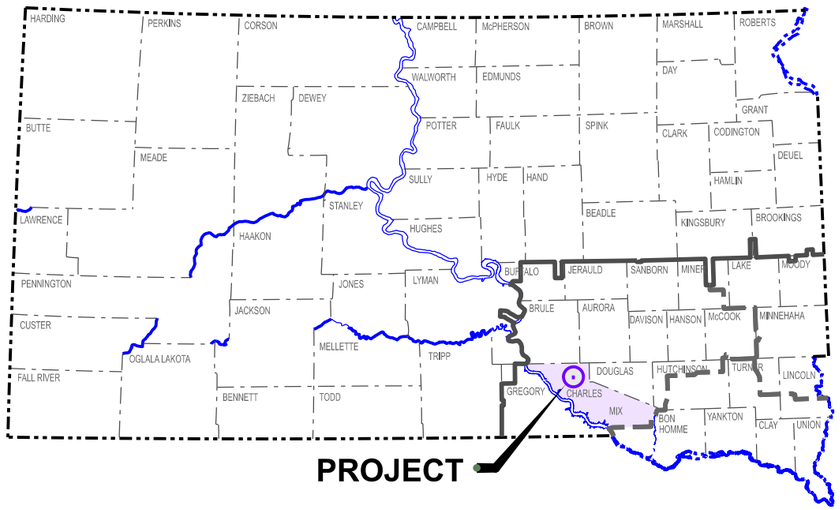


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

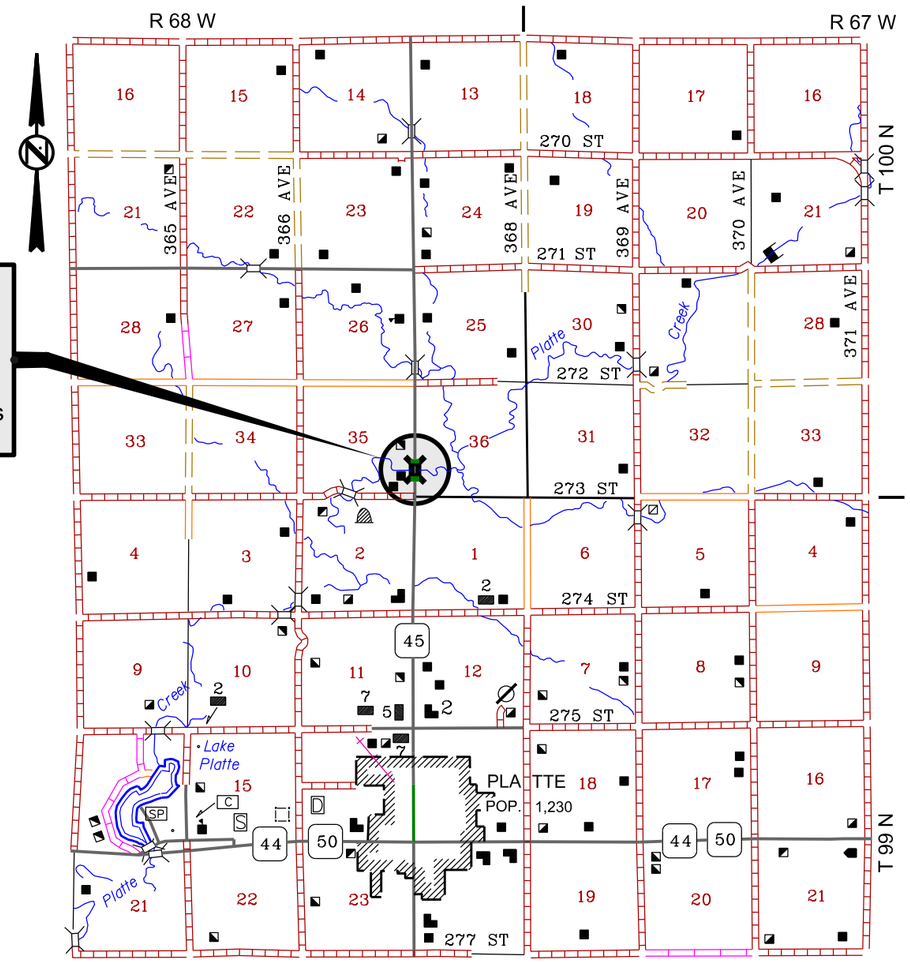
PROJECT P 0045(66)30
SD HIGHWAY 45
CHARLES MIX COUNTY

APPROACH SLABS, APPROACH PAVEMENT,
PAVEMENT MARKING & RESETTING GUARDRAIL
PCN 09J7

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0045(66)30	1	31

Plotting Date: mmm-ddd-yyy

INDEX OF SHEETS



STR. NO. 12-230-047
Sta. 169+13 to Sta. 170+79
Prestressed Girder Bridge
166'-0 3/16"=0.031 Mile
MRM 30.24
Two Approach/Sleeper Slabs
2@22'=44' = 0.008 Mile

DESIGN DESIGNATION

ADT(2022)	1,268
ADT(2042)	1,830
DHV	211
D	51%
T DHV	6.8%
T ADT	14.9%
V	65 MPH

STORM WATER PERMIT
(None required)

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0045(66)30	2	31

REVISED 04/02/2024

ESTIMATE OF QUANTITIES – 09J7

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	80	Ft
110E0420	Remove Drop Inlet Frame and Grate Assembly	2	Each
110E1010	Remove Asphalt Concrete Pavement	192.0	SqYd
110E1640	Remove Granular Material	32.5	CuYd
110E6410	Remove Type 1 MGS for Reset	150.0	Ft
260E1010	Base Course	20.0	Ton
320E1200	Asphalt Concrete Composite	6.8	Ton
630E2110	Beam Guardrail Post and Block	5	Each
630E5010	Reset Type 1 MGS	150.0	Ft
634E0010	Flagging	20.0	Hour
634E0110	Traffic Control Signs	195.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0600	4" Temporary Pavement Marking Tape Type I	144	Ft
634E0640	Temporary Pavement Marking	2,200	Ft
670E0200	Type A Frame and Grate	2	Each
670E5400	Precast Drop Inlet Collar	2	Each

ESTIMATE OF QUANTITIES – STR. NO. 12-230-047

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	74.4	Ft
430E0300	Granular Bridge End Backfill	13.1	CuYd
460E0150	Concrete Approach Slab for Bridge	169.8	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	37.4	SqYd
460E0380	Install Dowel in Concrete	48	Each
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	32	Each
480E0506	No. 6 Rebar Splice	46	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.

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

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

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.

The Contractor is responsible 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.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the 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.

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 construction operations will be conducted in the general direction of traffic movement.

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.

Spacing between channelizing devices, "1 G", will be 50 feet as shown on standard plate 634.25.

The channelizing devices will be drums in the taper. If 42" cones are used as channelizing devices, sufficient weight will be required to keep the cones in place and prevent movement from wind.

FLAGGING

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

It is required that the flaggers and pilot car operators be able to communicate with one another. 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”.

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 workspace 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 workspace remaining during nighttime hours x 2,200’ per workspace = 2,200’). 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”.

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

SURFACING THICKNESS DIMENSIONS

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

WATER FOR COMPACTION

The cost of water for compaction of the granular material will be incidental to the various other contract items. A minimum of 4% moisture will be required at the time of compaction unless otherwise directed by the Engineer.

ASPHALT CONCRETE COMPOSITE

Asphalt for tack SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for tack will be applied at a rate of 0.09 gallons per square yard on existing pavement or milled asphalt concrete surfaces and at a rate of 0.06 gallons per square yard on primed base course or new asphalt concrete pavement. The Asphalt for tack will be applied for the full width of the bottom layer of Asphalt Concrete Composite plus one-half foot additional on the outside shoulder.

RESETTING GUARDRAIL

Existing guardrail adjacent to replacement area will need to be removed & reset.

The Engineer is to determine if new guardrail posts will be needed.

The Contractor will satisfactorily restore disturbed areas adjacent to the guardrail to the satisfaction of the Engineer. Cost for this restoration work will be incidental to the contract unit prices for the various items.

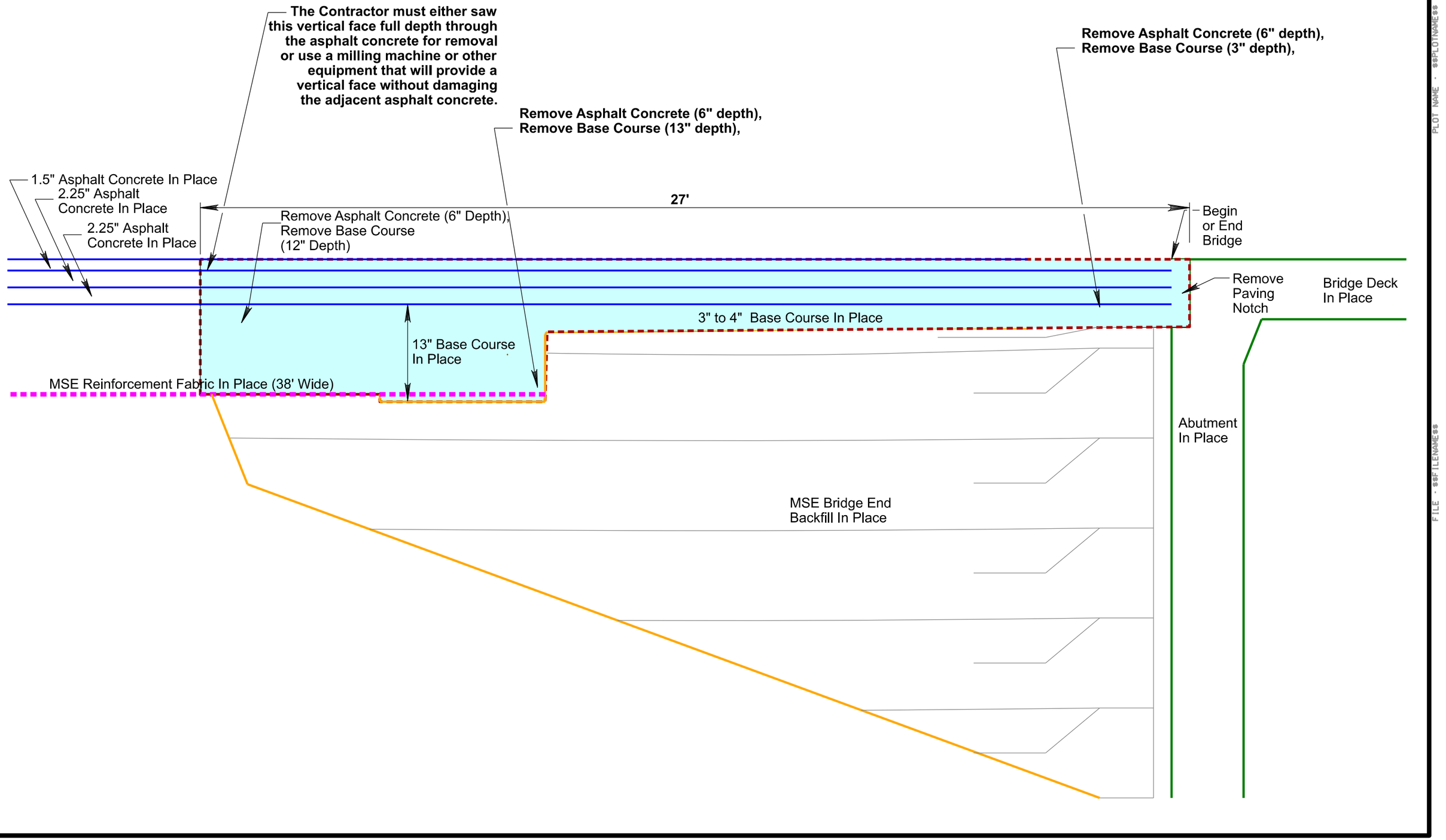
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
W1-3	REVERSE TURN (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
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
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	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			195.4

REMOVE & REPLACE SURFACING

STRUCTURE 12-230-047 SD45 MRM 30.24

BEGIN OR END BRIDGE



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0045(66)30	6	31

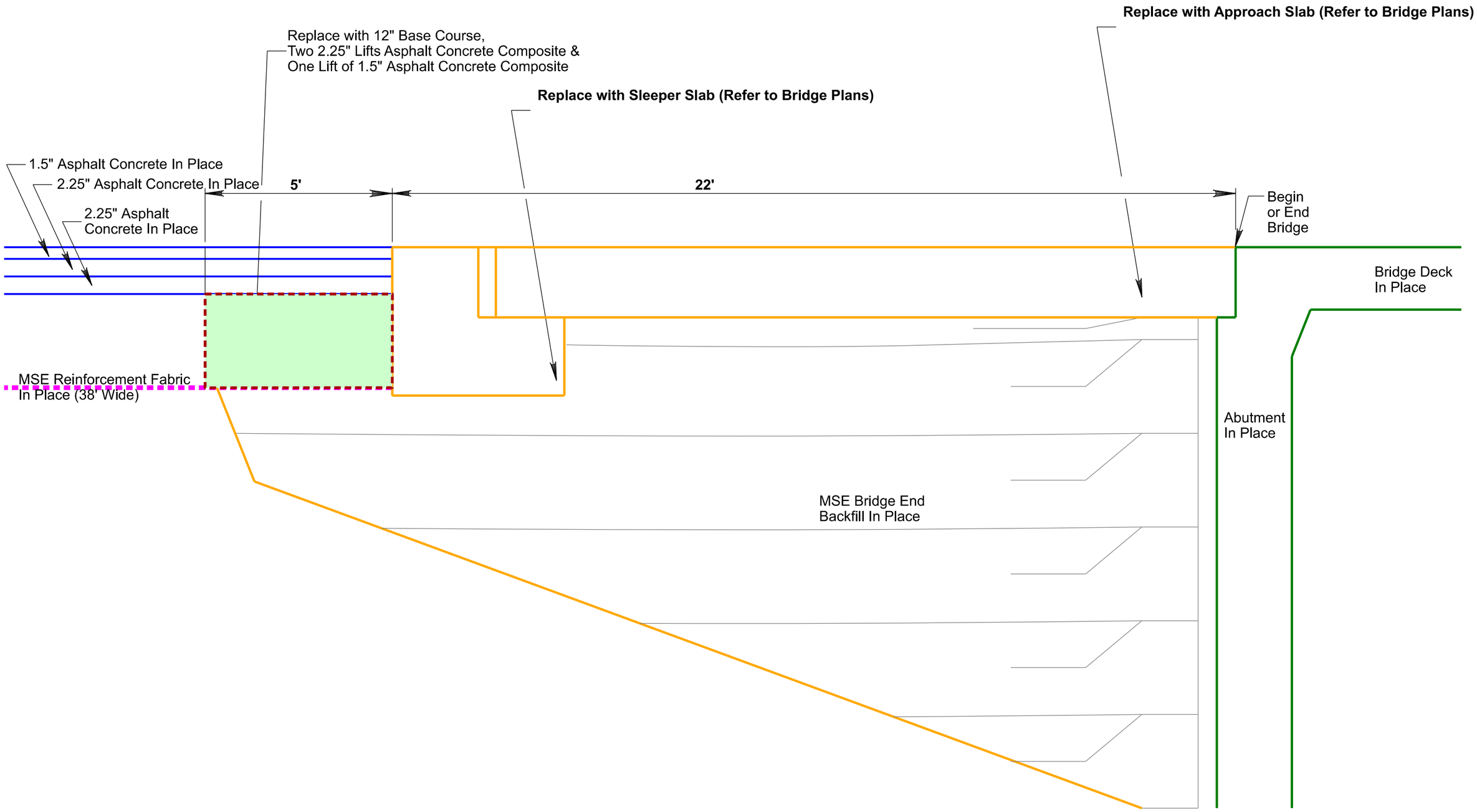
Plotting Date: mmm-ddd-yyy

REVISED 04/02/2024

REMOVE & REPLACE SURFACING

STRUCTURE 12-230-047 SD45 MRM 30.24

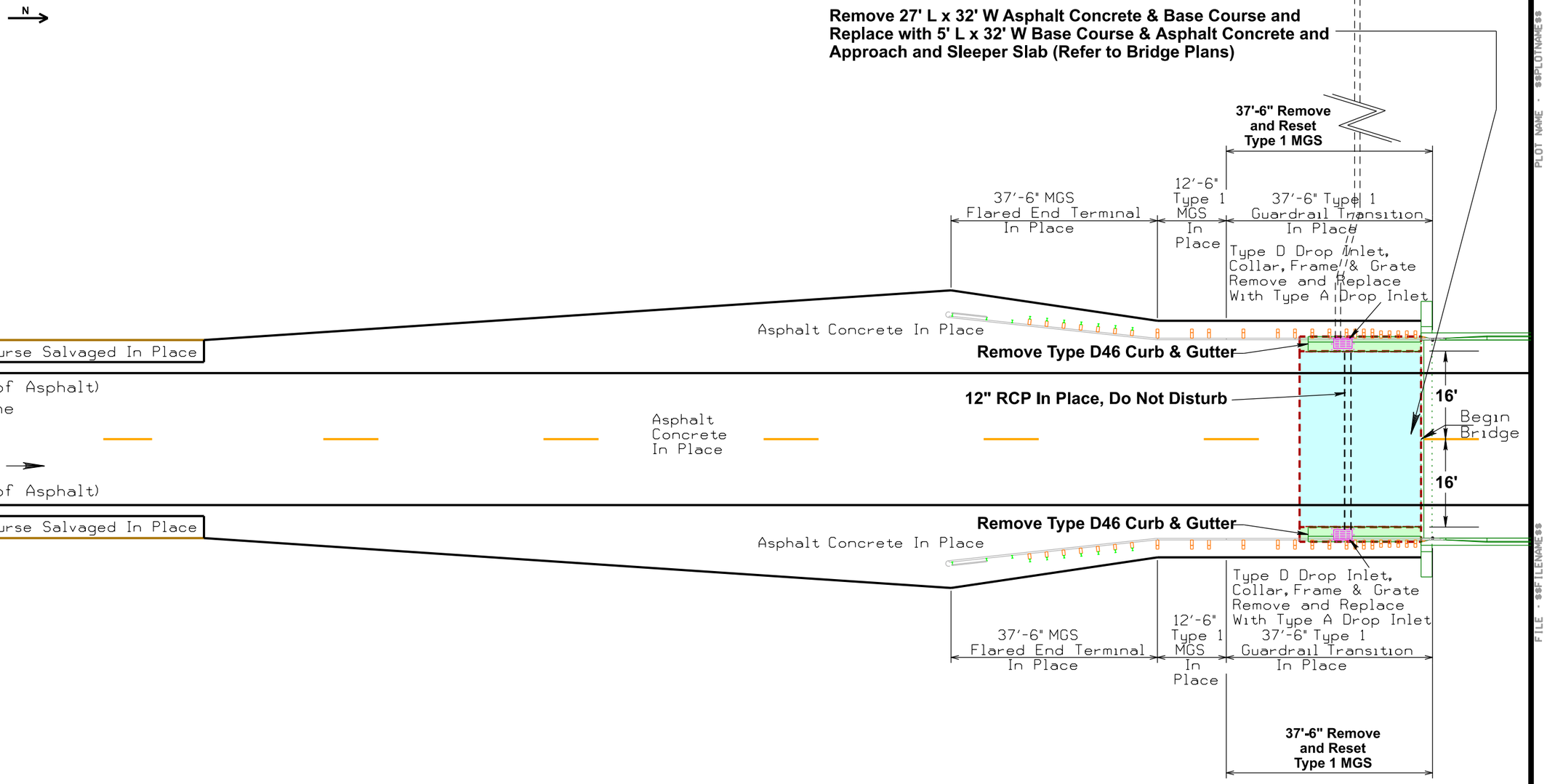
BEGIN OR END BRIDGE



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0045(66)30	7	31

Plotting Dates mmm-ddd-yyy REVISED 04/02/2024

REMOVE & REPLACE SURFACING
STRUCTURE 12-230-047 SD45 MRM 30.24
BEGIN BRIDGE

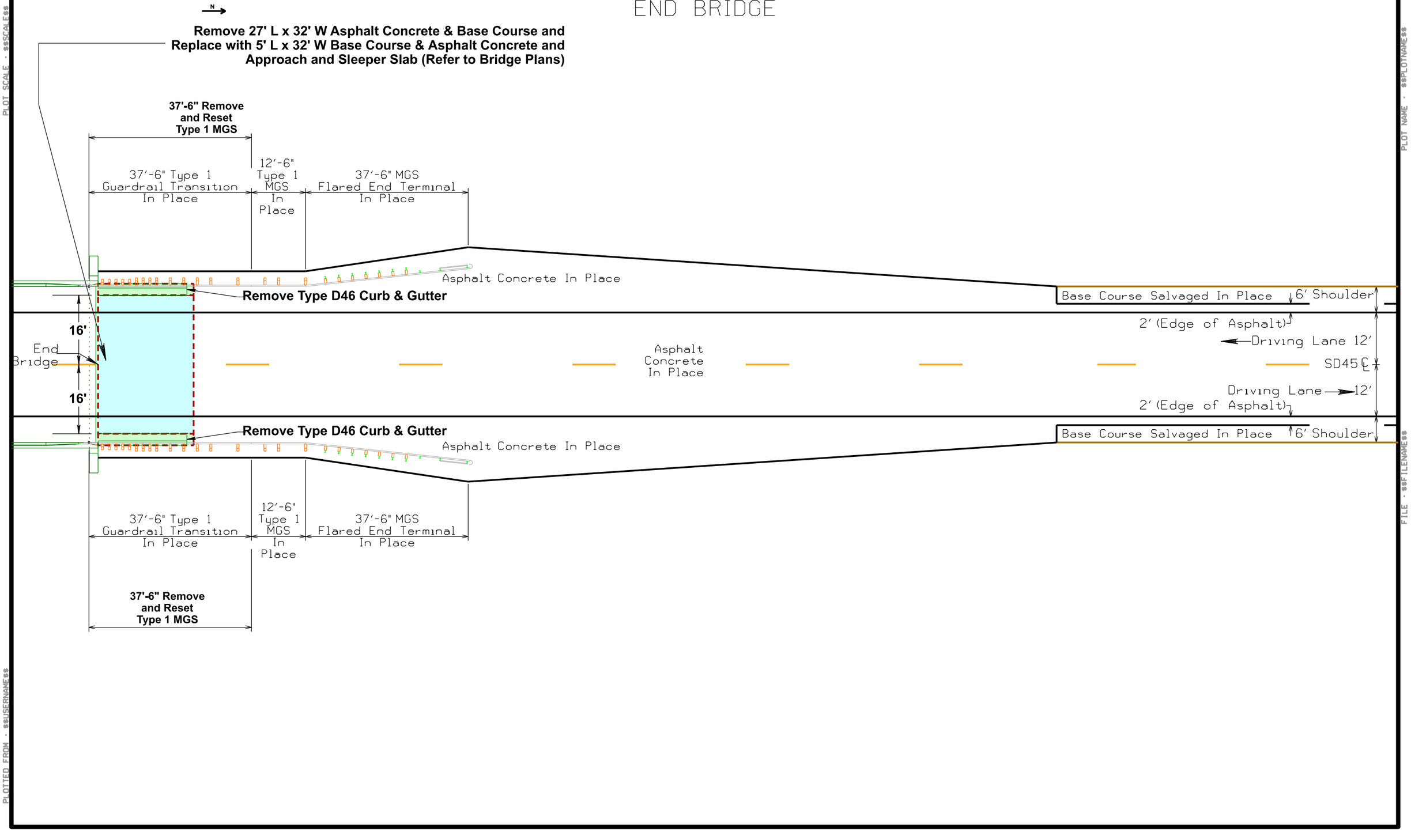


PLOT SCALE - $$SCALE$$
PLOT NAME - $$PLOTNAME$$
PLOTTED FROM - $$USERNAME$$
FILE - $$FILENAME$$

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0045(66)30	8	31

Plotting Date: mmm-ddd-yyy REVISED 04/02/2024

REMOVE & REPLACE SURFACING
STRUCTURE 12-230-047 SD45 MRM 30.24
END BRIDGE



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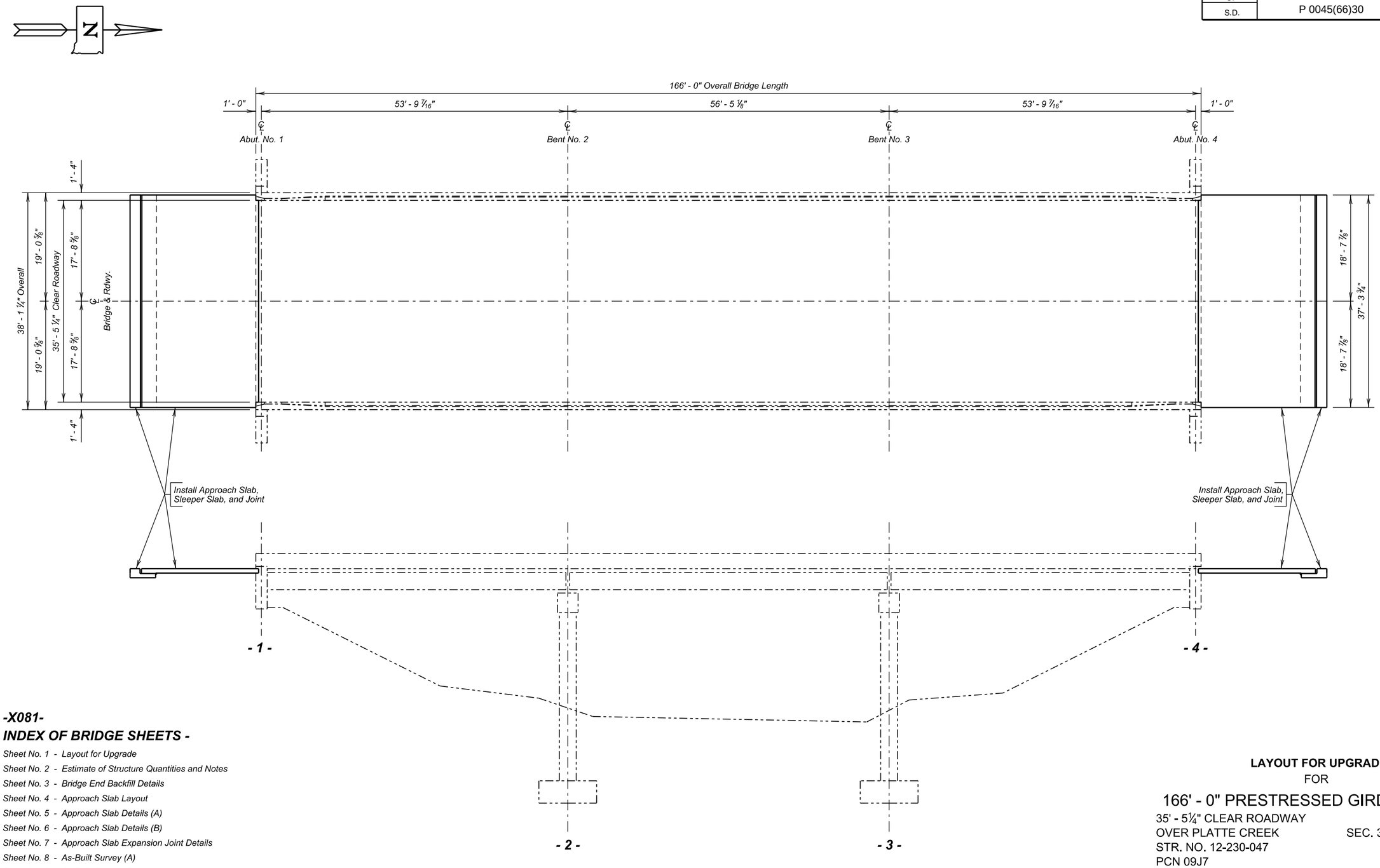
PLOTTED FROM - $$USERNAME$$

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	9	31



-X081-

INDEX OF BRIDGE SHEETS -

LAYOUT FOR UPGRADE

FOR

166' - 0" PRESTRESSED GIRDER BRIDGE

35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30
PCN 09J7

CHARLES MIX COUNTY

S. D. DEPT. OF TRANSPORTATION

JULY 2024

1 OF 14

-X081-

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	JB	BRIDGE ENGINEER
CMIX09J7	09J7BA01		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	10	31

Revised 03/06/2024 P.I.

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	74.6	Ft
430E0200	Granular Bridge End Backfill	13.1	CuYd
460E0150	Concrete Approach Slab for Bridge	169.8	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	37.4	SqYd
460E0380	Install Dowel in Concrete	48	Each
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	32	Each
480E0506	No. 6 Rebar Splice	46	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

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

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

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

1. Remove the existing and approach pavement for the first phase of construction.
2. Install approach slabs and sleeper slabs to the correct grade for the first phase of construction.
3. Install sleeper slab joints with approved Membrane Sealant Expansion Joint for the first phase of construction.
4. Switch traffic and repeat steps 1 through 3 for the second phase of construction.

GENERAL CONSTRUCTION – BRIDGE

1. All mild reinforcing steel will conform to ASTM A615, Grade 60.
2. 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.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
4. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
5. All lap splices are contact lap splices unless noted otherwise.

DESIGN MIX OF CONCRETE

1. Class A45 Concrete will be used for the contract items Concrete Approach Slab for Bridge and Concrete Approach Sleeper Slab for Bridge.
2. The type of cement, concrete strength requirements, aggregate requirements, slump, and air requirements for the contract items Concrete Approach Sleeper Slab for Bridge and Concrete Approach Slab for Bridge will conform to the requirements of Section 460 of the Construction Specifications.

APPROACH SLABS

1. Excavation for placement of new approach slabs and sleeper slabs will be done with minimal disturbance to the underlying material.
2. Prior to the placement of the approach and sleeper slabs, the existing MSE Bridge End Backfill material will be compacted using at least four complete passes of a smooth face vibratory roller or vibratory plate compactor. A layer of type B drainage fabric will be placed and Base Course will be used as required to fill any low spots and to achieve the elevation needed for installation of the new approach and sleeper slabs. The existing and fill material will be thoroughly watered prior to and during compaction. Base Course will be in accordance with Section 882 of the Construction Specifications.
3. The top of approach slab elevations will be subject to the approval of the Engineer. Care will be taken to provide a smooth transition from the bridge deck elevations to the new pavement elevations established in the field so as to prevent any dips or bumps in the areas of the bridge ends or ends of the new approach slabs. The maximum rate of grade transition through the approach slab will be 1/8 inch per 10 feet.
4. Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the joint.
5. The portion of the sleeper slab below the construction joint may be precast. If the bottom portion of the sleeper slab is precast, the Contractor will submit proposed lifting and setting plans to the Bridge Construction Engineer for approval. In addition, if reinforcing or other details differ from those shown in the plans, the Contractor will submit proposed alternate details for approval.
6. The use of an Engineer approved vibratory screed will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the screed will be kept parallel to the screed.
7. The concrete in the approach slab will be tined perpendicular to the centerline of the roadway.
8. The new approach slabs and sleeper slabs will have a surface finish as specified in Section 460.3 L.4 of the Construction Specifications.
9. The quantity of Base Course required to fill any low spots or voids is based on a 2-inch layer under the area of the approach slab. The actual quantity may vary.
10. The concrete approach slabs will be cured in accordance with Section 460.3 M of the Construction Specifications. The minimum 7-day cure time requirement will be waived. The approach slabs will be cured until a minimum compressive strength of 4,000 psi is reached.
11. Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for excavation; furnishing, hauling, and placing all materials including: concrete, concrete anchors, and reinforcing steel; for disposal of all excavated material and surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.
12. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for excavation; furnishing, hauling, and placing all materials including: concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer, and reinforcing steel; for disposal of all excavated material and surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.
13. Any Base Course, type B drainage fabric, and compaction required to fill any low spots or voids will be paid for at the contract unit price per cubic yard for Granular Bridge End Backfill. This payment will be full compensation for furnishing, hauling, and placing all materials including disposal of all surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.

AS-BUILT ELEVATION SURVEY

The Contractor will be responsible for producing an as-built elevation survey soon after construction is complete and before the bridge is completely opened to traffic The Contractor will be responsible for recording the as-built elevations at the locations shown by the table of as-built elevations shown in the plans. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer. The elevations will be based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88) and will use the benchmark provided in the plans. The Contractor will be responsible for verifying the NAVD88 elevation for the benchmark provided in the plans. All costs associated with obtaining the NAVD88 elevations at the locations shown in the table and for the benchmark shown in the plans, including all equipment, labor and any incidentals required will be incidental to the contract lump sum price for Bridge Elevation Survey.

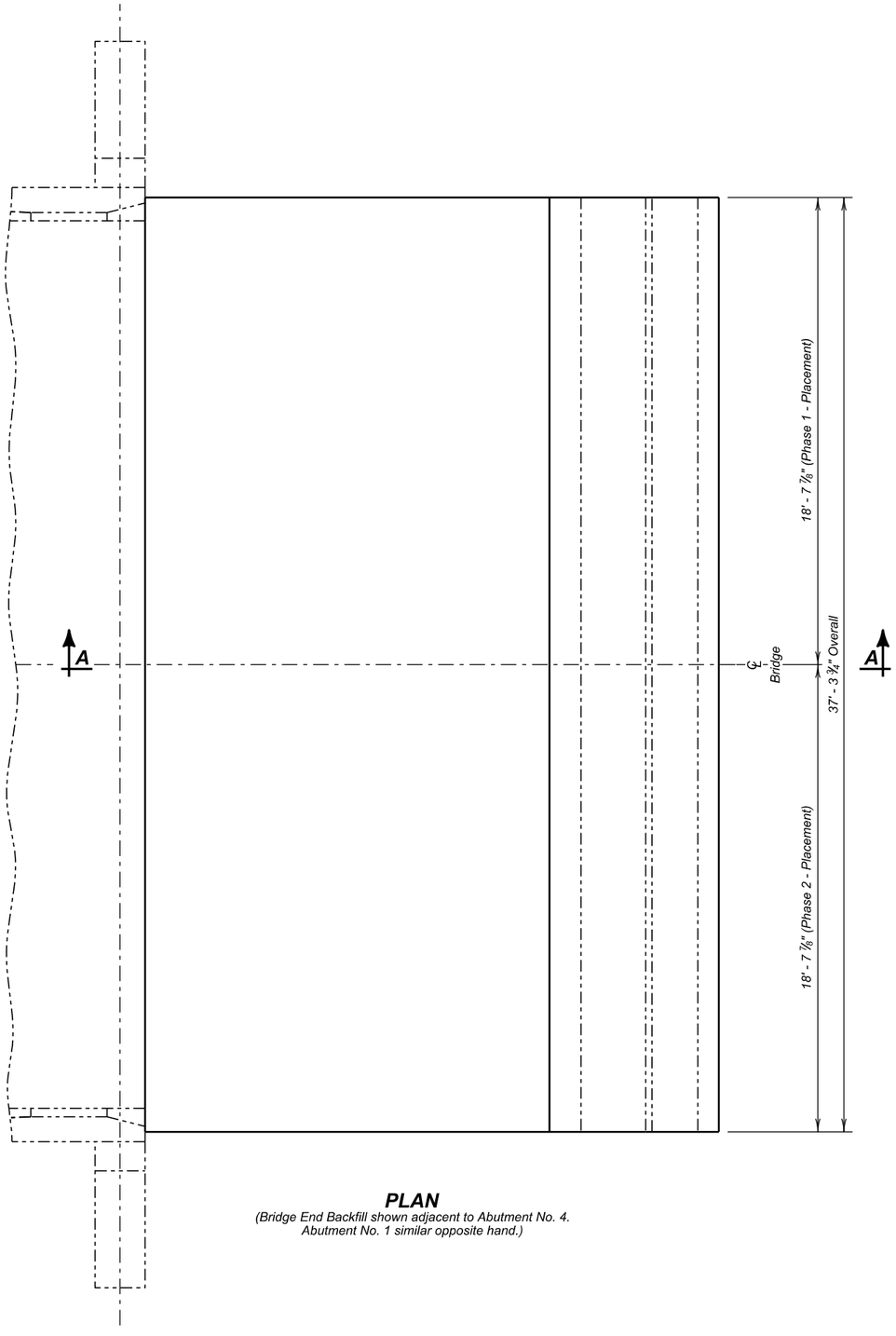
ESTIMATE OF STRUCTURE QUANTITIES & NOTES
FOR
166' - 0" PRESTRESSED GIRDER BRIDGE

STR. NO. 12-230-047

JULY 2024

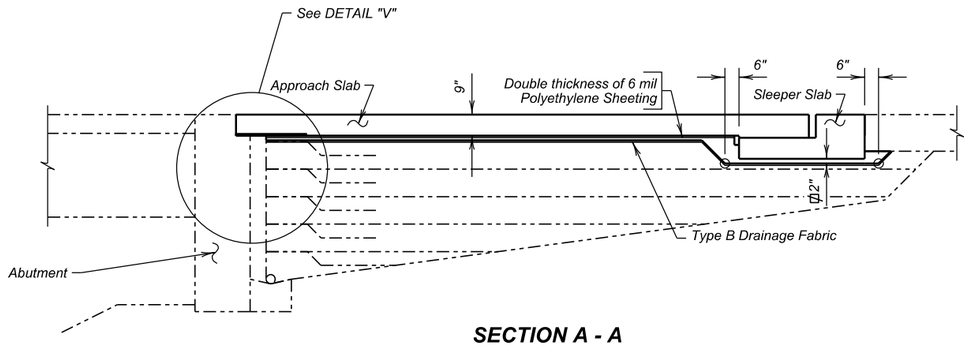
DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII CMIX09J7	CMM 09J7BA02	JB	Steve A. Johnson BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	11	31

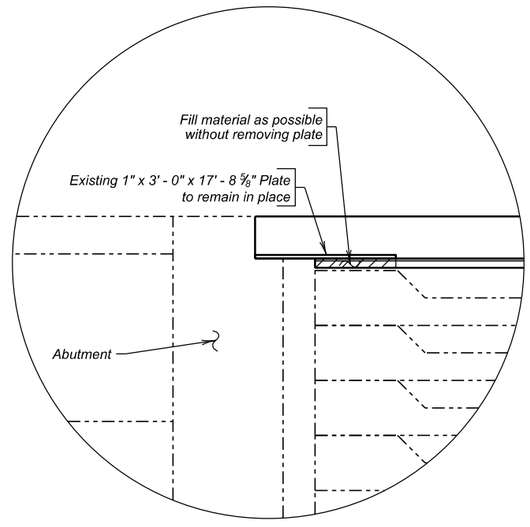


PLAN

(Bridge End Backfill shown adjacent to Abutment No. 4. Abutment No. 1 similar opposite hand.)



SECTION A - A



DETAIL "V"

GENERAL NOTES:

℄ *2" of material is used for estimation purposes only. Granular Bridge End Backfill will be placed and compacted to fill any low spots and bring backfill up to grade.*

ESTIMATED QUANTITIES
(For Both Abutments)

	ITEM	UNIT	QUANTITY	
			Phase 1	Phase 2
℄	Granular Bridge End Backfill	CuYd	6.9	6.2

Item 1 is an approximate quantity contained in the above contract items and is for information only.

		Phase 1	Phase 2
1.	6 mil Polyethylene Sheeting (not including laps)	106.3 SqYd	95.5 SqYd

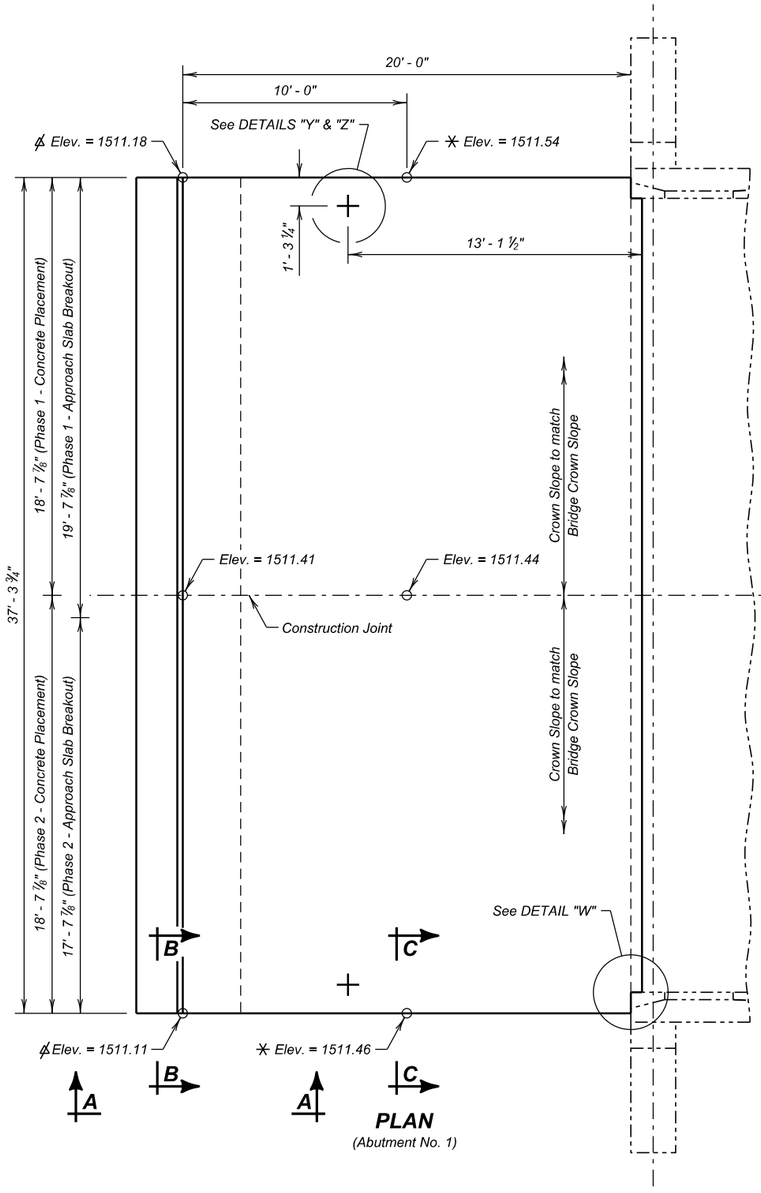
BRIDGE END BACKFILL DETAILS
FOR
166' - 0" PRESTRESSED GIRDER BRIDGE

35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30

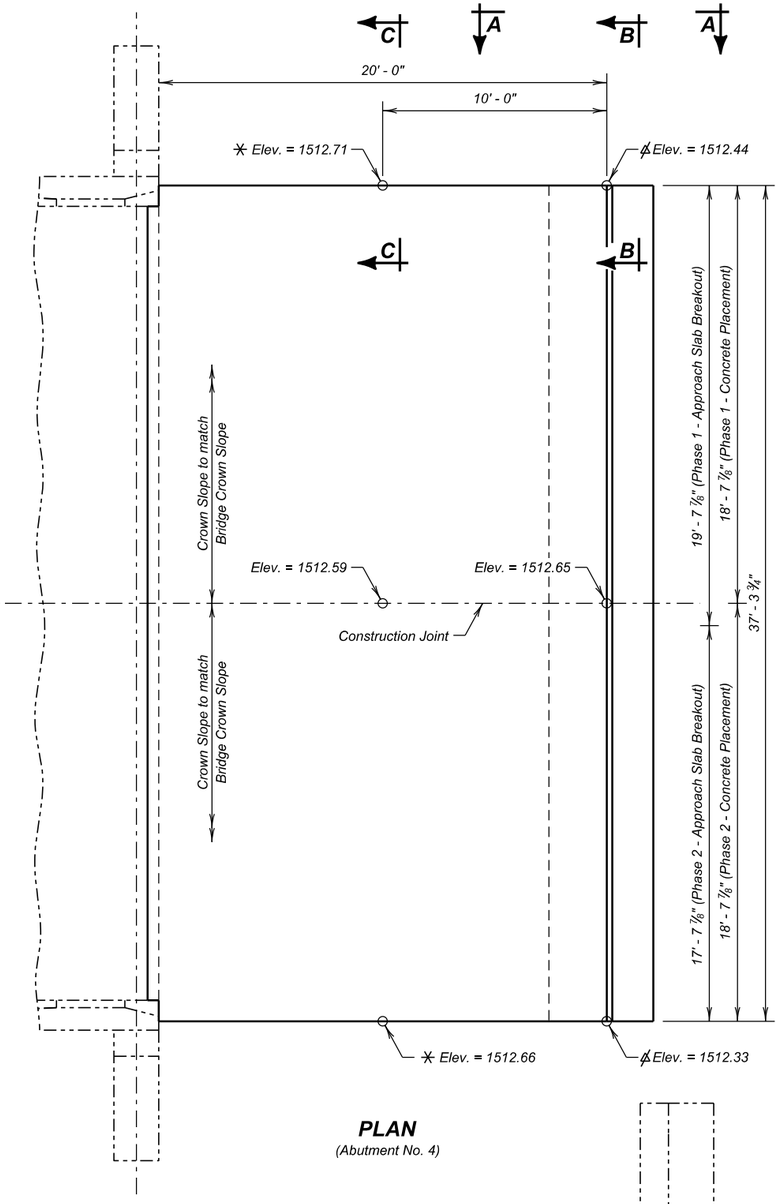
CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	JB	Steven A Johnson BRIDGE ENGINEER
CMIX09J7	09J7BA03		

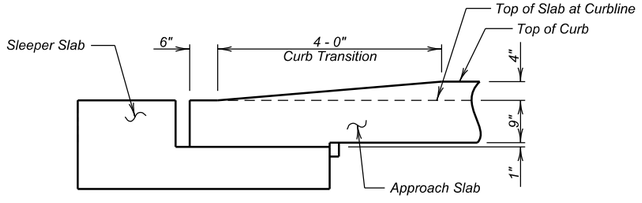
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	12	31



PLAN
(Abutment No. 1)

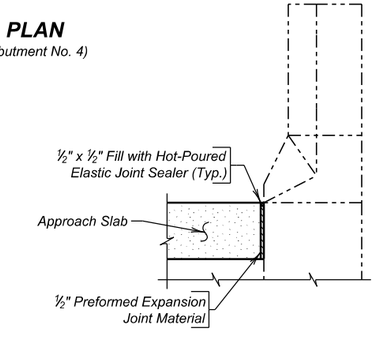


PLAN
(Abutment No. 4)



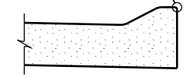
VIEW A - A

Survey Reference:
Brass Disk on NW Wing Wall
Elevation 1512.73



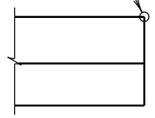
SECTION D - D

✳ NOTE: Elevations Top of Approach Slab Curb at this location.

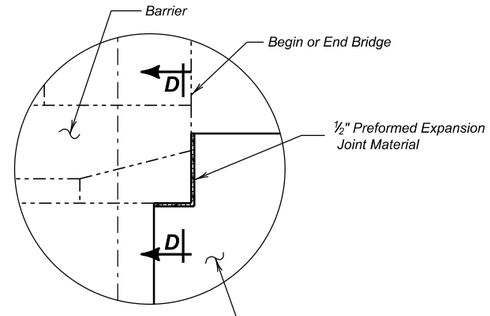


SECTION C - C

⧄ NOTE: Elevations Top of Approach Slab Curb at this location.



SECTION B - B



DETAIL "W"

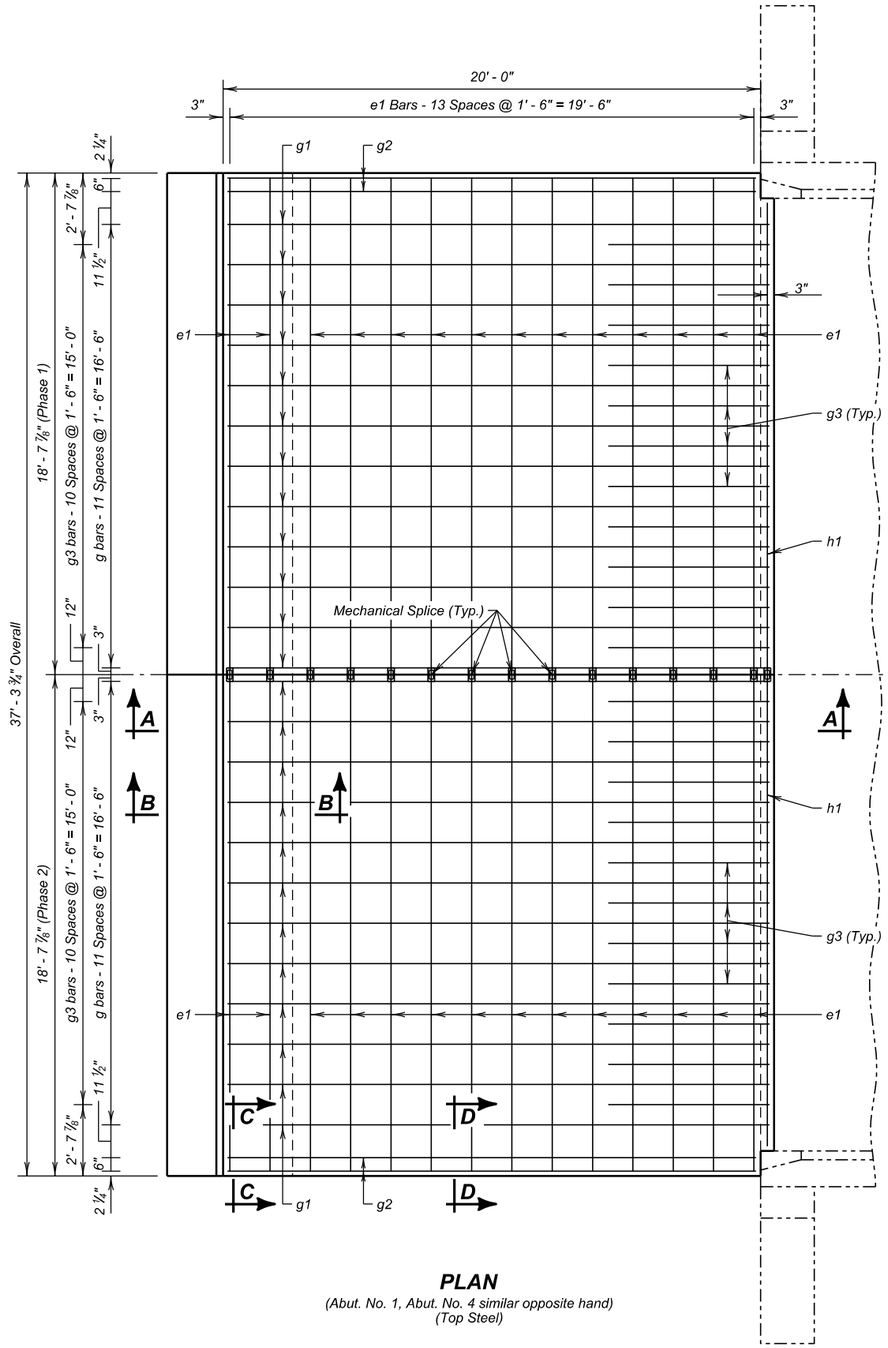
APPROACH SLAB LAYOUT
FOR
166' - 0" PRESTRESSED GIRDER BRIDGE

35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30

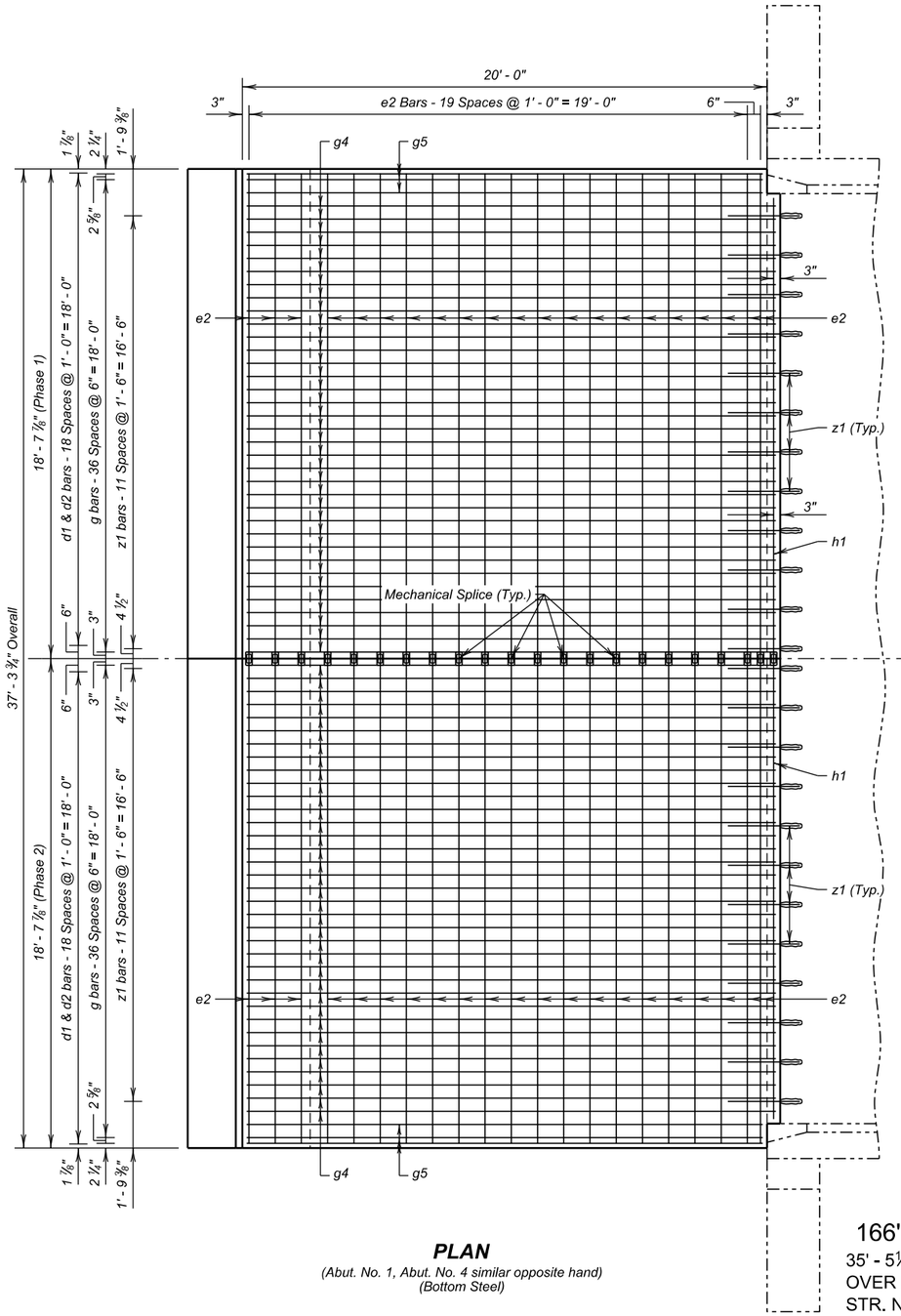
CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII CMIX09J7	CMM 09J7BA04	JB	Steven A. Johnson BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	13	31



PLAN
(Abut. No. 1, Abut. No. 4 similar opposite hand)
(Top Steel)



PLAN
(Abut. No. 1, Abut. No. 4 similar opposite hand)
(Bottom Steel)

APPROACH SLAB DETAILS (A)
FOR
166' - 0" PRESTRESSED GIRDER BRIDGE

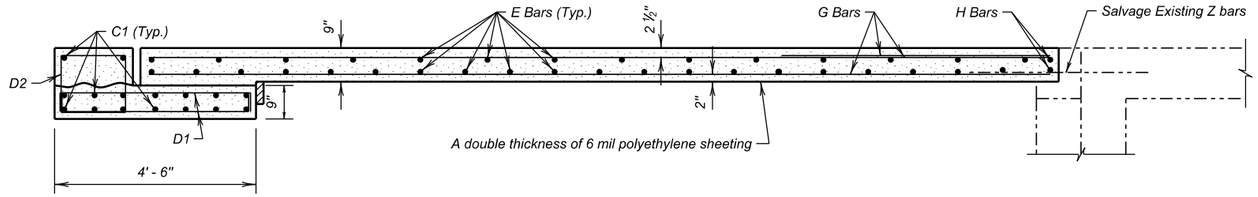
35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

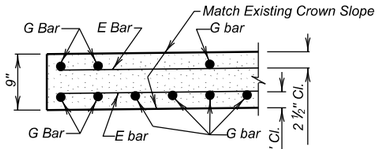
5 OF 14

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	JB	Steve A Johnson BRIDGE ENGINEER
CMIX09J7	09J7BA05		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	14	31



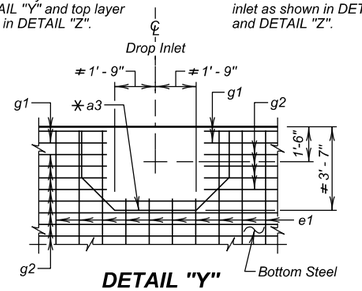
SECTION A - A



SECTION C - C

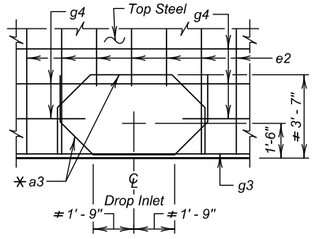
⚹ *Add a3 bar to bottom layer of steel as shown in DETAIL "Y" and top layer of steel as shown in DETAIL "Z".*

≠ *Cut all bars in area of drop inlet as shown in DETAIL "Y" and DETAIL "Z".*



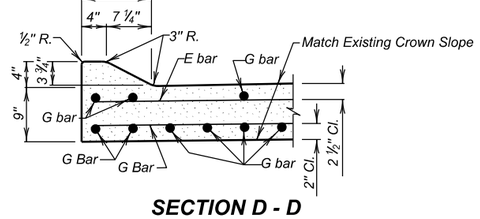
DETAIL "Y"

(Plan for Bottom Steel when drop inlet is used.)

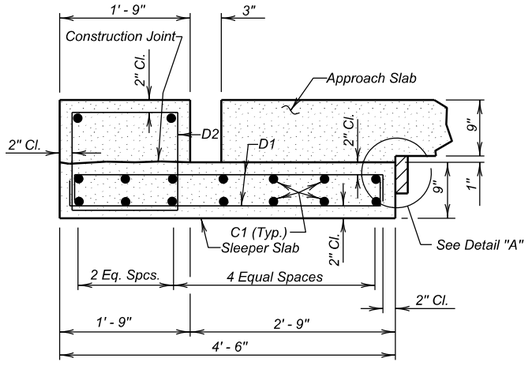


DETAIL "Z"

(Plan for Top Steel when drop inlet is used.)

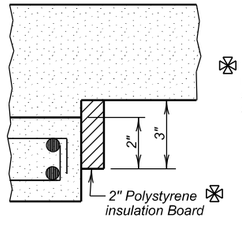


SECTION D - D



SECTION B - B

(Sleeper Slab)

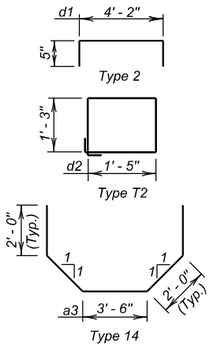


DETAIL "A"

REINFORCING SCHEDULE

(For Two Approach Slabs and Sleeper Slabs)

	Mk.	No.	Size	Length	Type
	Sleeper Slab (Phase 1)				
⊛	c1	32	5	18' - 6"	Str.
	d1	38	4	6' - 1"	T2
	d2	76	4	5' - 0"	2
	Approach Slab (Phase 1)				
	a3	3	4	11' - 6"	14
⊛	e1	28	4	18' - 6"	Str.
⊛	e2	42	6	18' - 6"	Str.
	g1	24	4	20' - 2"	Str.
	g2	4	4	19' - 8"	Str.
	g3	22	4	6' - 0"	Str.
	g4	70	8	20' - 2"	Str.
	g5	6	8	19' - 8"	Str.
⊛	h1	4	6	17' - 6"	Str.
△	z1	24	7	2' - 9"	Str.
	Sleeper Slab (Phase 2)				
	c1	32	5	18' - 6"	Str.
	d1	38	4	6' - 1"	T2
	d2	76	4	5' - 0"	2
	Approach Slab (Phase 2)				
	a3	3	4	11' - 6"	14
⊛	e1	28	4	18' - 6"	Str.
⊛	e2	42	4	18' - 6"	Str.
	g1	24	4	20' - 2"	Str.
	g2	4	4	19' - 8"	Str.
	g3	22	6	6' - 0"	Str.
	g4	70	8	20' - 2"	Str.
	g5	6	8	19' - 8"	Str.
⊛	h1	4	6	17' - 6"	Str.
△	z1	24	7	2' - 9"	Str.



NOTES:
All Bars to be Epoxy Coated
All dimensions are out to out of bars.

△ *Dowel*
⊛ *Mechanical Splice*

ESTIMATED QUANTITIES

(For Two Approach Slabs and Sleeper Slabs)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Concrete Approach Slab for Bridge	SqYd	84.9	84.9
Concrete Approach Sleeper Slab for Bridge	SqYd	18.7	18.7
No. 4 Rebar Splice	Each	28	-
No. 5 Rebar Splice	Each	32	-
No. 6 Rebar Splice	Each	46	-

		Phase 1	Phase 2
1.	Concrete in Approach Slabs.	21.2 CuYd	21.2 CuYd
⚹ 2.	Epoxy Coated Re-Steel in Approach Slabs.	6324.4 Lb	6324.4 Lb
3.	Concrete in Sleeper Slabs	6.9 CuYd	6.9 CuYd
4.	Epoxy Coated Re-Steel in Sleeper Slabs.	1025.7 Lb	1025.7 Lb

Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.

⚹ *Does not include the following quantity for z1 bars as these are paid for in the contract item Install Dowel in Concrete.*

QUANTITY
270 Lb.

APPROACH SLAB DETAILS (B)

FOR

166' - 0" PRESTRESSED GIRDER BRIDGE

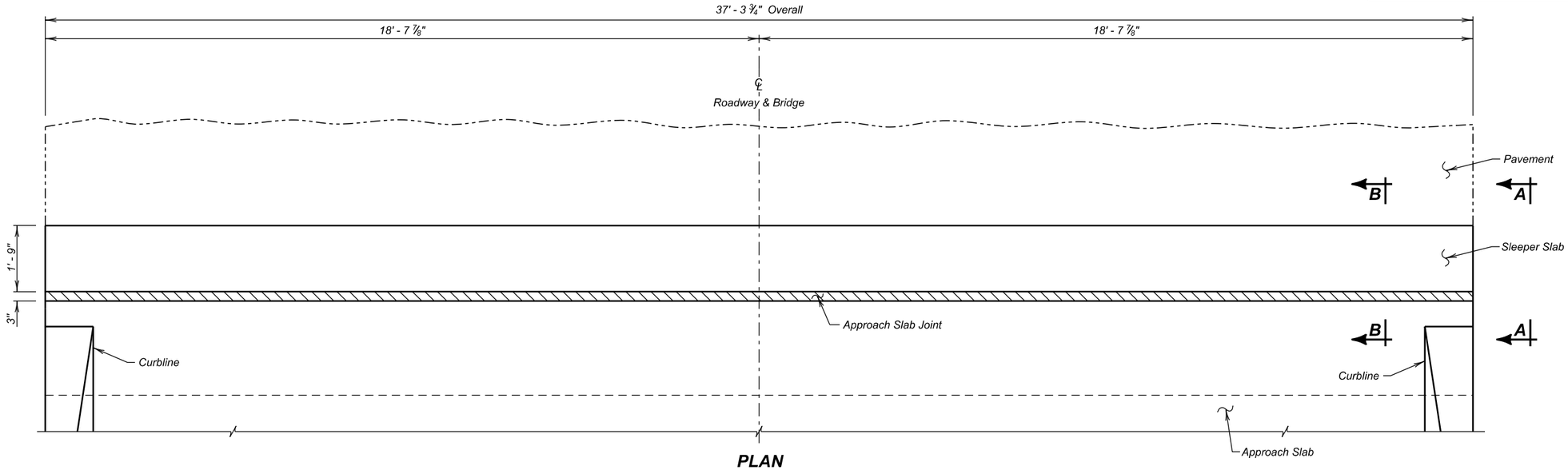
35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

6 OF 14

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	JB	Steven A Johnson BRIDGE ENGINEER
CMIX09J7	09J7BA06		

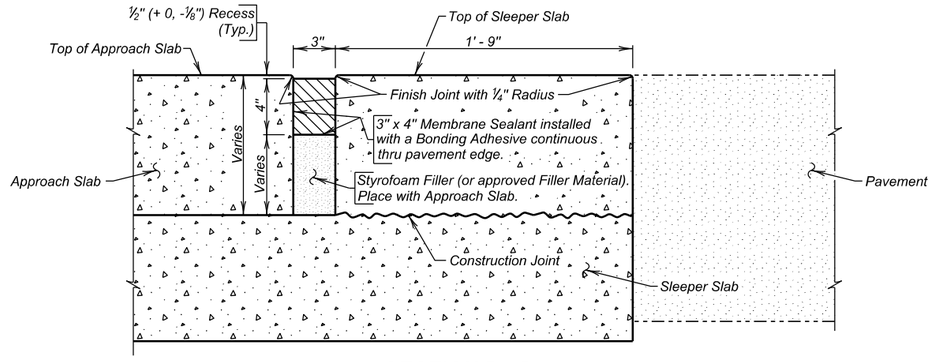
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	15	31



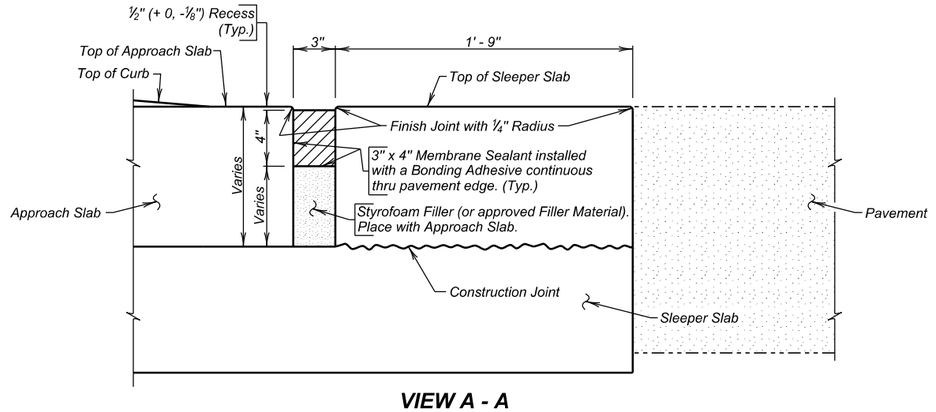
PLAN

GENERAL NOTES

1. The membrane sealant will be on the approved product list for membrane sealant expansion joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case will the precompressed dimension exceed 75% of the joint opening width. The foam sealant will be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
3. The membrane sealant will be supplied in pieces 5 feet in length or longer. The foam sealant will be ultra-violet and ozone resistant.
4. The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
5. Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
6. If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
7. The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40° F.
8. A technical representative of the membrane sealant manufacturer will be present at the jobsite during installation. The technical representative will be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.
9. Concrete surfaces that will be in contact with the membrane sealant will be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding will not be permitted.
10. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface will be air blasted. The air compressor used for joint cleaning will be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint will be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
11. Individual spliced sections will be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer will submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
12. Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
13. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
14. The membrane sealant expansion joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The membrane sealant expansion joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.



SECTION B - B



VIEW A - A

ESTIMATED QUANTITIES
(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	74.6

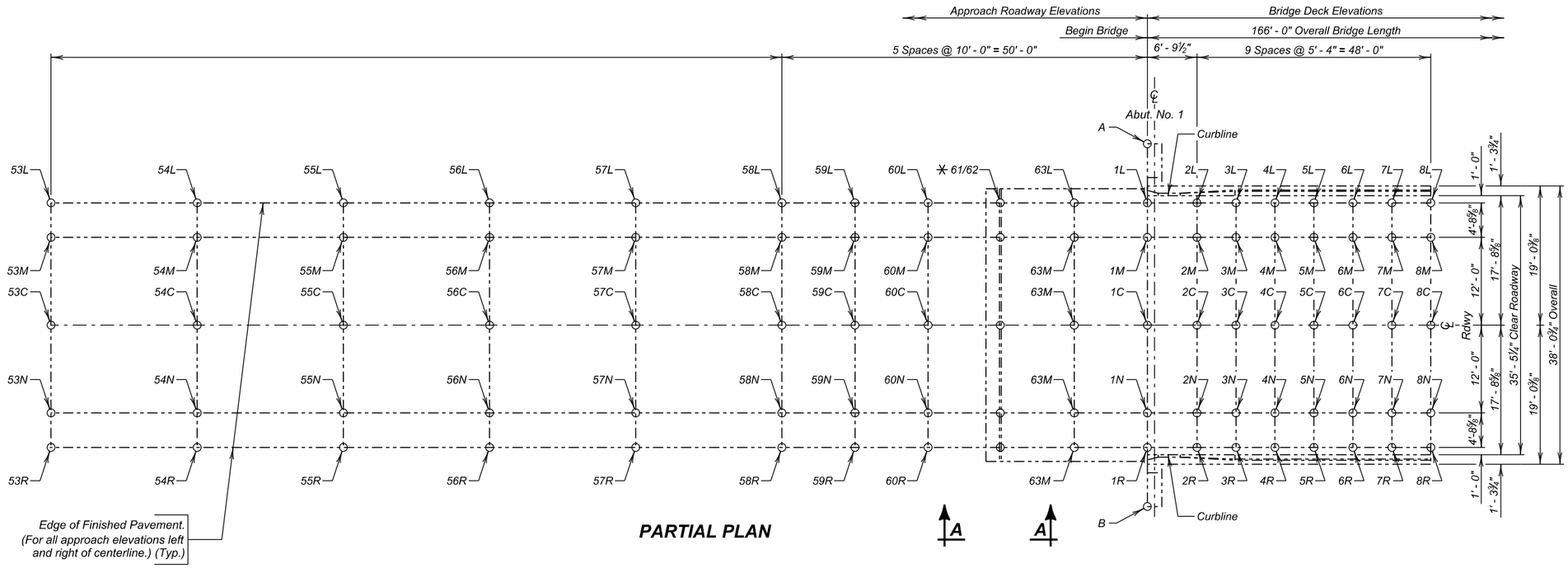
APPROACH SLAB EXPANSION JOINT DETAILS
FOR
166' - 0" PRESTRESSED GIRDER BRIDGE

35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	PII	BRIDGE ENGINEER
CMIX09J7	09J7BA07		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	16	31



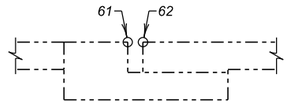
PARTIAL PLAN

Table of Elevations - Approach Roadway									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
53L		53M		53C		53N		53R	
54L		54M		54C		54N		54R	
55L		55M		55C		55N		55R	
56L		56M		56C		56N		56R	
57L		57M		57C		57N		57R	
58L		58M		58C		58N		58R	
59L		59M		59C		59N		59R	
60L		60M		60C		60N		60R	

Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
1L		1M		1C		1N		1R	
2L		2M		2C		2N		2R	
3L		3M		3C		3N		3R	
4L		4M		4C		4N		4R	
5L		5M		5C		5N		5R	
6L		6M		6C		6N		6R	
7L		7M		7C		7N		7R	
8L		8M		8C		8N		8R	

Table of Elevations - Approach Slab									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
61L		61M		61C		61N		61R	
62L		62M		62C		62N		62R	
63L		63M		63C		63N		63R	

Bridge Ends	
Location	Elevation
A	
B	



VIEW A - A

AS-BUILT SURVEY (A)

FOR

166' - 0" PRESTRESSED GIRDER BRIDGE

35' - 5¼" CLEAR ROADWAY OVER PLATTE CREEK
STR. NO. 12-230-047

0° SKEW
SEC. 35/36-T100N-R68W
P 0045(66)30

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

8 OF 14

✳ *Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are also shown in VIEW A - A.*

NOTE:

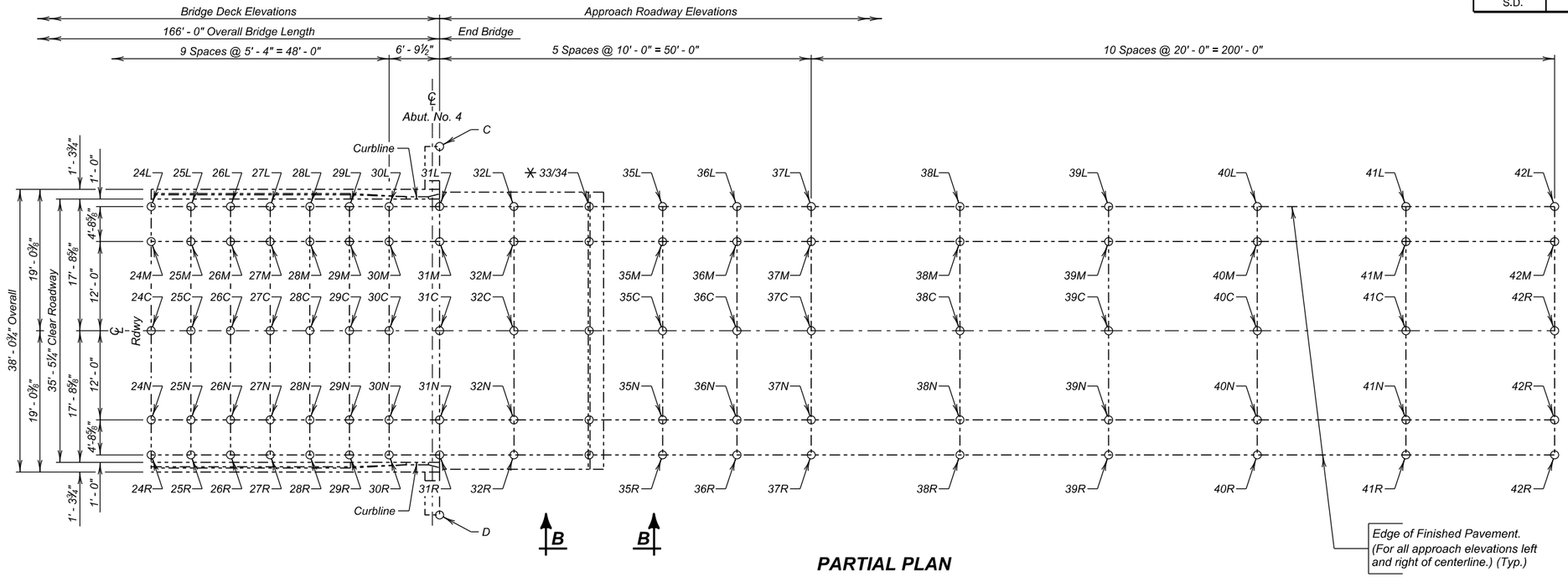
The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer.

Survey Reference:

Brass Disk on NW Wing Wall
Elevation 1512.73

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	PII	BRIDGE ENGINEER
CMIX09J7	09J7BA08		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	17	31



PARTIAL PLAN

Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
24L		24M		24C		24M		24R	
25L		25M		25C		25M		25R	
26L		26M		26C		26M		26R	
27L		27M		27C		27M		27R	
28L		28M		28C		28M		28R	
29L		29M		29C		29N		29R	
30L		30M		30C		30N		30R	
31L		31M		31C		31N		31R	

Table of Elevations - Approach Roadway									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
35L		35M		35C		35N		35R	
36L		36M		36C		36N		36R	
37L		37M		37C		37N		37R	
38L		38M		38C		38N		38R	
39L		39M		39C		39N		39R	
40L		40M		40C		40N		40R	
41L		41M		41C		41N		41R	
42L		42M		42C		42N		42R	

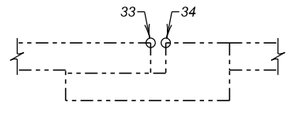
Table of Elevations - Approach Slab									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
32L		32M		32C		32N		32R	
33L		33M		33C		33N		33R	
34L		34M		34C		34N		34R	

✳ *Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are also shown in VIEW B - B.*

NOTE:

The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer.

Bridge Ends	
Location	Elevation
C	
D	



VIEW B - B

Survey Reference:

Brass Disk on NW Wing Wall
Elevation 1512.73

AS-BUILT SURVEY (B)

FOR

166' - 0" PRESTRESSED GIRDER BRIDGE

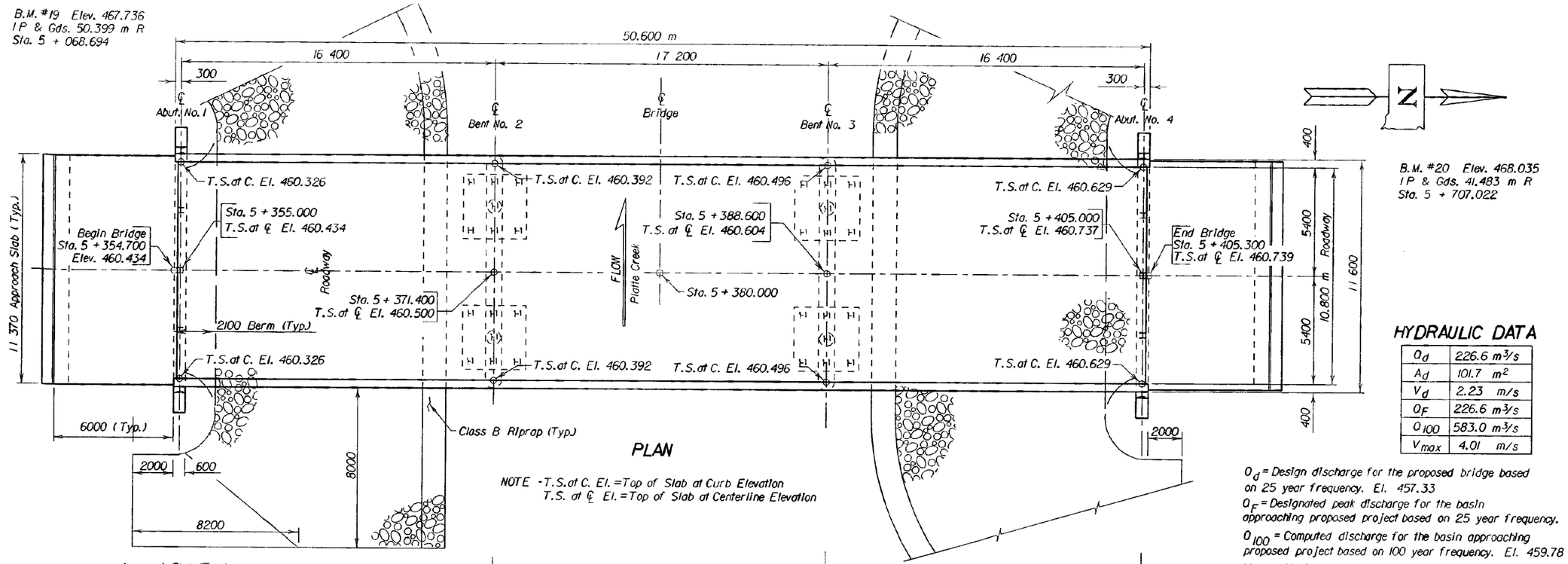
35' - 5¼" CLEAR ROADWAY — 0° SKEW
OVER PLATTE CREEK — SEC. 35/36-T100N-R68W
STR. NO. 12-230-047 — P 0045(66)30

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
PII	CMM	PII	BRIDGE ENGINEER
CMIX09J7	09J7BA09		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	18	31

B.M. #19 Elev. 467.736
I P & Gds. 50.399 m R
Sta. 5 + 068.694



PLAN

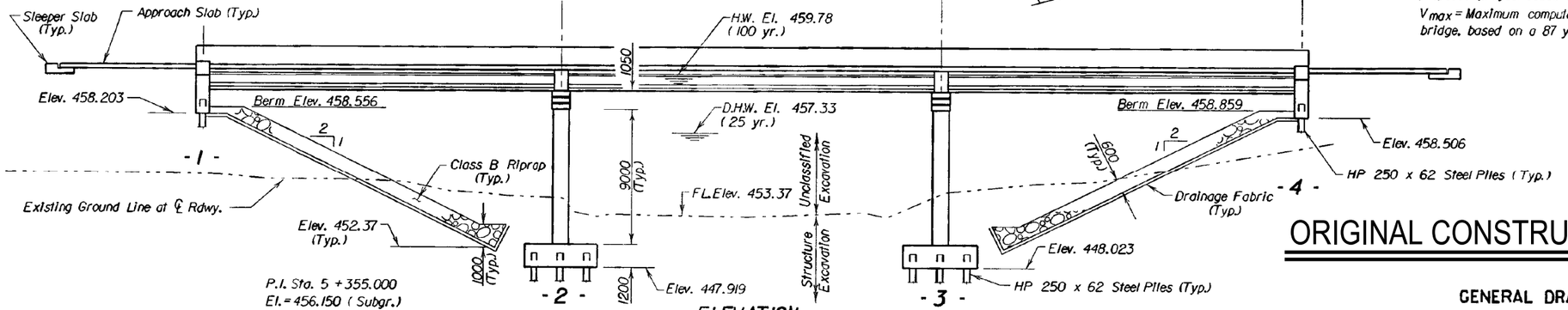
NOTE - T.S. at C. El. = Top of Slab at Curb Elevation
T.S. at ℄ El. = Top of Slab at Centerline Elevation

B.M. #20 Elev. 468.035
I P & Gds. 41.483 m R
Sta. 5 + 707.022

HYDRAULIC DATA

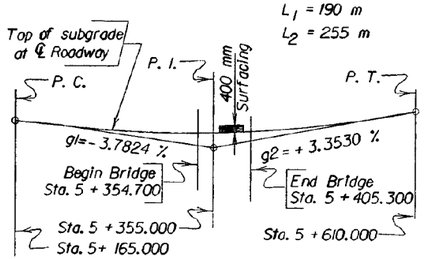
Q_d	226.6 m^3/s
A_d	101.7 m^2
V_d	2.23 m/s
Q_F	226.6 m^3/s
Q_{100}	583.0 m^3/s
V_{max}	4.01 m/s

Q_d = Design discharge for the proposed bridge based on 25 year frequency. El. 457.33
Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 459.78
V_{max} = Maximum computed velocity for the proposed bridge, based on a 87 year frequency.



ELEVATION

P.I. Sta. 5 + 355.000
El. = 456.150 (Subgr.)
L_1 = 190 m
L_2 = 255 m



VERTICAL CURVE DATA

-X081-
INDEX OF BRIDGE SHEETS-

NOTE: All dimensions in these plans are millimeters (mm) unless otherwise noted. Stations and elevations are in meters.

ORIGINAL CONSTRUCTION PLANS

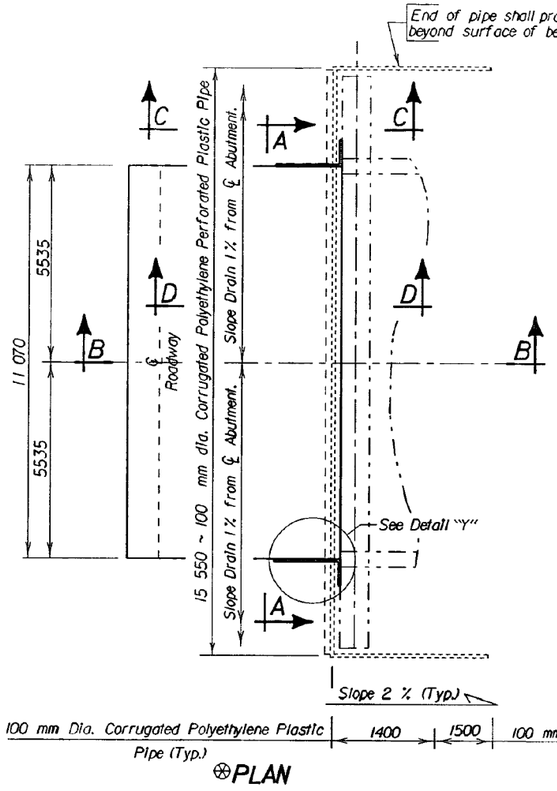
GENERAL DRAWING
FOR
50.600 m PRESTRESSED GIRDER BRIDGE
10.8 m ROADWAY — SEC. 35/36-T100N-R68W
OVER PLATTE CREEK — 0° SKEW
STA. 5 +354.700 TO STA. 5 +405.300 P 0045(19)27
STR. NO. 12-230-047 — MS22.5
PCEMS NO. 2747 — (& ALT.)

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 1997 (10) OF (14)

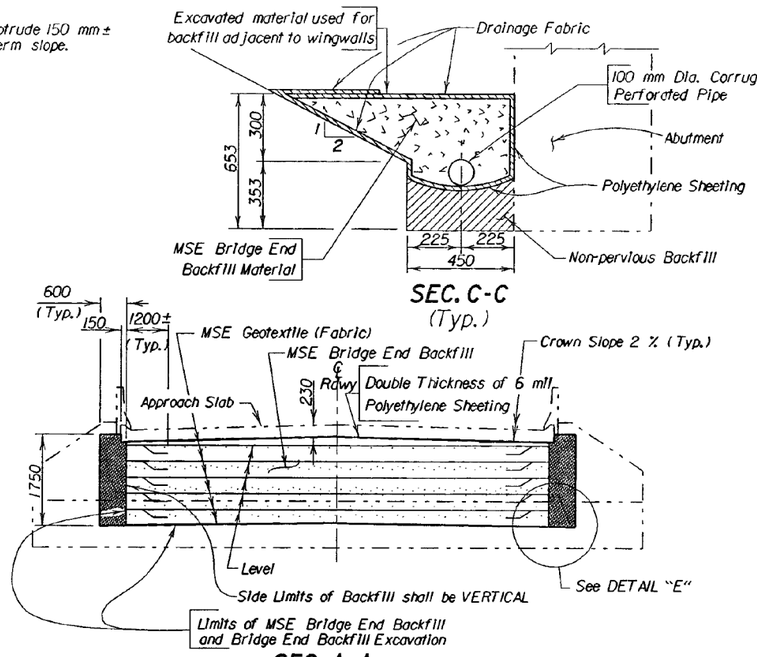
-X081-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
PC/DV	TB/SM	PC/DV	BRIDGE ENGINEER
CMIX2747	2747MCOI		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	19	31



⊛PLAN



SEC. C-C
(Typ.)

SEC. A-A

ESTIMATED QUANTITIES
(for 2 abutments)

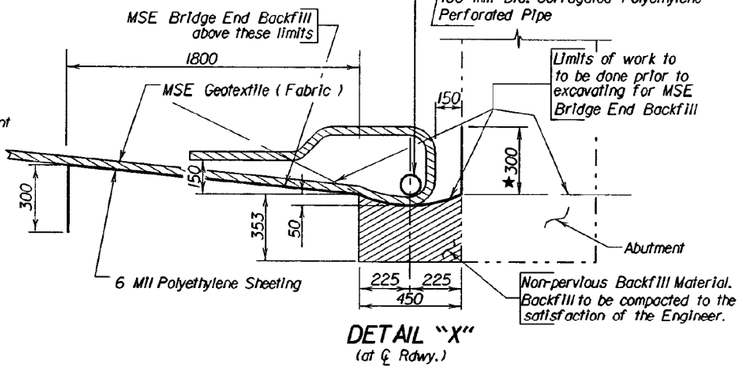
ITEM	UNIT	QUANTITY
Underdrain Pipe, Bridge End Backfill	m	42.7
⍁ Excavation, Bridge End Backfill	m^3	92
Backfill, MSE Bridge End	m^3	165
Fabric, Type B Drainage	m^2	41
Fabric, MSE Geotextile	m^2	1175

1. 31.1 m 100 mm dia. Corrugated Polyethylene Perforated Plastic Pipe for 2 Abut.
2. 5.6 m 100 mm dia. Corrugated Polyethylene Plastic Pipe for 2 Abut.
3. 6.0 m 100 mm dia. Std. Black Steel Pipe for 2 Abut.
4. 338.7 m^2 6 mil Polyethylene Sheeting, not including laps.

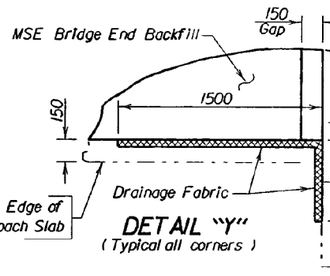
Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.

⍁ Bridge End Backfill Excavation will not be measured. Plans quantity payment will be full compensation for this item.

★ The polyethylene sheeting shall be attached to the back face of the abutment using a construction adhesive.



DETAIL "X"
(at ℄ Rdwy.)

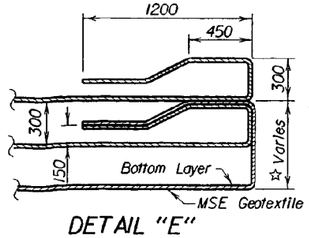


DETAIL "Y"
(Typical all corners)

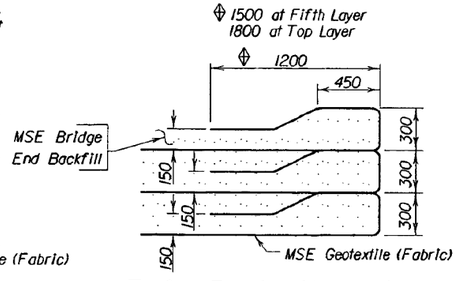
⊛ NOTE
Bridge End Backfill shown adjacent to Abut. No. 1 Abut. No. 4 will be similar by rotation.

NOTE
The Drainage Fabric shall be attached to the back side of the wingwall using a construction adhesive. The other end shall be attached between the side limits of excavation and the Reinforced Backfill material.

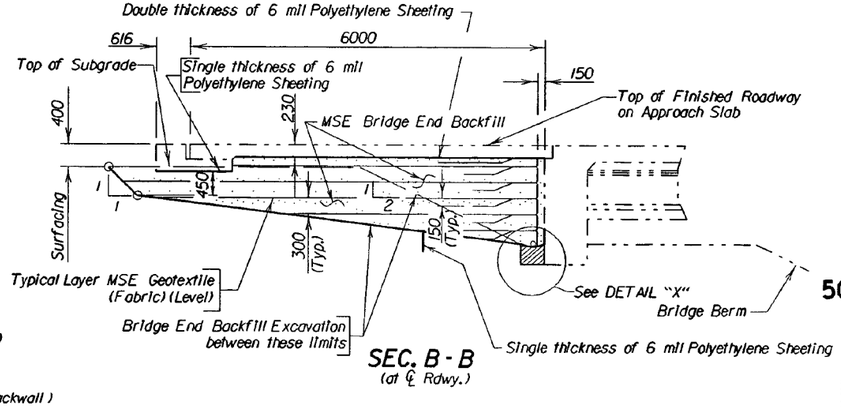
☆ NOTE
At sides, re-embed bottom layer with Second layer re-embedment fold. Where bottom layer extends past Second layer, re-embed with Third layer re-embedment fold.



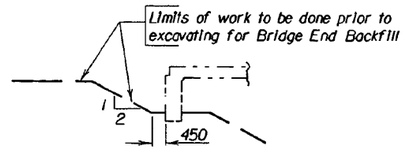
DETAIL "E"
(Fabric Wrap at Sides)



Typical Fabric Lift and Wrap
(Showing Second and Above Lifts Normal to Abutment Backwall)



SEC. B - B
(at ℄ Rdwy.)



SEC. D-D
(Typ.)

DETAILS OF MSE BRIDGE END BACKFILL FOR 50.600 m PRESTRESSED GIRDER BRIDGE

STR. NO. 12-230-047

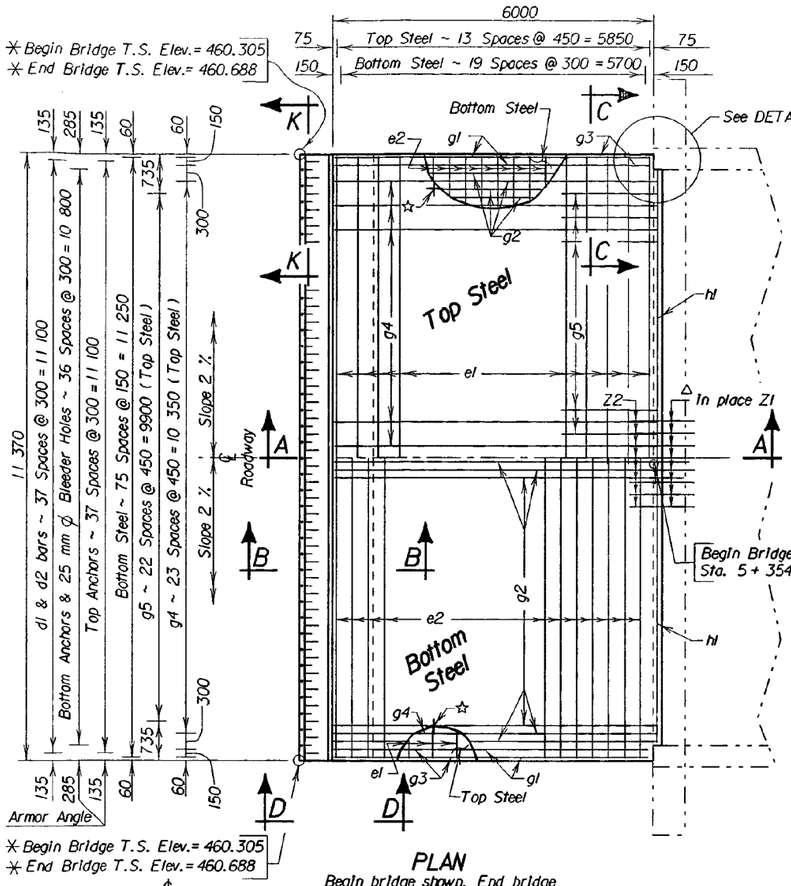
NOVEMBER 1997

(11) OF (14)

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
PC/DV	SM	PC/DV	John C. Cole
CMIX2747	2747MC15		BRIDGE ENGINEER

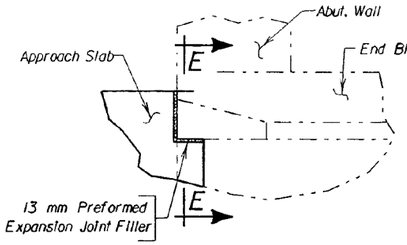
ORIGINAL CONSTRUCTION PLANS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	20	31



PLAN

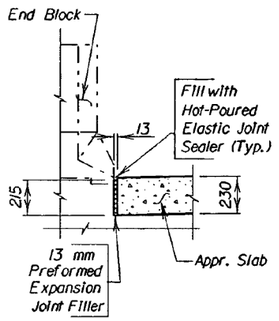
Begin bridge shown. End bridge similar by rotation.



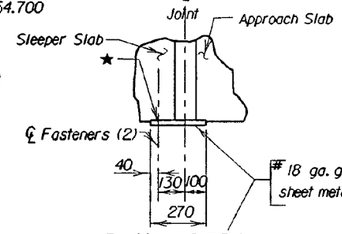
PLAN DETAIL "X"

℄ Drop Inlet Type "D"
☆ Sta. 5 + 350.70 - 5.3 m R. & L.
See DETAIL "Y"

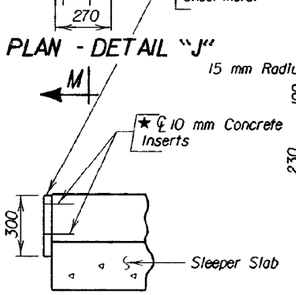
★ Attach #18 ga. galv. Sheet Metal to Sleeper Slab only, after slab has been poured. Use fasteners that will not spall concrete, as approved by the Engineer.



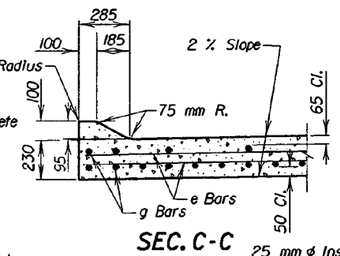
SEC. E-E



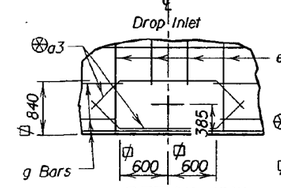
PLAN - DETAIL "J"



SEC. M-M

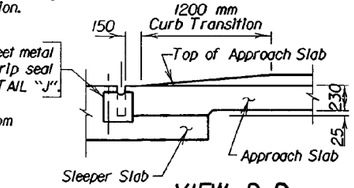


SEC. C-C

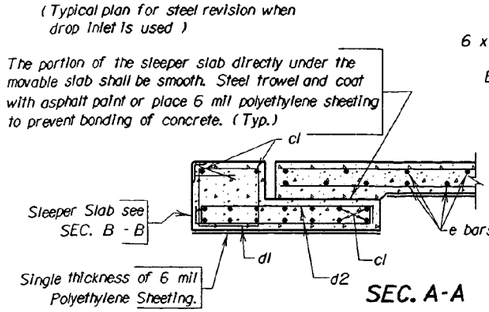


DETAIL "Y"

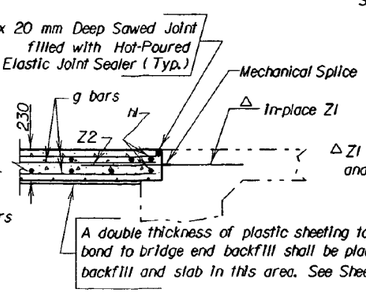
(Typical plan for steel revision when drop inlet is used)



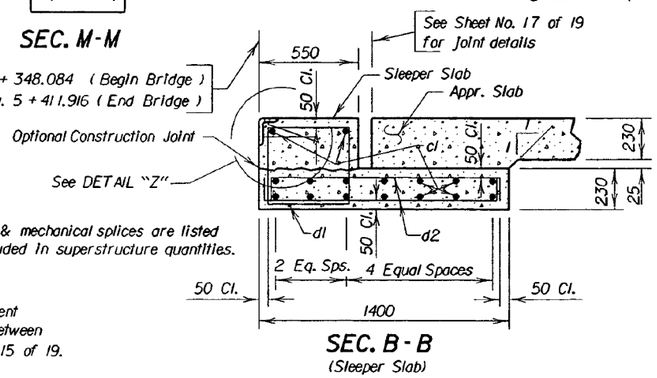
VIEW D-D



SEC. A-A



△ Z1 bars & mechanical splices are listed and included in superstructure quantities.



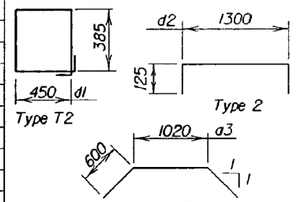
SEC. B - B
(Sleeper Slab)

REINFORCING SCHEDULE

(For Two Approach Slabs and Two Sleeper Slabs)

Mk.	No.	Size	Length	Type
a3	8	13	2220	19A
c1	32	16	11 290	Str.
d1	76	13	1900	T2
d2	152	13	1550	2
e1	28	13	11 290	Str.
e2	40	19	11 290	Str.
g1	8	25	5920	Str.
g2	144	25	6070	Str.
g3	8	13	5920	Str.
g4	48	13	6070	Str.
g5	46	13	1830	Str.
h1	4	19	10 720	Str.
Z2	94	22	600	Str.

Bending Details



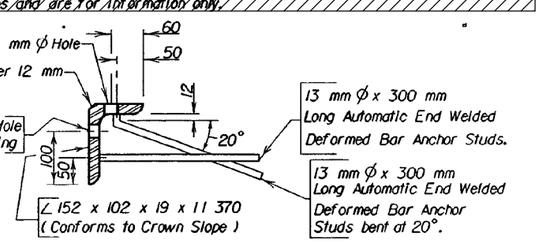
NOTE --
All Bars to be Epoxy Coated.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

(For Two Approach Slabs and Two Sleeper Slabs)

	ITEM	UNIT	QUANTITY
	Conc. Approach Slab Adjacent to Bridge	m^2	139.7
	Bridge Approach Sleeper Slab	m^2	31.8
1.	33.0	m^3	Concrete in Approach Slab.
2.	5690	kg	Epoxy Coated Re-Steel in Approach Slab.
3.	10.5	m^3	Concrete in Sleeper Slab.
4.	938	kg	Epoxy Coated Re-Steel in Sleeper Slab.
5.	845	kg	Structural Steel in Armor Angle Assembly

Items 1 thru 5 are approximate quantities contained in the above bid items and are for information only.



DETAIL "Z"

(See Notes Regarding Armor Angle Assembly Sheet No. 4 of 19.)

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR 50.600 m PRESTRESSED GIRDER BRIDGE

STR. NO. 12-230-047

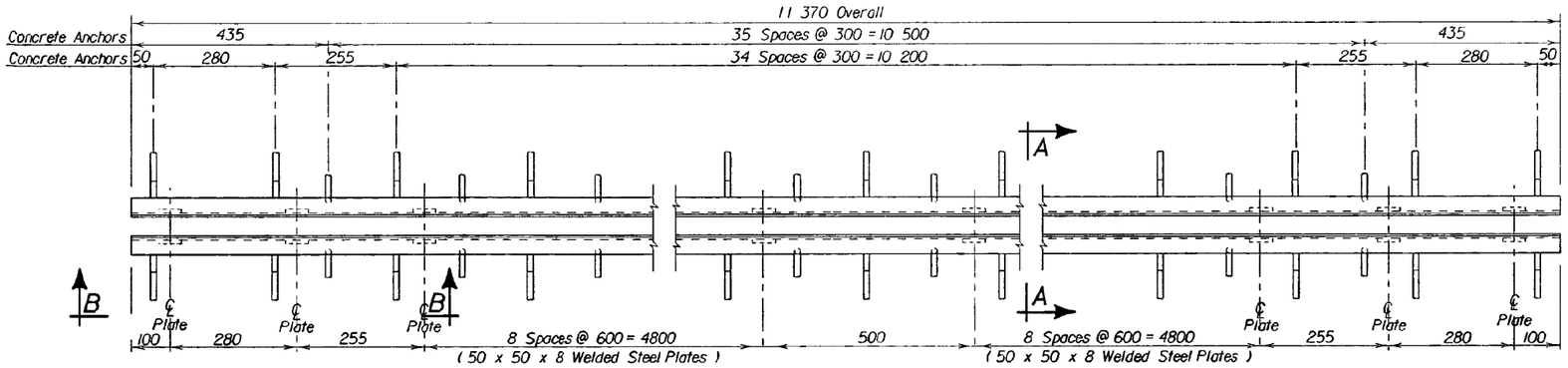
NOVEMBER 1997

12 OF 14

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
PC/DV	SM	PC/DV	John C. Cole BRIDGE ENGINEER
CMIX2747	2747MC16		

ORIGINAL CONSTRUCTION PLANS

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	21	31



PLAN OF STRIP SEAL
(Neoprene Seal not shown)

✳ TEMP.	DIMENSION "X"
0°	57
5°	55
10°	53
15°	52
20°	50
25°	48
30°	47
35°	45

✳ Temperature Is In Celsius

GENERAL NOTES:

1. Materials for the Steel Extrusion shall conform to ASTM-A36M, A242M or A588M. Materials for the 50 X 50 X 8 mm welded steel plates shall conform to ASTM-A36M. Material for the 12.7 mm diameter x 150 mm Concrete Anchors shall conform to Type A steel studs of Section 7 of the latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel.

2. Material for the neoprene seal shall conform to ASTM D2628 modified to omit the recovery test. No splices will be permitted in the neoprene seal.

3. The lubricant-adhesive used to install the neoprene seal shall conform to the requirements of ASTM D4070. The neoprene seal and the lubricant adhesive should be supplied or recommended by the same source as they must be compatible.

4. The installation of the neoprene seal shall be as recommended by its Manufacturer and approved by the Engineer, but in general shall be as follows: The neoprene seal shall be installed and bonded to the steel extrusion with a high-solids lubricant adhesive. The neoprene surfaces shall be roughened with a wire brush before the application of the lubricant adhesive. The neoprene seal may be installed either prior to or after the time the steel extrusions are concreted in the approach slab. The steel extrusion shall be dry, clean, free from dirt, grease and contaminates at the time the neoprene seal is installed.

5. Due to the length of the steel extrusions, splices are permitted. No welds shall be permitted in the internal section of the extrusion where the neoprene seal is located. Weld details shall be shown on the shop plans for approval by the Engineer. Welding shall be in accordance with latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel. Galvanize the steel extrusions and anything welded to them after all welding is completed. They shall be galvanized in accordance with AASHTO M111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding shall be included with the shop plans.

6. The thickness and shape of the neoprene seal may vary from the sketch shown (Detail "C" on this sheet) according to the manufacturer's design: however, the wedge lugs must properly fit the groove in the steel extrusion. Before installation, the shop plans of the proposed neoprene seal showing the fixed dimensions, thickness of neoprene seal, and dimensions pertinent to the fit of the neoprene seal in the steel extrusion shall be submitted to and approved by the Engineer.

7. Since the configuration and dimensions of the steel extrusion may vary according to each manufacturer's design, they need not conform exactly to that shown in DETAIL "D", however, any deviations from the plan shown configuration or dimensions must be approved by the Office of Bridge Design.

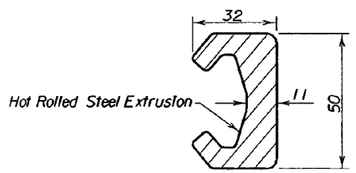
8. The Strip Seal Expansion Joint supplier shall submit a detailed gland installation procedure with the shop plans.

9. The cost of welding shall be included in the unit cost for Strip Seal Expansion Joint.

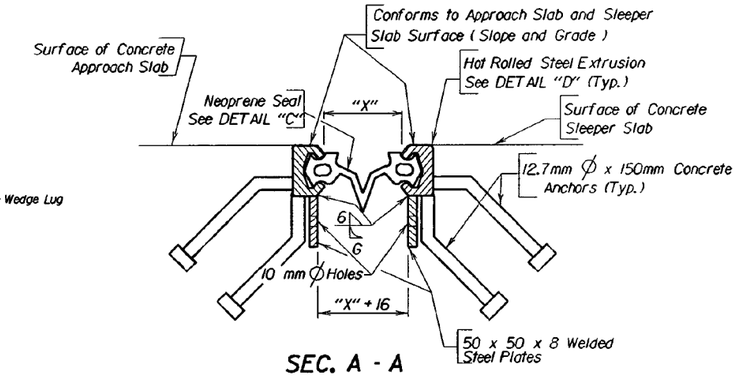
10. The neoprene seal shall be of sufficient length such that a minimum length of 150 mm shall extend beyond each end of the steel extrusions.

11. The Strip Seal Expansion Joint will be measured in meters to the nearest 0.01 meter, complete in place. Measurement will be made of the overall horizontal length. The Strip Seal Expansion Joint will be paid for at the contract unit price per meter complete in place. Payment of this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.

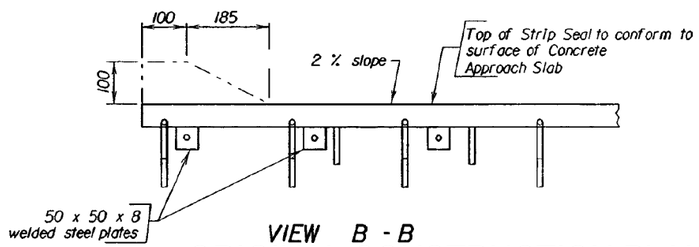
DETAIL "C"
Neoprene Seal shall have a 100 movement capability.



DETAIL "D"



SEC. A - A



VIEW B - B

ESTIMATED QUANTITIES (For Two Approach Slabs)		
ITEM	UNIT	QUANTITY
Strip Seal Expansion Joint	m	22.74

ORIGINAL CONSTRUCTION PLANS

APPROACH SLAB JOINT DETAILS FOR 50.600 m PRESTRESSED GIRDER BRIDGE

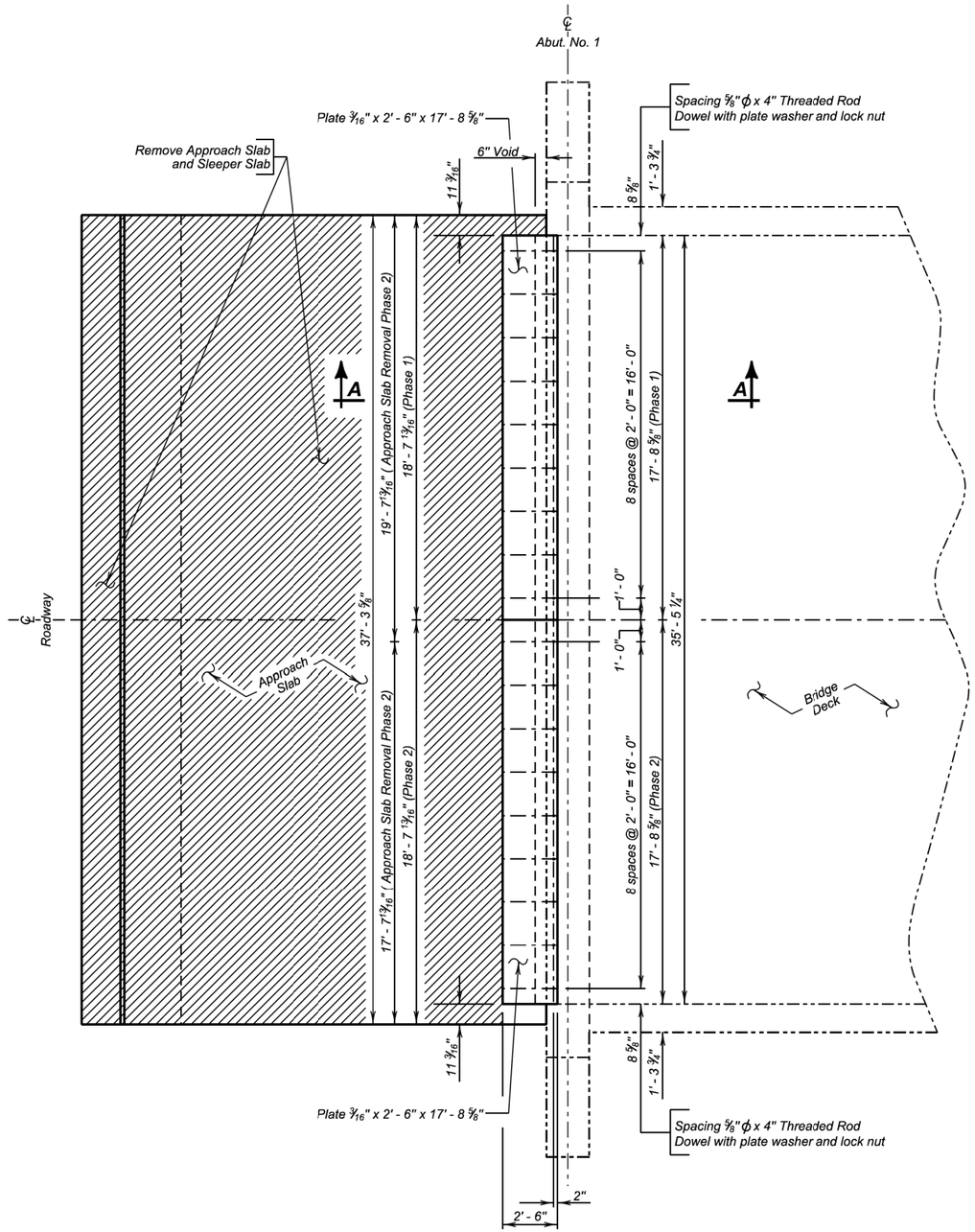
STR. NO. 12-230-047

NOVEMBER 1997

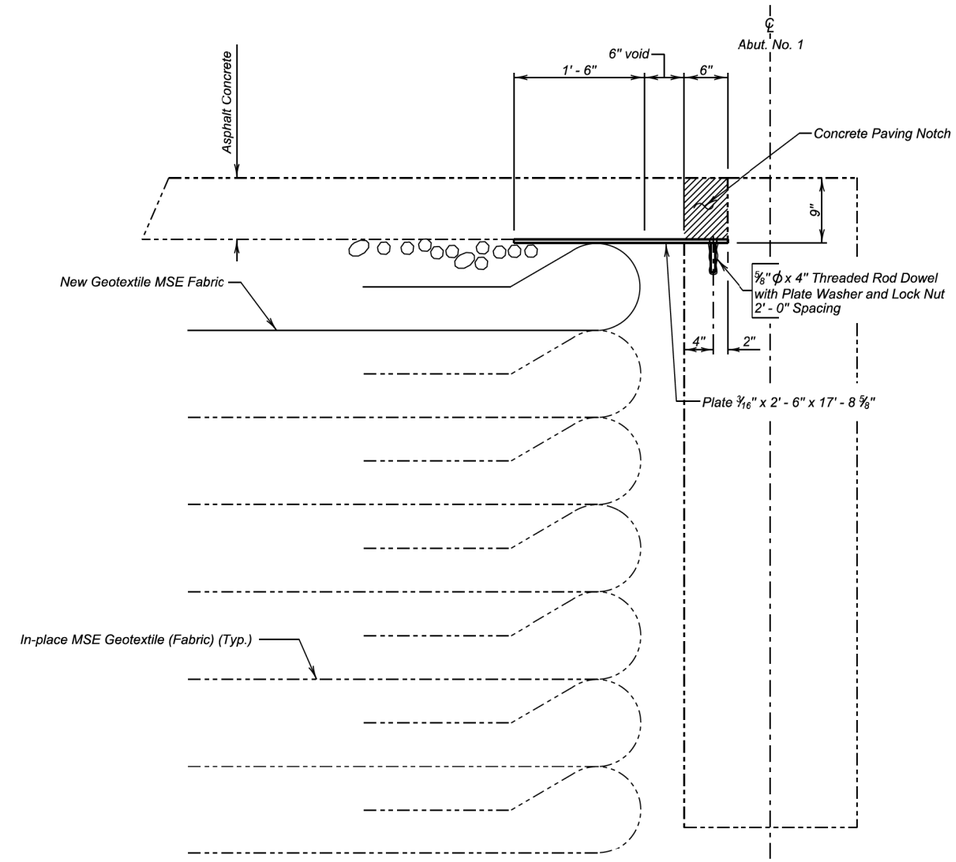
13 OF 14

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
PC/DV	SM	PC/DV	BRIDGE ENGINEER
CMIX2747	2747MC17		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0045(66)30	22	31



PLAN
(Abut. No. 1 Shown. Abut. No. 4 similar by rotation.)



SECTION A - A

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY Phase 1	QUANTITY Phase 2
(1) Structural Steel Miscellaneous	LS	Lump Sum	Lump Sum
Remove Concrete Approach Slab	Sq. Yd.	41.4	41.4
Install Dowel in Concrete	Each	17	17
Reinforced Fabric (MSE)	Sq. Yd.	43.5	43.5
Concrete Patching Material, Bridge Deck	Cu. Ft.	8.1	8.1

(1) For informational purposes only, the estimated total structural steel quantity is:

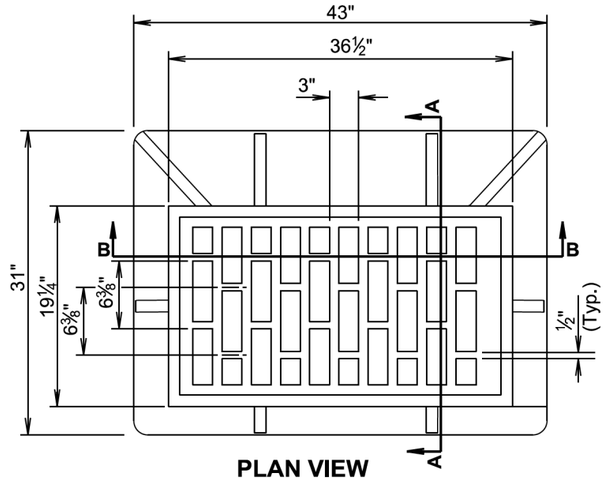
PHASE 1 339 Lb. PHASE 2 339 Lb.

ORIGINAL CONSTRUCTION PLANS

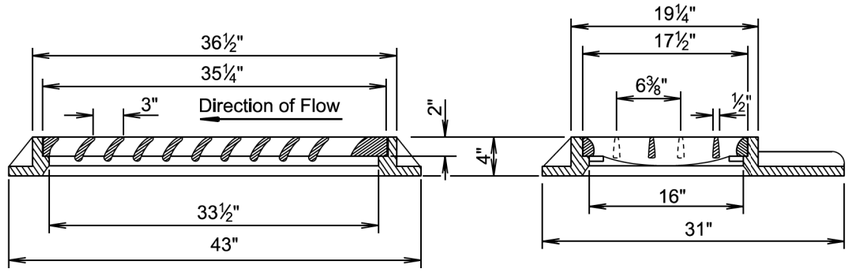
DETAILS FOR APPROACH SLABS
FOR
166' - 0 3/16" PRESTRESSED GIRDER BRIDGE
OVER PLATTE CREEK 0° SKEW
STR. NO. 12-230-047 SEC. 35/36-T100N-R68W
P 0045(54)27

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2017 14 OF 14

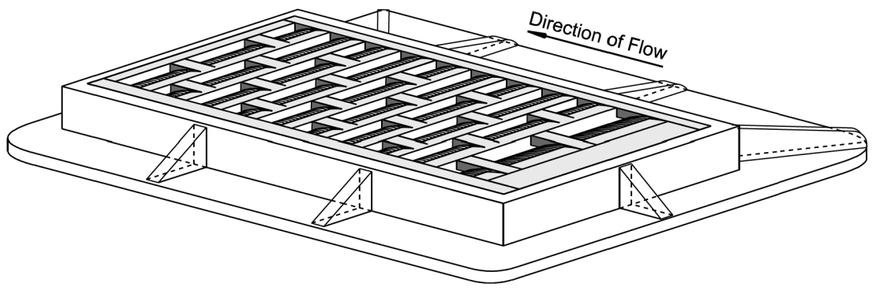
DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	JH	KR	Steve A Johnson BRIDGE ENGINEER
CMIX04WY	04WYRA03		



PLAN VIEW



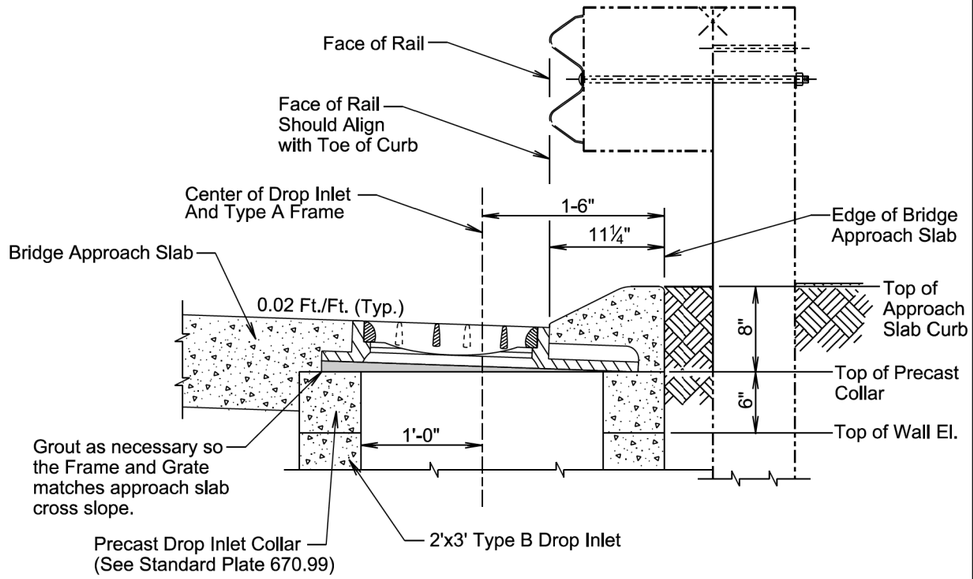
SECTION B-B **SECTION A-A**



ISOMETRIC VIEW

June 1, 2022

Published Date: 2024	SDDOT	*TYPE A FRAME AND GRATE*	*PLATE NUMBER* 670.78
			Sheet 1 of 2



ELEVATION VIEW

(Installation of Type A Frame and Grate in Bridge Approach Slab)

GENERAL NOTES:

The product dimensions may vary from those shown on the standard plate depending on the manufacturer. Grate size and configuration will be similar to the standard plate for hydraulic capacity and bicycle safety. Any variation in dimensions will be approved by the Engineer and the type A frame and grate will be from a manufacturer on the approved products list.

Design load for the grate will meet the requirements of AASHTO HL-93.

The type A frame and grate will be installed on a 2'x3' type B drop inlet.

The direction of flow is shown for illustrative purpose only. The grate will be installed to intercept the direction of flow.

June 1, 2022

Published Date: 2024	SDDOT	*TYPE A FRAME AND GRATE*	*PLATE NUMBER* 670.78
			Sheet 2 of 2

TYPE AND DETAILS OF MGS						
Type of MGS	W Beam Rail Single or Double (Nested)	Blockout Size	Blockout Material	Post Size	Post Material	Post Spacing
1	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"
1C	Single	6"x12"x14"	Wood	6"x8"x7'-6"	Wood	6'-3"
2	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	3'-1½"
3	Single	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	1'-6¾"
4	Double	6"x12"x14"	Wood	6"x8"x6'-0"	Wood	6'-3"

STANDARD PLATE REFERENCE	
Type of MGS	See Standard Plate(s)
1	630.20, 630.22
1C	630.20, 630.25
2	630.20
3	630.20
4	630.20

GENERAL NOTES:

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite".

Granular material will be the same type used elsewhere on the project or will be as specified in the plans. If granular material type is not specified in the plans, the material will conform to the Specifications for "Base Course". The granular material will be placed the same thickness as the mainline surfacing or as specified in the plans.

Topsoil is not shown in the transverse section drawing on sheet 2 of 6.

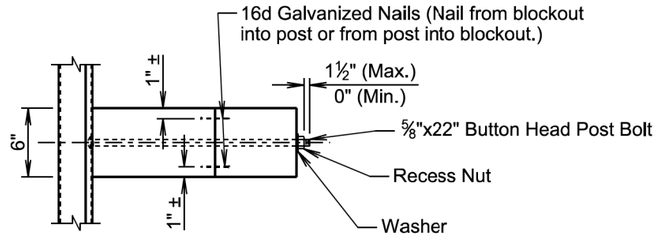
All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

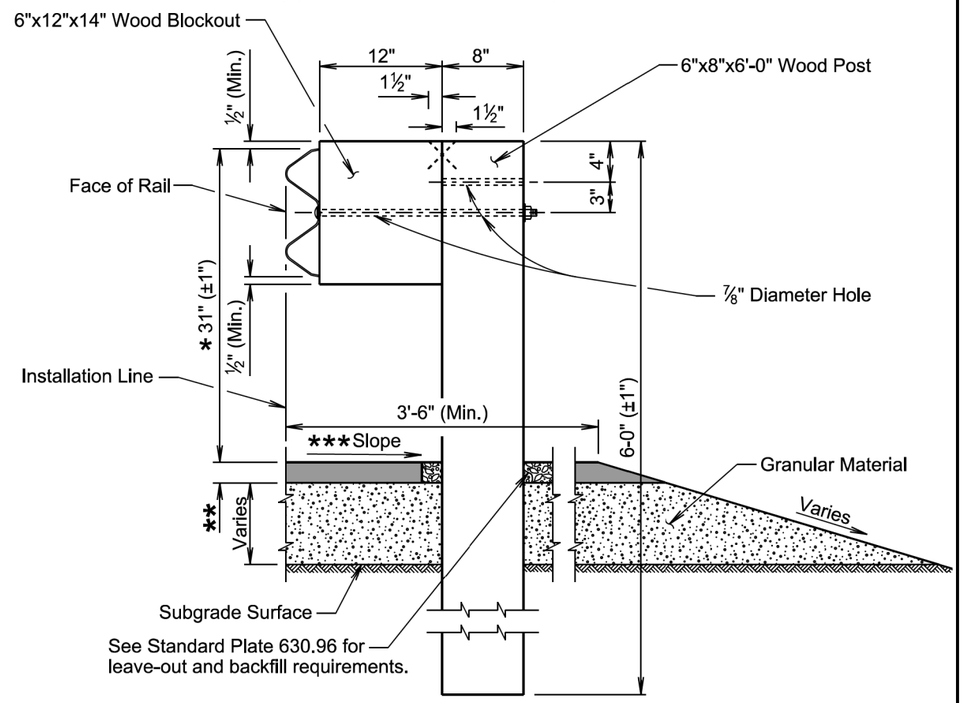
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for constructing the MGS including labor, equipment, and materials including all posts, blockouts, steel beam rail, and hardware will be incidental to the contract unit price per foot for the respective MGS contract item.

September 14, 2019



TOP VIEW
(Type 1, 2, or 3 MGS Installation)



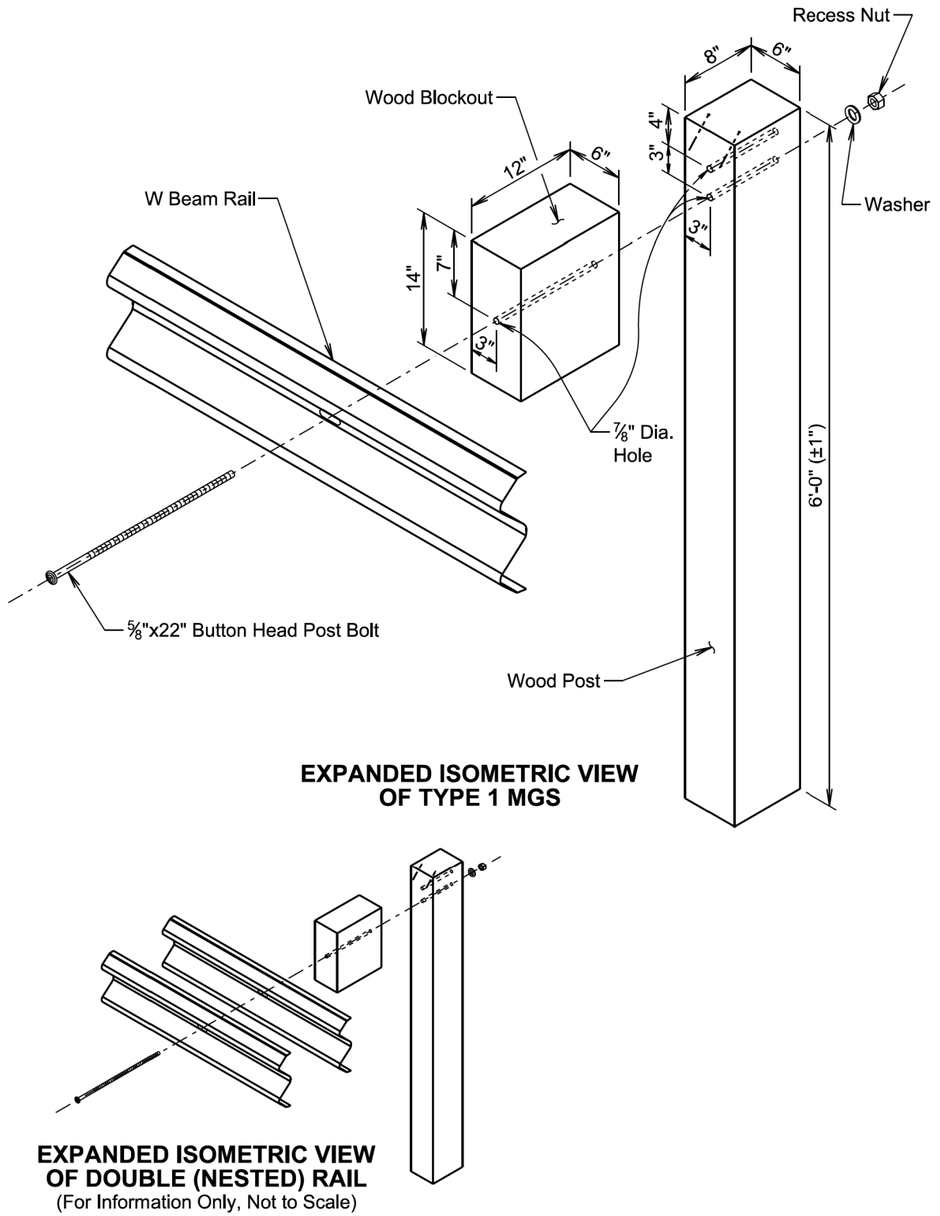
TRANSVERSE SECTION
(Type 1, 2, or 3 MGS Installation)

* See Standard Plate 630.99

** 2" asphalt concrete or as specified in the plans.

*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

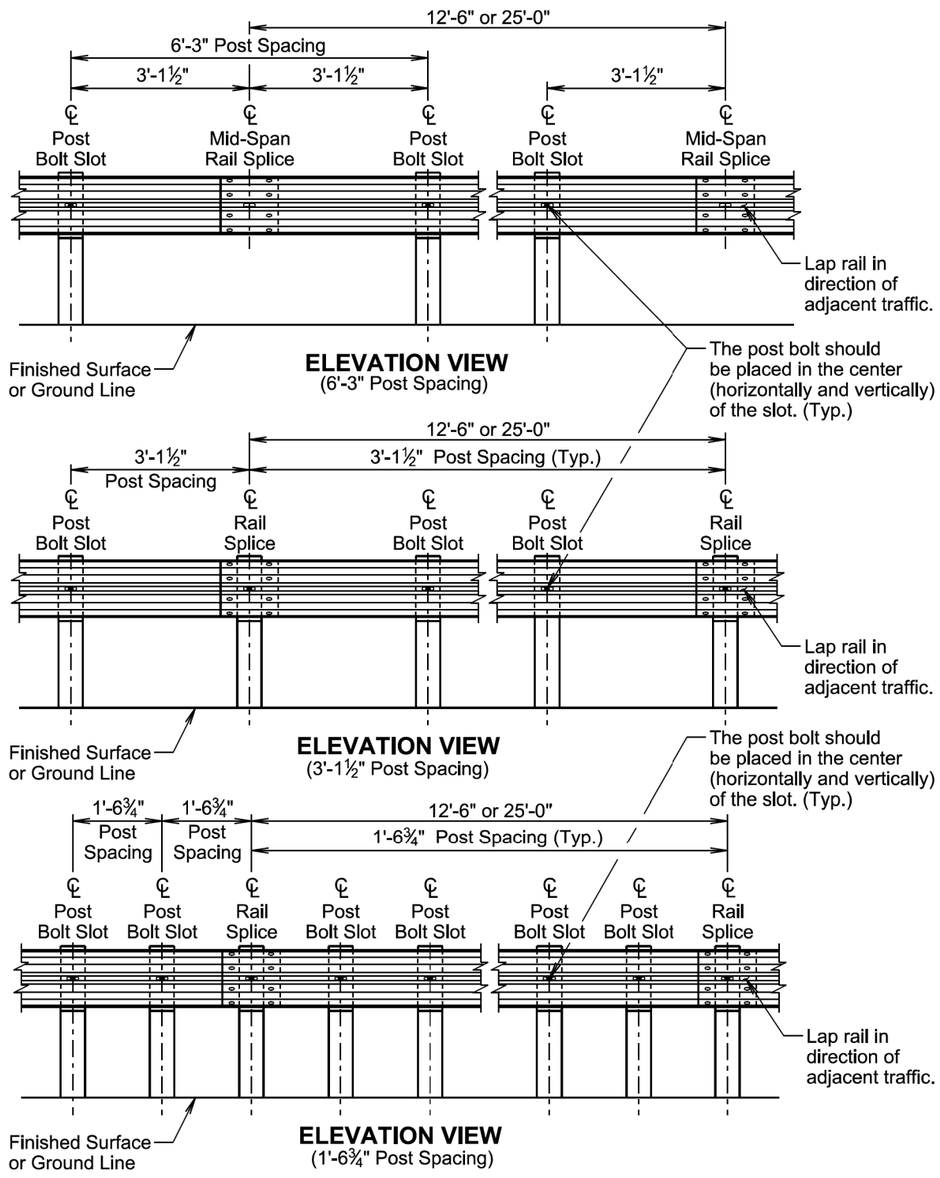
September 14, 2019



EXPANDED ISOMETRIC VIEW OF TYPE 1 MGS

EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) RAIL
(For Information Only, Not to Scale)

September 14, 2019

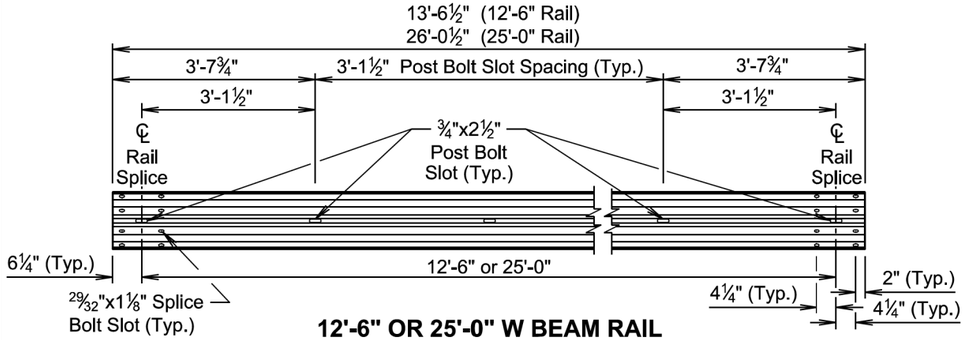


ELEVATION VIEW
(6'-3" Post Spacing)

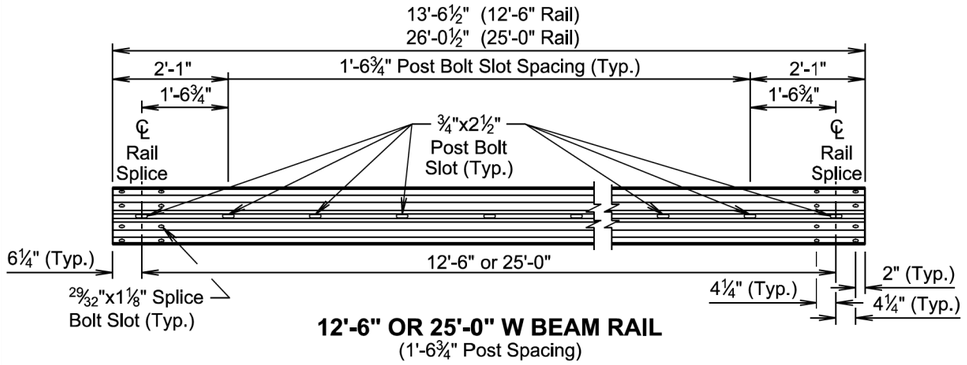
ELEVATION VIEW
(3'-1½" Post Spacing)

ELEVATION VIEW
(1'-6¾" Post Spacing)

September 14, 2019



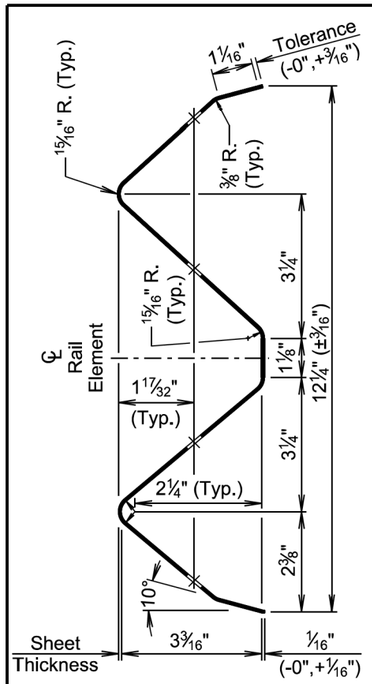
12'-6" OR 25'-0" W BEAM RAIL
(3'-1½" and 6'-3" Post Spacing)



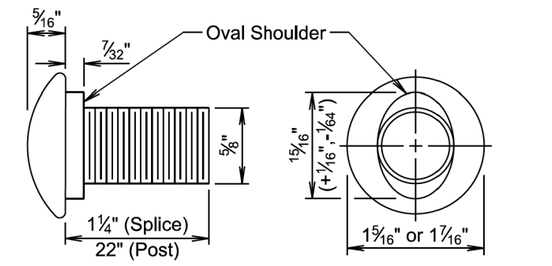
12'-6" OR 25'-0" W BEAM RAIL
(1'-6¾" Post Spacing)

September 14, 2019

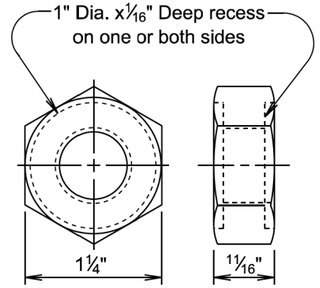
Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 5 of 6



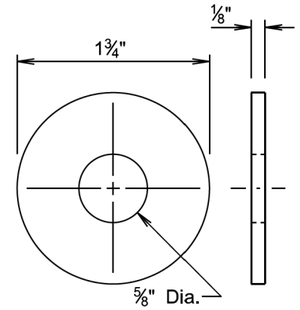
SECTION THROUGH W BEAM RAIL



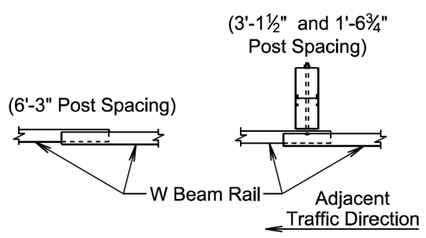
SPLICE BOLT AND POST BOLT
(⅝" Button Head Bolt)



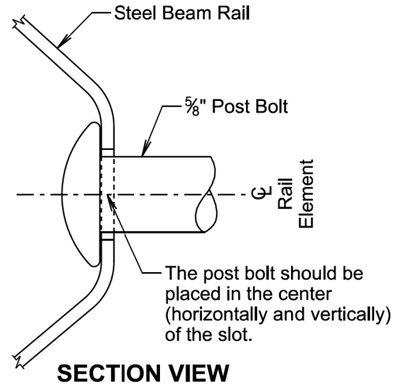
RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)



WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 2 and 3.)



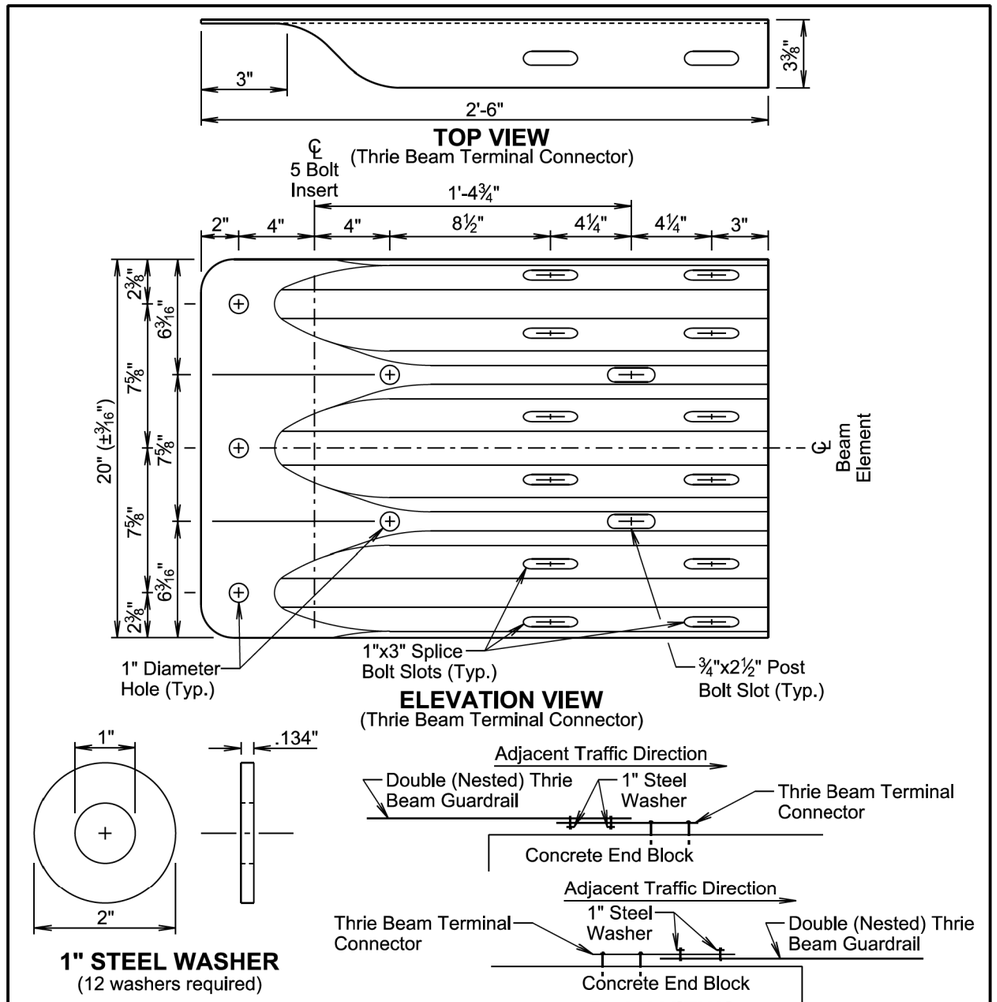
PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)



SECTION VIEW
(At Post Bolt)

September 14, 2019

Published Date: 2024	SDDOT	MIDWEST GUARDRAIL SYSTEM (MGS)	PLATE NUMBER 630.20
			Sheet 6 of 6



GENERAL NOTES:

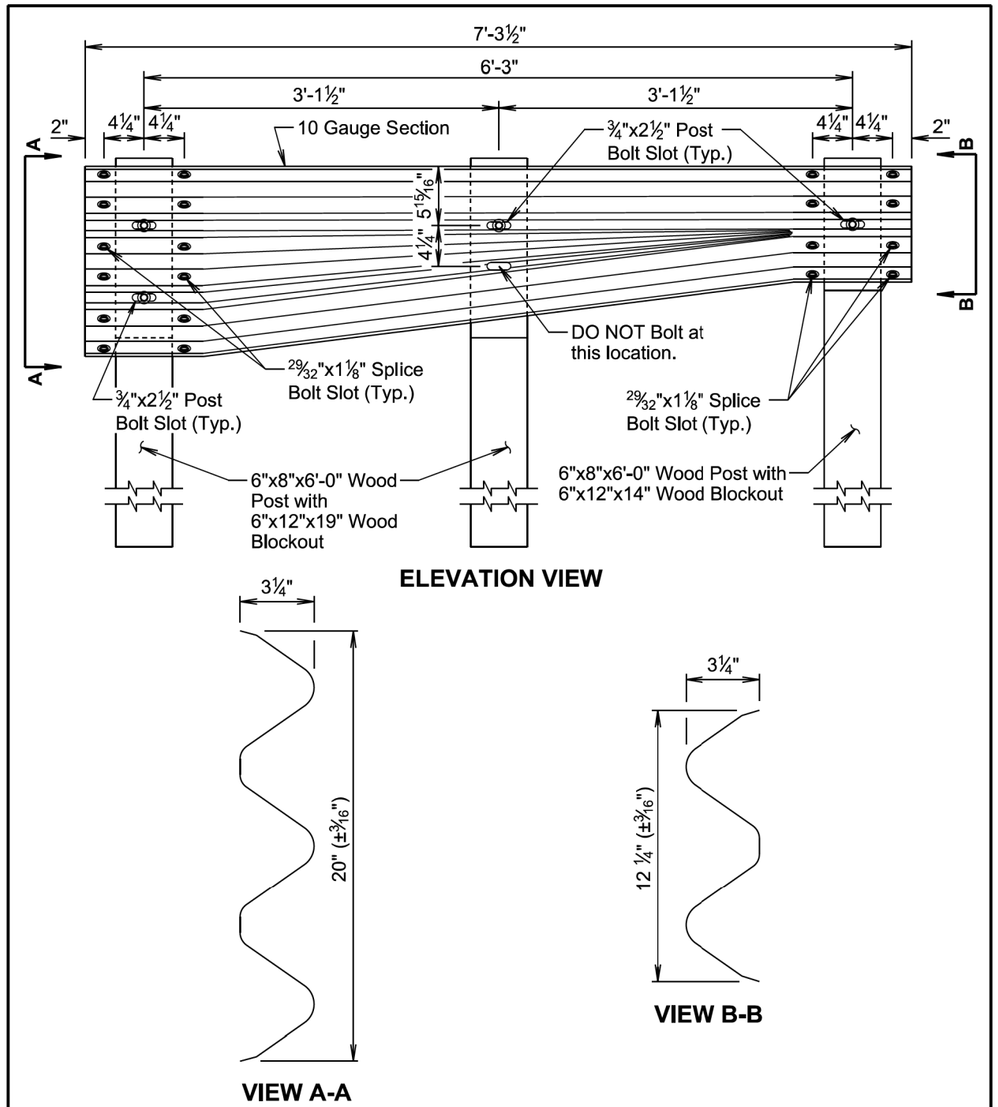
Thrie Beam Terminal Connectors will be 10 gauge.

When the thrie beam terminal connector is used to connect the rail to the bridge or concrete end block, 1" steel washers will be used at the lap splice and the washers will be in direct contact with the 3" slots of the thrie beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.

There will be no separate payment for furnishing and installing the thrie beam terminal connector. All costs for furnishing and installing the thrie beam terminal connector will be incidental to the contract unit price of the respective guardrail item it is attached to.

September 14, 2019

Published Date: 2024	SDDOT	THRIE BEAM TERMINAL CONNECTOR	PLATE NUMBER 630.47
			Sheet 1 of 1

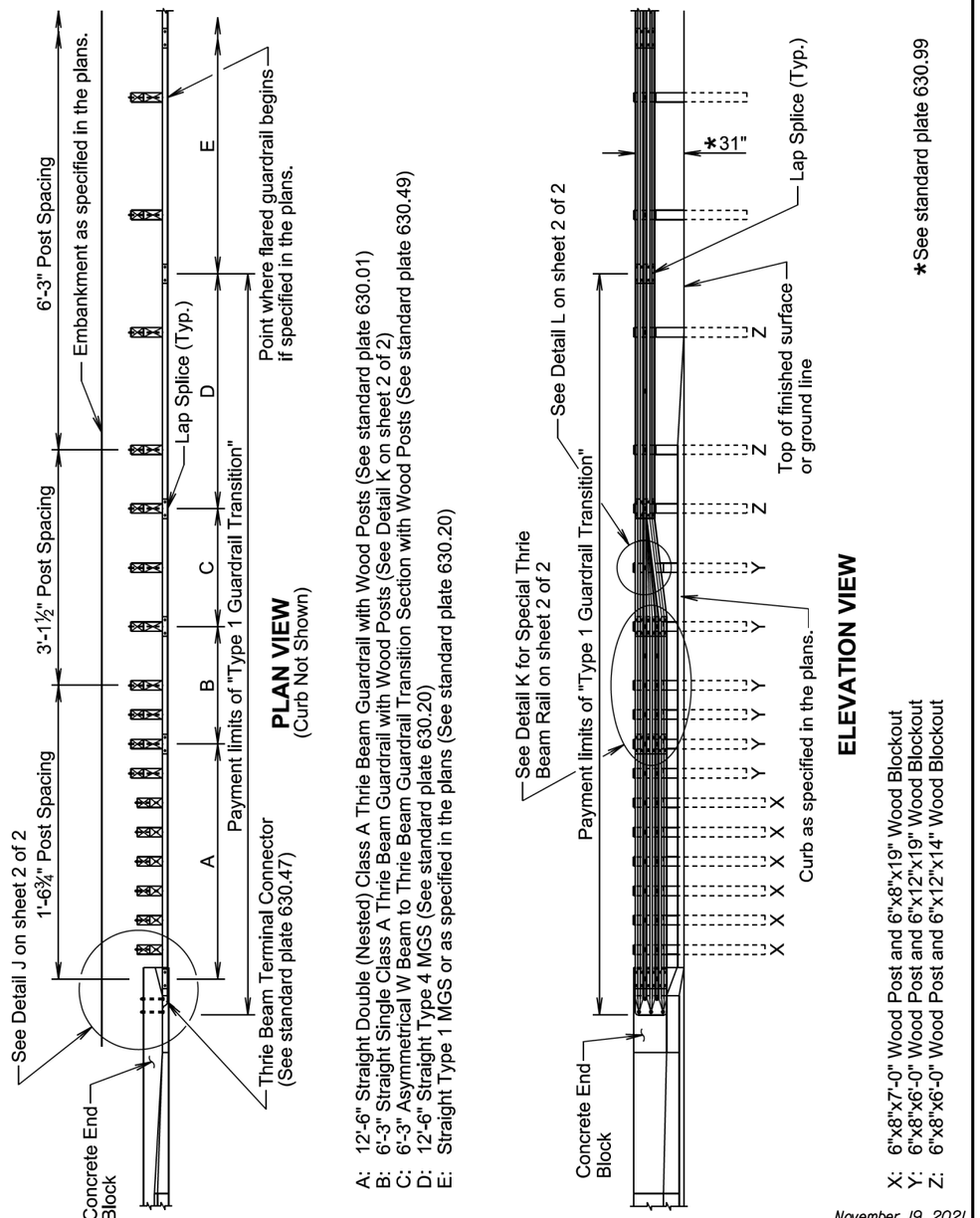


GENERAL NOTES:

All costs for furnishing and installing the asymmetrical W beam to thrie beam guardrail transition including labor, equipment, and materials including two posts, two blocks, asymmetrical W beam to thrie beam transition section, and hardware will be incidental to the contract unit price per each for the corresponding guardrail transition contract item.

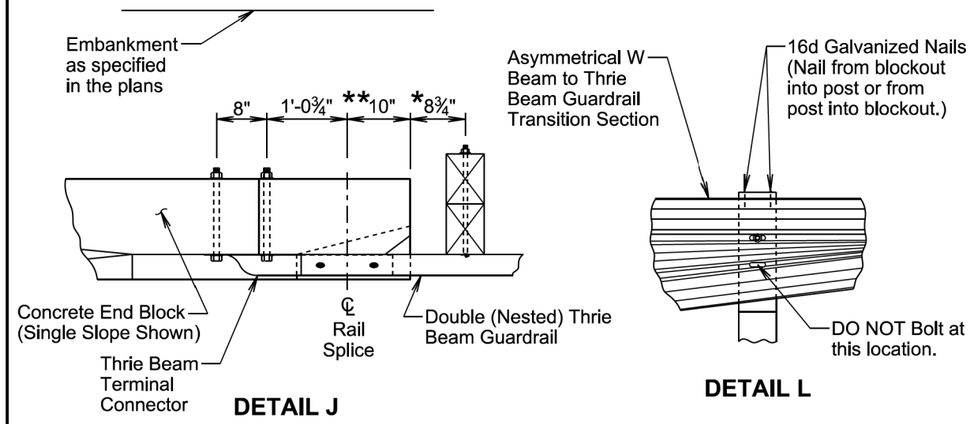
September 14, 2019

Published Date: 2024	SDDOT	ASYMMETRICAL W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.49
			Sheet 1 of 1

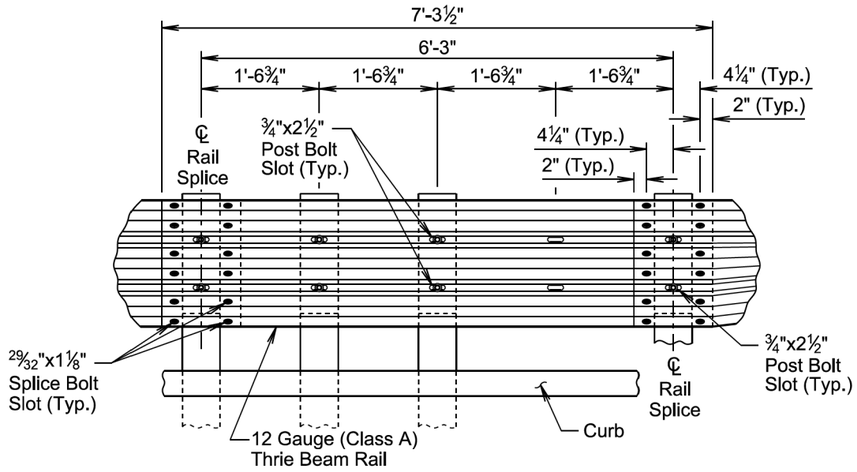


November 19, 2021

Published Date: 2024	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 1 of 2



Jersey Barrier Dimensions are **7¼" and *11½"



DETAIL K
(Special Thrie Beam Rail)

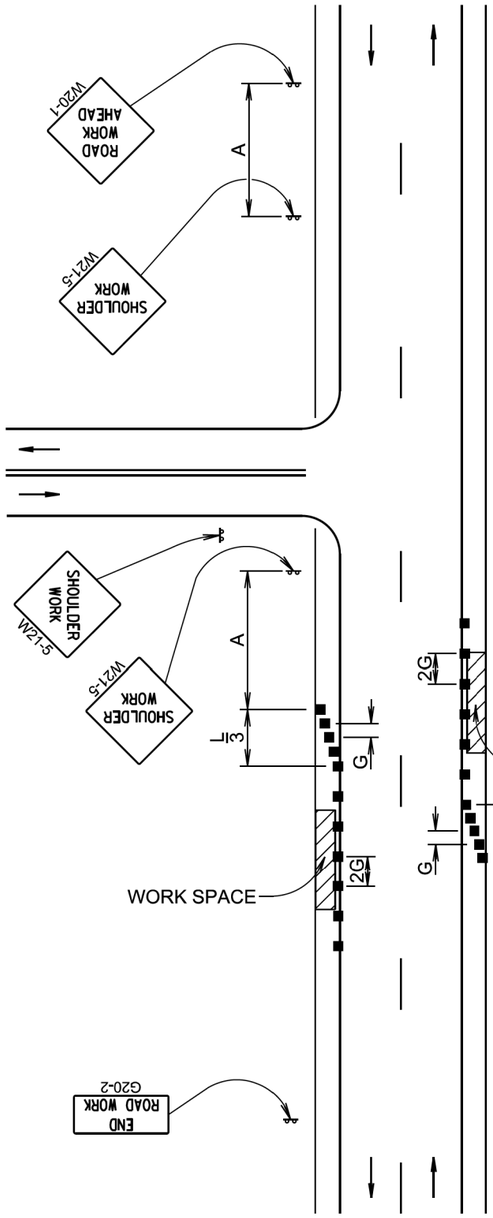
GENERAL NOTES:

Throughout the type 1 guardrail transition, slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

All costs for furnishing and installing the type 1 guardrail transition including labor, equipment, and materials which includes all rail sections, posts and blockouts, hardware, and incidentals will be included in the contract unit price per each for "Type 1 Guardrail Transition".

November 19, 2021

Published Date: 2024	SDDOT	TYPE 1 GUARDRAIL TRANSITION (CONCRETE END BLOCK TO MIDWEST GUARDRAIL SYSTEM (MGS))	PLATE NUMBER 630.50
			Sheet 2 of 2



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

■ Channelizing Device

END ROAD WORK
G20-2

The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

January 22, 2021

Published Date: 2024	SDDOT	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1

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.

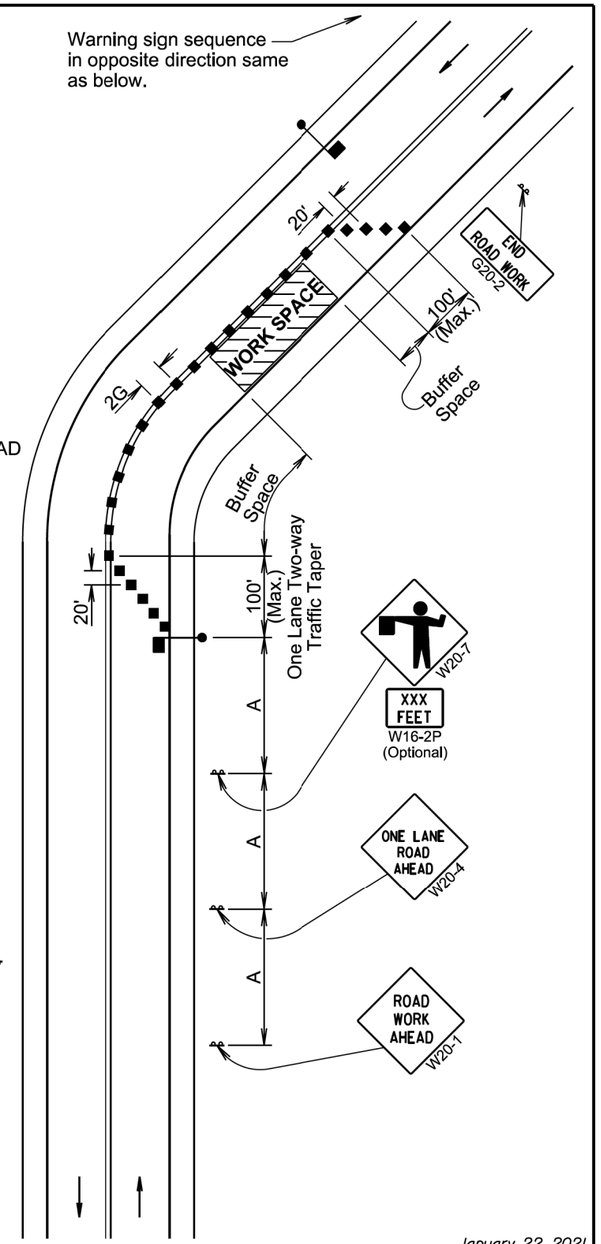
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

END ROAD WORK
G20-2

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.

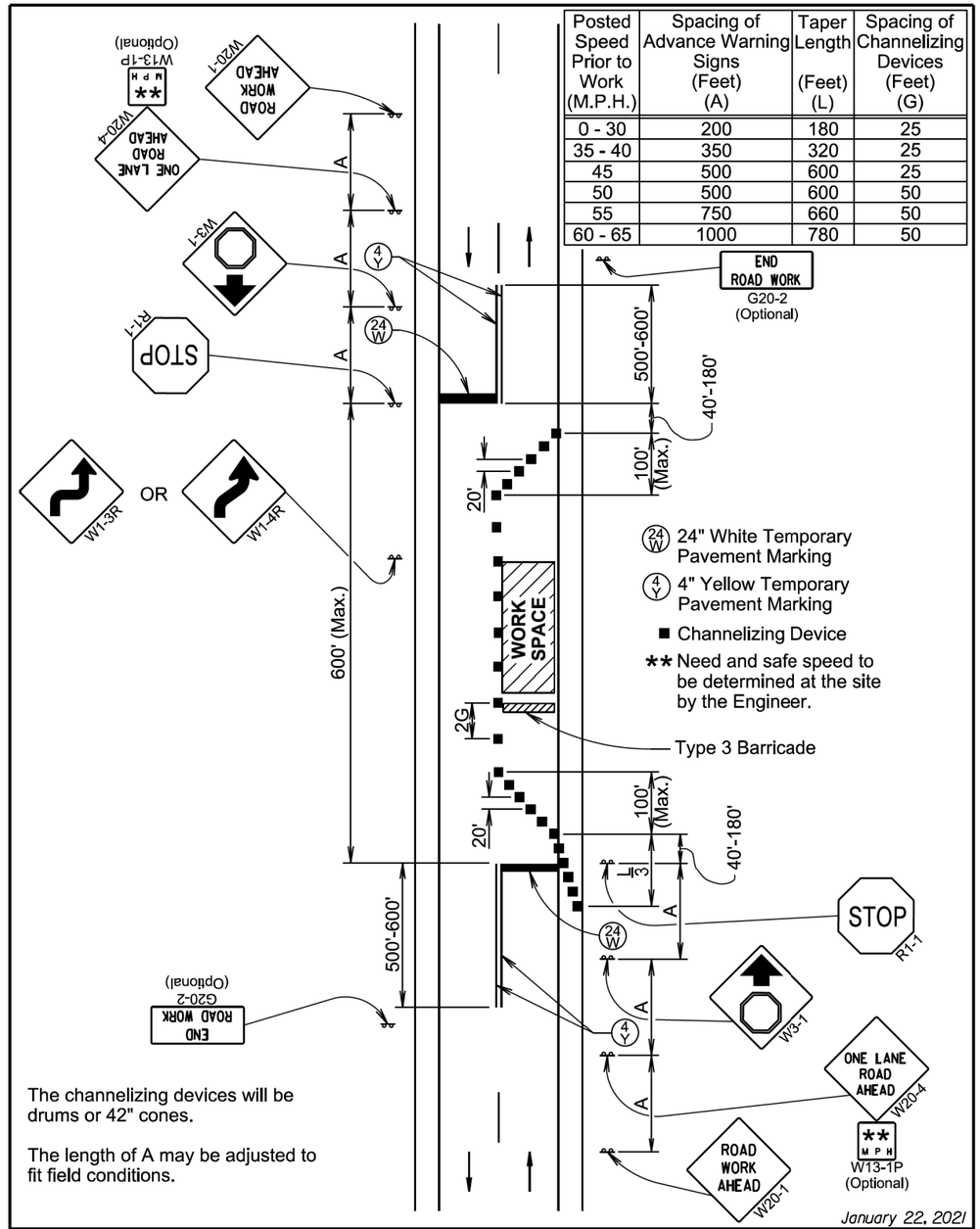
The length of A may be adjusted to fit field conditions.



January 22, 2021

Published Date: 2024	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)	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



24 W 24" White Temporary Pavement Marking

4 Y 4" Yellow Temporary Pavement Marking

■ Channelizing Device

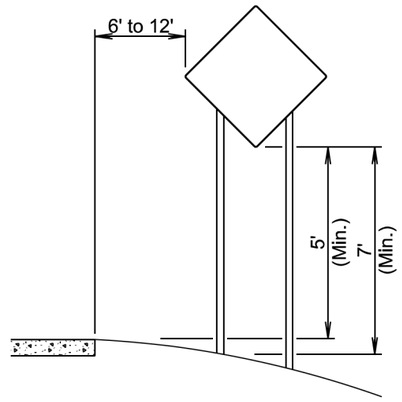
** Need and safe speed to be determined at the site by the Engineer.

The channelizing devices will be drums or 42" cones.

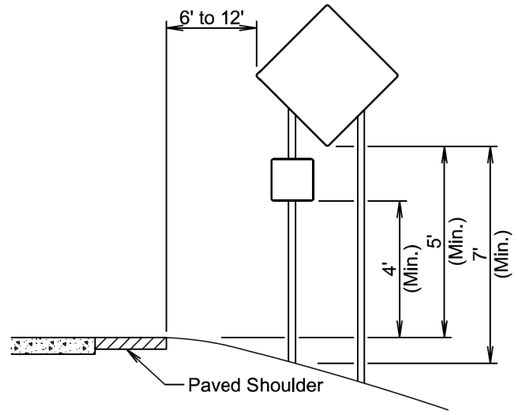
The length of A may be adjusted to fit field conditions.

January 22, 2021

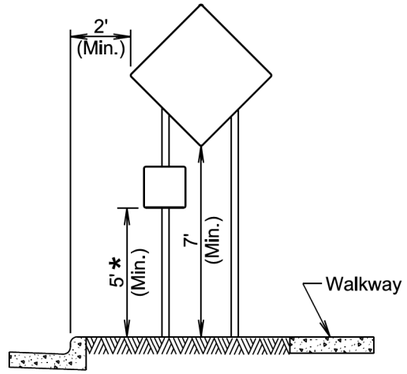
Published Date: 2024	SDDOT	LANE CLOSURE USING STOP SIGNS	PLATE NUMBER 634.25
			Sheet 1 of 1



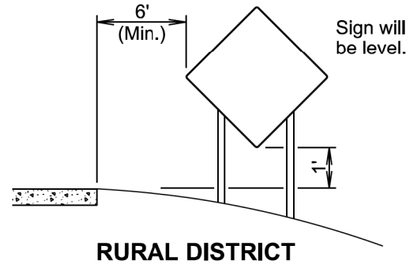
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

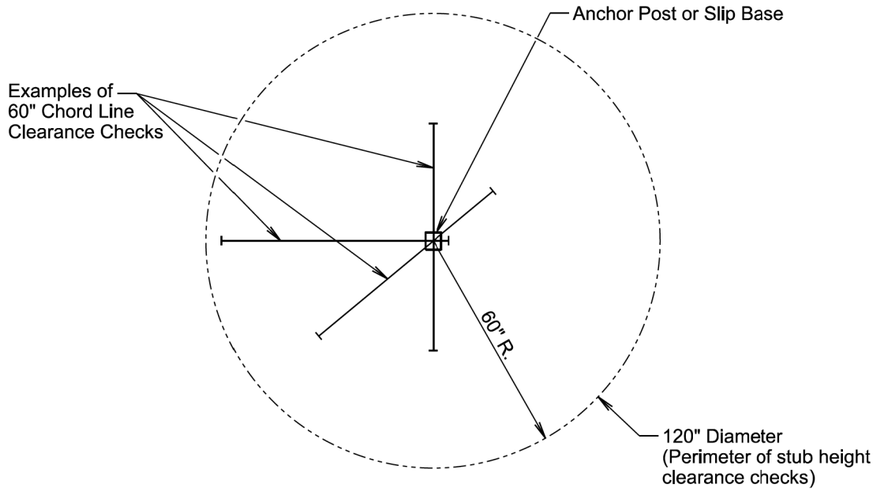


RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

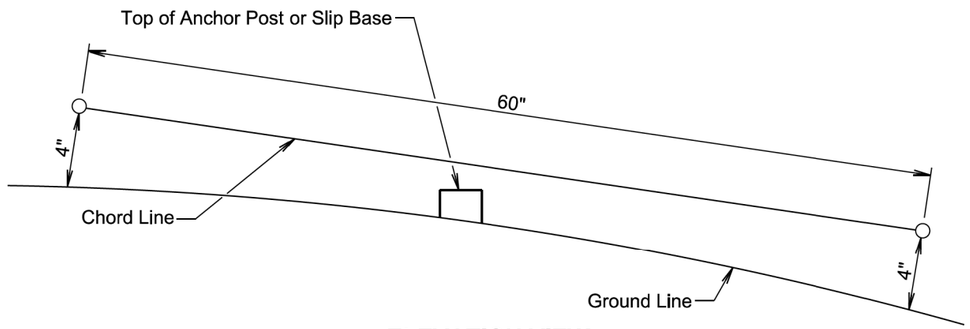
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2024	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: 2024	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	*PLATE NUMBER* 634.99
			Sheet 1 of 1