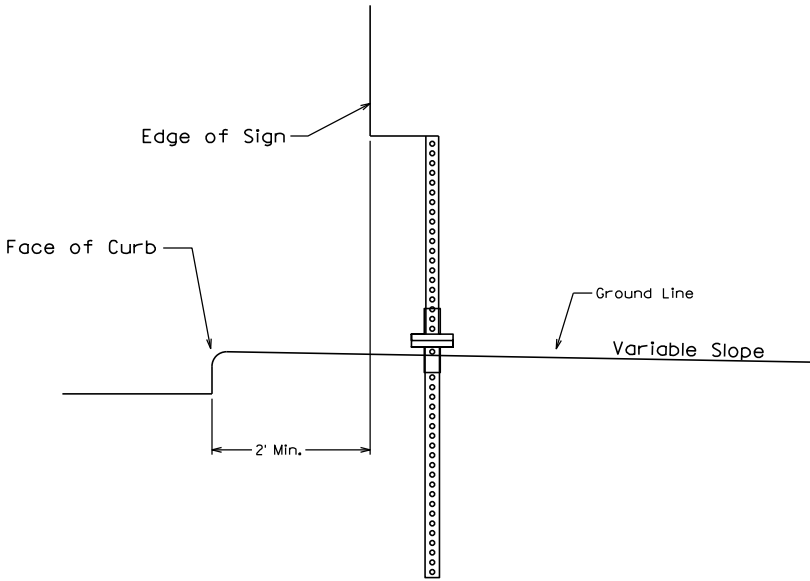
SIGN NUMBER	1
WIDTH x HGHT.	2'-6" x 1'-6"
BORDER WIDTH	0.75"
CORNER RADIUS	1.5"
MOUNTING	Ground
BACKGROUND	TYPE: IV
	COLOR: Green
LEGEND/BORDER	TYPE: IV
	COLOR: WhiteWhite

SYMBOL	ROT	X	Y	WID	HT

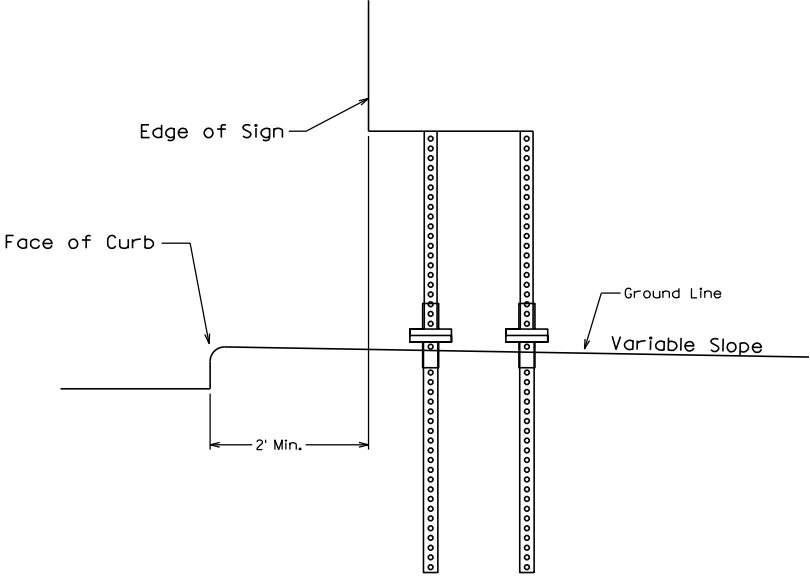
LETTER POSITIONS (X)															LENGTH	SERIESSIZE
C	h	e	r	r	y											EM 2000
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C	r	e	e	k												EM 2000
6.6	10.9	13.5	17	20.9											17.1	43

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-468	17	22

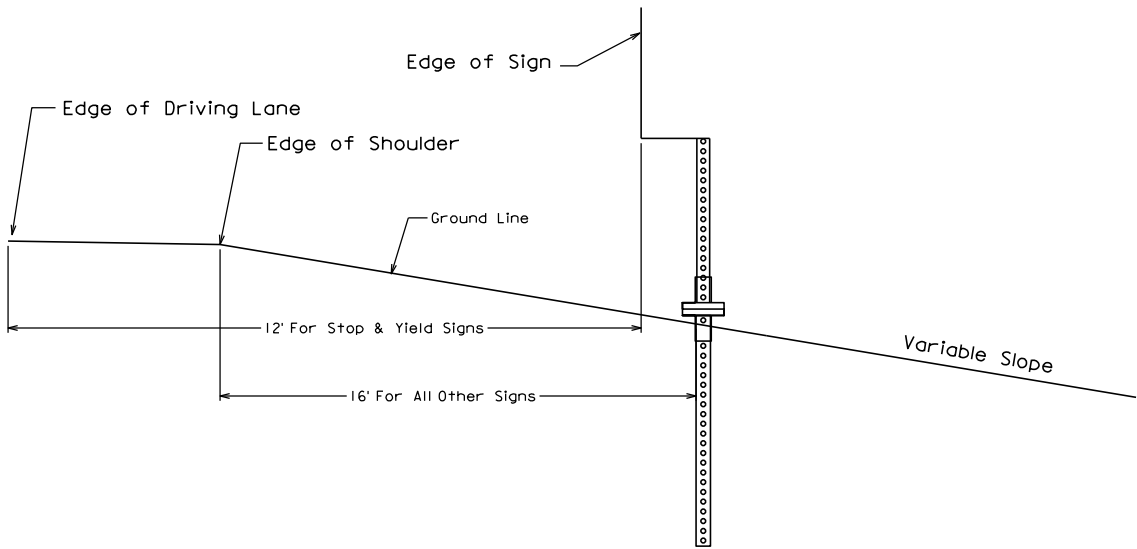
Plotting Date: 07/10/2013



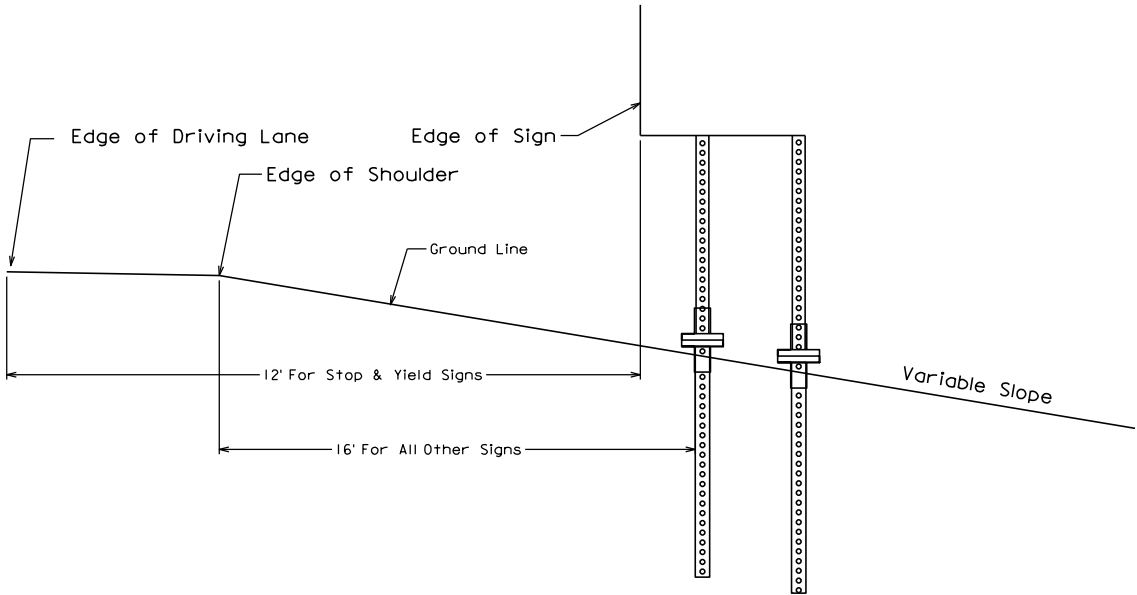
URBAN LOCATION WITH 1 POST
(Drawing shown from face of sign)



URBAN LOCATION WITH 2 POSTS
(Drawing shown from face of sign)

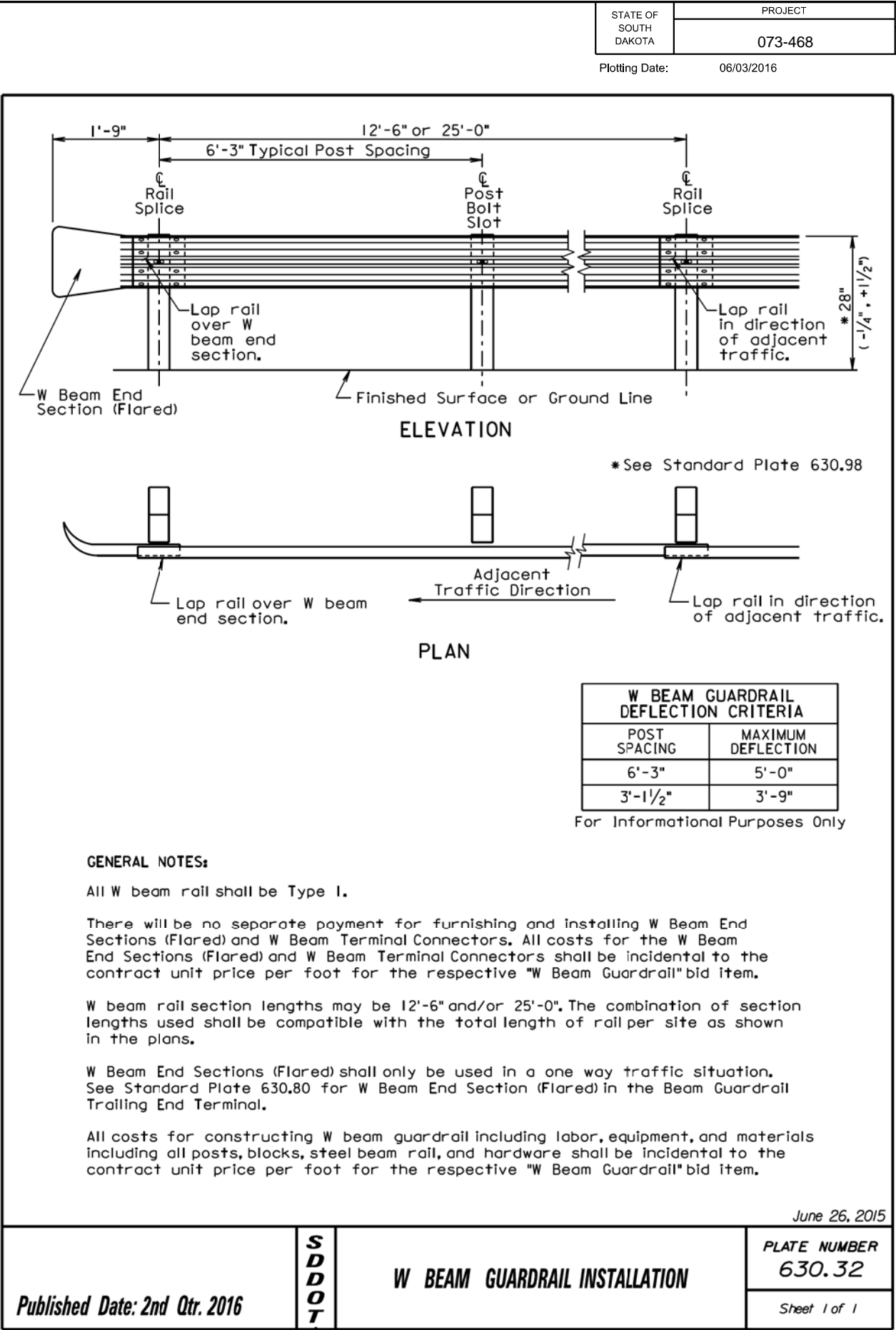
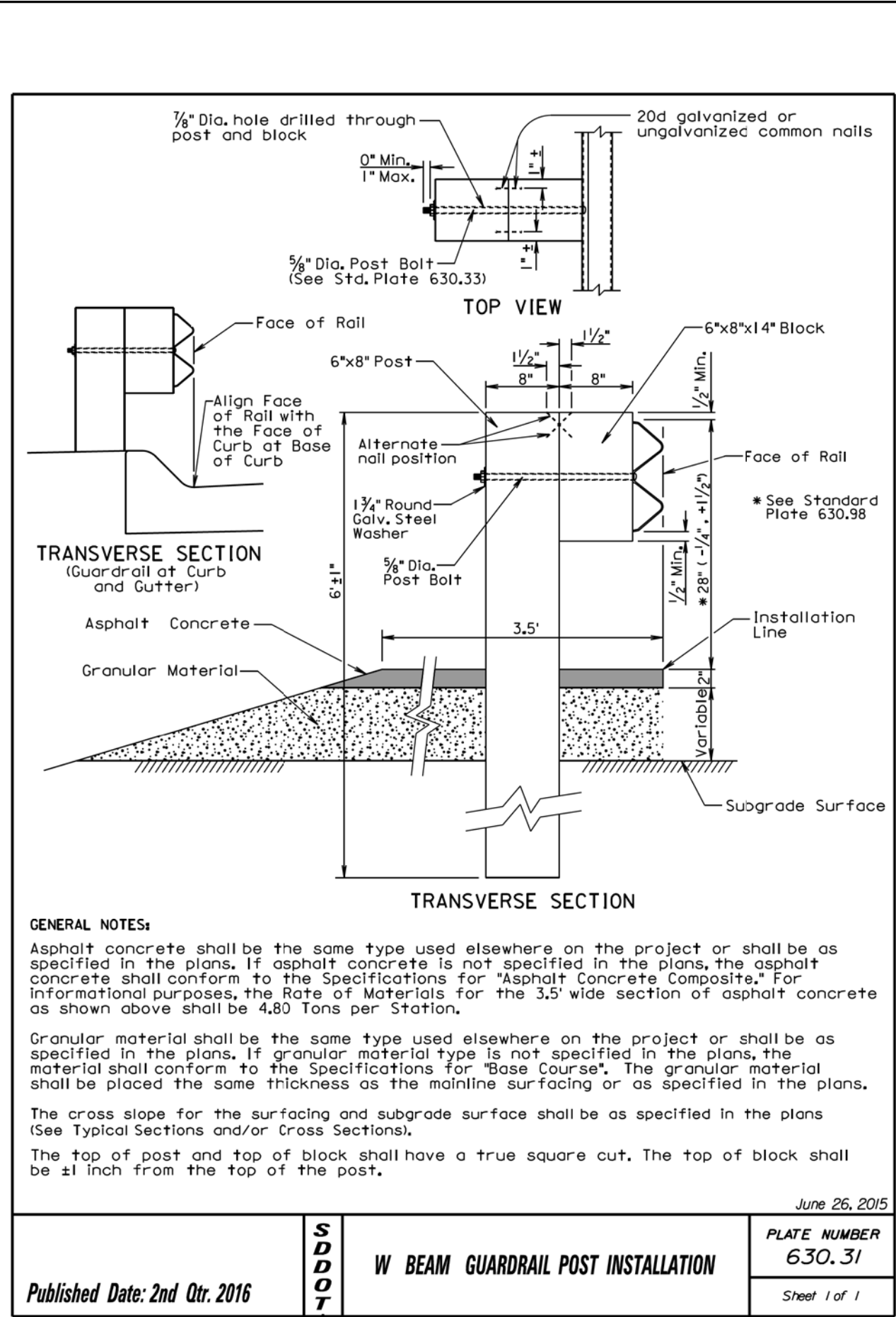


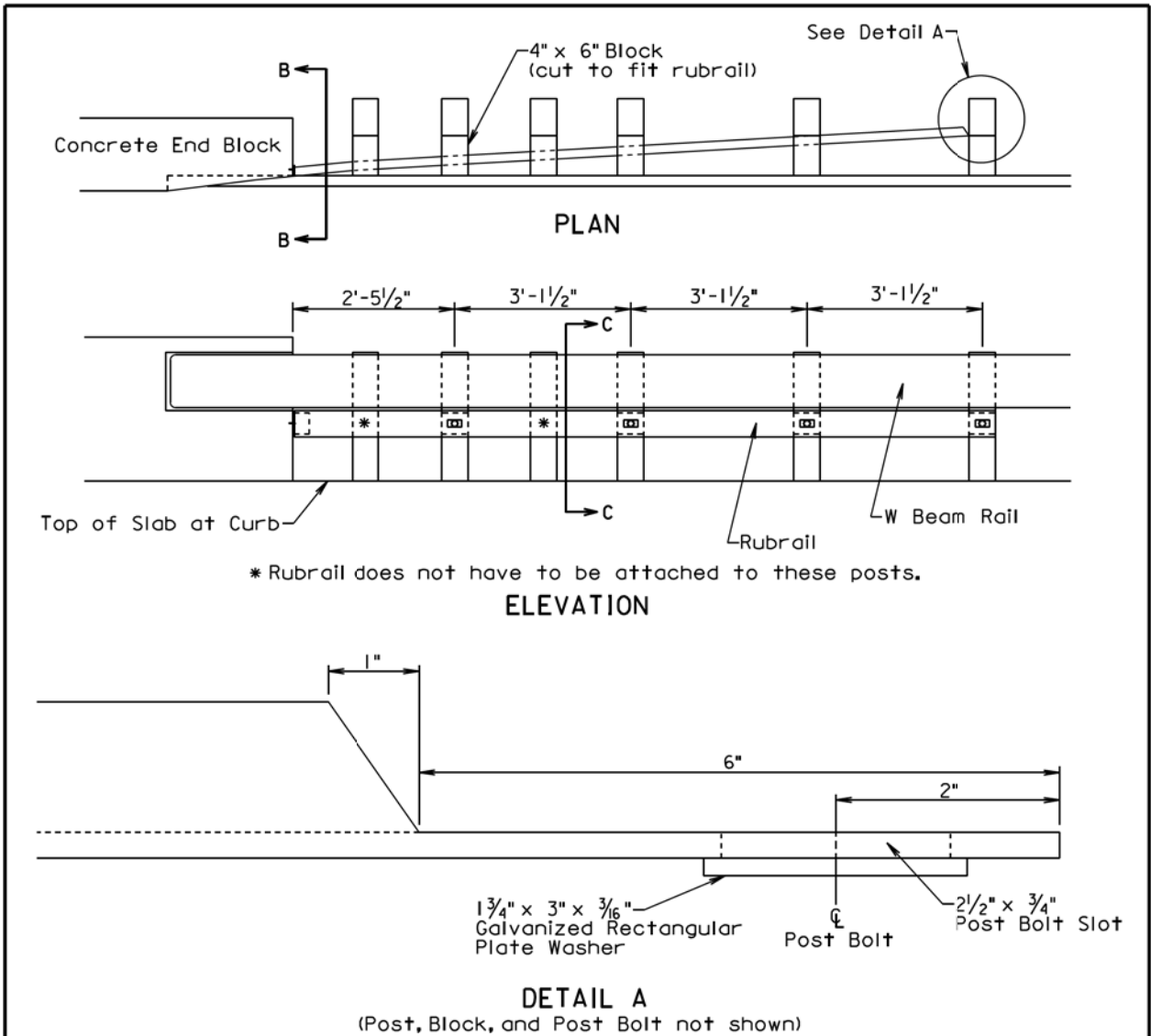
RURAL LOCATION WITH 1 POST
(Drawing shown from face of sign)



RURAL LOCATION WITH 2 POSTS
(Drawing shown from face of sign)

**LATERAL LOCATION FOR
URBAN & RURAL SIGNS**





GENERAL NOTES:

The steel shall be in conformance with ASTM A 36 and shall be galvanized after fabrication in conformance with ASTM A 123. If pre-galvanized steel members are used, all cuts and welds shall be coated with an approved galvanizing paint.

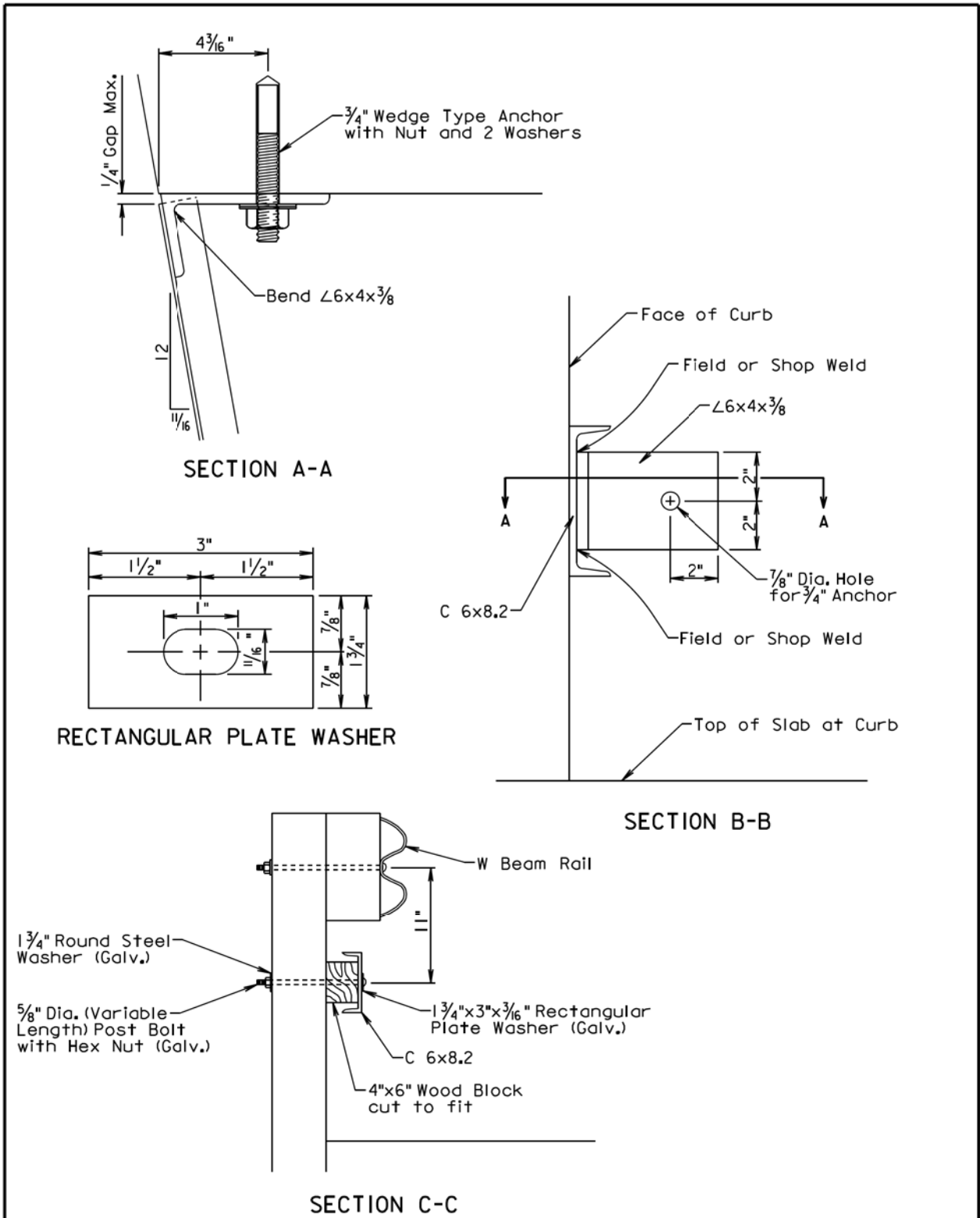
Offset blocks shall be in conformance with section 630 of the Standard Specifications.

All hardware shall be in conformance with the requirements of AASHTO M 180.

The wedge type anchor bolt, nut, and washer shall be hot dipped galvanized or made of a corrosion resistant material. The wedge type anchor shall be capable of sustaining an ultimate load in tension or shear of 17,000 pounds when the anchor is set in 4,500 psi compressive strength concrete. The anchor shall be installed according to the manufacturer's recommendations. The Contractor shall obtain certification from the manufacturer that the anchor meets the tensile and shear requirements and shall submit the certification to the Engineer. The cost for furnishing and installing the wedge type anchor, nut, and washer shall be incidental to the contract unit price per foot for "Rubrail".

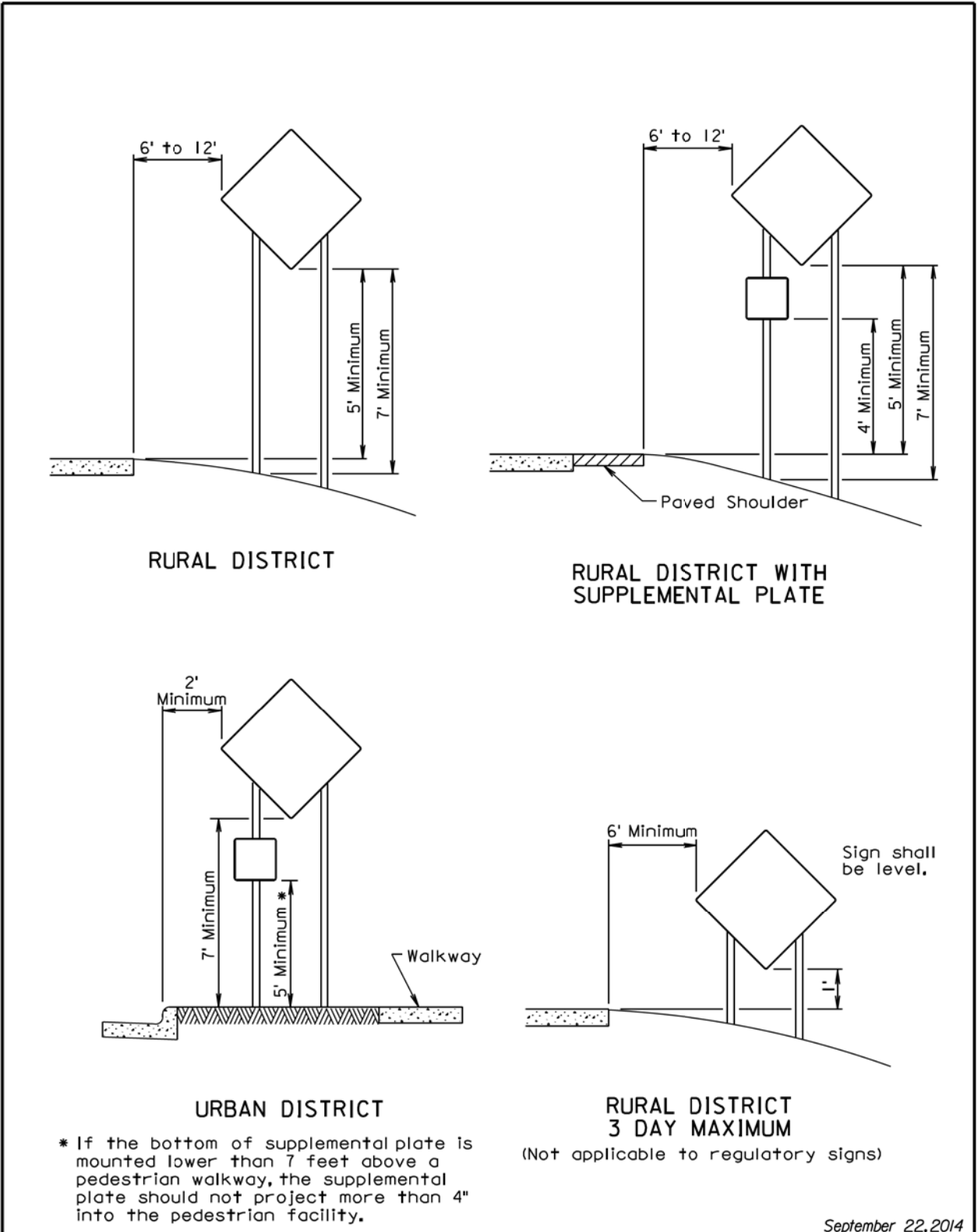
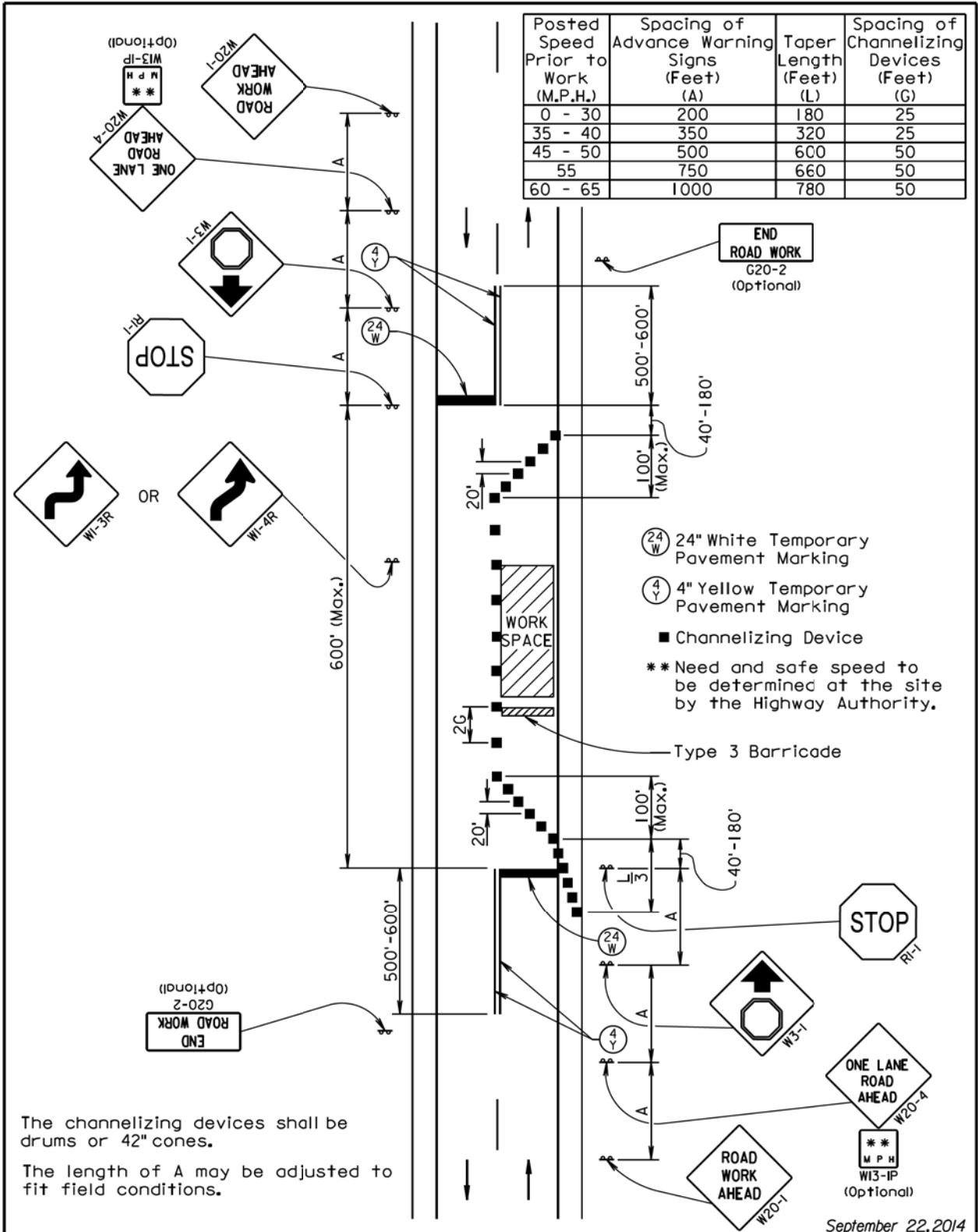
March 31, 2000

Published Date: 2nd Qtr. 2016	S D D O T	RUBRAIL AT BRIDGE END (W BEAM RETROFIT AND DRILLED IN ANCHOR)	PLATE NUMBER
			630.76
			Sheet 1 of 2



March 31, 2000

Published Date: 2nd Qtr. 2016	S D D O T	RUBRAIL AT BRIDGE END (W BEAM RETROFIT AND DRILLED IN ANCHOR)	PLATE NUMBER
			630.76
			Sheet 2 of 2

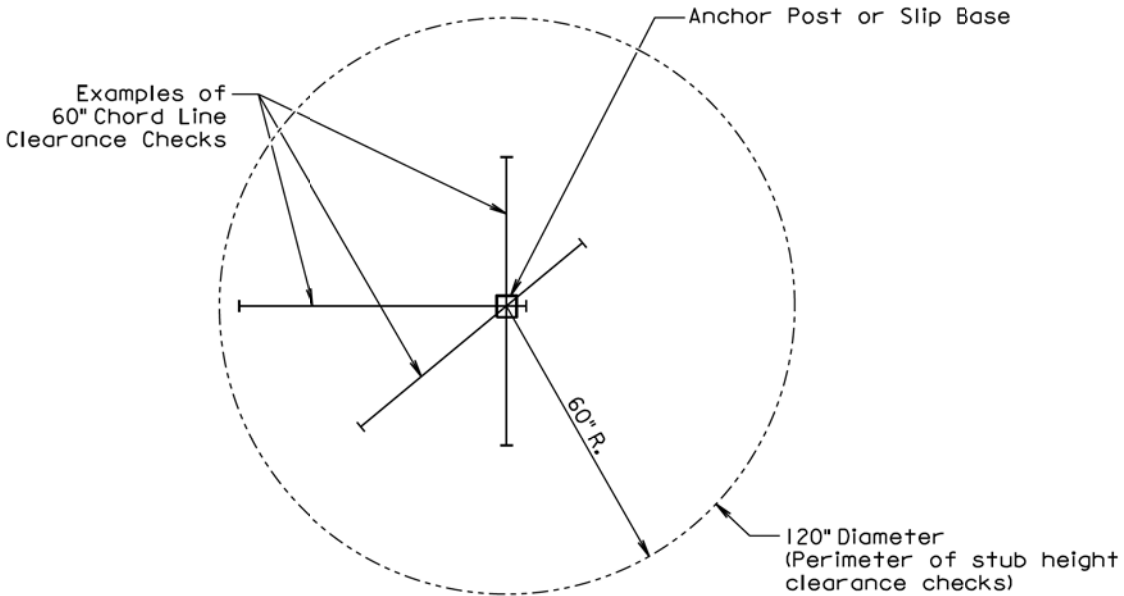


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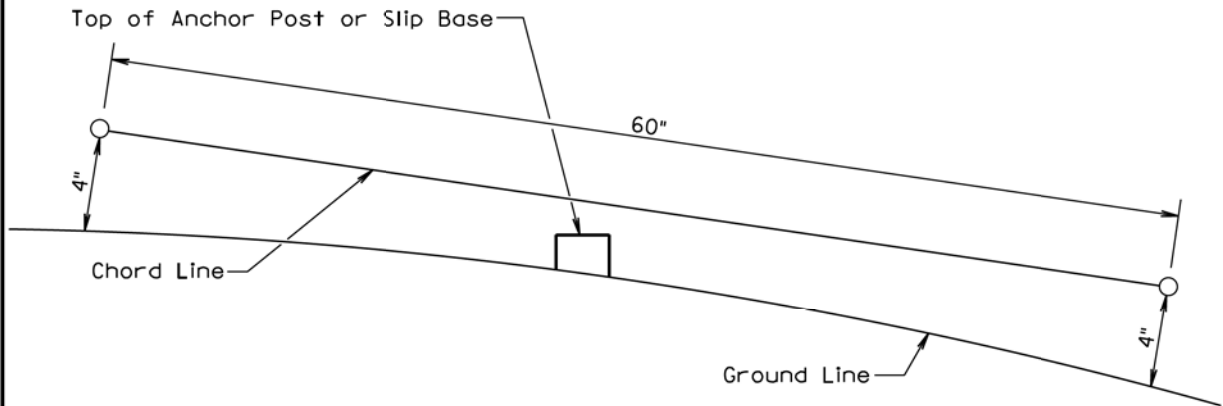
trc11610
- Plotted From -

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-468	22	22

Plotting Date: 06/03/2016



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: 2nd Qtr. 2016	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1