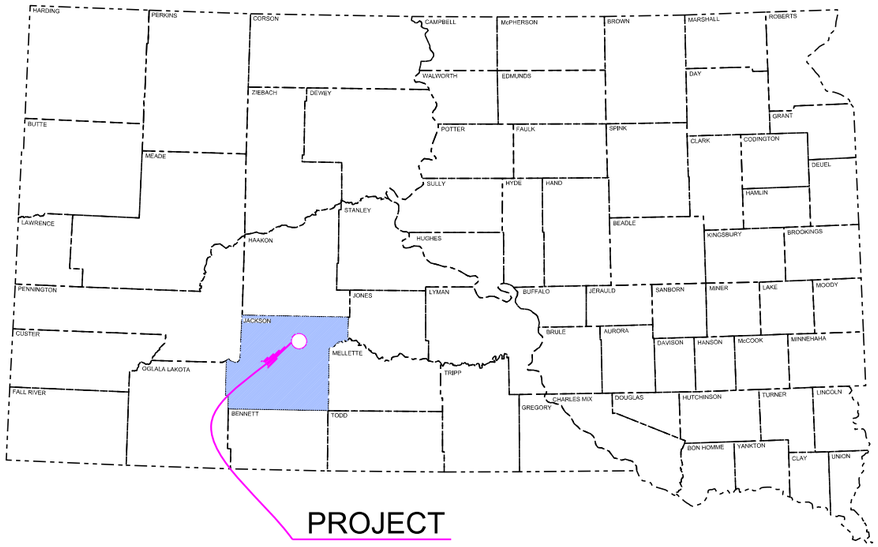


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

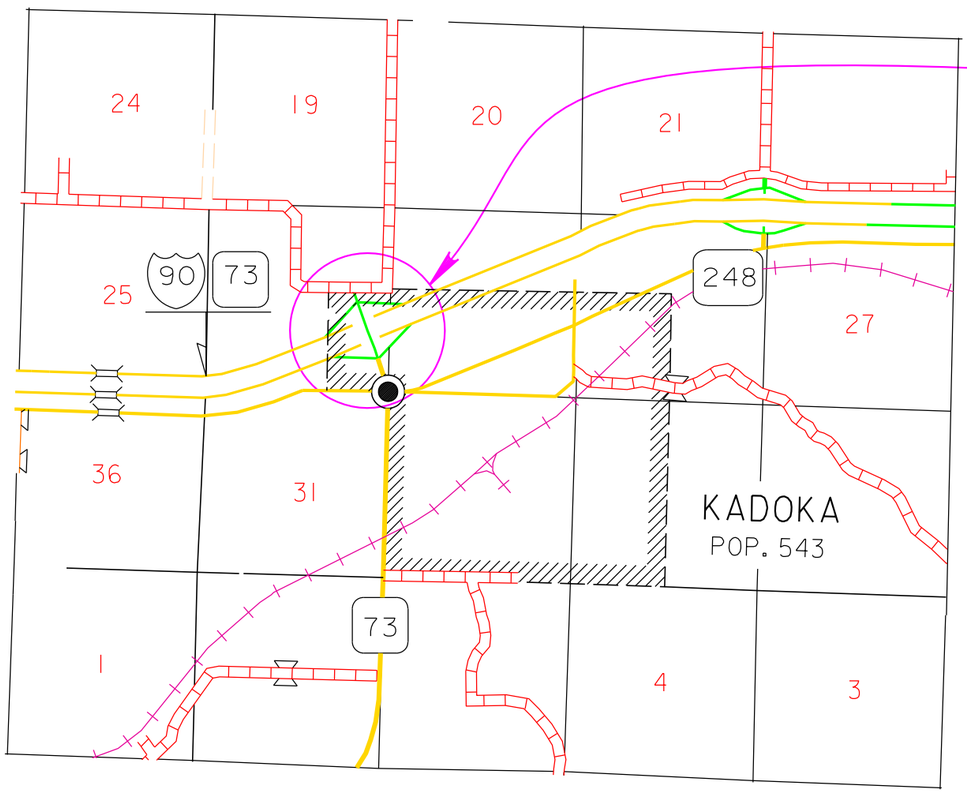
PROJECT 090W-368
SD HIGHWAY 73
JACKSON COUNTY

BRIDGE GIRDER REPAIR
PCN i7KK & i7NW

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090W-368	1	14

Plotting Date: 04/17/2025

INDEX OF SHEETS



090W-368
Str. No. 36-309-106
over I-90
MRM 150.20

DESIGN DESIGNATION (I-90W)

AADT (2024)	3463
AADT (2044)	4869
DHV	900
D	51%
DHV T%	13.1%
AADT T%	28.8%
V	80 mph

DESIGN DESIGNATION (SD73)

AADT (2024)	1508
AADT (2044)	2175
DHV	256
D	50%
DHV T%	5.3%
AADT T%	11.7%
V	65 mph

STORM WATER PERMIT
None Required

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
634E0010	Flagging	80.0	Hour
634E0110	Traffic Control Signs	388.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	1	Each
634E0330	Temporary Raised Pavement Markers	4,490	Ft
634E0420	Type C Advance Warning Arrow Board	1	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	21	Each
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E0700	Traffic Control Movable Concrete Barrier	21	Each
634E0750	Temporary Concrete Barrier End Protection	1	Each
634E0755	Remove and Reset Temporary Concrete Barrier End Protection	1	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
634E1255	Contractor Furnished Speed Monitoring Radar Trailer	1	Each

PCN I7KK (Structure No. 36-309-106):

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
480E5000	Galvanic Anode	4	Each
560E9503	Prestressed Concrete Beam Repair	Lump Sum	LS

PCN I7NW (Structure No. 36-309-106):

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
480E5000	Galvanic Anode	12	Each
560E9503	Prestressed Concrete Beam Repair	Lump Sum	LS

SEQUENCE OF OPERATIONS

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

COORDINATION BETWEEN CONTRACTORS

A separate contract for Project IM 0903(117)131 – PCN 091K will be awarded to INDUSTRIAL BUILDERS, INC. for Low Slump Deck Concrete Overlay, Joints, Approach Surfacing & Guardrail on I-90 adjacent to this project (PCN i7KK/i7NW). The LSDC Overlay work for PCN 091K will begin at MRM 165.78 and end at MRM 220.31.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed on PCN 091K. Conflicting traffic control devices may need to be temporarily adjusted or removed as directed by the Engineer and at no additional cost to the contract.

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.

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.

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

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

LANE CLOSURES

The length of lane closures for structure work on interstate should be limited to one structure or 1 mile.

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

The SD 73 bridge over I90 will need lane closures when the pre-load is placed above and concrete patch is placed and cured as per Standard Plate 634.25.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

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 TAPE, TYPE I

Temporary pavement marking for stop lines will consist of 4" Temporary Pavement Marking Tape Type I. Placement of each 24" white stop line will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop lines which is an equivalent of approximately 144' of 4" tape (1 workspaces (SD73) at 144' = 144'). Temporary pavement marking on centerline will consist of temporary flexible vertical markers (tabs) or temporary raised pavement markers and will be used as depicted on standard plate 634.25 when the stop condition must remain in place during nighttime hours, 9:00 pm to 6:00 am (Estimate 1 workspaces (SD73) remaining during nighttime hours x 2,200' per workspace = 2,400'). Temporary tape will be removed upon completion of the project.

TEMPORARY RAISED PAVEMENT MARKERS

Temporary raised pavement markers will be used for marking edge lines, lane lines, and centerlines. Temporary raised pavement markers will be used on all new permanent surfacing sections of roadway and on existing surfacing where temporary marking locations are different than existing marking locations, unless noted or as directed by the Engineer.

Temporary raised pavement markers will be attached to the roadway surface with a flexible non-permanent bituminous adhesive capable of being removed from the roadway surface or with an adhesive approved by the Engineer.

All costs to furnish, install, replace if necessary, and remove the markers will be incidental to the contract unit price per foot for "Temporary Raised Pavement Markers".

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as a crash, hazardous materials spill, or other event.

The Contractor will set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the Jackson County Sheriff and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at that meeting.

Emergency vehicle access through the project will be considered and discussed at the meeting.

The Contractor may be required to provide flaggers to direct or detour traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting more than two hours. Fixed location ground mounted signs may be covered, and additional portable signs provided.

Cost for the relocation of an advance warning sign due to an incident will be 50% of the designated sign rate. Flaggers will be paid for at the contract unit price per hour for "Flagging".

PRESS RELEASE ANNOUNCEMENTS

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

TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS

Concrete barriers will be provided by the State and are available for pickup from the SDDOT Murdo Maintenance Yard located at Exit 192 in Murdo. The barriers will be hauled back to the SDDOT Murdo Maintenance Yard when they are no longer needed on the project.

Barriers to be adjusted or moved will be disconnected from adjacent barriers to minimize damage to connecting pins. Pins damaged by the Contractor will be replaced at no cost to the Department.

Concrete barrier sections will be placed as depicted in the plans to comply with clear zone requirements and as required by the Engineer. The barriers will be pinned and bolted together as directed by the Engineer.

All costs associated with picking the barriers up from the SDDOT Maintenance Yard, transporting, setting, connecting, and hauling them back to the SDDOT Maintenance Yard will be incidental to the contract unit price per each for Traffic Control Movable Concrete Barrier.

After the initial placement, the concrete barriers may need to be adjusted. Adjustment of the barriers, where they do not need to be loaded on a truck for transport, will be incidental to the contract unit price per each for Traffic Control Movable Concrete Barrier. All costs associated with removing, loading, unloading, and resetting of the barriers at a new site, will be incidental to the contract unit price per each for Remove and Reset Traffic Control Movable Concrete Barrier. No additional payment will be made for barriers that are not immediately reset at a new location on the project and stored on-site until they are either reset on the project or returned to the SDDOT as indicated in these plans.

TEMPORARY CONCRETE BARRIER END PROTECTION

Crash attenuators meeting the requirements of NCHRP 350 or MASH TL-3 will be furnished and installed by the Contractor. Attachment of the attenuators to the concrete barriers will be by approved methods.

All costs associated with furnishing, transporting, initial setup, connecting, maintaining, and removing the crash attenuators will be incidental to the contract unit price per each for Temporary Concrete Barrier End Protection.

All costs associated with moving and resetting crash attenuators to accommodate traffic flows after initial set-up will be paid for at the contract unit price per each for Remove & Reset Temporary Concrete Barrier End Protection. All costs associated with removing from initial placement and resetting at a new location will be incidental to the contract unit price per each. No additional payment will be made for crash attenuators that are not immediately reset at a new location on the project and stored on-site until they are either reset or removed from the project as determined by the Engineer. No additional payment will be made for minor adjustments.

The Contractor will have replacement hardware available so that in the event the crash attenuator is hit and made unusable, the crash attenuator can be made functional within 24 hours. The cost of replacement will be incidental to the contract unit price per each for Temporary Concrete Barrier Module Set or Repair Kit. No payment will be made for the Temporary Concrete Barrier Module Set or Repair Kit if no repairs are necessary. Upon completion of the project, crash attenuators will remain the property of the Contractor.

BARRIER MOUNTED LINEAR DELINEATION SYSTEM PANELS

A linear delineation system (LDS) panel will be attached to each barrier section. The color will be the same as the nearest pavement marking, white along outside edgelines or yellow for the left side on one way traffic sections. The LDS will be 34 inches long and 6 inches in height and be constructed of aluminum formed into a shape to provide retroreflective properties across a wide range of angles. It will be sheeted with sheeting meeting the requirements of ASTM D4956 Type XI. The panels will be evenly spaced, with the top of the panel 4 inches below the top of the barrier. Installation will be as per the manufacturer's recommendations. This will allow for easy removal for replacement of damaged panels or to replace with an alternate color. The Contractor will furnish and install one panel along each side of the barrier if any panels are missing from the barriers. Replacement of damaged linear delineation system panels will be furnished and replaced by the Contractor. The LDS panel may be replaced by a 4" x 8" delineator of the appropriate color mounted on the top of the Traffic Control Movable Concrete Barrier at the discretion of the Engineer. All costs associated with furnishing, installing, and replacing, if needed, will be incidental to the contract unit price per each for Linear Delineation System Panel, Barrier Mounted.

All LDS panels will remain attached to the barrier sections and will become the property of the State of South Dakota upon completion of the project.

The Contractor will verify the number of LDS panels that will need to be installed or replaced on the Traffic Control Movable Concrete Barriers. The contract amount of LDS panels is an estimate and the full contract amount may not be needed.

Maintaining the linear delineation system, including moving LDS panels from one side of the barrier to the other side of the barrier to match the applicable color of the nearest pavement marking will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

SIGN TABULATION

SD73:

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

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

I-90W:

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

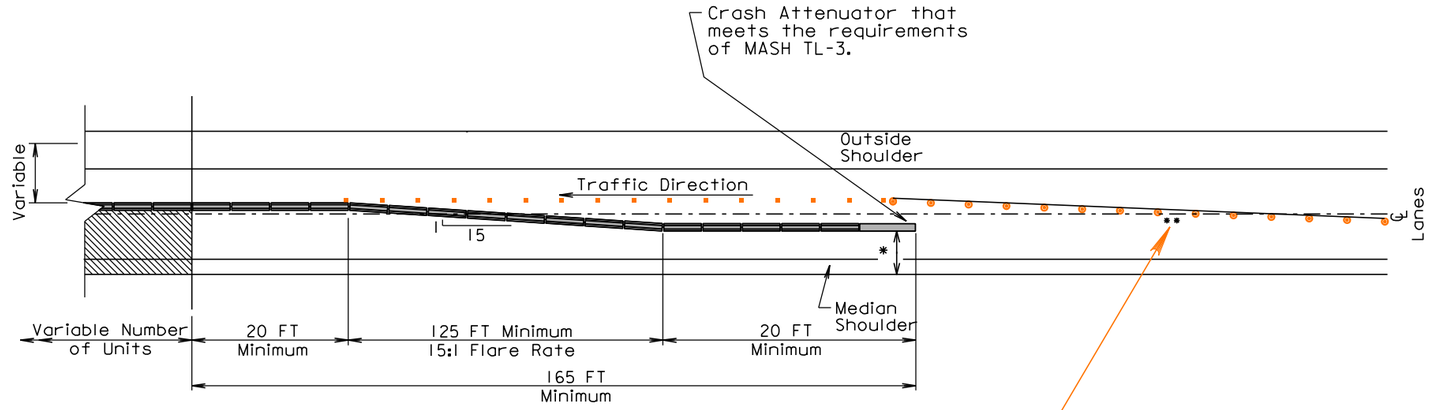
SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 65	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	1	36" x 48"	12.0	12.0
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	1	36" x 24"	6.0	6.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	1	48" x 48"	16.0	16.0
G20-2	END ROAD WORK	1	48" x 24"	8.0	8.0
		EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			244.0

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090W-368	4	14

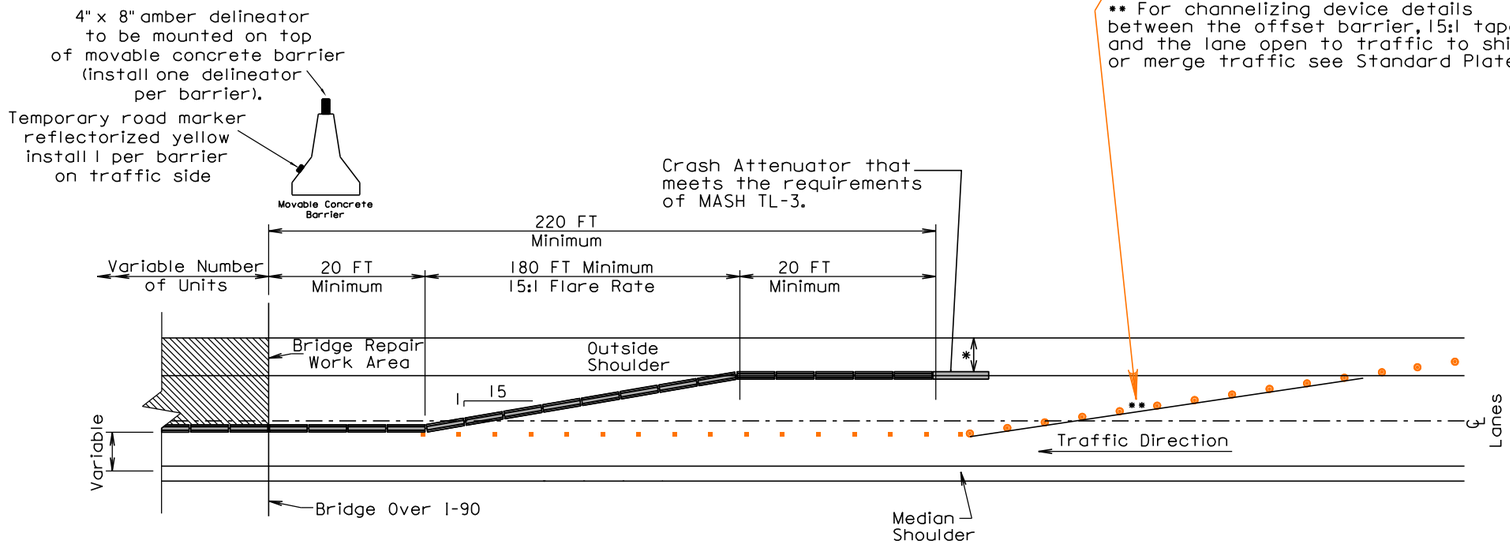
Plotting Date: 04/17/2025

DETAILS FOR TEMPORARY MOVABLE CONCRETE BARRIERS NEAR CENTERLINE FOR BRIDGE REPAIR ON INTERSTATE

**The SD 73 bridge over I90 will need lane closures when the pre-load is placed above and concrete patch is placed and cured as per Standard Plate 634.25.



PLAN VIEW
MEDIAN PORTION OF I-90 CLOSED TO TRAFFIC

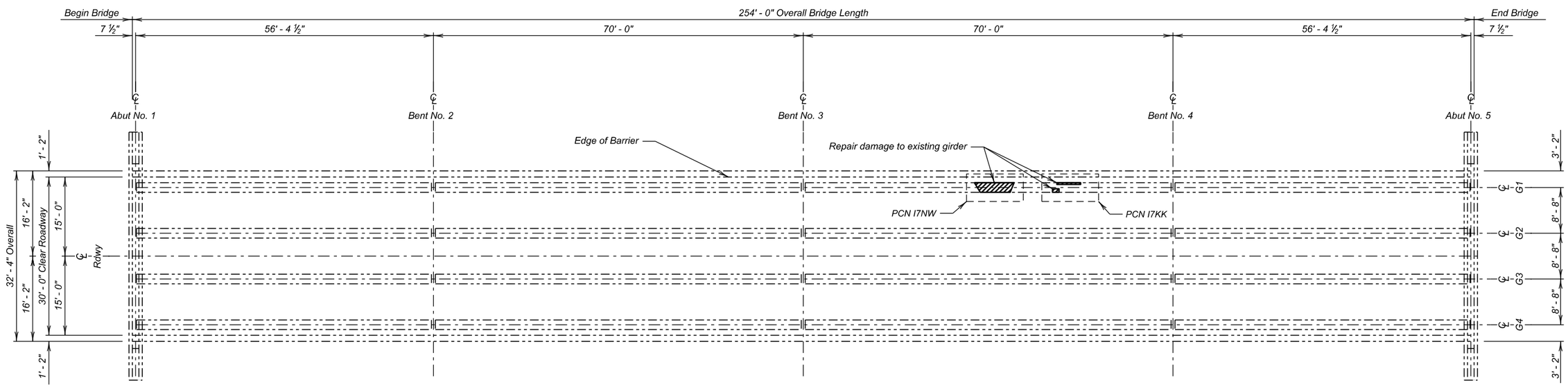


PLAN VIEW
OUTSIDE PORTION OF I-90 CLOSED TO TRAFFIC

GENERAL NOTES:

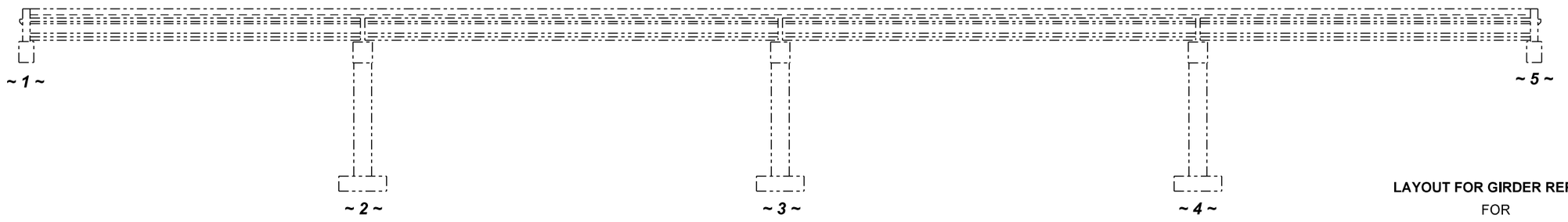
* *10 FOOT MAXIMUM DISTANCE FROM EDGE OF SHOULDER TO ATTENUATOR. IF CONSTRUCTION ACCESS IS NOT NEEDED, ATTENUATOR SHALL BE PLACED AT THE EDGE OF SHOULDER.*

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	090W-368	5	14



PLAN

NOTE:
Stations have been reversed since Original Construction Plans.



ELEVATION

LAYOUT FOR GIRDER REPAIR

FOR

254' - 0" PRESTR. CONC. GIRDER BRIDGE

30' - 0" ROADWAY
OVER I90
STR. NO. 36-309-106
PCN I7KK & I7NW

0° SKEW
SEC. 30-T25S-R22E
090 W-368

JACKSON COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2025

1 OF 6

- X281 -

-X281-
INDEX OF BRIDGE SHEETS -

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
AP	PII	AP/KR	Steve A Johnson BRIDGE ENGINEER
JACKI7KK	I7KKPX01		

ESTIMATE OF STRUCTURE QUANTITIES

I7KK:

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
480E5000	Galvanic Anode	4	Each
560E9503	Prestressed Concrete Girder Repair	Lump Sum	LS

I7NW:

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
480E5000	Galvanic Anode	12	Each
560E9503	Prestressed Concrete Girder Repair	Lump Sum	LS

SPECIFICATIONS

1. Design Specifications: AASHTO Specifications for Highway Bridges 1983 Edition with 1984 thru 1987 Interims. The prestressed girder beams were designed for a combination of both Service Load and Load Factor Design.

2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

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 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.

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.

PRE-CONSTRUCTION MEETING

A pre-construction meeting is required prior to beginning the repair work. The purpose of the meeting is to review the plans and procedures because of the specialty work involved. At a minimum, a representative from the Contractor and all Subcontractors will attend this meeting along with Department personnel from the Area Office and Bridge Office. The Contractor must notify the Bridge Construction Engineer (BCE) and the Area Office, at least 3 days prior to beginning the repair work to schedule the meeting.

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. Close west bound I-90 lanes. Close south bound South Dakota Hwy 73 traffic.

2. Remove and capture all loose concrete from Girder 1.

3. Preload Girder 1. Place concrete patches on Girder 1.

GENERAL CONSTRUCTION - BRIDGE

1. All exposed concrete corners and edges will be chamfered ¾-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.

GALVANIC ANODE

1. The Contractor will furnish and place galvanic anodes in the concrete repair areas where existing concrete is in contact with new concrete in the girder.

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
   Website: www.vector-corrosion.com

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

   c. Sika FerroGard 670
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (800) 933-7452
   Website: http://usa.sika.com

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 ¾" cover and will be set in embedding mortar per the manufacturer's recommendations. The anodes will be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket will be chipped out behind the anode to provide 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. In area of concrete repair where anodes are placed, the epoxy coating on the reinforcing steel will not require touch up.

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

8. 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.

REPAIR OF PRESTRESSED GIRDERS

1. Remove all loose and broken concrete and breakout to sound concrete in spalled and delaminated areas on Girder 1, as directed by the Engineer. Use 3/4" deep saw cuts, to be made in sound concrete, to define the limits of breakout surrounding the damaged area. The minimum depth of concrete patch will be 3/4". Use extreme care not to damage any strand or reinforcing steel during concrete breakout. Use chipping hammers not heavier than 15-pound class for concrete removal around strands or rebar. Blast clean the existing strands, exposed rebar and surrounding concrete.

2. Following concrete removal, the Region Bridge Engineer will inspect the exposed strands for damage such as gouges, flattening, or sharp bends. If damaged strands are found, the damage will be called to the attention of the BCE, who will determine whether the strands will be repaired and what the repair procedure will be if required.

3. Apply a preload prior to concrete patching of Girder 1. Position a 5050 lb/ft uniform load on the deck, starting at 1'-4" from Bent 4 ending at 43'-4" from Bent 4 placed along the barrier near Girder 1. The total amount of preload is 212,100 lbs. Maintain the preload until the concrete patches have achieved a compressive strength of 3000 psi, as measured by concrete cylinders. If a truck is used to provide the 212,100 lb. load, contact the BCE with axle spacing and weights. The BCE will provide the truck position to produce an equivalent 212,100 lb. load and will have the heavier axles positioned closer to Bent 3. For design purposes, two dump trucks parked tail to tail were used to simulate this loading.

4. Areas to be patched must be sand blasted and cleaned immediately prior to priming and patching. All loose materials must be removed by sweeping and blowing out with clean, dry, oil free compressed air at 90 psi. When the clean and dry areas have been approved by the Engineer, they must be primed with an approved bonding agent per the concrete patch material manufacturer's recommendations. Exposed strands and strand splices must be coated with the bonding agent. The bottom of the flange will be formed to permit packing the concrete patch material into the repair area. Forms may be required by the Engineer elsewhere depending on the amount of concrete to be placed. The Contractor will provide the Engineer with technical data for the bonding agent.

ESTIMATE OF STRUCTURE QUANTITIES & NOTES
FOR
254' - 0" PRESTR. CONC. GIRDER BRIDGE
STR. NO. 36-309-106
APRIL 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
AP	PII	AP	BRIDGE ENGINEER
JACKI7KK	I7KKPX02		

REPAIR OF PRESTRESSED GIRDERS (CONT.)

5. The concrete patching material will be an approved product and will attain a minimum 28-day compressive strength of 5000 psi. The concrete patching material will be extended with aggregate of the quality, size and gradation specified in the manufacturer's technical literature.

   Two types of approved patching material are:

   a. Speed Crete Red Line
      The Euclid Chemical Company
      19218 Redwood Rd.
      Cleveland, OH 44110
      www.euclidchemical.com

   b. Thorite Rapid Vertical
      ChemRex Inc.
      889 Valley Park Drive
      Shakopee, MN 55379
      800-433-9517
      www.chemrex.com

   Use one of the above patching products, or an approved equal. Whichever concrete patching product is chosen the Contractor will provide technical literature to the Engineer prior to use.

6. All of the manufacturer's specifications will be followed for the final surface preparation, addition of aggregate, mixing, placement, curing, and temperature limits of the surrounding material and the concrete patch material.

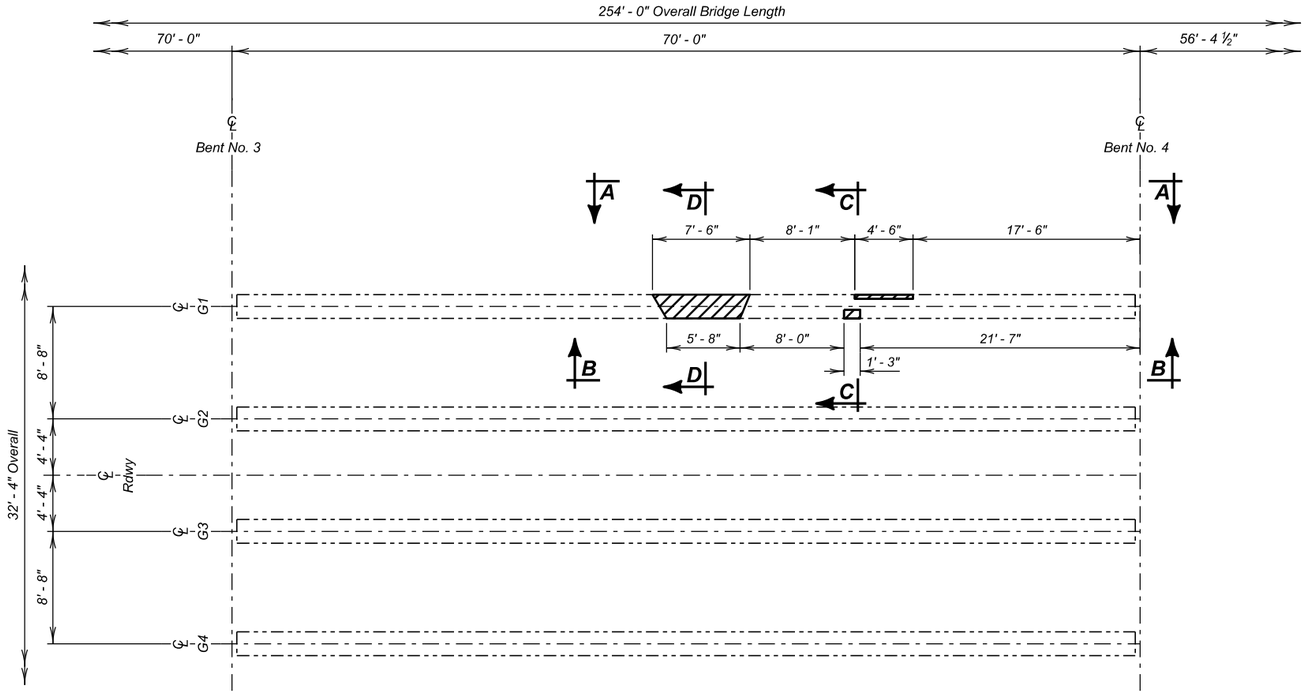
7. Curing will be in accordance with the manufacturer's requirements or cured by the wet cure method which ever is more stringent. The wet cure will be for a minimum of 7 days or until 70% of the 28-day compressive strength has been reached, whichever is less. The 28-day compressive strength will be that listed in the manufacturer's technical literature.

8. The cost for concrete removal, cleaning, applying preload, priming and placing new concrete, curing, cold weather protection and any other incidental items required to complete the work will be incidental to the contract lump sum price for Prestressed Concrete Girder Repair.

NOTES (CONTINUED)
FOR
254' - 0" PRESTR. CONC. GIRDER BRIDGE
STR. NO. 36-309-106
APRIL 2025

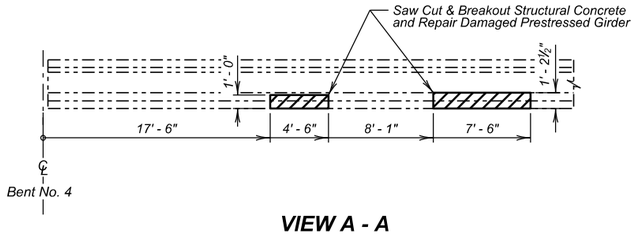
DESIGNED BY	CK. DES. BY	DRAFTED BY	
AP JACKI7KK	PII I7KKPX03	AP	Steve A Johnson BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	090W-368	8	14

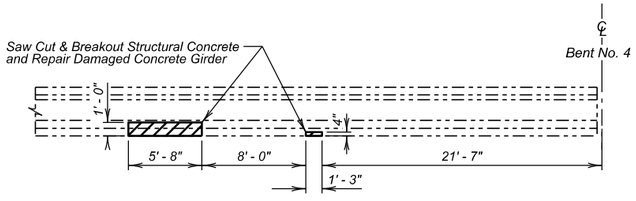


PLAN

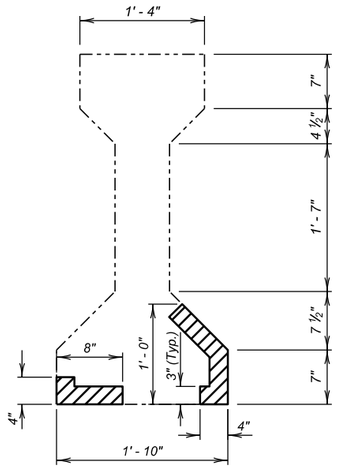
(Only Bottom of Girders Shown)



VIEW A - A

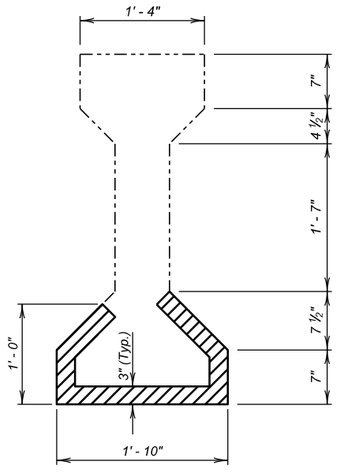


VIEW B - B



SECTION C - C

(Care will be taken to avoid additional damage to the reinforcing steel)



SECTION D - D

(Care will be taken to avoid additional damage to the reinforcing steel)

I7KK ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Galvanic Anode	Each	4
⚹ Prestressed Concrete Girder Repair	LS	Lump Sum

For estimating purposes an average depth of 3" was used to calculate the volume of concrete.

1. Concrete Breakout 0.1 CuYd
2. Patch Material 0.1 CuYd

⚹ *Items 1 and 2 are approximate quantities contained in the above bid item and are for information only.*

I7NW ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Galvanic Anode	Each	12
⚹ Prestressed Concrete Girder Repair	LS	Lump Sum

For estimating purposes an average depth of 3" was used to calculate the volume of concrete.

1. Concrete Breakout 0.2 CuYd
2. Patch Material 0.2 CuYd

⚹ *Items 1 and 2 are approximate quantities contained in the above bid item and are for information only.*

GIRDER REPAIR DETAILS

FOR

254' - 0" PRESTR. CONC. GIRDER BRIDGE

30' - 0" ROADWAY
OVER I90
STR. NO. 36-309-106

0° SKEW
SEC. 30-T25S-R22E
090 W-368

JACKSON COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
AP	PII	AP/KR	BRIDGE ENGINEER
JACKI7KK	I7KKPX04		

—X781—

INDEX OF BRIDGE SHEETS —

B.M. # 4 Elev. 2473.50
Rebar & Gds.
290' Rt. Sta. 422+09.7

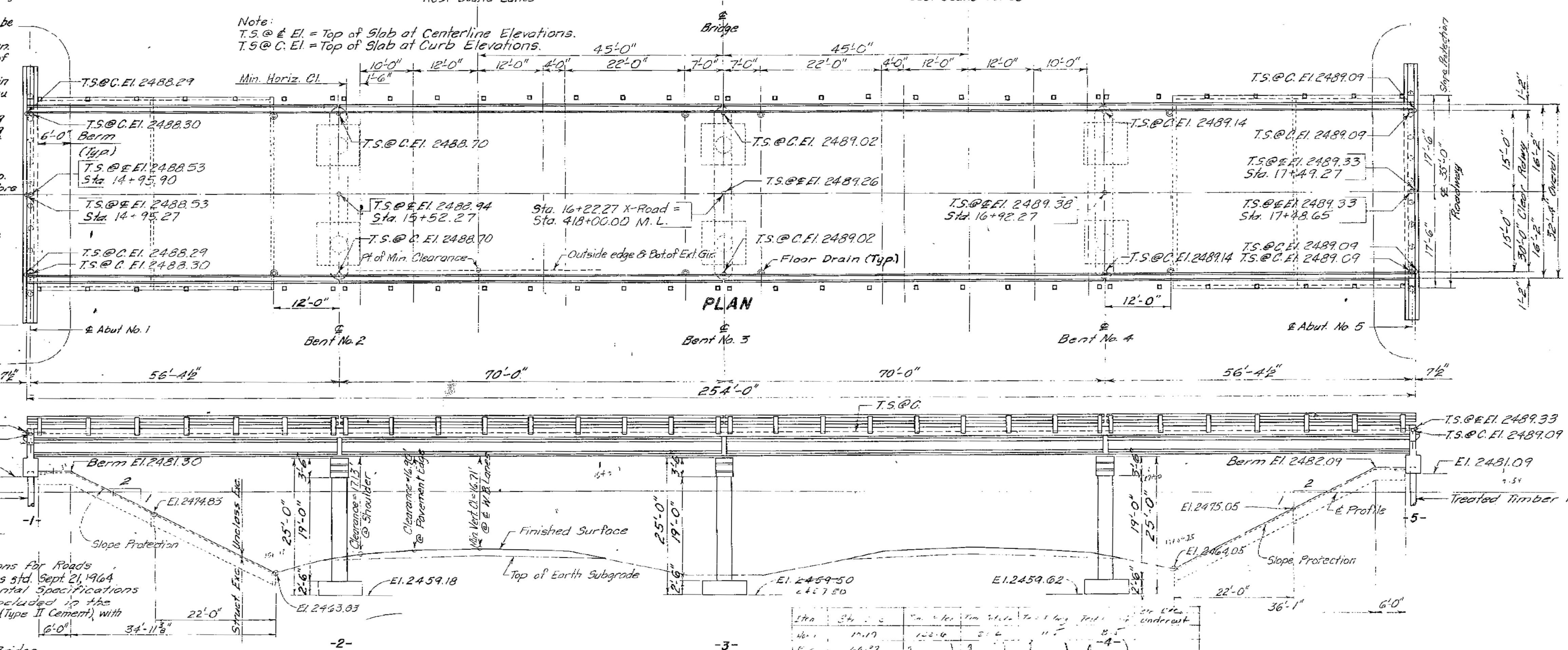
GENERAL NOTES —

1. See NOTES on Sheets No. 3, 4, 7, 8 and 9.
2. Longitudinal elements of the slab shall conform to the vertical curve.
3. Rail posts shall be built vertical.
4. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 303 for splice details.
5. Bridge contractor shall furnish and install 1⅛" × 7½" sleeve nut units in wing walls as shown on Standard Plate No. 304.
6. In the event pile shoes are used, see Standard Plate No. 301 for details.
7. Place floor drains as shown in Plan (8 required).

B.M. # 4B Elev. 2475.77
Rebar & Gds.
73' East of Sta. 29+00

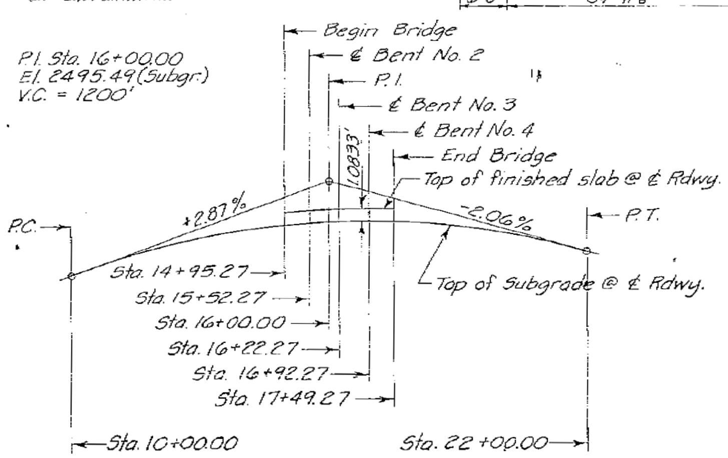
EXCAVATION NOTES —

1. Footings for Bents No. 2 thru No. 4 shall be cast upon solid undisturbed shale and carried into same to the elevation shown. Limits of shale excavation, below top of footings, shall be bound as nearly as practicable by the neat lines as shown in details of Footings for Bents No. 2 thru No. 4 on sheet No. 4 of 9.
2. Shale shall develop a minimum bearing value of 8 tons per sq. ft. If the bearing value is less than 8 tons per sq. ft. at elevations shown, communicate with the BRIDGE SECTION.
3. Final footing elevations for Bents No. 2 thru No. 4 shall be established before ordering column reinforcing steel for the respective Bents. If final footing elevations must differ from those shown, communicate with the BRIDGE SECTION.



SPECIFICATION NOTE —

Use South Dakota Standard Specifications for Roads and Bridges 1963 Edition, approved as std. Sept. 21, 1964 and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal. All concrete shall be Class "A" (Type II Cement), with air entrainment.



SUBGRADE CURVE DATA

* increase 8 T₁, 42 T₂, 24 T₃, 84 T₄ bars
** Bents 2 & 4 increased 32 K₁ bars each
*** Bent #3 increased 32 K₁ bars and lengthened 2'

ESTIMATED QUANTITIES

ITEM	Cl. "A" Conc. Cu. Yds.	Re-Steel Lbs.	Prestr. Conc. Beams 55'-10"	Prestr. Conc. Beams 69'-3"	Type RT-2 Steel Railing Lin. Ft.	Timber Piles - Lin. Ft. Treated Timber	Timber Piles - Lin. Ft. ⌀ Test	Excavation - Cu. Yds. Struct.	Excavation - Cu. Yds. △ Unclass.	Slope Protec. Sq. Yds.
Superstructure	211.0	*70,465	8	8	508					
Abut. No. 1	25.4	3,915				9@16 = 144	1@20 = 20	10		175.3
Bent No. 2	34.9	**9,770						30		
Bent No. 3	34.9	***9,770						20		
Bent No. 4	34.9	**9,770						30		
Abut. No. 5	25.4	3,915				9@12 = 108	1@16 = 16	10		180.2
Totals	366.5	107,605	8	8	508	252	36	100	—	355.5

⌀ One Treated Timber Test Pile shall be driven at Abutments No. 1 and No. 5 before remaining piles are ordered.
△ All Unclassified Excavation to be done by Grading Contractor.

F.E. Mar. 22, 1968

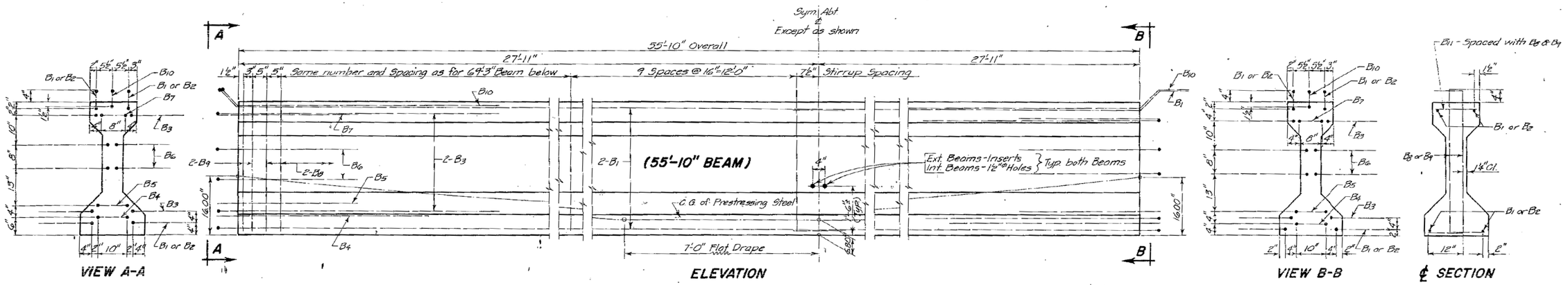
ORIGINAL CONSTRUCTION PLANS

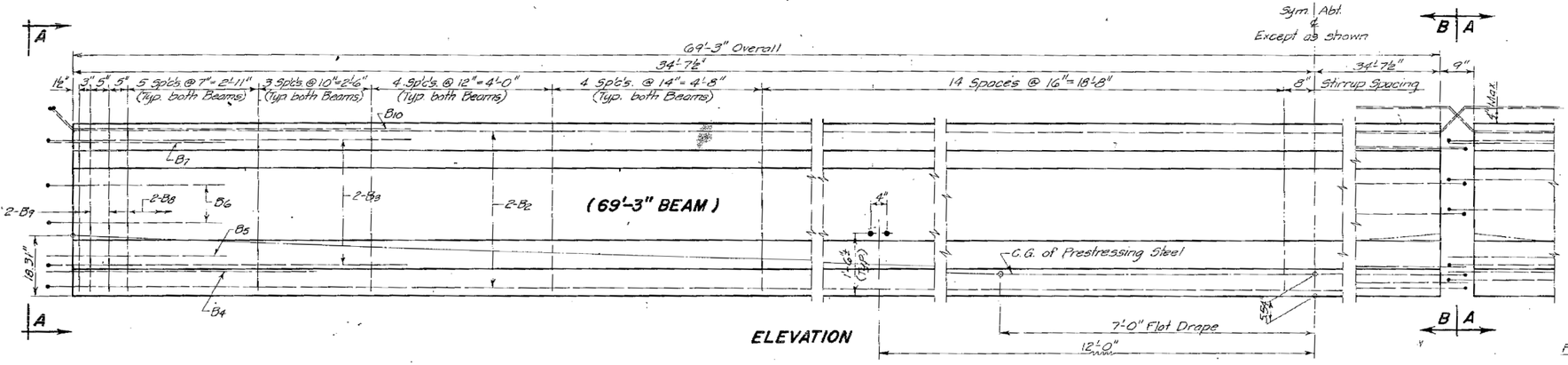
GENERAL DRAWING AND QUANTITIES
FOR
254'-0" PRESTR. CONC. GIRDER VIADUCT
30'-0" ROADWAY
OVER I.S. NO. 90 STA. 418+00M.L. SEC. 30-T2S-R22E
STA. 14+95.27 TO 17+49.27 I 90-3( )151
JACKSON COUNTY
SOUTH DAKOTA HS20-44
DEPARTMENT OF HIGHWAYS 5 OF 6
-X781- JUNE 1965

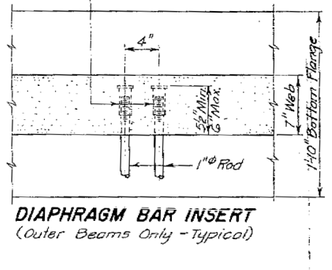
STR. NO. 36-309-106

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	G.K.T. Rev. by: O.P.	F.M. Ckd. by: F.M.	BRIDGE ENGINEER

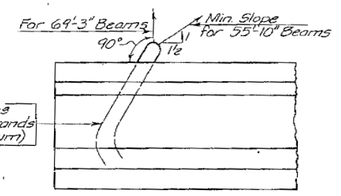
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	090W-368	10	14







DIAPHRAGM BAR INSERT
(Outer Beams Only - Typical)

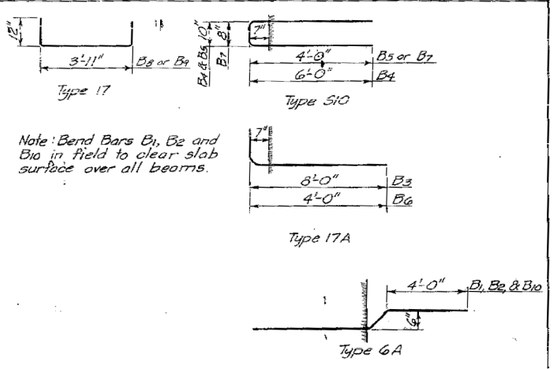


TYP. LIFTING DEVICE

REINFORCING SCHEDULE

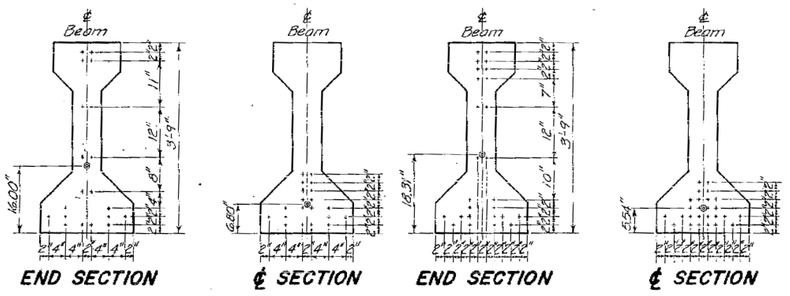
	MK	No	Size	Length	Type
55'-10" BEAM	B1	8	5	33'-9"	6A
	B3	8	5	9'-6"	17A
	B4	2	5	12'-9"	510
	B5	2	4	8'-9"	510
	B6	8	4	5'-6"	17A
	B7	2	5	8'-9"	510
	B8	108	4	5'-9"	17
	B9	8	6	3'-9"	17
	B10	2	7	12'-0"	6A
	B11	58	3	1'-0"	Str.
69'-3" BEAM	B2	8	5	40'-6"	6A
	B3	8	5	9'-6"	17A
	B4	2	5	12'-9	510
	B5	2	4	8'-9"	510
	B6	8	4	5'-6"	17A
	B7	2	5	8'-9"	510
	B8	128	4	5'-9"	17
	B9	8	6	3'-9"	17
	B10	2	7	12'-0"	6A
	B11	68	3	1'-0"	Str.

Bending Details



Note: Bend Bars B1, B2 and B10 in field to clear slab surface over all beams.

Note: All dimensions are out to out of bars.



55'-10" BEAM
(AASHO-PCI Type III, 20-½"ϕ Type 270K Strands.

69'-3" BEAM
(AASHO-PCI Type III, 26-½"ϕ Type 270K Strands.

ORIGINAL CONSTRUCTION PLANS

DETAILS FOR

STANDARD PRESTR. CONCRETE BEAMS

FOR

254'-0" 4-SPAN CONT. PRESTR. CONC. GIRDER VIADUCT

30'-0" ROADWAY 0° SKEW

SOUTH DAKOTA

DEPARTMENT OF HIGHWAYS 6 OF 6

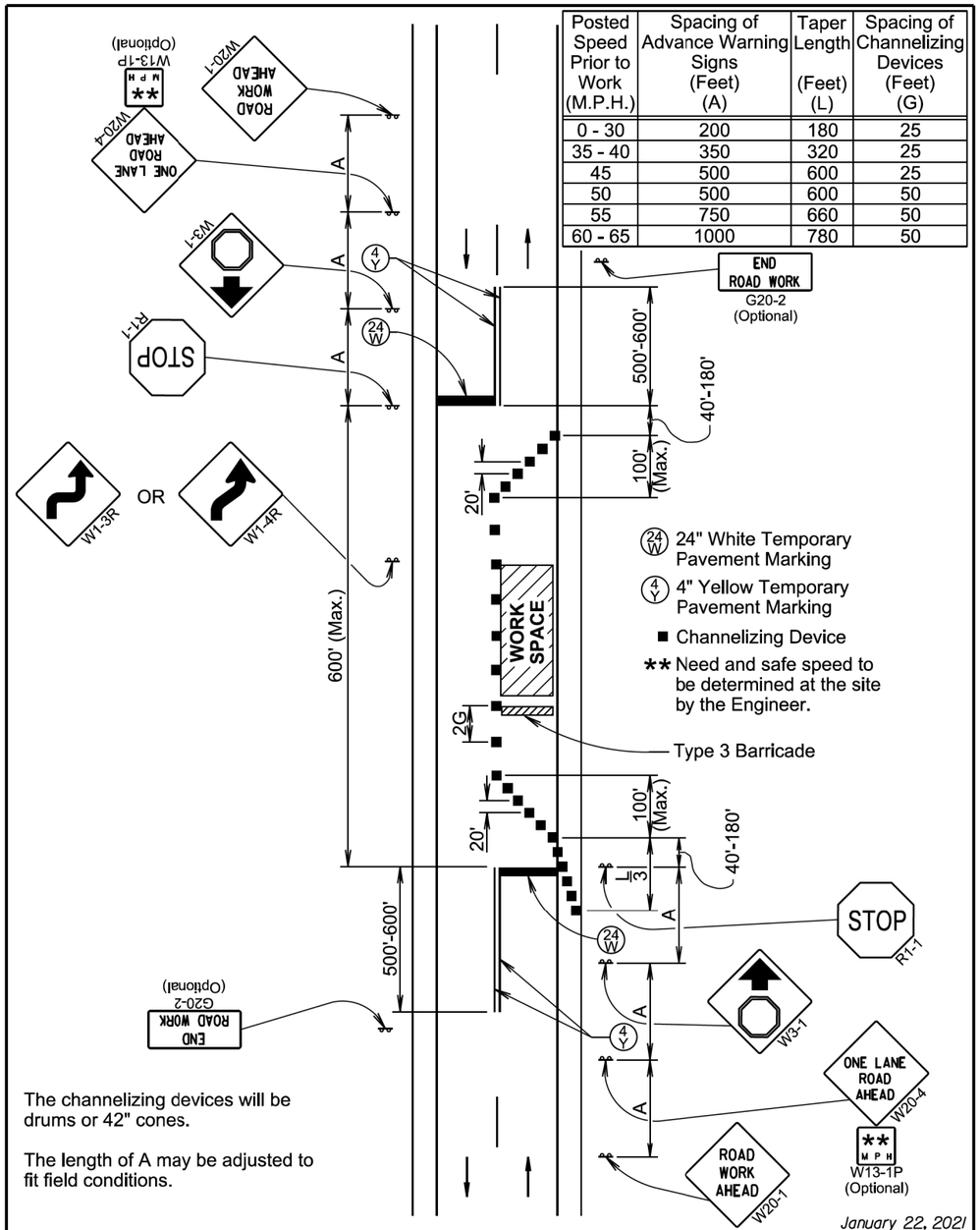
STR. NO. 36-309-106 JULY 1965 HS20-44

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	DC	F.M.	7-65 BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090W-368	11	14

Plotting Date: 04/03/2025 _____

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50



The channelizing devices will be drums or 42" cones.

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

January 22, 2021

Published Date: 2025	SDDOT	LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25
			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

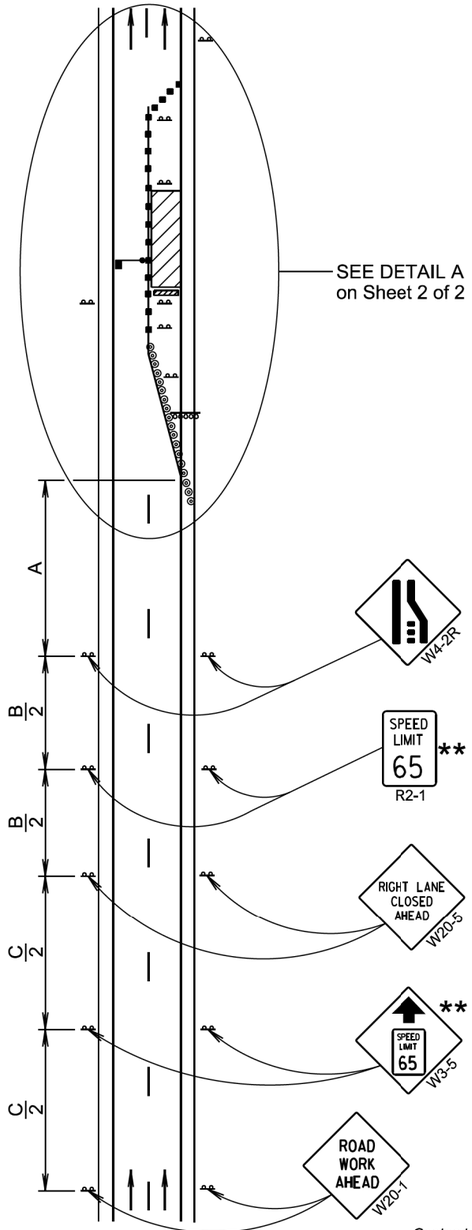
** Speed appropriate for location.

◎ 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.



September 22, 2021

Published Date: 2025	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.

■● Flagger (As Necessary)

◎ Reflectorized Drum

■ Channelizing Device

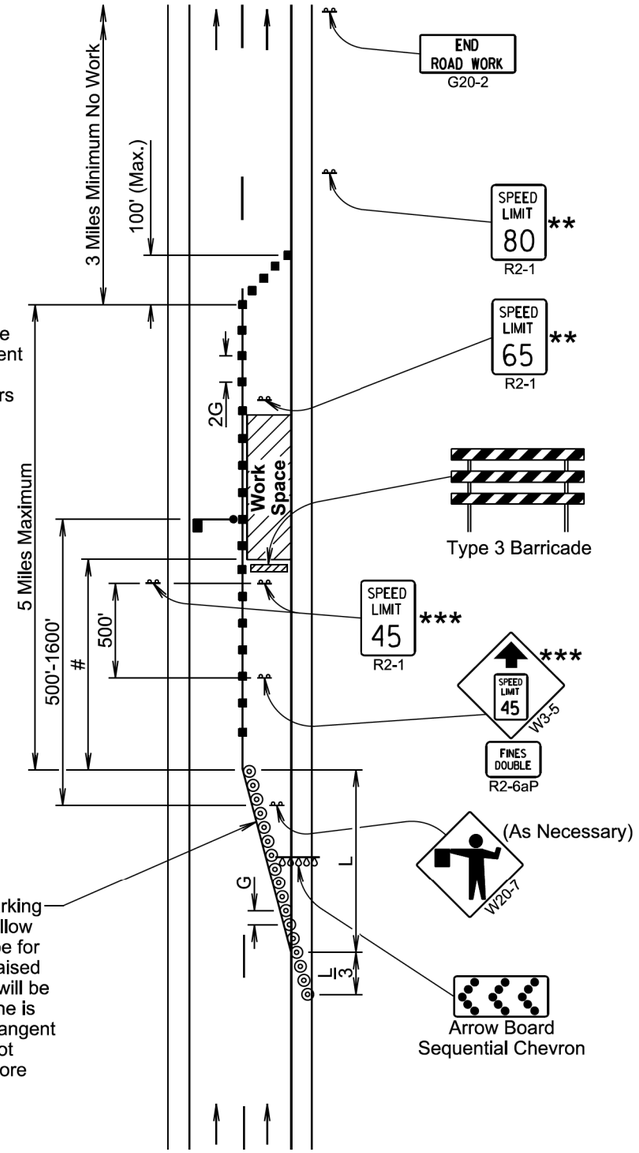
The Work Space will be a minimum of 500' from the end of the taper.

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

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.



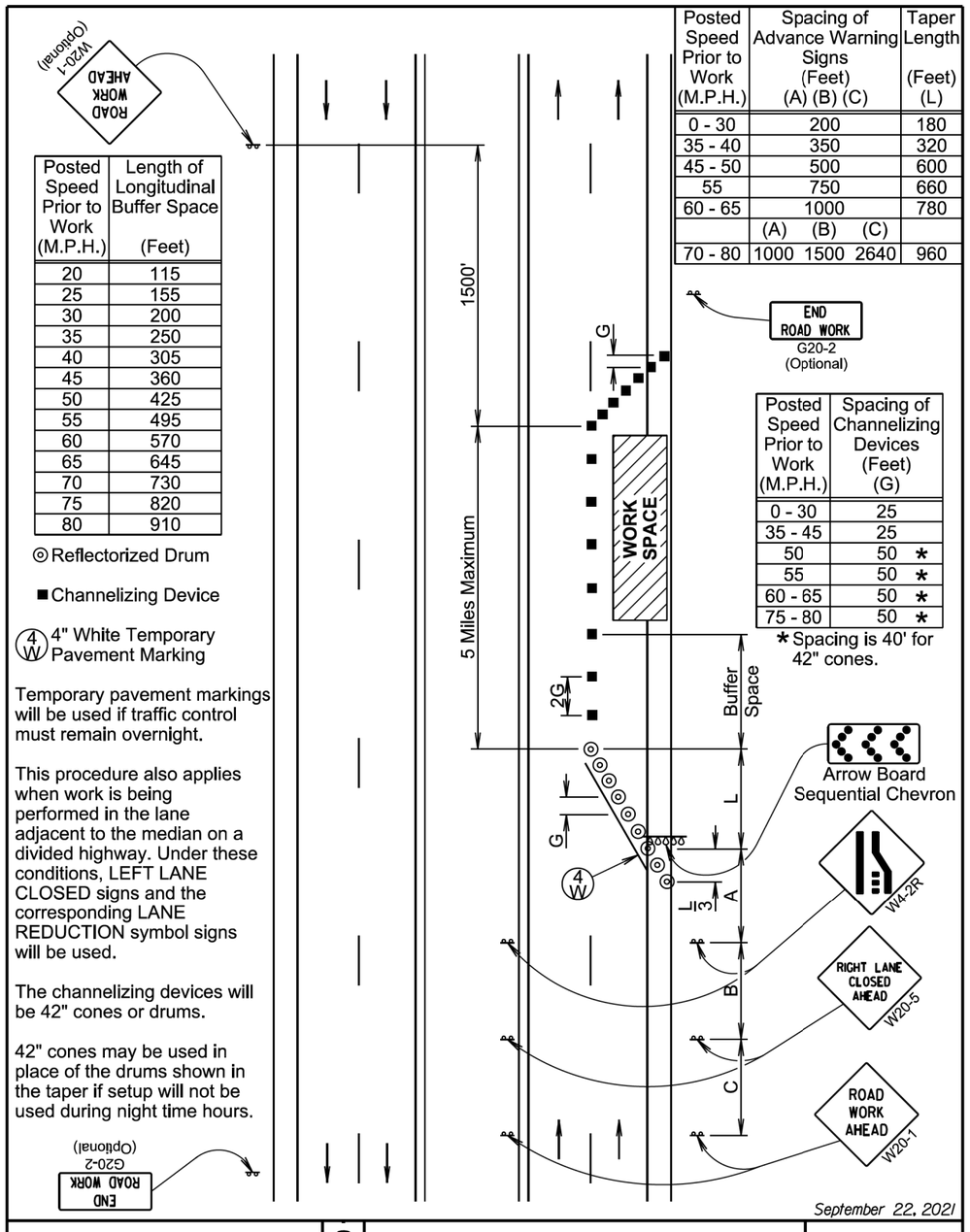
DETAIL A

September 22, 2021

Published Date: 2025	SDDOT	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 2 of 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	090W-368	13	14

Plotting Date: 03/27/2025 _____



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

◎ Reflectorized Drum

■ Channelizing Device

4W 4" White Temporary Pavement Marking

Temporary pavement markings will be used if traffic control must remain overnight.

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs will be used.

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.

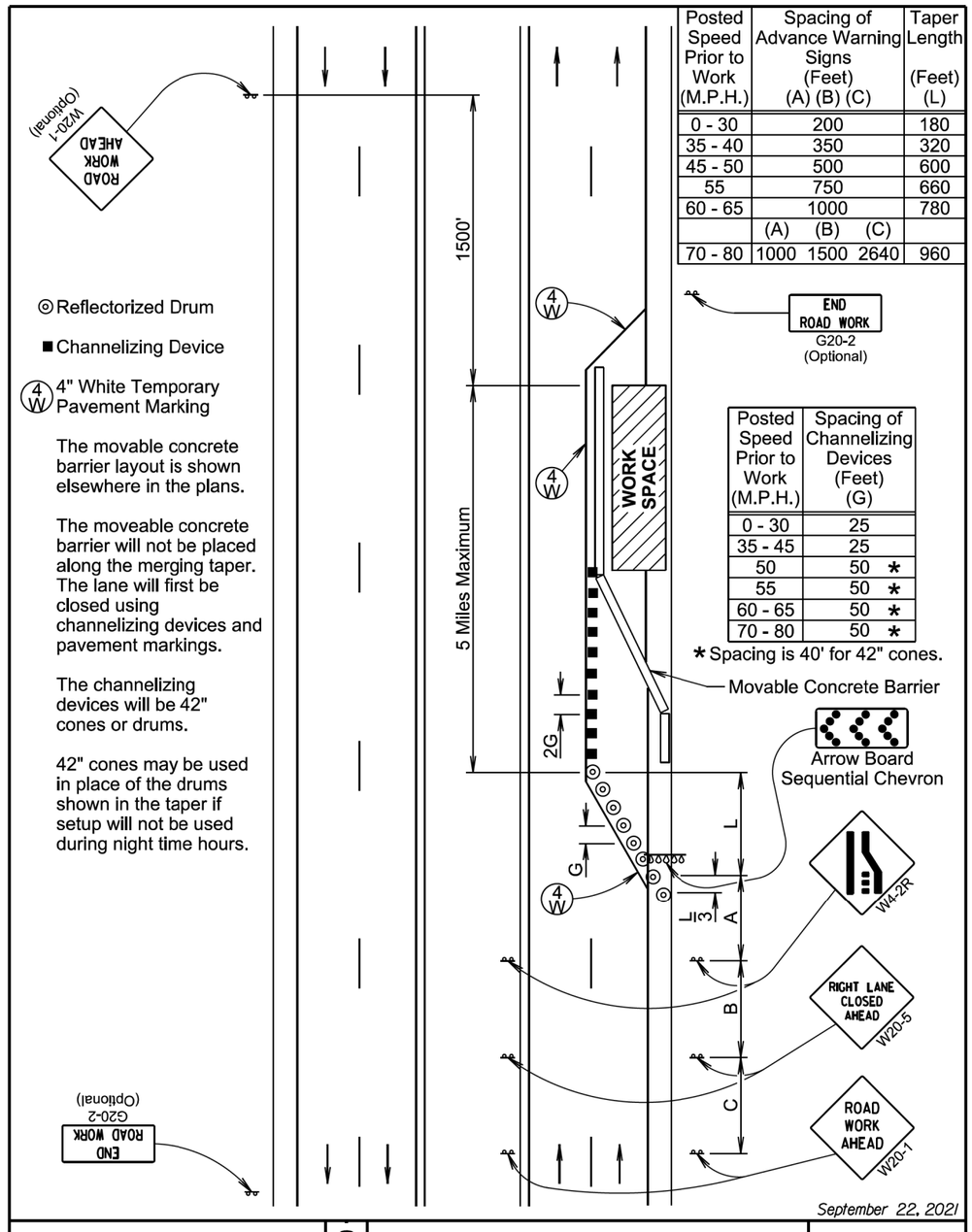
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
75 - 80	50 *

* Spacing is 40' for 42" cones.

September 22, 2021

Published Date: 2025	SDDOT	LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64 Sheet 1 of 1



◎ Reflectorized Drum

■ Channelizing Device

4W 4" White Temporary Pavement Marking

The movable concrete barrier layout is shown elsewhere in the plans.

The moveable concrete barrier will not be placed along the merging taper. The lane will first be closed using channelizing devices and pavement markings.

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.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
70 - 80	50 *

* Spacing is 40' for 42" cones.

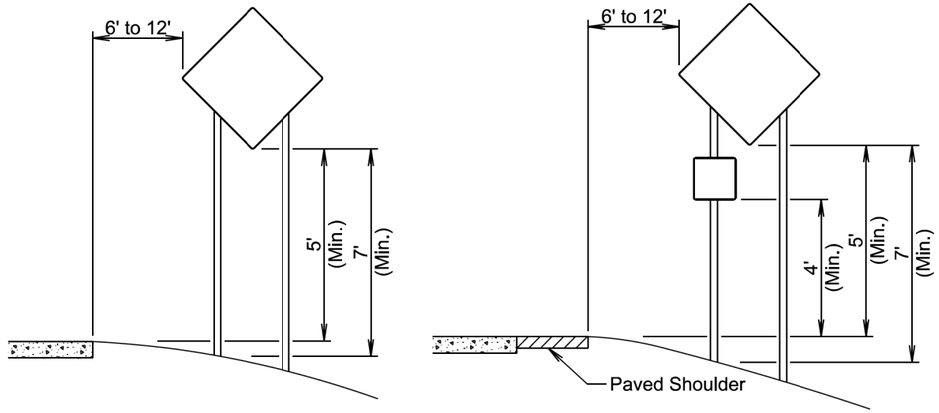
September 22, 2021

Published Date: 2025	SDDOT	LANE CLOSURE WITH BARRIER	PLATE NUMBER 634.65 Sheet 1 of 1

Plot Scale - 1:200

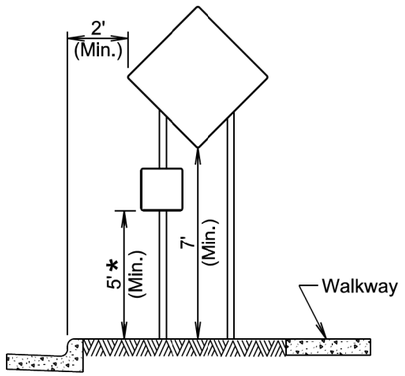
Plotted From - tmp25280

File - ...\17kk_I7NW_Std Plates.dgn

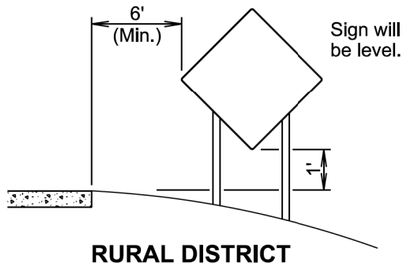


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

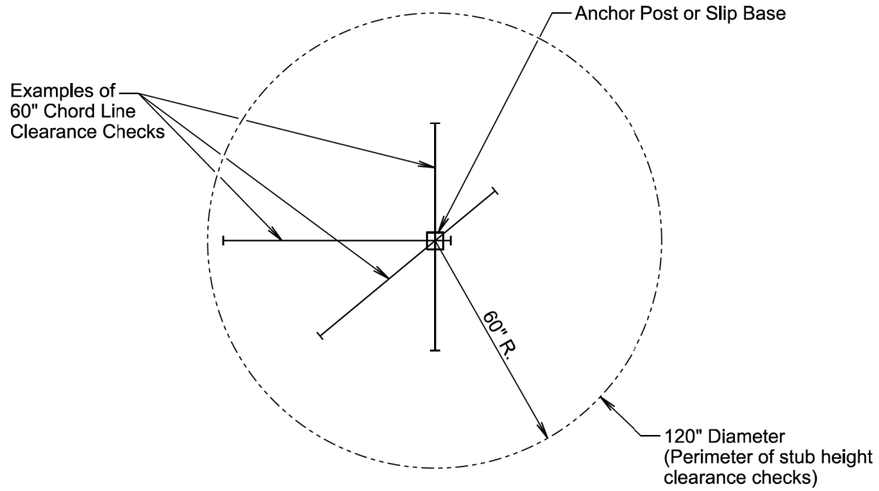


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

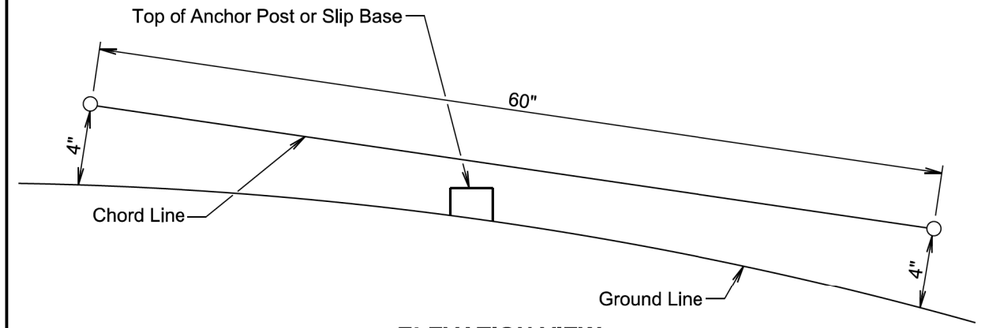
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	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: 2025	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1