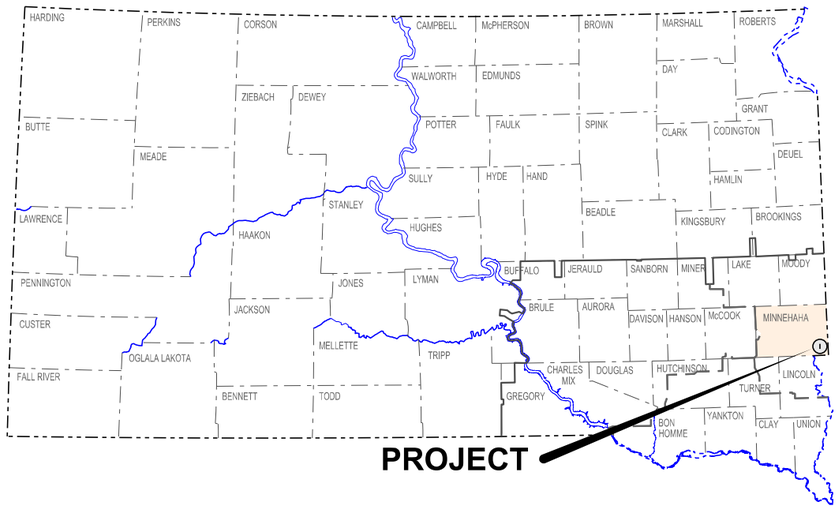


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 090E–288
484TH AVE OVER
INTERSTATE 90
MINNEHAHA COUNTY

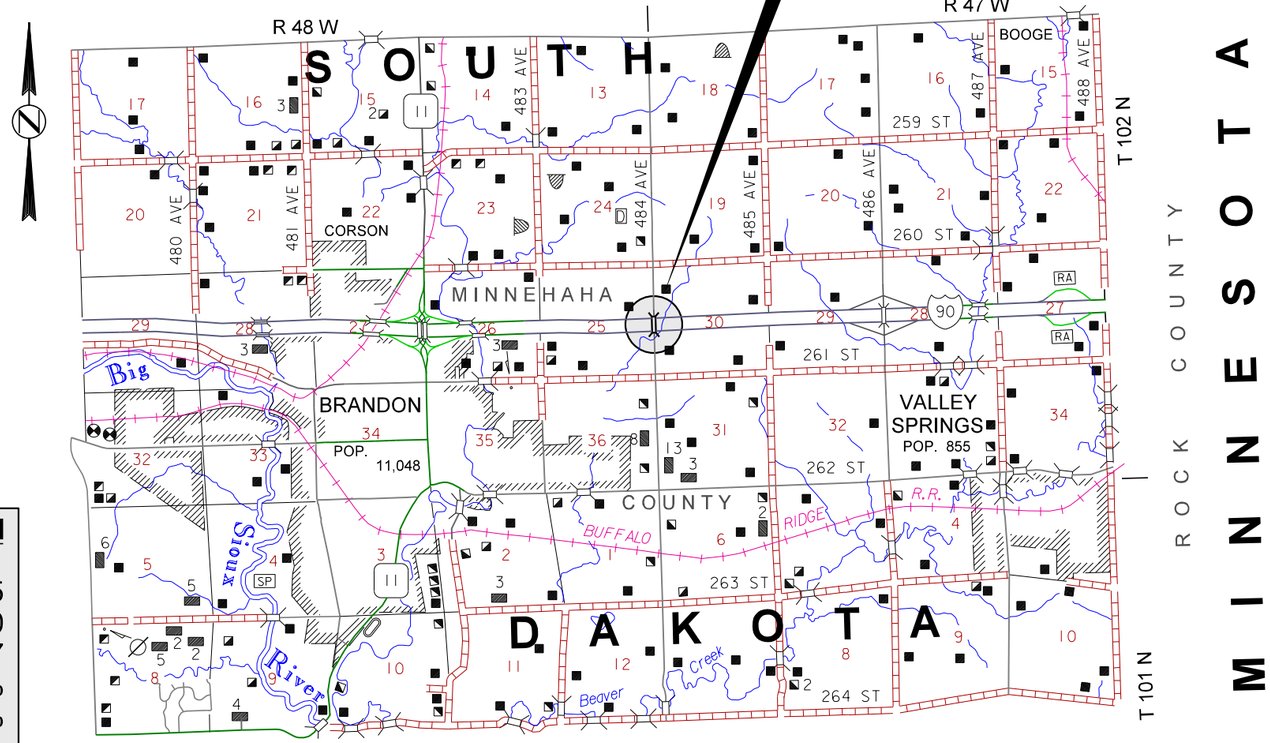
BRIDGE REPAIR
PCN I7Y2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090E-288	1	13

Plotting Date: 07/02/2025

INDEX OF SHEETS

STR. NO. 50-300-166
9+42 to 11+96
Continuous Concrete Bridge
254'-0"=0.048 Mile
MRM 408.56



STORM WATER PERMIT
(None required)

DESIGN DESIGNATION (I90E)		DESIGN DESIGNATION (484th Ave)	
ADT(2024)	12,279	ADT(2023)	115
ADT(2044)	19,352	ADT(2043)	180
DHV	2,193	DHV	27
D	51%	D	50%
T DHV	6.5%	T DHV	4.0%
T ADT	14.3%	T ADT	8.9%
V	80 MPH	V	55 MPH

PLOT SCALE - 1:1.70000
PLOT NAME - 1
PLOTTED FROM - TRM1INT15
FILE - ...\BRIDGE\MINN17Y2\TITLE 17Y2.DGN

ESTIMATE OF QUANTITIES & ENVIRONMENTAL COMMITMENTS

ESTIMATE OF QUANTITIES – PCN I7Y2

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	50.0	Hour
634E0110	Traffic Control Signs	307.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0420	Type C Advance Warning Arrow Board	1	Each

STR. NO. 50-300-166

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
460E0070	Class A45 Concrete, Bridge Repair	0.2	CuYd
460E0300	Breakout Structural Concrete	0.1	CuYd
480E5000	Galvanic Anode	10	Each

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
https://sdleastwanted.sd.gov/maps/default.aspx

South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:
https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

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

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, No Dumping Allowed.
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

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

ENVIRONMENTAL COMMITMENTS (CONTINUED) & PLAN NOTES

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic 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 a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

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

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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 will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COORDINATION BETWEEN CONTRACTORS

A separate contract for Project IM-EM-NH-TA 0909(46)406 - PCN 4433 has been awarded to T&R Contracting Inc. Phone 605-332-1170 for interchange reconstruction on I90 from MRM 406.00 to MRM 407.10.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed by other Contractors on the interchange reconstruction project.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

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

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

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

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

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

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for 1 site. Payment will only be for those signs used on this site.

WORK ZONE SPEED REDUCTION

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

TEMPORARY PAVEMENT MARKING

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline, No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course or after application of the flush seal.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD				EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 80		24" x 30"	5.0		1	36" x 48"	12.0	12.0
R2-1	SPEED LIMIT 65		24" x 30"	5.0		3	36" x 48"	12.0	36.0
R2-1	SPEED LIMIT 45		24" x 30"	5.0		1	36" x 48"	12.0	12.0
R2-6aP	FINES DOUBLE (plaque)		24" x 18"	3.0		1	36" x 24"	6.0	6.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)		48" x 48"	16.0		2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)		48" x 48"	16.0		1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	16.0		2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0		48" x 48"	16.0	
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0	1	48" x 24"	8.0	8.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			105.0	EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			202.0

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

Flagger

Channelizing Device

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

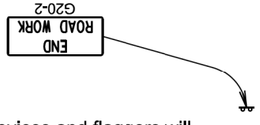
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

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

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

The channelizing devices will be drums or 42" cones.

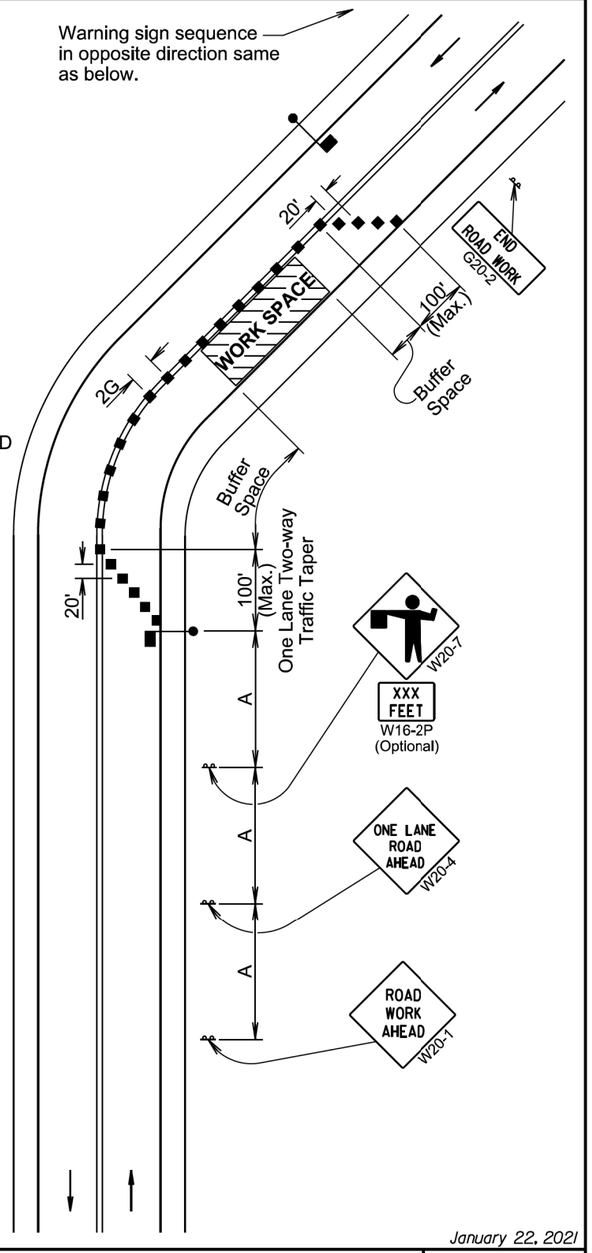
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



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

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

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



January 22, 2021

Published Date: 2026	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1

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

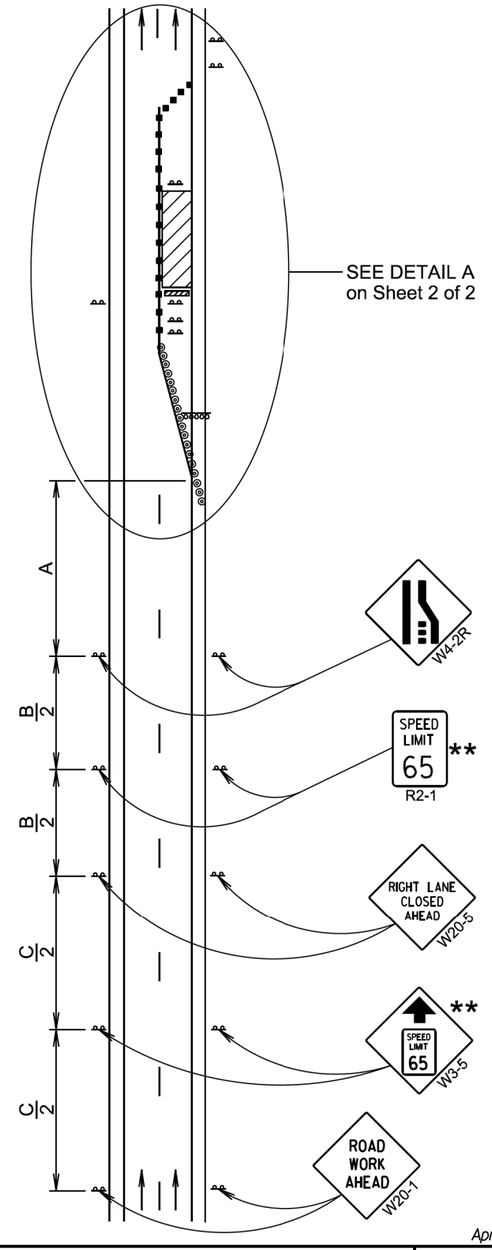
** Speed appropriate for location.

◎ Reflectorized Drum

▪ Channelizing Device

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

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



April 8, 2025

Published Date: 2026	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

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

* Spacing is 40' for 42" cones.

** Speed appropriate for location.

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

◎ Reflectorized Drum

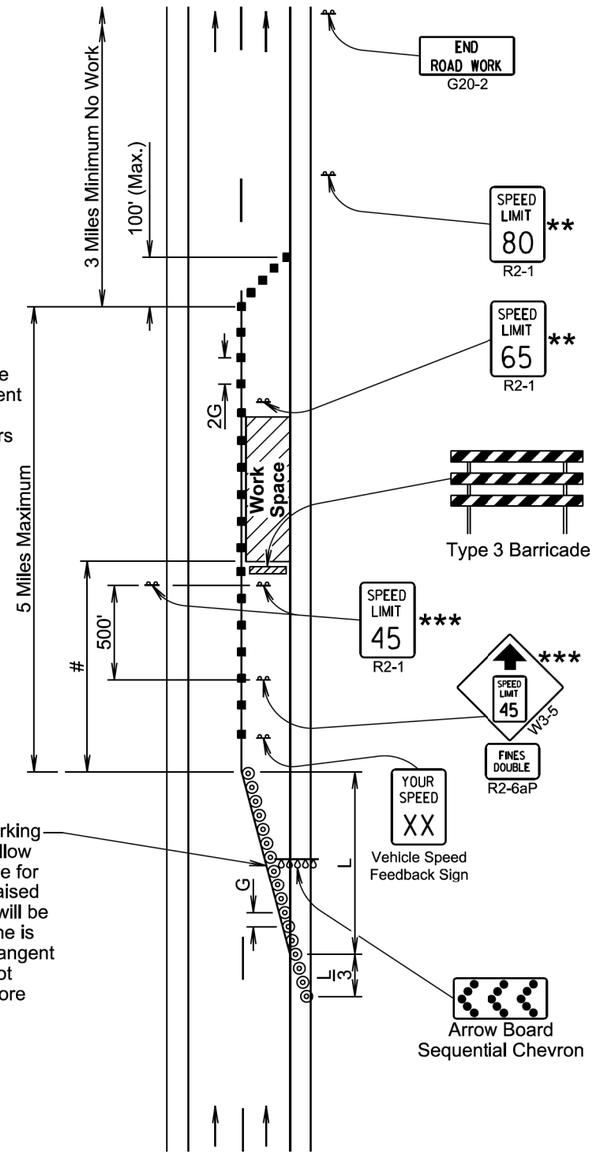
■ Channelizing Device

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

The channelizing devices will be 42" cones or drums.

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

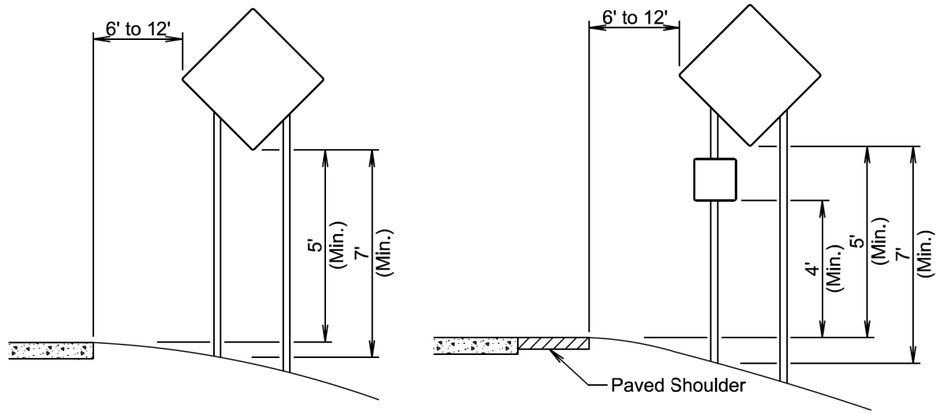
4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do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



DETAIL A

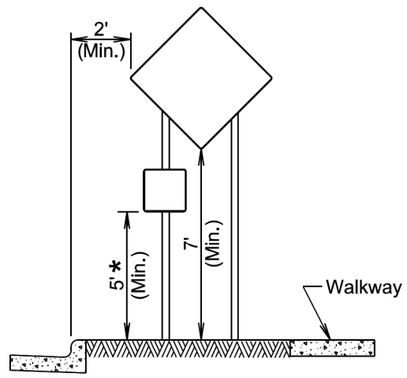
April 8, 2025

Published Date: 2026	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2

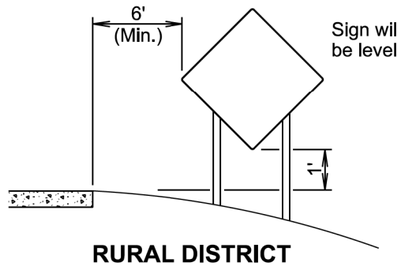


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

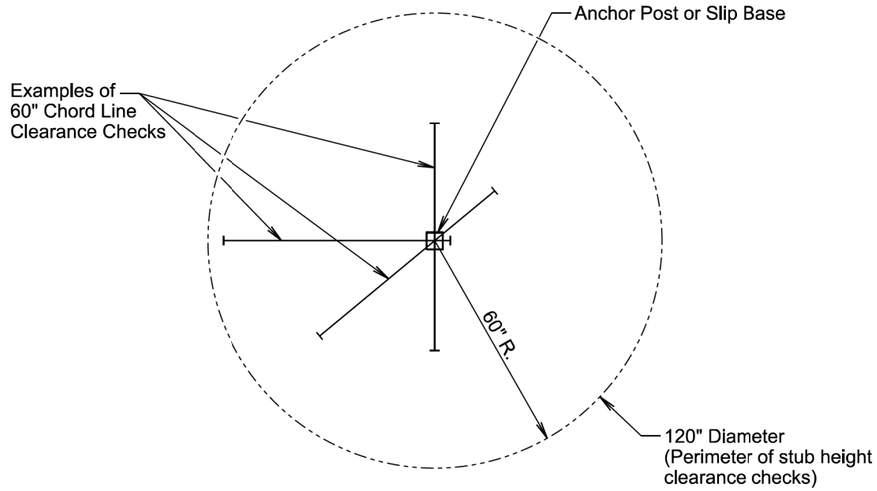


RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

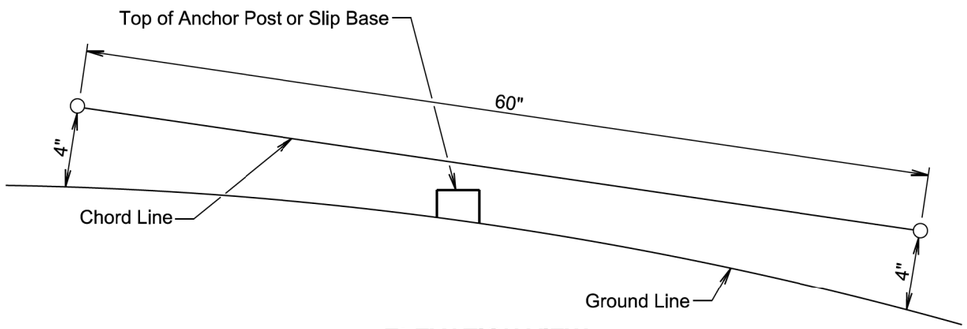
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

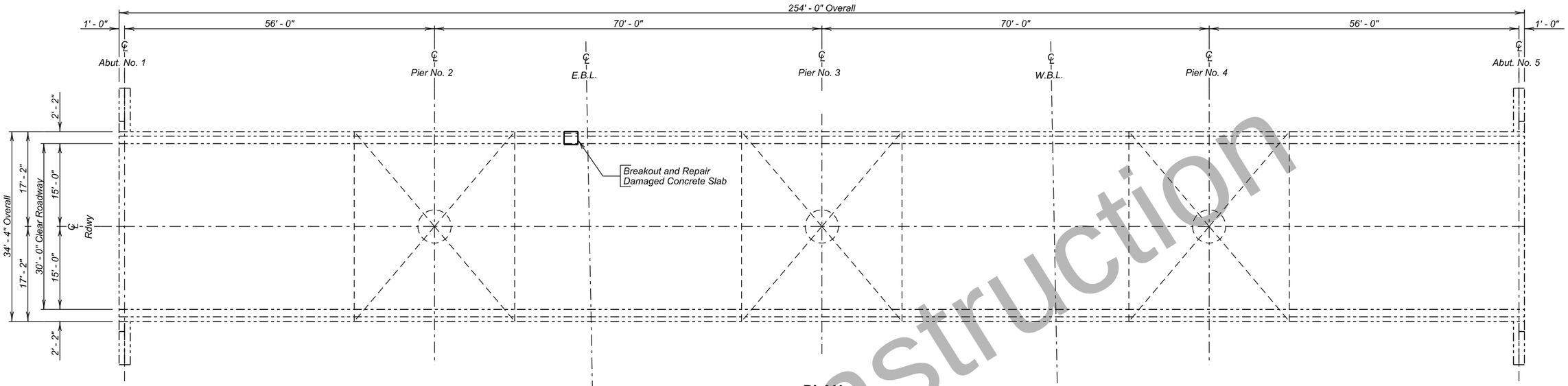
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

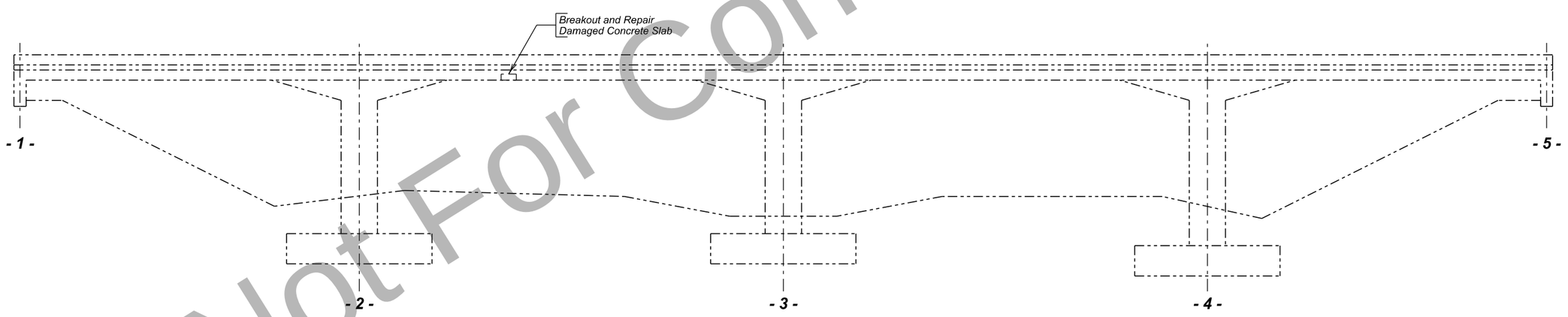
January 22, 2021

Published Date: 2026	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99 Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	090E-288	8	13



PLAN



ELEVATION

- X220 -

INDEX OF BRIDGE SHEETS -

LAYOUT FOR BRIDGE REPAIR

FOR

254' - 0" CONTINUOUS CONCRETE BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER INTERSTATE 90 — SEC. 25/30-T102N-R47/48W
STR. NO. 50-300-166 — 090 E-288
PCN I7Y2

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2025

- X220 -

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JKI	TJM	JB	Steven A. Johnson BRIDGE ENGINEER
MINNI7Y2	I7Y2BA01		

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
460E0070	Class A45 Concrete, Bridge Repair	0.2	CuYd
460E0300	Breakout Structural Concrete	0.1	CuYd
480E5000	Galvanic Anode	10	Each

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

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

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

PROPOSED PROCEDURE

A minimum of seven days prior to beginning the repair work, the Contractor will provide the Bridge Construction Engineer (BCE) with the proposed procedure for completing the repair.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

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

1. Remove and capture all concrete in the removal area of the damaged portion of the bridge deck to prevent any pieces from falling into traffic during the repair process. This will not be done directly over traffic.

2. Cut and remove damaged section of existing B4 bar.

3. Repair the damaged portion of the bridge deck.

GENERAL CONSTRUCTION - BRIDGE

1. All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.

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

CONCRETE BREAKOUT

1. The existing deck will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. All existing reinforcing steel that will be exposed is scheduled for reuse and will be cleaned to the satisfaction of the Engineer. Care will be taken not to damage the reinforcing steel or void form during concrete breakout. Use chipping hammers not heavier than 15-pound class for concrete removal around reinforcing steel. Blast-clean the existing exposed reinforcing steel and surrounding concrete. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.

2. All broken out concrete and discarded reinforcing bars will be disposed of by the Contractor. Any disposal of discarded material will be in accordance with the Environmental Commitments.

3. During concrete removal operation, no concrete will be allowed to fall onto I-90 below.

4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, capturing all removed materials, cleaning and straightening existing reinforcing steel, and disposal of all broken out material. All broken out concrete and other discarded material will become the property of the Contractor and will be disposed of on a site obtained by the Contractor and approved by the Engineer. See the Environmental Commitment notes.

CLASS A45 CONCRETE, BRIDGE REPAIR

1. If pumpable concrete is used for concrete placement, the damaged void form will need to be sealed prior to placement.

2. During concrete placement and 12 hours of curing time post-concrete placement, all vehicular traffic on the lane open for travel will be stopped by flaggers before entering onto the bridge and then allowed to proceed at a maximum of 5 MPH. To safely slow traffic to cross the bridge during the deck curing period two advance flaggers may be required.

3. The type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract item Class A45 Concrete, Bridge Repair will conform to the requirements of Section 460 of the Construction Specifications for A45 concrete used in bridge decks, and the 4 1/2-inch maximum slump requirement will be waived.

GALVANIC ANODE

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

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

   a. Galvashield XP2
   Vector Corrosion Technologies
   65114 140th Ave.
   Wabasha, MN 55981
   Phone: (507) 259-2481

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

   c. Sika FerroGard 670
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (800) 933-7452

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

4. The anodes will be placed with a minimum 3/4-inch cover and will be set in embedding mortar per the manufacturer's recommendations. The anodes will be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket will be chipped out behind the anode to provide sufficient cover. The Contractor may need to chip around the reinforcing bar locally at the anode installation to make the electrical connection. The reinforcing steel at the connection location will be cleaned per the manufacturer's recommendations to provide sufficient electrical connection and mechanical bond.

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

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

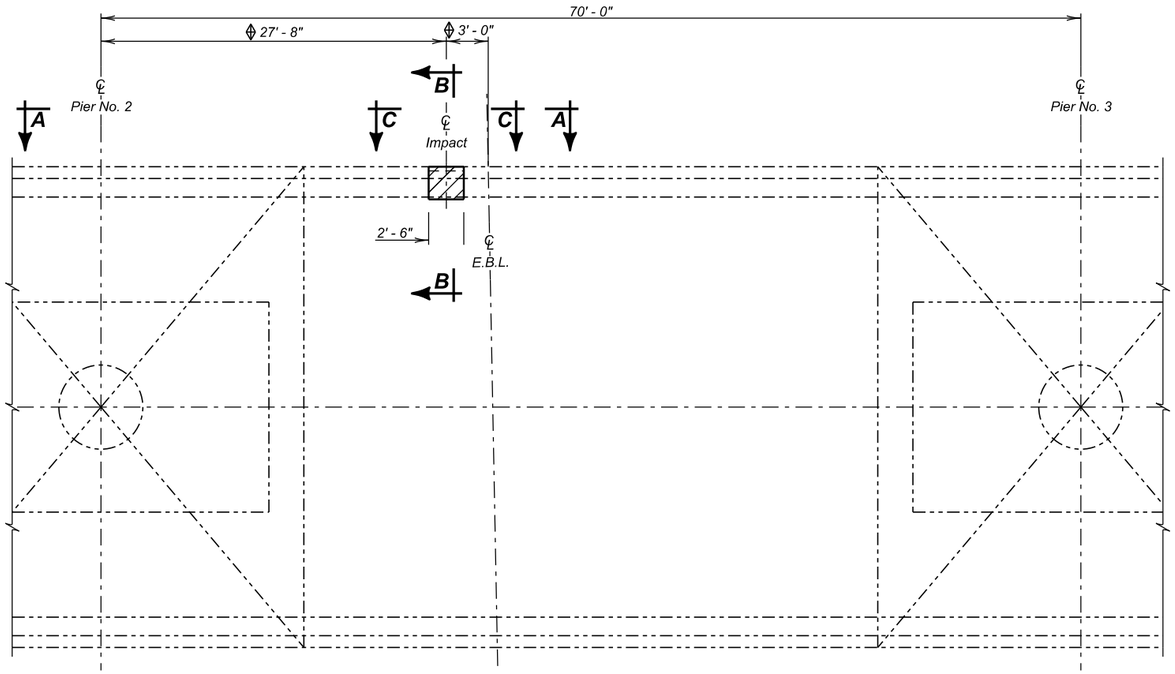
7. All costs associated with placing anodes including labor, equipment, materials, and incidentals will be included in the contract unit price per each for Galvanic Anode.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
254' - 0" CONTINUOUS CONCRETE BRIDGE

STR. NO. 50-300-166
JUNE 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JKI	TJM	JKI	BRIDGE ENGINEER
MINNI7Y2	I7Y2IA02		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	090E-288	10	13

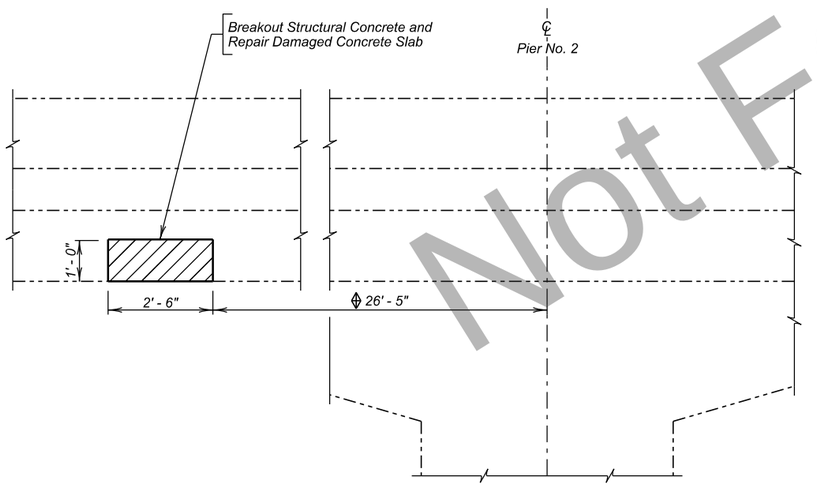


PARTIAL PLAN

Shaded area indicate area to be broken out and repaired

◊ Due to traffic at the time of inspection, dimension was difficult to obtain. Dimension shown is an approximation, and removal area will be as approved by the Engineer.

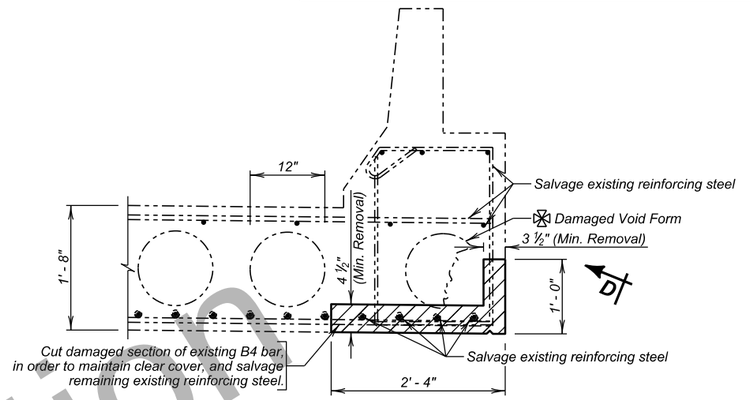
✠ If pumpable concrete is used for concrete placment, the damaged void form will need to be sealed prior to placement.



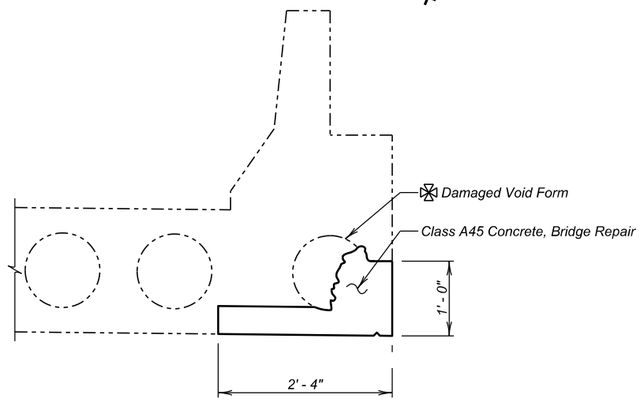
VIEW A - A

VIEW C - C

VIEW D - D



SECTION B - B
(Concrete Breakout Shown)



SECTION B - B
(Reinforcing steel not shown for clarity)
(Concrete Placement Shown)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Repair	CuYd	0.2
Breakout Structural Concrete	CuYd	0.1
Galvanic Anode	Each	10

SLAB REPAIR DETAILS

FOR

254' - 0" CONTINUOUS CONCRETE BRIDGE

30' - 0" ROADWAY — 0° SKEW
OVER INTERSTATE 90 — SEC. 25/30-T102N-R47/48W
STR. NO. 50-300-166 — 090 E-288

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2025

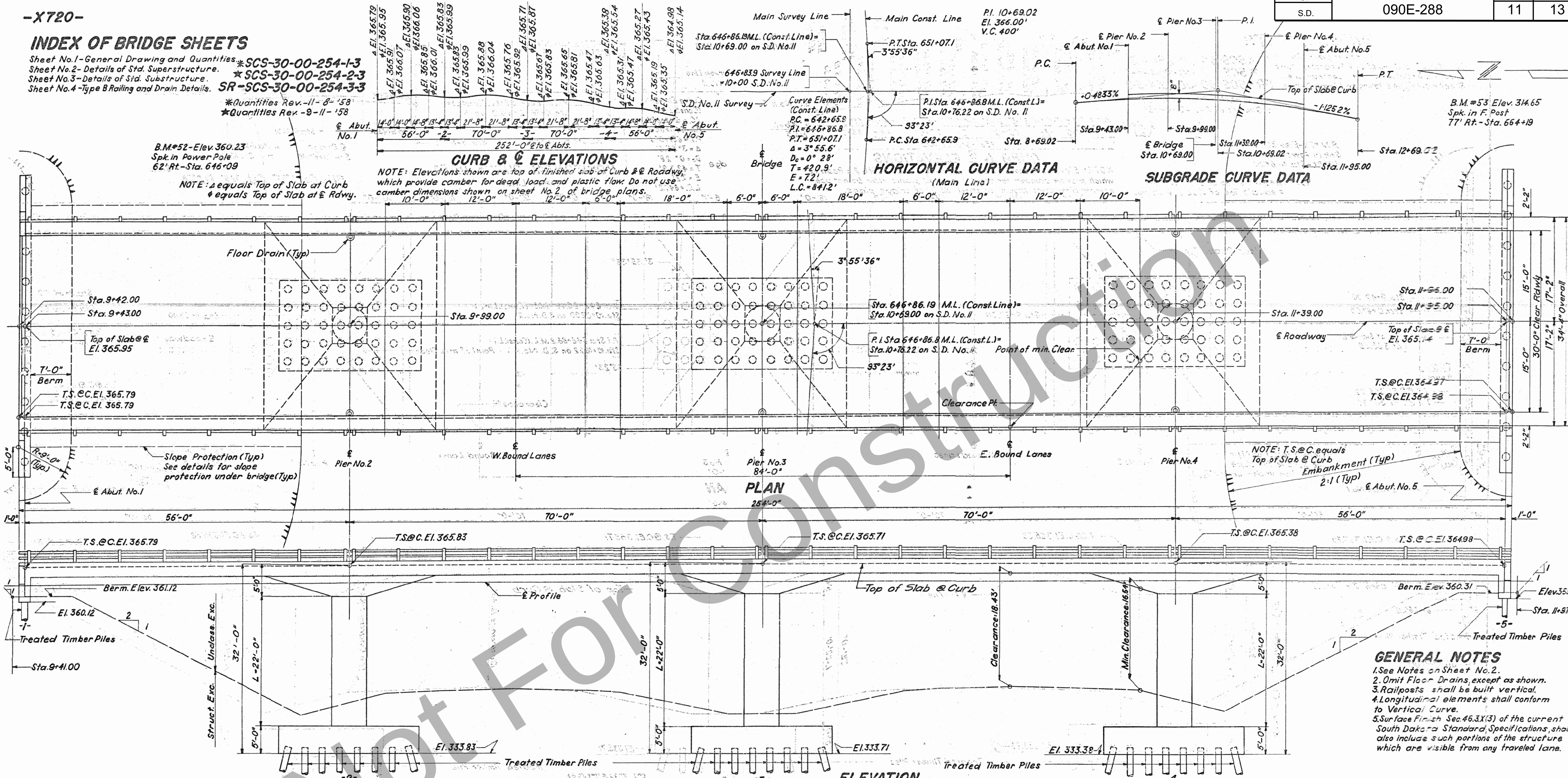
3 OF 6

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JKI	TJM	JB	Steve A Johnson BRIDGE ENGINEER
MINNI7Y2	I7Y2BA03		

-X720-

INDEX OF BRIDGE SHEETS

*Quantities Rev.-11-8-'58
★Quantities Rev.-9-11-'58



GENERAL NOTES

1. See Notes on Sheet No. 2.
2. Omit Floor Drains except as shown.
3. Railposts shall be built vertical.
4. Longitudinal elements shall conform to Vertical Curve.
5. Surface Finish Sec.46.3X(3) of the current South Dakota Standard Specifications, shall also include such portions of the structure which are visible from any traveled lane.

TEST HOLE DATA

Station	Dist. From ℄	Elevation: Top of Hole	Fill Material	Clay	Silty Clay	Sandy Silt	Silty Sand	Clay Silt	Clay Sand	Partially Cemented Sand	Sandy Gravel	Bottom of Hole
8+75.00	12'-6" Lt.	362.2	362.2	359.2	350.0		334.6		330.1		323.4	313.4
10+00.00	12'-6" Lt.	362.8	362.8	358.9	351.6			337.0	331.8	327.1	324.8	313.8
10+50.00	12'-6" Lt.	362.7	362.7	359.3	351.6			337.2	332.6	328.6	325.0	321.8
11+25.00	12'-6" Lt.	362.1	362.1	360.0	351.9			337.9	333.4	328.0	325.7	325.0
11+75.00	12'-6" Lt.	361.9	361.9	359.3	349.9	346.0	334.8	332.8	327.2		325.0	318.0
11+95.00	12'-6" Lt.	361.9	361.9	359.0	349.0	342.8		337.8			325.8	317.9

El. Top of Hole & Fill Material; El. Clay; El. Silty Clay; El. Sandy Silt; El. Silty Sand; El. Clay Silt; El. Clay Sand; Partially Cemented Sand; Sandy Gravel; El. Bott. of Hole

Typ. Test Hole Symbols. Materials in Test Holes may not occur in the order shown for Typ. Test Hole.

ESTIMATED QUANTITIES

ITEM	Concrete-Cu.Yds. Class "A"	*Light Wt.	Steel-Lbs. Reinf.	Struct.	Type-B Steel Railing Lin.Ft.	Treated Timber Piles◆ - Lin.Ft.	Excavation-Cu.Yds. Struct.	▵Unclass.	Pile Shoes ≠ No.
Superstructure	334.7	313.7	139,450	145	510.3				
Abutments No.1 & No.5	27.1		3,135	960		Abut.No.1 10@30'=300' Abut.No.5 10@35'=350'	15		20
Piers No.2 & No.4	179.4		23,755	80		80@10'=800'	315		80
Pier No.3	89.7		11,875	40		40@10'=400'	130		40
	630.9	*313.7	178,215	1,125	510.3	◆ =1850'	460	▵	≠

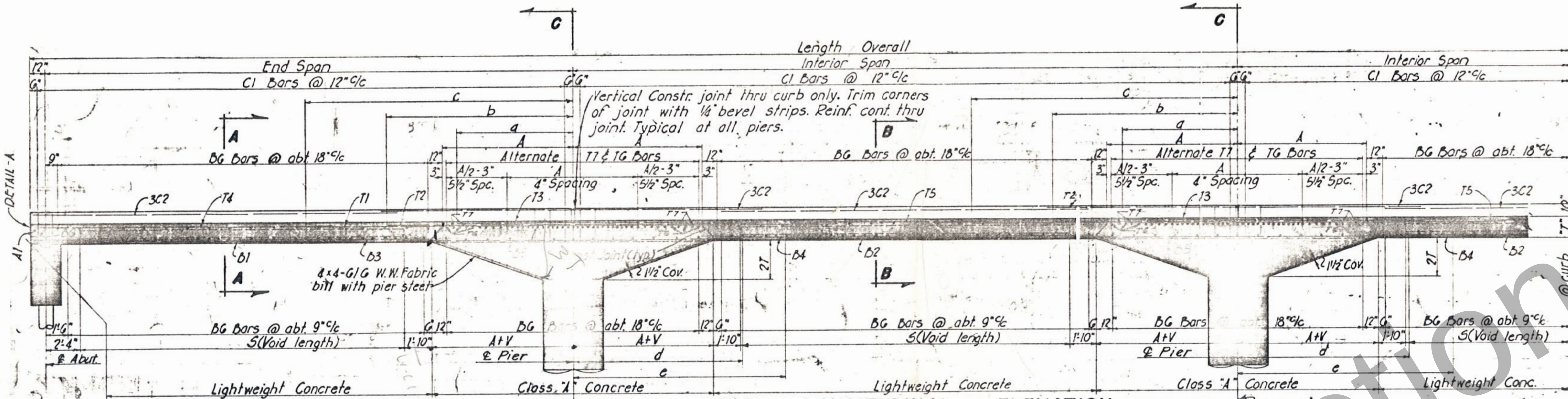
◆ One Treated Timber Test Pile shall be driven at Abuts. No. 1 & 5 and at Piers No. 2, 3 & 4 before remaining piles are ordered.
▵ See Grading Plans for Unclassified Excavation.
★ See supplemental specifications dated Feb. 1, 1958.
≠ American All Steel Pile Shoes or equiv. shall be used. The cost shall be included in the unit price bid for Treated Timber Piles.

ORIGINAL CONSTRUCTION PLANS

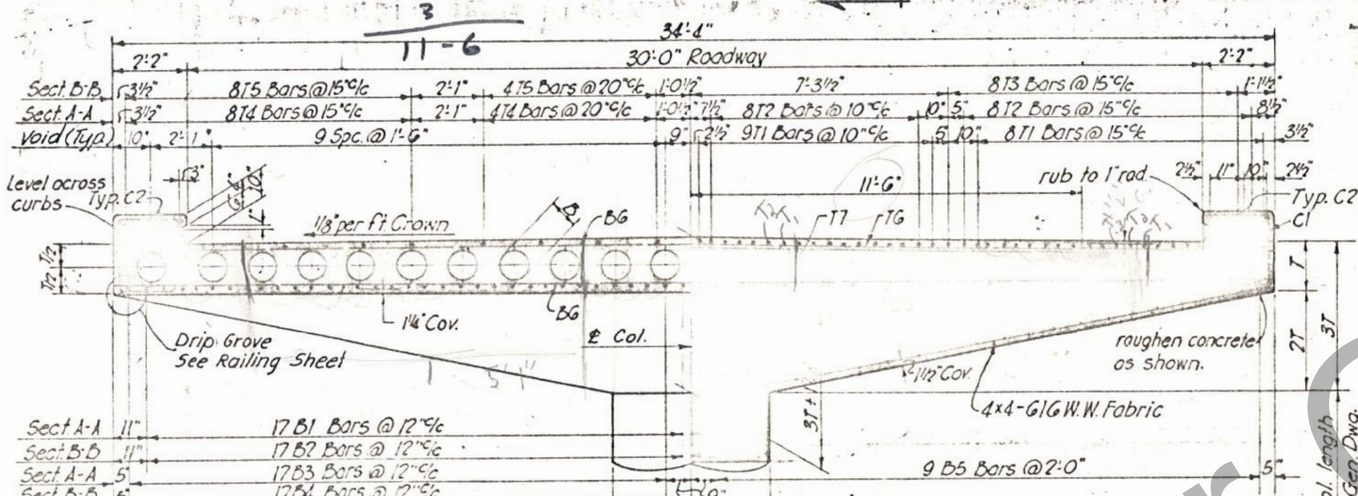
GENERAL DRAWING AND QUANTITIES
FOR
254'-0" CONTINUOUS CONCRETE BRIDGE
30'-0" ROADWAY
OVER INTERSTATE NO.90 STA.646+86.19 SEC.27/26T102N-R48W
STA.9+42.00 TO 11+96.00 I-90-9(2)404
STR. NO. 50-300-166 MINNEHAHA COUNTY
SOUTH DAKOTA H20-S16-44 (& ALT.)
DEPARTMENT OF HIGHWAYS
MAY 1958 4 OF 6

-X720-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	F.H.		BRIDGE ENGINEER

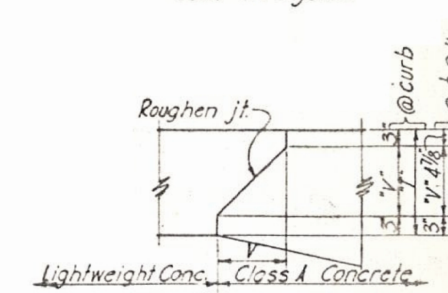


HALF LONGITUDINAL ELEVATION
(Railing not shown)



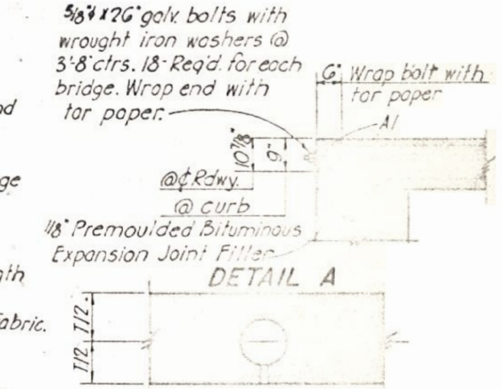
HALF SECTION A-A
HALF SECTION B-B
HALF SECTION C-C

Note: Reinf. to be cont. thru joint.



CONST. JOINT DETAIL

5/8"×26" galv. bolts with wrought iron washers @ 3'-8" ctrs. 18 Req'd for each bridge. Wrap end with tar paper.



DETAIL A

Note: One 3/8" weephole shall be provided near each end of each void. Weepholes shall be placed in straight lines normal to ℄ roadway and shall be kept positively open down to and thru the bottom forms for breather holes during the casting & curing period for slabs. Void forms to be tied securely in place during casting period.

NOTES

These notes cover substructure & superstructure details. The General Plan for each structure will show spans, elevations, and other necessary notes and details.

CONSTRUCTION SPECIFICATIONS: Current South Dakota Highway Commission's "Standard Specifications for Roads and Bridges," shall govern unless otherwise noted on plans, or in Special Provisions.

PILING: All piles shall be treated timber. Piles will not be necessary under footings of Piers if soil bearing pressure exceeds 3½ Tons/Sq. Ft. If piles are not used on pier footings, decrease footing thickness one foot, change quantity of Class "A" Concrete accordingly, footing steel to have a min. of 3" clear cover from bottom of footing.

STRUCTURAL STEEL: All 5/8"φ & 1"φ bolts including nuts and washers, pile straps and floor drains shall be paid for as structural steel.

CONCRETE: Class "A" Concrete and Lightweight Aggregate Concrete shall develop a minimum compressive strength of 4000 p.s.i. at 28 days.

All bars to be lapped 20 bar dia. unless otherwise shown. Min. cover 1½" except as shown. 6" min. lap for W.W. Fabric.

Curbs and all the roadway slab except the haunched sections shall be lightweight aggregate concrete. The haunched sections, abutments, piers and footings, shall be Class "A" Concrete.

The curb section is not to be poured until all of the slab has been poured and all supporting forms for the slab have been removed.

All exposed concrete corners and edges shall be chamfered 3/4" unless otherwise shown.

All costs for expansion jt filler and paper shall be included in the unit price bid for Class "A" Concrete.

DESIGN DATA: Design Loading H20-S16-44 (1953),* Unit stresses: Concrete fc = 1600 p.s.i., n=8 (Class "A" Conc.) n=15 (Lightweight Conc.), Reinforcing steel fs = 20,000 p.s.i. (Int. Grade Steel.) Design pile loading - 20 Tons per pile. Equivalent fluid pressure of earth = 40#/a.' See Substructure sheet for Elevation showing req'd pouring sequence.

* & Alternate

SLAB DATA

REINFORCING SCHEDULE

LENGTH OVERALL	END SPAN	INTERIOR SPAN	A1 No.	A1 Size	A1 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	B5 No.	B5 Size	B5 Length	B6 No.	B6 Size	B6 Length
164'-0"	36'-0"	45'-0"	2	5	29'-6"	68	7	23'-0"	68	6	17'-0"	68	8	27'-3"	68	6	25'-6"	54	8	23'-0"	242	5	34'-0"
182'-0"	40'-0"	50'-0"	↓	↓	↓	↓	8	26'-3"	↓	6	25'-0"	↓	8	30'-3"	↓	7	28'-6"	↓	8	25'-0"	272	5	↓
200'-0"	44'-0"	55'-0"					8	27'-0"		7	23'-0"		9	33'-3"		7	31'-6"		9	27'-0"	303	5	
218'-0"	48'-0"	60'-0"					9	29'-3"		7	23'-9"		9	36'-3"		7	34'-6"		9	29'-0"	333	6	
236'-0"	52'-0"	65'-0"	↓	↓	↓	↓	9	32'-6"	↓	7	24'-9"	↓	9	39'-3"	↓	8	37'-6"	↓	9	31'-0"	362	6	↓
254'-0"	56'-0"	70'-0"	2	5	29'-6"	68	9	34'-0"	68	7	28'-0"	68	10	42'-3"	68	8	40'-6"	54	10	34'-0"	389	6	34'-0"

LENGTH OVERALL	T1 No.	T1 Size	T1 Length	T2 No.	T2 Size	T2 Length	T3 No.	T3 Size	T3 Length	T4 No.	T4 Size	T4 Length	T5 No.	T5 Size	T5 Length	T6 No.	T6 Size	T6 Length	T7 No.	T7 Size	T7 Length	C1 No.	C1 Size	C1 Length	C1 "E"	C2 No.	C2 Size	C2 Length
164'-0"	102	8	36'-0"	96	8	25'-0"	48	8	15'-6"	48	5	20'-0"	48	5	11'-9"	69	9	34'-0"	66	9	23'-0"	328	4	8'-0"	1'-11"	42	5	25'-0"
182'-0"	↓	9	40'-6"	↓	9	28'-0"	↓	9	17'-6"	↓	↓	22'-0"	↓	↓	12'-3"	78	9	↓	72	9	↓	364	↓	8'-3"	2'-0"	↓	↓	27'-6"
200'-0"		10	45'-0"		10	30'-6"		10	19'-0"			23'-0"			12'-9"	84	9		81	9		400		8'-3"	2'-1"			30'-0"
218'-0"		10	49'-0"		10	33'-6"		10	21'-0"			25'-0"			13'-3"	90	8		87	8		436		8'-6"	2'-2"			32'-9"
236'-0"	↓	11	54'-0"	↓	11	36'-6"	↓	11	22'-6"	↓	↓	27'-0"	↓	↓	13'-9"	96	8	↓	96	8	↓	472	↓	8'-9"	2'-3"	↓	↓	35'-3"
254'-0"	102	11	58'-0"	96	11	39'-0"	48	11	24'-6"	48	5	29'-0"	48	5	14'-3"	105	8	34'-0"	102	8	23'-0"	508	4	8'-9"	2'-4"	42	5	37'-9"

DIMENSIONS

LENGTH OVERALL	"B"	"S"	"T"	"2T"	"A"	"V"	A+V	"D"	"a"	"b"	"c"	"d"	"e"
164'-0"	7"	22'-4"	1'-3"	2'-6"	8'-9"	9"	9'-6"	4'-0"	7'-9"	12'-6"	18'-0"	11'-6"	14'-0"
182'-0"	8"	25'-4"	1'-4"	2'-8"	9'-8"	10"	10'-6"	4'-4"	8'-9"	14'-0"	20'-3"	12'-6"	12'-6"
200'-0"	9"	28'-4"	1'-5"	2'-10"	10'-7"	11"	11'-6"	4'-8"	9'-6"	15'-3"	22'-6"	13'-6"	16'-0"
218'-0"	10"	31'-4"	1'-6"	3'-0"	11'-6"	12"	12'-6"	5'-0"	10'-6"	16'-9"	24'-6"	14'-6"	18'-0"
236'-0"	11"	34'-4"	1'-7"	3'-2"	12'-5"	1'-1"	13'-6"	5'-6"	11'-3"	18'-3"	27'-0"	15'-6"	20'-3"
254'-0"	12"	37'-4"	1'-8"	3'-4"	13'-4"	1'-2"	14'-6"	6'-0"	12'-3"	19'-6"	29'-0"	17'-0"	21'-0"

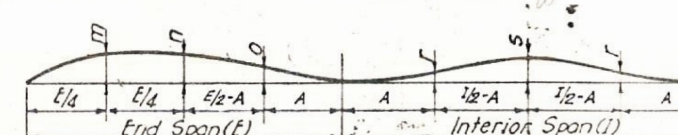
BAR BENDS
Note: All dimensions are out to out.
1'-10"
"F"
2"φ Pin
12 / 4
1'-7"
C1

ESTIMATED QUANTITIES

LENGTH OVERALL	TWO ABUTMENTS: CLASS A CONC CU. YDS.	TWO ABUTMENTS: REINF. STEEL LBS.	TWO ABUTMENTS: NO. OF PILES	TWO ABUTMENTS: STRUCT. STEEL LBS.	THREE PIERS: CLASS A CONC. CU. YDS. Constant Quantity	THREE PIERS: Cu. Yds./L.Ft for 3 Cols "Q"	THREE PIERS: REINF. STEEL LBS. Constant φ Quantity	THREE PIERS: Lbs/L.Ft for 3 Cols "P"	THREE PIERS: NO. OF FLOOR DRAINS	THREE PIERS: STRUCT STEEL LBS.	THREE PIERS: NO. OF PILES
164'-0"	29.3	3135	18	865	70.0	1.396	9,845	632	6	90	60
182'-0"	28.8	↓	18	865	[illegible]	1.639	11,615	754	6	95	66
200'-0"	28.4		18	865	102.0	1.901	13,110	812	6	100	72
218'-0"	28.0		20	960	127.5	2.182	14,460	854	6	105	90
236'-0"	27.6	↓	20	960	157.6	2.640	17,625	837	6	115	105
254'-0"	27.1	3135	20	960	200.0	3.142	18,645	772	6	120	120

LENGTH OVERALL	SLABS & CURBS: CLASS A CONC. CU. YDS.	SLABS & CURBS: LIGHT-WEIGHT CONC. CU. YDS.	SLABS & CURBS: REINF. STEEL LBS.	SLABS & CURBS: 5/8"φ BOLTS	SLABS & CURBS: NO. OF FLOOR DRAINS	SLABS & CURBS: STRUCT. STEEL * LBS.	TOTALS: CLASS A CONC. CU. YDS.	TOTALS: LIGHT-WEIGHT CONC. CU. YDS.	TOTALS: REINF. STEEL φ LBS.	TOTALS: STRUCT. STEEL * LBS.	TOTALS: NO. OF PILES	* VOID "B"	* VOID L.F.
164'-0"	[illegible]	[illegible]	60,360	18	16		267.8+(Q×L)	185.1	73,340+(P×L)		78	7"	1966
182'-0"	[illegible]	[illegible]	75,840	↓	16		311.1 "	211.6	90,590 "		84	8"	2230
200'-0"	[illegible]	[illegible]	83,555		16		354.2 "	237.8	103,800 "		90	9"	2494
218'-0"	[illegible]	[illegible]	104,500		20		413.3 "	263.9	122,095 "		110	10"	2758
236'-0"	[illegible]	[illegible]	125,650	↓	20		480.0 "	289.5	146,450 "		125	11"	3022
254'-0"	[illegible]	313.1	139,450	18	24	420	561.8 "	313.1	161,230 "	1500	140	12"	3286

φ Includes w. w. fabric
Δ Includes wt. of 4 Spacer bars per pier.
* Weights are for round drains only. (See Al. Railing sheets for weights when rectangle drains are used.)
* Cost of Voids to be included in the unit bid price for Lightweight Concrete.



CAMBER DIAGRAM

End Span	m	n	o	r	s
36'	5/16"	1/4"	1/32"	1/32"	7/16"
40'	7/16"	5/16"	1/16"	1/16"	3/8"
44'	5/8"	7/16"	1/16"	1/16"	9/16"
48'	3/4"	9/16"	1/8"	1/16"	11/16"
52'	1"	3/4"	1/8"	1/8"	1"
56'	1 1/8"	13/16"	3/16"	1/8"	1"

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

Camber Diagram & Drains Rev. 12-20-58
Slab Re-Steel & Quantities Rev. 11-8-58
Slab Re.-St. & Quantities Rev. 9-11-58

ORIGINAL CONSTRUCTION PLANS

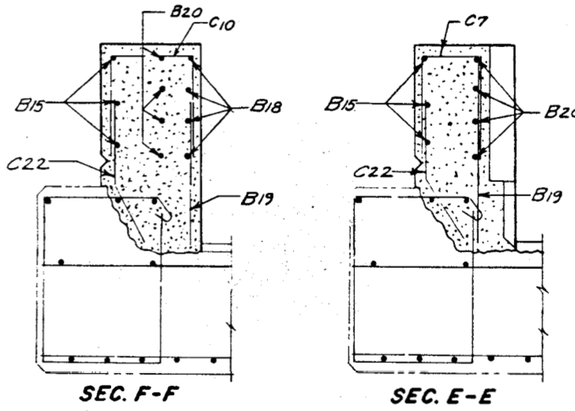
DETAILS OF STANDARD SUPERSTRUCTURE FOR
4-SPAN CONTINUOUS
CONCRETE SLAB BRIDGES
WITH
SINGLE COLUMN PIERS ON PILES
30'-0" ROADWAY 164'-0" TO 254'-0" OVERALL LENGTH

AUGUST 1957 — SOUTH DAKOTA — H20-S16-44 & ALT.
DEPARTMENT OF HIGHWAYS
KIRKHAM, MICHAEL & ASSOCIATES CONSULTING ENGINEERS

STR. NO. 50-300-166 — 5 OF 6

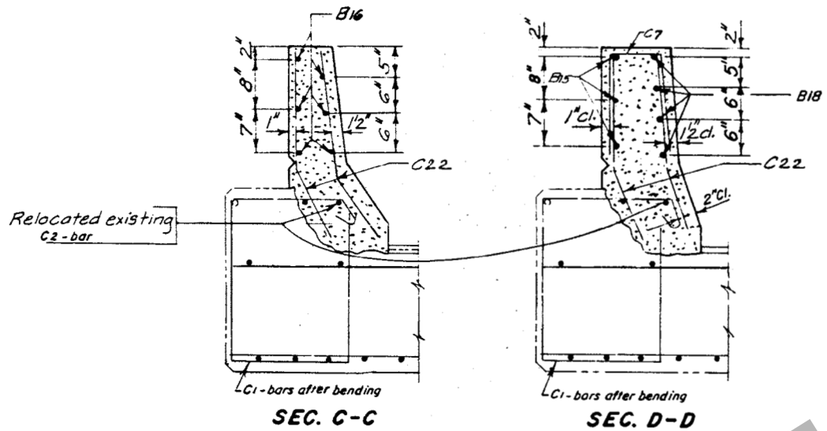
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
C.J.N.	F.C.H.	K.A.R.	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	090E-288	13	13



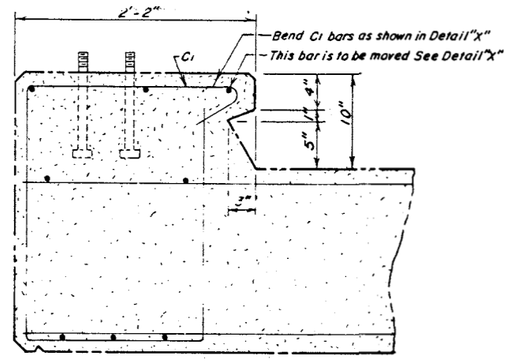
SEC. F-F

SEC. E-E

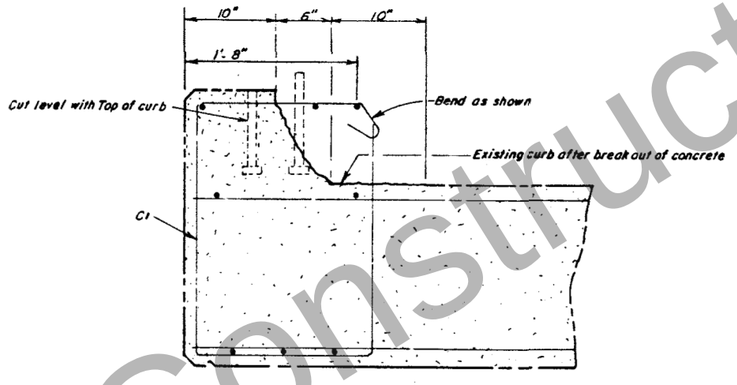


SEC. C-C

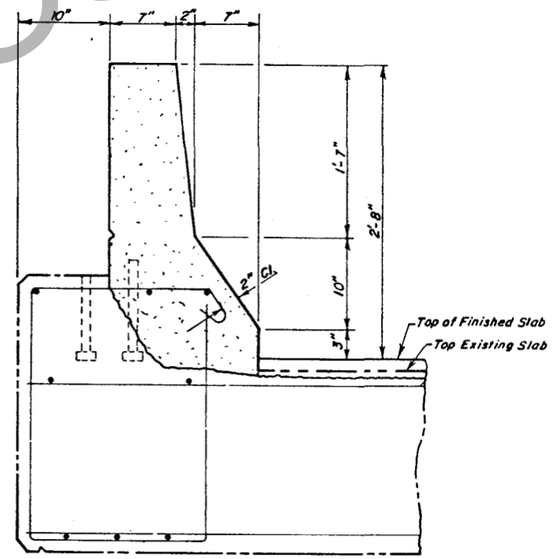
SEC. D-D



EXISTING CURB



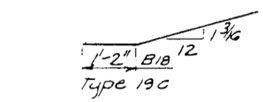
DETAIL "X"



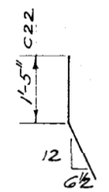
NEW CURB WITH BARRIER
(Barrier steel not shown)

REINFORCING SCHEDULE

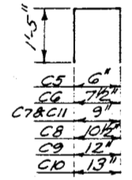
Mk.	No.	Size	Length	Type	Bending Details
B15	12	5	11'-0"	Str.	
B16	60	4	48'-10"	Str.	
B18	16	4	6'-8"	19C	
B19	20	5	2'-6"	Str.	
* C22	1004	5	2'-5"	19B	
C5	4	5	3'-4"	T1	
C6	4	5	3'-6"	T1	
C7	16	5	3'-7"	T1	
C8	4	5	3'-9"	T1	
C9	4	5	3'-10"	T1	
C10	8	5	3'-11"	T1	
B20	16	4	3'-6"	Str.	



Type 19C



Type 19B



Type T1

* Bend in field where necessary to fit.

NOTE: All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITIES
Class "A45" Concrete (Bridge Repair)	Cu. Yds.	41.7
Epoxy Coated Reinf. for Conc. Masonry	Lbs.	4940
Breakout Structural Concrete	Cu. Yds.	17.0
Remove Bridge Railing	Lin. Ft.	510.3

ORIGINAL CONSTRUCTION PLANS

RAIL REPLACEMENT
FOR
254'-0" CONT. CONC. BRIDGE
30'-0" ROADWAY
OVER I 90 STA. 753+08.00 SEC.25/30-T102N-R47/48 W
STA. 8+73.00 TO 11+27.00 IR 90-9(54) 408
STR. NO. 50-300-166
MINNEHAHA COUNTY (6) OF (6)
S. D. DEPT. OF TRANSPORTATION
DEC. 1987

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
KTA	T.W.	EJA KTA	BRIDGE ENGINEER