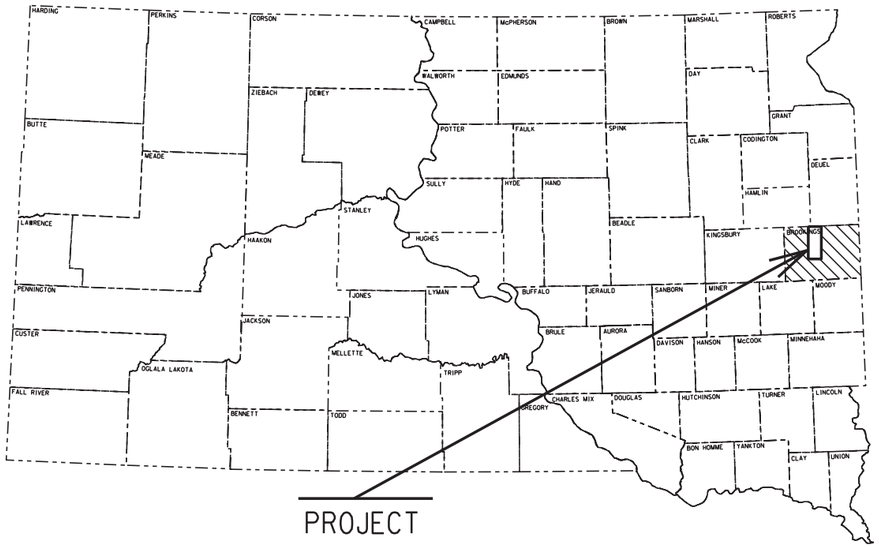
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(43)141	1	51

Plotting Date: 11/09/2015

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT IM 0295(43)141
INTERSTATE 29
BROOKINGS COUNTY

BRIDGE DECK POLYMER CHIP SEAL
PCN 035B



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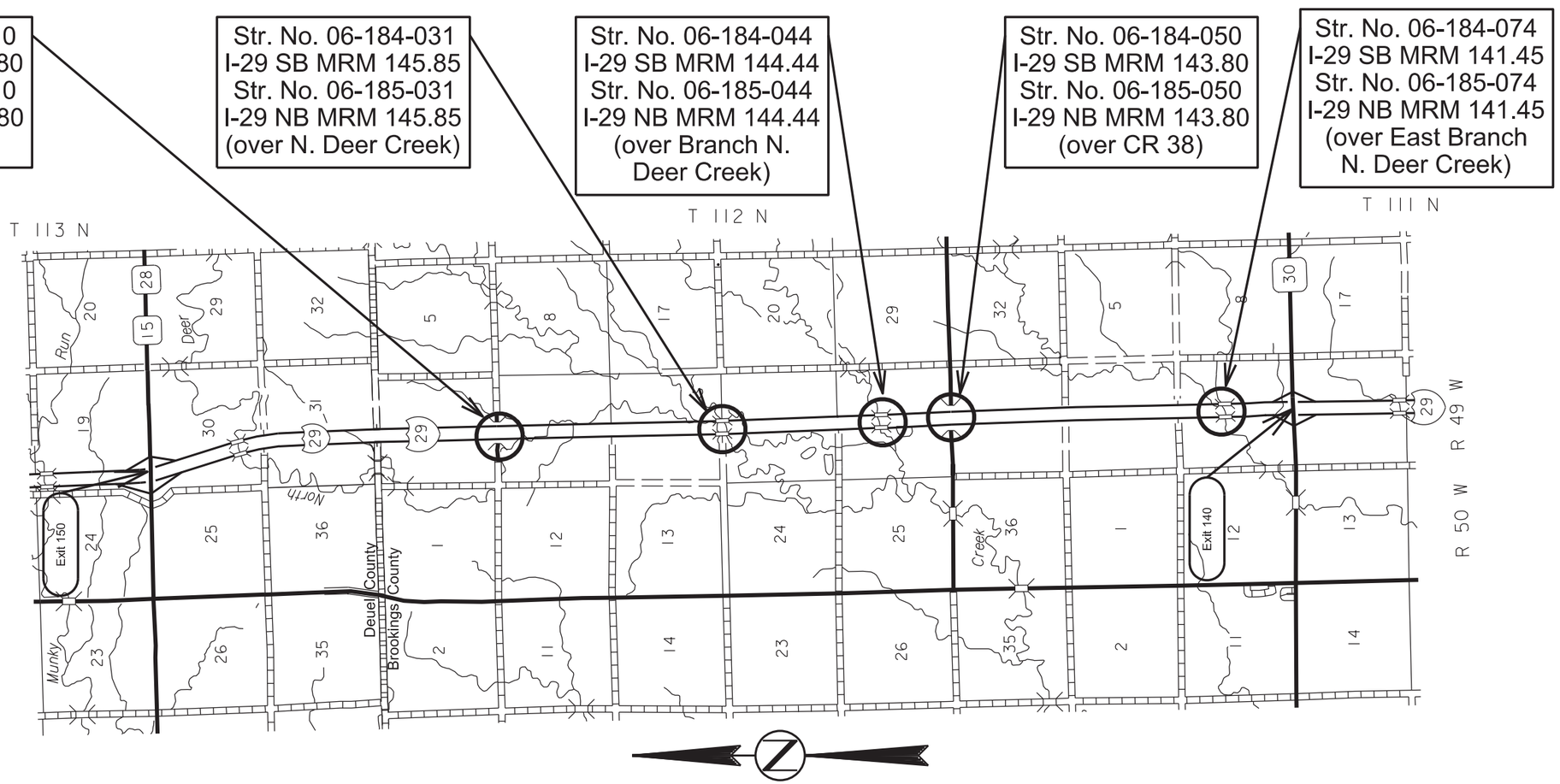


DESIGN DESIGNATION

ADT (2014)	7140
ADT (2034)	8810
DHV	1110
D	51%
T DHV	10.3%
T ADT	22.7%
V	80 MPH

STORM WATER PERMIT
NONE REQUIRED

PLOT SCALE - 1:6000
PLOT NAME - 1
FILE - ...\BROK035B\035B_TITLE SHEET.DGN
PLOTTED FROM - TRAB17882

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0295(43)141	2	51

GENERAL QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
320E1200	Asphalt Concrete Composite	50.0	Ton
633E1400	Pavement Marking Paint, 4" White	3,980	Ft
633E1405	Pavement Marking Paint, 4" Yellow	1,202	Ft
634E0010	Flagging	200.0	Hour
634E0110	Traffic Control Signs	936	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	20	Each
634E0420	Type C Advance Warning Arrow Board	4	Each
634E0600	4" Temporary Pavement Marking Tape Type I	11,520	Ft
634E1002	Detour Signing	1,098.0	SqFt

Str. No. 06-185-074

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	61.0	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	636.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	636.1	SqYd
491E0120	Bridge Deck Grinding	636.1	SqYd
491E0130	Concrete Removal, Class A	5.6	SqYd
491E0140	Concrete Removal, Class B	5.6	SqYd

Str. No. 06-184-074

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	55.9	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	636.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	636.1	SqYd
491E0120	Bridge Deck Grinding	636.1	SqYd
491E0130	Concrete Removal, Class A	5.1	SqYd
491E0140	Concrete Removal, Class B	5.1	SqYd

SPECIFICATIONS

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

Str. No. 06-185-050

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	54.1	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.3	SqYd
491E0140	Concrete Removal, Class B	4.3	SqYd

Str. No. 06-184-050

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	50.2	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

Str. No. 06-185-044

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	39.6	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	306.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	306.1	SqYd
491E0120	Bridge Deck Grinding	306.1	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

Str. No. 06-184-044

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	39.6	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	306.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	306.1	SqYd
491E0120	Bridge Deck Grinding	306.1	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

Str. No. 06-185-031

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	43.4	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	361.7	SqYd
491E0110	Abrasive Blasting of Bridge Deck	361.7	SqYd
491E0120	Bridge Deck Grinding	361.7	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

Str. No. 06-184-031

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	43.4	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	361.7	SqYd
491E0110	Abrasive Blasting of Bridge Deck	361.7	SqYd
491E0120	Bridge Deck Grinding	361.7	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

Str. No. 06-185-010

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	50.2	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

Str. No. 06-184-010

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	50.2	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

TABLE OF QUANTITIES - FOR INFORMATION ONLY

BID ITEM DESCRIPTION	UNIT	STRUCTURE NUMBER, MRM and ROUTE DIRECTION										TOTAL QUANTITY
		06-185-074	06-184-074	06-185-050	06-184-050	06-185-044	06-184-044	06-185-031	06-184-031	06-185-010	06-184-010	
		141.45 NB	141.45 SB	143.80 NB	143.80 SB	144.44 NB	144.44 SB	145.85 NB	145.85 SB	147.80 NB	147.80 SB	
Mobilization	LS	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum
Asphalt Concrete Composite	Ton	50										50
Concrete Patching Material, Bridge Deck	CuFt	61.0	55.9	54.1	50.2	39.6	39.6	43.4	43.4	50.2	50.2	487.6
Two Coat Bridge Deck Polymer Chip Seal	SqYd	636.1	636.1	498.2	498.2	306.1	306.1	361.7	361.7	498.2	498.2	4,600.6
Abrasive Blasting of Bridge Deck	SqYd	636.1	636.1	498.2	498.2	306.1	306.1	361.7	361.7	498.2	498.2	4,600.6
Bridge Deck Grinding	SqYd	636.1	636.1	498.2	498.2	306.1	306.1	361.7	361.7	498.2	498.2	4,600.6
Concrete Removal, Class A	SqYd	5.6	5.1	4.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	43.0
Concrete Removal, Class B	SqYd	5.6	5.1	4.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	43.0
Pavement Marking Paint, 4" White	Ft	450	450	409	409	353	353	369	369	409	409	3,980
Pavement Marking Paint, 4" Yellow	Ft	162	162	129	129	84	84	97	97	129	129	1,202
Flagging	Hour	20	20	20	20	20	20	20	20	20	20	200
Traffic Control Signs	SqFt	936										936
Traffic Control Miscellaneous	LS	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum
Type 3 Barricade, 8' Single Sided	Each	20										20
Type C Advance Warning Arrow Board	Each	4										4
4" Temporary Pavement Marking Tape, Type I	Ft	11,520										11,520
Detour Signing	SqFt	1,098										1,098

PLOTTED FROM - TRAB17892

ENVIRONMENTAL COMMITMENTS

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 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 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

he 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.

SEQUENCE OF OPERATIONS & TRAFFIC CONTROL

The following sequence of operations will be followed unless an alternate sequence is submitted in writing to the Area Engineer prior to the preconstruction meeting and approved.

Work on multiple structures may be completed concurrently. Once the bridge deck work commences the work shall progress continuously until complete.

1. Install traffic control devices to close Phase 1 of the project.
2. Complete Phase 1 work within the limits of the closed lane.
3. Switch traffic control and close Phase 2 of the project. For Phase 2, width restriction signing is required.
4. Complete Phase 2 work within the limits of the closed lane.
5. Complete clean up and remove traffic control devices to open the roadway to traffic.

Refer to each individual bridge repair plan set for location of Phase 1 and Phase 2, along with more detailed phasing and repair requirements.

GENERAL MAINTENANCE OF TRAFFIC

One lane of traffic shall be maintained across each bridge at all times.

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to 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.

A Type 3 Barricade shall be placed at the beginning of each work space and additional Type 3 Barricades shall be placed at ¼ mile spacing in a lane closed to traffic.

The use of interstate maintenance crossovers will not be permitted.

Work activities during non-daylight hours are subject to prior approval.

Sufficient traffic control devices have been included in these plans to provide four lane closure workspaces per standard plate 634.63. A maximum of 4 divided highway lane closures will be measured and paid for.

All closures that are not being used shall be removed. If lane a closure is not needed when workers are not present it shall be removed.

Flagger(s) will be required where work activity and/or equipment may encroach into a lane open to traffic.

Temporary Raised Pavement Markers spaced at 5’ center to center may be used in place of Temporary Pavement Marking Tape, Type I. All Temporary Pavement Marking Tape and Temporary Raised Pavement Markers shall be clean at all times.

Temporary Pavement Marking Tape, Type I shall be paid for once in each lane. Should the Contractor elect to close a lane, remove the lane closure and then reclose the lane again at a later time, the cost of the Temporary Pavement Marking Tape, Type I shall be at the Contractor’s expense. The Estimate of Quantities is based upon 3 lanes closures in the Northbound lanes and 3 lane closures in the Southbound lanes.

Traffic control drums or 42” cones shall be placed on the roadway shoulders to discourage traffic from driving on the shoulders. Placement and spacing of these devices shall be as directed by the Engineer.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days the signs shall be on fixed location, ground mounted, breakaway supports.

REMOVE PAVEMENT MARKING

Pavement marking which conflicts with the temporary traffic control or temporary pavement markings shall be removed by a means that is nondestructive to the surfacing. Payment for this work shall be incidental to the contract lump sum price for TRAFFIC CONTROL MISCELLANEOUS.

TEMPORARY PAVEMENT MARKING

The Contractor will be required to install temporary centerline pavement markings across the bridge decks as required by Section 634.3 L of the Specifications. Temporary Raised Pavement Marker shall be an acceptable substitute for temporary pavement marking tape. Cost of centerline pavement markings shall be incidental to the contract unit price for the various traffic control contract items.

PERMANENT PAVEMENT MARKING

Upon completion of the polymer chip seals, the Contractor shall install white/yellow pavement marking paint across the bridge decks, in a manner which aligns with the pavement marking on the adjacent roadway and to the satisfaction of the Engineer. The centerline skips shall consist of a 10 foot long 4” line placed every 40 feet and the outside edge lines shall be 4” solid line.

The pavement marking paint shall be applied at a minimum rate of 1 gallon per 200 feet of 4 inch wide line.

Immediately prior to applying the pavement marking paint, any debris or loose aggregate shall be removed by brooming, high pressure air, vacuuming, or other methods approved by the Engineer.

An additional 10 ft for each color of pavement marking paint for each bridge has been included in the Estimate of Quantities, for marking any damaged pavement markings beyond the end of the bridge deck.

An additional 250 ft of white pavement marking paint for each bridge has been included in the Estimate of Quantities, for marking the centerline skips removed for the lane taper.

The application of pavement marking paint may not begin until 2 calendar days following completion of the polymer chip seal and shall be completed within 12 calendar days following completion of the polymer chip seal. For each working day the application of pavement marking paint remains uncompleted after the 10 calendar days, the Contractor will be assessed liquidated damages at the rate of $250.00 per day. This liquidated damage provision applies up to the Substantial Completion Date, as extended. After the Substantial Completion Date, liquidated damages will be assessed in accordance with Section 8.8 of the Specifications, until the permanent pavement marking is completed, even though the project may be open to traffic.

All costs associated with furnishing/installing the pavement marking paint and preparing the bridge deck surfaces for painting shall be incidental to the contract unit price per foot for PAVEMENT MARKING PAINT, 4” WHITE and PAVEMENT MARKING PAINT, 4” YELLOW.

OVERWIDTH SIGNING

The Contractor shall furnish and install over width signing as illustrated in the signing details and as required by the Engineer.

The posts used for installing the signs shall yield upon impact and be as designated in the plans.

When the overwidth signing is not required, the installed signs shall be covered or deactivated by an alternate method approved by the Engineer. If the signs are covered, the covering shall completely prevent viewing of the sign. The signs shall be removed during periods of deactivation greater than 30 days.

Upon completion of the work the signs, posts, and hardware shall remain the property of the Contractor.

All costs associated with furnishing, installing, maintaining, and removing the signs shall be incidental to the contract unit price per square foot for DETOUR SIGNING.

COORDINATION OF WORK

Project IM 0295(38)125, PCN 035C, Bridge Painting, with a work site located at Exit 140 on I-29 shall require coordination of work between Contractors, specifically coordination of lane closures on I-29. Due to the close proximity of work sites, it will not be an option to have lane closures in opposite lanes of travel in the same direction within 1 mile either direction of Exit 140.

Project IM 0294(66)164, PCN 034T, Bridge Deck Polymer Chip Seal, with width restrictions shall require coordination of work between Contractors, specifically width restriction signing. Contractors shall work together to coordinate width restriction signing, specifically on I-29.

Both of the above projects are scheduled to let to contract for the 2016 construction season.

Project IM 0295(35)127, PCN 022C, Scour Protection, with identical work sites located at Str. No. 06-184-031, 06-185-031, 06-184-044, 06-185-044, 06-184-074 and 06-185-074 Exit 140 on I-29 shall require coordination of work between Contractors, specifically coordination of lane closures on I-29. This project also has other work sites on I-29 that may require coordination of work between Contractors, specifically coordination of lane closures on I-29. The Contractor for this project is K & L Construction Inc., PO Box 1040, Sergeant Bluff, IA 51054-1040. Phone 712-943-2939

ASPHALT CONCRETE COMPOSITE

50 tons Asphalt Concrete Composite has been included in the Estimate of Quantities. Asphalt Concrete Composite shall be used, as needed, to:

- Stabilize the asphalt shoulders near the bridge ends prior to bridge construction activities commencing.
- Maintain the asphalt shoulders during bridge construction.
- Repair the asphalt shoulders following bridge construction activities.

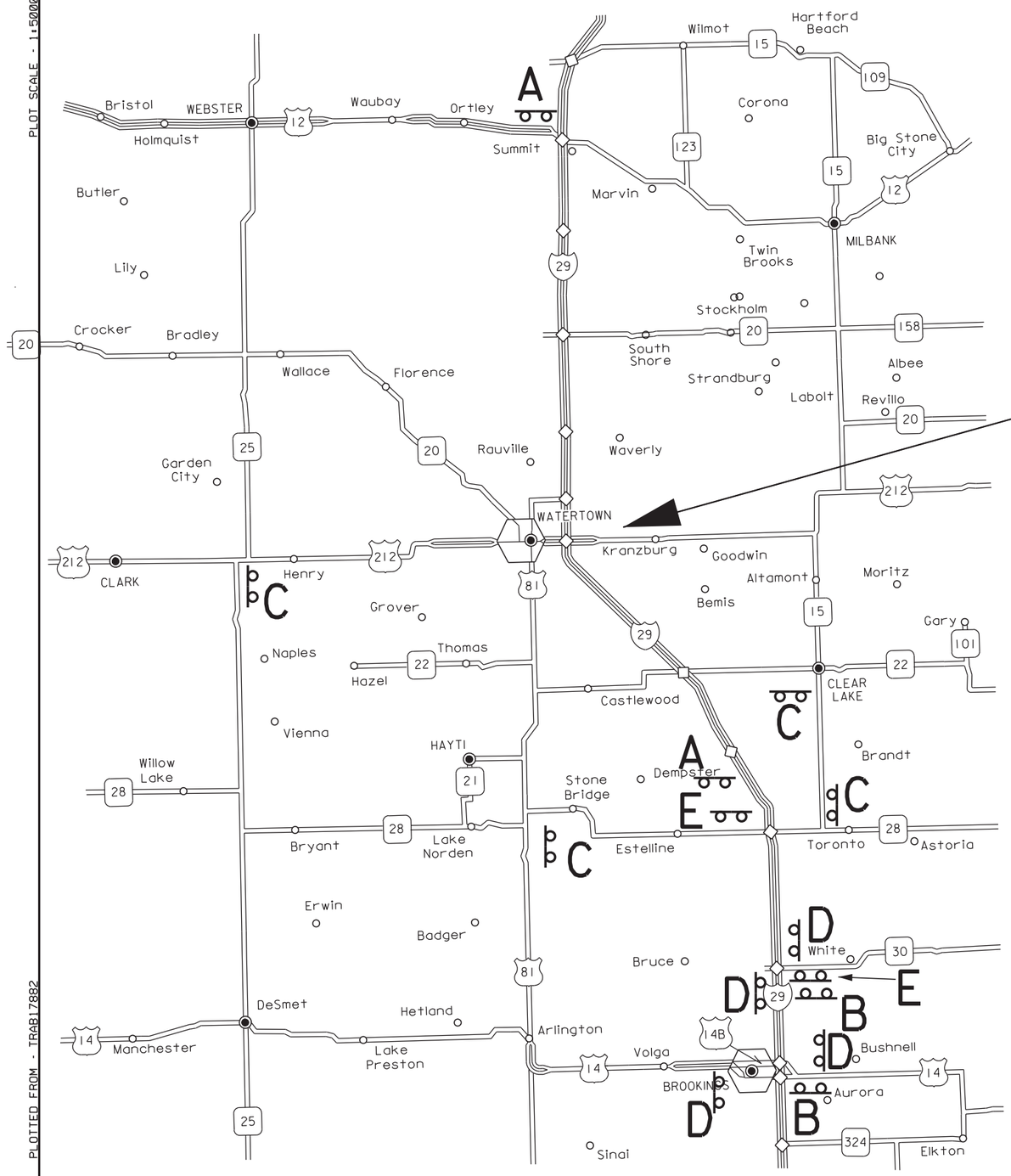
The contract unit price per ton for Asphalt Concrete Composite shall include the removal and disposal of unstable, broken up or deteriorated asphalt pavement and underlying base material.

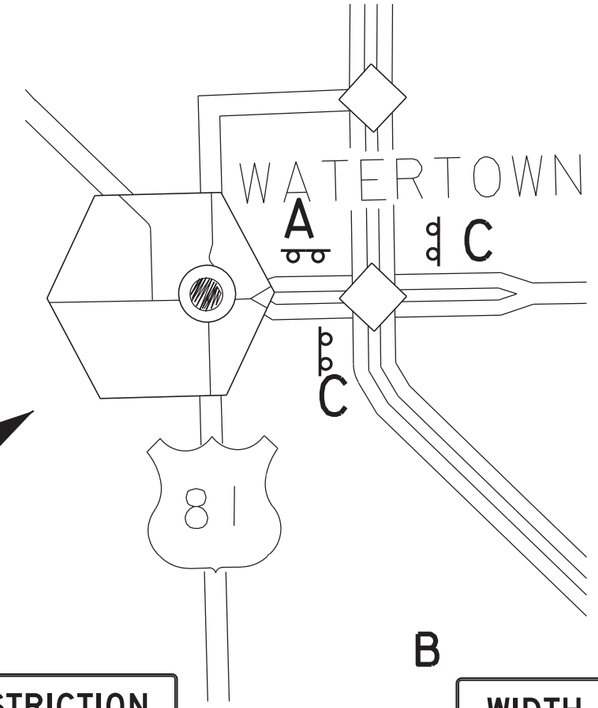
WIDTH RESTRICTION SIGN LOCATIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(43)141	7	51

Plotting Date: 11/09/2015

PLOT SCALE - 1:50000





A

WIDTH RESTRICTION
INTERSTATE 29 12 FT. MAXIMUM
SOUTH OF 28
USE ALT. ROUTE

B

WIDTH RESTRICTION
INTERSTATE 29 12 FT. MAXIMUM
NORTH OF 30
USE ALT. ROUTE

C

WIDTH RESTRICTION
INTERSTATE 29 12 FT. MAXIMUM
SOUTH OF 28
USE ALT. ROUTE

D

WIDTH RESTRICTION
INTERSTATE 29 12 FT. MAXIMUM
NORTH OF 30
USE ALT. ROUTE

E

VEHICLES OVER
12 FT. WIDE
EXIT HERE

Sign E shall be placed on the inside median and outside shoulders.

F

NO VEHICLES
OVER 12 FT. WIDE

Sign F shall be placed on the Southbound On-Ramp at SD28 and the Northbound On-Ramp at SD30.

PLOT NAME - 2

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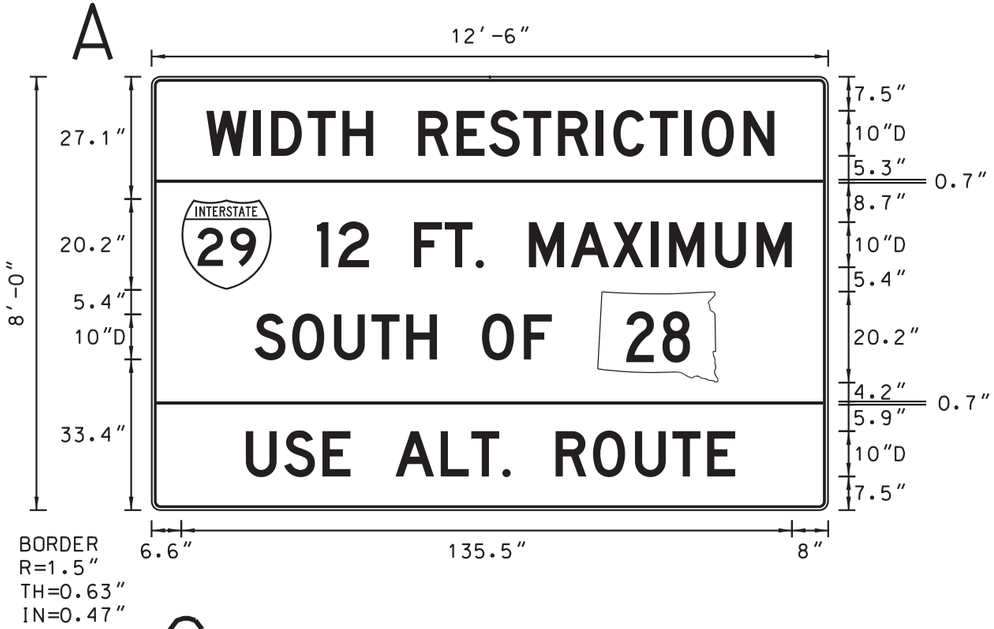
PLOTTED FROM - TRAB17982

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0295(43)141	8	51

Plotting Date: 11/09/2015

Sheet 2 of 2

A



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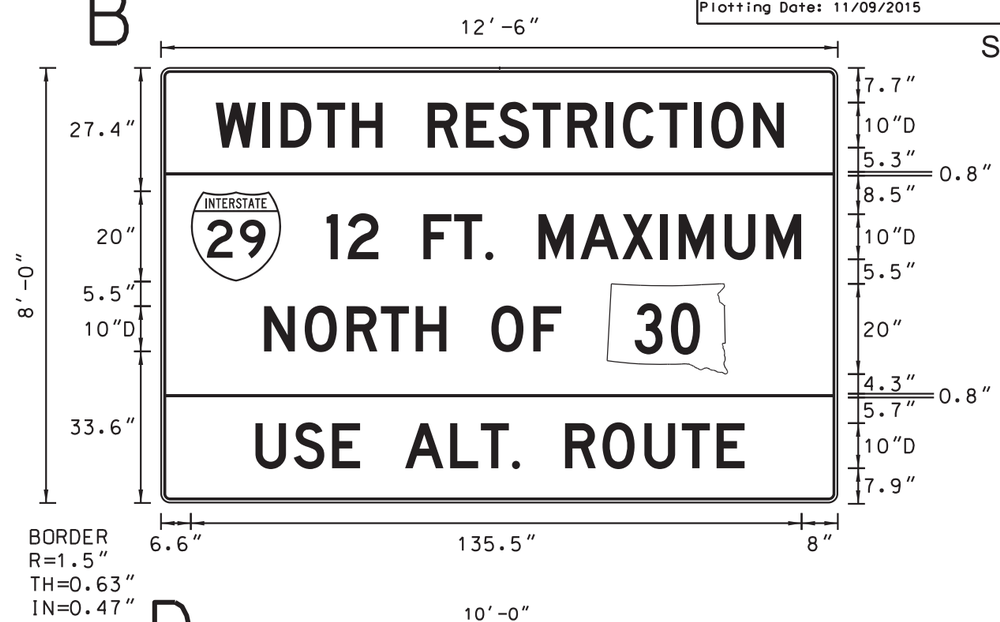

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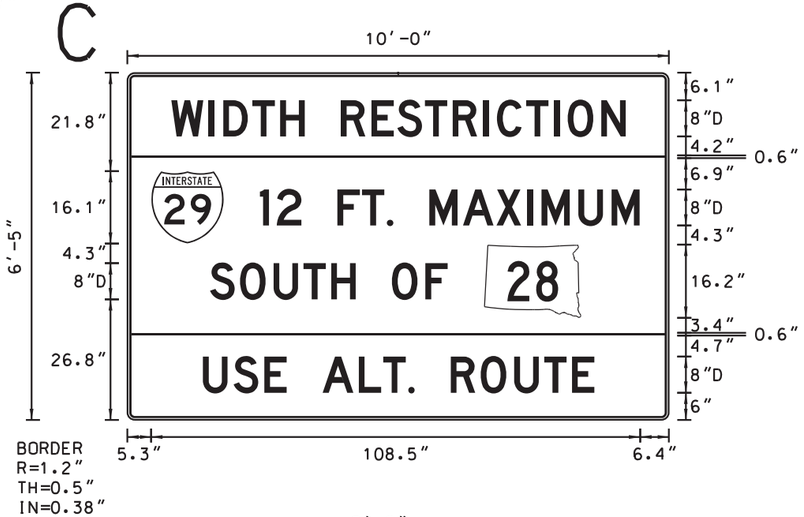

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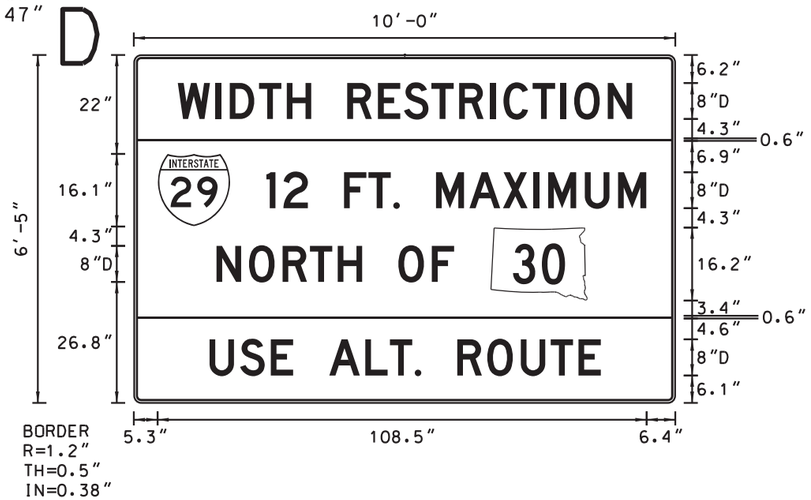

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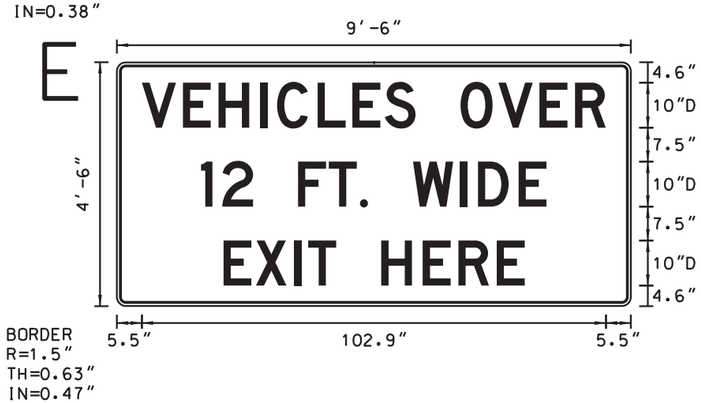

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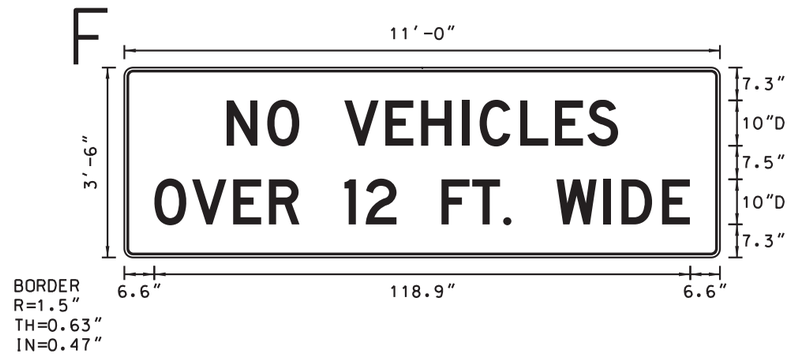


PLOT SCALE - 1:2.8

PLOTTED FROM - TRAB17882

PLOT NAME - 3

FILE - ...\TRAFFIC CONTROL SIGNING.DGN

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

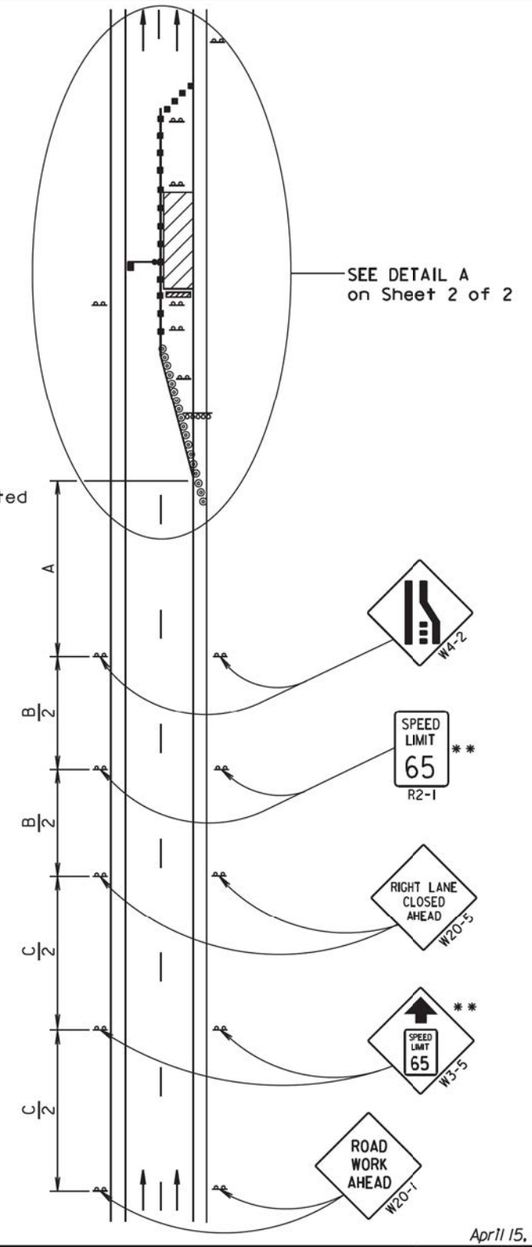
** Speed appropriate for location.

◎ Reflectorized Drum

■ Channelizing Device

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

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



April 15, 2015

Published Date: 4th Qtr. 2015

SDDOT

WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS

PLATE NUMBER 634.63

Sheet 1 of 2

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

* Spacing is 40' for 42" cones.

**Speed appropriate for location.

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

■—● Flagger (As Necessary)

◎ Reflectorized Drum

■ Channelizing Device

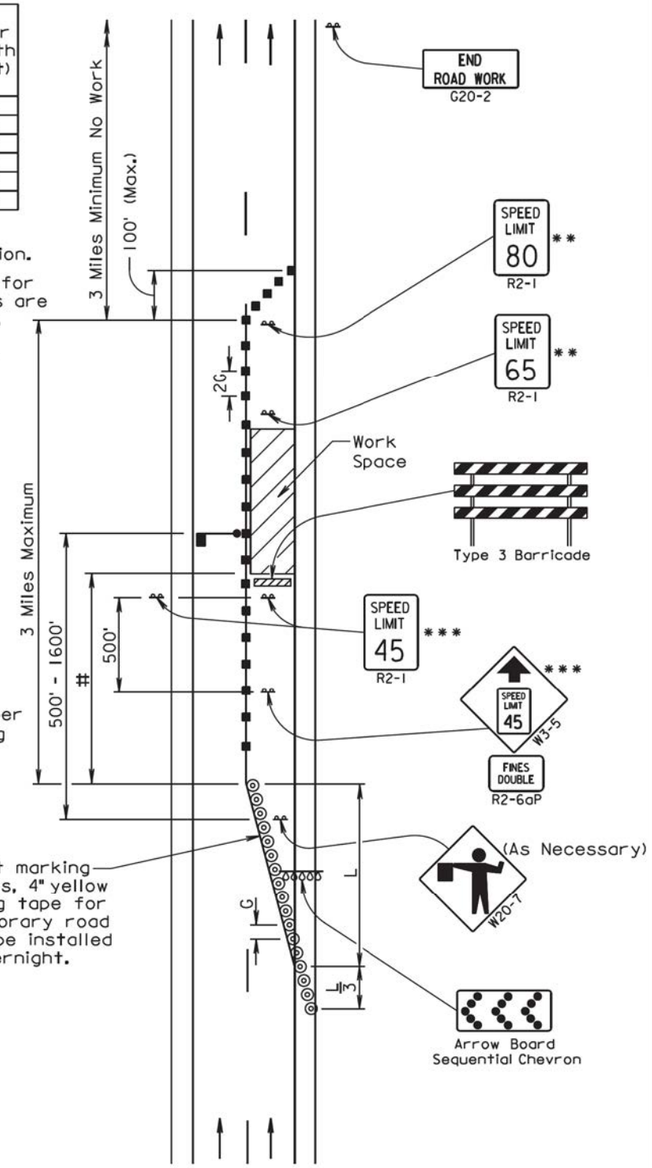
The Work Space shall be a minimum of 500' from the end of the taper.

The FLAGGER sign shall be used whenever there is a Flagger present.

The channelizing devices shall be 42" cones or drums.

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

4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary road markers at 5' spacing shall be installed when the lane is closed overnight.



DETAIL A

April 15, 2015

Published Date: 4th Qtr. 2015

SDDOT

WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS

PLATE NUMBER 634.63

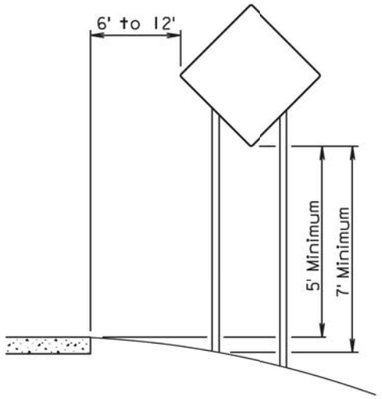
Sheet 2 of 2

PLOT SCALE - 1:200

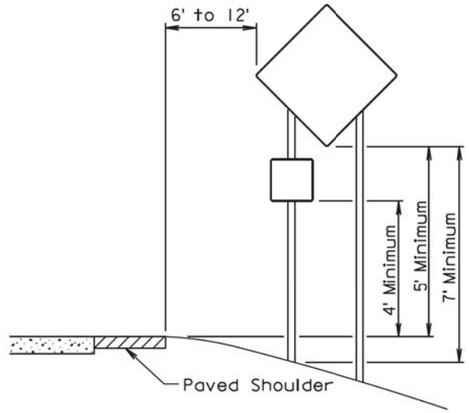
PLOT NAME - 4

FILE - ...\PRJ\BROK035B\634463_&_634463.DGN

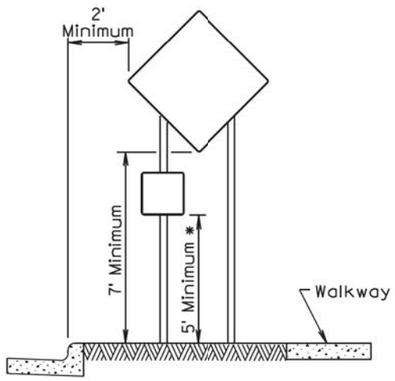
-PLOTTED FROM - TRAB17982



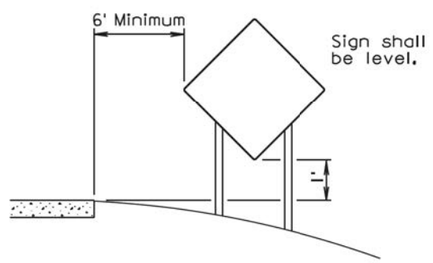
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

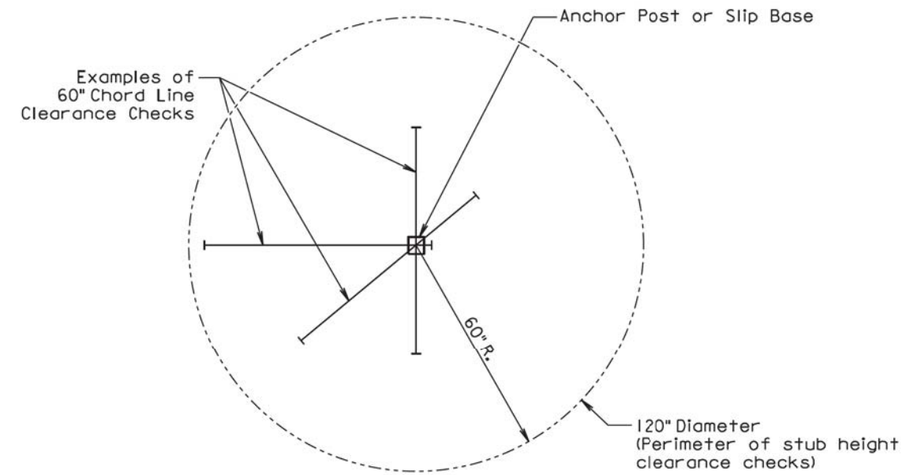


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

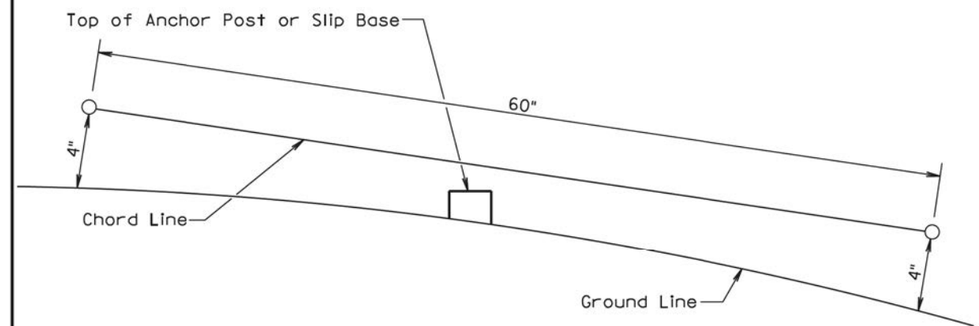
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

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

PLOT SCALE - 1:200
PLOT NAME - 5
FILE - ...\PRJ\BROK035B\63485_&_63499.DGN
PLOTTED FROM - TRAB17892

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 80	4	36" x 48"	12	48
R2-1	SPEED LIMIT 65	8	36" x 48"	12	96
R2-1	SPEED LIMIT 45	8	36" x 48"	12	96
R2-6aP	FINES DOUBLE (plaque)	4	36" x 24"	6	24
W3-5	SPEED REDUCTION AHEAD (__ MPH)	12	48" x 48"	16	192
W4-2	LEFT or RIGHT LANE ENDS (symbol)	8	48" x 48"	16	128
W20-1	ROAD WORK AHEAD	8	48" x 48"	16	128
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	8	48" x 48"	16	128
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
G20-2	END ROAD WORK	4	48" x 24"	8	32
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			936

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	20 Each

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Arrow Board	4 Each

TABLE OF OVERWIDTH SIGNING (Detour Signing)

Quantity	Code	Sign Description	Background Color	Border and Text Color	Sign Width (Ft)	Sign Height (Ft)	Total (Sq Ft)
3	A	Width Restriction - I-29 12 FT Maximum South of SD28 - Use Alternate Route	See Layout on this sheet		12.5	8	300
2	B	Width Restriction - I-29 12 FT Maximum South of SD28 - Use Alternate Route	See Layout on this sheet		12.5	8	200
6	C	Width Restriction - I-29 12 FT Maximum North of SD30 - Use Alternate Route	See Layout on this sheet		10	6.5	390
4	D	Width Restriction - I-29 12 FT Maximum North of SD30 - Use Alternate Route	See Layout on this sheet		10	6.5	260
4	E	Vehicles over 12 Ft Wide - Exit Here	White	Black	9.5	4.5	171
2	F	No Vehicles over 12 Ft Wide	White	Black	11	3.5	77
					TOTAL		1098

Typical Layout

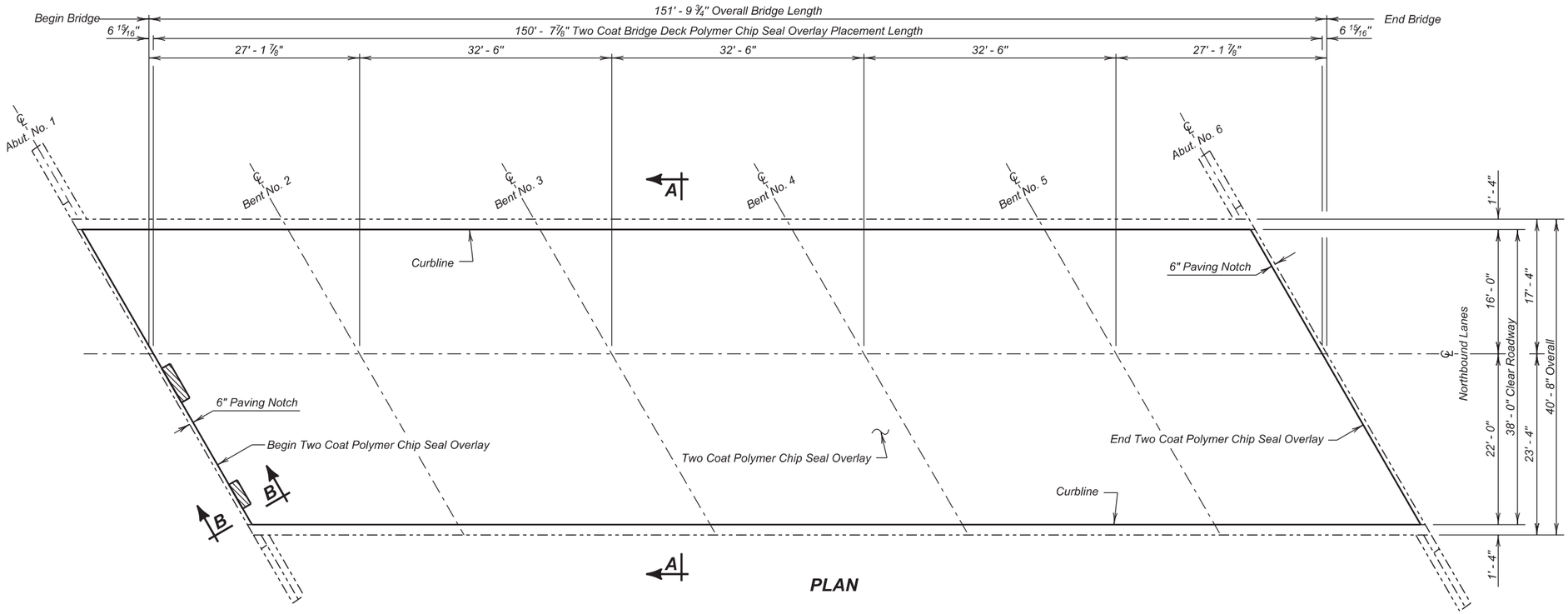
Background - Orange, Legend and Border - Black

Background - White, Legend and Border - Black
Shield as per Standard Highway Sign Catalog

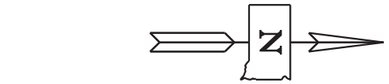
Background - White, Legend and Border - Black

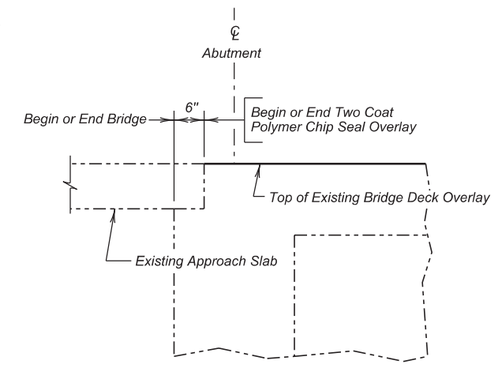
PLOTTED FROM - TRAB17882

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	12	51



PLAN





SECTION B - B

LEGEND -

Shaded area indicates locations of Repair of Low Slump Density Concrete

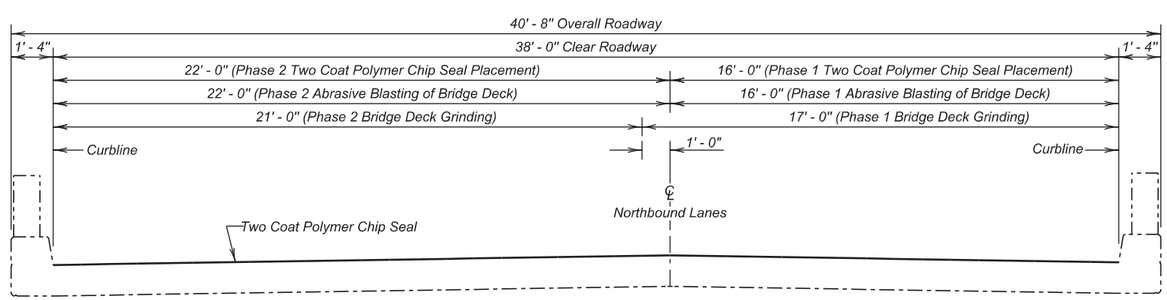
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	27.3	33.7
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	267.8	368.3
	Abrasive Blasting of Bridge Deck	Sq. Yd.	267.8	368.3
	Bridge Deck Grinding	Sq. Yd.	284.6	351.5
*	Concrete Removal, Class A	Sq. Yd.	2.5	3.1
*	Concrete Removal, Class B	Sq. Yd.	2.5	3.1

NOTE :
* 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.

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(NORTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR
151' - 9 3/4" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 30° SKEW R.H.F.
OVER E. BR. N. DEER CREEK — SEC. 7-T111N-R49W
STR. NO. 06-185-074 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRA01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	61.0	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	636.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	636.1	SqYd
491E0120	Bridge Deck Grinding	636.1	SqYd
491E0130	Concrete Removal, Class A	5.6	SqYd
491E0140	Concrete Removal, Class B	5.6	SqYd

SPECIFICATIONS

Construction Specifications: South Dakota Standard Specifications for Roadand 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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

151' - 9¾" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-185-074

FEBRUARY 2016

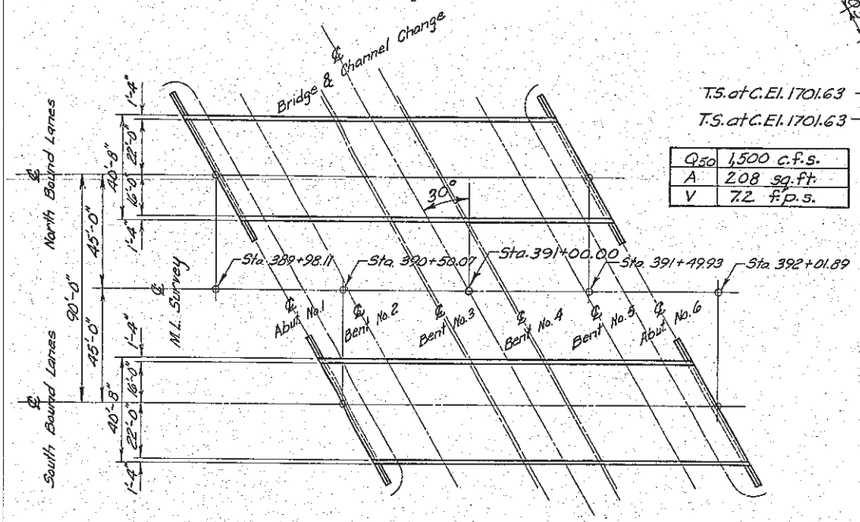
DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRA01		BRIDGE ENGINEER

-X020-

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	14	51

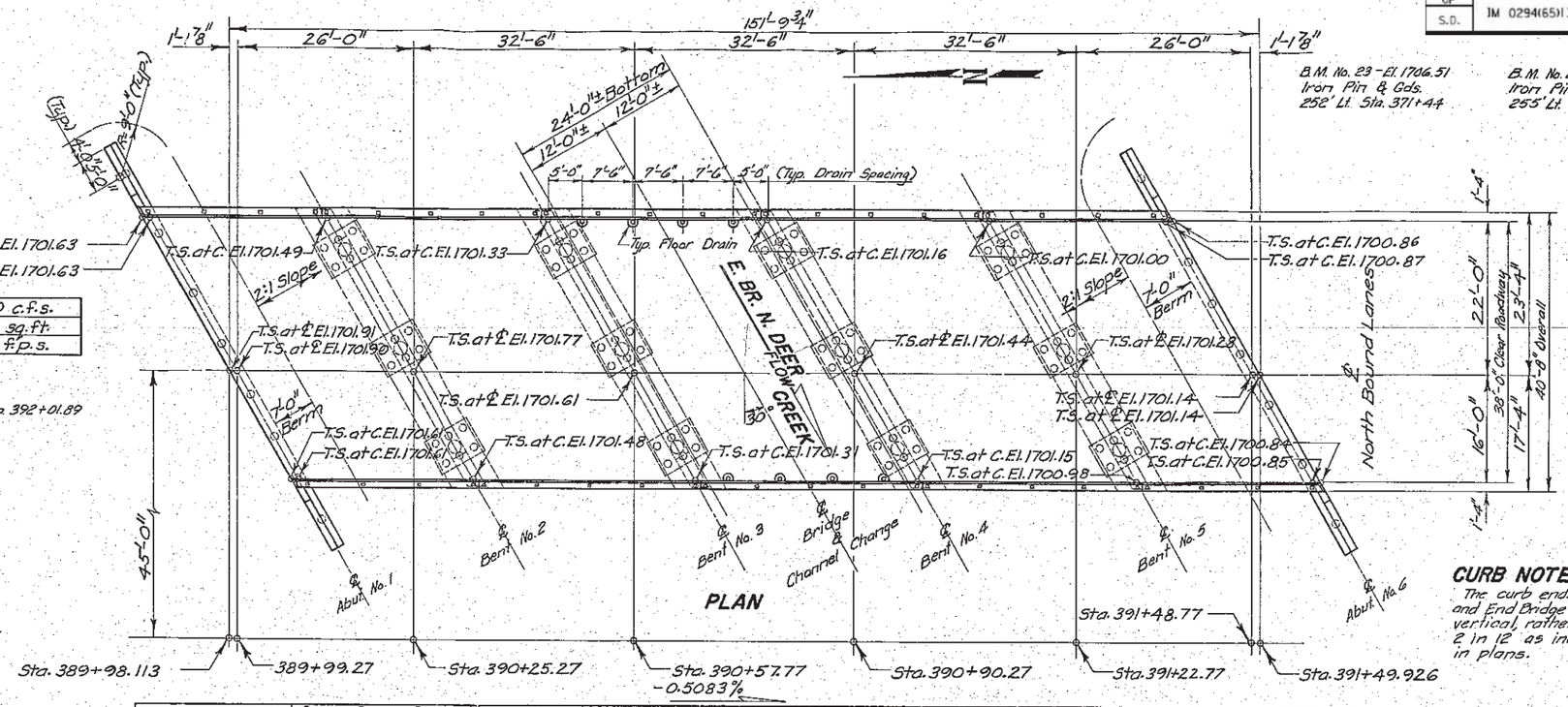
INDEX OF BRIDGE SHEETS—

Sheet No. 1 — General Drawing and Quantities
Sheet No. 2 — Subsurface Investigations
Sheet No. 3 — Details of Abut. No. 1
Sheet No. 4 — Details of Abut. No. 6
Sheet No. 5 — Bent Details
Sheet No. 6 — Superstructure Details
Sheet No. 7 — Details of Type RT-3A Steel Railing, Drains, and Curbs



Q_{50}	1,500 c.f.s.
A	2.08 sq. ft.
V	7.2 f.p.s.

LAYOUT SKETCH



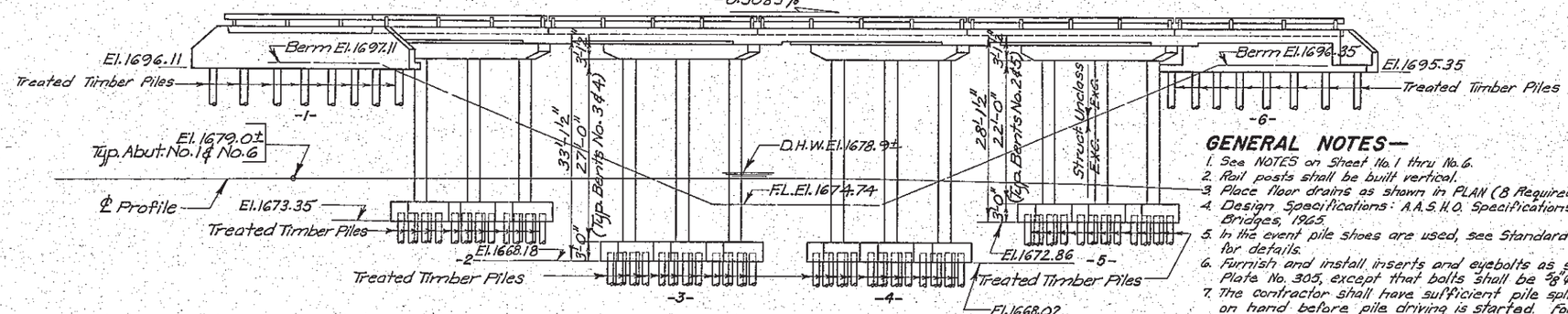
PLAN

CURB NOTE—

The curb ends at Begin Bridge and End Bridge shall be built vertical, rather than beveled 2 in 12 as indicated elsewhere in plans.

SPECIFICATION NOTE—

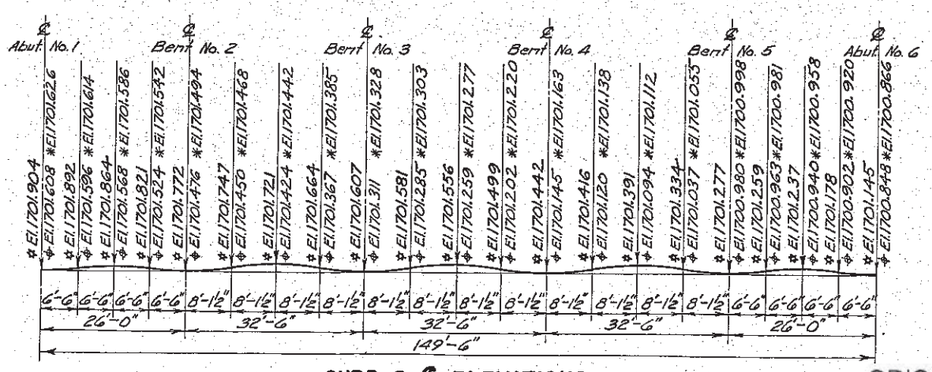
Use South Dakota Standard Specifications for Roads and Bridges, 1969 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.



ELEVATION

GENERAL NOTES—

1. See NOTES on Sheet No. 1 thru No. 6.
2. Rail posts shall be built vertical.
3. Place floor drains as shown in PLAN (8 Required).
4. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
5. In the event pile shoes are used, see Standard Plate No. 301 for details.
6. Furnish and install inserts and eyebolts as shown on Std. Plate No. 305, except that bolts shall be ⅜"Φ.
7. The contractor shall have sufficient pile splice material on hand before pile driving is started. For details see Std. Plate No. 303.1.
8. Prebored holes for piles at Abutments shall be backfilled with granular material acceptable to the ENGINEER and compacted as specified by the ENGINEER. The cost of granular material in place shall be included in the unit price bid for the piles.



CURB & ℄ ELEVATIONS

Elevations indicated with + are Top of Finished Slab at Centerline of Roadway, with + are Top of Finished Slab at Rt. Curb, and with * are Top of Finished Slab at Lt. Curb. Camber for Dead Load Deflection PLUS Plastic Flow, shown on Sheet No. 6 of Bridge Plans, have been included in the elevations shown above.

ESTIMATED QUANTITIES

Bid Item No.	40005	40505	40555	40166	40710	40705	10410	10405
ITEM	Cl. "A" Conc. Cu. Yds.	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type RT-3A Steel Railing - Lin. Ft.	Piles - Lin. Ft. Φ Test	Piles - Lin. Ft. Treated Timber	Excavation - Cu. Yds. Struct.	Excavation - Cu. Yds. Δ Unclass.
Superstructure	263.9	78,335	145	303.6				
Abuts. No. 1 & No. 6	48.6	5,470	760		2@35'=70	14@50'=700	26	
Bents No. 2 & No. 5	56.2	12,460			2@35'=70	34@30'=1020	329	
Bents No. 3 & No. 4	59.8	13,560			2@30'=60	34@25'=850	150	
Totals	428.5	109,825	905	303.6	Φ 240	2570	505	Δ —

Φ One Treated Timber Test Pile shall be driven at Abuts. No. 1 and No. 6 and at Bents No. 2, 3, 4, and 5 before the remaining Piles are ordered.
Δ All Unclass. Exc. to be done by others.

	Std. Exc.	Final Pile	Final Pile Bent	Test Pile	Test Pile Bent
Abut #1	17.0	24.5	30.9	50.0	5.0
B2	15.0	22.5	29.5	22.5	21.5
B3	21.8	30.0	27.3	24.3	5.2
B4	22.2	22.5	3.3	3.3	2.3
B5	16.5	5.5	2.2	3.3	2.3
Abut #6	17.0	27.2	0	28.7	2.3
Total	109.5	142.1	29.7	132.4	41.6

Finaled 11-30-71 E.T.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-074

PLANS BY
BRIDGE SEC., S. DAK. DEPT. HWYS.

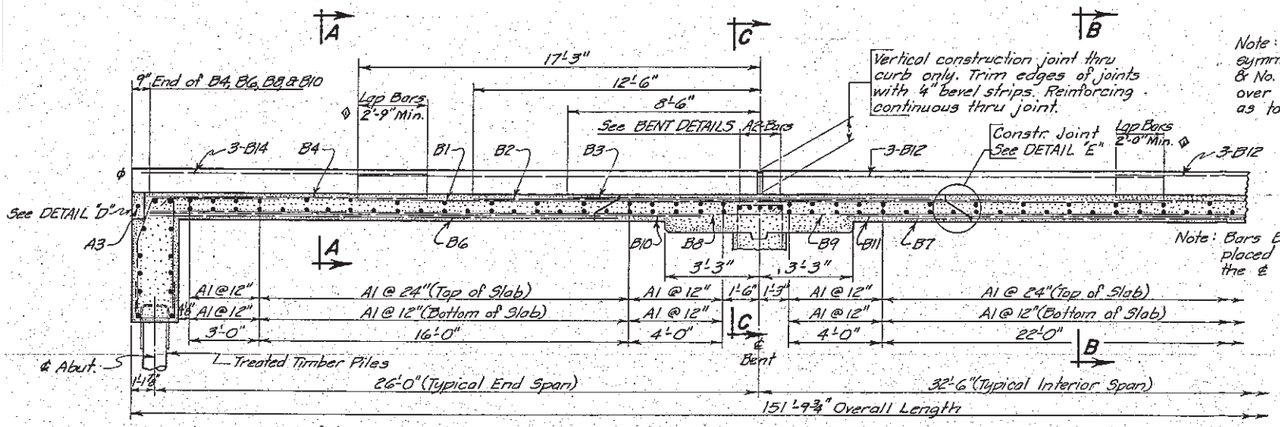
(NORTH BOUND LANES)
GENERAL DRAWING AND QUANTITIES
FOR
151'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F.
OVER E. BR. N. DEER CREEK — SEC. 7-T111N-R49W
STA. 389+98.113 TO 391+49.926 — I 29-5(11)141
BROOKINGS COUNTY
Str. No. 06-185-074 SOUTH DAKOTA — HS 20-44 (& ALT.)
DEPARTMENT OF HIGHWAYS
JULY 1967 — 3 OF 4

-X020-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	L.G.	K.R.S.	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	15	51

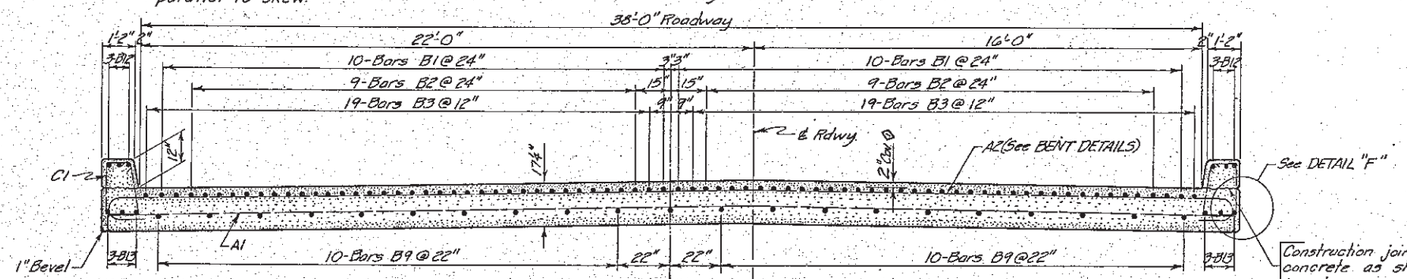


Note: Place Bars B2 & B3 symmetrically over Bents No. 3 & No. 4. Place Bars B1 & B12 over Bents No. 3 & No. 4 so as to achieve equal laps.

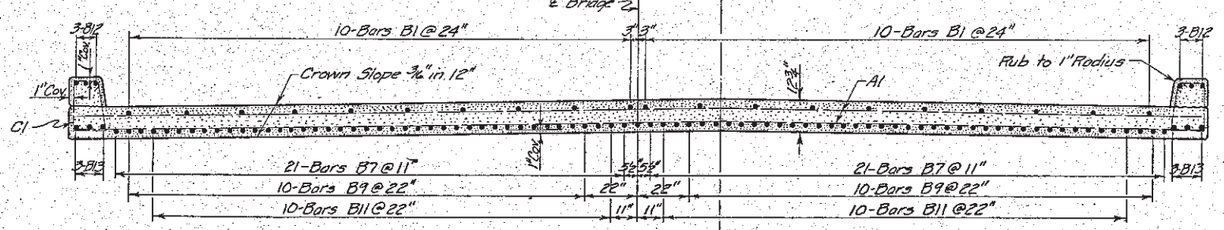
Note: Bars B7 & B11 are to be placed symmetrically about the ℄ of interior span.

NOTE: Spacing of A1 Bars are shown along ℄ Roadway. Layout all A1 Bars parallel to skew.

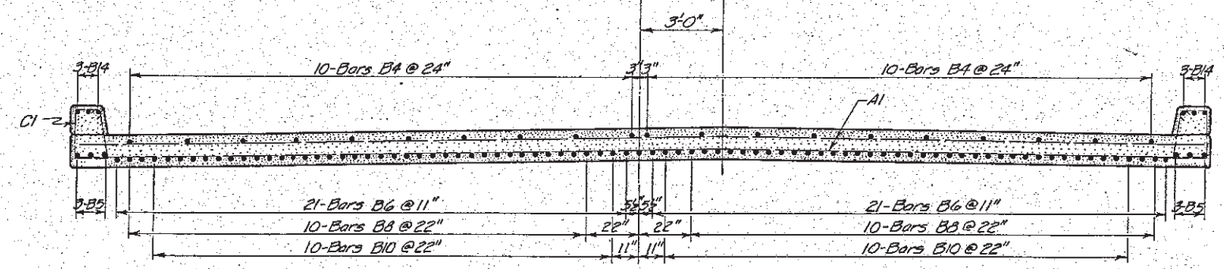
HALF LONGITUDINAL SECTIONAL VIEW
(Railing not shown)



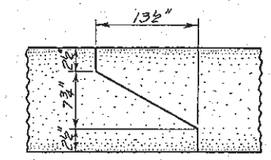
SECTION C-C



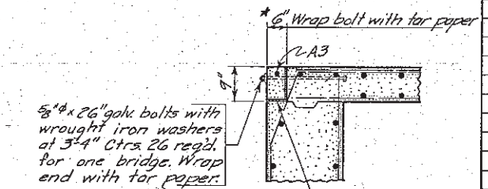
SECTION B-B



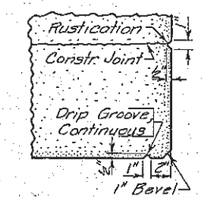
SECTION A-A



DETAIL "E"



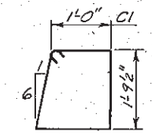
DETAIL "D"
* Normal to ℄ Abutment



DETAIL "F"

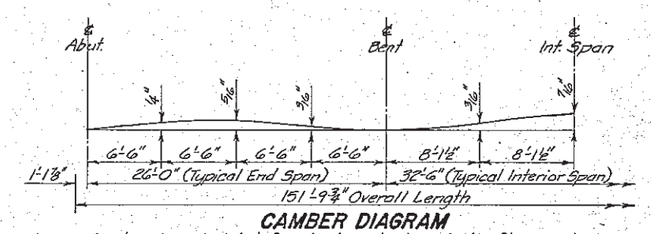
REINFORCING SCHEDULE

MK	No.	Size	Length	Type	Bending Details
A1	233	5	46'-6"	Str.	
A3	2	5	43'-6"		
B1	80	9	34'-6"		
B2	72	9	25'-0"		
B3	152	9	17'-0"		
B4	40	9	12'-0"		
B5	12	9	26'-9"		
B6	84	9	20'-0"		
B7	126	9	20'-0"		
B8	42	9	26'-3"		
B9	63	9	32'-6"		
B10	40	9	23'-6"		
B11	60	9	25'-0"		
B12	24	9	34'-6"		
B13	18	9	32'-6"		
B14	12	8	11'-6"	Str.	
C1	326	4	6'-9"	T1	



Type T1

NOTE: All dimensions are out to out of bars.



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow and shall be added to the proposed grade elevations at the respective stations to establish the elevation of the top of the finished roadway slab.

NOTES—

These notes cover Substructure, Superstructure, and Railing Details. The General Drawing for each structure will show elevations and other necessary notes and details.

DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for length of Treated Timber Piles.

STRUCTURAL STEEL: All ⅝"φ bolts, including washers, and all pile connections in Abutments and all floor drains shall be paid for as Struct. Steel.

REINFORCING STEEL: All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

CONCRETE: All Concrete shall be Class "A". All exposed concrete corners and edges shall be chamfered to a 1" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the quarter points of each and any span, adjacent to interior bents. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and Alternate Loading designated in P.P.M. 20-4, Sec. 4c. Unit Stresses: Concrete, f'c = 1600 p.s.i. n = 3; Reinforcing Steel fs = 20,000 p.s.i. (Int. Grade Steel). Equivalent fluid pressure of earth at 40 #/sq. ft. Minimum Pile Loading = 24 tons per pile.

~~ESTIMATED QUANTITIES~~

ITEM	UNIT	QUANTITY
^A Class "A" Concrete	Cu. Yds.	263.9
Reinforcing Steel	Lbs.	78,335
*Structural Steel	Lbs.	145
Type RT-3 Steel Railing	Lin. Ft.	303.6

* Wt. of 26-⅝"φ Bolts and washers and 8 floor drains.
^A Does not include slab and curbs directly over abutments.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-074

(NORTH BOUND LANES)
SUPERSTRUCTURE DETAILS
FOR

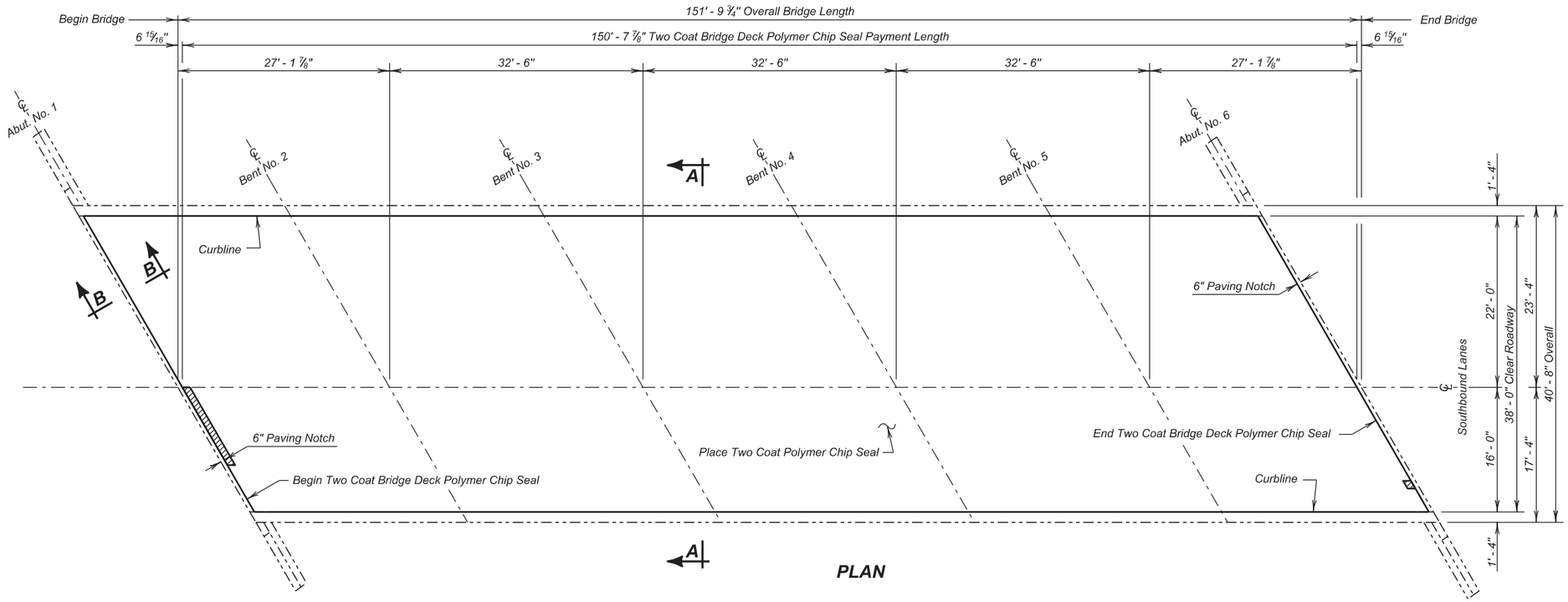
151'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F.
OVER EAST BR. NORTH DEER CR. — SEC. 7-T111N-R49W
STA. 389+98.113 TO 391+49.926 — I 29-5(11)141
BROOKINGS COUNTY
SOUTH DAKOTA HS20-44 & ALT.
DEPARTMENT OF HIGHWAYS
JULY 1967 — (4) OF (4)

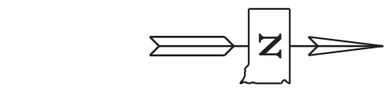
φ Rev. 2-19-69 P.W.F.
φ Rev. 1-24-68 P.W.F.

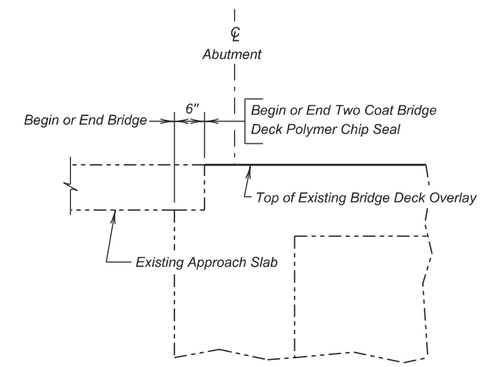
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	D.C.	K.R.S.	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	16	51



PLAN





SECTION B - B

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)

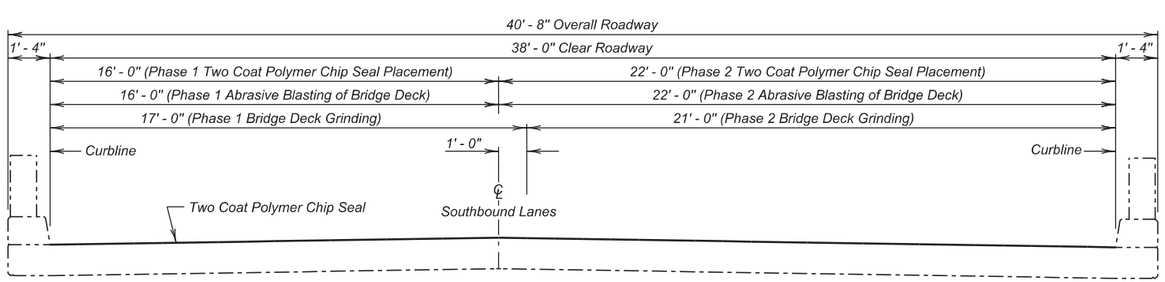
LEGEND -

Shaded area indicates locations of Repair of Low Slump Density Concrete

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	25.0	30.9
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	267.8	368.3
	Abrasive Blasting of Bridge Deck	Sq. Yd.	267.8	368.3
	Bridge Deck Grinding	Sq. Yd.	284.6	351.5
*	Concrete Removal, Class A	Sq. Yd.	2.3	2.8
*	Concrete Removal, Class B	Sq. Yd.	2.3	2.8

NOTE :
* 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.



SECTION A - A

(SOUTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR
151' - 9 3/4" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 30° SKEW R.H.F.
OVER E. BR. N. DEER CREEK — SEC. 7-T111N-R49W
STR. NO. 06-184-074 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRB01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	55.9	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	636.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	636.1	SqYd
491E0120	Bridge Deck Grinding	636.1	SqYd
491E0130	Concrete Removal, Class A	5.1	SqYd
491E0140	Concrete Removal, Class B	5.1	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

151' - 9¾" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-184-074

FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRB01		BRIDGE ENGINEER

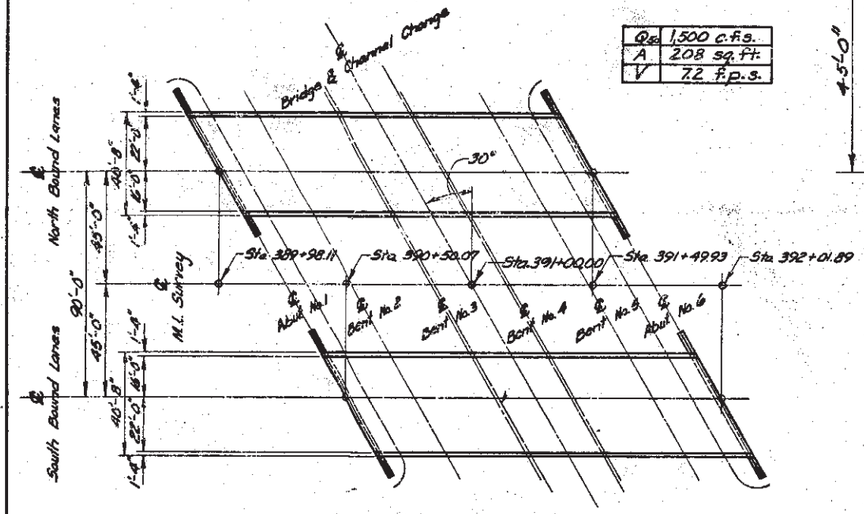
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 029H(65)133	18	51

-X020-

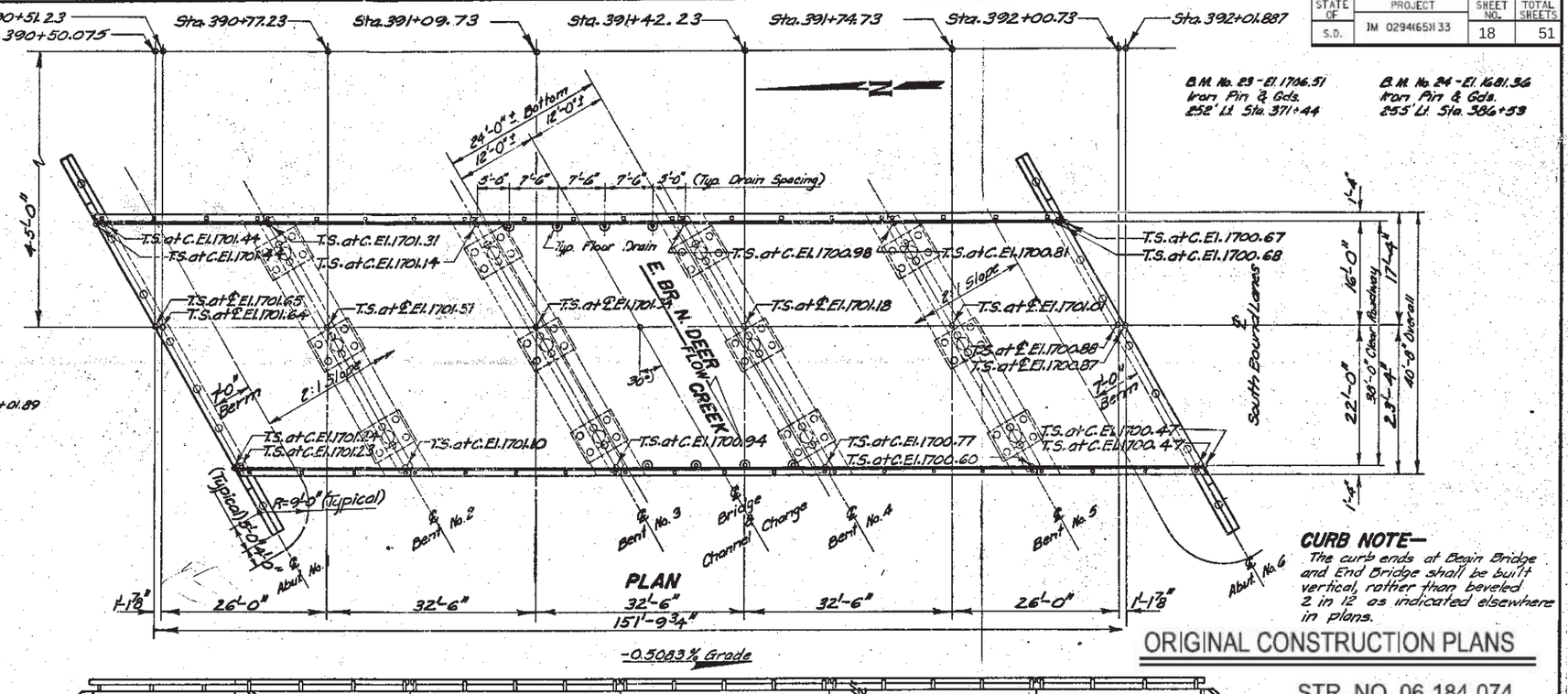
INDEX OF BRIDGE SHEETS—

Sheet No. 1 – General Drawing and Quantities
Sheet No. 2 – Subsurface Investigations
Sheet No. 3 – Details of Abut. No. 1
Sheet No. 4 – Details of Abut. No. 6
Sheet No. 5 – Bent Details
Sheet No. 6 – Superstructure Details
Sheet No. 7 – Details of Type RF-3A Steel Railing, Drains, and Curbs

Q_{50}	1,500 c.f.s.
A	208 sq. ft.
V	7.2 f.p.s.



LAYOUT SKETCH

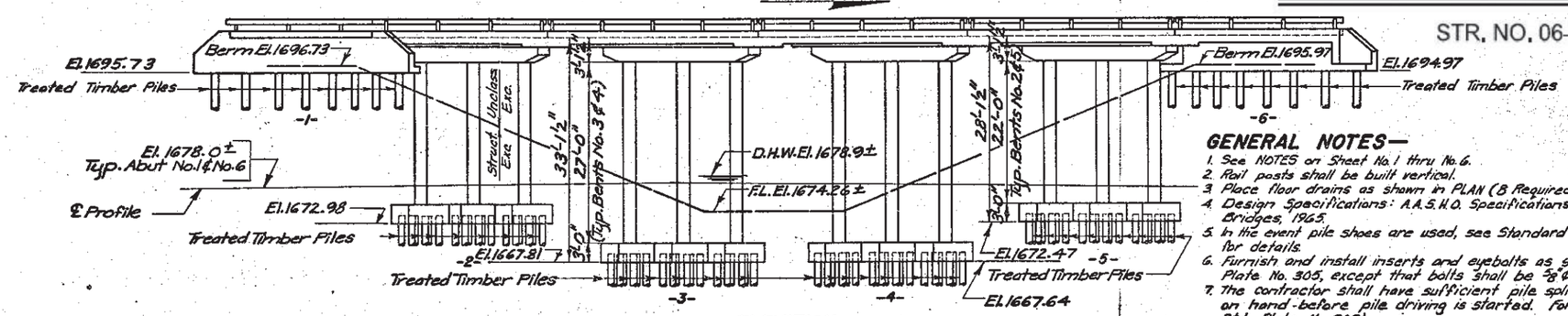


PLAN

CURB NOTE—
The curb ends at Begin Bridge and End Bridge shall be built vertical, rather than beveled 2 in 12 as indicated elsewhere in plans.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-074

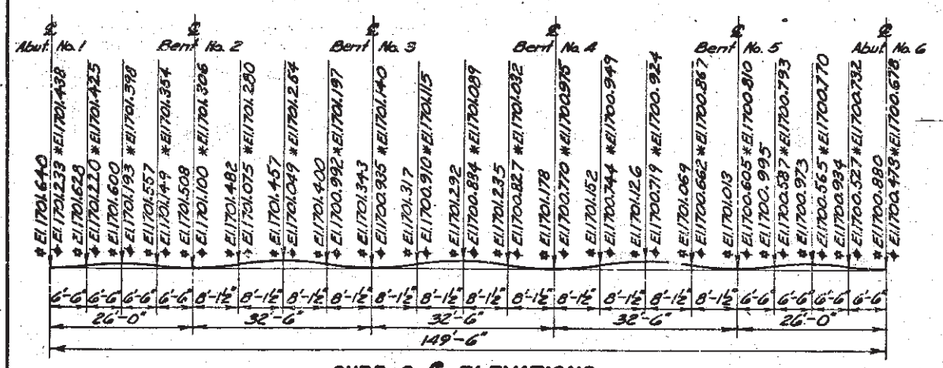


ELEVATION

SPECIFICATION NOTE—
Use South Dakota Standard Specifications for Roads and Bridges, 1969 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES—

1. See NOTES on Sheet No. 1 thru No. 6.
2. Rail posts shall be built vertical.
3. Place floor drains as shown in PLAN (8 Required).
4. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
5. In the event pile shoes are used, see Standard Plate No. 301 for details.
6. Furnish and install inserts and eyebolts as shown on Std. Plate No. 305, except that bolts shall be ⅝ ϕ.
7. The contractor shall have sufficient pile splice material on hand before pile driving is started. For details see Std. Plate No. 303J.
8. Prebored holes for piles at Abutments shall be backfilled with granular material acceptable to the ENGINEER and compacted as specified by the ENGINEER. The cost of granular material in place shall be included in the unit price bid for the piles.



CURB & ℄ ELEVATIONS

Elevations indicated with * are Top of Finished Slab at Centerline of Roadway, with + are Top of Finished Slab at Rt. Curb, and with * are Top of Finished Slab at Lt. Curb. Camber for Dead Load Deflection PLUS Plastic Flow, shown on Sheet No. 6 of Bridge Plans, have been included in the elevations shown above.

ESTIMATED QUANTITIES

Bid Item No.	40005	40505	40555	40166	40710	40705	10410	10405
ITEM	Cl. "A" Conc. Cu. Yds.	Steel – Lbs. Reinf.	Steel – Lbs. Struct.	Type RF-3A Steel Railing – Lin. Ft.	Piles – Lin. Ft. ϕ Test	Piles – Lin. Ft. Treated Timber	Excavation – Cu. Yds. Struct.	Excavation – Cu. Yds. △ Unclass.
Superstructure	263.9	78,335	145	303.6				
Abuts. No. 1 & No. 6	48.6	5,470	760		2@55=110	14@50'=700	26	
Bents No. 2 & No. 5	56.2	12,460			2@35'=70	34@30'=1020	329	
Bents No. 3 & No. 4	60.8	13,560			2@30=60	34@25'=850	150	
Totals	428.5	109,825	905	303.6	ϕ 240	2570	505	△

* One Treated Timber Test Pile shall be driven at Abuts. No. 1 and No. 6 and at Bents No. 2, 3, 4, and 5 before the remaining Piles are ordered.
△ All Unclass. Exc. to be done by others.

	Bent No. 3 Exc.	Test Pile	Test Pile Cut-off	Test Pile	Test Pile Cut-off	
BH #1	17.0	33.2	15.5	49.0	6.1	
#2	16.0	[illegible]	9.3	31.7	4.1	
#3	24.7	41.1	2.7	20.4		
#4	26.6	75.4	5.5	[illegible]	1.5	
#5	15.8	54.5	7.0	34.5		
Abut. No. 6	12.0	30.0	2.7	4.6	3.4	
Total	112.1	234.2	42.7	200.6	18.3	

Finaled 11-30-71 E.T.

PLANS BY
BRIDGE SEC., S. DAK. DEPT. HWYS.

(SOUTH BOUND LANES)
GENERAL DRAWING AND QUANTITIES
FOR

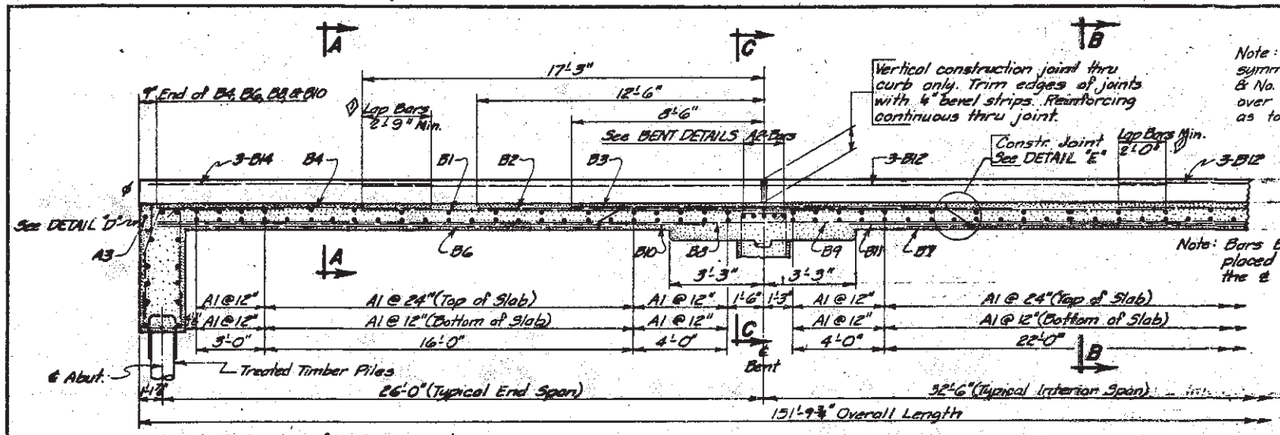
151'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F.
OVER E. BR. N. DEER CREEK — SEC. 7-T111N-R49W
STA. 390+50.075 TO 392+01.887 — I 29-5(11)141
BROOKINGS COUNTY
Str. No. 06-184-074 SOUTH DAKOTA — HS 20-44 (8 ALT.)
DEPARTMENT OF HIGHWAYS
JULY 1967 — 3 OF 4

-X020-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	L.G.	K.R.S.	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	19	51



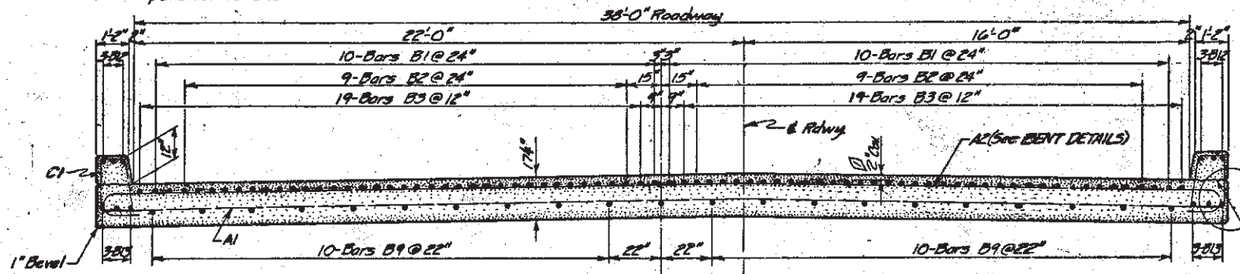
Vertical construction joint thru curb only. Trim edges of joints with ¼" bevel strips. Reinforcing continuous thru joint.

Note: Place Bars B2 & B3 symmetrically over Bents No. 3 & No. 4. Place Bars B1 & B12 over Bents No. 3 & No. 4 so as to achieve equal laps.

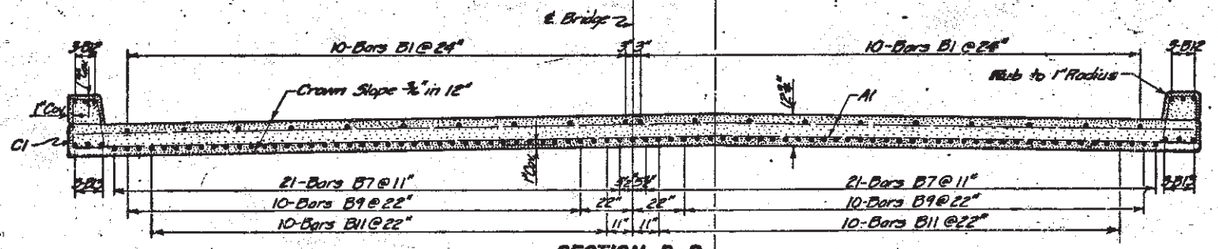
Note: Bars B7 & B11 are to be placed symmetrically about the ℄ of interior span.

NOTE: Spacing of A1 Bars are shown along ℄ Roadway. Layout all A1 Bars parallel to skew.

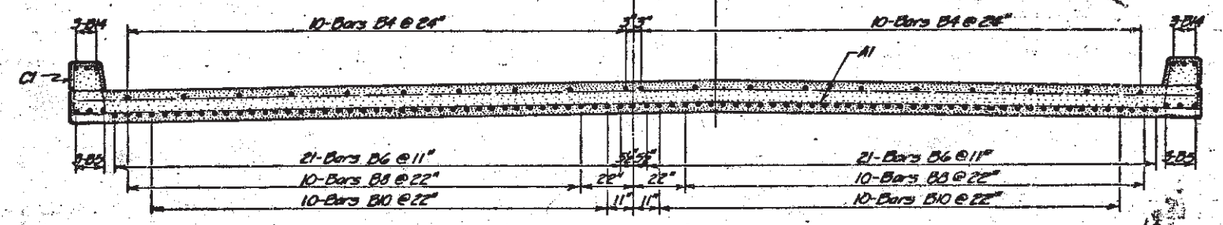
HALF LONGITUDINAL SECTIONAL VIEW
(Railing not shown)



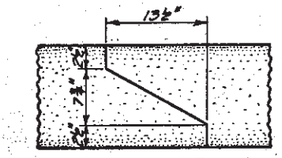
SECTION C-C



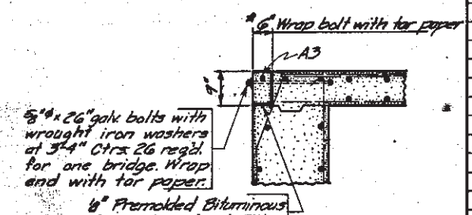
SECTION B-B



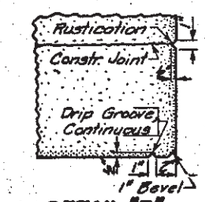
SECTION A-A



DETAIL "E"



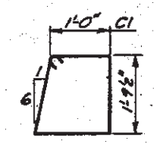
DETAIL "D"
℄ Normal to ℄ Abutment



DETAIL "F"

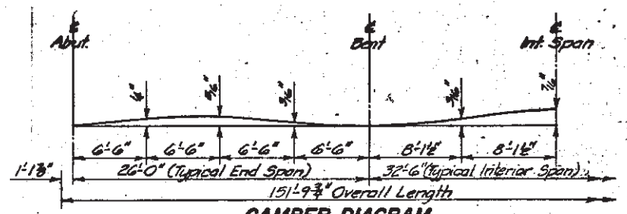
REINFORCING SCHEDULE

Mk	No	Size	Length	Type	Bending Details
A1	233	5	46'-6"	Str.	
A3	2	5	43'-6"		
B1	80	9	34'-6"		
B2	72	9	25'-0"		
B3	152	9	17'-0"		
B4	40	9	12'-0"		
B5	12	9	26'-9"		
B6	84	9	20'-0"		
B7	126	9	20'-0"		
B8	42	9	26'-3"		
B9	63	9	32'-6"		
B10	40	9	23'-6"		
B11	60	9	25'-0"		
B12	24	9	34'-6"		
B13	18	9	32'-6"		
B14	12	8	11'-6"	Str.	
C1	326	4	6'-9"	T1	



Type T1

NOTE: All dimensions are out to out of bars.



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow and shall be added to the proposed grade elevations at the respective stations to establish the elevation of the top of the finished roadway slab.

NOTES—

These notes cover Substructure, Superstructure, and Railing Details. The General Drawing for each structure will show elevations and other necessary notes and details.

DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for length of Treated Timber Piles.

STRUCTURAL STEEL: All ¾"φ bolts, including washers, and all pile connections in Abutments and all floor drains shall be paid for as Struct. Steel.

REINFORCING STEEL: All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

CONCRETE: All concrete shall be Class "A". All exposed concrete corners and edges shall be chamfered to a 1" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the quarter points of each end any span, adjacent to interior bents. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and Alternate Loading designated in P.P.M. 20-4, Sec. 4c. Unit Stresses: Concrete, f'c = 1600 p.s.i. n = 8; Reinforcing Steel fs = 20000 p.s.i. (Int. Grade Steel). Equivalent fluid pressure of earth at 40 #/sq. ft. Minimum Pile Loading = 24 tons per pile.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
▲Class "A" Concrete	Cu. Yds.	2639
Reinforcing Steel	Lbs.	78,335
*Structural Steel	Lbs.	145
Type RT-3 Steel Railing	Lin. Ft.	3006

*Wt. of 26-⅝"φ Bolts and washers and 8 floor drains.
▲Does not include slab and curbs directly over abutments.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-074

Rev. 2-19-68
Rev. 1-24-68

(SOUTH BOUND LANES)
SUPERSTRUCTURE DETAILS
FOR

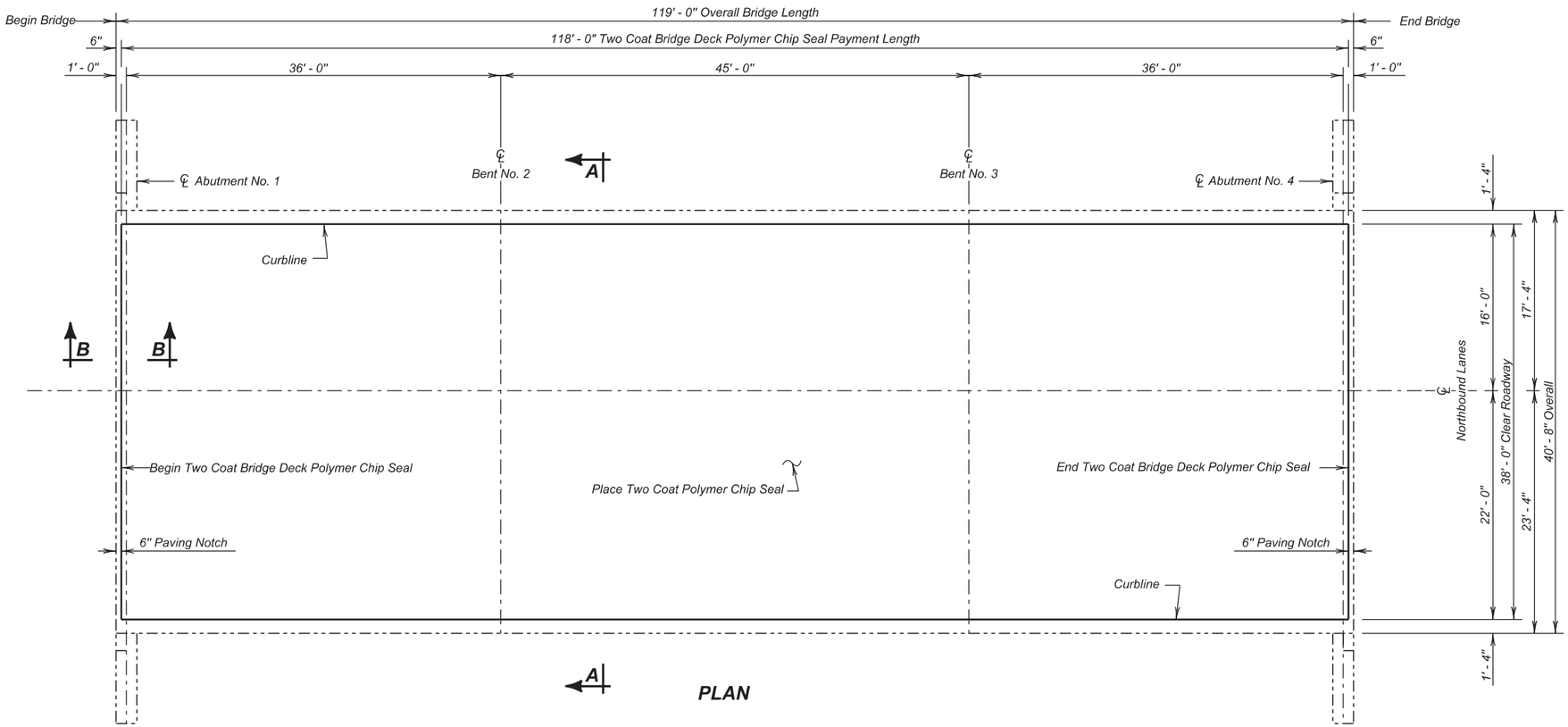
151'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F.
OVER EAST BR. NORTH DEER CR. — SEC. 7-T111N-R49W
STA. 390+50.075 TO 392+01.887 — I 29-5(11)141
BROOKINGS COUNTY
SOUTH DAKOTA — HS20-44 & ALT.
DEPARTMENT OF HIGHWAYS
JULY 1967 — 4 OF 4

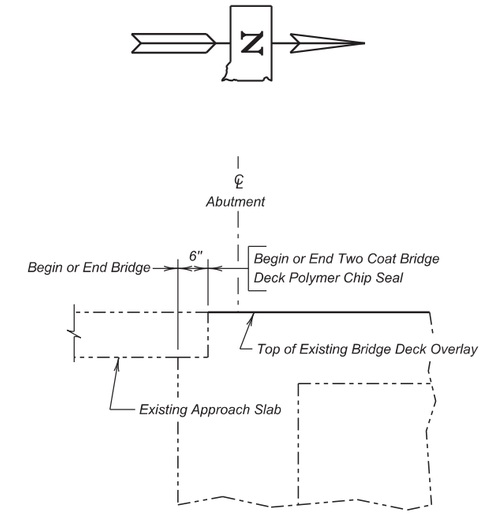
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	D.P.	K.R.S.	BRIDGE ENGINEER

06073

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	20	51



PLAN



SECTION B - B

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	24.2	29.9
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	209.8	288.4
	Abrasive Blasting of Bridge Deck	Sq. Yd.	209.8	288.4
	Bridge Deck Grinding	Sq. Yd.	222.9	275.3
*	Concrete Removal, Class A	Sq. Yd.	1.9	2.4
*	Concrete Removal, Class B	Sq. Yd.	1.9	2.4

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

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
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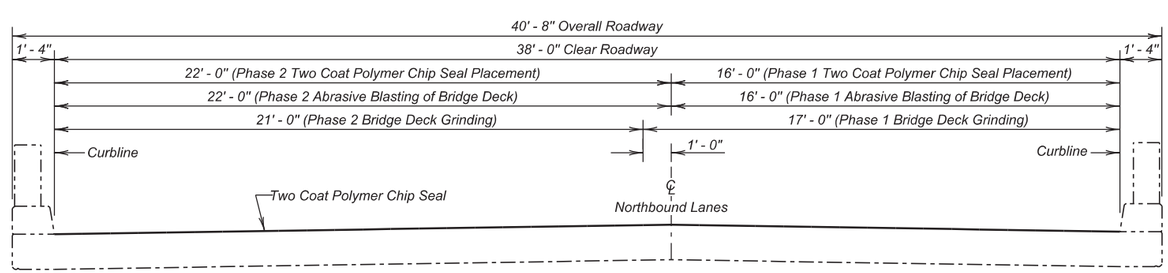
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A
(Railing Not Shown for Clarity)

(NORTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 0° SKEW
OVER CROSS ROAD — SEC. 30 / 31-T112N-R49W
STR. NO. 06-185-050 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRC01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	54.1	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.3	SqYd
491E0140	Concrete Removal, Class B	4.3	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-185-050

FEBRUARY 2016

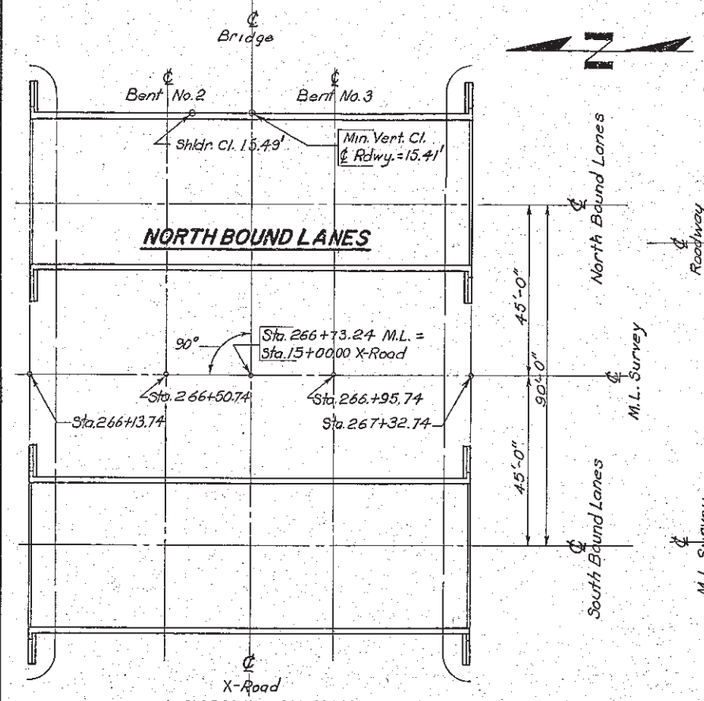
DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRC02		BRIDGE ENGINEER

-X220-

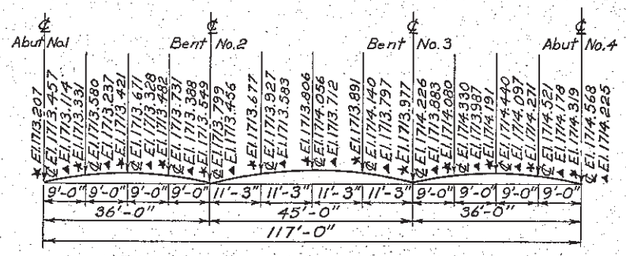
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	22	51

INDEX OF BRIDGE SHEETS.—

Sheet No.1.-General Drawing, Layout and Quantities
Sheet No.2.-Subsurface Investigations
Sheet No.3.-Details of Standard Superstructure **3PCCS-38-119-1-3** (2-19-69).
Sheet No.4-Details of Standard Abutment **3PCCS-38-119-2-3** (2-19-69).
Sheet No.5-Details of Standard Bent **3PCCS-38-119-3-3** (10-27-64)
Sheet No.6-Standard Type RT.3A Steel Railing Drain and Curb Details **RT-3A**

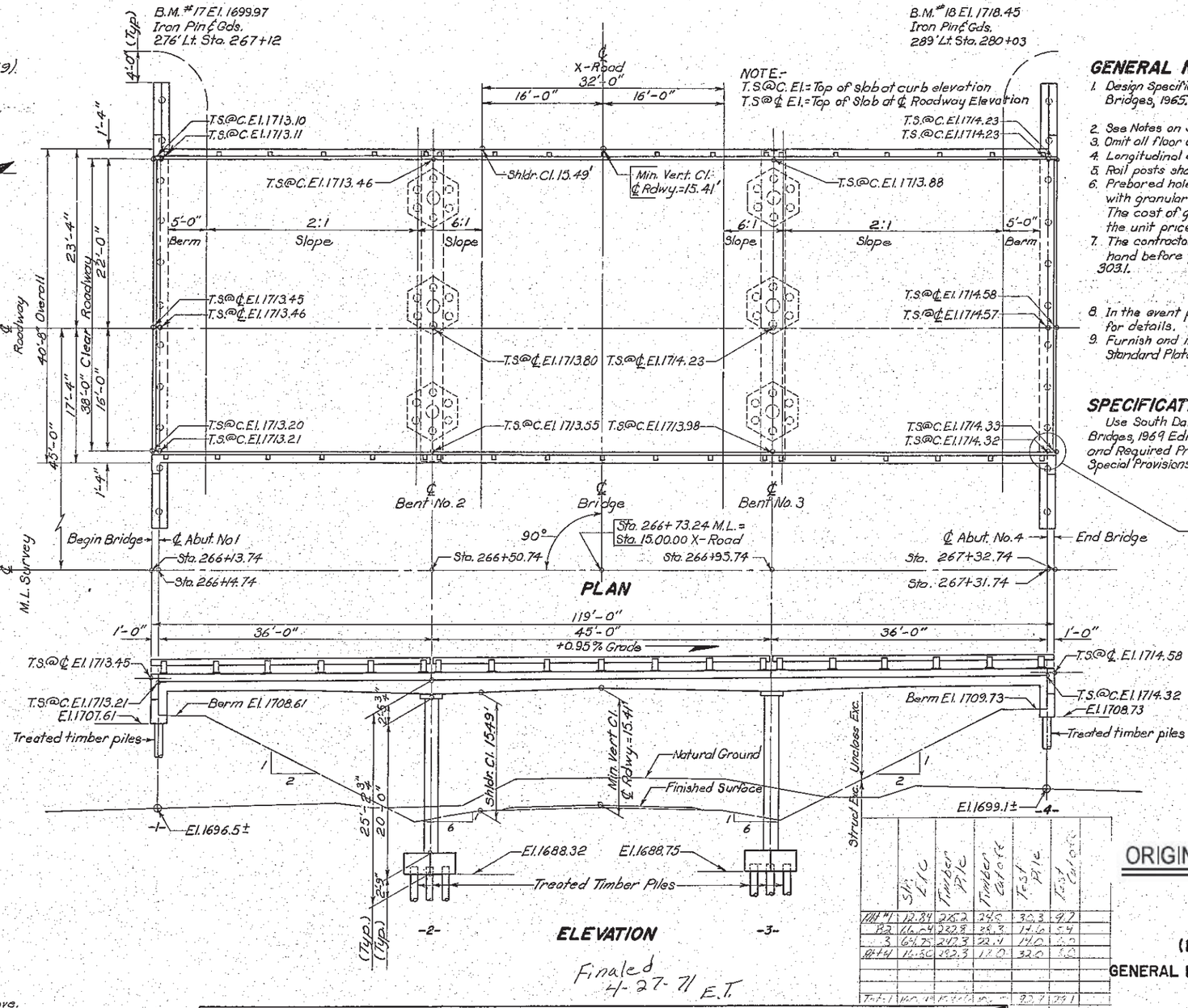


LAYOUT SKETCH



CURB AND ℄ ELEVATIONS

NOTE.-Elevations indicated with * are top of finished slab at right curb and with ▲ are top of finished slab at left curb and with ℄ are top of finished slab at centerline of roadway. Comber for dead load deflection PLUS plastic flow shown on Sheet No.3 of Bridge Plans have been included in the elevations shown above.



Finaled 4-27-71 E.T.

	Str. Exc.	Timber Pile	Timber Cal. Off	Test Pile	Test Cal. Off
Abt #1	12.84	226.2	24.8	32.3	9.2
B2	16.54	222.8	28.3	14.6	5.4
3	64.75	242.3	32.4	14.0	5.0
Abt #4	16.50	182.3	11.0	32.0	5.0
Total	[illegible]	[illegible]	[illegible]	92.7	29.1

GENERAL NOTES.—

1. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
2. See Notes on Sheet No.1 thru No.6.
3. Omit all floor drains.
4. Longitudinal elements of the slab shall conform to the grade.
5. Rail posts shall be built vertical.
6. Prebored holes for piles at abutments shall be backfilled with granular material acceptable to the ENGINEER. The cost of granular material inplace shall be included in the unit price bid for the piles.
7. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 303.1.
8. In the event pile shoes are used, see Standard Plate No 301 for details.
9. Furnish and install Inserts and Eyebolts as shown on Standard Plate No. 305 except that bolts shall be 5/8" ϕ.

SPECIFICATION NOTE.—

Use South Dakota Standard Specifications for Roads and Bridges, 1969 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

CURB NOTE—

The Curb ends at Begin Bridge and End Bridge shall be built vertical, rather than Beveled 2 in 12 as indicated elsewhere in these Plans.

EXCAVATION NOTES—

1. Footings for Bents No.2 and No.3 shall be cast upon undisturbed soil (ϕ) and connected into same to the elevation shown. Limits of any overexcavation below top of footing shall be bound as nearly as practicable to the neat lines as shown in details of footings for Bents No.2 and No.3 on Sheet No.5 of 6.
2. Silty clay shall have a minimum bearing value of 4000 lbs per sq. ft. in the bearing value is less than 4000 lbs per sq. ft. at elevations shown communicate with the BRIDGE SECTION.
3. Final footing elevations for Bents No.2 and No.3 shall be established before ordering column reinforcing steel in the respective Bents. If the footing elevations vary further from those shown communicate with BRIDGE SECTION.

ESTIMATED QUANTITIES (ONE STRUCTURE)

BID ITEM NO.	40005	40505	40555	40166	40705	40710	10410	10405
ITEM	Cl. "A" Conc. Cu. Yds.	Steel-Lbs. Reinf.	Steel-Lbs. Struct.	Type RT-3A Steel Railing-Lin.Ft.	Timber Piles-Lin.Ft. Treated Timber	Timber Piles-Lin.Ft. ϕ Test	Excavation-Cu.Yds. Struct.	Excavation-Cu.Yds. △Unclass.
Superstructure	255.5	75290	60	238.0				
Abutment No.1	21.3	2465	525		10@35'=350'	1@40'=40'	17	
Bent No.2	19.3	4415			17@16'=272	1@20'=20'	68	
Bent No.3	19.3	4415			17@16'=272	1@20'=20'	68	
Abutment No.4	21.3	2465	525		10@35'=350'	1@40'=40'	17	
Totals	336.7	89,050	1,110	238.0	1244'	120'	170	△——

ϕ One Treated Timber Test Pile shall be driven at Abutments No.1 and No.4, and Bents No.2 and No.3 before remaining piles are ordered.
△All Unclassified Excavation to be done by others.

PLANS BY
BRIDGE SEC., S. DAK. DEPT. HWYS.

P.S.&E. Revisions 1-18-68 Ed.L., Chk. by

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-050

(NORTH BOUND LANES)
GENERAL DRAWING, LAYOUT AND QUANTITIES
FOR

119'-0" CONTINUOUS CONCRETE BRIDGE

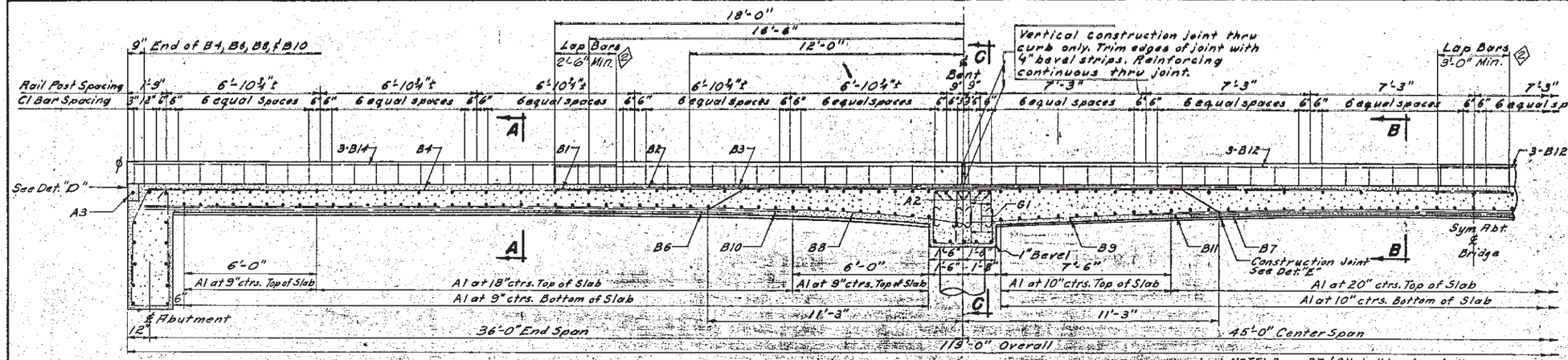
38'-0" ROADWAY
OVER CROSS ROAD SEC.30/31-T112N-R49W
STA. 266+13.74 TO 267+32.74 I 29-5(11)141
BROOKINGS COUNTY
Str. No. 06-185-050 SOUTH DAKOTA HS20-44 (8ALT.)
DEPARTMENT OF HIGHWAYS
-X220- JUNE 1967 (3) OF (4)

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	ed L	R.C.M.	[signature] BRIDGE ENGINEER

06027

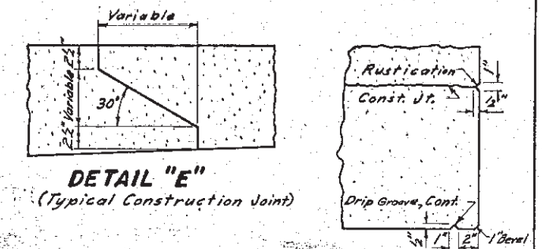
06027

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	23	51



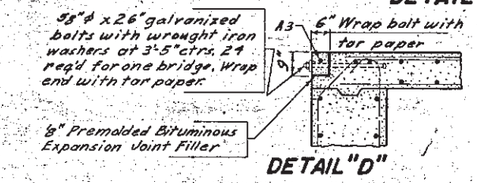
HALF LONGITUDINAL SECTIONAL VIEW

NOTE: Bars B7 & B11 shall be placed Symmetrically about ℄ Bridge.

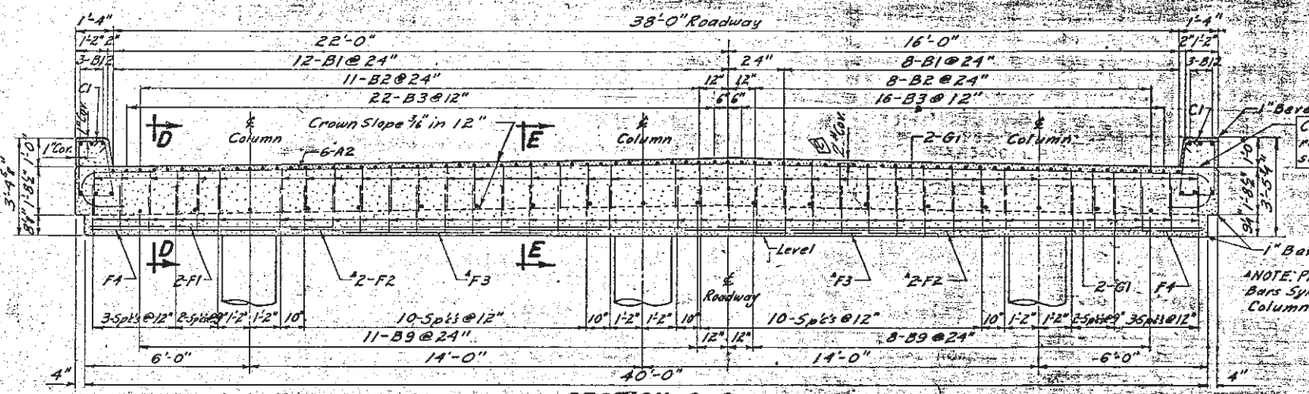


DETAIL "E"
(Typical Construction Joint)

DETAIL "F"

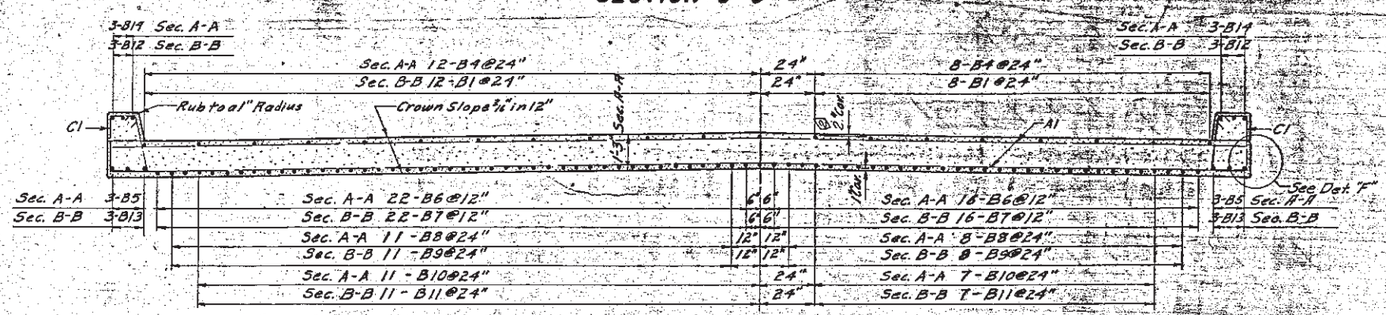


DETAIL "D"



NOTE: Place F2 & F3 Bars Sym. between Columns.

SECTION C-C

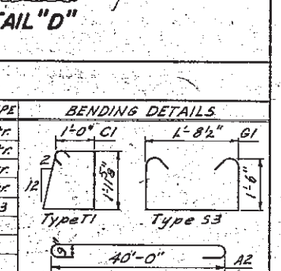


SECTION A-A OR SECTION B-B
(As Shown and Noted)

REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE
A1	238	5	40'-3"	Str.	B7	38	10	25'-9"	Str.	F1	4	9	39'-9"	Str.
A2	12	10	42'-3"	1	B8	38	10	36'-3"	Str.	F2	8	9	11'-0"	Str.
A3	2	5	37'-9"	Str.	B9	19	10	45'-0"	Str.	F3	4	9	7'-0"	Str.
B1	40	10	42'-0"	Str.	B10	36	9	29'-0"	Str.	F4	4	4	6'-6"	Str.
B2	38	11	33'-0"	Str.	B11	18	9	30'-0"	Str.	G1	304	4	5'-6"	S3
B3	76	10	24'-0"	Str.	B12	12	11	42'-6"	Str.					
B4	40	9	21'-0"	Str.	B13	6	11	45'-0"	Str.					
B5	12	11	36'-9"	Str.	B14	12	8	21'-6"	Str.					
B6	76	10	27'-0"	Str.	C1	240	4	7'-3"	T1					

BENDING DETAILS



NOTE: All dimensions are out to out of Bars.

NOTES

These notes cover Abutments, Bents, Superstructure and Railing Details. The General Drawing will show other necessary notes and details.

DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for type and length of Piling.

STRUCTURAL STEEL: All ⅝" ϕ bolts including washers, and all pile connections in Abutments, and all floor drains shall be paid for as Structural Steel.

REINFORCING STEEL: All Reinforcing steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

CONCRETE: All Concrete shall be Class "A". All exposed concrete corners and edges shall be chamfered to a ¾" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the points shown in each end span. If these joints are used, submit a Concrete Pouring Sequence to the BRIDGE SECTION for approval. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and the Alternate Loading as designated in P.P.M. 20-4, Section 4c.
Unit Stresses: Concrete fc = 1600 p.s.i., n = 8, Reinforcing Steel: fs = 20,000 p.s.i. Equivalent fluid pressure of earth at 40#/sq.ft.
Minimum Pile Loading = 24 tons for Timber Piling and 45 tons for 8 BP36 Steel Bearing Piles. (values for one pile) Minimum Soil Bearing Pressure for Spread Footings = 4 Tons per Sq. Ft.

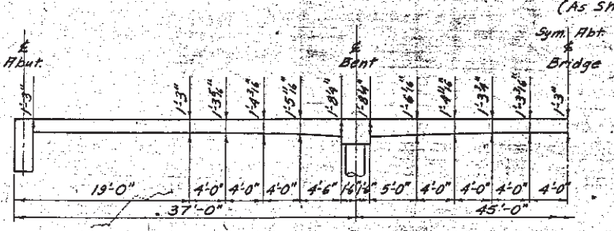
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class "A" Concrete	Cu. Yds.	255.5
Reinforcing Steel	Lbs.	75,290
*Structural Steel	Lbs.	60

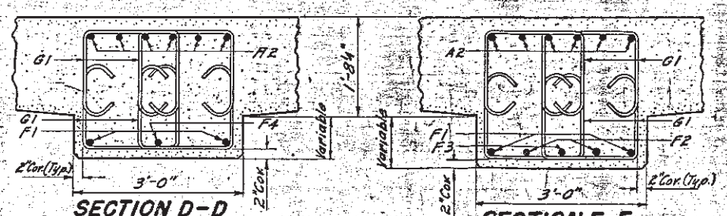
*Weight of ⅝" ϕ Bolts and washers only.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-050

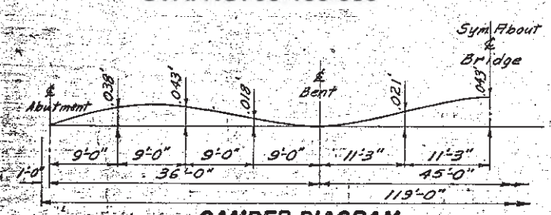


SLAB THICKNESS DIAGRAM
(For any longitudinal section parallel to ℄ Roadway)



SECTION D-D

SECTION E-E



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow. Camber shall be added to the proposed grade elevations at the respective stations to establish the elevations of the top of the finished roadway slab.

DETAILS OF STANDARD SUPERSTRUCTURE FOR
3-SPAN 119'-0" CONTINUOUS CONCRETE SLAB BRIDGE
WITH
ROUND COLUMN BENTS
38'-0" ROADWAY (22'-0" R_L & 16'-0" R_L OF ℄ RDWY.)
SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS

4 OF 4

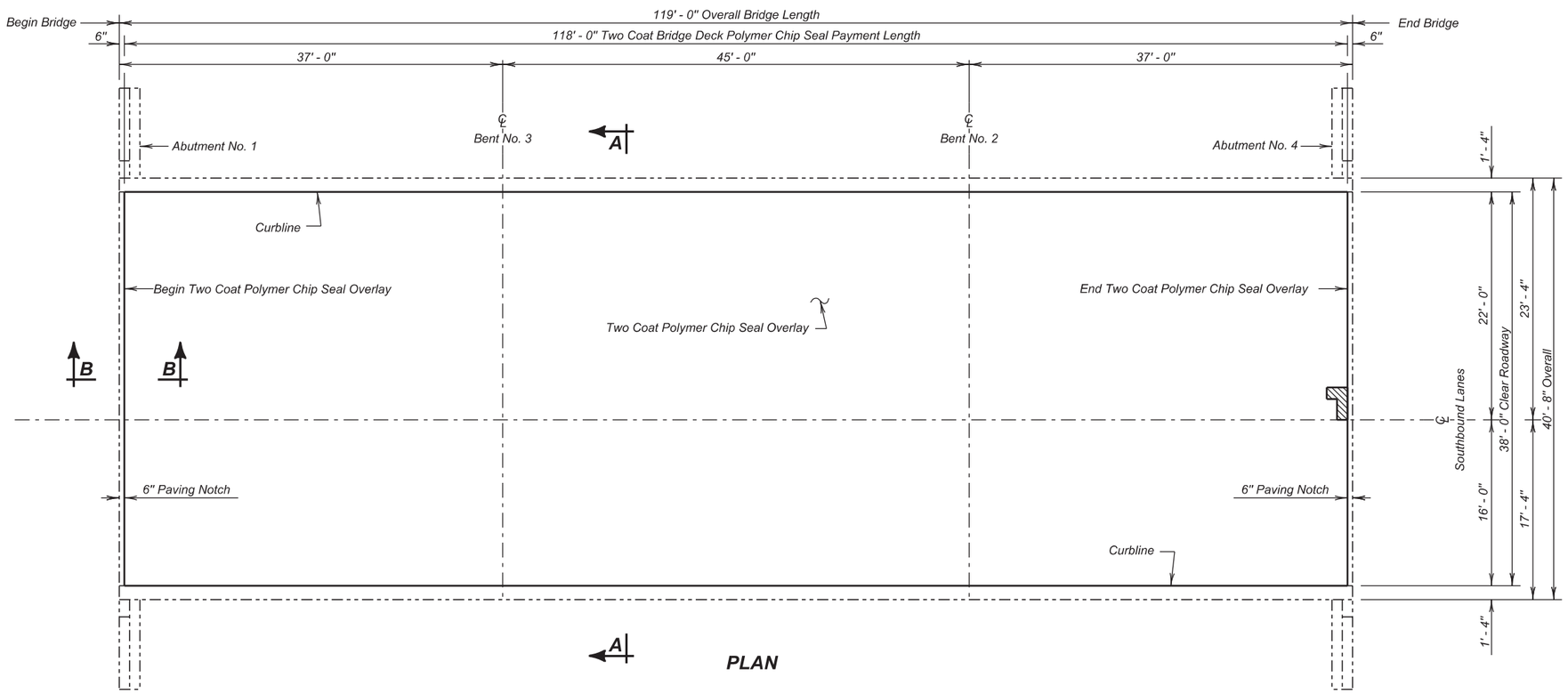
APRIL 1964 HS20-44 (8 ALT.)

Rev. 2-19-69
Rev. Spec. Note (7-6-67) M.V.W.
Rev. for 1963 & 1964 AASHO Interim Specifications (10-27-64) W.C.P.
ϕ Rev. 1-24-68

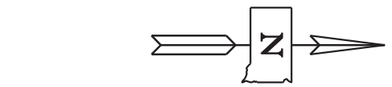
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
C.H.J. & M.B.S.	C.H.J.	M.B.S.	BRIDGE ENGINEER

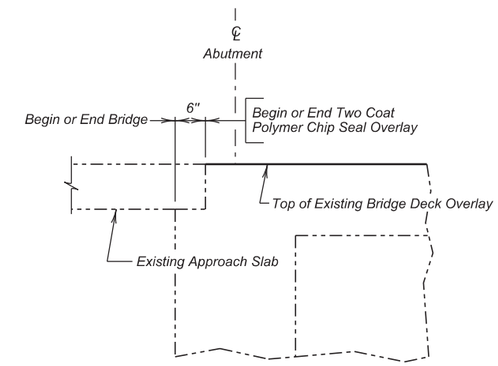
3PCCS-38-119-1-3

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	24	51



PLAN





SECTION B - B

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)

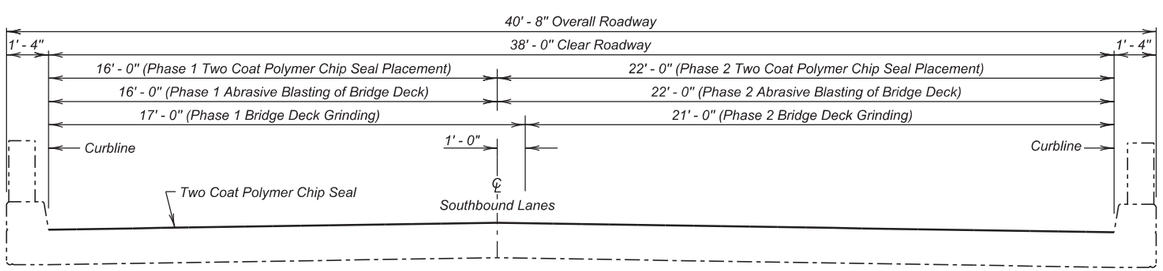
LEGEND -

Shaded area indicates locations of Repair of Low Slump Density Concrete

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	25.1	25.1
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	209.8	288.4
	Abrasive Blasting of Bridge Deck	Sq. Yd.	209.8	288.4
	Bridge Deck Grinding	Sq. Yd.	222.9	275.3
*	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
*	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

NOTE :
* 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.



SECTION A - A

(SOUTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 0° SKEW
OVER CROSS ROAD — SEC. 30 / 31-T112N-R49W
STR. NO. 06-184-050 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRD01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	50.2	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-184-050

FEBRUARY 2016

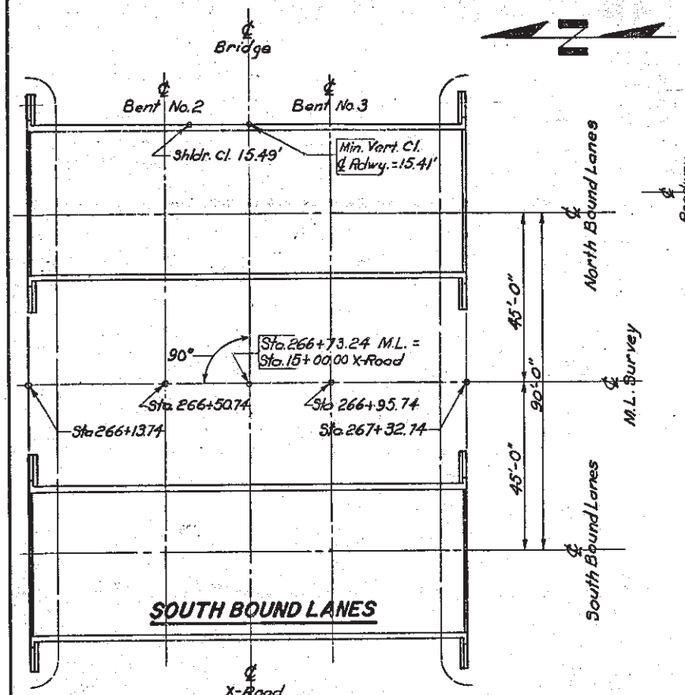
DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRD01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 029(65)133	26	51

-X220-

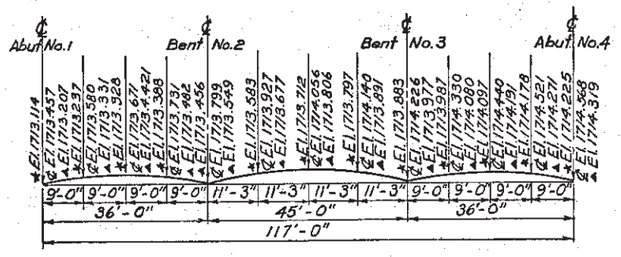
INDEX OF BRIDGE SHEETS.—

Sheet No.1 -General Drawing, Layout and Quantities
Sheet No.2 - Subsurface Investigations
Sheet No.3 - Details of Standard Superstructure **SPCCS-38-119-1-3** (2-19-68)
Sheet No.4 - Details of Standard Abutment **SPCCS-38-119-2-3** (2-19-68)
Sheet No.5 - Details of Standard Bent **SPCCS-38-119-3-3** (10-27-64)
Sheet No.6 - Standard Type RT-3A Steel Railing Drain and Curb Details **RT-3A** (1-19-68)



SOUTH BOUND LANES

LAYOUT SKETCH

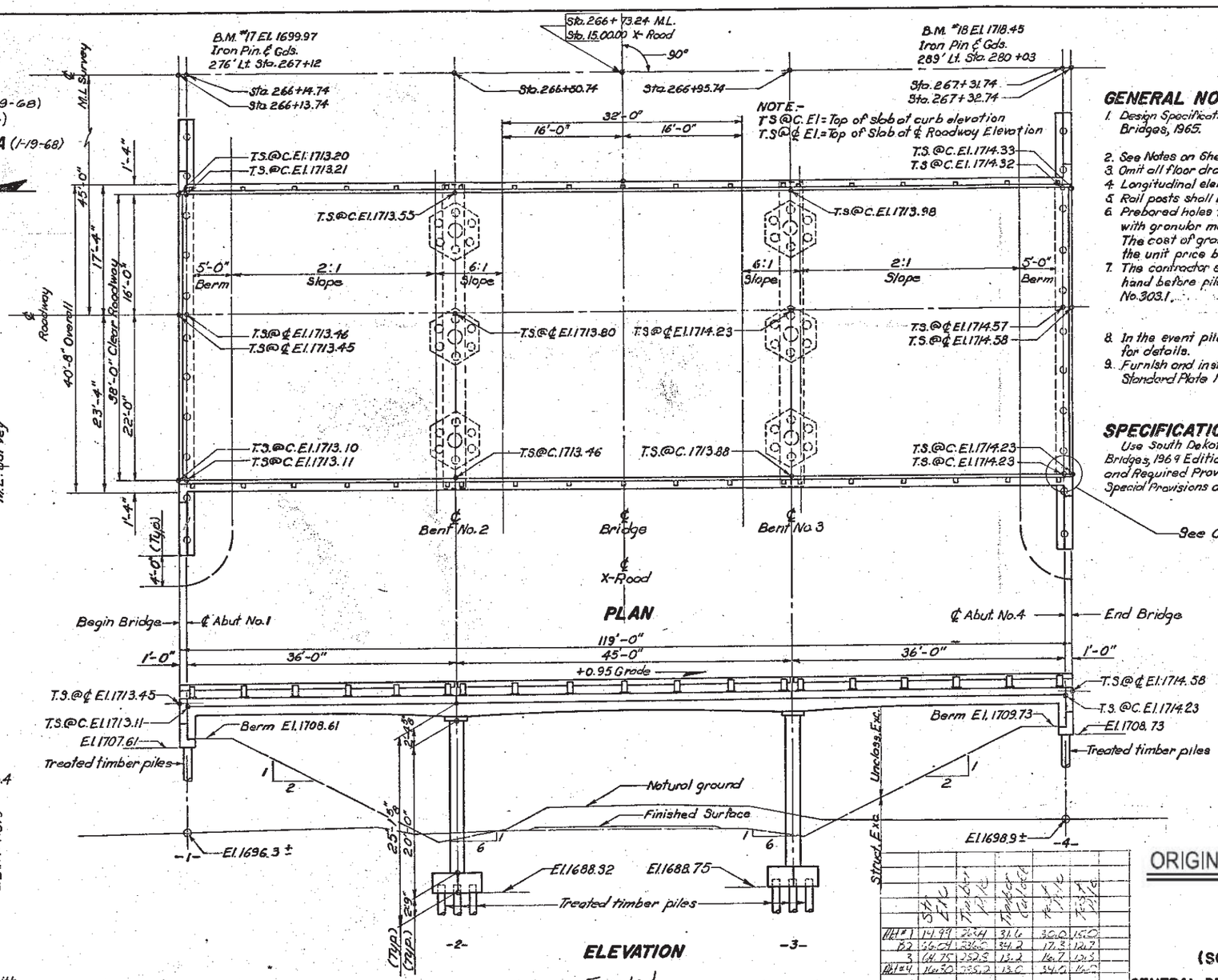


CURB AND ℄ ELEVATIONS

NOTE- Elevations indicated with ★ are top of finished slab at right curb and with ▲ are top of finished slab at left curb and with ℄ are top of finished slab at centerline of roadway. Camber for dead load deflection PLUS plastic flow shown on Sheet No.3 of Bridge Plans have been included in the elevations shown above.

EXCAVATION NOTES.—

1. Footings for Bents No. 2 and No. 3 shall be cast upon solid undisturbed silty clay and constructed to the lines, widths, shown, limits of structure excavation below top of footings shall be boundary neat lines, except where the footing lines are shown in details of footings for Bents No. 2 and 3 on Sheet No. 3 of 6.
2. Silty clay shall develop a minimum bearing value of 4.00 tons per sq. ft. for the bearing value is less than 4.00 the plan and elevations shown on the minimum footing elevations for Bents No. 2 and No. 3 shall be established before pouring column reinforcing steel. The respective bottom of footing elevations shall be from those shown on the BRIDGE SECTION.



PLAN

ELEVATION

Finaled
4-27-71 E.T.

	Sta.	Elev.	Timber Piles		Timber Piles Cut Off		Test Pile
Abt #1	14.99	26.4	31.6		30.0		15.0
B2	16.04	23.6	34.2		17.3		12.7
3	16.75	25.5	13.2		16.7		12.3
Abt #4	16.50	25.2	13.0		34.0		16.0
Total			92.0		98.0		57.0

GENERAL NOTES.—

1. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
2. See Notes on Sheet No.1 thru No.6
3. Omit all floor drains.
4. Longitudinal elements of the slab shall conform to the grade.
5. Rail posts shall be built vertical
6. Prebored holes for piles at abutments shall be backfilled with granular material acceptable to the ENGINEER. The cost of granular material inplace shall be included in the unit price bid for the piles.
7. The contractor shall have sufficient pile splice material on hand before pile driving is started See Standard Plate No.303.1.
8. In the event pile shoes are used see Standard Plate No.301. for details.
9. Furnish and install Inserts and Eyebolts as shown on Standard Plate No. 305 except that bolts shall be $\frac{5}{8}$" ϕ.

SPECIFICATION NOTE:—

Use South Dakota Standard Specifications for Roads and Bridges, 1964 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

CURB NOTES—

The curb ends at Begin Bridge and End Bridge shall be built vertical, rather than beveled 2 in 12 as indicated elsewhere in these Plans.

ESTIMATED QUANTITIES (ONE STRUCTURE)

BID ITEM NO.	40005	40505	40555	40166	40705	40710	10410	10405
ITEM	Cl. "A" Conc. Cu. Yds.	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type RT-3A Steel Railing - Lin. Ft	Timber Piles - Lin. Ft. Treated Timber	Timber Piles - Lin. Ft. ϕ Test	Excavation - Cu. Yds. Struct.	Excavation - Cu. Yds. △ Unclass.
Superstructure	255.5	75,290	60	2,380				
Abutment No.1	21.3	2,465	525		10@40=400	1@45=45	17	
Bent No. 2	19.3	4,415			17@25=425	1@30=30	66	
Bent No. 3	19.3	4,415			17@25=425	1@30=30	65	
Abutment No. 4	21.3	2,465	525		10@45=450	1@50=50	17	
Totals	336.7	89,050	1,110	2,380	1700	ϕ155	165	△

ϕ One Treated Timber Test Pile shall be driven at Abutments No.1 and No.4, and Bent No.2 and No.3 before remaining piles are ordered.

△ All Unclassified Excavation to be done by others.

PLANS BY
BRIDGE SEC., S. DAK. DEPT. HWYS.

P.S.&E. Revision 1-19-68 by E.L.P., Checked by

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-050

(SOUTH BOUND LANES)

GENERAL DRAWING, LAYOUT AND QUANTITIES

FOR

119'-0" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY

OVER CROSS ROAD SEC.30/31-T112N-R49W

STA. 266+13.74 TO 267+32.74 I 29-5(11)141

BROOKINGS COUNTY

Str. No. 06-184-050 SOUTH DAKOTA HS20-44 (8 ALT.)

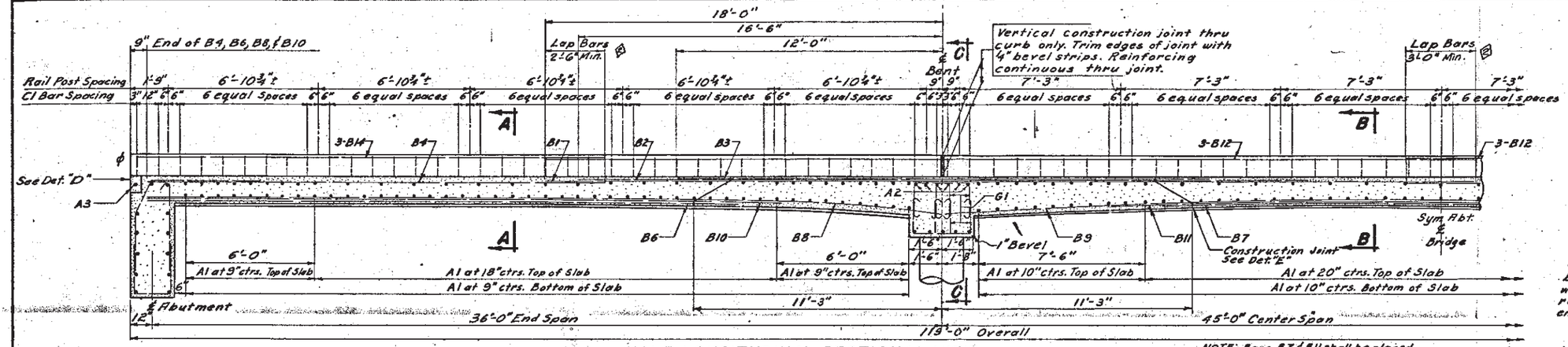
DEPARTMENT OF HIGHWAYS

-X220- JUNE 1967 (3) OF (4)

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	E.L.P.	R.C.M.	BRIDGE ENGINEER

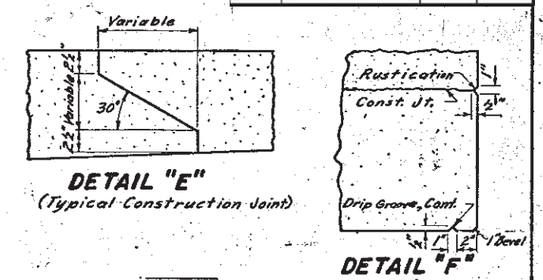
06026

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 029(65)133	27	51



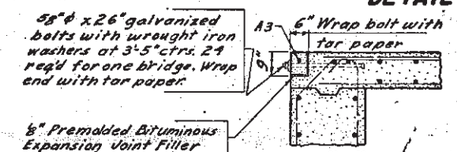
HALF LONGITUDINAL SECTIONAL VIEW

NOTE: Bars B7 & B11 shall be placed Symmetrically about ℄ Bridge.

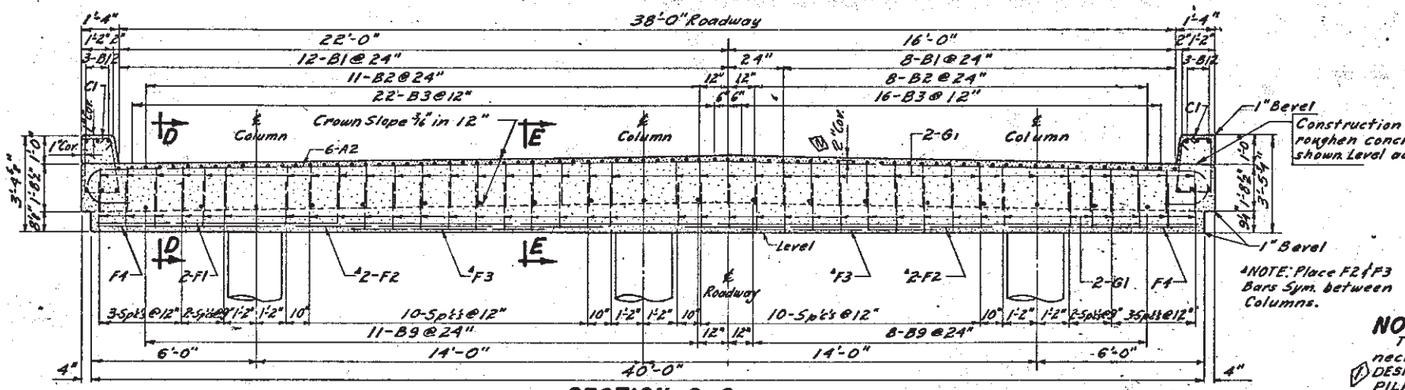


DETAIL "E"
(Typical Construction Joint)

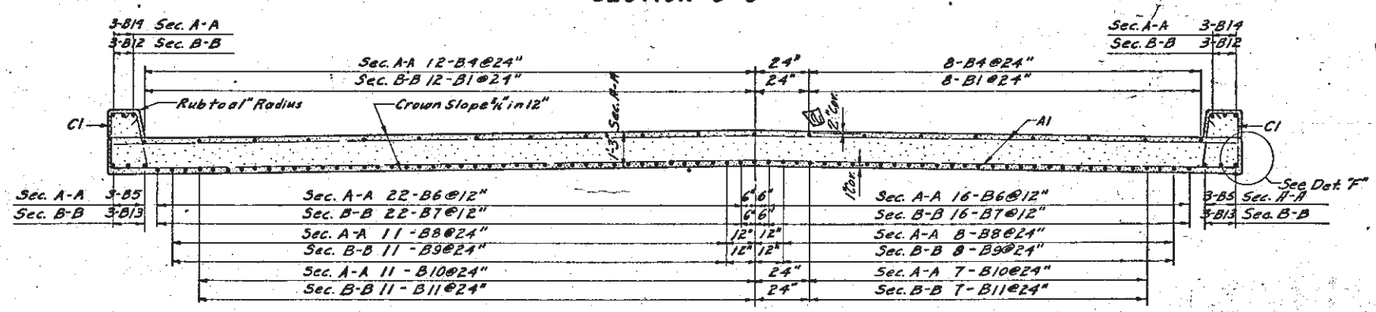
DETAIL "F"



DETAIL "D"



SECTION C-C

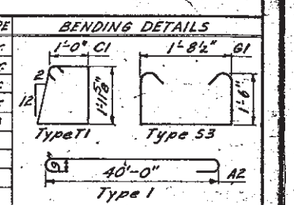


SECTION A-A OR SECTION B-B
(As Shown and Noted)

REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE
A1	238	5	40'-3"	Str.	B7	38	10	25'-9"	Str.	F1	4	9	39'-9"	Str.
A2	12	10	42'-3"	1	B8	38	10	36'-3"	Str.	F2	8	9	11'-0"	Str.
A3	2	5	37'-9"	Str.	B9	19	10	45'-0"	Str.	F3	4	9	7'-0"	Str.
B1	40	10	42'-0"	Str.	B10	36	9	29'-0"	Str.	F4	4	4	6'-6"	Str.
B2	38	11	33'-0"	Str.	B11	18	9	30'-0"	Str.	G1	304	4	5'-6"	S3
B3	76	10	24'-0"	Str.	B12	12	11	42'-6"	Str.					
B4	40	9	21'-0"	Str.	B13	6	11	45'-0"	Str.					
B5	12	11	36'-9"	Str.	B14	12	8	21'-6"	Str.					
B6	76	10	27'-0"	Str.	C1	240	4	7'-3"	T1					

BENDING DETAILS



NOTE: All dimensions are out to out of Bars.

NOTES —

These notes cover Abutments, Bents, Superstructure and Railing Details. The General Drawing will show other necessary notes and details.

(1) DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.
PILING: See General Drawing for type and length of Piling.
STRUCTURAL STEEL: All ⅝" ϕ bolts including washers, and all pile connections in Abutments, and all floor drains shall be paid for as Structural Steel.
REINFORCING STEEL: All Reinforcing steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

(2) CONCRETE: All Concrete shall be Class "A". All exposed concrete corners and edges shall be chamfered to a ¾" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the points shown in each and any span. If these joints are used, submit a Concrete Pouring Sequence to the BRIDGE SECTION for approval. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.
DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and the Alternate Loading as designated in P.P.M. 20-4, Section 4c.
Unit Stresses: Concrete fc = 1600 p.s.i., n = 8, Reinforcing Steel: fs = 20,000 p.s.i.. Equivalent fluid pressure of earth at 40#/sq. ft.
Minimum Pile Loading = 24 tons for Timber Piling and 45 tons for 8 BP36 Steel Bearing Piles. (values for one pile) Minimum Soil. Bearing Pressure for Spread Footings = 4 Tons per Sq. Ft.

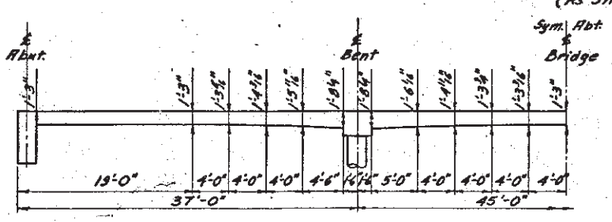
ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-050

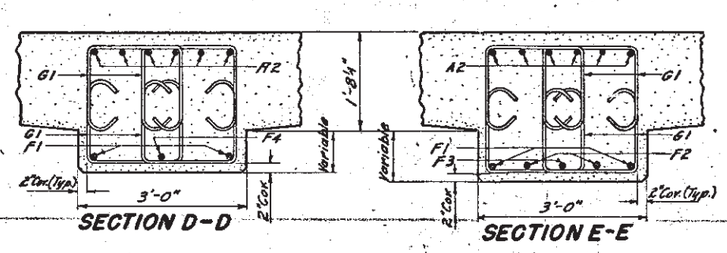
~~ESTIMATED QUANTITIES~~

ITEM	UNIT	QUANTITY
Class "A" Concrete	Cu. Yds.	255.5
Reinforcing Steel	Lbs.	75,290
*Structural Steel	Lbs.	60

*Weight of ⅝" ϕ Bolts and washers only.

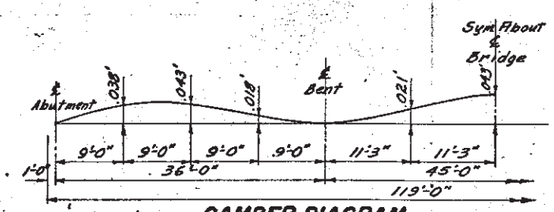


SLAB THICKNESS DIAGRAM
(For any longitudinal section parallel to ℄ Roadway)



SECTION D-D

SECTION E-E



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow. Camber shall be added to the proposed grade elevations at the respective stations to establish the elevations of the top of the finished roadway slab.

(3) Rev. 2-18-69
(4) Rev. Spec. Note (7-G-G7) M.V.W.
Rev. for 1963 & 1964 AASHO Interim Specifications (10-27-64) W.C.P.
ϕ Rev. 1-24-68

DETAILS OF STANDARD SUPERSTRUCTURE FOR 3-SPAN 119'-0" CONTINUOUS CONCRETE SLAB BRIDGE

WITH

ROUND COLUMN BENTS

38'-0" ROADWAY (22'-0" R_L & 16'-0" R_L OF ℄ RDWY.)

SOUTH DAKOTA

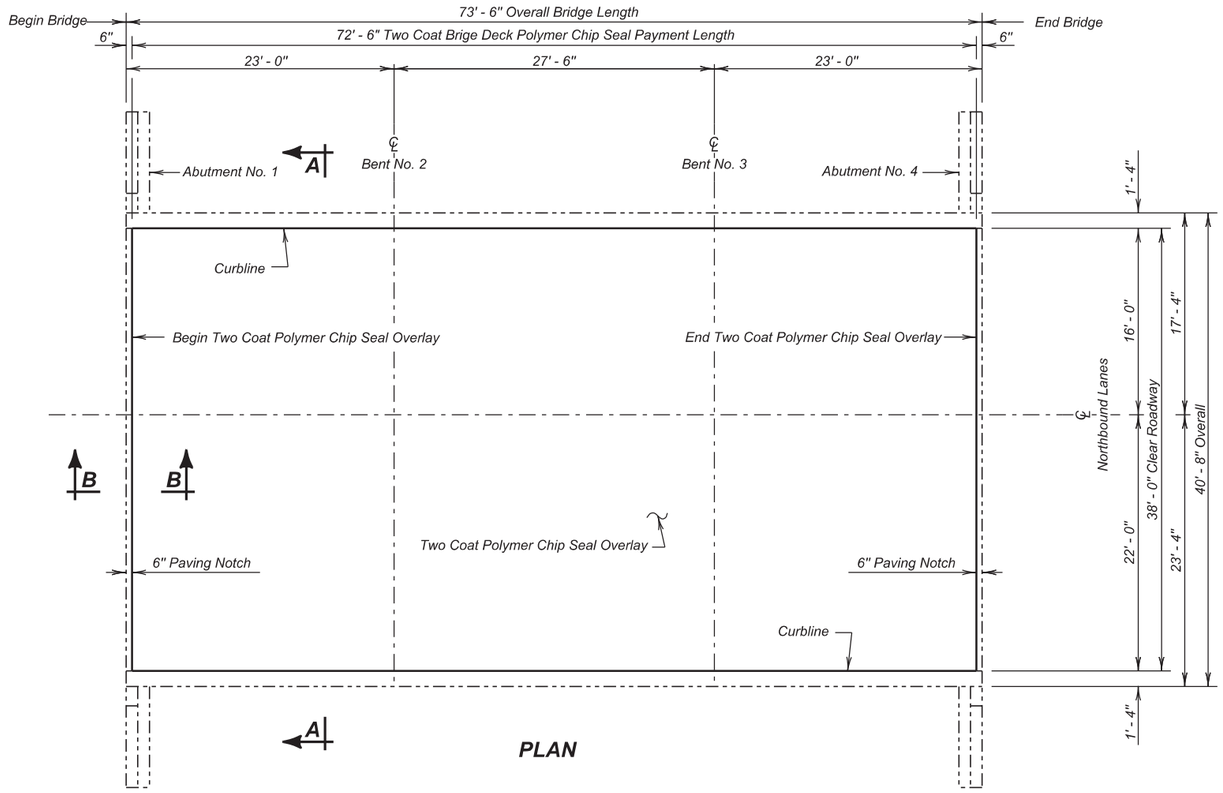
DEPARTMENT OF HIGHWAYS

(4) OF (4) APRIL 1964 HS20-44 (8 ALT.)

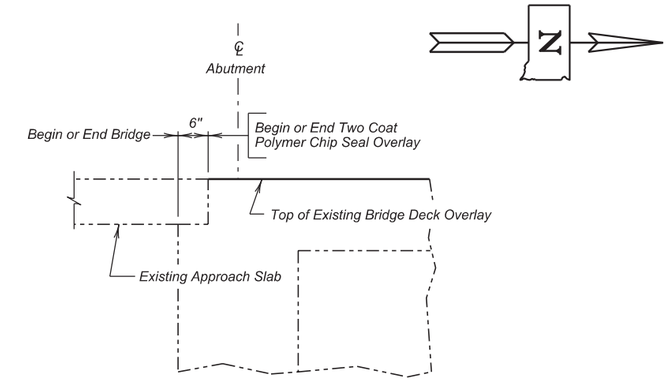
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
C.H.J. & M.B.S.	C.H.J.	M.B.S.	R. L. Lahuis, BRIDGE ENGINEER

3PCCS-38-119-1-3

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	28	51



PLAN



SECTION B - B

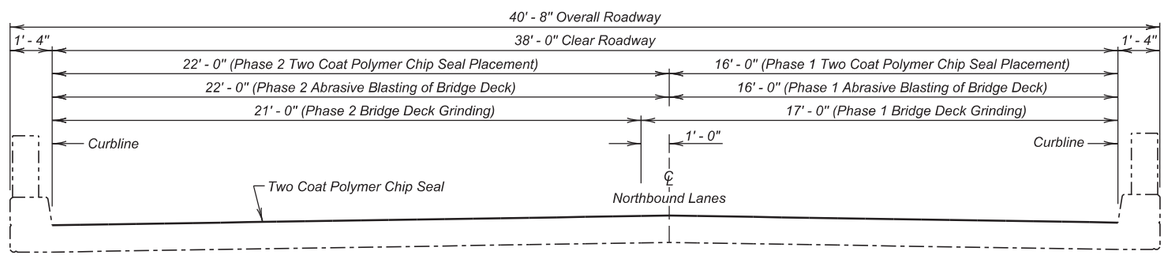
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
* Concrete Patching Material, Bridge Deck	Cu. Ft.	19.8	19.8
Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	128.9	177.2
Abrasive Blasting of Bridge Deck	Sq. Yd.	128.9	177.2
Bridge Deck Grinding	Sq. Yd.	136.9	169.2
* Concrete Removal, Class A	Sq. Yd.	2.0	2.0
* Concrete Removal, Class B	Sq. Yd.	2.0	2.0

NOTE :
* 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.

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(NORTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT

FOR

73' - 6" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 0° SKEW
OVER BRANCH NO. DEER CREEK — SEC.30-T112N-R49W
STR. NO. 06-185-044 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY

S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRE01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	39.6	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	306.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	306.1	SqYd
491E0120	Bridge Deck Grinding	306.1	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

73' - 6" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-185-044

FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRE01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	30	51

-X020-

INDEX OF BRIDGE SHEETS.—

Sheet No.1 - General Drawing, Layout and Quantities.
Sheet No.2 - Subsurface Investigations.
Sheet No.3 - Details of Std. Superstructure NCCS-38-00-119-1-2 (2-1969)
Sheet No.4 - Details of Std. Abutment NCCS-38-00-119-2-2 (2-18-69)
Sheet No.5 - Bent Details.
Sheet No.6 - Std. Type RT-3A Steel Railing, Curb & Drain Details RT-3A

SPECIFICATION NOTE.—

Use South Dakota Standard Specifications for Roads and Bridges, 1963 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTE.—

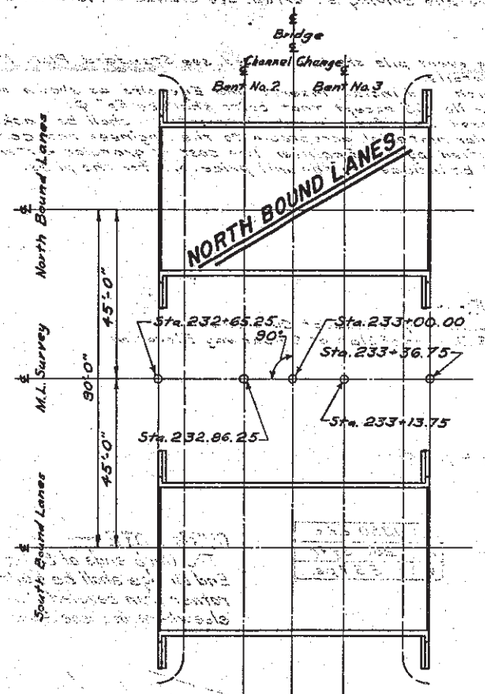
1. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
2. See Notes on Sheets No.1 thru No.6.
3. Place floor drains as shown in plan (6 Required).
4. Longitudinal elements of slab shall conform to the grade.
5. Rail Posts shall be built vertical.
6. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No.303.1
7. In the event pile shoes are used, see Standard Plate No. 301 for details.
8. Furnish and install inserts and Eyebolts as shown on Standard Plate No. 305 except that bolts shall be 5/8" Ø.
9. Prebored holes for piles at Abutments shall be backfilled with granular material acceptable to the Engineer and compacted as specified by the Engineer. The cost of granular material inplace shall be included in the unit price bid for the piles.

NOTE.—

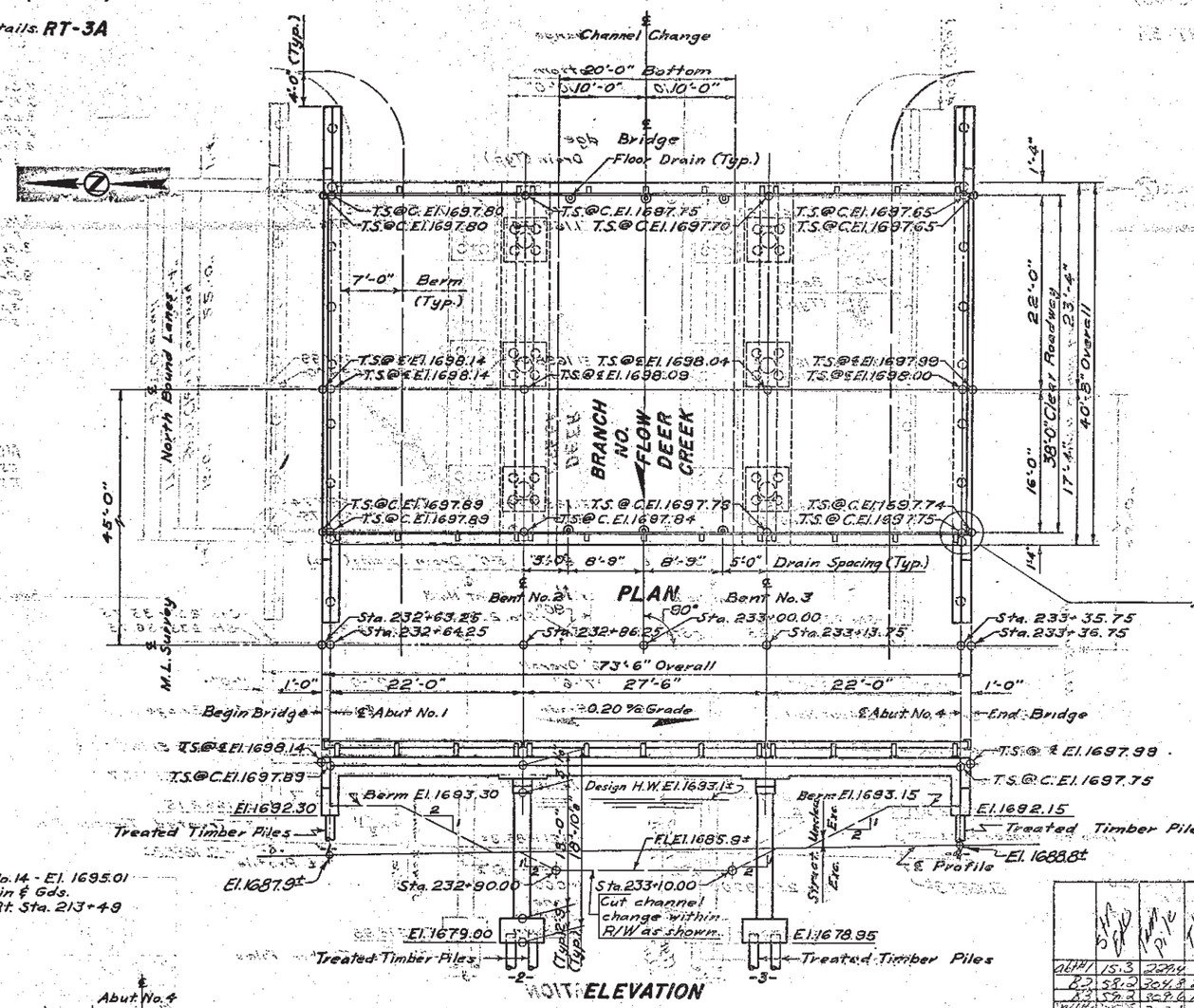
T.S.@C.El. = Top of Slab at Curb Elevation
T.S.@℄El. = Top of Slab at ℄ Roadway Elevation

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-044



LAYOUT SKETCH



NORTH ELEVATION

B.M. No.14 - El. 1695.01
Iron pin ℄ Gds.
327' Rt. Sta. 213+49

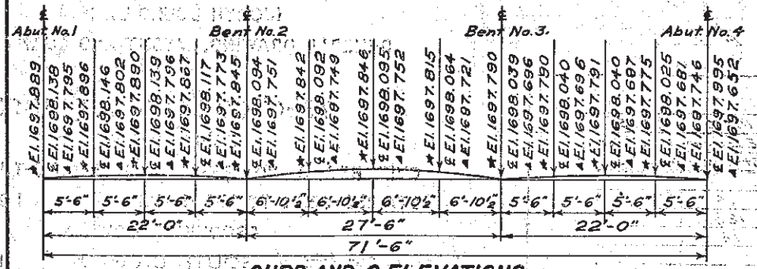
B.M. No.15 - El. 1702.05
Iron pin ℄ Gds.
287' Lt. Sta. 240+24

See CURB NOTE:

Q50	1350 c.f.s.
A	253 Sq.ft.
V	5.3 f.p.s.

CURB NOTE.—

The Curb ends at Begin Bridge and End Bridge shall be built vertical, rather than beveled 2 in 12 as indicated elsewhere in these Plans.



CURB AND ℄ ELEVATIONS

Elevations indicated with * are top of finished slab at left curb, with ℄ are top of finished slab at ℄ roadway, and with * are top of finished slab at right curb. Camber for dead load deflection plus plastic flow, shown on Sheet No.3 of Bridge Plans, have been included in the elevations shown.

	Str. Exc.	Pile Cutoff	Pile Cutoff	Test Pile	Test Pile Cutoff	
Abt #1	15.3	220.4	49.2	24.1	15.8	
B.2	58.2	304.8	25.2	33.8	6.2	
B.3	58.2	304.8	13.2	22.2	9.8	
Abt #4	15.3	322.1	12.0	42.0	6.9	
Total	146.5	1152.1	99.6	122.1	38.2	

Finaled 11-30-71 E.T.

ESTIMATED QUANTITIES (ONE STRUCTURE)

Bid Item No.	40905	40505	40655	40166	40705	40710	10410	10405	
ITEM	Cl. "A" Conc. Cu. Yd.	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type RT-3A Steel Railing - Lin. Ft.	Piles - Lin. Ft. Treated Timber	Piles - Lin. Ft. Ø Test	Excavation - Cu. Yds. Struct.	Excavation - Cu. Yds. △Unclass.	
Superstructure	112.7	32,340	115	147.0					
Abutment No.1	21.3	2,465	430		8@45'=360'	1@50'=50'	16		
Bents No.2 & No.3	33.2	5,890			22@35'=770'	2@40'=80'	123		
Abutment No.4	21.3	2,465	430		8@45'=360'	1@50'=50'	16		
Totals	188.5	*3,160	975	147.0	1490'	180'	155	△—	

* One Treated Timber Test Pile shall be driven at Abut. No.1 and No.4 and at Bents No.2 and No.3 before remaining piles are ordered.
△All unclassified Excavation to be done by others.

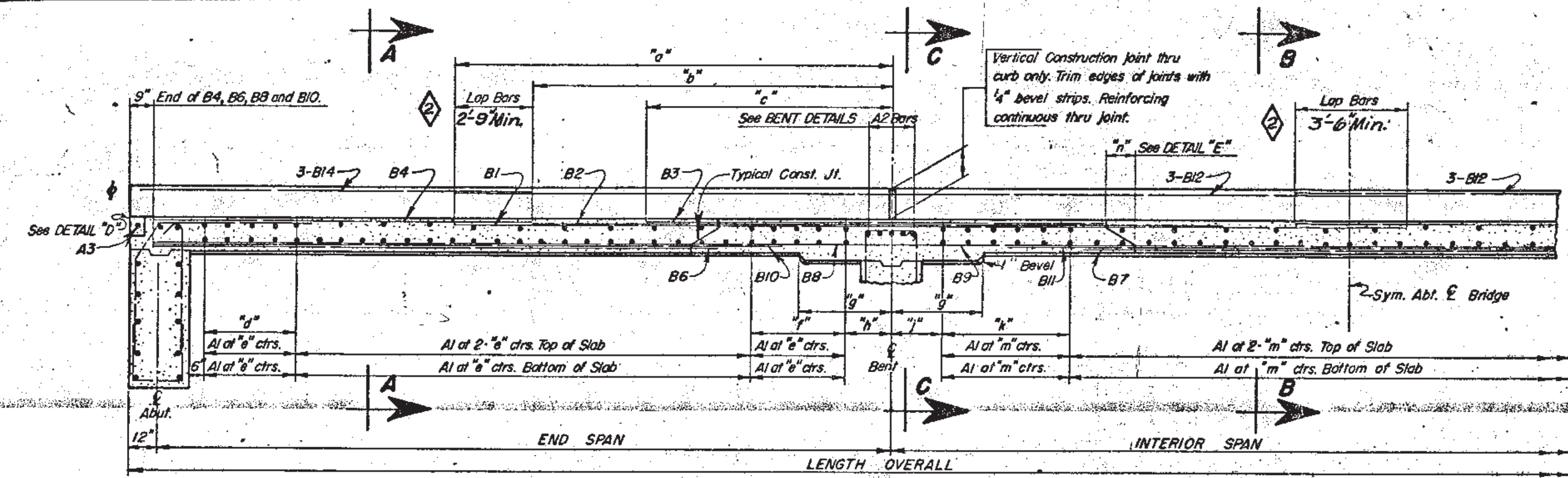
(NORTH BOUND LANES)
GENERAL DRAWING, LAYOUT AND QUANTITIES
FOR
73'-6" CONT. CONC. BRIDGE
38'-0" ROADWAY
OVER BRANCH NO. DEER CREEK SEC.30-T112N-R49W
STA.232+63.25 TO 233+36.75 I 29-5(11)141
BROOKINGS COUNTY
Str. No. 06-185-044 SOUTH DAKOTA HS 20-44
DEPARTMENT OF HIGHWAYS (8 ALT.)
JUNE 1967 (3) OF (4)

-X020-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	P.W.F.	R.C.M.	R. L. Schuett, BRIDGE ENGINEER

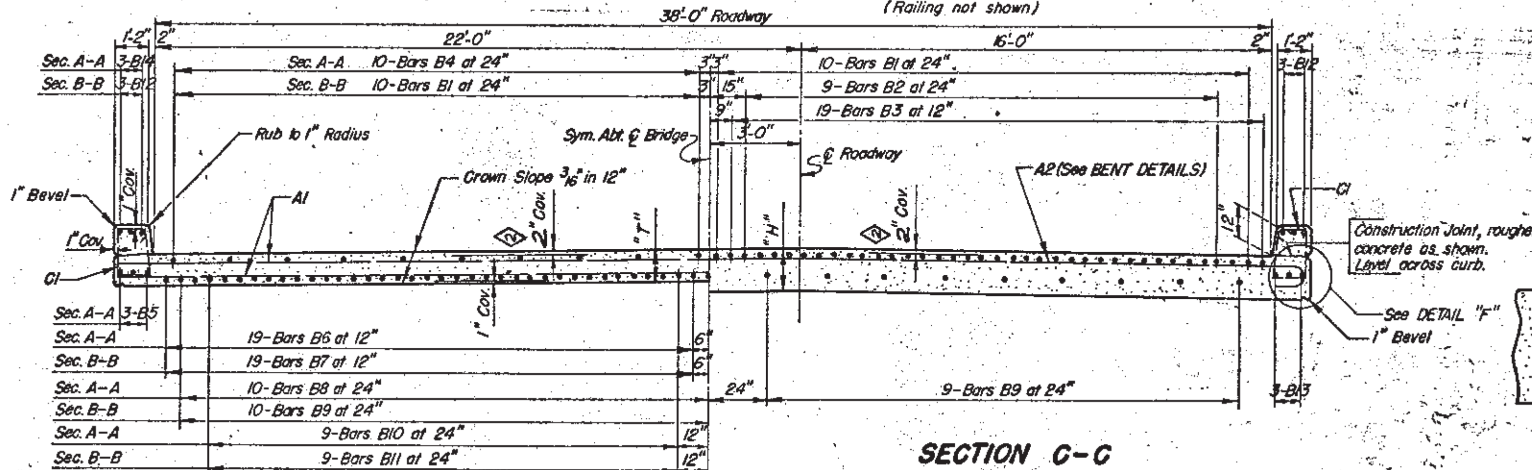
PLANS BY
BRIDGE SEC., S.DAK. DEPT. HWYS.

P.S.&E. Rev. 1-19-68 by Ed. L., Chk. by



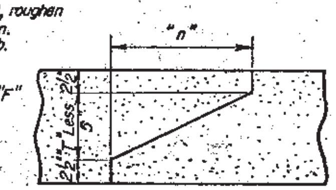
HALF LONGITUDINAL SECTIONAL VIEW

(Railing not shown)

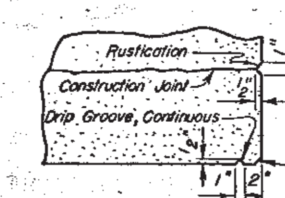


SECTION A-A
SECTION B-B — As shown and noted

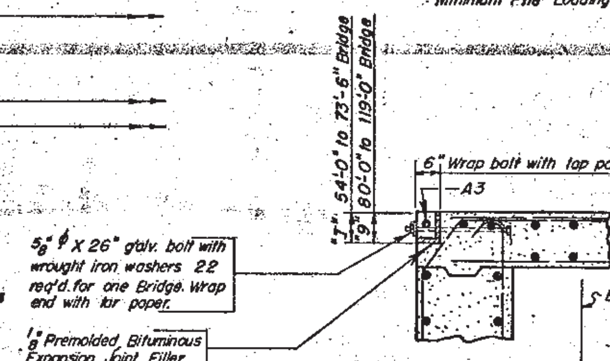
SECTION C-C



DETAIL "E"
(TYPICAL CONSTRUCTION JOINT)



DETAIL "F"



DETAIL "D"

NOTES—

These notes cover Abutment, Superstructure, and Railing Details. The General Drawing for each Structure will show spans elevations, and other necessary notes and details.

◊1 DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for type and length of Abutment piling.

STRUCTURAL STEEL: All 5/8"φ bolts including washers, and all pile connections in Abutments, and floor drains shall be paid for as Structural Steel.

REINFORCING STEEL: All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

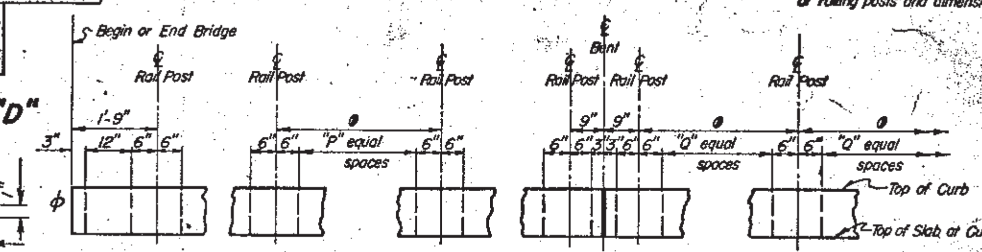
CONCRETE: All Concrete shall be Class "A". ◊ All exposed concrete corners and edges shall be chamfered to a 3/4" bevel unless otherwise noted. If necessary to facilitate construction, transverse joints may be made at the quarter points of each and any span, adjacent to the interior bents. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu.yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. & Alternate Loading as designated in P.P.M. 20-4 Section 4c. Unit Stresses, Conc. f_c=1,600 p.s.i., n=8. Reinforcing Steel f_s=20,000 p.s.i. (Int. Grade Steel). Equivalent fluid pressure of earth at 40#/sq.ft. Minimum Pile Loading = 24 tons for Timber Piling and 45 tons for 8BP36 Steel Bearing Piles (value for one pile).

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-044

φ See Railing Sheet for number of railing posts and dimensions.



C1 BAR SPACING

NUMBER OF EQUAL SPACES

Bridge Length	54'-0"	60'-6"	67'-0"	73'-6"	80'-0"	86'-6"	93'-0"	99'-6"	106'-0"	112'-6"	119'-0"
"P" equal spaces	6	7	5	6	7	7	6	6	7	7	6
"Q" equal spaces	5	6	7	6	6	7	6	6	7	7	6

SLAB DATA

REINFORCING SCHEDULE

LENGTH OVERALL	END SPAN	INTERIOR SPAN	A1 No.	A1 Size	A1 Length	A2	A3 No.	A3 Size	A3 Length	B1 No.	B1 Size	B1 Length	B2 No.	B2 Size	B2 Length	B3 No.	B3 Size	B3 Length	B4 No.	B4 Size	B4 Length
54'-0"	16'	20'	88	5	40'-3"	See "BENT DETAILS" for Number, Length, Size and Type.	2	5	37'-9"	40	8	22'-6"	36	7	19'-0"	76	7	15'-0"	40	7	8'-0"
60'-6"	18'	22'-6"	100								8	24'-0"		8	20'-6"		7	13'-6"		7	9'-6"
67'-0"	20'	25'	125								8	26'-0"		7	22'-0"		8	17'-0"		7	11'-0"
73'-6"	22'	27'-6"	139								8	28'-0"		8	23'-6"		8	16'-6"		8	12'-6"
80'-0"	24'	30'	151								9	31'-0"		9	23'-0"		8	15'-0"		8	12'-6"
86'-6"	26'	32'-6"	167								9	34'-0"		8	24'-6"		9	19'-0"		8	15'-0"
93'-0"	28'	35'	179								9	35'-0"		9	25'-0"		9	18'-6"		9	15'-0"
99'-6"	30'	37'-6"	196								10	36'-6"		9	25'-6"		9	19'-0"		9	17'-0"
106'-0"	32'	40'	210								10	39'-0"		9	27'-0"		10	21'-6"		9	17'-6"
112'-6"	34'	42'-6"	222								10	40'-0"		10	29'-0"		10	21'-6"		9	19'-6"
119'-0"	36	45'	238	5	40'-3"		2	5	37'-9"	40	10	42'-6"	36	11	31'-0"	76	10	22'-0"	40	9	21'-0"

LENGTH OVERALL	B5 No.	B5 Size	B5 Length	B6 No.	B6 Size	B6 Length	B7 No.	B7 Size	B7 Length	B8 No.	B8 Size	B8 Length	B9 No.	B9 Size	B9 Length
54'-0"	12	6	16'-9"	76	8	13'-6"	38	8	12'-6"	38	8	16'-3"	19	8	20'-0"
60'-6"		7	18'-9"		8	14'-6"		8	14'-6"		8	18'-3"		8	22'-6"
67'-0"		7	20'-9"		8	15'-6"		8	14'-0"		9	20'-3"		9	25'-0"
73'-6"		8	22'-9"		8	17'-0"		8	16'-0"		9	22'-3"		9	27'-6"
80'-0"		8	24'-9"		9	19'-6"		9	18'-6"		9	24'-3"		9	30'-0"
86'-6"		9	26'-9"		9	20'-6"		9	19'-6"		9	26'-3"		9	32'-6"
93'-0"		9	28'-9"		9	21'-0"		9	19'-0"		10	28'-3"		10	35'-0"
99'-6"		9	30'-9"		9	23'-0"		9	21'-0"		10	30'-3"		10	37'-6"
106'-0"		10	32'-9"		9	23'-6"		9	21'-6"		10	32'-3"		10	40'-0"
112'-6"		10	34'-9"		10	26'-0"		10	24'-0"		10	34'-3"		10	42'-6"
119'-0"	12	11	36'-9"	76	10	26'-6"	38	10	24'-0	38	10	36'-3"	19	10	45'-0"

LENGTH OVERALL	B10 No.	B10 Size	B10 Length	B11 No.	B11 Size	B11 Length	B12 No.	B12 Size	B12 Length	B13 No.	B13 Size	B13 Length	B14 No.	B14 Size	B14 Length
54'-0"	36	7	15'-6"	18	7	16'-6"	12	6	22'-6"	6	6	20'-0"	12	6	8'-6"
60'-6"		8	16'-6"		8	18'-6"		7	24'-0"		7	22'-6"		7	10'-0"
67'-0"		9	18'-0"		9	19'-6"		7	26'-0"		7	25'-0"		7	11'-6"
73'-6"		9	19'-0"		9	21'-0"		8	28'-0"		8	27'-6"		8	13'-0"
80'-0"		8	20'-6"		8	22'-0"		8	31'-0"		8	30'-0"		8	13'-0"
86'-6"		9	22'-6"		9	24'-0"		9	32'-0"		9	32'-6"		8	15'-6"
93'-0"		9	23'-0"		9	23'-6"		9	35'-0"		9	35'-0"		8	15'-6"
99'-6"		9	24'-6"		9	25'-6"		9	36'-6"		9	37'-6"		8	17'-6"
106'-0"		10	26'-6"		10	28'-0"		10	39'-0"		10	40'-0"		8	18'-0"
112'-6"		9	27'-6"		9	28'-6"		10	40'-6"		10	42'-6"		8	20'-0"
119'-0"	36	10	29'-6"	18	10	30'-6"	12	11	42'-6"	6	11	45'-0"	12	8	21'-6"

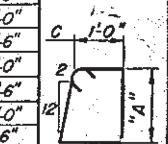
LENGTH OVERALL	C1 No.	C1 Size	C1 Length	C1 Type	C1 A
54'-0"	108	4	6'-3"	T1	1'-6¾"
60'-6"	122		6'-6"		1'-7¼"
67'-0"	136		6'-6"		1'-7¾"
73'-6"	156		6'-6"		1'-8¼"
80'-0"	168		6'-9"		1'-8¾"
86'-6"	176		6'-9"		1'-9½"
93'-0"	198		7'-0"		1'-10"
99'-6"	198		7'-0"		1'-10½"
106'-0"	224		7'-0"		1'-11"
112'-6"	224		7'-3"		1'-11½"
119'-0"	240	4	7'-3"	T1	2'-0"

DIMENSIONS

"T"	"H"	"a"	"b"	"c"	"d"	"e"	"f"	"g"	"h"	"j"	"k"	"m"	"n"	LENGTH OVERALL
9¾"	13¼"	11'-0"	9'-6"	7'-6"	1'-8"	10"	1'-8"	2'-0"	1'-2"	1'-9"	2'-9"	11"	8½"	54'-0"
10¼"	14"	11'-3"	10'-3"	6'-9"	1'-8"	10"	1'-8"	2'-3"	1'-6"	1'-2"	2'-9"	11"	9½"	60'-6"
10¾"	14¾"	12'-0"	11'-0"	8'-6"	2'-3"	9"	3'-0"	2'-6"	1'-3"	1'-8"	3'-4"	10"	10½"	67'-0"
11½"	15¾"	12'-6"	11'-9"	8'-3"	3'-0"	9"	3'-9"	2'-9"	1'-9"	1'-3"	3'-4"	10"	11½"	73'-6"
12"	16¼"	14'-3"	11'-6"	7'-6"	3'-0"	9"	3'-0"	3'-0"	1'-6"	1'-8"	4'-2"	10"	1'-0¼"	80'-0"
12¾"	17¼"	16'-0"	12'-3"	9'-6"	3'-0"	9"	3'-9"	3'-3"	1'-3"	1'-3"	4'-2"	10"	1'-1½"	86'-6"
13¼"	18"	15'-9"	12'-6"	9'-3"	3'-9"	9"	4'-6"	3'-6"	1'-9"	1'-8"	5'-0"	10"	1'-2½"	93'-0"
13¾"	18¾"	16'-0"	12'-9"	9'-6"	4'-6"	9"	4'-6"	3'-9"	1'-6"	1'-3"	5'-10"	10"	1'-3¼"	99'-6"
14¼"	19¼"	17'-3"	13'-6"	10'-9"	4'-6"	9"	5'-3"	4'-0"	1'-3"	1'-8"	6'-8"	10"	1'-4¾"	106'-0"
14¾"	20"	17'-6"	14'-6"	10'-9"	4'-6"	9"	5'-3"	4'-3"	1'-9"	1'-3"	6'-8"	10"	1'-5"	112'-6"
15¼"	20¾"	18'-0"	15'-6"	11'-0"	6'-0"	9"	6'-0"	4'-6"	1'-6"	1'-8"	7'-6"	10"	1'-6"	119'-0"

BAR BENDS

NOTE.-All dimensions are out to out of bars.

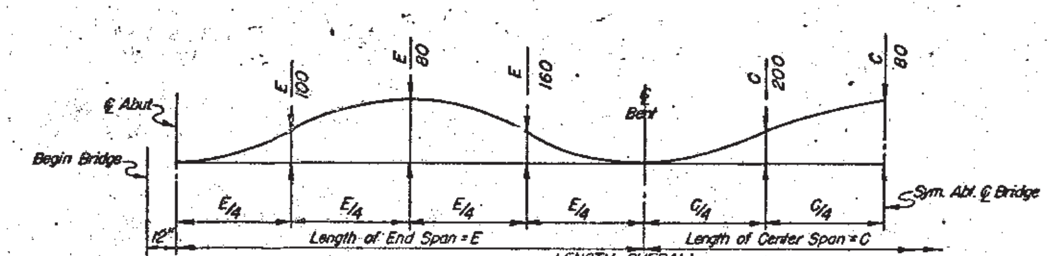


Type T1

ESTIMATED QUANTITIES

LENGTH OVERALL	TWO ABUTMENTS: Class "A" Concrete † Cu. Yds.	TWO ABUTMENTS: Reinforcing Steel Lbs.	TIMBER PILES: Number of Piles	TIMBER PILES: Struct. Steel Lbs.	STEEL PILES: Number of Piles	STEEL PILES: Struct. Steel Lbs.	SLAB & CURBS: Class "A" Concrete Cu. Yds.	SLAB & CURBS: Reinforcing Steel Lbs.	SLAB & CURBS: 5/8"φ Bolts	SLAB & CURBS: Number of Floor Drains	SLAB & CURBS: Structural Steel Lbs.
54'-0"	42.6	4930	16	760	12	300	69.4	20,470	22	12	160
60'-6"			16	760	12	300	82.2	23,665		14	185
67'-0"			16	760	12	300	95.9	28,590		14	190
73'-6"			18	860	12	300	112.7	32,340		18	235
80'-0"			18	860	12	300	128.0	36,795		18	240
86'-6"			18	860	12	300	147.1	42,460		20	270
93'-0"			20	950	14	350	164.7	46,585		20	275
99'-6"			20	950	14	350	183.2	51,155		20	285
106'-0"			22	1050	14	350	202.0	58,355		24	335
112'-6"			22	1050	14	350	222.2	63,780		26	370
119'-0"	42.6	4930	22	1050	14	350	243.3	70,835	22	26	375

† Includes slab and curbs directly over abutments.



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow. Camber is calculated thus using the 106'-0" Bridge as an illustration: E=32' and C=40'; C/80=40/80=1/2, provide 1/2" camber at center of center span. The values obtained for camber shall be added to the proposed grade elevations at the respective stations to establish the elevations of the Top of the finished roadway slab.

◊ Rev. 2-19-69 R.K.
◊ Rev. Spec. Note (7-6-67) M.V.W.
φ Rev. 1-24-68

DETAILS OF STANDAND SUPERSTRUCTURE
FOR
3-SPAN CONTINUOUS
CONCRETE SLAB BRIDGES
38'-0" ROADWAY (22'-0" R_L & 16'-0" R_L OF ℄ RDWY.)
54'-0" TO 119'-0" OVERALL LENGTH
SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS

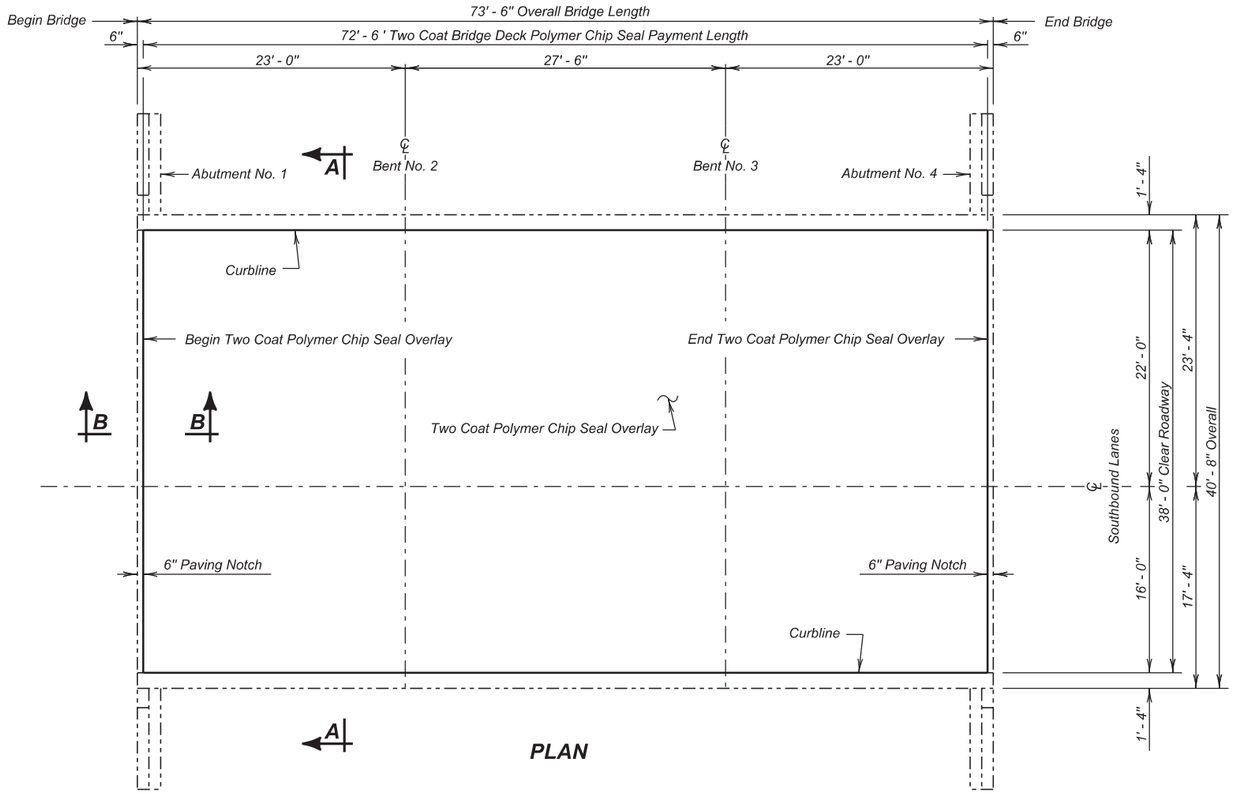
(4) OF (4)

APRIL 1966 HS20-44 (& ALT.)

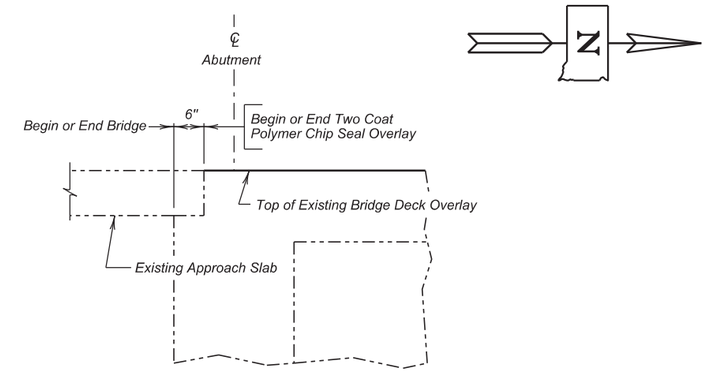
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	M.V.W.	C.H.J.	[signature] BRIDGE ENGINEER

NCCS-38-00-119-1-2

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	32	51



PLAN



SECTION B - B

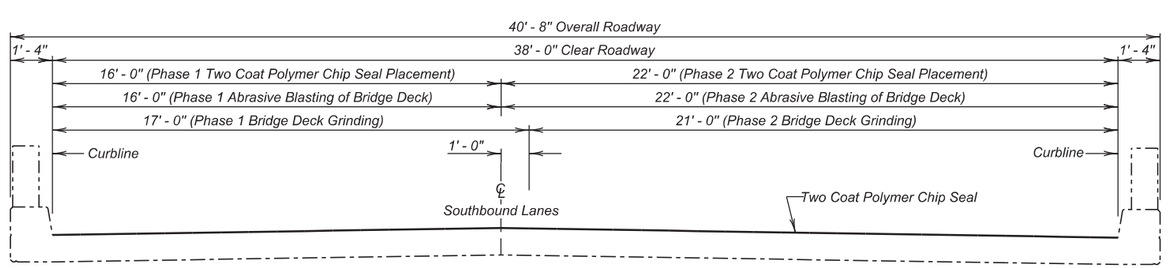
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	19.8	19.8
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	128.9	177.2
	Abrasive Blasting of Bridge Deck	Sq. Yd.	128.9	177.2
	Bridge Deck Grinding	Sq. Yd.	136.9	169.2
*	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
*	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

NOTE :
* 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.

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(SOUTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR

73' - 6" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 0° SKEW
OVER BRANCH NO. DEER CREEK — SEC.30-T112N-R49W
STR. NO. 06-184-044 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Boeden
BROK035B	035BRF01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	39.6	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	306.1	SqYd
491E0110	Abrasive Blasting of Bridge Deck	306.1	SqYd
491E0120	Bridge Deck Grinding	306.1	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

73' - 6" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-184-044

FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRF01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	34	51

-X020-

INDEX OF BRIDGE SHEETS.—

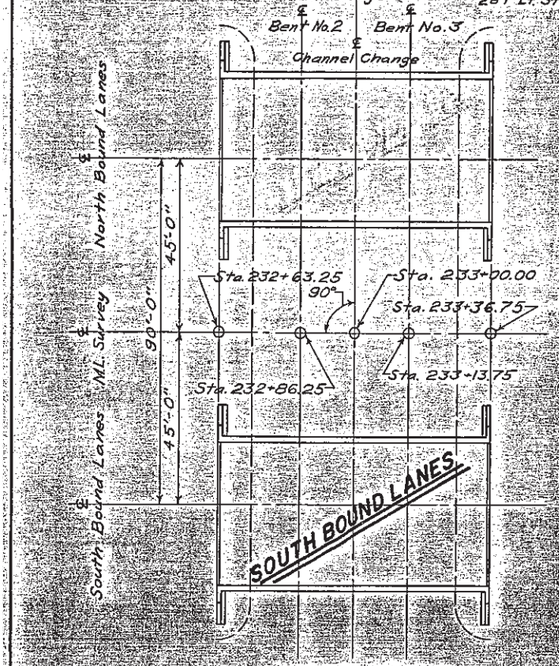
Sheet No.1 - General Drawing, Layout and Quantities.
Sheet No.2 - Subsurface Investigations.
Sheet No.3 - Details of Std. Superstructure. NCCS-38-00-119-1-2 (2-19-69)
Sheet No.4 - Details of Std. Abutment NCCS-38-00-119-2-2 (2-19-69)
Sheet No.5 - Bent Details.
Sheet No.6 - Std. Type RT-3A Steel Railing, Curb & Drain Details. RT-3A

NOTE.—

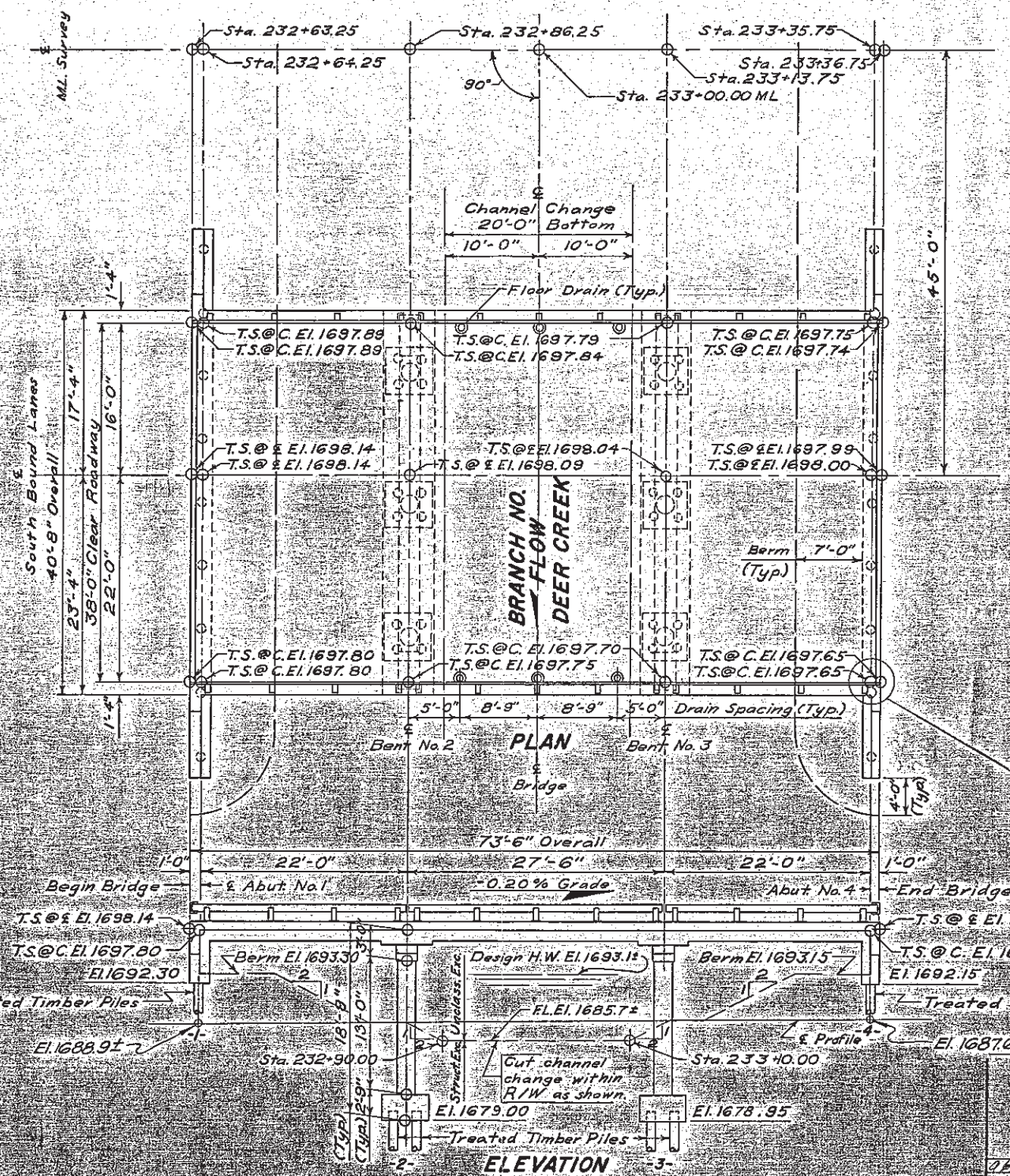
T.S.@C.El. = Top of Slab at Curb Elevation
T.S.@℄ El. = Top of Slab at ℄ Roadway Elevation

B.M. No.14 - Elev. 1695.01
Iron pin ℄ Gds.
327' Rt. Sta. 213+49

B.M. No.15 - Elev. 1702.05
Iron pin ℄ Gds.
287' Lt. Sta. 240+24



LAYOUT SKETCH



0.50	1350 c.f.s.					
A	253 Sq. ft					
V	5.3 f.p.s.					

SPECIFICATION NOTE.—

Use South Dakota Standard Specifications for Roads and Bridges, 1969 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES.—

1. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
2. See NOTES on Sheets No.1 thru No.6.
3. Place floor drains as shown in plan (6 Required).
4. Longitudinal elements of slab shall conform to the grade.
5. Rail Posts shall be built vertical.
6. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 303.1
7. In the event pile shoes are used, see Standard Plate No. 301 for details.
8. Furnish and install Inserts and Eyebolts as shown on Standard Plate No. 305 except that bolts shall be 5/8" Φ.
9. Prebored holes for piles at Abutments shall be backfilled with granular material acceptable to the Engineer and compacted as specified by the Engineer. The cost of granular material inplace shall be included in the unit price bid for the piles.

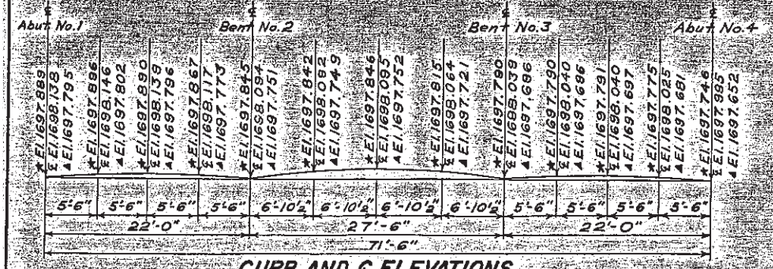
ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-044

CURB NOTE—

The Curb ends at Begin Bridge and End Bridge shall be built vertical rather than beveled 2 in 12 as indicated elsewhere in these Plans.

Revised 1-20-71



CURB AND ℄ ELEVATIONS

Elevations indicated with ★ are top of finished slab at left curb, with ℄ are top of finished slab at ℄ roadway, and ▲ are top of finished slab at right curb. Camber for dead load deflection plus plastic flow, shown on Sheet No. 3 of Bridge Plans, have been included in the elevations shown.

ESTIMATED QUANTITIES (ONE STRUCTURE)

Bid Item No.	40005	40505	40555	40166	40705	40710	10410	10405
ITEM	Cl. "A" Conc. Cu. Yds.	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type RT-3A Steel Railing - Lin. Ft.	Piles - Lin. Ft. Treated Timber	Piles - Lin. Ft. ϕ Test	Excavation - Cu. Yds. Struct.	Excavation - Cu. Yds. ▲ Unclass.
Superstructure	112.7	32,340	115	147.0				
Abutment No.1	21.3	2,465	430		8 @ 45' = 360'	1 @ 50' = 50	16	
Bents No.2 & No.3	33.2	5890			22 @ 35' = 770'	2 @ 40' = 80	123	
Abutment No.4	21.3	2,465	430		8 @ 45' = 360'	1 @ 50' = 50	16	
Totals	188.5	43,160	975	147.0	1490'	180'	155	▲ —

ϕ One Treated Timber Test Pile shall be driven at Abut. No.1 and No.4 and at Bents No.2 and No.3 before remaining piles are ordered.
▲ All Unclassified Excavation to be done by others.

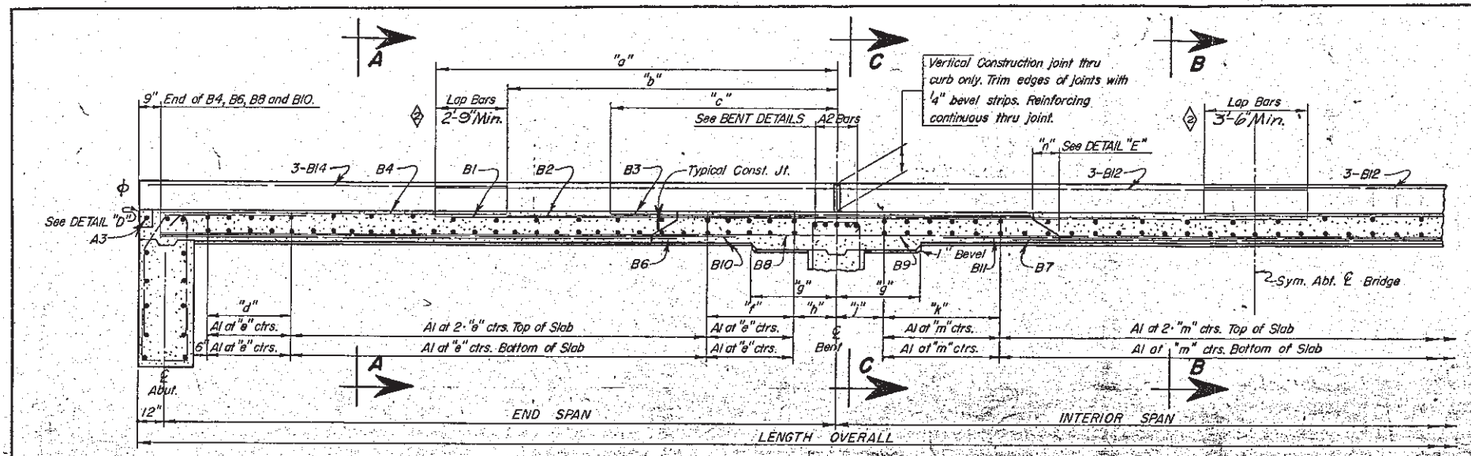
(SOUTH BOUND LANES)
GENERAL DRAWING, LAYOUT AND QUANTITIES
FOR
73'-6" CONT. CONC. BRIDGE
38'-0" ROADWAY
OVER BRANCH NO. DEER CREEK SEC.30-T112N-R49W
STA. 232+63.25 TO 233+36.75 I 29-5(11)141
BROOKINGS COUNTY
Str. No. 06-184-044 SOUTH DAKOTA HS 20-44 (& ALT.)
DEPARTMENT OF HIGHWAYS
JUNE 1967 (3) OF (4)

-X020-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	P.W.F.	R.C.M.	BRIDGE ENGINEER

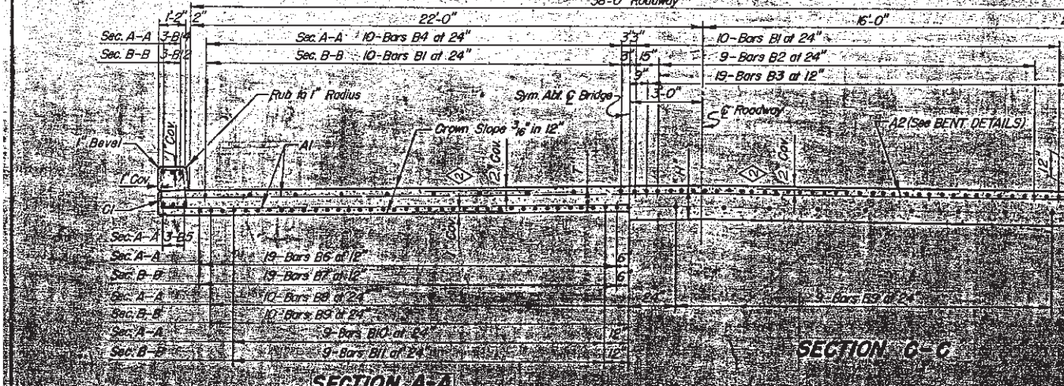
PLANS BY
BRIDGE SEC., S. DAK. DEPT. HWYS.
P.S.&E. Revision 1-19-68 by Ed.P., Chk. by

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	35	51



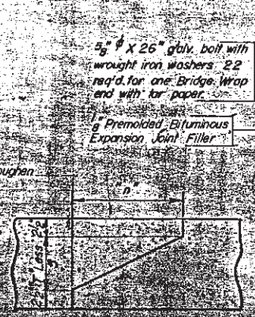
HALF LONGITUDINAL SECTIONAL VIEW

(Railing not shown)

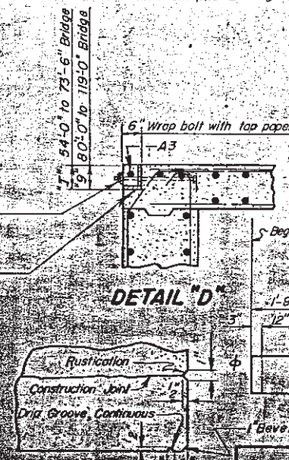


SECTION A-A
SECTION B-B

SECTION C-C



DETAIL "E"
(TYPICAL CONSTRUCTION JOINT)



DETAIL "D"

DETAIL "F"

NOTES —

These notes cover Abutment, Superstructure, and Railing Details. The General Drawing for each Structure will show spans elevations, and other necessary notes and details.

(1) DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for type and length of Abutment piling.

STRUCTURAL STEEL: All 5/8" ϕ bolts including washers, and all pile connections in Abutments, and floor drains shall be paid for as Structural Steel.

REINFORCING STEEL: All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

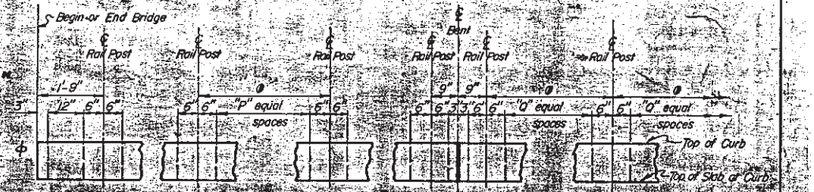
CONCRETE: All concrete shall be Class "A". (2) All exposed concrete corners and edges shall be chamfered to a 3/4" bevel unless otherwise noted. If necessary to facilitate construction, transverse joints may be made at the quarter points of each and any span, adjacent to the interior bents. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu.yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. & Alternate Loading as designated in P.P.M. 20-4 Section 4c. Unit Stresses, Conc. f_c=1,600 p.s.i., n=8. Reinforcing Steel f_s=20,000 p.s.i. (Int. Grade Steel). Equivalent fluid pressure of earth at 40#/sq.ft. Minimum Pile Loading = 24 tons for Timber Piling and 45 tons for 8BP36 Steel Bearing Piles (value for one pile).

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-044

(3) See Railing Sheet for number of railing posts and dimensions.



CI BAR SPACING

NUMBER OF EQUAL SPACES

Bridge Length	54'-0"	60'-6"	67'-0"	73'-6"	80'-0"	86'-6"	93'-0"	99'-6"	106'-0"	112'-6"	119'-0"
"f" equal spaces	6	7	6	6	7	7	6	7	6	7	6
"g" equal spaces	5	6	7	6	6	8	6	6	7	7	8

SLAB DATA

REINFORCING SCHEDULE

DIMENSIONS

LENGTH OVERALL	END SPAN	INTERIOR SPAN	A1 No.	A1 Size	A1 Length	A2	A4 No.	A4 Size	A4 Length	B1 No.	B1 Size	B1 Length	B2 No.	B2 Size	B2 Length	B3 No.	B3 Size	B3 Length	B4 No.	B4 Size	B4 Length	B8 No.	B8 Size	B8 Length	B9 No.	B9 Size	B9 Length	B10 No.	B10 Size	B10 Length	B11 No.	B11 Size	B11 Length	B12 No.	B12 Size	B12 Length	B13 No.	B13 Size	B13 Length	B14 No.	B14 Size	B14 Length	C1 No.	C1 Size	C1 Length	C1 Type	A	"a"	"b"	"c"	"d"	"e"	"f"	"g"	"h"	"j"	"k"	"m"	"n"	LENGTH OVERALL	BAR BENDS
54'-0"	16	20'	88	5	20'-3"	40	8	5	22'-6"	36	6	15'-0"	26	7	15'-0"	40	7	18'-0"	12	8	16'-6"	16	8	18'-0"	16	8	18'-0"	16	8	18'-0"	16	8	18'-0"	16	8	18'-0"	12	6	8'-6"	100	4	6'-3"	78	1	6'-3"	9'-3"	13½"	14'-0"	9'-6"	7'-6"	1'-8"	10"	1'-8"	2'-0"	1'-2"	1'-9"	2'-9"	1"	8½"	54'-0"	
60'-6"	16	22'-6"	100	5	22'-9"	40	8	5	24'-0"	40	8	20'-0"	30	8	20'-0"	40	8	20'-0"	14	8	18'-3"	18	8	20'-0"	18	8	20'-0"	18	8	20'-0"	18	8	20'-0"	18	8	20'-0"	14	6	10'-0"	122	4	6'-6"	88	1	6'-6"	10'-9"	14"	11'-3"	10'-3"	6'-9"	1'-8"	10"	1'-8"	2'-3"	1'-6"	1'-6"	2'-5"	1"	9½"	60'-6"	
67'-0"	16	25'	112	5	25'-3"	40	8	5	25'-0"	44	8	22'-0"	34	8	22'-0"	44	8	22'-0"	16	8	20'-3"	20	8	22'-0"	20	8	22'-0"	20	8	22'-0"	20	8	22'-0"	20	8	22'-0"	16	6	11'-6"	136	4	6'-9"	98	1	6'-9"	12'-0"	15½"	14'-0"	11'-0"	8'-6"	1'-8"	10"	1'-8"	2'-6"	1'-9"	1'-9"	2'-9"	1"	10"	67'-0"	
73'-6"	16	27'-6"	124	5	27'-9"	40	8	5	27'-0"	48	8	24'-0"	38	8	24'-0"	48	8	24'-0"	18	8	22'-3"	22	8	24'-0"	22	8	24'-0"	22	8	24'-0"	22	8	24'-0"	22	8	24'-0"	18	6	13'-6"	156	4	7'-3"	112	1	7'-3"	13'-6"	17"	16'-6"	12'-0"	9'-3"	1'-8"	10"	1'-8"	2'-9"	2'-0"	2'-0"	3'-0"	1"	11"	73'-6"	
80'-0"	16	30'	136	5	30'-3"	40	8	5	28'-6"	52	8	26'-0"	42	8	26'-0"	52	8	26'-0"	20	8	24'-3"	24	8	26'-0"	24	8	26'-0"	24	8	26'-0"	24	8	26'-0"	24	8	26'-0"	20	6	15'-0"	172	4	7'-9"	126	1	7'-9"	15'-0"	18"	18'-0"	13'-0"	9'-9"	1'-8"	10"	1'-8"	3'-0"	2'-3"	2'-3"	3'-3"	1"	12"	80'-0"	
86'-6"	16	32'-6"	148	5	32'-9"	40	8	5	30'-0"	56	8	28'-0"	46	8	28'-0"	56	8	28'-0"	22	8	26'-3"	26	8	28'-0"	26	8	28'-0"	26	8	28'-0"	26	8	28'-0"	26	8	28'-0"	22	6	16'-6"	188	4	8'-3"	140	1	8'-3"	16'-6"	19"	19'-6"	14'-0"	10'-6"	1'-8"	10"	1'-8"	3'-3"	2'-6"	2'-6"	3'-6"	1"	13"	86'-6"	
93'-0"	16	35'	160	5	35'-3"	40	8	5	32'-6"	60	8	30'-0"	50	8	30'-0"	60	8	30'-0"	24	8	28'-3"	28	8	30'-0"	28	8	30'-0"	28	8	30'-0"	28	8	30'-0"	28	8	30'-0"	24	6	18'-0"	204	4	8'-9"	154	1	8'-9"	18'-0"	20"	21'-0"	15'-0"	11'-3"	1'-8"	10"	1'-8"	3'-6"	2'-9"	2'-9"	3'-9"	1"	14"	93'-0"	
99'-6"	16	37'-6"	172	5	37'-9"	40	8	5	35'-0"	64	8	32'-0"	54	8	32'-0"	64	8	32'-0"	26	8	30'-3"	30	8	32'-0"	30	8	32'-0"	30	8	32'-0"	30	8	32'-0"	30	8	32'-0"	26	6	19'-6"	220	4	9'-3"	168	1	9'-3"	19'-6"	21"	22'-6"	16'-0"	12'-0"	1'-8"	10"	1'-8"	3'-9"	3'-0"	3'-0"	4'-0"	1"	15"	99'-6"	
106'-0"	16	40'	184	5	40'-3"	40	8	5	37'-6"	68	8	34'-0"	58	8	34'-0"	68	8	34'-0"	28	8	32'-3"	32	8	34'-0"	32	8	34'-0"	32	8	34'-0"	32	8	34'-0"	32	8	34'-0"	28	6	21'-0"	236	4	9'-9"	182	1	9'-9"	21'-0"	22"	24'-0"	17'-0"	12'-9"	1'-8"	10"	1'-8"	4'-0"	3'-3"	3'-3"	4'-3"	1"	16"	106'-0"	
112'-6"	16	42'-6"	196	5	42'-9"	40	8	5	40'-0"	72	8	36'-0"	62	8	36'-0"	72	8	36'-0"	30	8	34'-3"	36	8	36'-0"	36	8	36'-0"	36	8	36'-0"	36	8	36'-0"	36	8	36'-0"	30	6	22'-6"	252	4	10'-3"	196	1	10'-3"	22'-6"	23"	25'-6"	18'-0"	13'-6"	1'-8"	10"	1'-8"	4'-3"	3'-6"	3'-6"	4'-6"	1"	17"	112'-6"	
119'-0"	16	45'	208	5	45'-3"	40	8	5	42'-6"	76	8	38'-0"	66	8	38'-0"	76	8	38'-0"	32	8	36'-3"	40	8	38'-0"	40	8	38'-0"	40	8	38'-0"	40	8	38'-0"	40	8	38'-0"	32	6	24'-0"	268	4	10'-9"	210	1	10'-9"	24'-0"	24"	27'-0"	19'-0"	14'-3"	1'-8"	10"	1'-8"	4'-6"	3'-9"	3'-9"	4'-9"	1"	18"	119'-0"	

Dwg. 11

ESTIMATED QUANTITIES

TWO ABUTMENTS — SLAB & CURB

LENGTH OVERALL	Class "A" Concrete Cu.Yds.	Reinforcing Steel Lbs.	Timber Piles Number of Piles	Timber Piles Struct. Steel Lbs.	Steel Piles Number of Piles	Steel Piles Struct. Steel Lbs.	Class "A" Concrete Cu.Yds.	Reinforcing Steel Lbs.	Curb Cu.Yds.	Curb Reinforcing Steel Lbs.
54'-0"	42.6	3930	16	760	12	300	69.4	10,410	22	162
60'-6"	[illegible]	[illegible]	16	760	12	300	82.2	12,665	24	184
67'-0"	[illegible]	[illegible]	16	760	12	300	94.9	15,290	26	190
73'-6"	[illegible]	[illegible]	18	860	12	300	107.7	17,340	28	236
80'-0"	[illegible]	[illegible]	18	860	12	300	120.4	19,785	30	240
86'-6"	[illegible]	[illegible]	18	860	14	300	133.1	22,360	32	270
93'-0"	[illegible]	[illegible]	20	960	14	300	145.7	[illegible]	34	278
99'-6"	[illegible]	[illegible]	20	960	14	300	158.4	31,885	36	288
106'-0"	[illegible]	[illegible]	22	1050	14	300	171.2	35,325	38	338
112'-6"	[illegible]	[illegible]	22	1050	14	300	183.9	38,780	40	370
119'-0"	46.6	4930	22	1050	14	300	196.6	42,855	42	378

* Includes 360 line curbs directly over abutments.

CAMBER DIAGRAM

Camber is calculated for dead load plus one half of live load. Number of calculated thousandths of an inch for camber shall be rounded off to the nearest whole number. Camber is zero at centerline of bent. The above diagram is an illustration only. Camber is to be imposed with sections of the girder in place, so that the elevation of the top of the finished roadway slab.

℄ Rev. 12-13-69 RL
◊ Rev. Spec. Note (7-6-67) M.V.W.

DETAILS OF STANDARD SUPERSTRUCTURE FOR 3-SPAN CONTINUOUS CONCRETE SLAB BRIDGES

38'-0" ROADWAY (22'-0" R_L & 16'-0" R_L OF ℄ RDWY.)

54'-0" TO 119'-0" OVERALL LENGTH

SOUTH DAKOTA DEPARTMENT OF HIGHWAYS

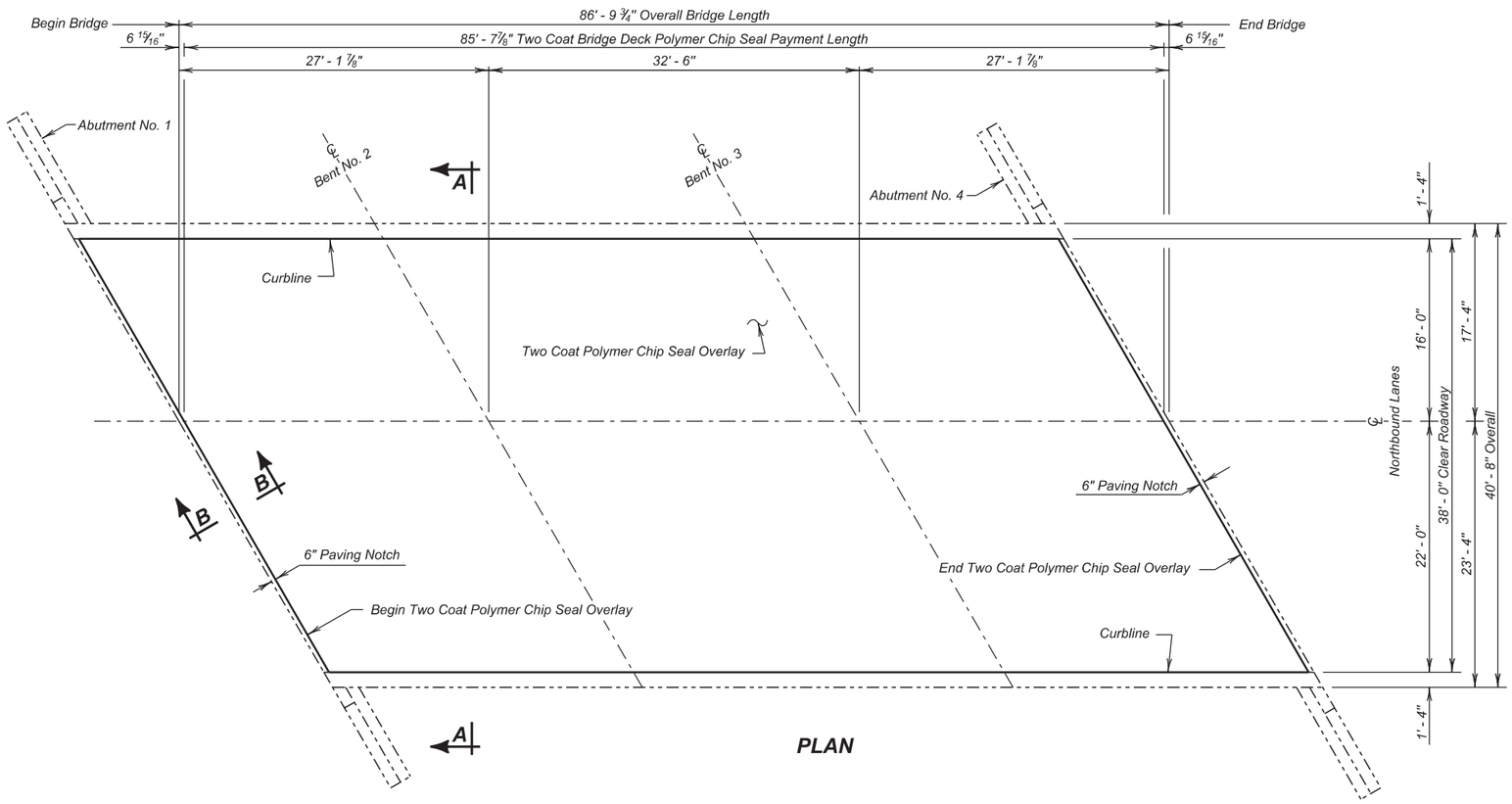
APRIL 1966 HS20-44(8ALT)

(4) OF (4)

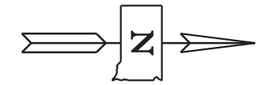
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	M.V.W.	C.H.U.	BRIDGE ENGINEER

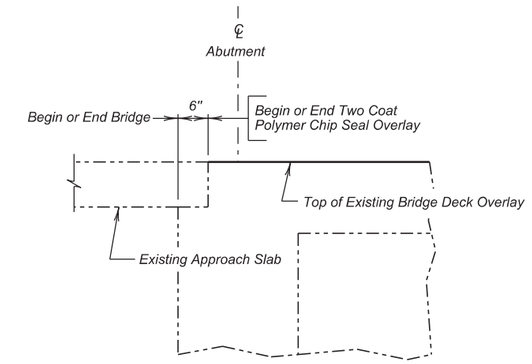
NCCS-38-00-119-1-2

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	36	51



PLAN





SECTION B - B

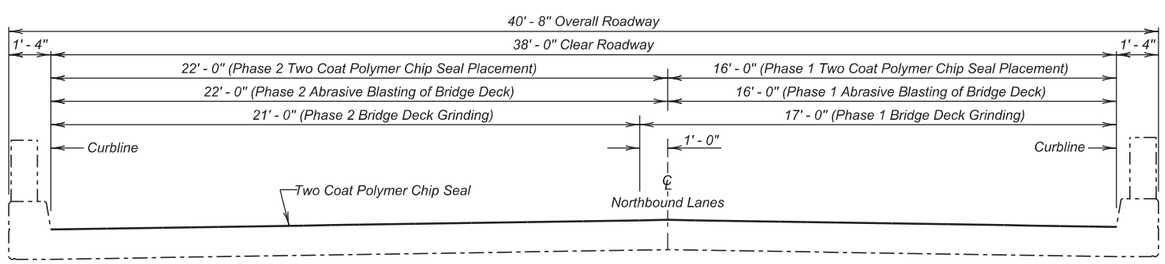
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge deck	Cu. Ft.	21.7	21.7
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	152.3	209.4
	Abrasive Blasting of Bridge Deck	Sq. Yd.	152.3	209.4
	Bridge Deck Grinding	Sq. Yd.	161.8	199.9
*	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
*	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

NOTE :
* 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.

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(NORTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR

86' - 9 3/4" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 30° SKEW R.H.F.
OVER BR. N. DEER CREEK — SEC. 19-T112N-R49W
STR. NO. 06-185-031 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRG01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	43.4	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	361.7	SqYd
491E0110	Abrasive Blasting of Bridge Deck	361.7	SqYd
491E0120	Bridge Deck Grinding	361.7	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

86' - 9¾" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-185-031

FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRG01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	38	51

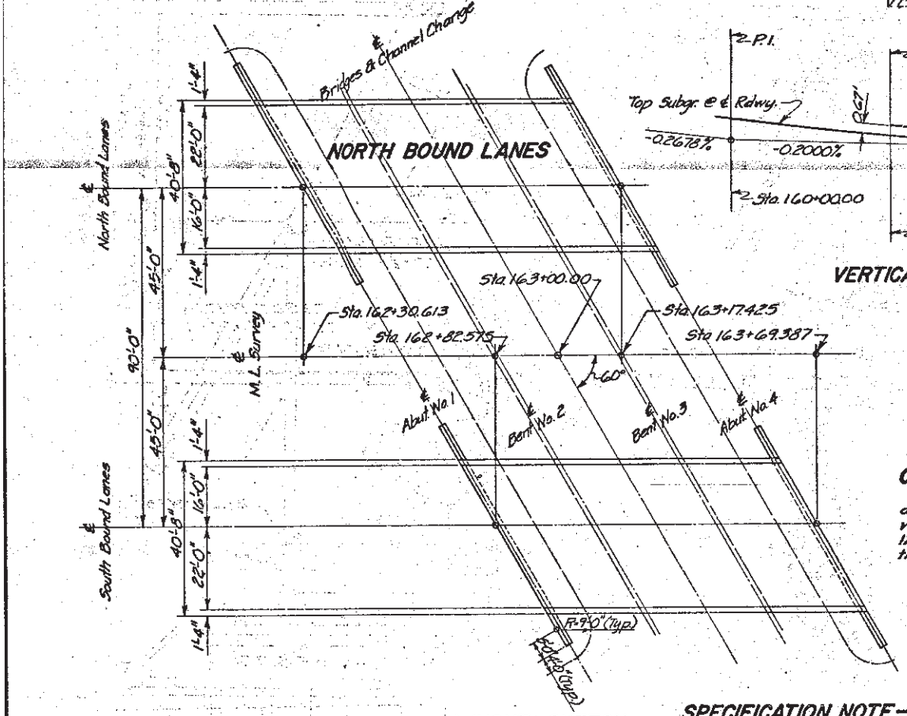
—X020—

INDEX OF BRIDGE SHEETS—

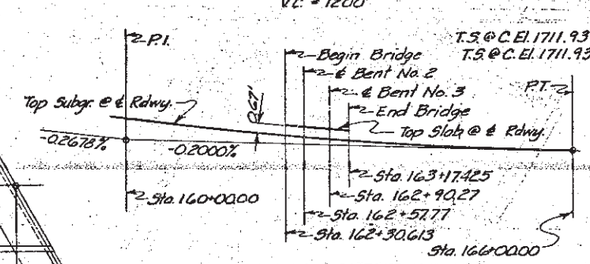
Sheet No. 1- General Drawing and Quantities
Sheet No. 2- Subsurface Investigations
Sheet No. 3- Details of Abut. No. 1
Sheet No. 4- Details of Abut. No. 4
Sheet No. 5- Bent Details
Sheet No. 6- Superstructure Details
Sheet No. 7- Type RT-3A Steel Railing, Curb & Drain Details.

GENERAL NOTES (CONT.)—

8. The contractor shall have sufficient pile splice material on hand before pile driving is started. For details see Std. Plate No. 303.1.



LAYOUT SKETCH



VERTICAL CURVE DATA

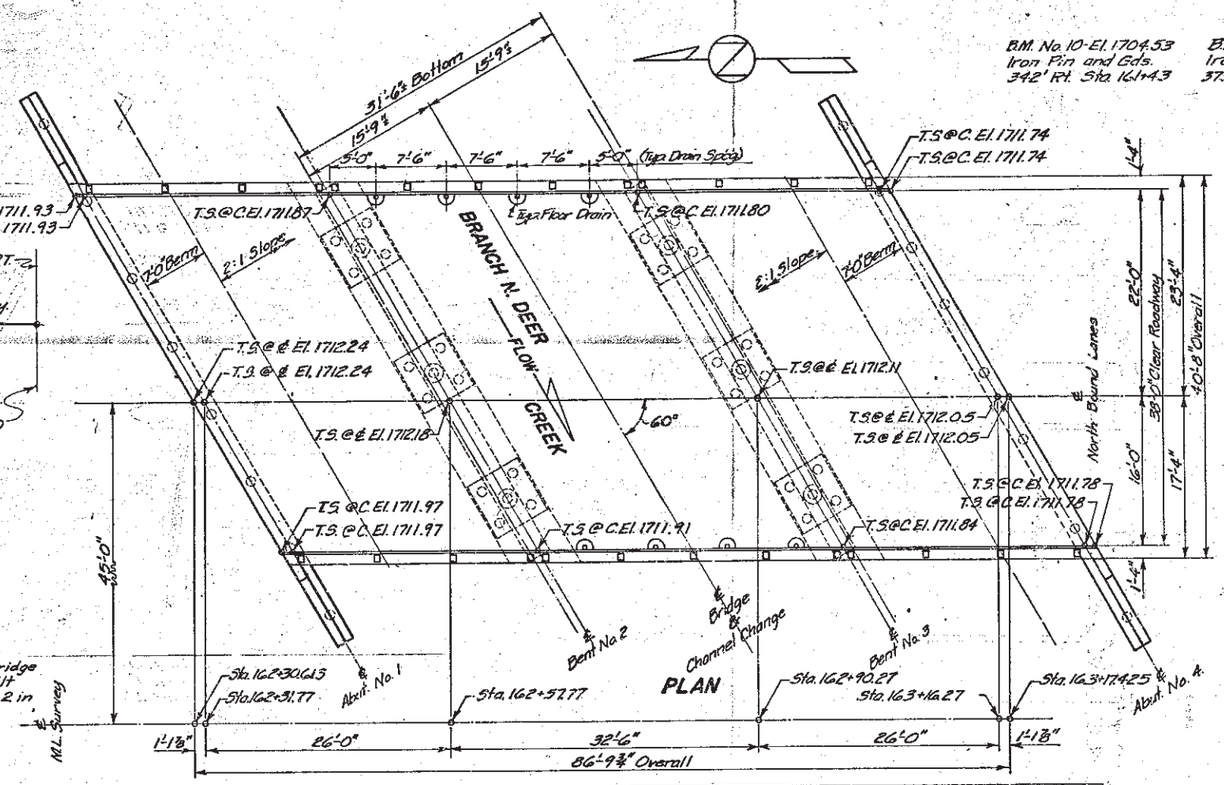
Q_{50}	1700	c.f.s. (50yr.)
A	254	sq. ft.
V	6.7	f.p.s.

CURB NOTE—

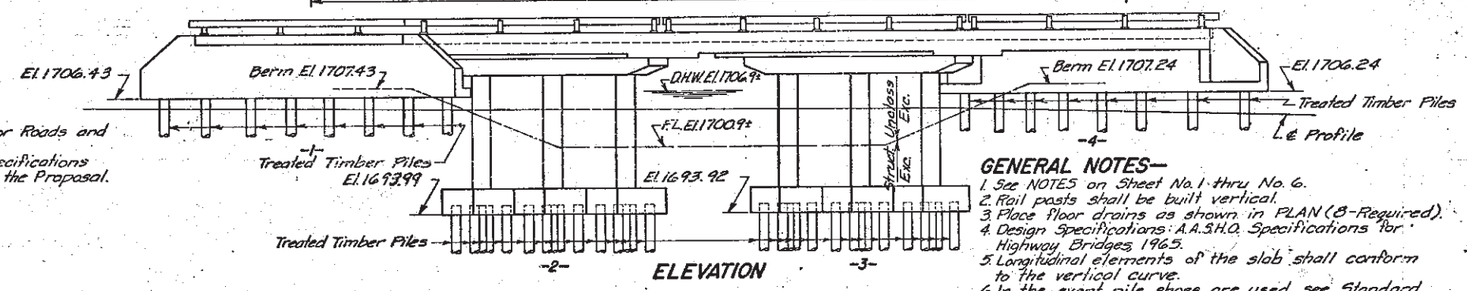
The Curb ends at Begin Bridge and End Bridge shall be built vertical, rather than beveled 2 in 12 as indicated elsewhere in these Plans.

SPECIFICATION NOTE—

Use South Dakota Standard Specifications for Roads and Bridges, 196 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.



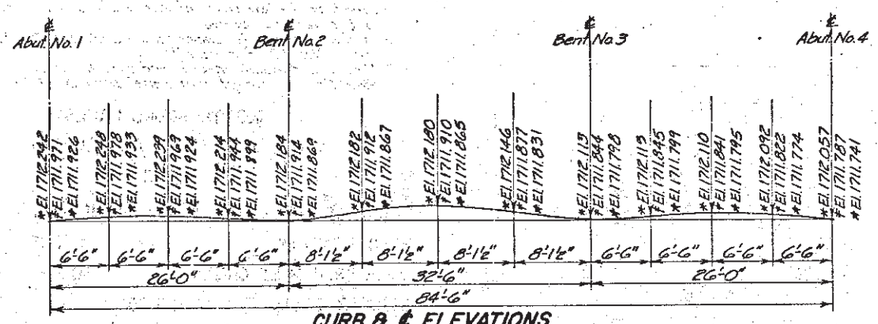
PLAN



ELEVATION

GENERAL NOTES—

1. See NOTES on Sheet No. 1 thru No. 6.
2. Rail posts shall be built vertical.
3. Place floor drains as shown in PLAN (8-Required).
4. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges 1965.
5. Longitudinal elements of the slab shall conform to the vertical curve.
6. In the event pile shoes are used, see Standard Plate No. 301 for details.
7. Furnish and install inserts and eyebolts as shown on Std. Plate No. 305, except that bolts shall be ⅝"Ø.



CURB & ℄ ELEVATIONS

Elevations indicated with * are Top of Finished Slab at Centerline of Roadway, with † are Top of Finished Slab at Rt. Curb, and with * are Top of Finished Slab at Lt. Curb. Camber for Dead Load Deflection PLUS Plastic Flow, shown on Sheet No. 6 of Bridge Plans, have been included in the elevations shown above.

ESTIMATED QUANTITIES

Bid Item No.	~~40005~~	40505	40555	40166	40710	40705	~~40410~~	10405	
ITEM	Cl. "A" Conc. Cu. Yds.	Clevl.-Lbs. Reinf.	Clevl.-Lbs. Struct.	Type RT-3A Railing-Lin. Ft.	Piles-Lin. Ft. ◊ Test	Piles-Lin. Ft. Treated Timber	Excavation-Cu. Yds. Struct.	Excavation-Cu. Yds. △Unclass.	
Superstructure	146.5	43,300	150	~~[illegible]~~					
Abuts. No. 1 & No. 4	49.4	5,500	~~260~~		2@45=90	14@40'=560	26		
Bents No. 2 & No. 3	45.8	~~11,410~~			2@35=70	~~2@32'=640~~	134		
Totals	241.7	60,710	910	173.6	◊ 160	1400	160	△——	

◊ One Treated Timber Test Pile shall be driven at Abuts. No. 1 and No. 4 and at Bents No. 2 and No. 3 before the remaining Piles are ordered.

△ All Uncl. Exc. to be done by others.

	Str. Exc.	Type RT-3A Railing	Type RT-3A Railing	Type RT-3A Railing	Type RT-3A Railing
Abut. 1	15.7	237.8	3.7	38.4	6.6
Br. 2	68.0	252.4	20.8	24.2	10.5
Br. 3	66.4	260.8	12.7	22.5	12.1
Abut. 4	15.5	232.4	16.0	38.2	6.5
Total	165.8	983.6	47.2	123.2	26.3

Finaled 11-30-71 E.T.

(NORTH BOUND LANES)

GENERAL DRAWING AND QUANTITIES

FOR

86'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F

OVER BR. N. DEER CREEK — SEC. 19-T112N-R49W

STA. 162+30.613 TO 163+17.425 — I 29-5(11)141

BROOKINGS COUNTY

Str. No. 06-185-031 SOUTH DAKOTA HS20-44 & ALT.

DEPARTMENT OF HIGHWAYS

JULY 1967 (3) OF (4)

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-031

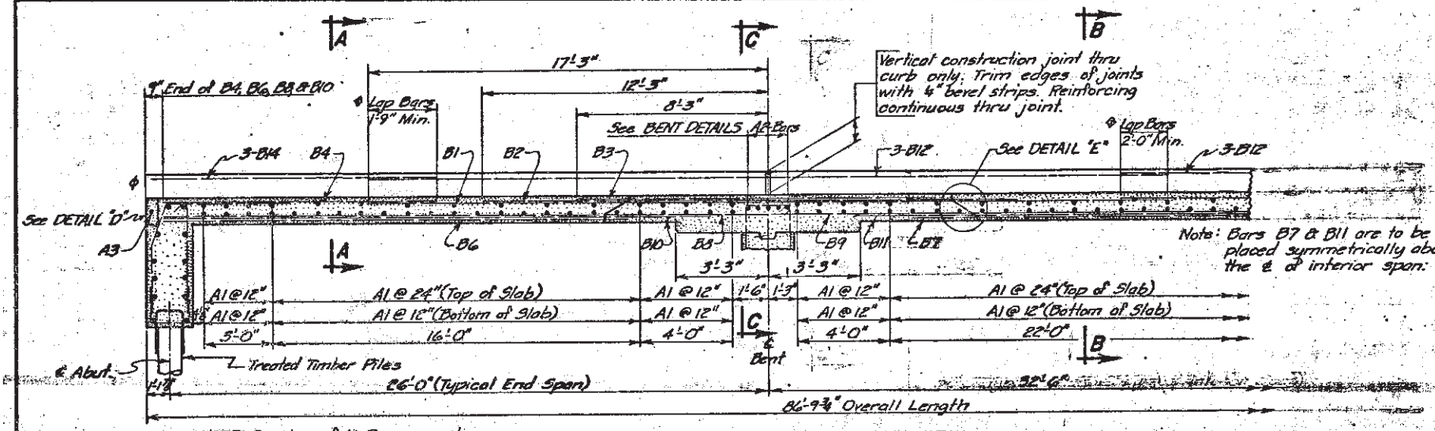
PLANS BY BRIDGE SEC., S. DAK. DEPT. HWYS.

—X 020—

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	D.C.	P.A.H.	BRIDGE ENGINEER

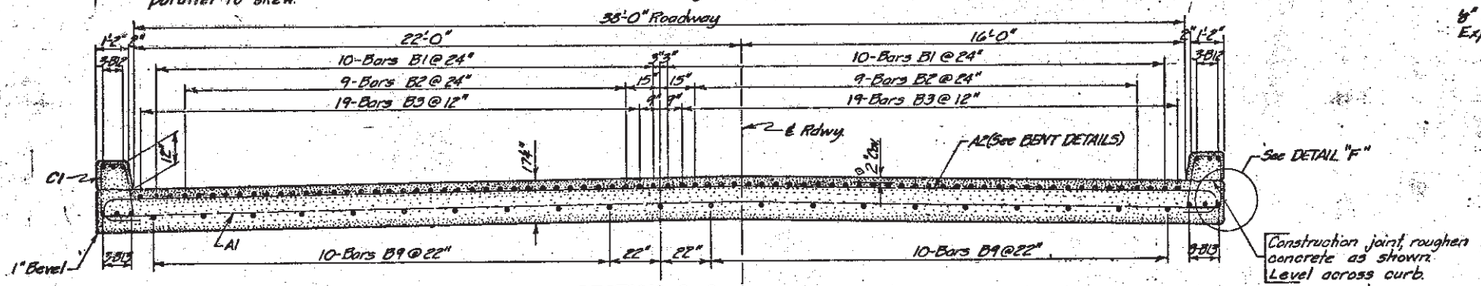
P.S.&E. Rev. 1-24-68 by E.J.P. Chk. by P.A.H.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	39	51

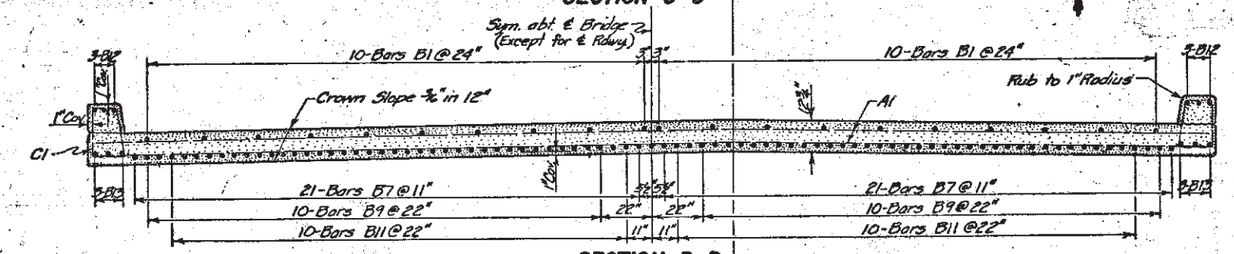


NOTE: Spacing of A1 Bars are shown along ℄ Roadway. Layout all A1 Bars parallel to skew.

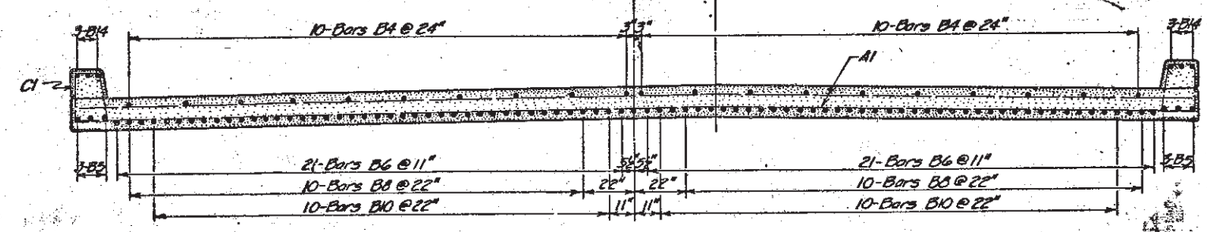
HALF LONGITUDINAL SECTIONAL VIEW
(Railing not shown)



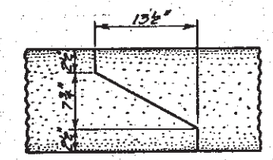
SECTION C-C



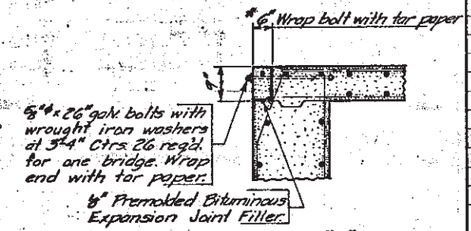
SECTION B-B



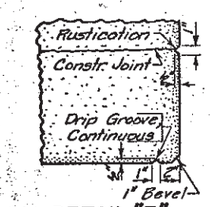
SECTION A-A



DETAIL "E"



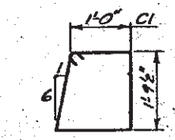
DETAIL "D"
* Normal to ℄ Abutment



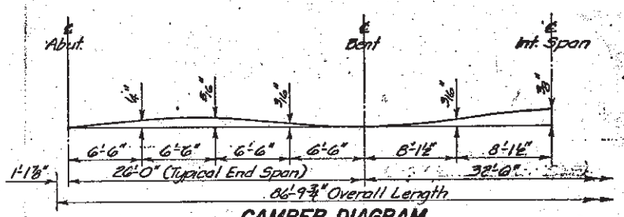
DETAIL "F"

REINFORCING SCHEDULE

MK	No.	Size	Length	Type	Bending Details
A1	131	5	46'-6"	Str.	
A3	2	5	43'-6"		
B1	40	9	34'-6"		
B2	36	9	23'-0"		
B3	76	9	15'-6"		
B4	40	9	11'-0"		
B5	12	9	26'-9"		
B6	84	9	20'-0"		
B7	42	9	20'-0"		
B8	42	9	26'-3"		
B9	21	9	32'-6"		
B10	40	9	23'-6"		
B11	20	9	25'-0"		
B12	12	9	34'-6"		
B13	6	9	32'-6"		
B14	12	8	11'-6"	Str.	
C1	174	4	6'-9"	T1	



NOTE: All dimensions are out to out of bars.



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow and shall be added to the proposed grade elevations at the respective stations to establish the elevation of the top of the finished roadway slab.

NOTES—

These notes cover Substructure, Superstructure, and Railing Details. The General Drawing for each structure will show elevations and other necessary notes and details.

DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for length of Treated Timber Piles.

STRUCTURAL STEEL: All ⅝"φ bolts, including washers, and all pile connections in Abutments and all floor drains shall be paid for as Struct. Steel.

REINFORCING STEEL: All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

*CONCRETE: All concrete shall be Class "A." φ All exposed concrete corners and edges shall be chamfered to a ¾" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the quarter points of each end any span, adjacent to interior bents. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and Alternate Loading designated in P.P.M. 20-4, Sec. 4c. Unit Stresses: Concrete, fc = 1600 psi. n = 8; Reinforcing Steel fs = 20000 p.s.i. (Int. Grade Steel). Equivalent fluid pressure of earth at 40 #/sq. ft. Minimum Pile Loading = 24 tons per pile.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
^Class "A" Concrete	Cu. Yds.	146.5
Reinforcing Steel	Lbs.	43,300
*Structural Steel	Lbs.	150

* Wt. of 26-⅝"φ Bolts and washers and 8 floor drains.
^ Does not include slab and curbs directly over abutments.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-185-031

(NORTH BOUND LANES)
SUPERSTRUCTURE DETAILS
FOR

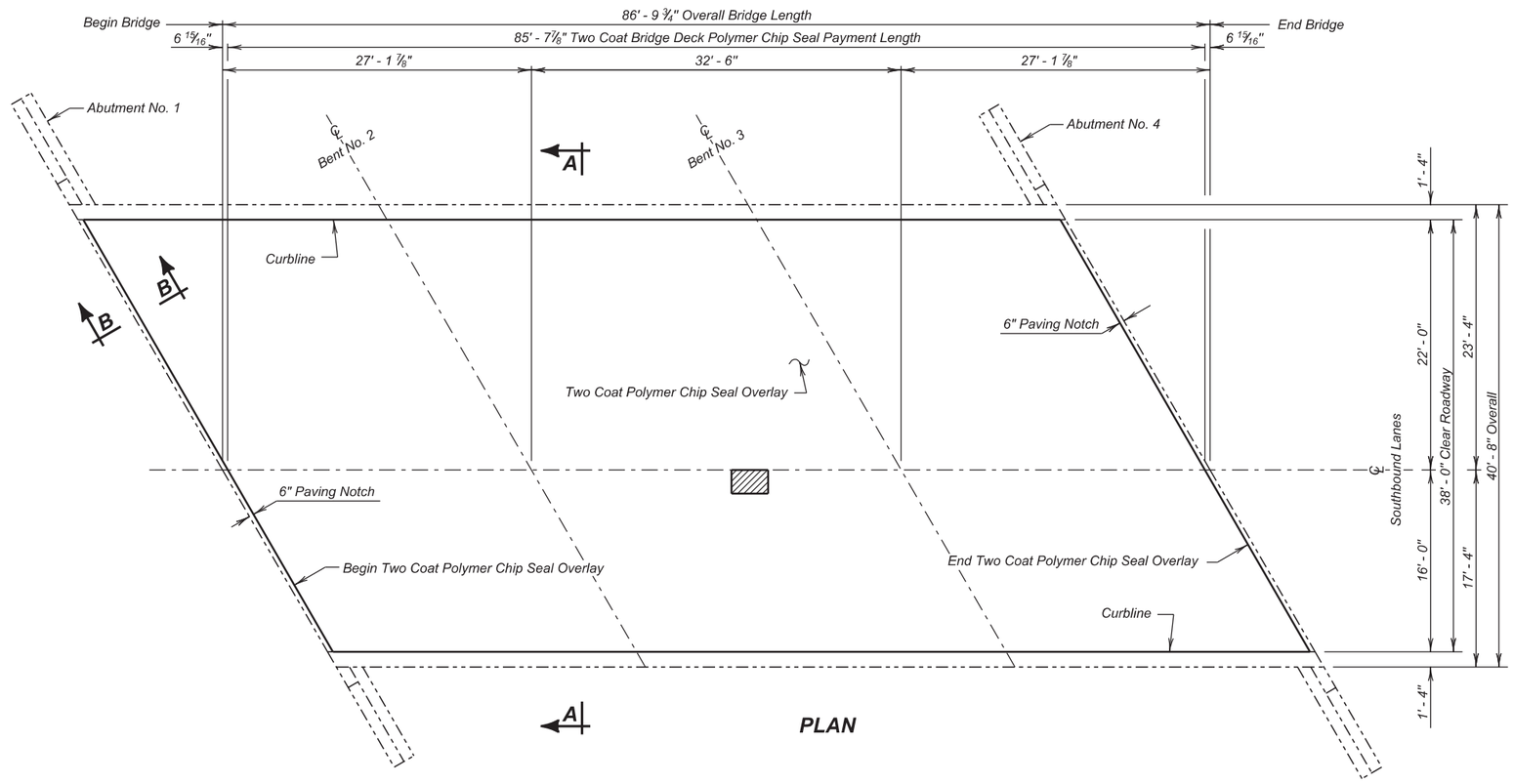
86'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F.
OVER BRANCH NORTH DEER CR. — SEC. 19-T.112N-R49W
STA. 162+30.613 TO 163+17.425 — I 29-5(11)141
BROOKINGS COUNTY
SOUTH DAKOTA — HS20-44 & ALT.
DEPARTMENT OF HIGHWAYS
JULY 1967 — 4 OF 4

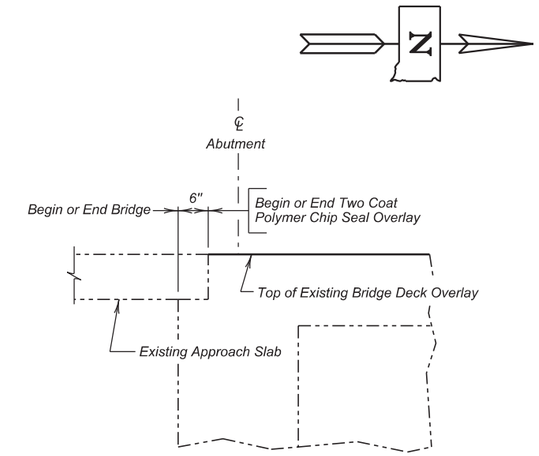
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	D.G.	P.A.H.	BRIDGE ENGINEER

φ Rev. 2-19-69 P.W.F.
φ Rev. 1-24-68 P.W.F.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	40	51



PLAN



SECTION B - B

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	21.7	21.7
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	152.3	209.4
	Abrasive Blasting of Bridge Deck	Sq. Yd.	152.3	209.4
	Bridge Deck Grinding	Sq. Yd.	161.8	199.9
*	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
*	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

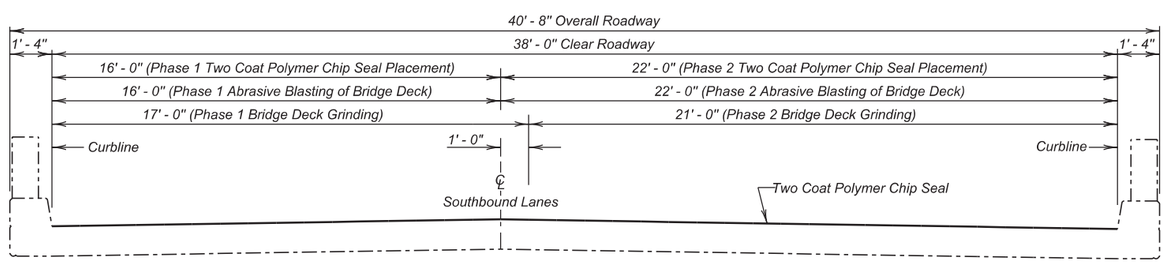
NOTE :
* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

LEGEND -

Shaded area indicates location of Repair of Low Slump Density Concrete

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(SOUTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT
FOR

86' - 9 ¾" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 30° SKEW R.H.F.
OVER BR. N. DEER CREEK — SEC. 19-T112N-R49W
STR. NO. 06-184-031 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2016

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRH01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	43.4	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	361.7	SqYd
491E0110	Abrasive Blasting of Bridge Deck	361.7	SqYd
491E0120	Bridge Deck Grinding	361.7	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

86' - 9 3/4" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-184-031

FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRH01		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	42	51

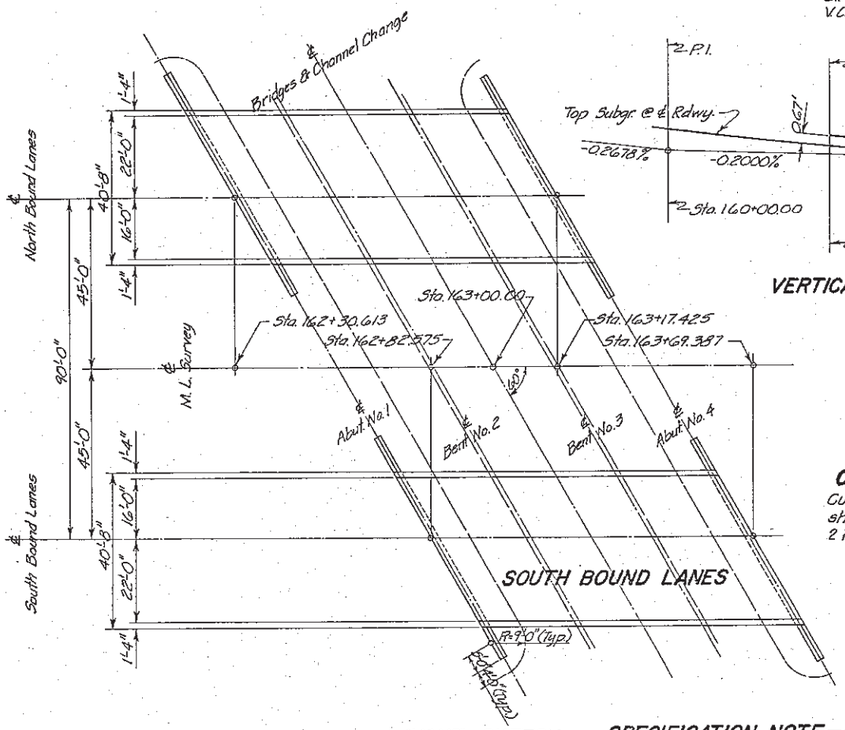
-X020-

INDEX OF BRIDGE SHEETS—

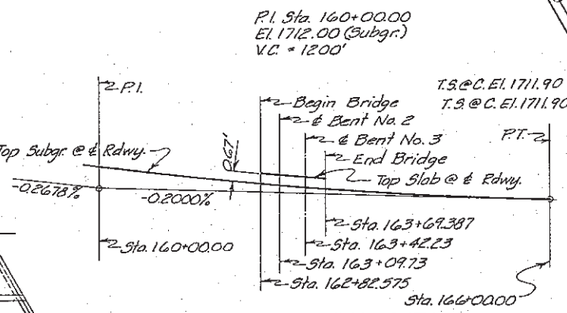
Sheet No. 1- General Drawing and Quantities
Sheet No. 2- Subsurface Investigations
Sheet No. 3- Details of Abut. No. 1
Sheet No. 4- Details of Abut. No. 4
Sheet No. 5- Bent Details
Sheet No. 6- Superstructure Details
Sheet No. 7- Type RT-3A Steel Railing, Curbs & Drain Details.

GENERAL NOTES (CONT.)—

8. The contractor shall have sufficient pile splice material on hand before pile driving is started. For details see Std. Plate No. 303.1.



LAYOUT SKETCH

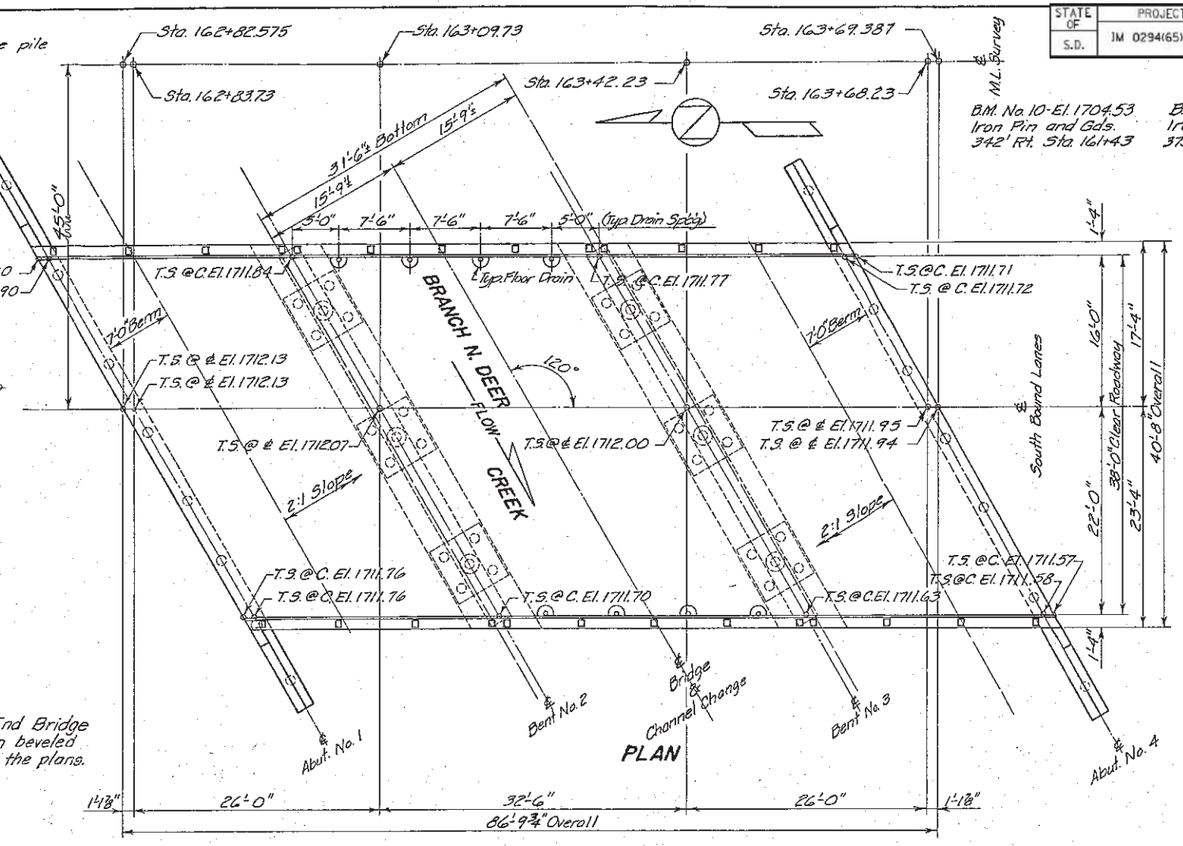


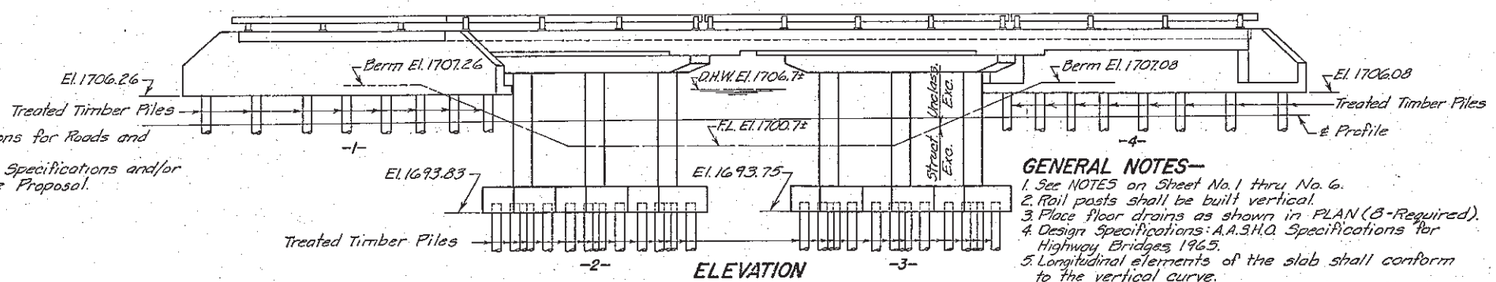
VERTICAL CURVE DATA

Q_{50}	1700	c.f.s. (50 yr.)
A	254	sq. ft.
V	6.7	f.p.s.

CURB NOTE —

Curb ends at Begin Bridge and End Bridge shall be built vertical rather than beveled 2 in 12 as indicated elsewhere in the plans.





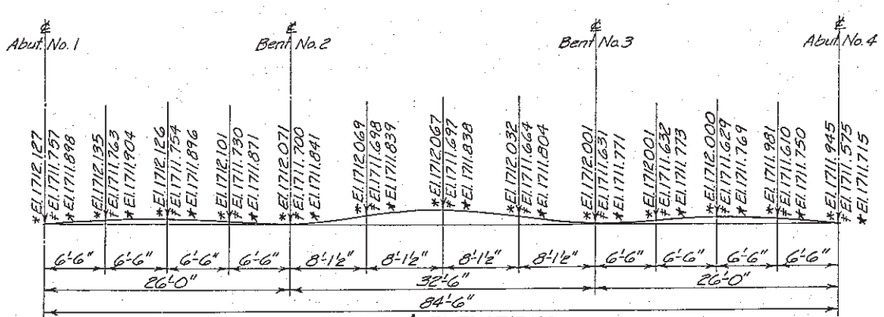
ELEVATION

SPECIFICATION NOTE—

Use South Dakota Standard Specifications for Roads and Bridges, 1964 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES—

1. See NOTES on Sheet No. 1 thru No. 6.
2. Rail posts shall be built vertical.
3. Place floor drains as shown in PLAN (8-Required).
4. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
5. Longitudinal elements of the slab shall conform to the vertical curve.
6. In the event pile shoes are used, see Standard Plate No. 301 for details.
7. Furnish and install inserts and eyebolts as shown on Std. Plate No. 303, except that bolts shall be ¾".



CURB & ℄ ELEVATIONS

Elevations indicated with * are Top of Finished Slab at Centerline of Roadway, with † are Top of Finished Slab at Rt. Curb and with * are Top of Finished Slab at Lt. Curb. Camber for Dead Load Deflection PLUS Plastic Flow, shown on Sheet No. 6 of Bridge Plans, have been included in the elevations shown above.

ESTIMATED QUANTITIES

Bid Item No.	40005	40505	40555	40166	40710	40705	10410	10405
ITEM	Cl "A" Conc. Cu. Yds.	Clerl -Lbs. Reinf.	Clerl -Lbs. Struct.	Type RT-3A Steel Railing-Lin. Ft.	Piles - Lin. Ft. ⌀ Test	Piles - Lin. Ft. Treated Timber	Excavation-Cu. Yds. Struct.	Excavation-Cu. Yds. △Unclass.
Superstructure	146.5	43,300	150	[illegible]				
Abuts. No. 1 & No. 4	49.4	5,500	760		2@40=80	14@35'=490	26	
Bents No. 2 & No. 3	45.8	4,710			2@30=60	20@35'=700	134	
Totals	241.7	60,710	910	173.6	⌀ 140	1190	160	△ ——

⌀ One Treated Timber Test Pile shall be driven at Abuts. No. 1 and No. 4 and at Bents No. 2 and No. 3 before the remaining Piles are ordered.

△ All Uncl. Exc. to be done by others.

Finaled 11-30-71

(SOUTH BOUND LANES)

GENERAL DRAWING AND QUANTITIES

FOR

86'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F

OVER BR. N. DEER CREEK — SEC. 19-T112N-R49W

STA. 162+82.575 TO 163+69.387 — I 29-5(11)141

BROOKINGS COUNTY

Str. No. 06-184-031 SOUTH DAKOTA HS20-44 & ALT.

DEPARTMENT OF HIGHWAYS

JULY 1967 — 3 OF 4

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-031

PLANS BY BRIDGE SEC., S. DAK. DEPT. HWYS.

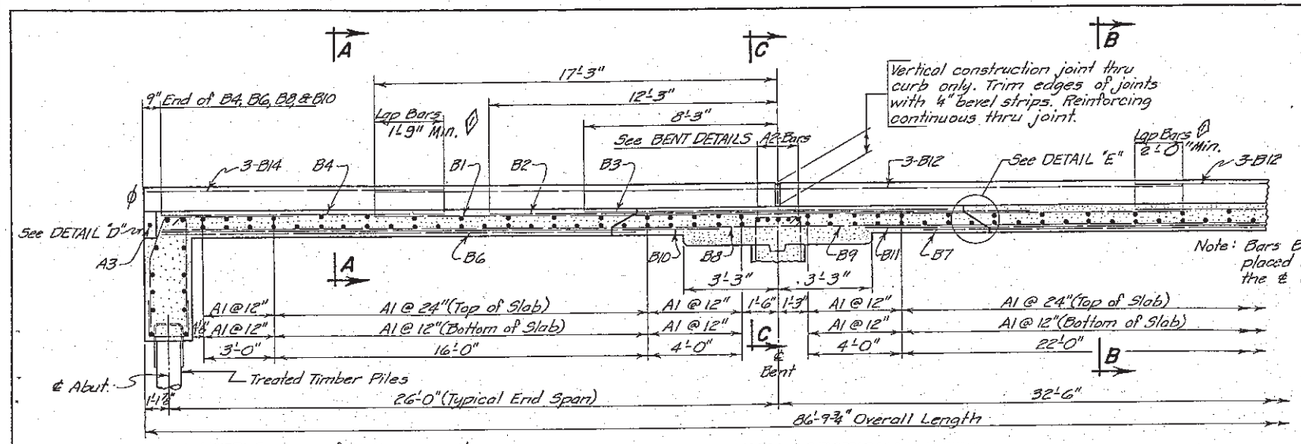
-X 020-

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

P.S.&E. Rev 1-19-68 by Ed. L. Chk. by P.A.H.

06022

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	43	51



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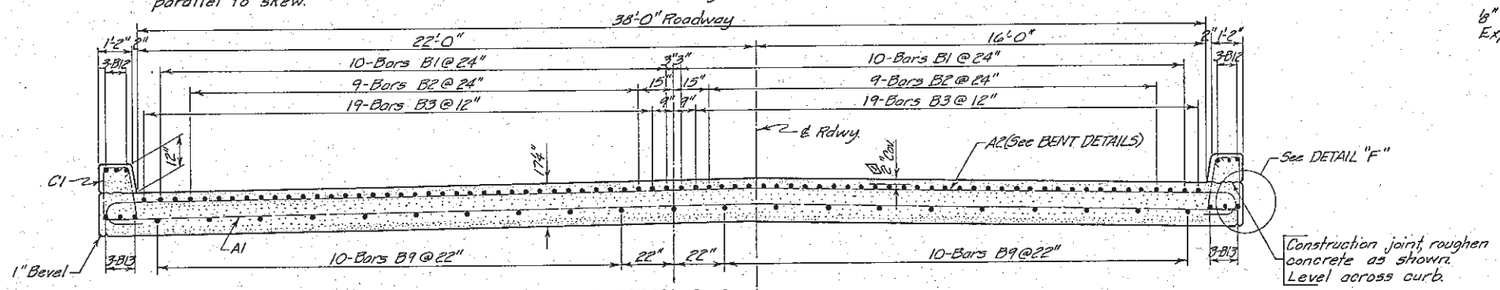
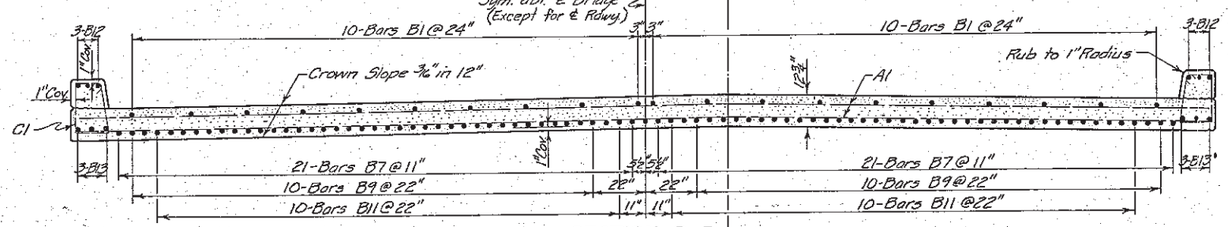
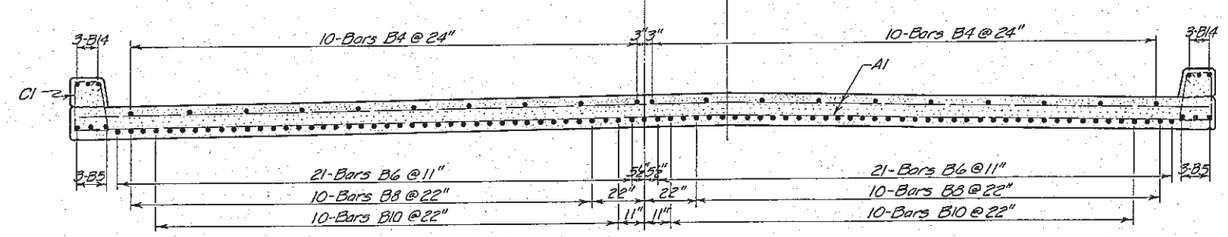
HALF LONGITUDINAL SECTIONAL VIEW
(Railing not shown)



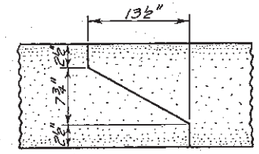
SECTION C-C



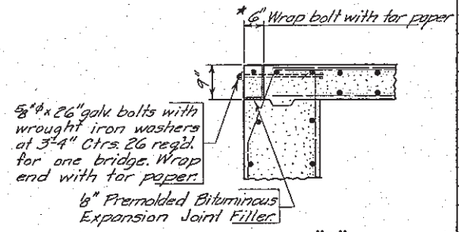
SECTION B-B



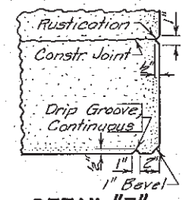
SECTION A-A



DETAIL "E"



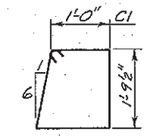
DETAIL "D"
* Normal to ℄ Abutment



DETAIL "F"

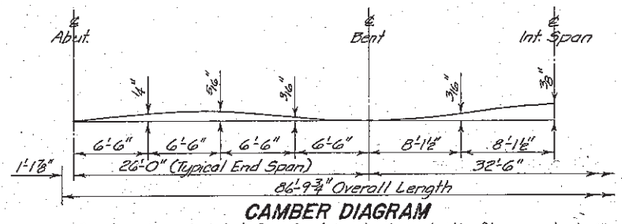
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
A1	131	5	46'-6"	Str.	
A3	2	5	43'-6"		
B1	40	9	34'-6"		
B2	36	9	23'-0"		
B3	76	9	15'-6"		
B4	40	9	11'-0"		
B5	12	9	26'-9"		
B6	84	9	20'-0"		
B7	42	9	20'-0"		
B8	42	9	26'-3"		
B9	21	9	32'-6"		
B10	40	9	23'-6"		
B11	20	9	25'-0"		
B12	12	9	34'-6"		
B13	6	9	32'-6"		
B14	12	8	11'-6"	Str.	
C1	174	4	6'-9"	T1	



Type T1

NOTE: All dimensions are out to out of bars.



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow and shall be added to the proposed grade elevations at the respective stations to establish the elevation of the top of the finished roadway slab.

NOTES—

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DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.

PILING: See General Drawing for length of Treated Timber Piles.

STRUCTURAL STEEL: All ⅝"φ bolts, including washers, and all pile connections in Abutments and all floor drains shall be paid for as Struct. Steel.

REINFORCING STEEL: All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).

CONCRETE: All Concrete shall be Class "A." ◊ All exposed concrete corners and edges shall be chamfered to a ¾" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the quarter points of each end any span, adjacent to interior bents. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.

DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and Alternate Loading designated in P.P.M. 20-4, Sec. 4c. Unit Stresses: Concrete, fc=1600 p.s.i. n=8; Reinforcing Steel fs=20000 p.s.i. (Int. Grade Steel). Equivalent fluid pressure of earth at 40 #/sq. ft. Minimum Pile Loading = 24 tons per pile.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Δ Class "A" Concrete	Cu. Yds.	146.5
Reinforcing Steel	Lbs.	43,300
* Structural Steel	Lbs.	150

* Wt. of 26-⅝"φ Bolts and washers and 8 floor drains.
Δ Does not include slab and curbs directly over abutments.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-031

◊ Rev. 2-19-69.
ϕ Rev. 1-25-68

(SOUTH BOUND LANES)
SUPERSTRUCTURE DETAILS
FOR

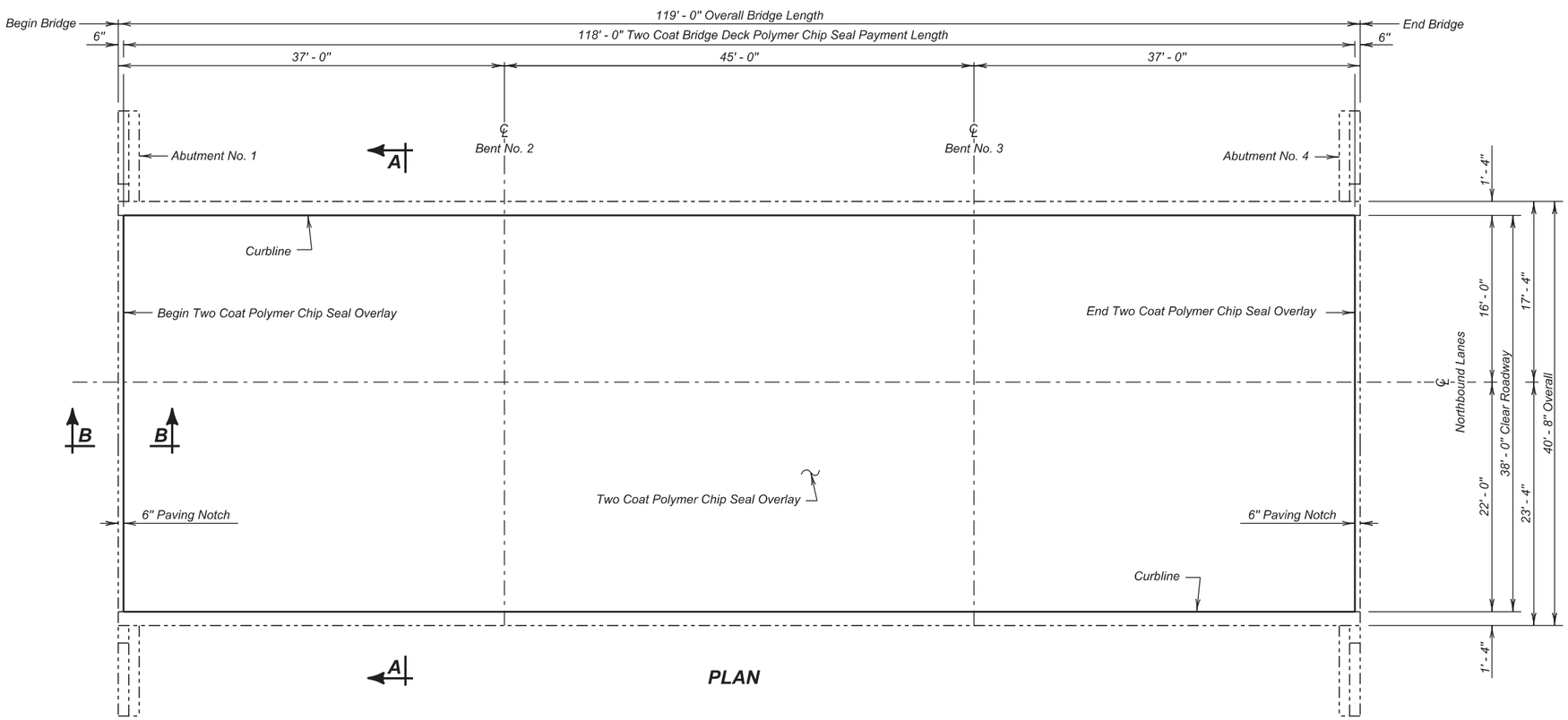
86'-9¾" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY — 30° SKEW R.H.F.
OVER BRANCH NORTH DEER CR. — SEC. 19-T112N-R49W
STA. 162+82.575 TO 163+69.387 — I 29-5(11)141
BROOKINGS COUNTY
SOUTH DAKOTA — HS20-44 & ALT.
DEPARTMENT OF HIGHWAYS
JULY 1967 — 4 OF 4

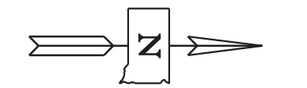
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	D.C.	P.A.H.	BRIDGE ENGINEER

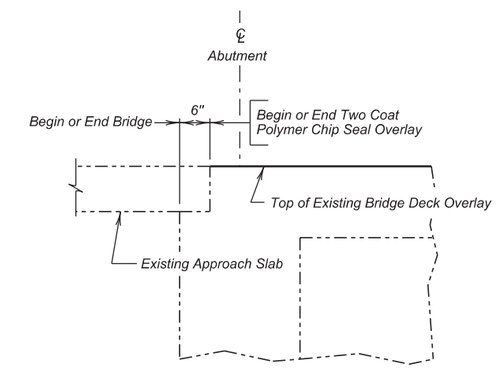
0608

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0295(43)141	44	51



PLAN





SECTION B - B

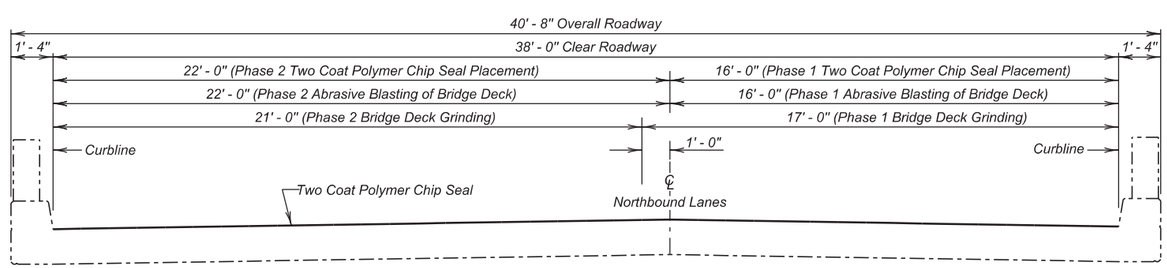
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	25.1	25.1
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	209.8	288.4
	Abrasive Blasting of Bridge Deck	Sq. Yd.	209.8	288.4
	Bridge Deck Grinding	Sq. Yd.	222.9	275.3
*	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
*	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

NOTE :
* Concrete Removal, Class A; and 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.

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(NORTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 0° SKEW
OVER CROSS ROAD — SEC. 6 / 7-T112N-R49W
STR. NO. 06-185-010 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY

S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2016

1 OF 4

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Boeden
BROK035B	035BRI01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	50.2	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-185-010

FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRI01		BRIDGE ENGINEER

-X220-

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 029(65)133	46	51

INDEX OF BRIDGE SHEETS:-

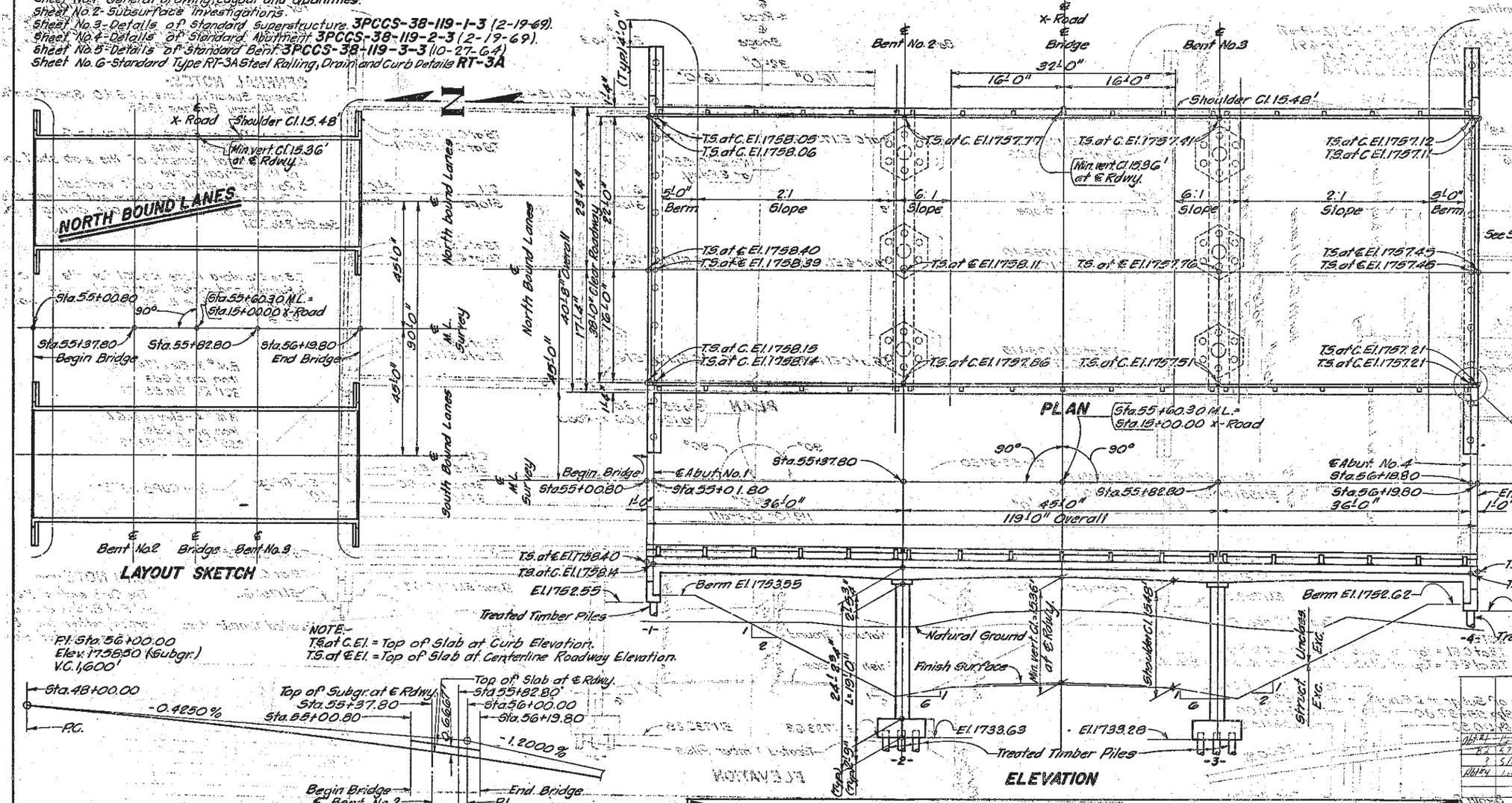
Sheet No.1-General Drawing, Layout and Quantities.
Sheet No.2-Subsurface Investigations.
Sheet No.3-Details of Standard Superstructure. 3PCCS-38-119-1-3 (2-19-69).
Sheet No.4-Details of Standard Abutment 3PCCS-38-119-2-3 (2-19-69).
Sheet No.5-Details of Standard Bent 3PCCS-38-119-3-3 (10-27-64)
Sheet No.6-Standard Type RT-3A Steel Railing, Drain and Curb Details RT-3A

SPECIFICATION NOTE:-

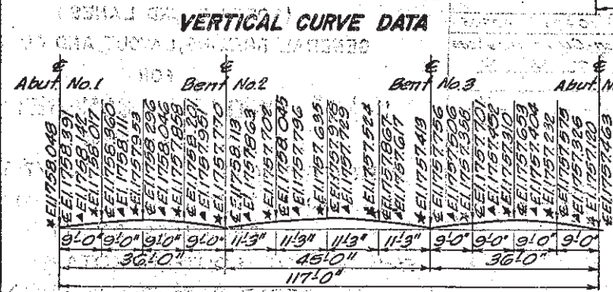
Use South Dakota Standard Specifications for Roads and Bridges, 1969 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES:-

1. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
2. See NOTES on Sheet No.1 thru No.6.
3. Omit all floor Drains.
4. Longitudinal elements of the slab shall conform to the vertical curve.
5. Rail Posts shall be built vertical.
6. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Std. # No.303.1
7. See Standard Plate No.301 for pile shoe Details.
8. Furnish and Install Insert and eyebolts as shown on Standard Plate No.303, except that bolts shall be 5/8"ϕ.



VERTICAL CURVE DATA



CURB AND ℄ ELEVATIONS

NOTE-Elevations indicated with * are top of finished slab at left curb, and with ℄ are top of finished slab at centerline roadway, and with ▲ are top of slab at right curb. Camber for Dead Load deflection PLUS Plastic Flow shown on Sheet No.3 of Bridge Plans has been included in the elevations shown above.

ESTIMATED QUANTITIES (ONE STRUCTURE)

Bid Item No.	10005	40505	40555	40166	40705	40710	10410	10405	40905
ITEM	Class "A" Conc. Cu. Yds	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type RT-3A Steel Railing-Lin. Ft.	Timber Piles Lin. Ft. Treated Timber	Timber Piles Lin. Ft. ♦Test	Excavation-Cu. Yds Struct.	Excavation-Cu. Yds ▲Unclass.	Pile shoes No.
Superstructure	255.5	75,290	60	288.0					
Abutment No.1	21.3	2,465	525		10 at 50'=500'	1 at 55'=55'	17		11
Bent No.2	19.0	4,890			17 at 30'=510'	1 at 35'=35'	57		18
Bent No.3	19.0	4,890			17 at 30'=510'	1 at 35'=35'	59		18
Abutment No.4	21.3	2,465	525		10 at 45'=450'	1 at 50'=50'	17		11
Totals	330.1	88,800	1,110	288.0	1970	♦175	150	▲ ——	58

♦One Treated Timber Test Pile shall be driven at Abutments No.1 and No.4 and at Bents No.2 and No.3 before remaining piles are ordered.
▲All Uncl. Exc. to be done by others.

CURB NOTE—

The Curb ends at Begin Bridge and End Bridge shall be vertical, rather than beveled 2 in 12 as indicated elsewhere in these Plans.

Abut. 1	1.50	3.50	22.6	2.5	37.1	0	
B2	2.00	2.66	33.1	22.0	13.0		
B3	5.10	2.20	78.0	25.6	9.4		
Abut. 4	1.50	3.04	2.5	37.0	13.0		
Totals	14.70	133.6	11.2	121.7	35.4		

(NORTH BOUND LANES)

GENERAL DRAWING, LAYOUT AND QUANTITIES

FOR

119'-0" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY

OVER CROSS ROAD — SEC.6/7-T112N-R49W

STA.55+00.80 TO 56+19.80 — I 29-5(11)141

BROOKINGS COUNTY

Str. No. 06-185-010 — SOUTH DAKOTA — HS20-44 (8 ALT.)

DEPARTMENT OF HIGHWAYS

JUNE 1967 — 3 OF 4

-X220-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	M.V.W.	R.C.M.	R. J. Rehult, BRIDGE ENGINEER

ORIGINAL CONSTRUCTION PLANS

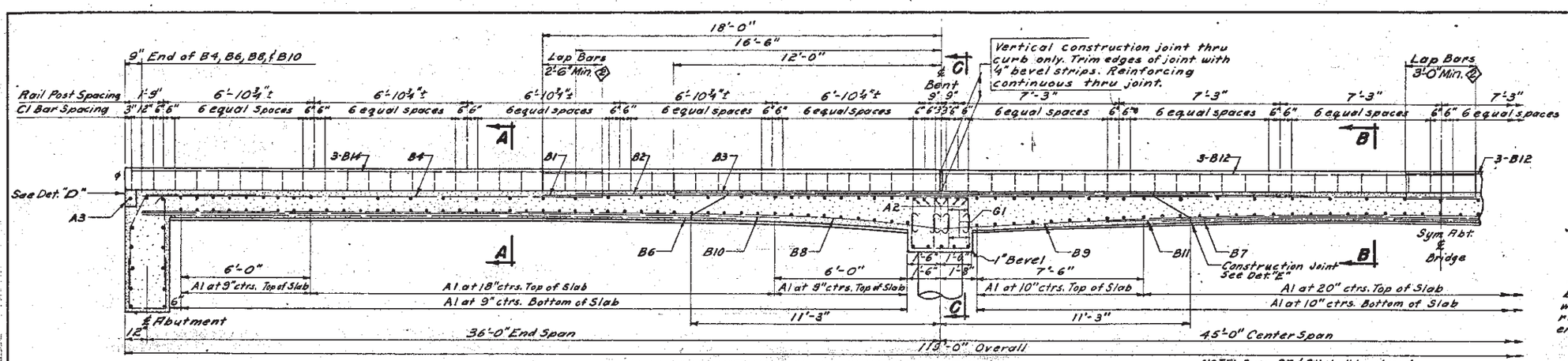
STR. NO. 06-185-010

Finaled 4-27-71 E.T.

PLANS BY BRIDGE SEC., S. DAK. DEPT. HWYS.

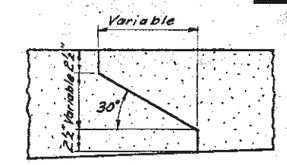
P.S.&E. Rev. 1-24-68 by Ed. P. Chk. by

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	47	51

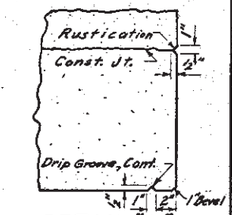


HALF LONGITUDINAL SECTIONAL VIEW

NOTE: Bars B7 & B11 shall be placed Symmetrically about ℄ Bridge.

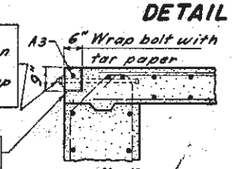


DETAIL "E"
(Typical Construction Joint)

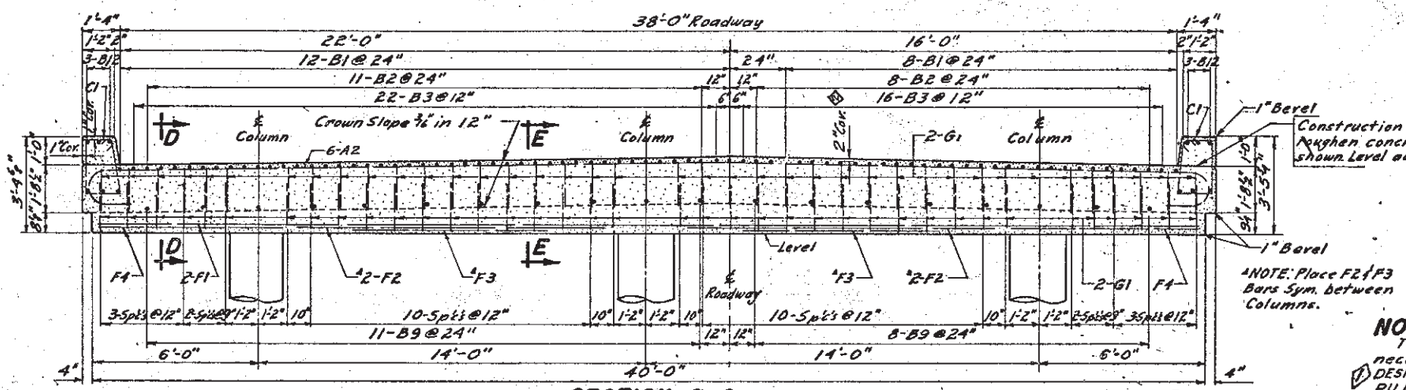


DETAIL "F"

58" ϕ x 26" galvanized bolts with wrought iron washers at 3'-5" ctrs. 24 req'd for one bridge. Wrap end with tar paper.



DETAIL "D"



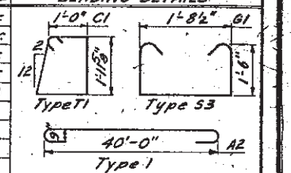
*NOTE: Place F2 & F3 Bars Sym. between Columns.

SECTION C-C

REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE
A1	238	5	40'-3"	Str.	B7	38	10	25'-9"	Str.	F1	4	9	39'-9"	Str.
A2	12	10	42'-3"	1	B8	38	10	36'-3"	Str.	F2	8	9	11'-0"	Str.
A3	2	5	37'-9"	Str.	B9	19	10	45'-0"	Str.	F3	4	9	7'-0"	Str.
B1	40	10	42'-0"	Str.	B10	36	9	29'-0"	Str.	F4	4	4	6'-6"	Str.
B2	38	11	33'-0"	Str.	B11	18	9	30'-0"	Str.	G1	304	4	5'-6"	S3
B3	76	10	24'-0"	Str.	B12	12	11	42'-6"	Str.					
B4	40	9	21'-0"	Str.	B13	6	11	45'-0"	Str.					
B5	12	11	36'-9"	Str.	B14	12	8	21'-6"	Str.					
B6	76	10	27'-0"	Str.	C1	240	4	7'-3"	T1					

BENDING DETAILS

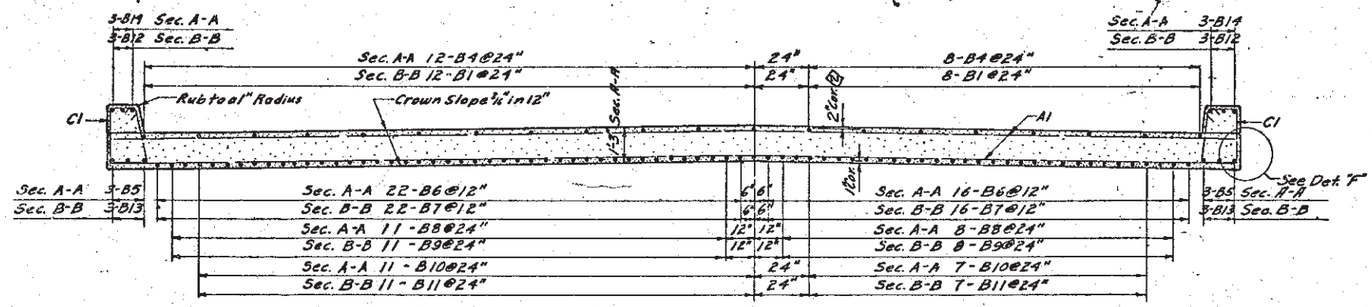


NOTE: All dimensions are out to out of Bars.

NOTES

These notes cover Abutments, Bents, Superstructure and Railing Details. The General Drawing will show other necessary notes and details.

DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.
PILING: See General Drawing for type and length of Piling.
STRUCTURAL STEEL: All ⅝" ϕ bolts including washers, and all pile connections in Abutments, and all floor drains shall be paid for as Structural Steel.
REINFORCING STEEL: All Reinforcing steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).
CONCRETE: All concrete shall be Class "A". All exposed concrete corners and edges shall be chamfered to a ¾" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the points shown in each and any span. If these joints are used, submit a Concrete Pouring Sequence to the BRIDGE SECTION for approval. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.
DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and the Alternate Loading as designated in P.P.M. 20-4, Section 4c.
Unit Stresses: Concrete fc = 1600 p.s.i., n = 8, Reinforcing Steel: fs = 20,000 p.s.i.. Equivalent fluid pressure of earth at 40#/sq. ft.
Minimum Pile Loading = 24 tons for Timber Piling and 45 tons for 8 BP36 Steel Bearing Piles. (values for one pile) Minimum Soil Bearing Pressure for Spread Footings = 4 Tons per Sq. Ft.



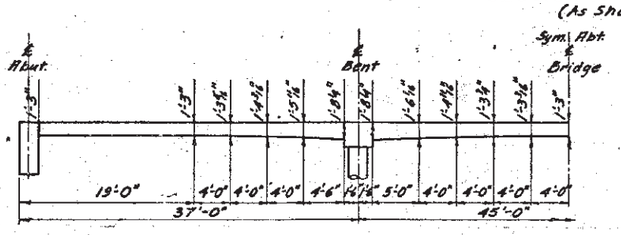
SECTION A-A OR SECTION B-B
(As Shown and Noted)

ORIGINAL CONSTRUCTION PLANS

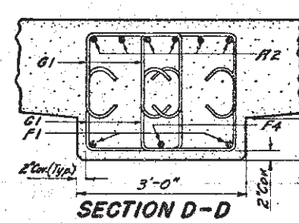
STR. NO. 06-185-010

~~ESTIMATED QUANTITIES~~		
ITEM	UNIT	QUANTITY
Class "A" Concrete	Cu. Yds.	255.5
Reinforcing Steel	Lbs.	75,290
*Structural Steel	Lbs.	60

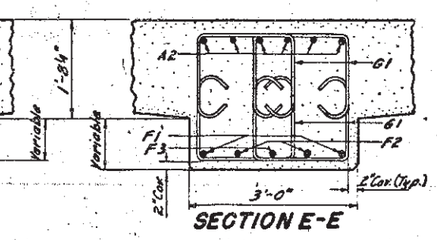
*Weight of ⅝" ϕ Bolts and washers only.



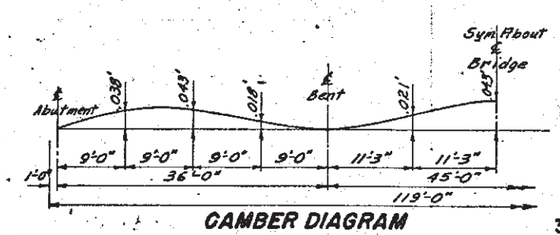
SLAB THICKNESS DIAGRAM
(For any longitudinal section parallel to ℄ Roadway)



SECTION D-D



SECTION E-E



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow. Camber shall be added to the proposed grade elevations at the respective stations to establish the elevations of the top of the finished roadway slab.

DETAILS OF STANDARD SUPERSTRUCTURE FOR

3-SPAN 119'-0" CONTINUOUS CONCRETE SLAB BRIDGE

WITH

ROUND COLUMN BENTS

38'-0" ROADWAY (22'-0" R_L & 16'-0" R_L OF ℄ RDWY.)

SOUTH DAKOTA

DEPARTMENT OF HIGHWAYS

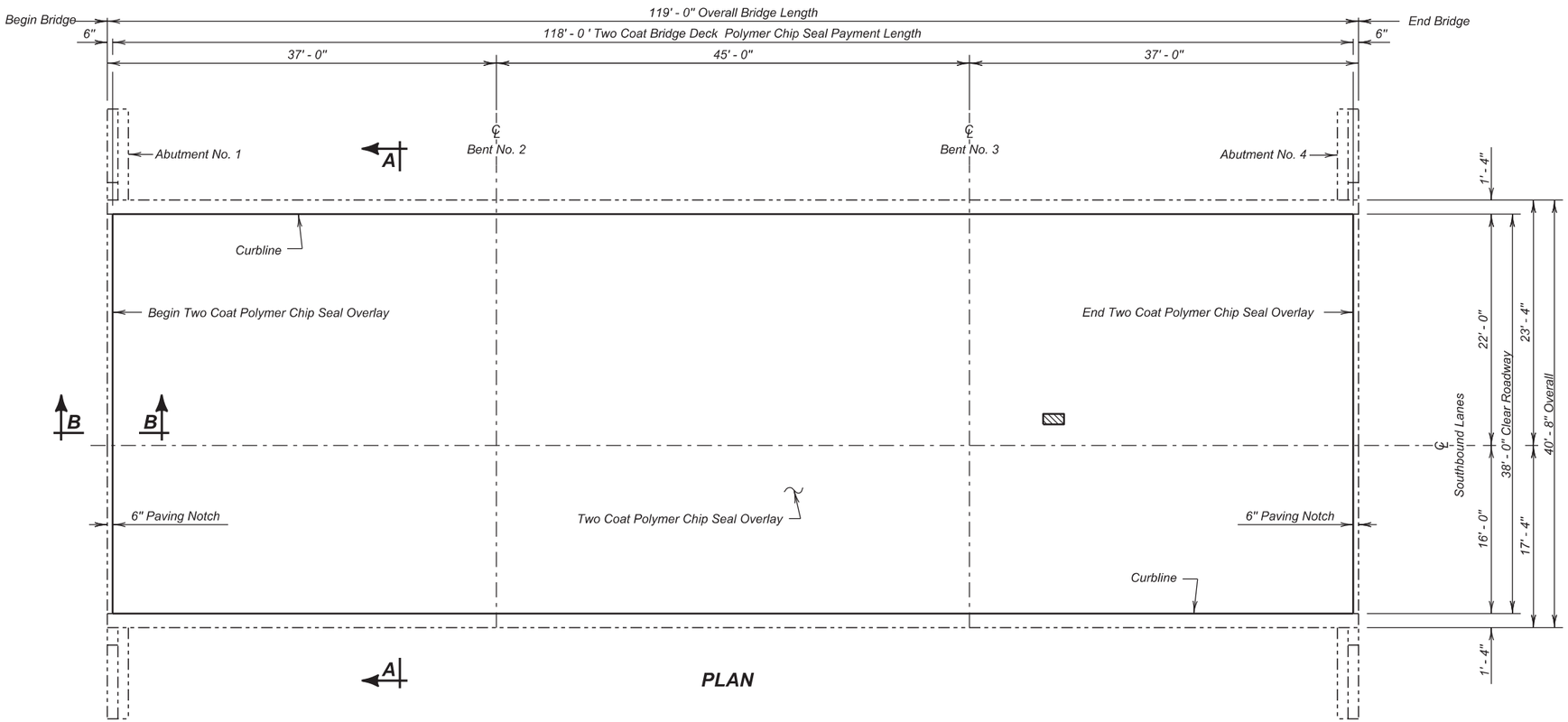
4 OF 4

APRIL 1964 HS20-44 (8 ALT.)

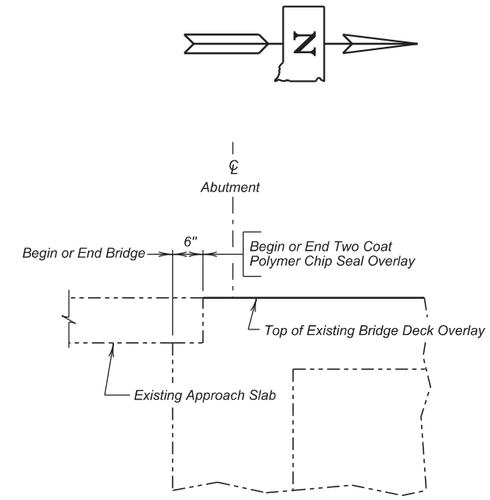
Rev. 2-19-69 GA
Rev. Spec. Note (7-6-67) M.V.W.
Rev. for 1963 & 1964 AASHO Interim Specifications (10-27-64) W.C.P.
Rev. 1-24-68 P.W.E

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
C.H.J. & M.B.S.	C.H.J.	M.B.S.	BRIDGE ENGINEER

3PCCS-38-119-1-3



PLAN



SECTION B - B

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
*	Concrete Patching Material, Bridge Deck	Cu. Ft.	25.1	25.1
	Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	209.8	288.4
	Abrasive Blasting of Bridge Deck	Sq. Yd.	209.8	288.4
	Bridge Deck Grinding	Sq. Yd.	222.9	275.3
*	Concrete Removal, Class A	Sq. Yd.	2.0	2.0
*	Concrete Removal, Class B	Sq. Yd.	2.0	2.0

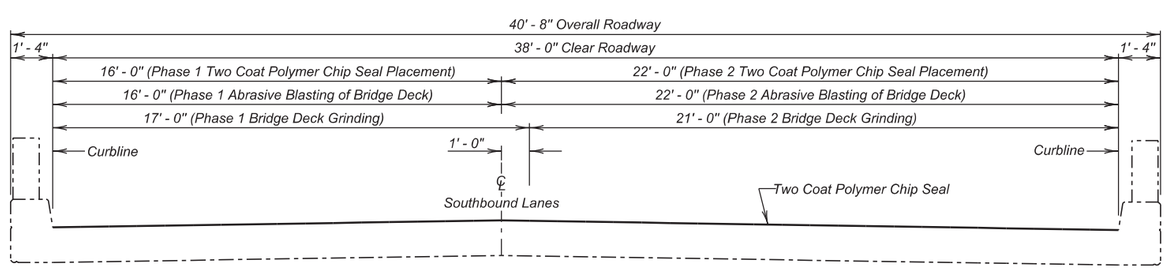
NOTE :
* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

LEGEND -

Shaded area indicate approximate locations of unsound concrete requiring concrete repair

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Polymer Chip Seal Layout
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Original Construction Plans
Sheet No. 4 - Original Construction Plans (Continued)



SECTION A - A

(SOUTHBOUND LANES)
POLYMER CHIP SEAL LAYOUT

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

38' - 0" ROADWAY — 0° SKEW
OVER CROSS ROAD — SEC. 6 / 7-T112N-R49W
STR. NO. 06-184-010 — IM 0295(43)141
PCN 035B

BROOKINGS COUNTY

S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2016

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRJ01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0172	Concrete Patching Material, Bridge Deck	50.2	CuFt
491E0005	Two Coat Bridge Deck Polymer Chip Seal	498.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	498.2	SqYd
491E0120	Bridge Deck Grinding	498.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd

SPECIFICATIONS

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 at the pre-construction meeting.

1. Perform Bridge Deck Grinding for the first phase of construction.
2. Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
3. Clean the bridge deck surface with abrasive blasting for the first phase of construction.
4. Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
5. Switch traffic and repeat steps 1 through 4 for Phase 2 construction.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

119' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 06-184-010

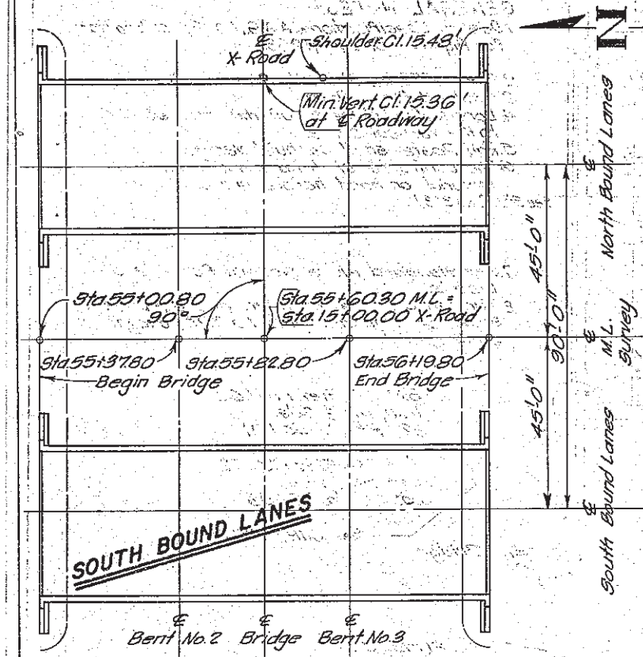
FEBRUARY 2016

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	NP	KR	Kevin N. Goeden
BROK035B	035BRJ02		BRIDGE ENGINEER

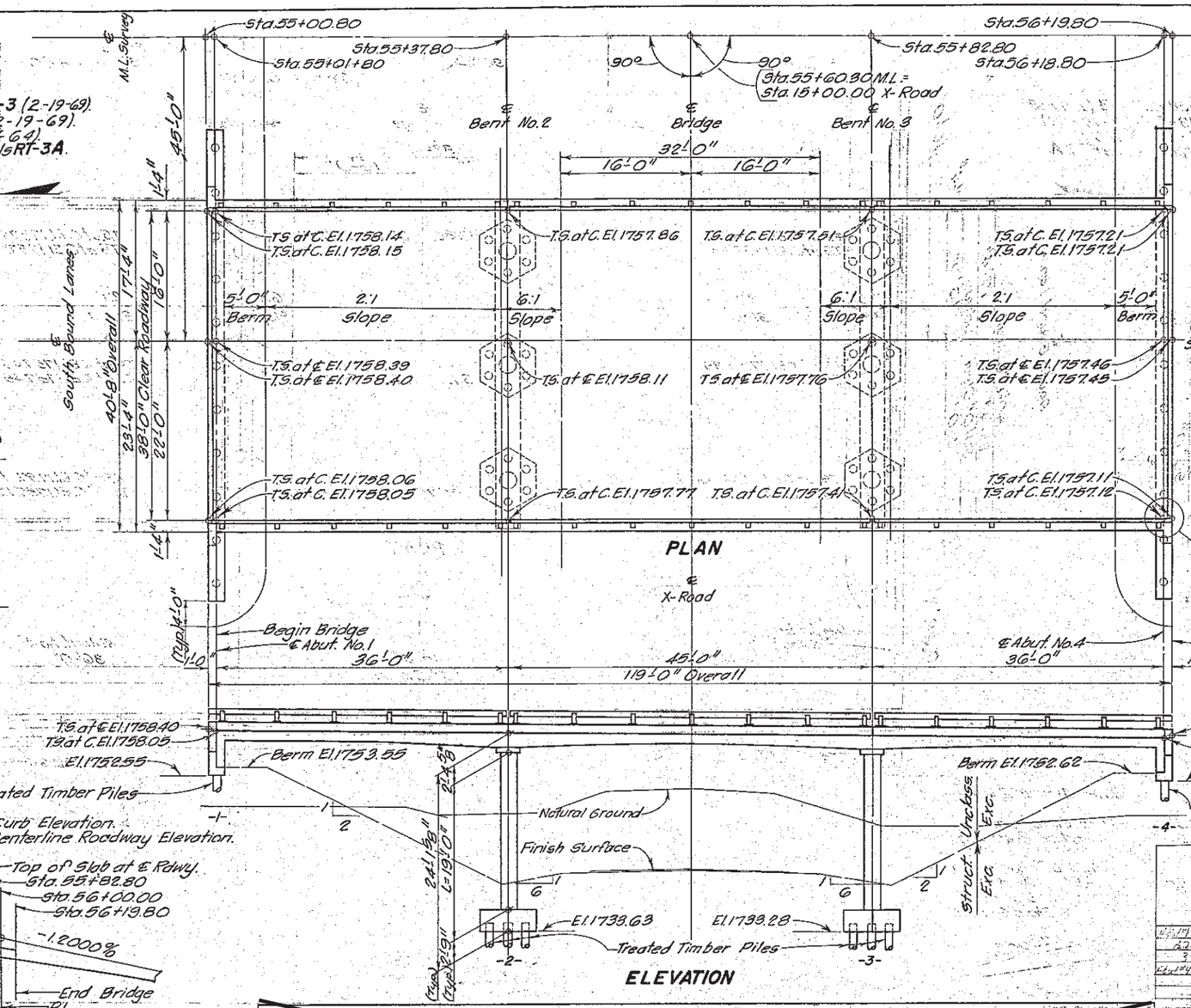
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	JM 0294(65)133	50	51

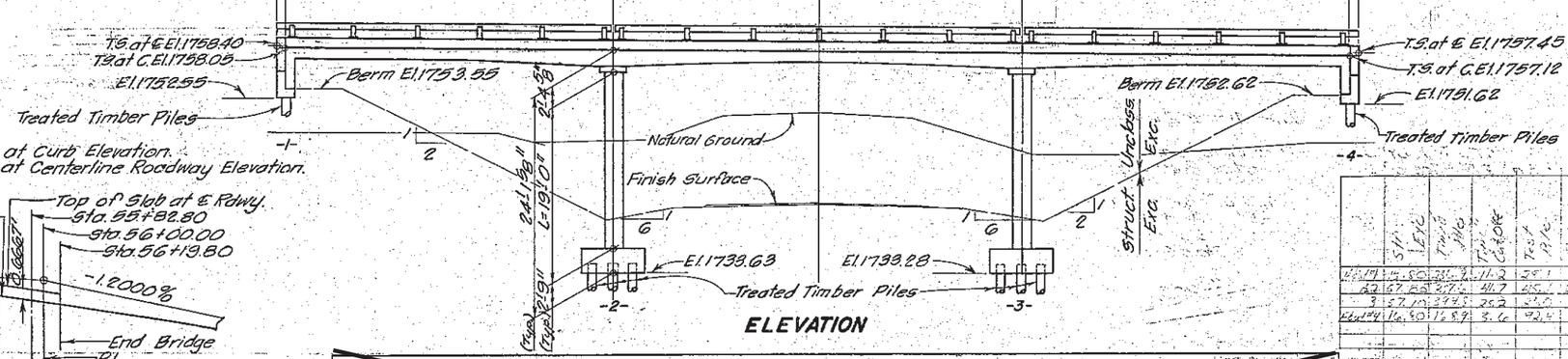
INDEX OF BRIDGE SHEETS.-

Sheet No.1- General Drawing, Layout and Quantities.
Sheet No.2- Subsurface Investigations.
Sheet No.3- Details of Standard Superstructure 3PCCS-38-119-1-3 (2-19-69).
Sheet No.4- Details of Standard Abutment 3PCCS-38-119-2-3 (2-19-69).
Sheet No.5- Details of Standard Bent 3PCCS-38-119-3-3 (10-27-64).
Sheet No.6- Standard Type RT-3A Steel Railing, Drain and Curb Details RT-3A.



LAYOUT SKETCH

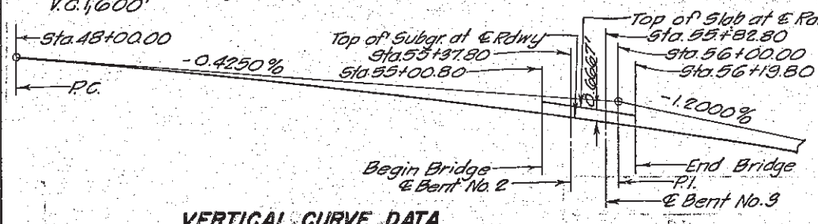




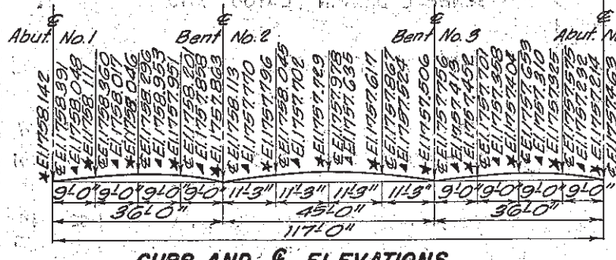
ELEVATION

P.I. Sta. 56+00.00
Elev. 1758.50 (subgr.)
V.C. 1,600'

NOTE-
T.S. at C. El. = Top of Slab at Curb Elevation.
T.S. at ℄ El. = Top of Slab at Centerline Roadway Elevation.



VERTICAL CURVE DATA



CURB AND ℄ ELEVATIONS

NOTE- Elevations indicated with * are top of finished slab at left curb, and with ℄ are top of finished slab at centerline roadway, and with ▲ are top of slab at right curb. Camber for Dead Load deflection PLUS Plastic flow shown on Sheet No. 3 of Bridge Plans has been included in the elevations shown above.

ESTIMATED QUANTITIES (ONE STRUCTURE)

Bid Item No.	40505	40505	40555	40166	40705	40710	10410	10405	40905
ITEM	Class "A" Conc. Cu. Yds	Steel - Lbs. Reinf.	Struct.	Type RT-3A Steel Railing - Lin. Ft.	Timber Piles - Lin. Ft. Treated Timber	◊Test	Excavation - Cu. Yds. Struct.	△Unclass.	Pile Shoes No.
Superstructure	255.5	75,290	60	238.0					
Abutment No. 1	21.3	2,465	525		10 at 45' = 450'	1 at 50' = 50'	17		11
Bent No. 2	19.0	4,290			17 at 25' = 425'	1 at 30' = 30'	55		18
Bent No. 3	19.0	4,290			17 at 25' = 425'	1 at 30' = 30'	56		18
Abutment No. 4	21.3	2,465	525		10 at 45' = 450'	1 at 50' = 50'	17		11
Totals	336.1	88,800	1,110	238.0	1750'	◊ 160'	145	△	68

◊ One Treated Timber Test Pile shall be driven at Abutments No. 1 and No. 4 and at Bents No. 2 and No. 3 before remaining piles are ordered.
△ All Uncl. Exc. to be done by others.

SPECIFICATION NOTE.-

Use South Dakota Standard Specifications for Roads and Bridges, 1969 Edition, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES.-

1. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
2. See NOTES on Sheet No. 1 thru No. 6.
3. Omit all Floor Drains.
4. Longitudinal elements of the slab shall conform to the vertical curve.
5. Rail Posts shall be built vertical.
6. The contractor shall have sufficient pile splice material on hand before pile driving is started.
7. See Standard Plate No. 301 for Pile shoe Details.
8. Furnish and Install Insert and eyebolts as shown on Standard Plate No. 305, except bolts shall be 5/8" Φ.

CURB NOTE—

The Curb ends at Begin Bridge and End Bridge shall be built vertical, rather than beveled 2 in 12 as indicated elsewhere in these Plans.

	Str. Exc.	Struct. Exc.	Unclass. Exc.	Test Pile	Pile Shoes
Abut. #1	14.50	38.7	11.2	25.1	11
#2	17.88	27.2	41.7	26.1	21.3
#3	17.10	27.4	25.2	21.5	22
Abut. #4	16.50	15.87	3.6	72.4	7.2
Total	117.78	135.2	51.7	119.4	72.5

(SOUTH BOUND LANES)

GENERAL DRAWING, LAYOUT AND QUANTITIES

FOR

119'-0" CONTINUOUS CONCRETE BRIDGE

38'-0" ROADWAY

OVER CROSS ROAD — SEC. 6/7-T112N-R49W

STA. 55+00.80 TO 56+19.80 — 29-5(11)141

BROOKINGS COUNTY

Str. No. 06-184-010 — SOUTH DAKOTA — HS20-44 (8 ALT.)

DEPARTMENT OF HIGHWAYS

JUNE 1967 — 3 OF 4

-X220-

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-010

Finaled 4-27-71 E.T.

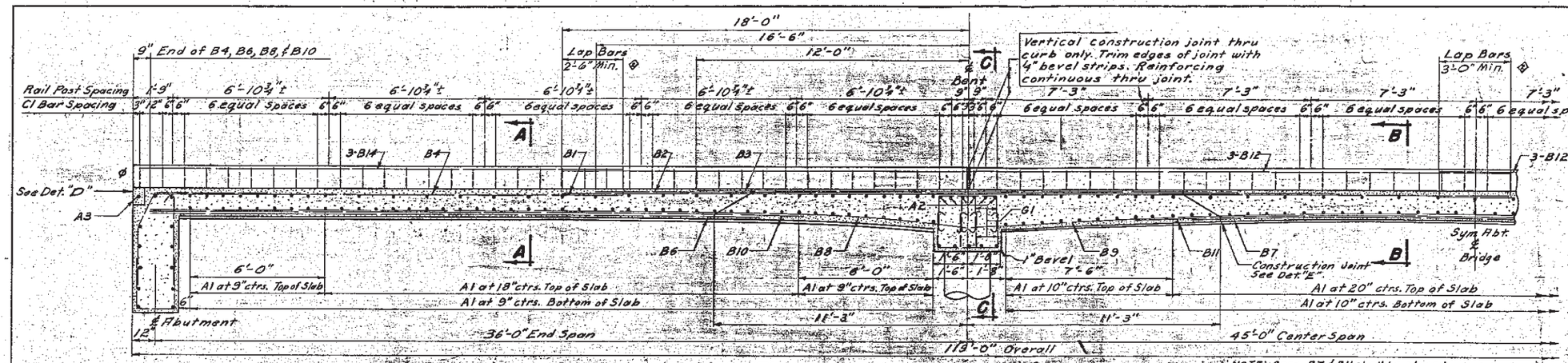
PLANS BY BRIDGE SEC., S. DAK. DEPT. HWYS.

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	M.V.W.	R.C.M.	BRIDGE ENGINEER

P.S.&E. Rev. 1-25-68 by E.L.P. Chk. by

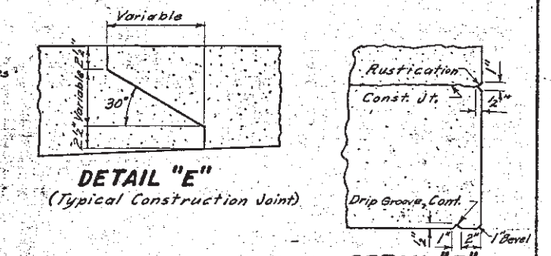
06024

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0294(65)133	51	51



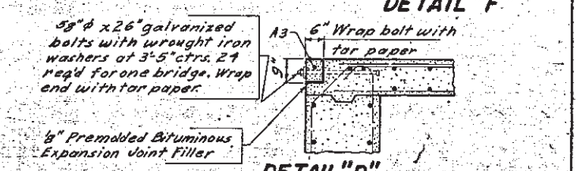
HALF LONGITUDINAL SECTIONAL VIEW

NOTE: Bars B7 & B11 shall be placed Symmetrically about ℄ Bridge.

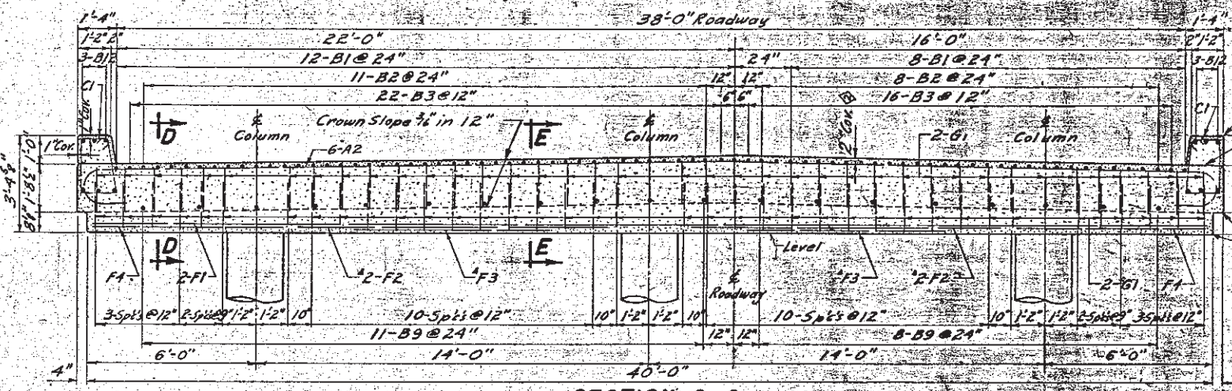


DETAIL "E"
(Typical Construction Joint)

DETAIL "F"



DETAIL "D"

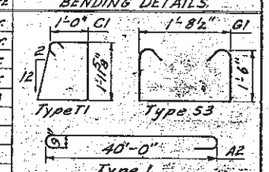


SECTION C-C

REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE	MK.	NO.	SIZE	LENGTH	TYPE
A1	238	5	40'-3"	Str.	B7	38	10	25'-9"	Str.	F1	4	9	39'-9"	Str.
A2	12	10	42'-3"	1	B8	38	10	36'-3"	Str.	F2	8	9	11'-0"	Str.
A3	2	5	37'-9"	Str.	B9	19	10	45'-0"	Str.	F3	4	9	7'-0"	Str.
B1	40	10	42'-0"	Str.	B10	36	9	29'-0"	Str.	F4	4	4	6'-6"	Str.
B2	38	11	33'-0"	Str.	B11	18	9	30'-0"	Str.	G1	304	4	5'-6"	S3
B3	76	10	24'-0"	Str.	B12	12	11	42'-6"	Str.					
B4	40	9	21'-0"	Str.	B13	6	11	45'-0"	Str.					
B5	12	11	36'-9"	Str.	B14	12	8	21'-6"	Str.					
B6	76	10	27'-0"	Str.	C1	240	4	7'-3"	T1					

BENDING DETAILS.

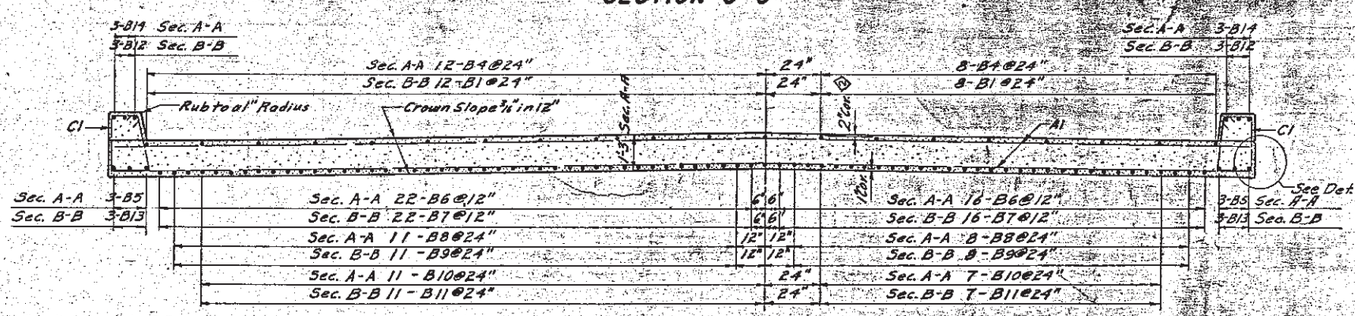


NOTE: All dimensions are out to out of Bars.

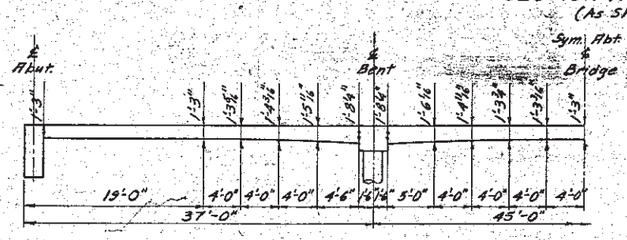
NOTES

These notes cover Abutments, Bents, Superstructure and Railing Details. The General Drawing will show other necessary notes and details.

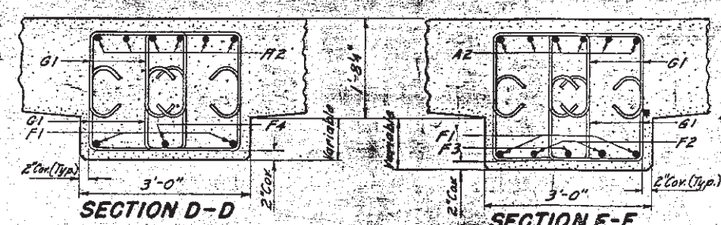
DESIGN SPECIFICATIONS: A.A.S.H.O. Specifications for Highway Bridges, 1965.
PILING: See General Drawing for type and length of Piling.
STRUCTURAL STEEL: All ⅝" ϕ bolts including washers, and all pile connections in Abutments, and all floor drains shall be paid for as Structural Steel.
REINFORCING STEEL: All Reinforcing steel shall conform to A.S.T.M. Specifications A305 and A15 (Intermediate Grade).
CONCRETE: All concrete shall be Class "A". All exposed concrete corners and edges shall be chamfered to a ¾" bevel unless noted otherwise. If necessary to facilitate construction, transverse construction joints may be made at the points shown in each and any span. If these joints are used, submit a Concrete Pouring Sequence to the BRIDGE SECTION for approval. All costs for expansion joint filler and tar paper shall be included in the unit price bid per cu. yd. for Class "A" Concrete.
DESIGN DATA: Design Loading: HS20-44 A.A.S.H.O. and the Alternate Loading as designated in P.P.M. 20-4, Section 4a.
Unit Stresses: Concrete fc = 1600 p.s.i., n = 8, Reinforcing Steel: fs = 20,000 p.s.i. Equivalent fluid pressure of earth at 40#/sq. ft.
Minimum Pile Loading = 24 tons for Timber Piling and 45 tons for 8 BP36 Steel Bearing Piles. (values for one pile) Minimum Soil Bearing Pressure for Spread Footings = 4 Tons per Sq. Ft.



SECTION A-A OR SECTION B-B
(As Shown and Noted)

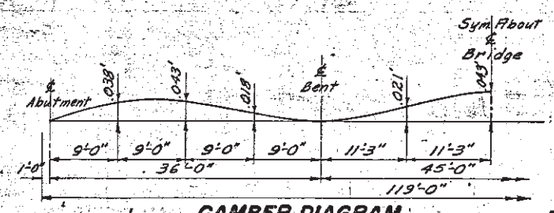


SLAB THICKNESS DIAGRAM
(For any longitudinal section parallel to ℄ Roadway)



SECTION D-D

SECTION E-E



CAMBER DIAGRAM

Camber is calculated for dead load plus plastic flow. Camber shall be added to the proposed grade elevations at the respective stations to establish the elevations of the top of the finished roadway slab.

ORIGINAL CONSTRUCTION PLANS

STR. NO. 06-184-010

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class "A" Concrete	Cu. Yds.	255.5
Reinforcing Steel	Lbs.	75,290
Structural Steel	Lbs.	80

*Weight of ⅝" ϕ Bolts and washers only.

DETAILS OF STANDARD SUPERSTRUCTURE FOR

3-SPAN 119'-0" CONTINUOUS CONCRETE SLAB BRIDGE

WITH

ROUND COLUMN BENTS

38'-0" ROADWAY (22'-0" R_L & 16'-0" R_L OF ℄ RDWY.)

SOUTH DAKOTA

DEPARTMENT OF HIGHWAYS

4 OF 4

APRIL 1964 HS20-44 (8 ALT.)

Rev. (2-19-69) O.C.
Rev. Spec. Note (7-6-67) M.V.W.
Rev. for 1963 & 1964 AASHO Interim Specifications (10-27-64) W.C.P.
Rev. 1-24-68 P.W.F.

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
C.H.J. & M.B.S.	C.H.J.	M.B.S.	BRIDGE ENGINEER

3PCCS-38-119-1-3