

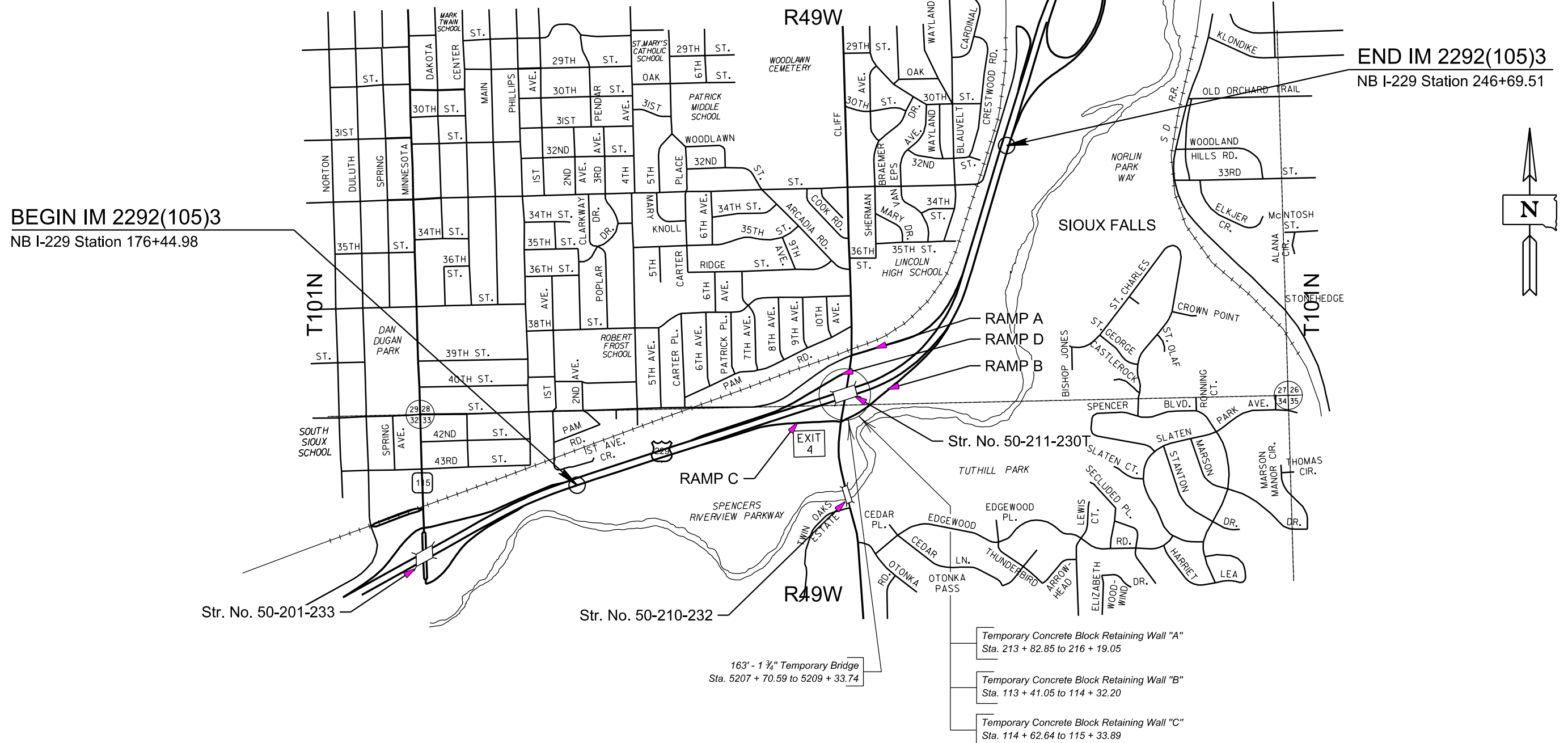
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E1	E16

Section E: Structure Plans

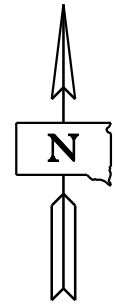
INDEX OF SHEETS -

Sheet E1	Layout Map and Index
Sheet E2	Estimate of Structure Quantities
Sheet E3 to E7	163' - 1 3/4" Temporary Bridge
Sheet E8 to E16	Layout, Notes and Details for Temporary Concrete Block Retaining Walls "A", "B", & "C"



BEGIN IM 2292(105)3
NB I-229 Station 176+44.98

END IM 2292(105)3
NB I-229 Station 246+69.51



- Temporary Concrete Block Retaining Wall "A"
Sta. 213 + 82.85 to 216 + 19.05
- Temporary Concrete Block Retaining Wall "B"
Sta. 113 + 41.05 to 114 + 32.20
- Temporary Concrete Block Retaining Wall "C"
Sta. 114 + 62.64 to 115 + 33.89

163' - 1 3/4" Temporary Bridge
Sta. 5207 + 70.59 to 5209 + 33.74

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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E2	E16

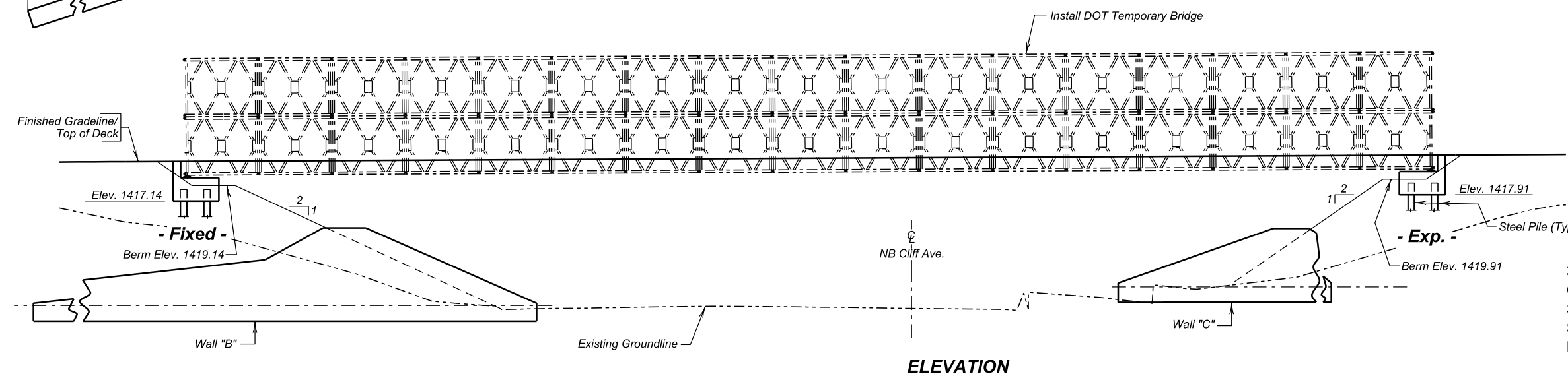
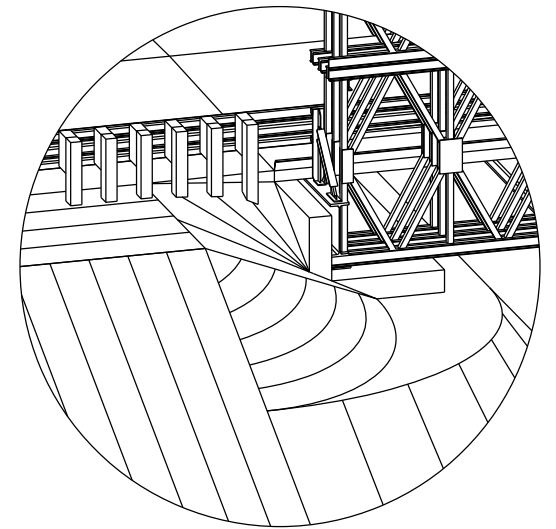
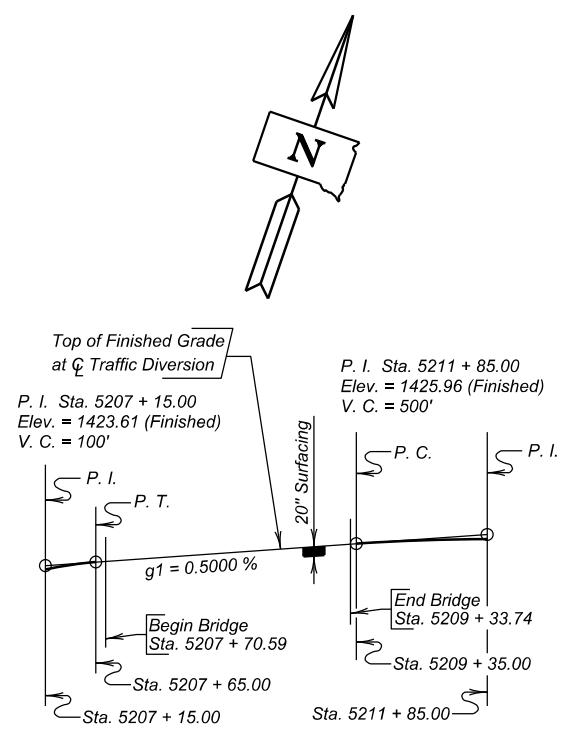
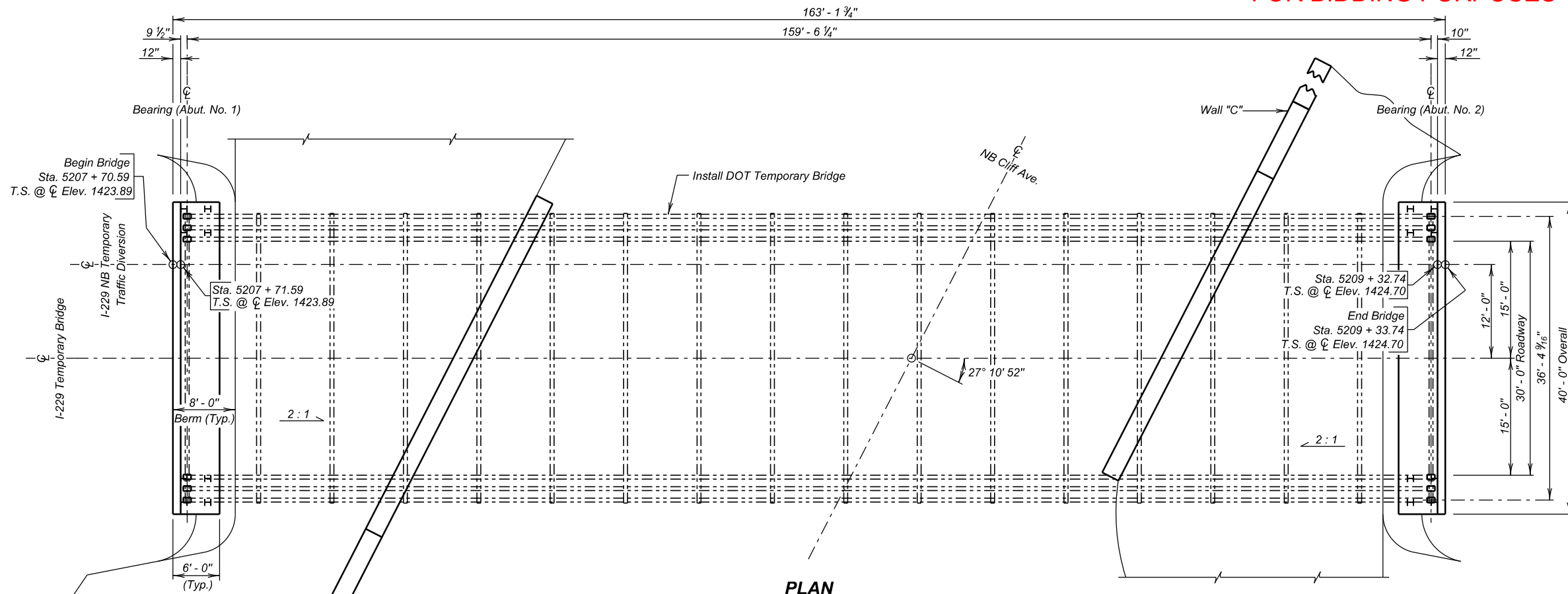
SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0060	Temporary Detour Structure	1	Each
420E0100	Structure Excavation, Bridge	57	CuYd
420E0300	Structure Excavation, Retaining Wall	35	CuYd
421E1000	Footing Undercut	102	CuYd
460E0050	Class A45 Concrete, Bridge	64.6	CuYd
480E0100	Reinforcing Steel	4,638	Lb
510E3120	HP 10 Pile Tip Reinforcement	16	Each
510E3365	HP 10x42 Steel Bearing Pile, Furnish and Drive	920	Ft
530E0470	Gravity Large Concrete Block Wall	2,592	SqFt
530E0718	Granular Backfill for Gravity Large Concrete Block Wall	386.8	CuYd
680E0040	4" Underdrain Pipe	659	Ft
680E2500	Porous Backfill	29.6	Ton

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

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E3	E16



GENERAL DRAWING
FOR
163' - 1 3/4" TEMPORARY BRIDGE
30' - 0 ROADWAY OVER CLIFF AVENUE
0° SKEW
STA. 5207 + 70.59 TO 5209 + 33.74
SEC. 28-T101N-R49W
STR. NO. 50-211-230T
PCN 07CY
IM 2292(105)3
HL-93

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Subsurface Investigation & Piling Layout
- Sheet No. 4 - Abutment Details
- Sheet No. 5 - Standard Plate No.'s 510.30 and 510.40

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

DESIGNED BY CL MINN07CY	CK. DES. BY SK 07CYGA01	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023
1 OF 5

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E4	E16

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Temporary Detour Structure	Lump Sum	LS	
Structure Excavation, Bridge	57.4	CuYd	
Class A45 Concrete, Bridge	64.6	CuYd	
Reinforcing Steel	4638	Lb	
HP 10 Pile Tip Reinforcement	16	Each	
HP10x42 Steel Bearing Pile, Furnish and Drive	920	Ft	

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
- 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.

BRIDGE DESIGN LOADING

AASHTO HL-93.

UNIT DESIGN STRESSES

- Design Material Strengths:

Class A45 Concrete	$f'_c = 4500$ psi
Reinforcing Steel (ASTM A615 Gr. 60)	$f_y = 60000$ psi
Structural Steel (ASTM A709 Gr. 36)	$f_y = 36000$ psi
Piling (ASTM A572 Grade 50)	$f_y = 50000$ psi

- Design unit stresses shall be as set forth in the Design Specifications.

DESIGN MIX OF CONCRETE

- All structural concrete will be Class A45 unless otherwise indicated.
- Type II cement is required.

ABUTMENTS

- The HP10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling will develop a field verified nominal bearing resistance of 192 tons per pile.
- All mild reinforcing steel will conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges will be chamfered 3/4" unless noted otherwise.
- Use 1" clear cover on all reinforcing steel except as shown.
- Pile tip reinforcement will be required. See Standard Plate 510.30.

STRUCTURAL STEEL

Anchor bolts will conform to ASTM A307 or F1554. All costs for nuts, bolts and wedge type anchors will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge.

DELIVERY AND ERECTION

- The Acrow temporary bridge will be supplied by and remain the property of the SDDOT.
- An Acrow construction advisor will be hired by the Contractor to assist in erection of the temporary bridge. The Contractor shall notify the Department a minimum of 14 days prior to construction.
- The Contractor will be required to load and transport the bridge from the City of Sioux Falls property at 3602/3604 S. Minnesota Ave to the erection site. The structure required 10 trucks to be delivered from the manufacturer for a total as delivered weight of 428,000 lbs. Contact Travis Dressen with the Mitchell Region at (605)995-8129
- The Contractor will be responsible for any damage to the temporary bridge that occurs during the handling, erection and dismantling operations, as well as during transportation to and from the SDDOT yards.
- All costs for delivery to the project site and erection of the temporary structure will be incidental to the contract unit price per each for Temporary Detour Structure.
- A bridge assembly scope with approximate assembly times, crew requirements, tools and equipment needed is available upon request from Acrow (phone 303-279-9088).
- After Notice to Proceed the Contractor will inventory parts of the temporary bridge to ensure all are present. Any missing pieces will be handle by CCO.

PILE DRIVING

- Steel piling will obtain bearing on Sioux Quartzite bedrock. This material is extremely hard and impenetrable by nature. The Site Plan & Subsurface Profile sheet should be reviewed to obtain approximate Sioux Quartzite elevation prior to pile driving operations. Some piles are likely to be shorter than the projected depth. Extreme care should be taken during pile driving operations not to over-stress the piles when the tips encounter bedrock.
- A drivability 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

- 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.

INSPECTION

- The Acrow temporary bridge will be inspected prior to being opened to traffic. The Office of Bridge Design and Mitchell Region Bridge Engineer will be notified a minimum of 14 days prior to the bridge being open to traffic to allow for inspection.
- The Acrow temporary bridge will be inspected every 24 months after being open to traffic. The Contractor will allow state inspectors access and provide the necessary traffic control to complete the 24-month inspections.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR

163' - 1 3/4" TEMPORARY BRIDGE

JULY 2023

2 OF 5

DESIGNED BY CL MINN07CY	CK. DES. BY SK 07CYGA02	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E5	E16

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.

Sioux Quartzite is a pink to red, hard silica cemented sandstone. It is jointed, bedded, and crossbedded with thin red to purple pipestone shales and coarse conglomerate. Layers of poorly cemented sands may also be present. The surface of the quartzite is not flat. It may vary several feet vertically in a short horizontal distance.

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

LEGEND

- Auger Test
- Water
- Caved

All auger test holes are drilled with a 4½ inch diameter continuous flight auger.

GROUNDWATER ELEVATIONS

JUNE 2022

A1	1392.5
A2	1392.2
A4	(CAVED) 1393.3
A5	1391.8
A7	1392.0
A8	1392.0
A10	1391.7
A11	1391.7

SUBSURFACE INVESTIGATION AND PILING LAYOUT

FOR

163' - 1 ¾" TEMPORARY BRIDGE

30' - 0 ROADWAY
OVER CLIFF AVENUE
STA. 5207 + 70.59 TO 5209 + 33.74
STR. NO. 50-211-230T

0° SKEW
SEC. 28-T101N-R49W
IM 2292(105)3
HL-93

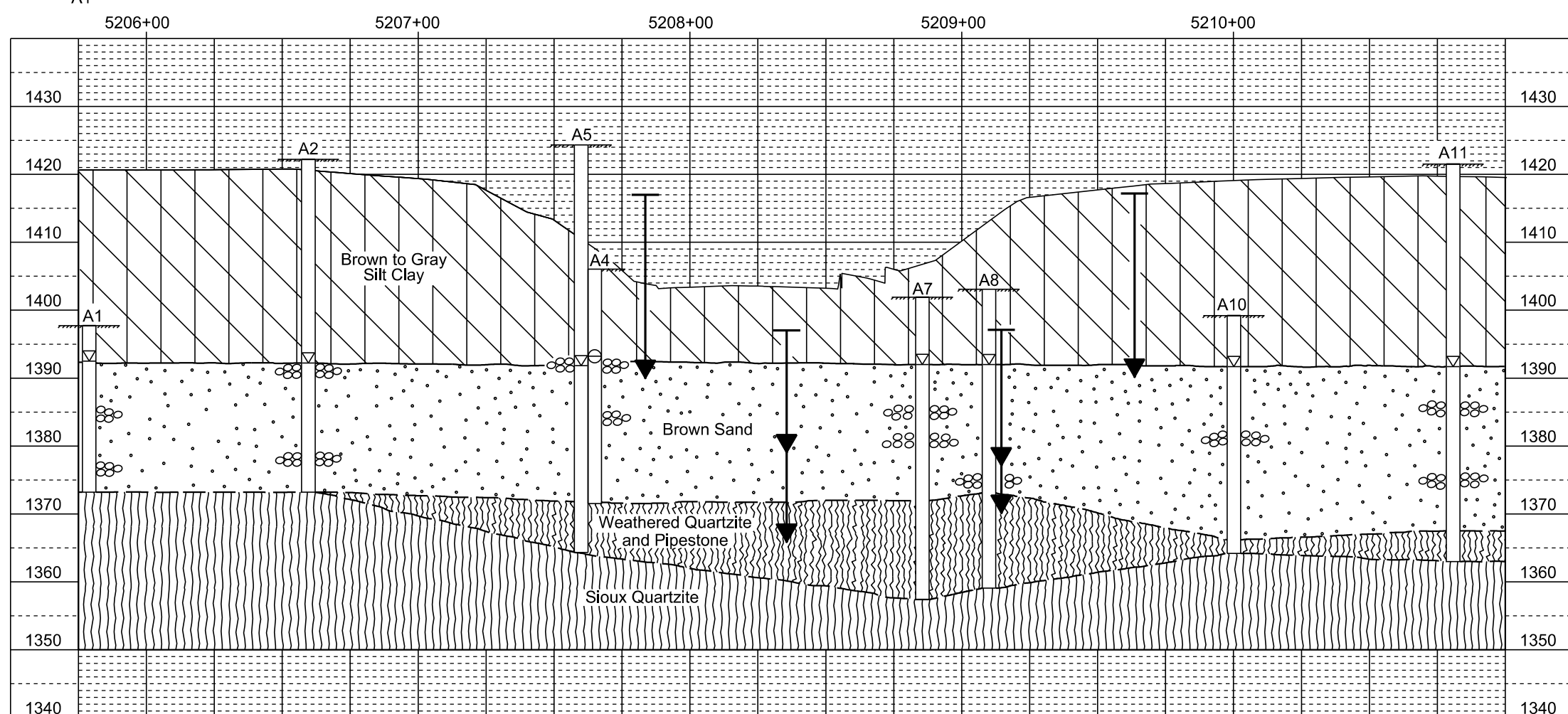
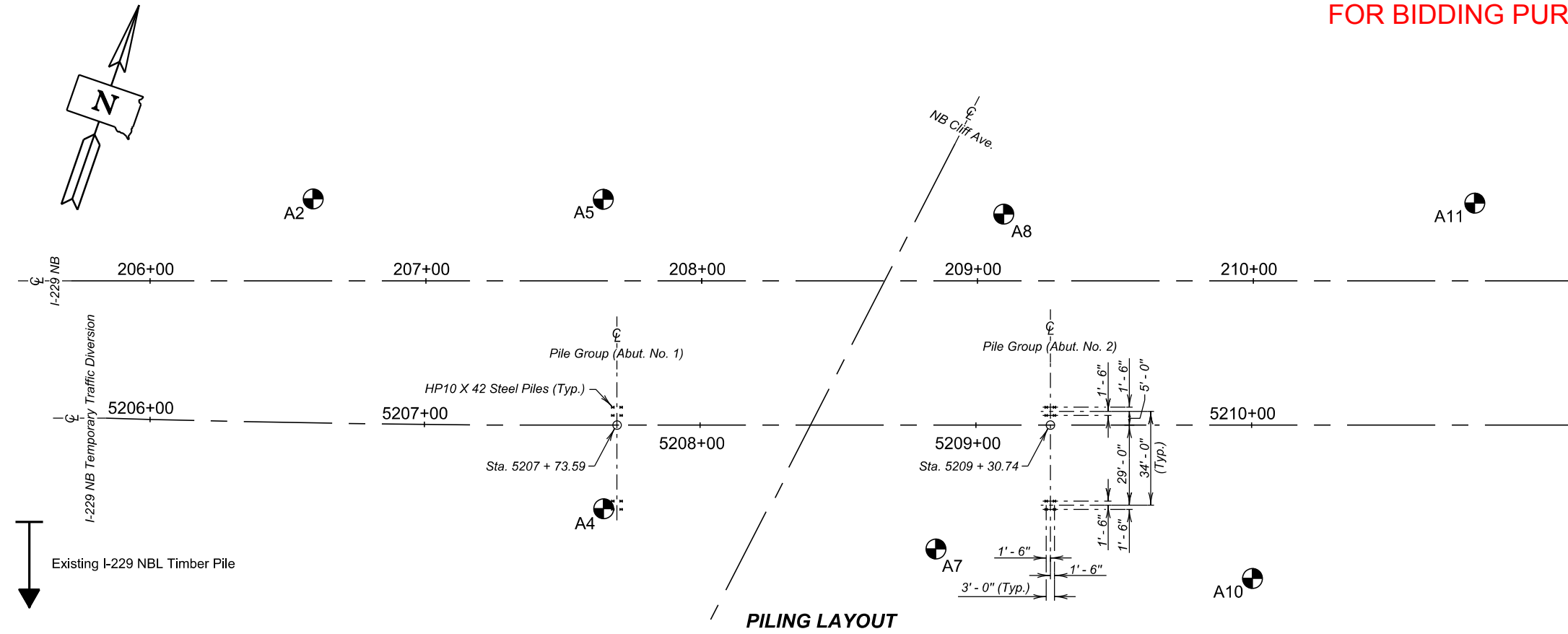
MINNEHAHA COUNTY

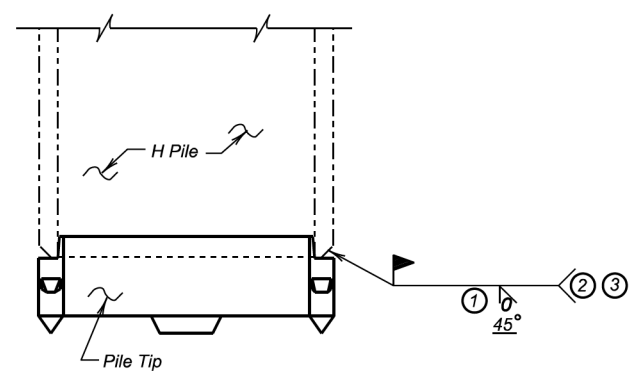
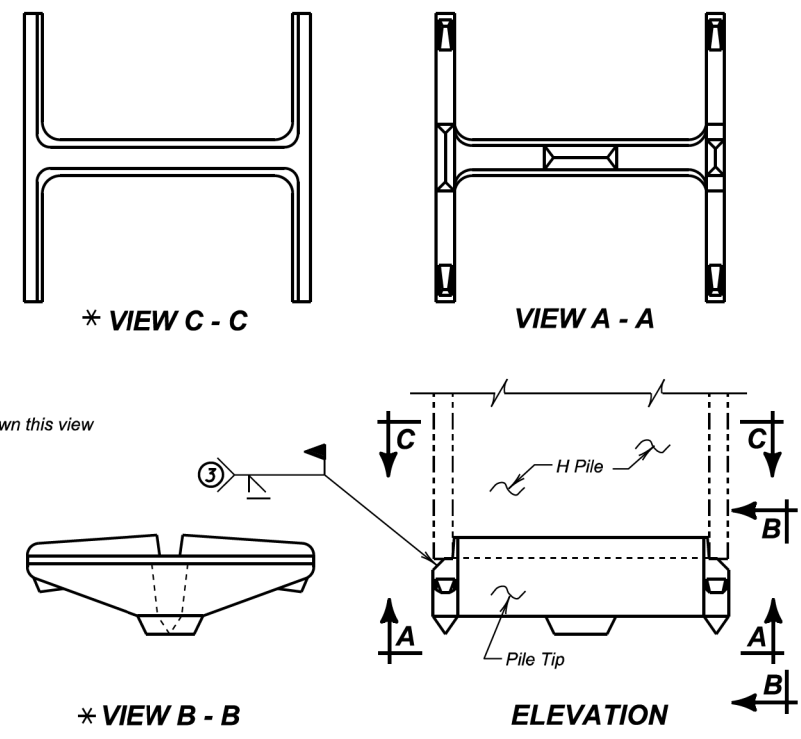
S. D. DEPT. OF TRANSPORTATION

JULY 2023

3 OF 5

DESIGNED BY CL MINN07CY	CK. DES. BY SH/SK 07CYGA03	DRAFTED BY HK/BT	 BRIDGE ENGINEER
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- ② See Table 1
- ③ Typical Both Flanges

TABLE 1

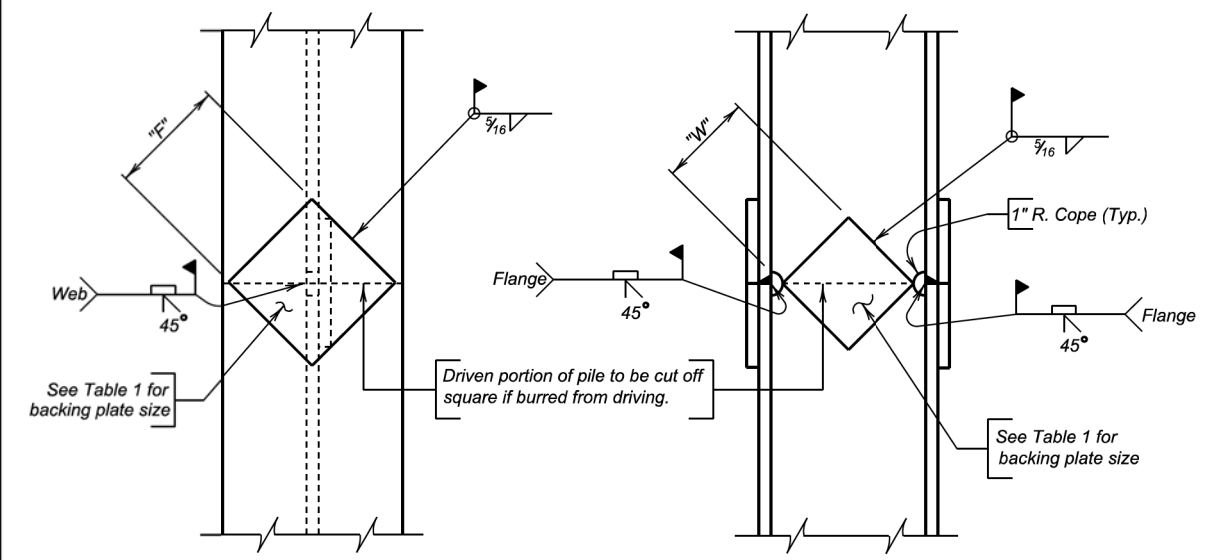
① DEPTH OF PREPARATION	PILE
3/8	HP 14 X 102 HP 14 X 89 HP 12 X 74
5/16	HP 14 X 73 HP 12 X 63 HP 10 X 57
1/4	HP 12 X 53 HP 10 X 42 HP 8 X 36

GENERAL NOTES:

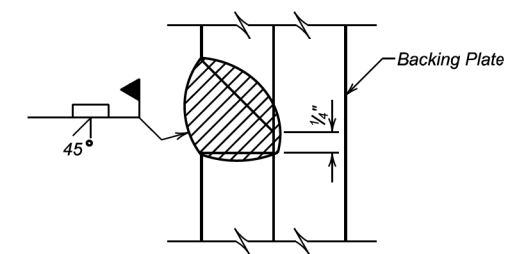
- Pile tip reinforcement shall be one-piece cast steel points commercially available and produced by a manufacturer who regularly produces pile points as a production item available to the public.
- Material for pile points shall conform to ASTM A27, Grade 65-35, Class 2.
- Pile points shall contain teeth designed to dig into obstructions and bearing materials in order to develop the maximum carrying capacity of the materials encountered.
- Welding and weld inspection shall be in conformance with AWS D1.5 - (Current Year) Bridge Welding Code - Steel.

December 23, 2012

Published Date: 2024	S D D O T	H PILE TIP REINFORCEMENT	PLATE NUMBER 510.30
			Sheet 1 of 1



NOTE:
Prepare joint surfaces lower end of upper section on the ground and weld on backing plates; then place upper section on lower section and weld.



GENERAL NOTES:

- Steel for backing plates shall conform to ASTM A709 Grade 50.
- Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
- Welder must be certified and registered with the SDDOT.
- Backing plate shall at a minimum be as thick as the web of the pile being spliced.
- Web must be coped with 1 inch radius.
- Submit Welding Procedure Specification (WPS) to Bridge Construction Engineer for approval prior to pile driving.

PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

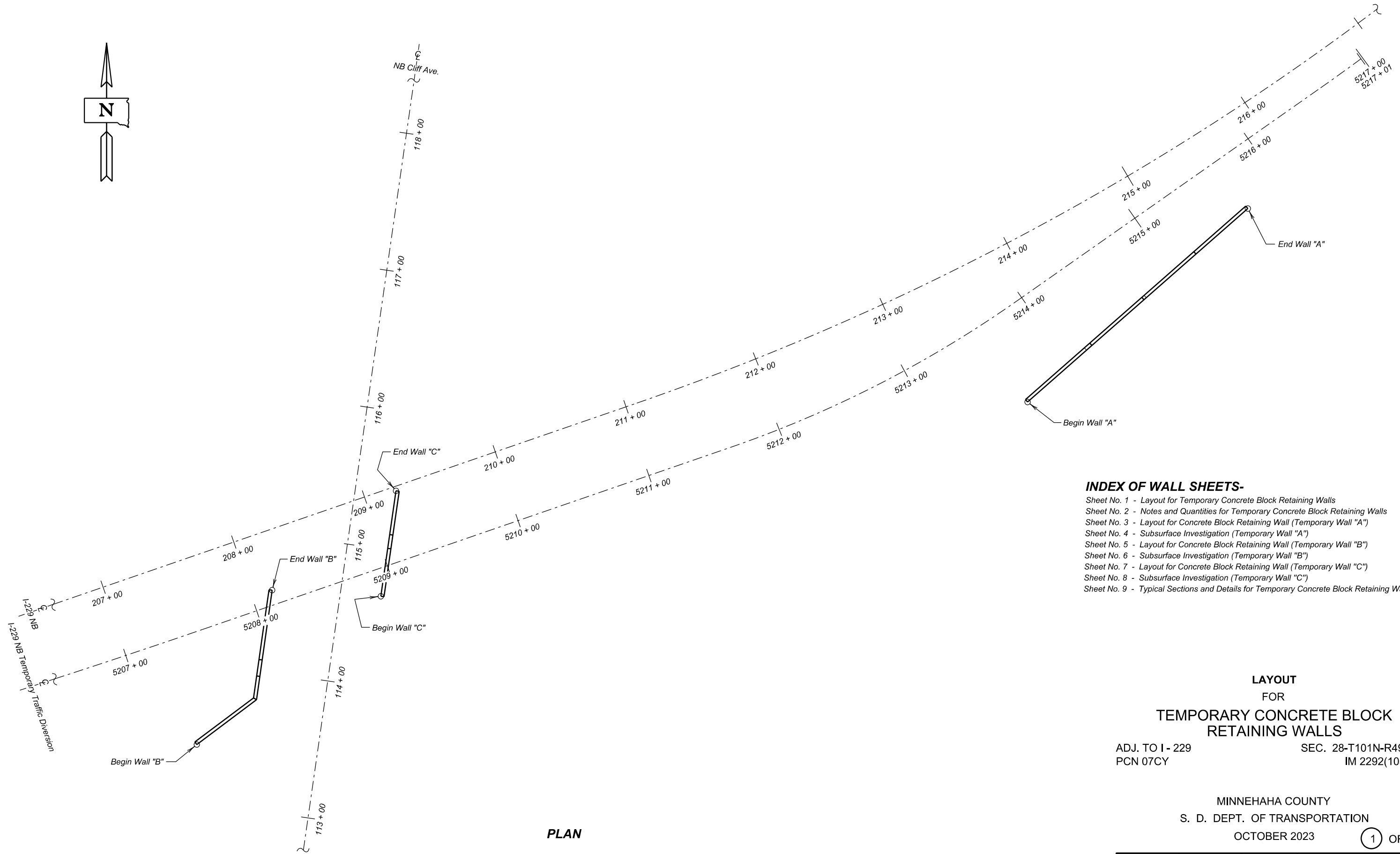
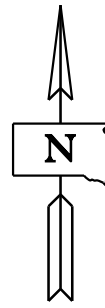
December 23, 2012

Published Date: 2024	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1

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

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E8	E16



- INDEX OF WALL SHEETS-**
- Sheet No. 1 - Layout for Temporary Concrete Block Retaining Walls
 - Sheet No. 2 - Notes and Quantities for Temporary Concrete Block Retaining Walls
 - Sheet No. 3 - Layout for Concrete Block Retaining Wall (Temporary Wall "A")
 - Sheet No. 4 - Subsurface Investigation (Temporary Wall "A")
 - Sheet No. 5 - Layout for Concrete Block Retaining Wall (Temporary Wall "B")
 - Sheet No. 6 - Subsurface Investigation (Temporary Wall "B")
 - Sheet No. 7 - Layout for Concrete Block Retaining Wall (Temporary Wall "C")
 - Sheet No. 8 - Subsurface Investigation (Temporary Wall "C")
 - Sheet No. 9 - Typical Sections and Details for Temporary Concrete Block Retaining Walls

LAYOUT FOR TEMPORARY CONCRETE BLOCK RETAINING WALLS

ADJ. TO I- 229 SEC. 28-T101N-R49W
PCN 07CY IM 2292(105)3

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

OCTOBER 2023 **1** OF **9**

PLAN

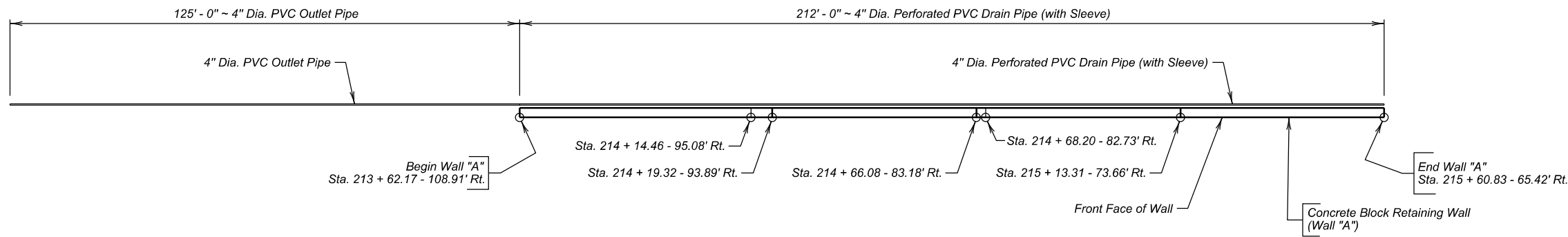
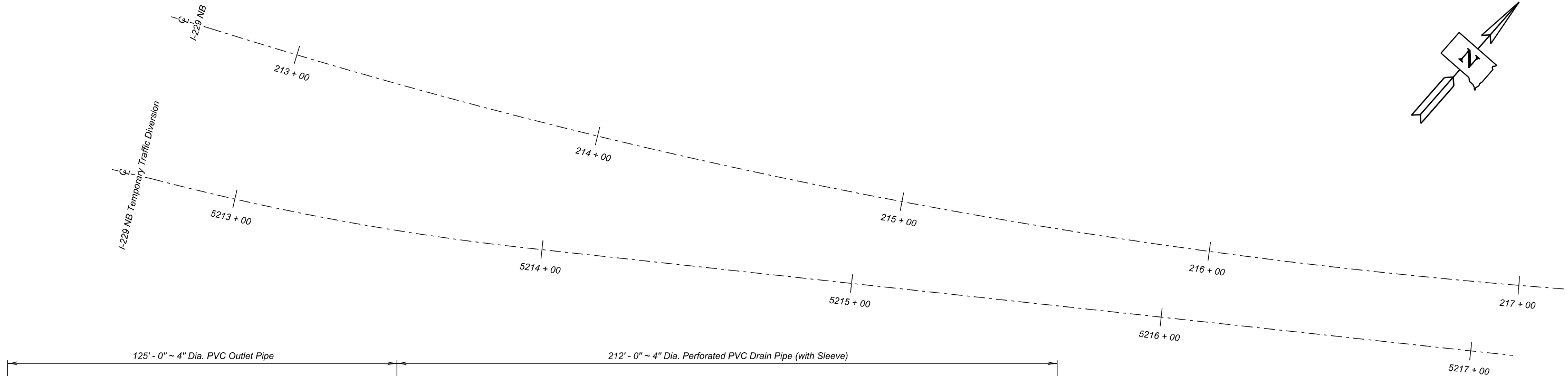
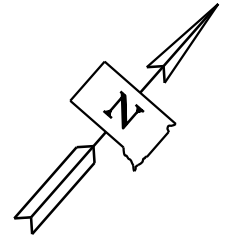
PLANS BY:
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY CL MINN07CY	CK. DES. BY SK 07CYGC91	DRAFTED BY MG	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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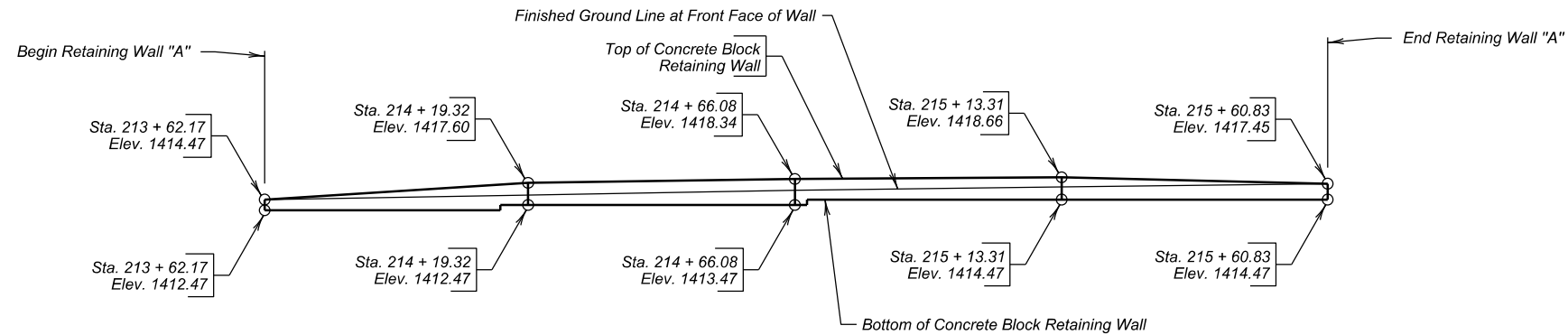
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E10	E16

NOTE:
Stations and offsets are from \odot NBL I - 229



PLAN

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Gravity Large Concrete Block	Sq. Ft.	829
Porous Backfill	Ton	14.8
4" Underdrain	Ft.	337
Footing Undercut	Cu. Yd.	47.1
Structure Excavation, Retaining Wall	Cu. Yd.	11.8



ELEVATION
(4" Dia. Drain Pipes not shown)

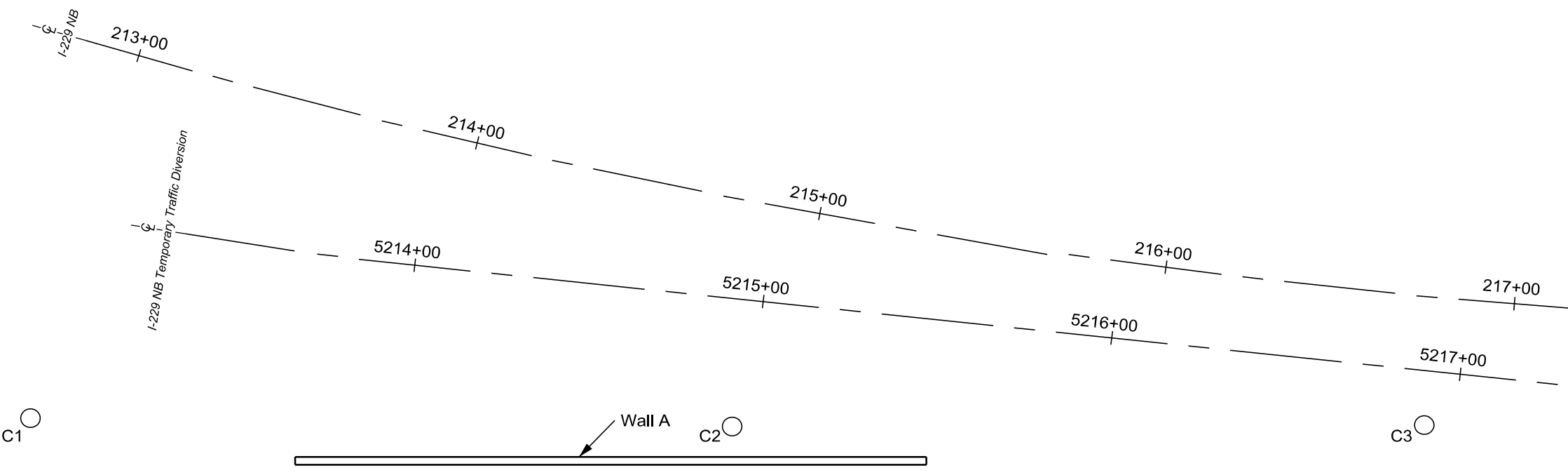
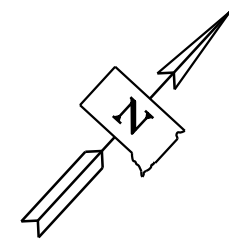
TEMPORARY WALL "A"
LAYOUT
FOR
CONCRETE BLOCK RETAINING WALL
ADJ. TO I - 229 SEC. 28-T101N-R49W
IM 2292(105)3

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2023

DESIGNED BY CL MINN07CY	CK. DES. BY SK 07CYGC93	DRAFTED BY MG	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

Hole Number	C1	Hole Number	C1	Hole Number	C2	Hole Number	C2	Hole Number	C3	Hole Number	C3
Station	213+01	Station	213+01	Station	214+87	Station	214+87	Station	216+79	Station	216+79
Depth	3.2 ft	Depth	5.5 ft	Depth	3.5 ft	Depth	5.2 ft	Depth	3.5 ft	Depth	5.5 ft
Soil Color	Brown	Soil Color	Brown	Soil Color	Brown	Soil Color	Brown	Soil Color	Brown	Soil Color	Brown
Classification	Gravelly Sand	Classification	Silt Clay	Classification	Gravelly Silty Sand	Classification	Silt Clay	Classification	Silty Sand	Classification	Silt Clay
Strength (Qu)	604 psf	Strength (Qu)	5,966 psf	Strength (Qu)	718 psf	Strength (Qu)	6,029 psf	Strength (Qu)	766 psf	Strength (Qu)	7,641 psf
Dry Density	116.7 pcf	Dry Density	109.5 pcf	Dry Density	114.2 pcf	Dry Density	114.2 pcf	Dry Density	114.0 pcf	Dry Density	117.3 pcf
Wet Density	124.4 pcf	Wet Density	127.3 pcf	Wet Density	123.4 pcf	Wet Density	134.0 pcf	Wet Density	129.7 pcf	Wet Density	135.1 pcf
Moisture	6.6 %	Moisture	16.2 %	Moisture	7.4 %	Moisture	17.3 %	Moisture	13.8 %	Moisture	15.2 %
Pass No. 10	68.5 %	Pass No. 10	97.0 %	Pass No. 10	68.4 %	Pass No. 10	98.6 %	Pass No. 10	84.1 %	Pass No. 10	98.2 %
Pass No. 40	41.8 %	Pass No. 40	91.2 %	Pass No. 40	41.2 %	Pass No. 40	93.3 %	Pass No. 40	65.4 %	Pass No. 40	91.7 %
Pass No. 200	17.1 %	Pass No. 200	70.5 %	Pass No. 200	24.5 %	Pass No. 200	74.7 %	Pass No. 200	29.9 %	Pass No. 200	71.3 %
Sand Content	51.5 %	Sand Content	26.5 %	Sand Content	44.0 %	Sand Content	23.9 %	Sand Content	54.2 %	Sand Content	26.9 %
Silt Content	9.7 %	Silt Content	32.9 %	Silt Content	14.3 %	Silt Content	36.5 %	Silt Content	15.8 %	Silt Content	39.1 %
Clay Content	7.4 %	Clay Content	37.6 %	Clay Content	10.1 %	Clay Content	38.3 %	Clay Content	14.1 %	Clay Content	32.2 %



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
- ⊖ Caved
- Sample Zone

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.

	Factored Bearing Resistance, R _r	Friction Angle (Φ)	Cohesion (c)	Wet Unit Weight (γ _w)
Base Course	2000	32°	0 psf	135 pcf
Foundation Soil	2000	22°	150 psf	125 pcf
Drainage Fill/ Granular Backfill	-	34°	0 psf	105 pcf
Retained Soil	-	18°	500 psf	125 pcf

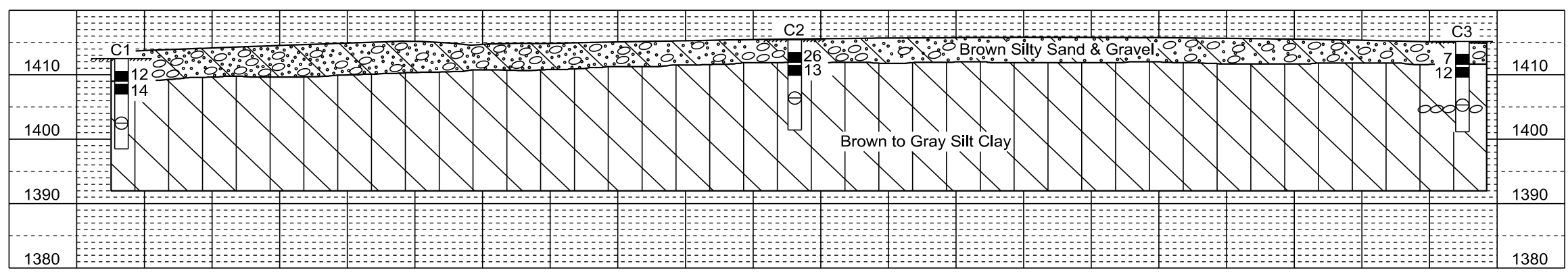
GROUNDWATER ELEVATIONS

NOVEMBER 2022

C1	(CAVED) 1402.5
C2	(CAVED) 1406.4
C3	(CAVED) 1405.3

TEMPORARY WALL "A"
SUBSURFACE INVESTIGATION
 FOR
CONCRETE BLOCK RETAINING WALL
 ADJ. TO I-229 SEC. 28-T101N-R49W
 IM 2292(105)3

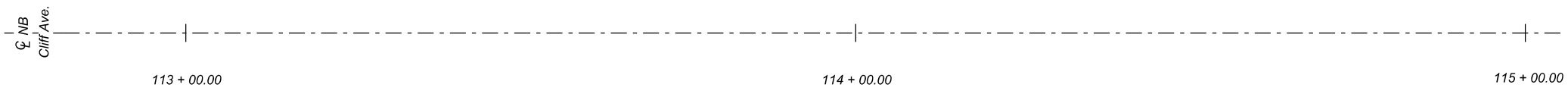
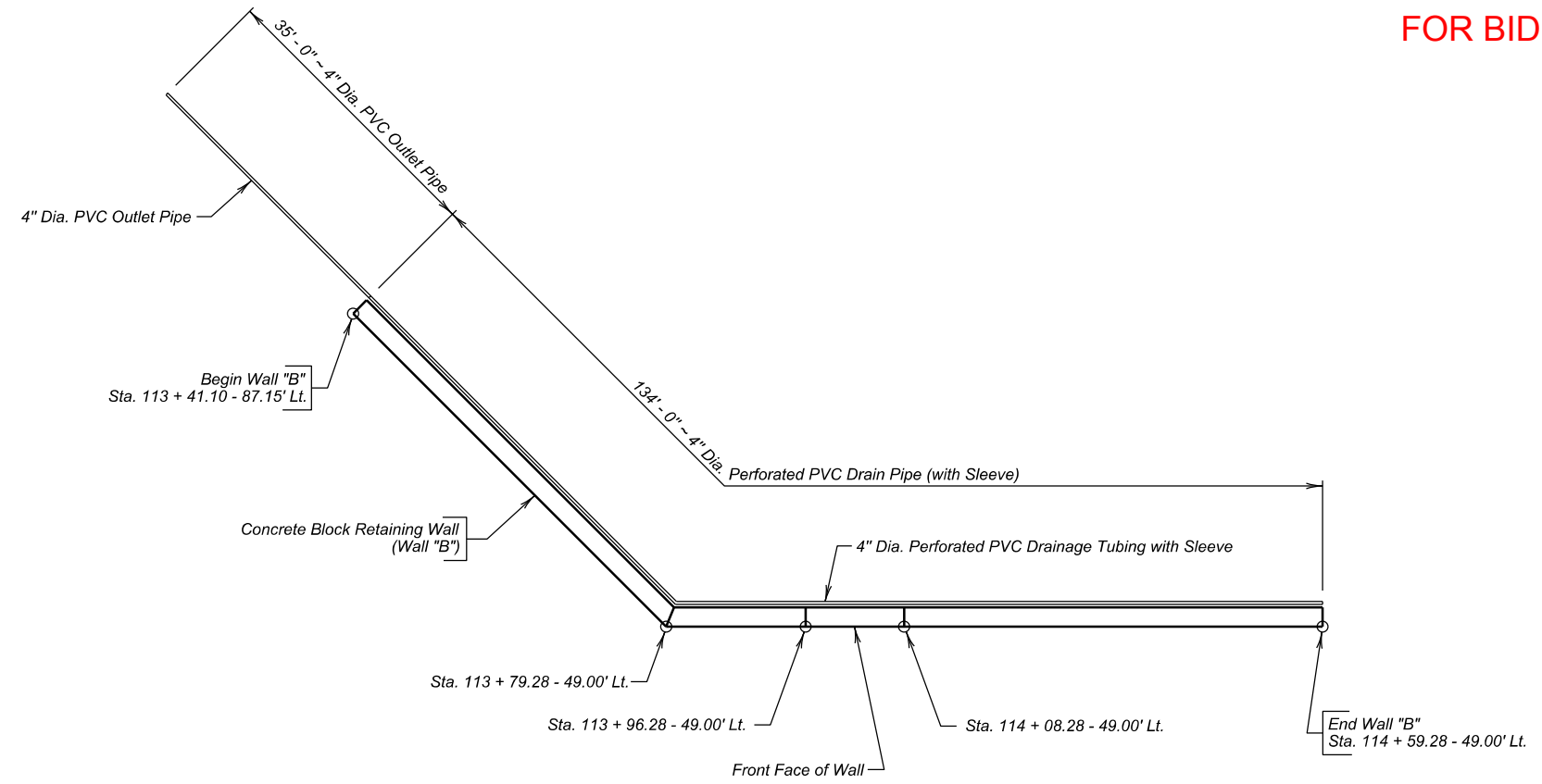
MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 OCTOBER 2023



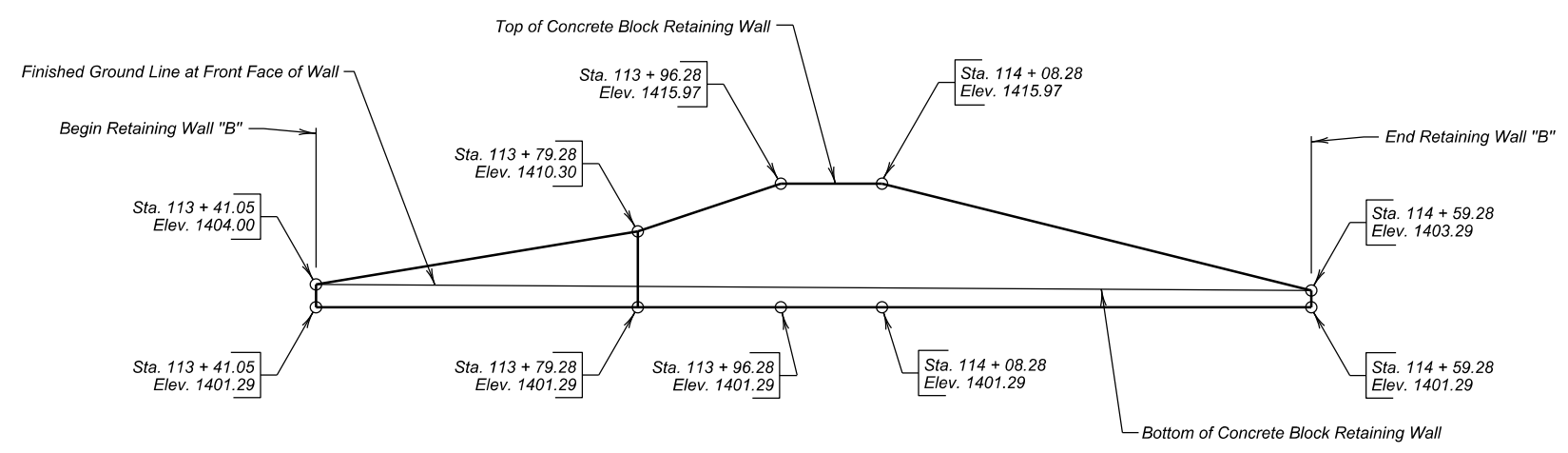
NOTE:
Stations and offsets are from \bar{C} NB Cliff Ave.

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E12	E16



PLAN



ELEVATION
(4" Dia. Drain Pipes not shown)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Gravity Large Concrete Block	Sq. Ft.	1119
Granular Backfill for Gravity Large Concrete Block	Cu. Yd.	242.5
Porous Backfill	Ton	9.4
4" Underdrain	Ft.	169
Footing Undercut	Cu. Yd.	34.8
Structure Excavation, Retaining Wall	Cu. Yd.	14.9

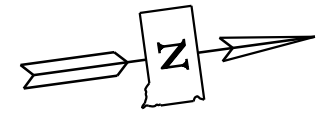
TEMPORARY WALL "B"
LAYOUT
FOR
CONCRETE BLOCK RETAINING WALL
ADJ. TO I - 229 SEC. 28-T101N-R49W
IM 2292(105)3

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2023

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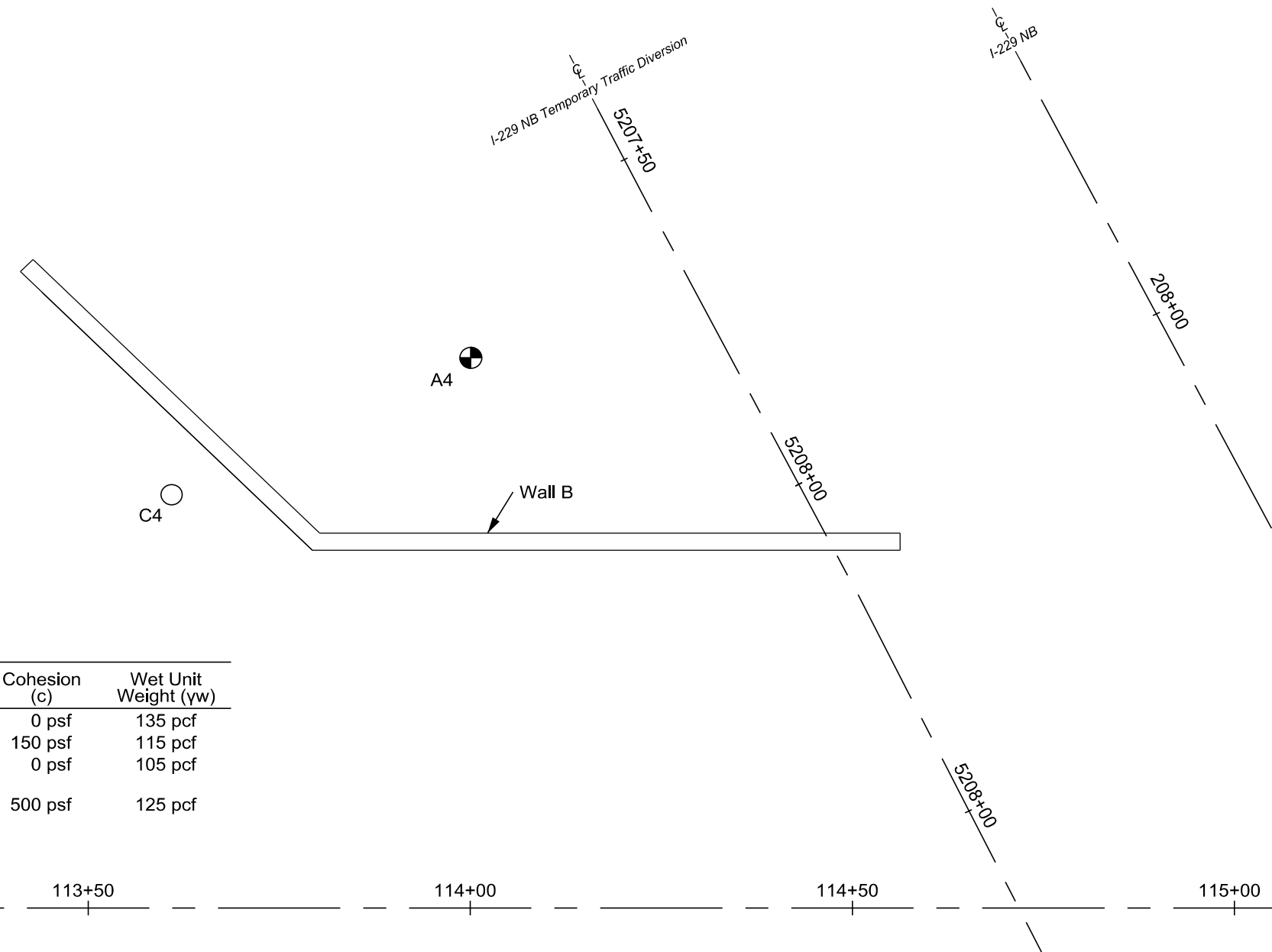
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E13	E16



Hole Number	C4
Station	113+60
Depth	3.5 ft
Soil Color	Dark Brown
Classification	Silt Clay
Strength (Qu)	1,230 psf
Dry Density	83.4 pcf
Wet Density	97.7 pcf
Moisture	17.0 %
Pass No. 10	99.3 %
Pass No. 40	93.8 %
Pass No. 200	80.1 %
Sand Content	19.2 %
Silt Content	49.5 %
Clay Content	30.6 %

Hole Number	C4
Station	113+60
Depth	5.5 ft
Soil Color	Dark Brown
Classification	Silt Clay
Strength (Qu)	8,436 psf
Dry Density	100.9 pcf
Wet Density	118.4 pcf
Moisture	17.3 %
Pass No. 10	99.7 %
Pass No. 40	93.1 %
Pass No. 200	77.7 %
Sand Content	22.0 %
Silt Content	45.0 %
Clay Content	32.7 %



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
- ⊖ Caved
- ⊙ Auger Test
- Sample Zone

All auger test holes are drilled with a 4½ inch diameter continuous flight auger.

Penetration test holes are drilled with a 6⅝ 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.

Retaining Wall Soil Parameters

	Factored Bearing Resistance, R _r	Friction Angle (Φ)	Cohesion (c)	Wet Unit Weight (γ _w)
Base Course	5000	32°	0 psf	135 pcf
Foundation Soil	5000	22°	150 psf	115 pcf
Drainage Fill/ Granular Backfill	-	34°	0 psf	105 pcf
Retained Soil	-	18°	500 psf	125 pcf

GROUNDWATER ELEVATIONS

JUNE 2022

A4 (CAVED) 1393.2

NOVEMBER 2022

C4 (CAVED) 1393.3

TEMPORARY WALL "B"

SUBSURFACE INVESTIGATION

FOR

CONCRETE BLOCK RETAINING WALL

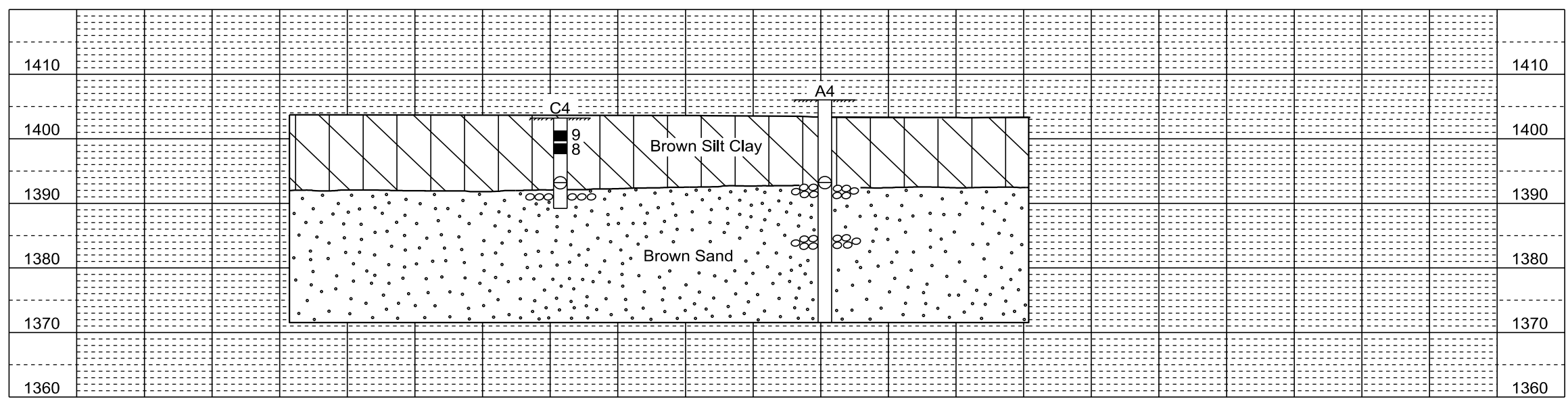
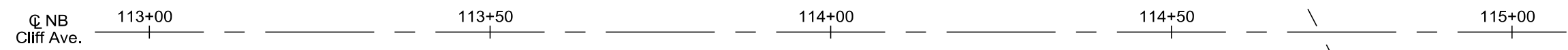
ADJ. TO I - 229

SEC. 28-T101N-R49W
IM 2292(105)3

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

OCTOBER 2023

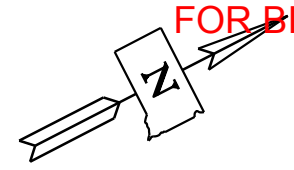


DESIGNED BY CL MINN07CY	CK. DES. BY JT/SK 07CYGC96	DRAFTED BY HK/MG	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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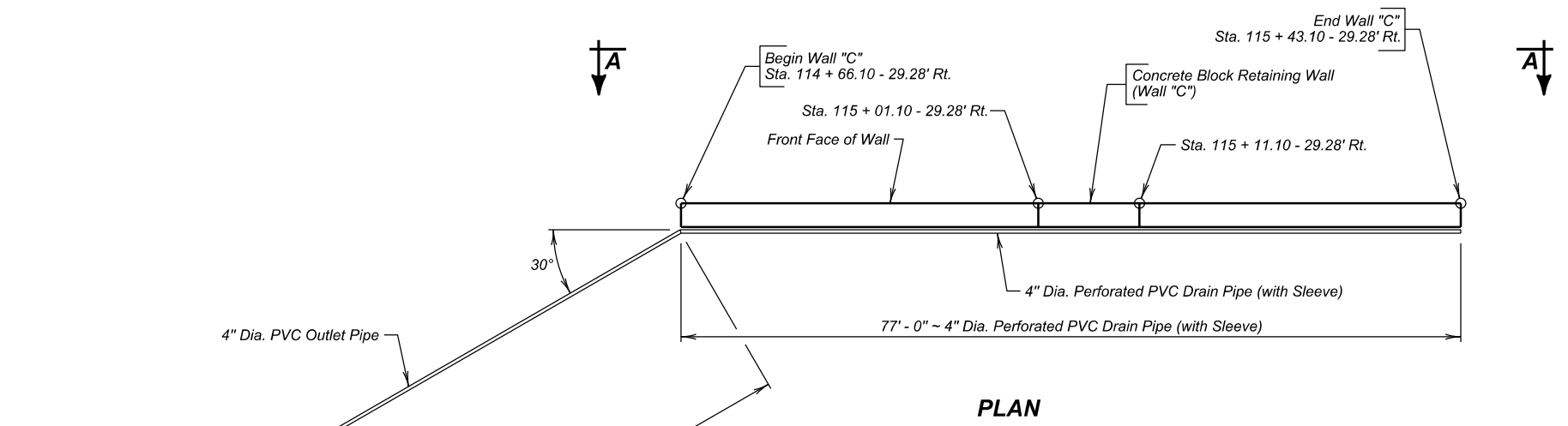
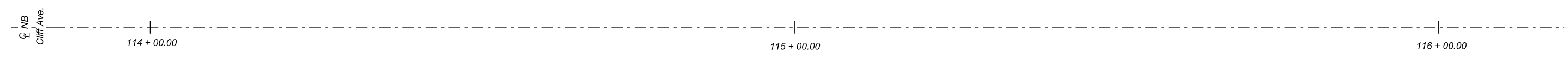
NOTE:
Stations and offsets are from \bar{C} NB Cliff Ave.

Revised March 20, 2024 SK

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E14	E16

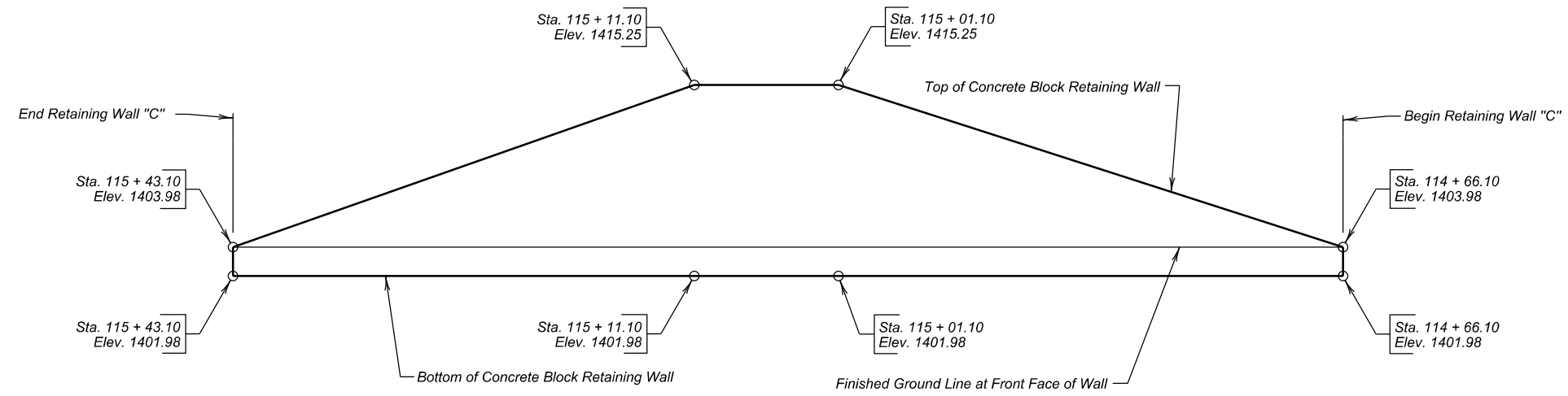


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PLAN

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Gravity Large Concrete Block	Sq. Ft.	644
Granular Backfill for Gravity Large Concrete Block	Cu. Yd.	144.3
Porous Backfill	Ton	5.4
4" Underdrain	Ft.	153
Footing Undercut	Cu. Yd.	20.0
Structure Excavation, Retaining Wall	Cu. Yd.	8.6



VIEW A - A
(4" Dia. Drain Pipes not shown)

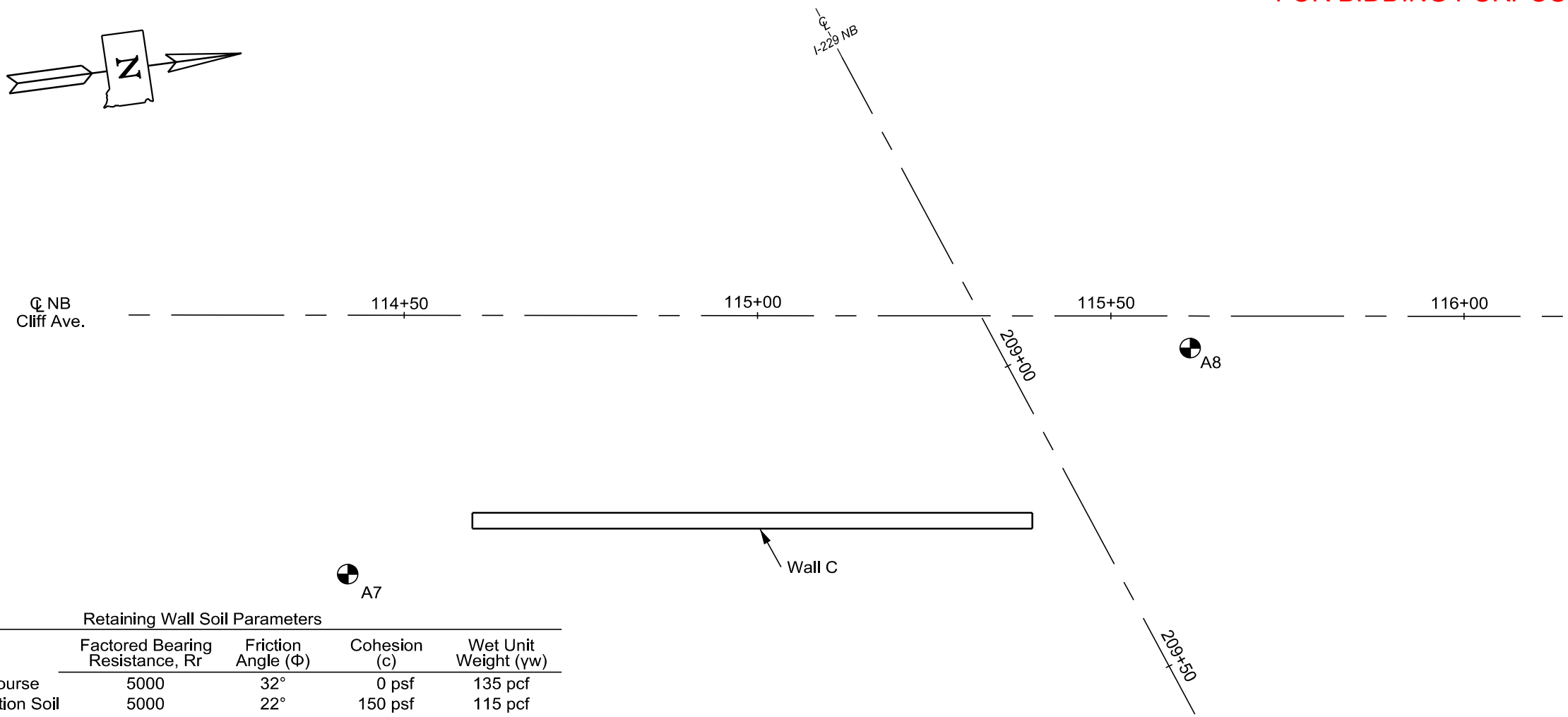
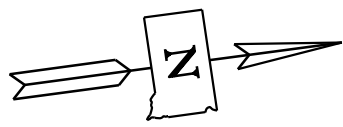
TEMPORARY WALL "C"
LAYOUT
FOR
CONCRETE BLOCK RETAINING WALL
ADJ. TO I - 229 SEC. 28-T101N-R49W
IM 2292(105)3

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2023

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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E15	E16



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.

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Retaining Wall Soil Parameters				
	Factored Bearing Resistance, R _r	Friction Angle (Φ)	Cohesion (c)	Wet Unit Weight (γ _w)
Base Course	5000	32°	0 psf	135 pcf
Foundation Soil	5000	22°	150 psf	115 pcf
Drainage Fill/ Granular Backfill	-	34°	0 psf	105 pcf
Retained Soil	-	18°	500 psf	125 pcf

LEGEND

⊕ Auger Test ▽ Water

All auger test holes are drilled with a 4½ inch diameter continuous flight auger.

GROUNDWATER ELEVATIONS

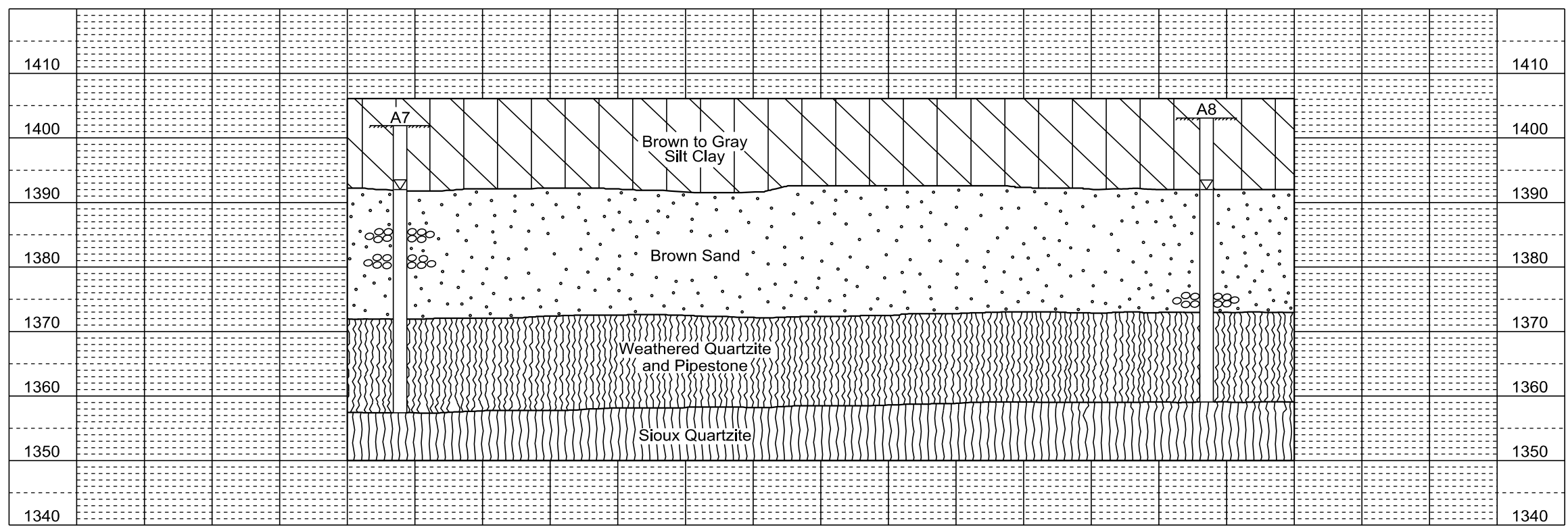
JUNE 2022	
A7	1392.0
A8	1392.0

TEMPORARY WALL "C"

SUBSURFACE INVESTIGATION
FOR
CONCRETE BLOCK RETAINING WALL
ADJ. TO I-229 SEC. 28-T101N-R49W
STA. 114 + 62.64 TO 115 + 33.89 IM 2292(105)3
PCN 07CY

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

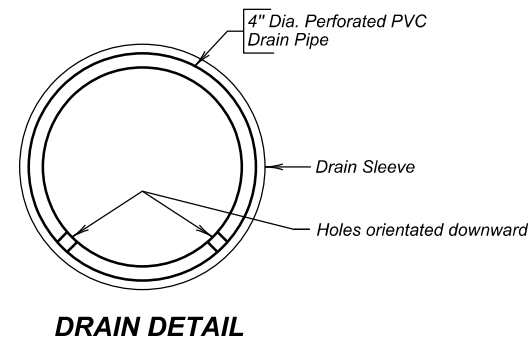
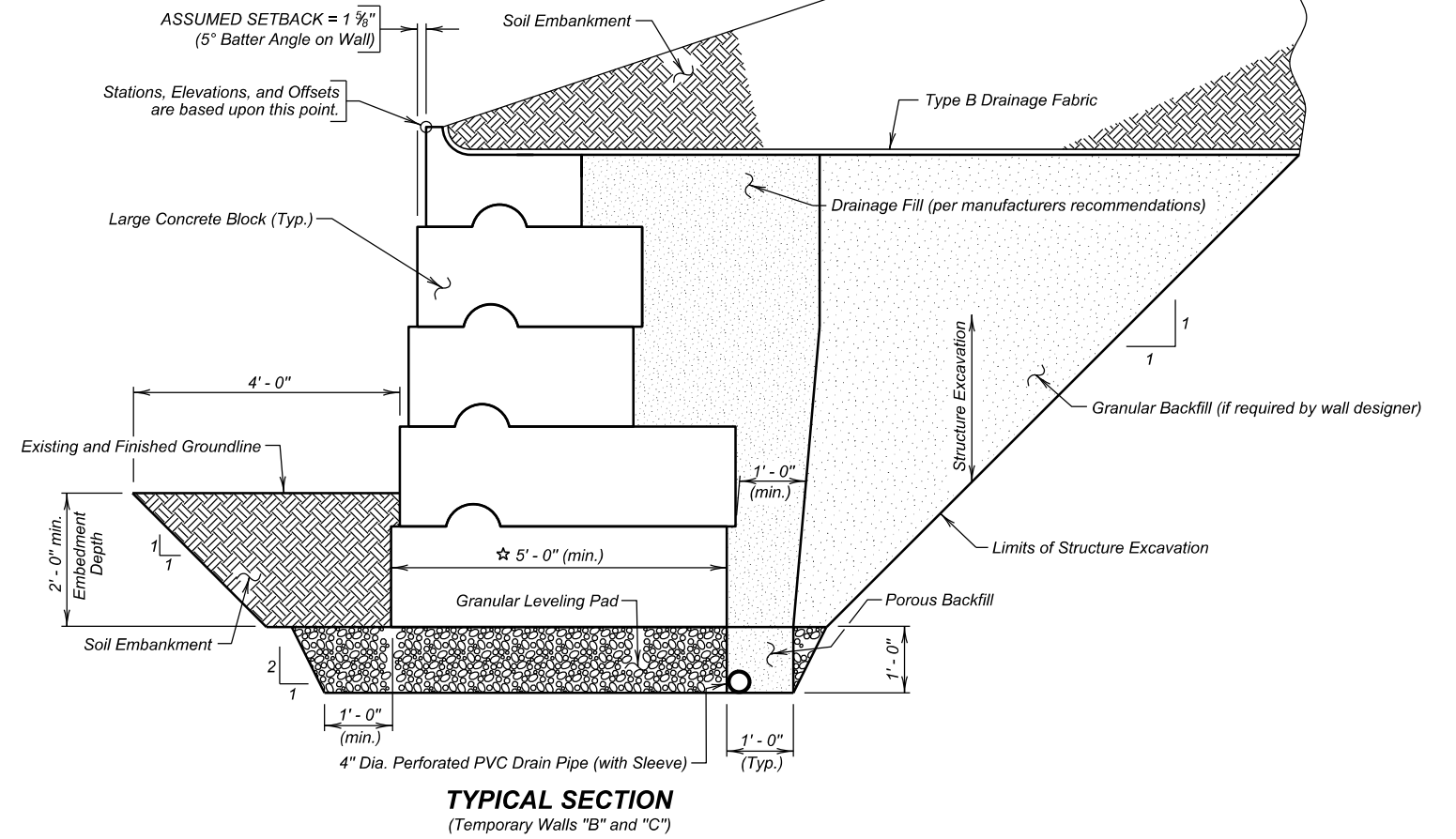
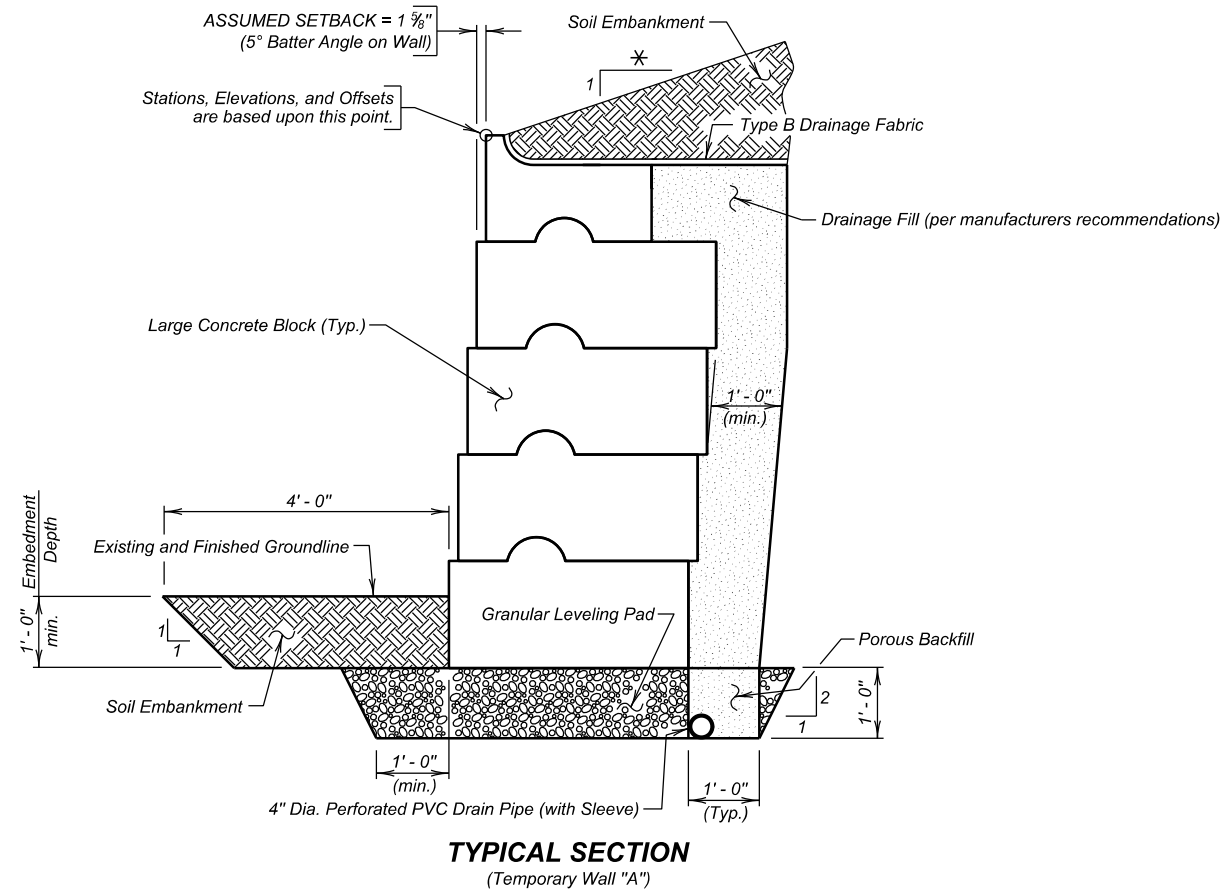
OCTOBER 2023



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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(105)3	E16	E16



- ☆ Bottom two base rows of Gravity Large Concrete Block Wall will be a minimum of 5' - 0" wide.
- * See Cross Sections for Finished Slope. (Max slope = 2 : 1)

TYPICAL SECTION AND DETAILS
FOR
TEMPORARY CONCRETE BLOCK
RETAINING WALLS

ADJ. TO I - 229 SEC. 28-T101N-R49W
IM 2292(105)3

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
OCTOBER 2023

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