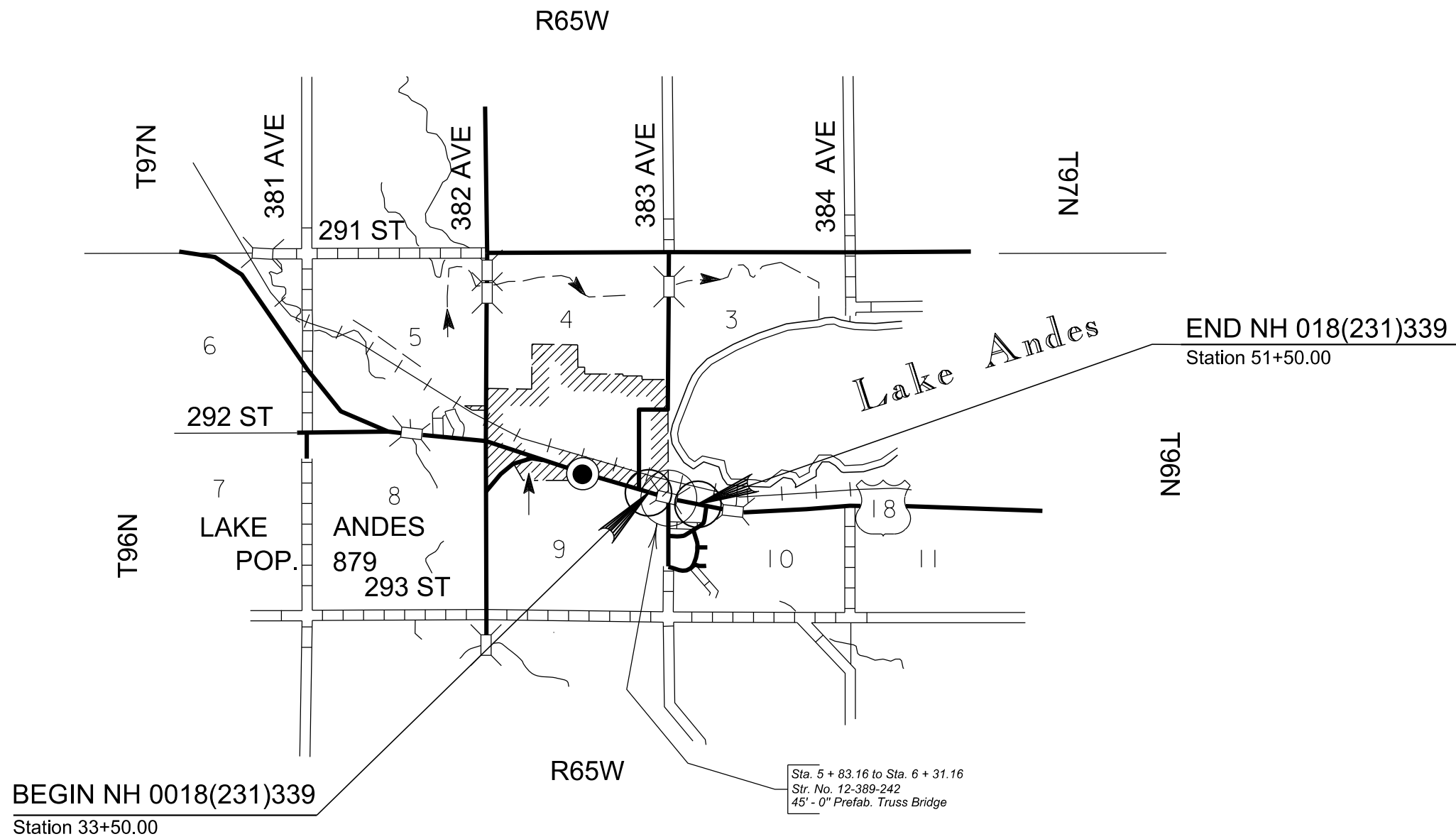
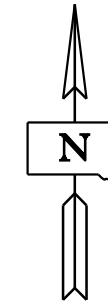


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(231)339	E1	E11

# Section E: Structure Plans

## INDEX OF SHEETS -

Sheet E1      Layout Map and Index  
 Sheet E2      Estimate of Structure Quantities  
 Sheet E3 to E11      Str. No. 12-389-242 45' - 0" Prefab. Truss Bridge



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(231)339	E2	E11

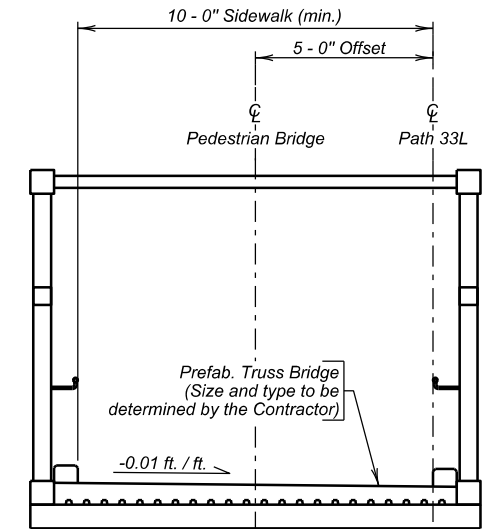
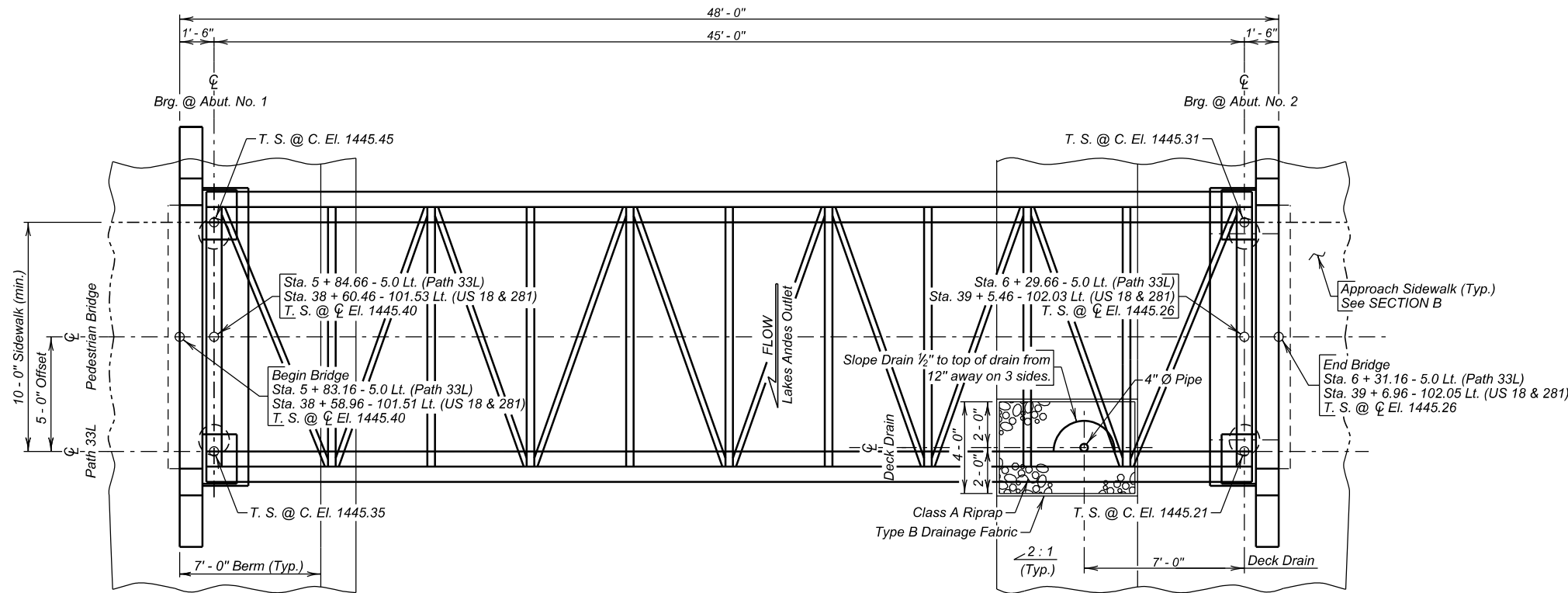
**SECTION E – ESTIMATE OF STRUCTURE QUANTITIES**

**Str. No. 12-389-242**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0100	Structure Excavation, Bridge	13	CuYd
430E0200	Bridge End Embankment	28	CuYd
430E0300	Granular Bridge End Backfill	2.7	CuYd
460E0050	Class A45 Concrete, Bridge	19.8	CuYd
480E0100	Reinforcing Steel	1,108	Lb
510E3851	16"x0.25" Steel Pipe Test Pile, Furnish and Drive	100	Ft
510E3855	16"x0.25" Steel Pipe Bearing Pile, Furnish and Drive	100	Ft
680E0040	4" Underdrain Pipe	80	Ft
680E2500	Porous Backfill	4.1	Ton
700E0110	Class A Riprap	2.5	Ton
831E0110	Type B Drainage Fabric	8	SqYd
900E7003	Pedestrian Bridge	1	Each

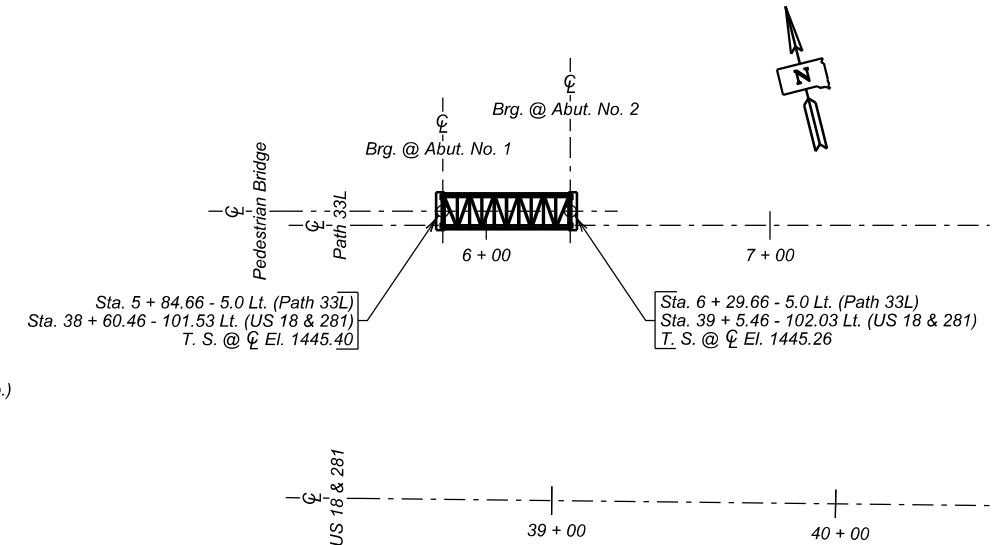
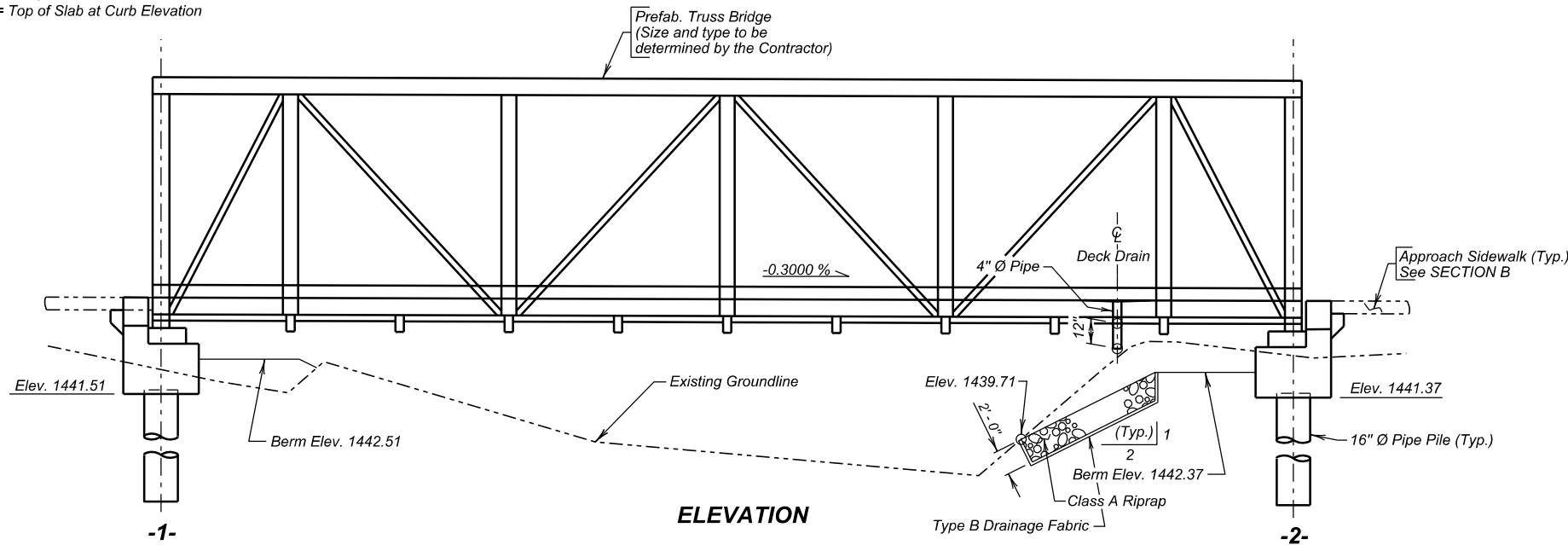
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(231)339	E3	E11

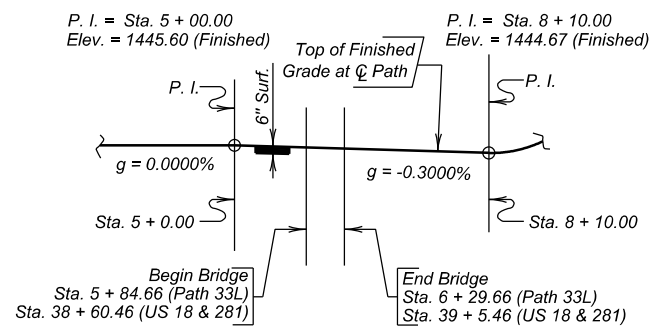


NOTES:  
T.S. @  $\phi$  Elev. = Top of Slab at Centerline Elevation  
T.S. @ C. El. = Top of Slab at Curb Elevation

PLAN



LAYOUT



GRADELINE DATA

**INDEX OF BRIDGE SHEETS**

- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Subsurface Investigation and Piling Layout
- Sheet No. 6 - Abutment Details
- Sheet No. 7 - Details of Bridge End Backfill
- Sheet No. 8 - Details of Standard Plate No's. 120.10 and 460.05
- Sheet No. 9 - Details of Standard Plate No. 460.05

**ESTIMATED QUANTITIES**

ITEM	UNIT	QUANTITY
Class A Riprap	Ton	2.5
Type B Drainage Fabric	Sq. Yd.	8

\* For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.

**GENERAL DRAWING**

FOR

**45' - 0" PREFAB. TRUSS BRIDGE**

10' - 0" WALKWAY  
OVER LAKE ANDES OUTLET  
STA. 5 + 83.16 TO STA. 6 + 31.16  
STR. NO. 12-389-242  
PCN 07M9

0° SKEW  
SEC. 9/10-T96N-R65W  
NH 0018(231)339  
H5/100 PSF PEDESTRIAN LL

CHARLES MIX COUNTY  
S. D. DEPT. OF TRANSPORTATION

APRIL 2024

1 OF 9

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

DESIGNED BY AU CMIX07M9	CK. DES. BY KB 07M9TA01	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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## ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Incidental Work, Structure	Lump Sum	LS	
Structure Excavation, Bridge	13	CuYd	
Granular Bridge End Backfill	2.7	CuYd	
Class A45 Concrete, Bridge	19.8	CuYd	
Reinforcing Steel	1108	Lb	
Bridge End Embankment	28	CuYd	
Pipe 16"x0.25" Steel Test Pile, Furnish and Drive	100	Ft	
Pipe 16"x0.25" Steel Bearing Pile, Furnish and Drive	100	Ft	
4" Underdrain Pipe	80	Ft	
Porous Backfill	4.1	Ton	
Pedestrian Bridge	1	Each	
Class A Riprap	2.5	Ton	
Type B Drainage Fabric	8	SqYd	

### BRIDGE SPECIFICATIONS

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9<sup>th</sup> Edition; AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges
- 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.
- All welding and welding inspections will be in conformance to the latest edition of AASHTO/AWS D1.5/D1.5M or D1.1 Bridge Welding Code as applicable unless otherwise noted in the plans.

### BRIDGE DESIGN LOADING

Design Pedestrian Live Load is 100 psf and Design Vehicular Live Load is H-5. Abutments were designed assuming the dead load of the pedestrian bridge is approximately 48 kips.

### DESIGN MATERIAL STRENGTHS\*

Class A45 Concrete	$f'_c = 4,500$ psi
Reinforcing Steel (ASTM A615, Gr. 60)	$f_y = 60,000$ psi
Piling (ASTM A252 Grade 2)	$f_y = 50,000$ psi

### DESIGN MIX OF CONCRETE

- All structural concrete will be Class A45 Concrete unless otherwise indicated.
- Type II cement conforming to Section 750 is required.

- Grout design mix will be as specified in Section 460.2 K of the Construction Specifications. A compressive strength of 2000 psi will be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4-inch. The quantity of grout is included in and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

### GENERAL CONSTRUCTION

- All lap splices shown are contact lap splices unless noted otherwise.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
- Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
- The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
- 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.
- Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.10. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
- The elevation of the bridge deck is 6 inches above subgrade elevation.

### INCIDENTAL WORK, STRUCTURE

- In place US18 Sta. 38+60.46—101.53 Lt. to US18 Sta. 39+5.46—102.03 Lt. was a 45'-0" pedestrian bridge with a 10'-0" clear pathway. The superstructure was washed out by a flood. The substructure consists of concrete abutments with unknown pile configuration.
- Break down and remove the abutments to 1-foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Construction Specifications. All portions of the existing bridge not salvaged for future highway related use will be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the Environmental Commitments found in Section A.
- During demolition of the structure, efforts will be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.

- The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid, it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

### PIPE PILE

- Pipe piles will conform to ASTM A252, Grade 2. Pipe piles will be furnished, driven and spliced in accordance with Section 510 of the Construction Specifications.
- The 16"x0.25" Pipe Piling were designed using a factored bearing resistance of 35 tons per pile. Piling will develop a field verified nominal bearing resistance of 87 tons per pile.
- Pile will be driven to a minimum elevation of 1395 feet even if nominal pile bearing resistance of 87 tons is reached shorter than this depth. Driving operations will stop if a nominal pile bearing resistance of 194 tons is reached prior to elevation 1395.
- Test pile lengths will be the same as the production pile.
- A two component coal tar epoxy paint will be applied to the piles.
- The Contractor will have sufficient pile splice material on hand before pile driving is started.
- The maximum horizontal out of position tolerance at the cutoff elevation is 3 inches.
- Piles will be driven closed end. The cost of the bottom end plate and welding of the same to the pile will be incidental to the contract unit price per foot for 16" x 0.25" Steel Pipe Bearing Pile, Furnish and Drive and 16" x 0.25" Steel Pipe Test Pile, Furnish and Drive.
- The pipe piles will be filled with Class A45 Concrete. Placement of the concrete will conform to Section 460.3 of the Construction Specifications except that only the concrete in the top 4 feet of each pile need be vibrated. The concrete will be paid at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

### ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

45' - 0" PREFAB. TRUSS BRIDGE

STR. NO. 12-389-242

APRIL 2024

2 OF 9

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(231)339	E5	E11

### ABUTMENTS

1. One test pile will be driven at each abutment and will become part of the pile group.
2. The Contractor will have sufficient pile splice material on hand before pile driving is started.
3. Each finished abutment will include a Bridge Survey Marker. See Standard Plate 460.05.

### PEDESTRIAN BRIDGE

1. The Pedestrian Bridge span lengths are measured from centerline of abutment to centerline of abutment and are as shown on the Plan and Elevations. Span lengths shown are horizontal and must be adjusted for grade.
2. The clear width of the bridge will be 10'-0" between all interior railing elements.
3. Live load deflection will not exceed 1/360 of the span length. Horizontal deflections under unfactored wind loading will not exceed 1/360 of the span length.
4. Vibrations will be investigated as a Service Limit State using Load Combination Service I in Table 3.4.1-1 of AASHTO LRFD and will meet the criteria specified in Section 6 of the *LRFD Guide Specifications for the Design of Pedestrian Bridges*. Vibration of the structure will not cause discomfort or concern to users of the bridge.
5. The Pedestrian Bridge will be constructed of structural steel. Structural steel materials will conform to all applicable ASTM Specifications. Exposed steel surfaces will be painted brown (AMS STD 595 30045)
6. The Pedestrian Bridge will include railing with rub rails. Railings will meet the requirements as specified in *AASHTO Guide for Bicycle Facilities 4<sup>th</sup> Edition, 2012*. Refer to *AASHTO LRFD Bridge Design Specifications 9<sup>th</sup> Edition* for loading and design requirements.
7. The distance from profile grade to top of bearing seat is assumed to be approximately 1'-4". Depth of selected Pedestrian Bridge will be reviewed by the Engineer for compatibility with pedestal and backwall elevations to maintain a flush deck with the backwall and trail.
8. The Pedestrian Bridge will be ADA and PROWAG compliant.
9. The Pedestrian Bridge will include design, details, and materials for the prefabricated superstructure, bearing assemblies, expansion joints (as needed), wire mesh or concrete decking, railings with rub rails, deck drains and drip pans, and anchor bolt locations.
10. The selected Pedestrian Bridge bearing loads will be reviewed by the Engineer for compatibility with the substructure design.
11. The Contractor will not begin construction of the bridge foundations or abutments until the design and plans for the Pedestrian Bridge have been approved.

12. Payment for the Pedestrian Bridge will be at the contract unit price per each for Pedestrian Bridge and will include furnishing all materials including, but not limited to, bearings and concrete decking, labor, engineering, delivery, installation, and equipment necessary or incidental to the satisfactory completion of this work.

### PILE DRIVING

A driveability analysis was performed using the wave equation analysis program (GRLWEAP). A list of acceptable hammers is provided below. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity. Requests for evaluation of hammers not listed will be submitted a minimum of 5 business days prior to installation of piles.

Delmag D19-42 MVE M-19 ICE 42S APE D19-42

### CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish will be applied to the following areas:
  - a. **\*Abutments:** all exposed surfaces to an elevation 1-foot below finished ground line.

\* Color will be AMS – STD - 595 37875 (Pearl White)
2. The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications.

### ABUTMENT UNDERDRAIN SYSTEM

1. An underdrain system will be placed behind the abutments as shown in the plans in accordance with Section 435 of the Construction Specifications.
2. The 4-inch diameter Perforated PVC Drain Pipe will be PS 46 Solvent Weld PVC Pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve shall conform to ASTM D6707.
3. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.

4. All labor, tools, equipment, and any incidentals necessary for the installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

### SHOP PLANS

Shop plans will be required as specified by the Construction Specifications.

### DECK DRAINS

1. Deck Drains will be 4-inch diameter x 2'-0" Fiberglass Pipe conforming to the requirements of ASTM D2996.
2. The Fiberglass Pipe Sleeves can be made from a 4-inch diameter Fiberglass Pipe Fitting. They will be attached to the 4-inch diameter Fiberglass Pipe, as shown in the plans, per the manufacturer's recommendation.
3. Pedestrian Bridge Fabricator will handle and install all fiberglass pipe and pipe fittings according to the guidelines and procedures recommended by the manufacturer. Pipe and pipe fittings must be from the same manufacturer.
4. All fiberglass pipes and pipe fittings will use pigmented resin throughout the wall. The color will be an approved brown (AMS STD 595 Color 30045)

### NOTES (CONTINUED)

FOR

45' - 0" PREFAB. TRUSS BRIDGE

STR. NO. 12-389-242

APRIL 2024

3 OF 9

DESIGNED BY AU CMIX07M9	CK. DES. BY KB 07M9TA03	DRAFTED BY BT 	BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	NH 0018(231)339	E6	E11

**TWO COMPONENT COAL TAR EPOXY PAINT**

1. A coating of Two Component (Self-Curing) Coal Tar Epoxy Paint conforming to Steel Structures Painting Council Specification SSPC-Paint 16, Coal Tar Epoxy Black (or Dark Red Paint) will be shop applied (as per the manufacturer's recommendations) to the entire outer surface of each pile and base plate prior to placement.
2. Steel surfaces which are to receive this coating will be prepared by blast cleaning to near white, grade SSPC 10. The Coal Tar Epoxy Paint will be applied before rusting occurs and in no case later than 24 hours after blast cleaning.
3. The coating may be applied by spray or brush. If the application is by brush, apply with a stiff brush heavily loaded with paint; apply quickly and smoothly and avoid excessive brushing.
4. The coating will be applied in two coats to a total dry film thickness of 16 mils at its thinnest spot.
5. Drying time between coats will be a minimum of 12 hours and a maximum of 72 hours under normal painting conditions. Long drying times between coats will cause poor intercoat adhesion and it is advisable in warm weather to reduce the maximum interval between coats. In very hot weather it may be necessary to limit the intercoat drying period to 24 hours or less.
6. At normal temperatures the coating dries dust free in about 4 hours and becomes thoroughly hardened after 3 to 5 days of curing. Pile placement shall not begin sooner than 5 days after coating.
7. The coating shall not be applied when the receiving surfaces or ambient temperatures are below 50°F unless it can reasonably be anticipated that the average ambient temperature will be 50°F or higher for the 5-day period following the application of any coat.
8. Steel members which are welded after coating will receive two coats of the coating applied to the weld heat affected areas.
9. After placement, the areas of the piles and base plates where the coating has been damaged will be touched up.
10. The cost of furnishing and applying the coating will be included in the contract unit price per foot for 16" x 0.25" Steel Pipe Test Pile, Furnish and Drive and 16" x 0.25" Steel Pipe Bearing Pile, Furnish and Drive.

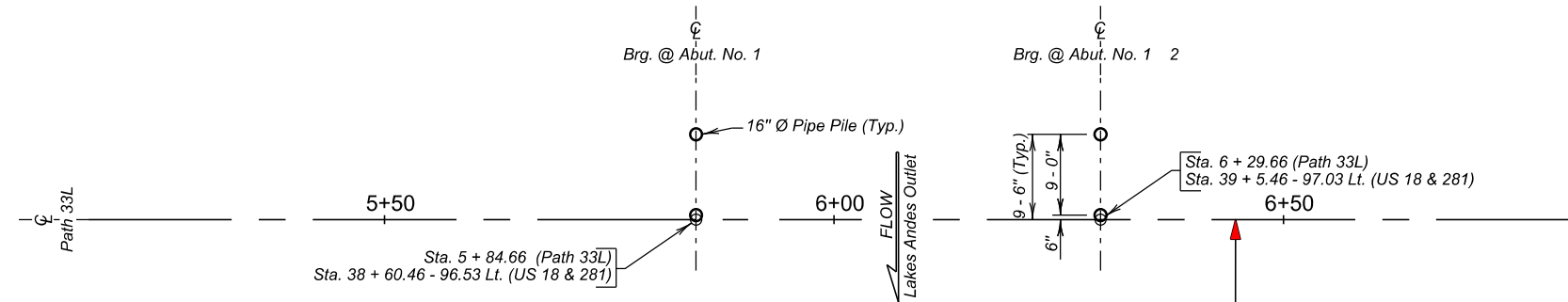
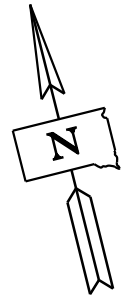
**NOTES (CONTINUED)**  
FOR  
**45' - 0" PREFAB. TRUSS BRIDGE**

STR. NO. 12-389-242

APRIL 2024

(4) OF (9)

DESIGNED BY AU CMIX07M9	CK. DES. BY KB 07M9TA04	DRAFTED BY BT	 BRIDGE ENGINEER
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**PILING LAYOUT**

Hole Number	B2	Hole Number	B2	Hole Number	B2	Hole Number	B2	Hole Number	B2
Station	6+33	Station	6+33	Station	6+33	Station	6+33	Station	6+33
Depth	16.5 ft	Depth	21.2 ft	Depth	31.5 ft	Depth	41.2 ft	Depth	51.5 ft
Soil Color	Brown	Soil Color	Brown	Soil Color	Brown	Soil Color	Brown	Soil Color	Brown
Classification	Sandy Clay	Classification	Sandy Clay	Classification	Sandy Clay	Classification	Sandy Clay	Classification	Silt Clay
Strength (Qu)	1,075 psf	Strength (Qu)	530 psf	Strength (Qu)	4,144 psf	Strength (Qu)	3,288 psf	Strength (Qu)	3,475 psf
Dry Density	92.9 pcf	Dry Density	87.6 pcf	Dry Density	88.7 pcf	Dry Density	92.5 pcf	Dry Density	97.4 pcf
Wet Density	115.4 pcf	Wet Density	114.9 pcf	Wet Density	111.3 pcf	Wet Density	117.9 pcf	Wet Density	122.5 pcf
Moisture	24.2 %	Moisture	31.1 %	Moisture	25.5 %	Moisture	27.5 %	Moisture	25.7 %
Pass No. 10	99.9 %	Pass No. 10	96.5 %	Pass No. 10	96.7 %	Pass No. 10	97.6 %	Pass No. 10	98.4 %
Pass No. 40	96.5 %	Pass No. 40	87.0 %	Pass No. 40	79.9 %	Pass No. 40	90.0 %	Pass No. 40	90.4 %
Pass No. 200	68.9 %	Pass No. 200	66.1 %	Pass No. 200	57.6 %	Pass No. 200	69.6 %	Pass No. 200	72.8 %
Sand Content	30.9 %	Sand Content	30.5 %	Sand Content	39.1 %	Sand Content	28.0 %	Sand Content	25.6 %
Silt Content	33.2 %	Silt Content	33.4 %	Silt Content	19.1 %	Silt Content	26.9 %	Silt Content	27.7 %
Clay Content	35.8 %	Clay Content	32.6 %	Clay Content	38.5 %	Clay Content	42.8 %	Clay Content	45.0 %

Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The borings shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

**LEGEND**

- Penetration Test
- ▽ Water
- ◼ Sample Zone
- Drive Test

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to collect samples and measure the resistance to penetration of the soil. Samples are collected using a lined Modified California Sampler. Penetration test results are listed as uncorrected "N" values in blows per foot.

**GROUNDWATER ELEVATIONS**

MARCH 2023

B1	1442.8
B2	1411.8

**MEASURED SKIN FRICTION**

	ELEV.	PSF
B1	1392.8	705

**SUBSURFACE INVESTIGATION AND PILING LAYOUT FOR**

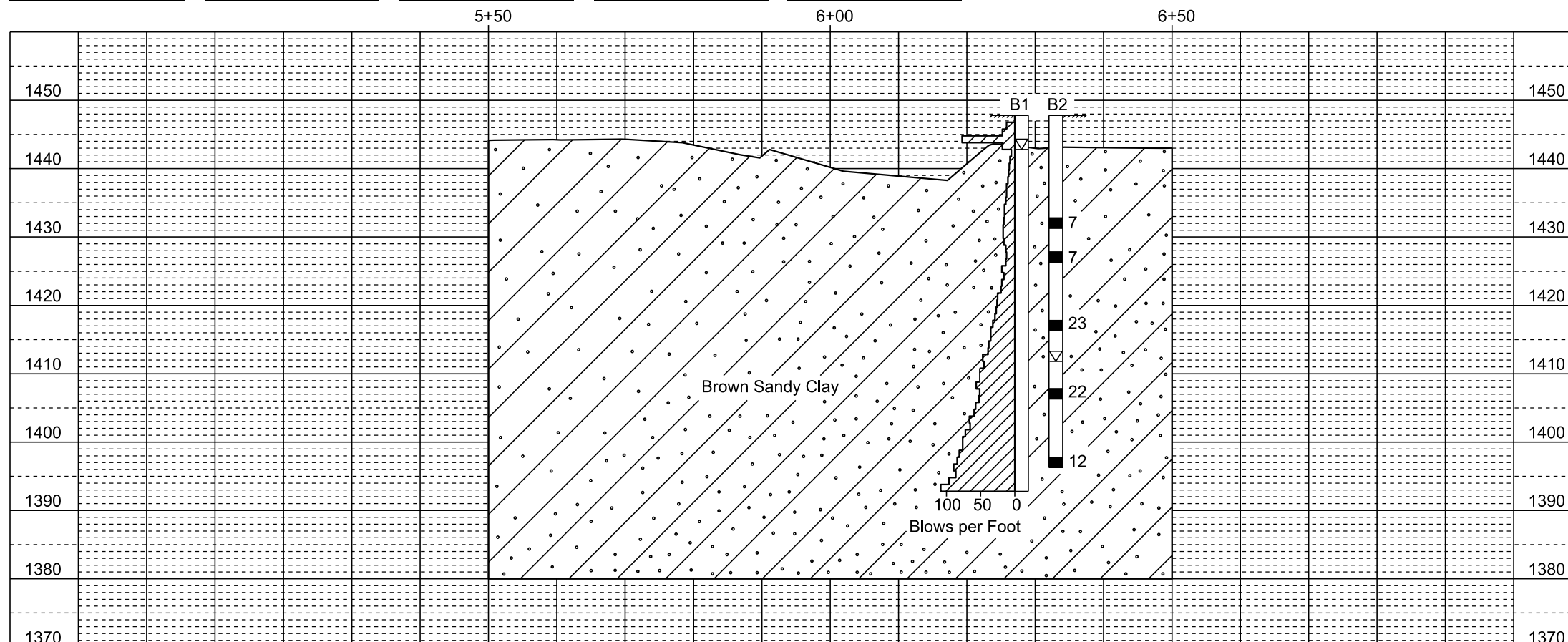
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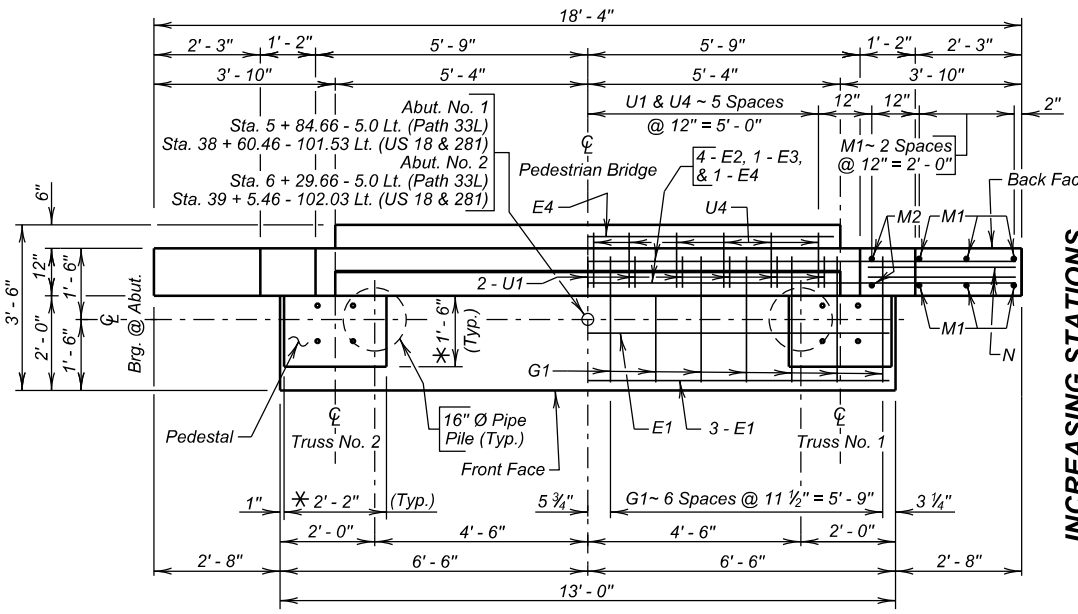
10' - 0" WALKWAY  
 OVER LAKE ANDES OUTLET  
 STA. 5 + 83.16 TO STA. 6 + 31.16  
 STR. NO. 12-389-242

0° SKEW  
 SEC. 9/10-T96N-R65W  
 NH 0018(231)339  
 H5/100 PSF PEDESTRIAN LL

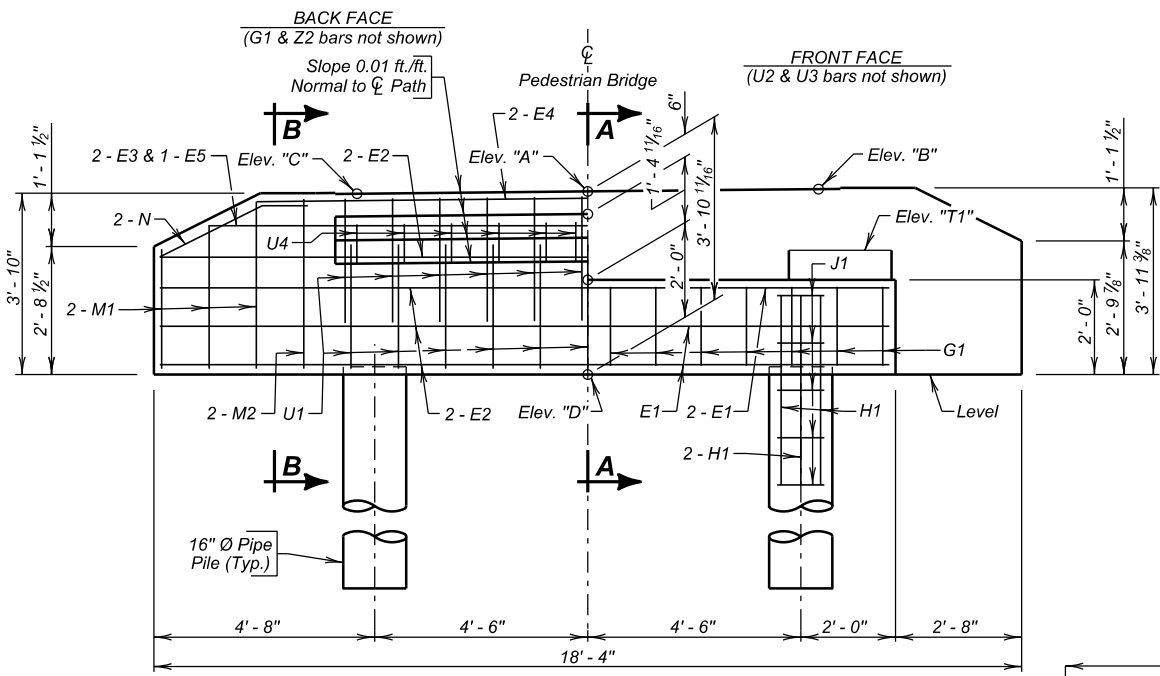
CHARLES MIX COUNTY  
 S. D. DEPT. OF TRANSPORTATION

APRIL 2024

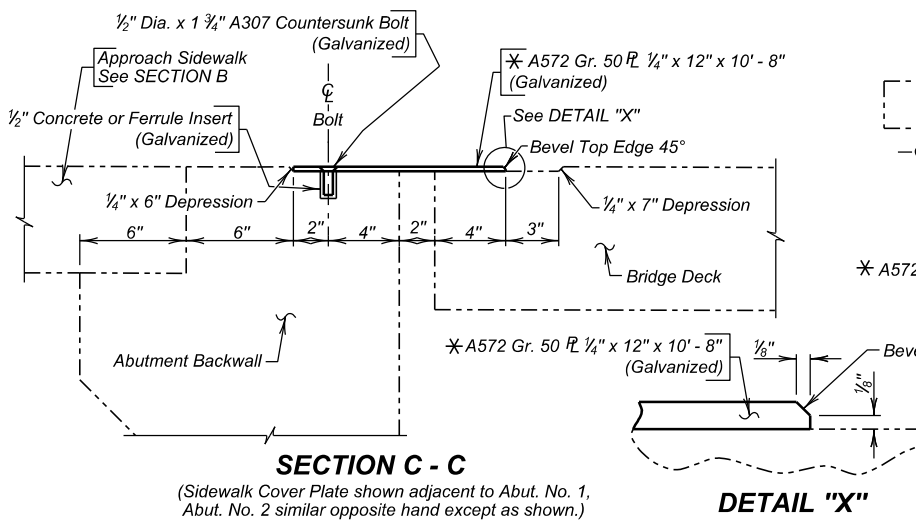




**PLAN**  
(Abut. No. 1 shown, Abut. No. 2 similar opposite hand except as shown.)



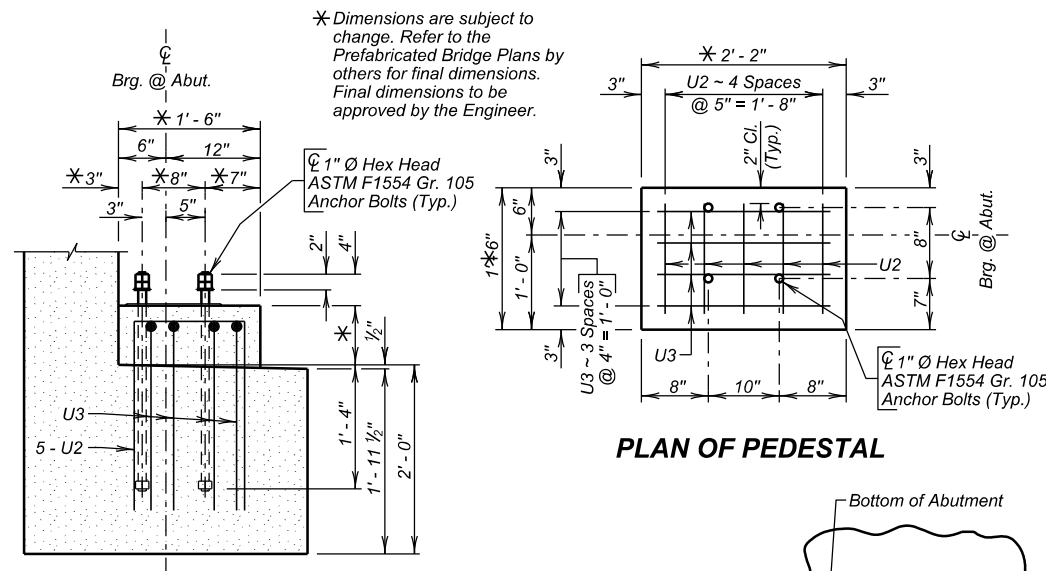
**ELEVATION**  
(Along  $\phi$  Abutment)



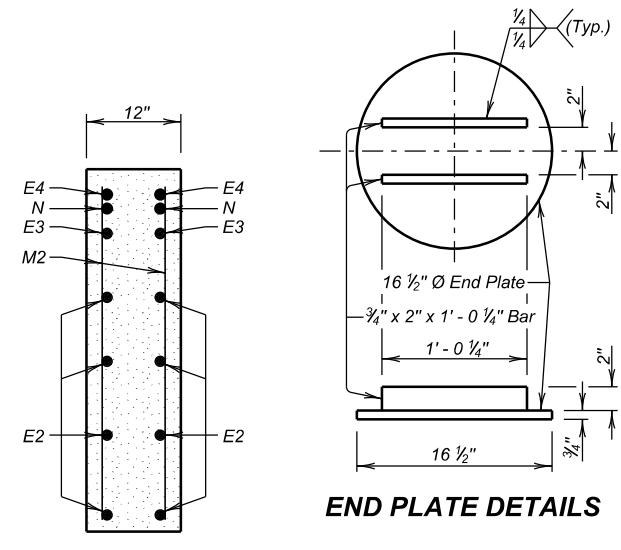
**SECTION C - C**  
(Sidewalk Cover Plate shown adjacent to Abut. No. 1, Abut. No. 2 similar opposite hand except as shown.)

**DETAIL "X"**

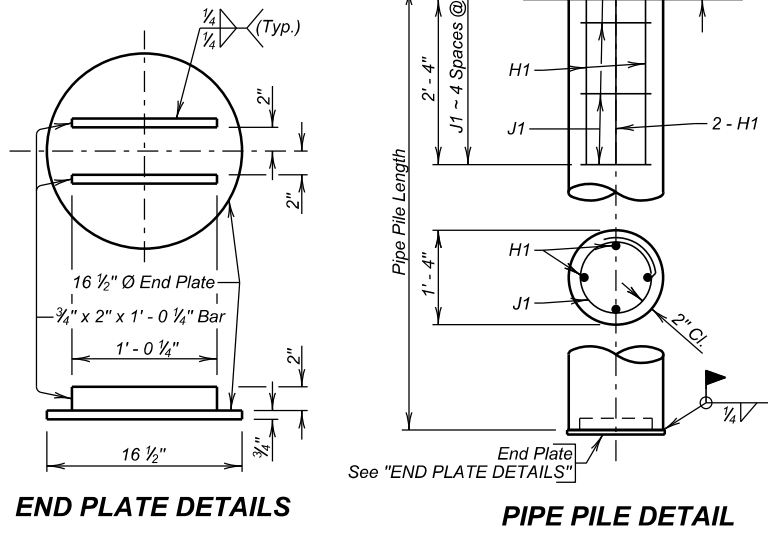
**INCREASING STATIONS**  
**Abut. No. 1**  
**INCREASING STATIONS**  
**Abut. No. 2**



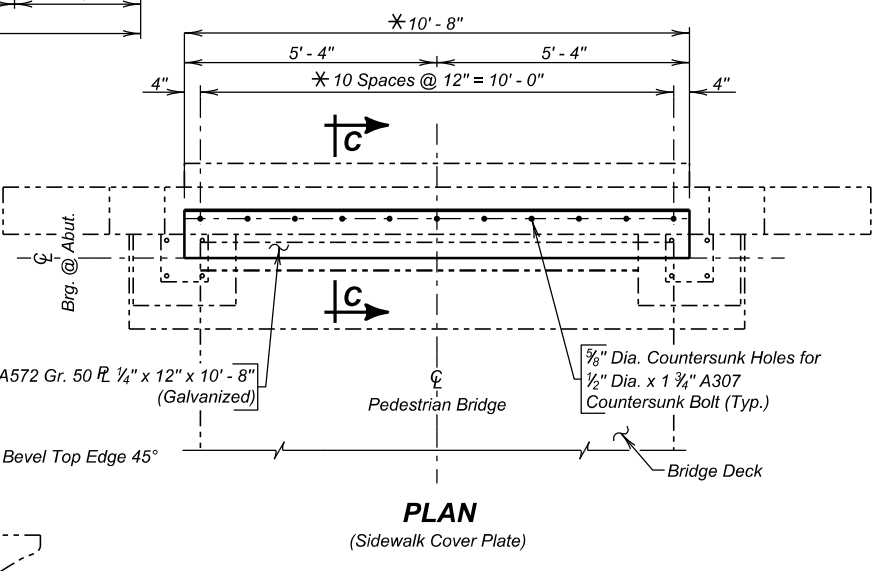
**TYPICAL SECTION AT BEARING**



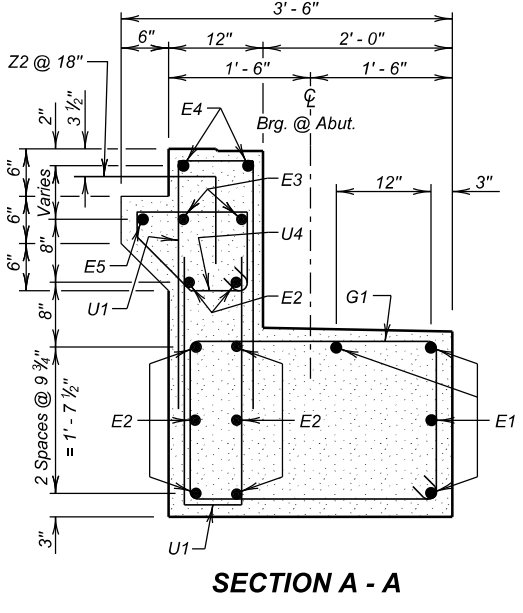
**SECTION B - B**



**PIPE PILE DETAIL**



**PLAN**  
(Sidewalk Cover Plate)



**SECTION A - A**

\* Dimensions are subject to change. Refer to the Prefabricated Bridge Plans by others for final dimensions. Final dimensions to be approved by the Engineer.

$\phi$  1"  $\phi$  Hex Head ASTM F1554 Gr. 105 Anchor Bolts (Typ.)

**PLAN OF PEDESTAL**

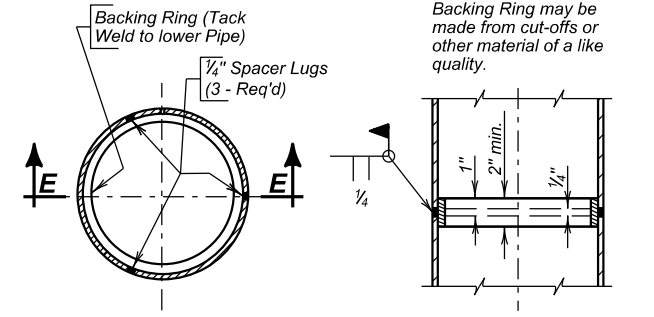
REINFORCING SCHEDULE				Bending Details	
Mk. No.	Size	Length	Type		
E1	4	4	12'-8"	Str.	
E2	8	4	18'-0"	Str.	
E3	2	4	15'-6"	Str.	
E4	2	4	13'-6"	Str.	
E5	1	4	10'-4"	Str.	
G1	14	4	9'-5"	T1	
H1	8	4	4'-0"	Str.	
J1	10	4	4'-2"	T3	
M1	6	4	5'-10"	Str.	
M2	4	4	3'-6"	Str.	
N	4	4	3'-4"	19B	
U1	22	4	6'-0"	17	
U2	10	4	5'-2"	17	
U3	8	4	5'-10"	17	
U4	11	4	4'-3"	T1A	
Z2	7	4	3'-0"	17A	

NOTES:  
All dimensions are out to out of bars.  
All bars to be black steel.  
 $\phi$  See cutting diagram.

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Abut. No. 1	Abut. No. 2
Class A45 Concrete, Bridge	Cu. Yd.	9.9	9.9
Reinforcing Steel	Lb.	554	554
Structure Excavation, Bridge	Cu. Yd.	5.0	8.0
16" X 0.25" Steel Pipe Pile, Furnish & Drive	Ft.	1 @ 50' = 50'	1 @ 50' = 50'
16" X 0.25" Steel Pipe Test Pile, Furnish & Drive	Ft.	1 @ 50' = 50'	1 @ 50' = 50'

TABLE OF ELEVATIONS						
	*Elev. "T1"	*Elev. "T2"	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"
Abut. No. 1	*	*	1445.40	1445.45	1445.35	1441.51
Abut. No. 2	*	*	1445.26	1445.31	1445.26	1441.37

NOTE: Top of Grout Pad will be level and smooth.  
\* Elevations are Top of Grout Pad at centerline of Bearing.  
 $\phi$  Includes 0.1 cu. yds. of concrete per pedestal.



**PILE SPLICE DETAIL**

**SECTION E - E**

**ABUTMENT DETAILS**

FOR

**45' - 0" PREFAB. TRUSS BRIDGE**

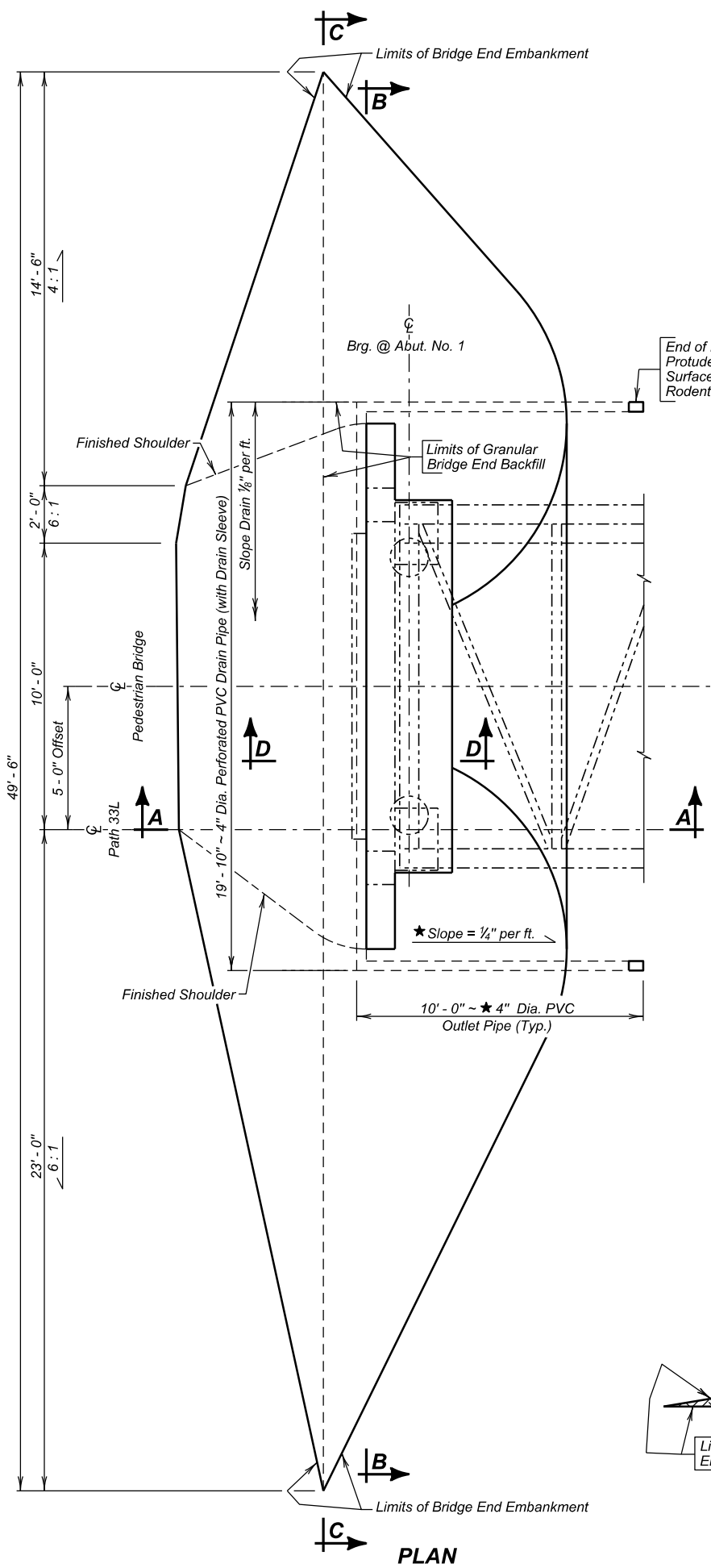
10' - 0" WALKWAY  
OVER LAKE ANDES OUTLET  
STA. 5 + 83.16 TO STA. 6 + 31.16  
STR. NO. 12-389-242

0° SKEW  
SEC. 9/10-T96N-R65W  
NH 0018(231)339  
H5/100 PSF PEDESTRIAN LL

CHARLES MIX COUNTY  
S. D. DEPT. OF TRANSPORTATION

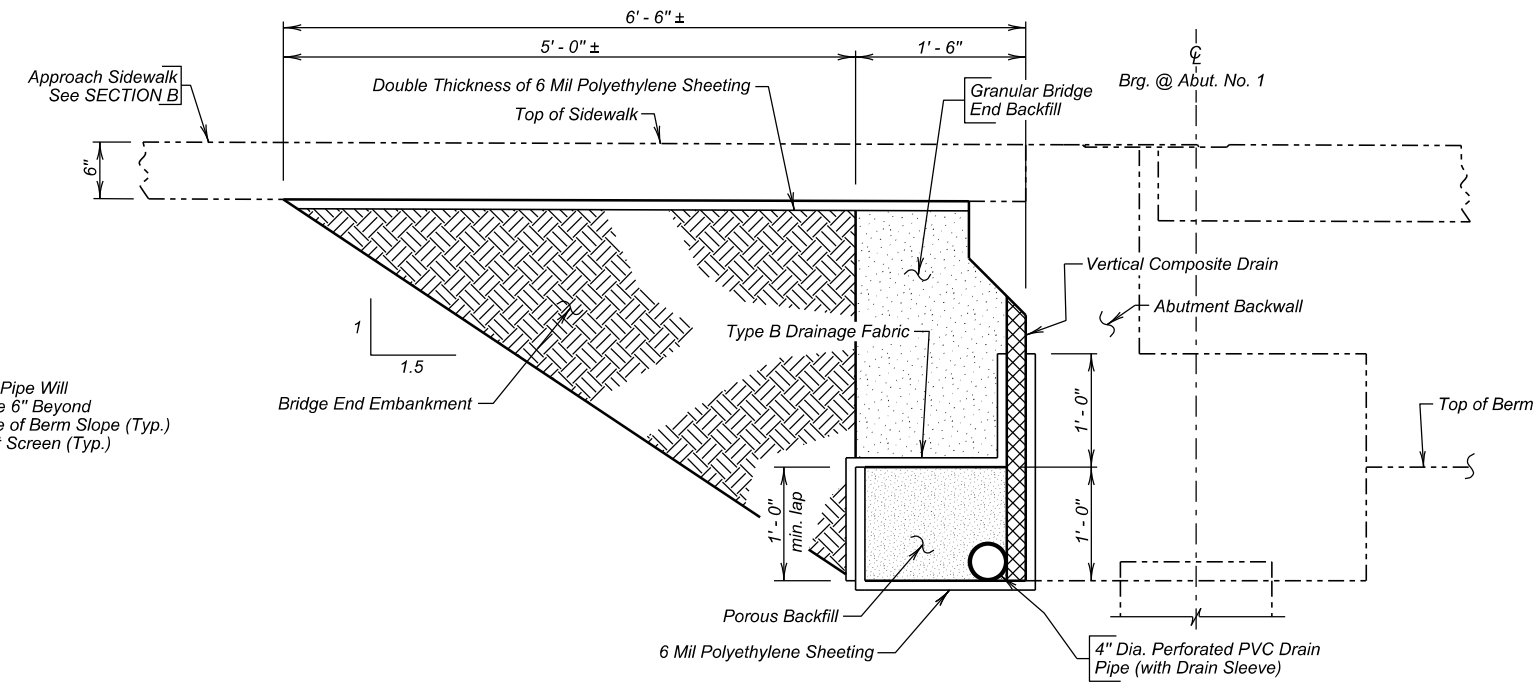
APRIL 2024



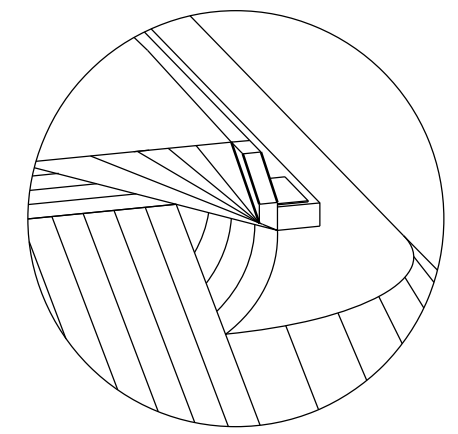


**PLAN**

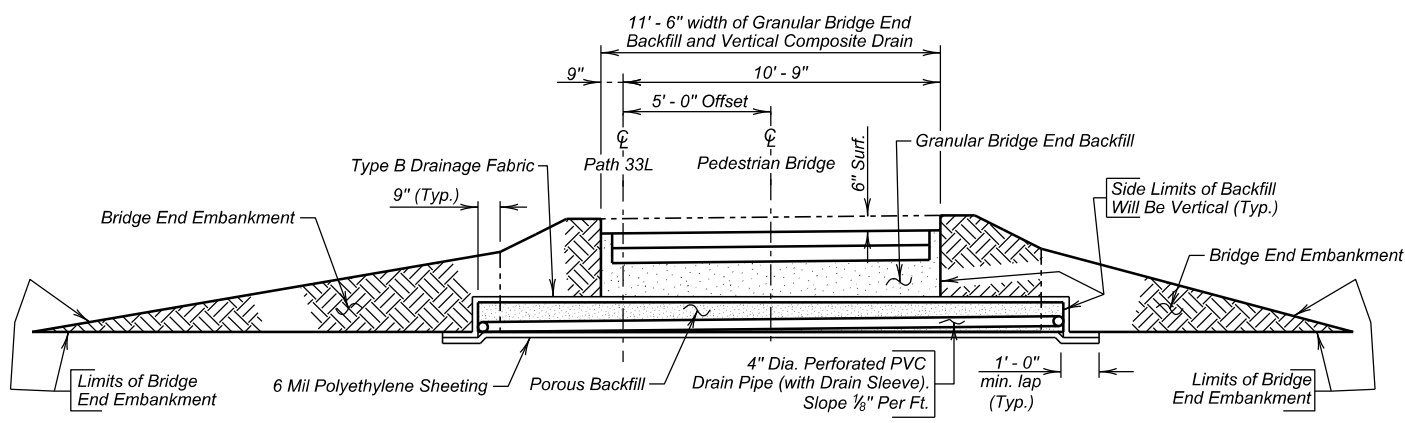
(Bridge End Backfill shown adjacent to Abut. No. 1, Abut. No. 2 similar opposite hand except as shown.)



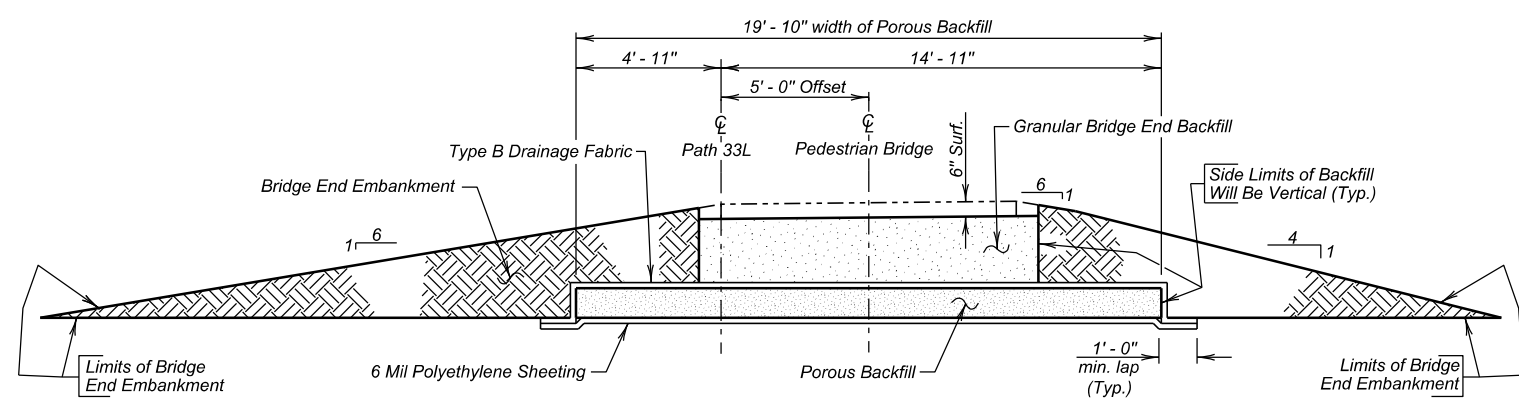
**SECTION A - A**  
(at Path 33L)



**SPILL CONE DETAIL AT EMBANKMENT**



**SECTION B - B**



**SECTION C - C**

ESTIMATED QUANTITIES (For Two Abutments)		
ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	2.7
Bridge End Embankment	Cu. Yd.	28
Porous Backfill	Ton	4.1
4" Underdrain Pipe	Ft.	80

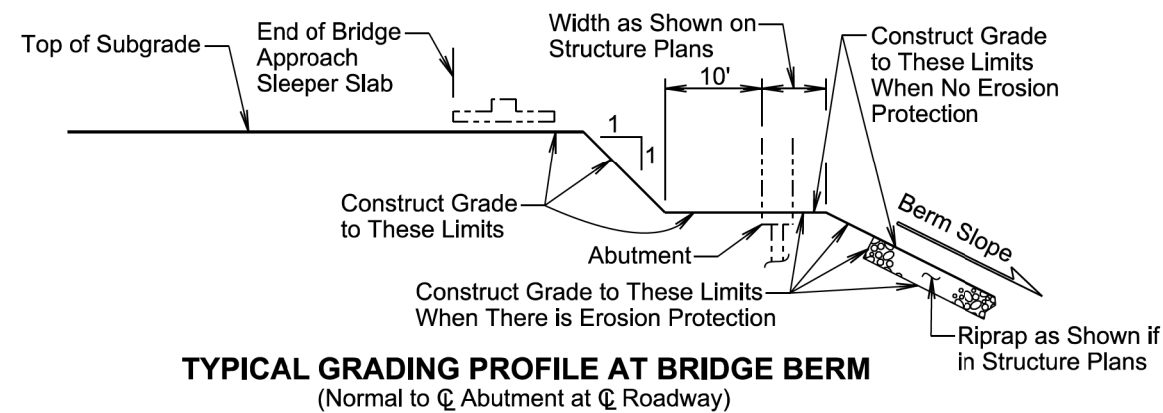
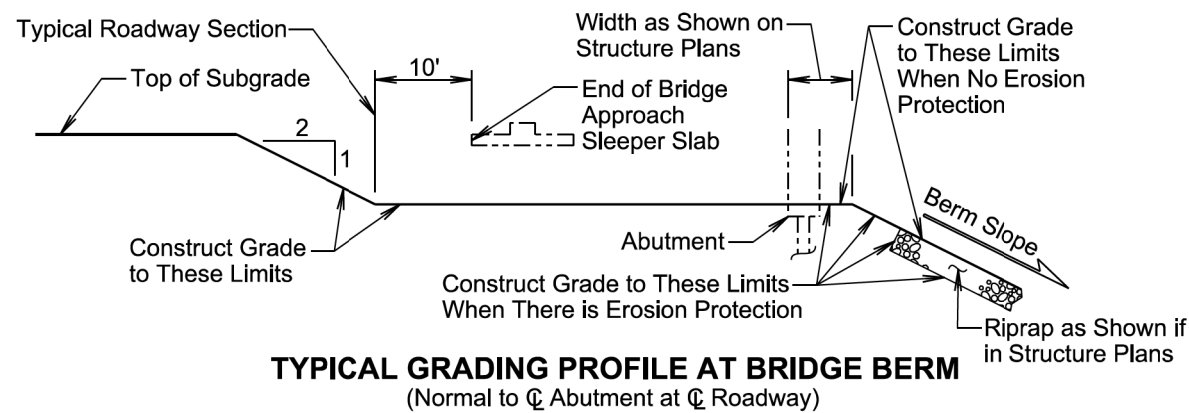
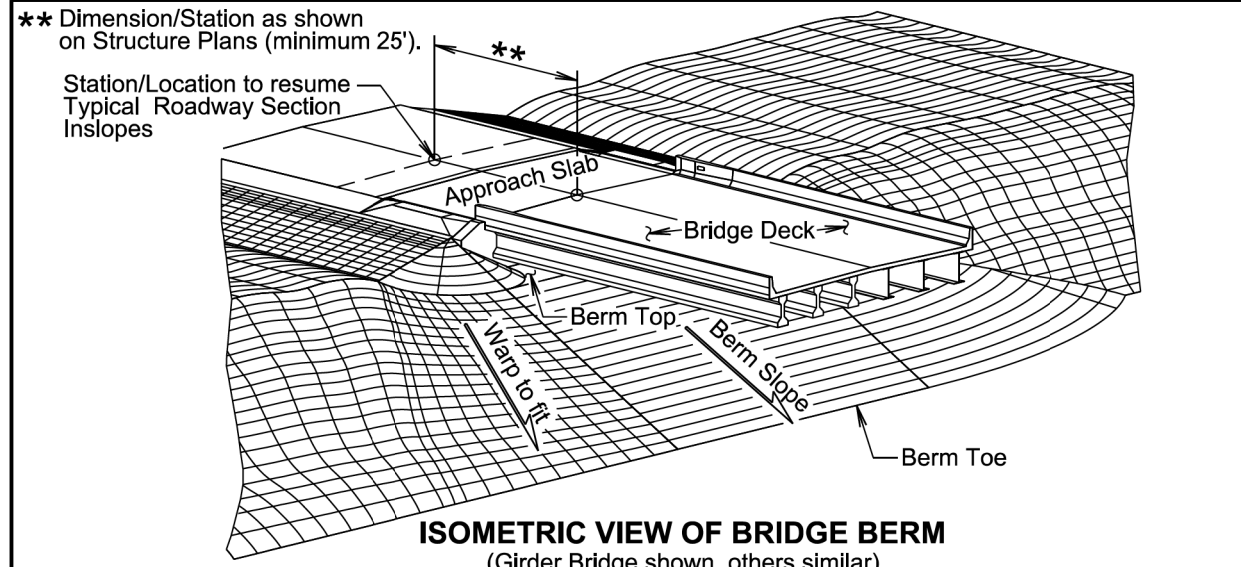
- 40 ft. 4" dia. Perforated PVC Drain Pipe (with Drain Sleeve).
  - 40 ft. 4" dia. PVC Outlet Pipe with Rodent Screens.
  - 65 sq. ft. Vertical Composite Drain
- Items 1 thru 3 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.
- 198 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
  - 20 sq. yd. Type B Drainage Fabric.
- Items 4 and 5 are approximate quantities contained in the Granular Bridge End Backfill and are for information only.
- For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.
- Shrinkage Factor of 1.25 Used.

**DETAILS OF BRIDGE END BACKFILL**  
FOR  
**45' - 0" PREFAB. TRUSS BRIDGE**  
10' - 0" WALKWAY  
OVER LAKE ANDES OUTLET  
STA. 5 + 83.16 TO STA. 6 + 31.16  
STR. NO. 12-389-242

0° SKEW  
SEC. 9/10-T96N-R65W  
NH 0018(231)339  
H5/100 PSF PEDESTRIAN LL

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

DESIGNED BY AU CMIX07M9	CK. DES. BY KB 07M9TA07	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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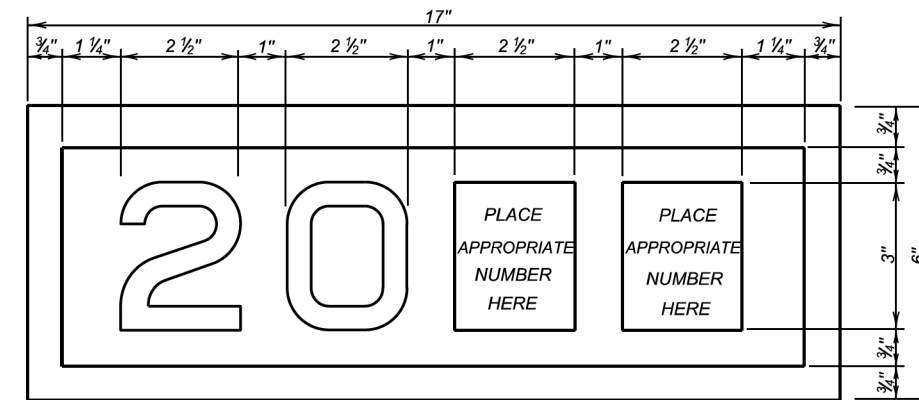


**GENERAL NOTES:**

The bridge berm elevation and slope will be as shown in the Structure Plans. See Structure Plans to determine which grading profile to use.

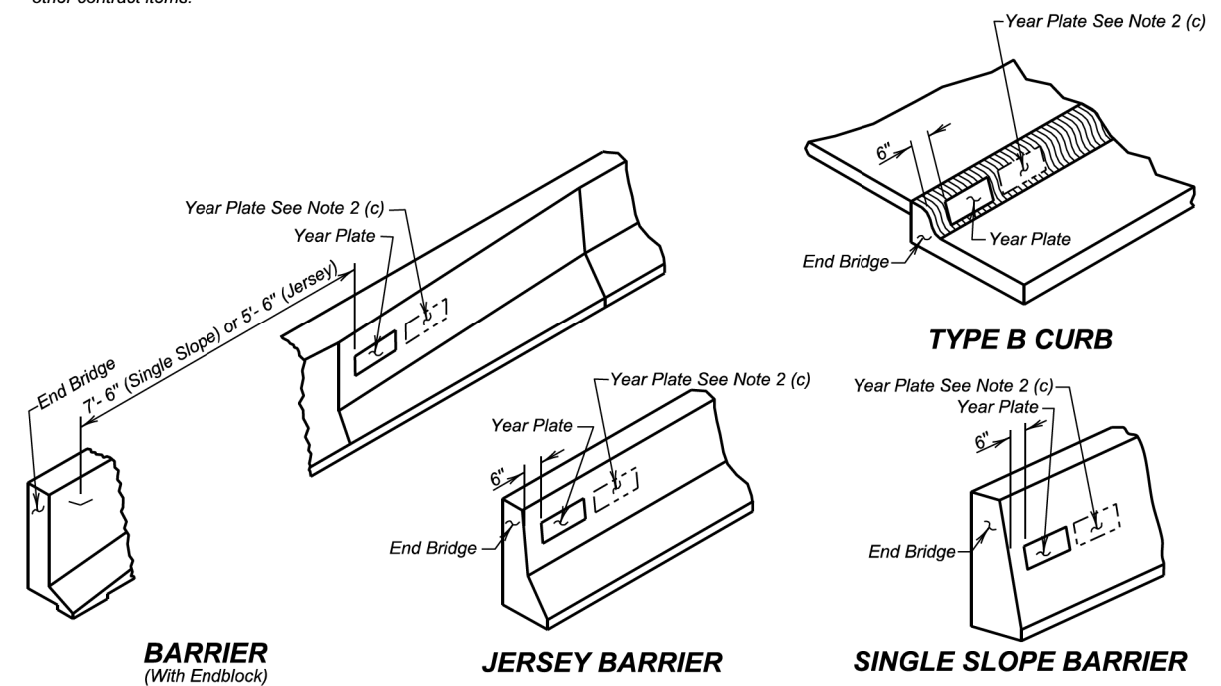
January 22, 2021

Published Date: 2025	S D D O T	BRIDGE BERM (NONPROJECTING EMBANKMENT)	PLATE NUMBER 120.10
			Sheet 1 of 1



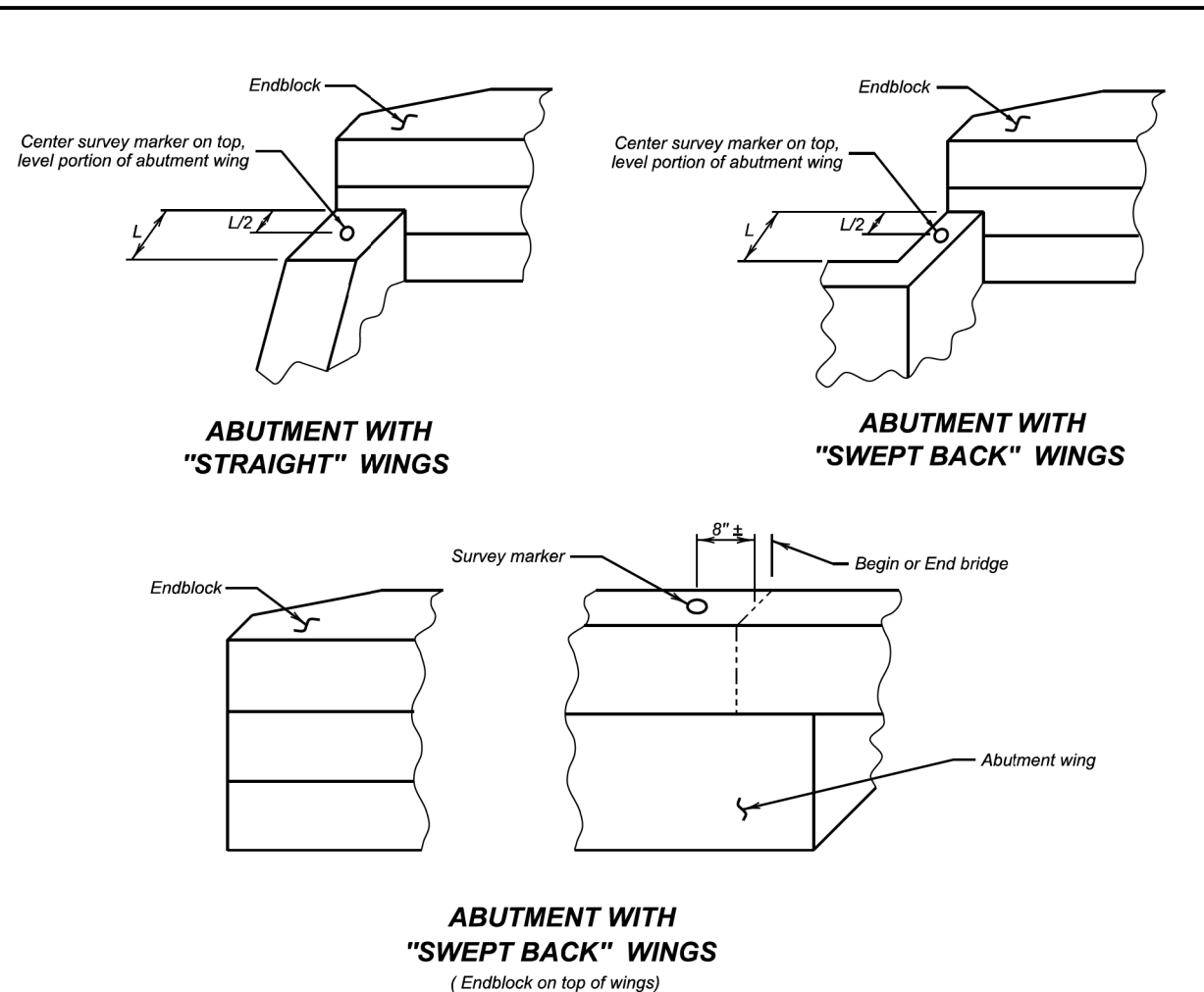
**GENERAL NOTES:**

- Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates will be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates will be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'-6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



January 22, 2021

Published Date: 2025	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



**GENERAL NOTES:**

1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
2. Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a  $\frac{3}{4}" \times 2"$  long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3  $\frac{1}{2}"$  top diameter.
3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26, 2012

Published Date: 2025	S D D O T	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1