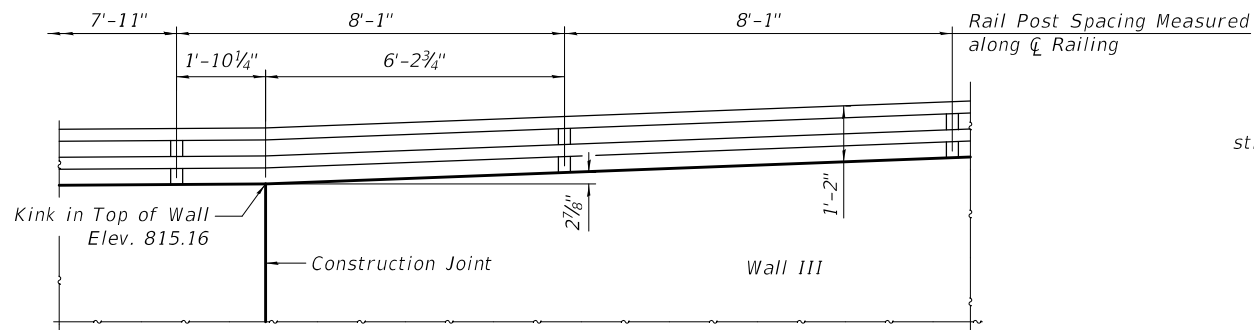
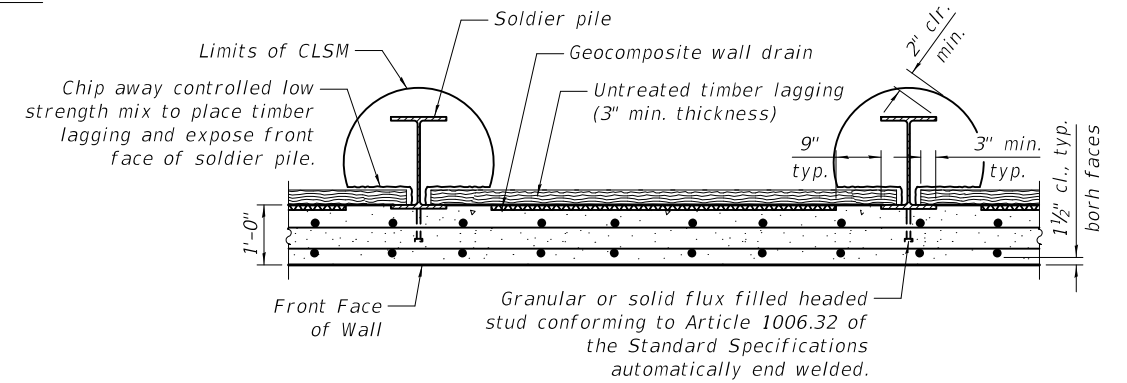


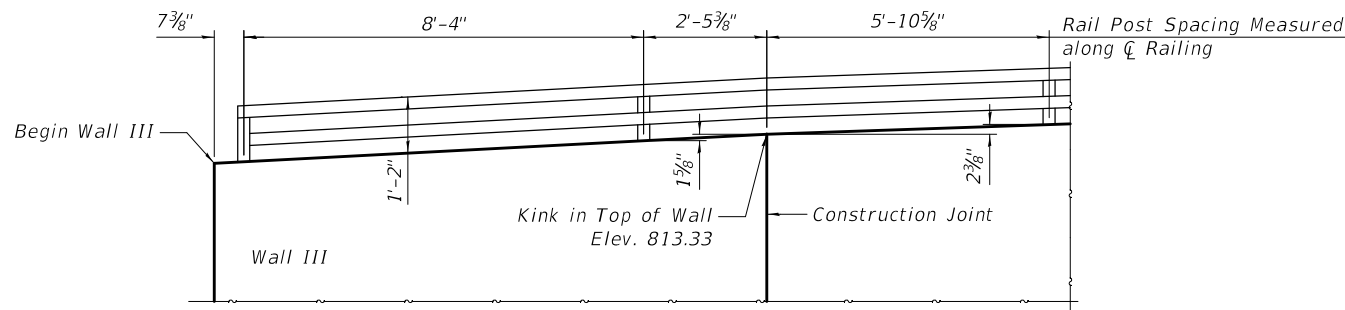
SHEAR STUD DETAIL
(Elevation of pile shown)



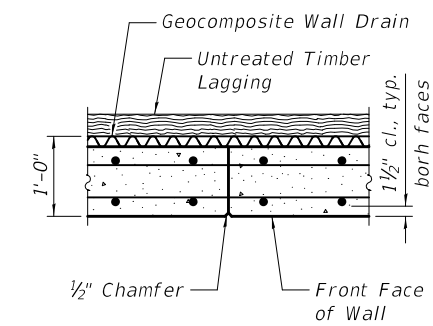
VIEW G-G
See Sheet SA-21 & SA-22 for additional railing details.



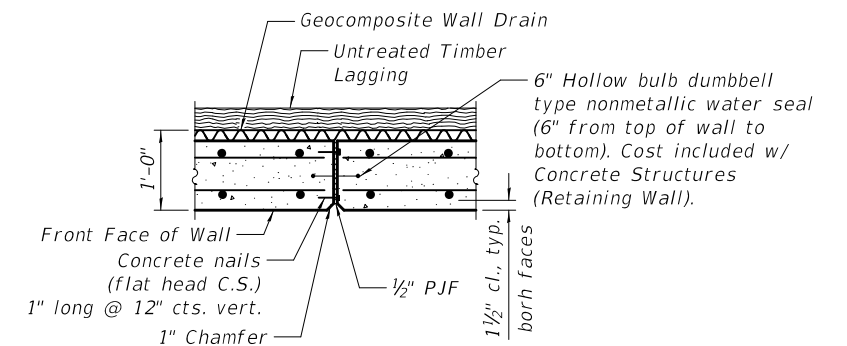
SECTION THROUGH DRILLED SOLDIER PILE WALL



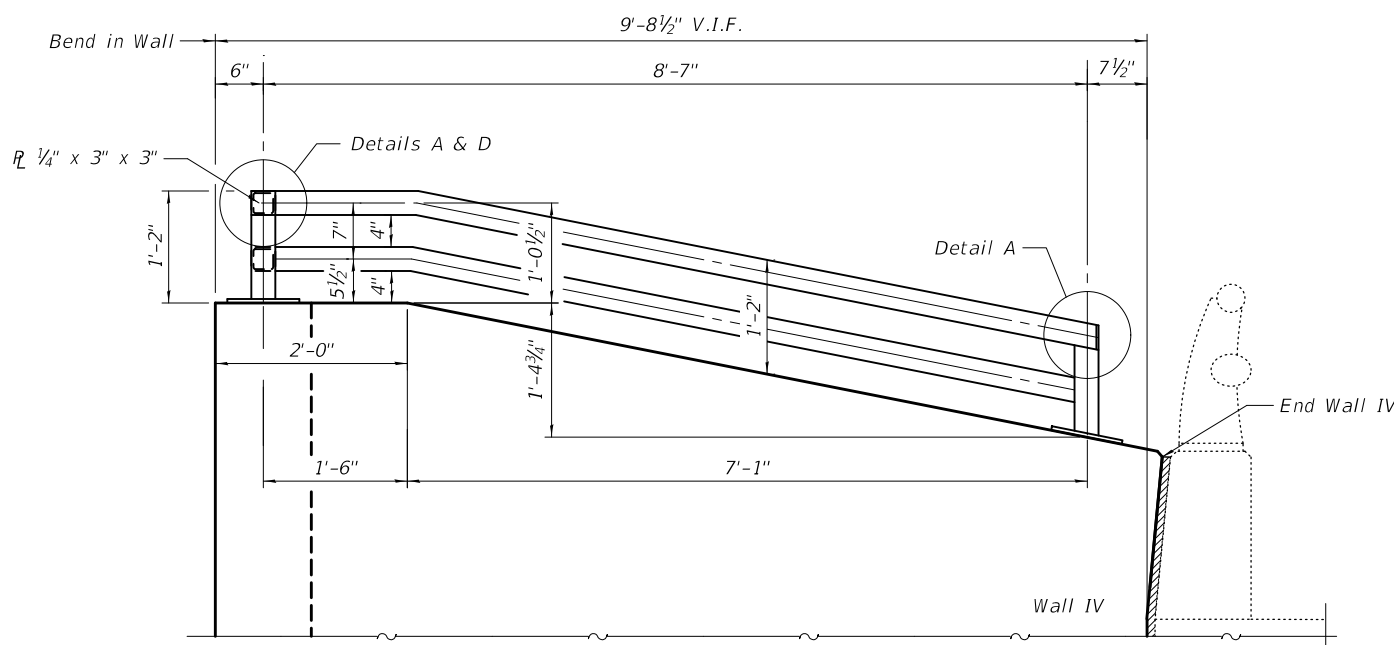
VIEW H-H
See Sheet SA-21 & SA-22 for additional railing details.



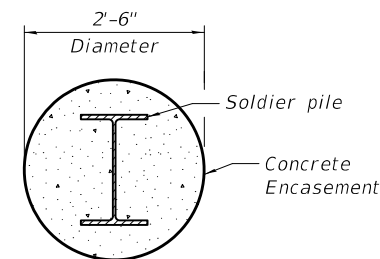
CONSTRUCTION JOINT DETAIL



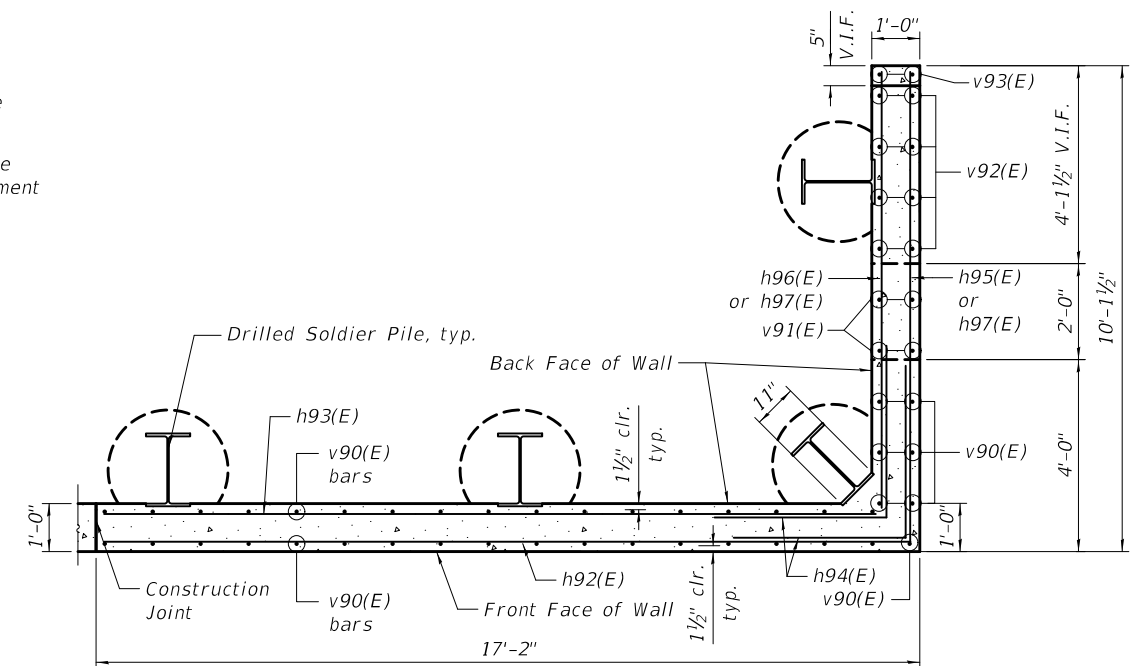
TYPICAL EXPANSION JOINT DETAIL



VIEW F-F
See Sheet SA-21 for Details A & D and additional railing details.



SOLDIER PILE ENCASEMENT



SECTION D-D

MODEL: Default
FILE NAME: ...0490008-61187-015-Wall Details II

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Two Pierce Place, Suite 1400
Lasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
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USER NAME = mc	DESIGNED - KLK	REVISED -
PLOT SCALE = N/A	DRAWN - KLK	REVISED -
PLOT DATE = 10/1/2024	CHECKED - GJH	REVISED -
	DATE - 10/01/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**WALL DETAILS II
STRUCTURE NO. 049-0008**

SHEET SA-15 OF SA-26 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 401
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

SOLDIER PILE DATA TABLE - WALL I

Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
1	W18x76	22+99.32	36.49 Lt.	814.00	796.00	18.00	810.00	5
2	W18x76	23+04.98	30.84 Lt.	814.00	792.00	22.00	807.04	8
3	W18x97	23+10.63	25.18 Lt.	814.00	786.00	28.00	804.06	11
4	W18x97	23+16.29	19.52 Lt.	814.00	780.00	34.00	801.08	14

SOLDIER PILE DATA TABLE - WALL II

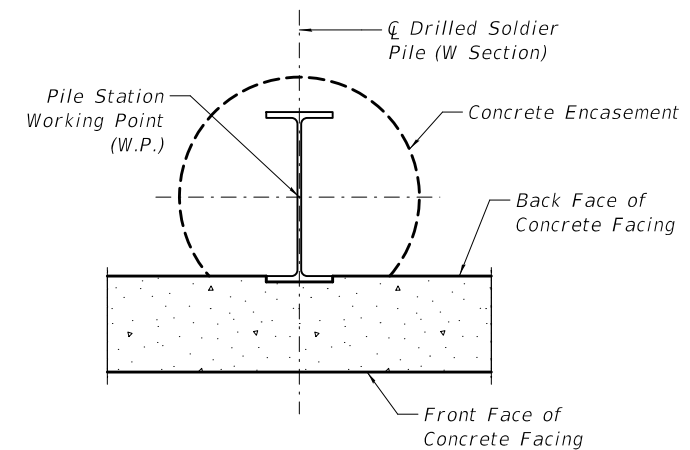
Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
5	W18x97	23+16.73	19.08 Rt.	814.00	777.70	36.30	800.73	14
6	W18x97	23+11.60	24.21 Rt.	814.00	782.70	31.30	802.77	12
7	W18x97	23+06.48	29.33 Rt.	814.00	788.80	25.20	804.82	10
8	W18x76	23+01.35	34.46 Rt.	814.00	791.80	22.20	806.86	8
9	W18x76	22+96.23	39.59 Rt.	814.00	794.90	19.10	808.90	6
10	W18x76	22+91.20	44.71 Rt.	814.00	796.00	18.00	810.00	5

SOLDIER PILE DATA TABLE - WALL III

Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
11	W18x76	26+72.01	21.04 Rt.	809.00	795.70	13.30	804.71	5
12	W18x76	26+61.14	18.72 Rt.	809.00	793.70	15.30	802.71	7
13	W18x76	26+51.62	18.76 Rt.	809.70	793.70	16.00	802.71	8
14	W18x76	26+41.58	18.86 Rt.	809.70	793.70	16.00	802.71	8
15	W18x76	26+31.53	18.92 Rt.	810.20	793.70	16.50	802.71	8
16	W18x76	26+21.46	18.95 Rt.	810.20	792.70	17.50	802.71	8
17	W18x76	26+13.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
18	W18x76	26+05.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
19	W18x76	25+97.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
20	W18x76	25+89.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
21	W18x76	25+81.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
22	W18x76	25+73.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
23	W18x76	25+65.36	18.95 Rt.	810.60	792.70	17.90	802.71	9
24	W18x76	25+57.36	18.95 Rt.	810.80	792.70	18.10	802.71	9
25	W18x76	25+49.36	18.95 Rt.	810.80	792.70	18.10	802.71	9
26	W18x76	25+41.36	18.95 Rt.	810.80	792.70	18.10	802.71	9
27	W18x76	25+34.49	18.95 Rt.	810.80	792.70	18.10	802.71	9
28	W18x76	25+27.08	18.95 Rt.	810.80	792.70	18.10	802.71	9
29	W18x76	25+19.66	18.95 Rt.	810.80	792.70	18.10	802.71	9
30	W18x76	25+12.24	18.95 Rt.	811.10	787.70	23.40	802.71	9
31	W18x76	25+04.82	18.95 Rt.	811.10	787.70	23.40	802.71	9
32	W18x76	24+97.41	18.95 Rt.	811.10	787.70	23.40	802.71	9
33	W18x76	24+89.99	18.95 Rt.	811.10	787.70	23.40	802.71	9
34	W18x76	24+84.88	18.95 Rt.	811.50	787.70	23.80	802.71	10
35	W18x76	24+80.72	18.95 Rt.	811.50	787.70	23.80	802.71	10
36	W18x97	24+76.56	18.95 Rt.	812.00	780.70	31.30	802.71	10
37	W18x97	24+72.40	18.95 Rt.	812.00	778.10	33.90	800.12	13

SOLDIER PILE DATA TABLE - WALL IV

Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
38	W18x97	24+77.74	18.63 Lt.	812.40	782.10	30.30	801.12	12
39	W18x97	24+94.32	18.99 Lt.	812.40	785.10	27.30	802.12	11
40	W18x97	25+01.99	18.99 Lt.	812.40	785.10	27.30	802.12	11
41	W18x97	25+09.65	19.00 Lt.	812.40	785.10	27.30	802.12	11
42	W18x76	25+17.32	19.01 Lt.	812.20	788.80	23.40	802.80	10
43	W18x76	25+24.99	19.02 Lt.	812.20	788.80	23.40	802.80	10
44	W18x76	25+32.65	19.02 Lt.	812.20	788.80	23.40	802.80	10
45	W18x76	25+40.32	19.03 Lt.	812.20	788.80	23.40	802.80	10
46	W18x76	25+47.99	19.04 Lt.	812.10	789.80	22.30	802.80	10
47	W18x76	25+55.65	19.04 Lt.	812.10	789.80	22.30	802.80	10
48	W18x76	25+63.32	19.05 Lt.	812.10	789.80	22.30	802.80	10
49	W18x76	25+70.99	19.06 Lt.	812.10	789.80	22.30	802.80	10
50	W18x76	25+76.99	19.06 Lt.	812.00	789.80	22.20	802.80	10
51	W18x76	25+84.24	19.07 Lt.	812.00	789.80	22.20	802.80	10
52	W18x76	25+91.49	19.08 Lt.	812.00	789.80	22.20	802.80	10
53	W18x76	25+98.49	19.08 Lt.	812.00	789.80	22.20	802.80	10
54	W18x76	26+05.82	19.09 Lt.	811.90	789.80	22.10	802.80	10
55	W18x76	26+13.15	19.10 Lt.	811.90	789.80	22.10	802.80	10
56	W18x76	26+19.00	19.27 Lt.	811.90	789.80	22.10	802.80	10
57	W18x76	26+18.93	25.16 Lt.	811.60	791.80	19.80	804.80	8



SOLDIER PILE WORKING POINT
(Timber Lagging not shown for clarity)

MODEL: Default
FILE NAME: ...0490008-61187-016-Wall Pile Data Tables

CIVILTECH
Two Pierce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

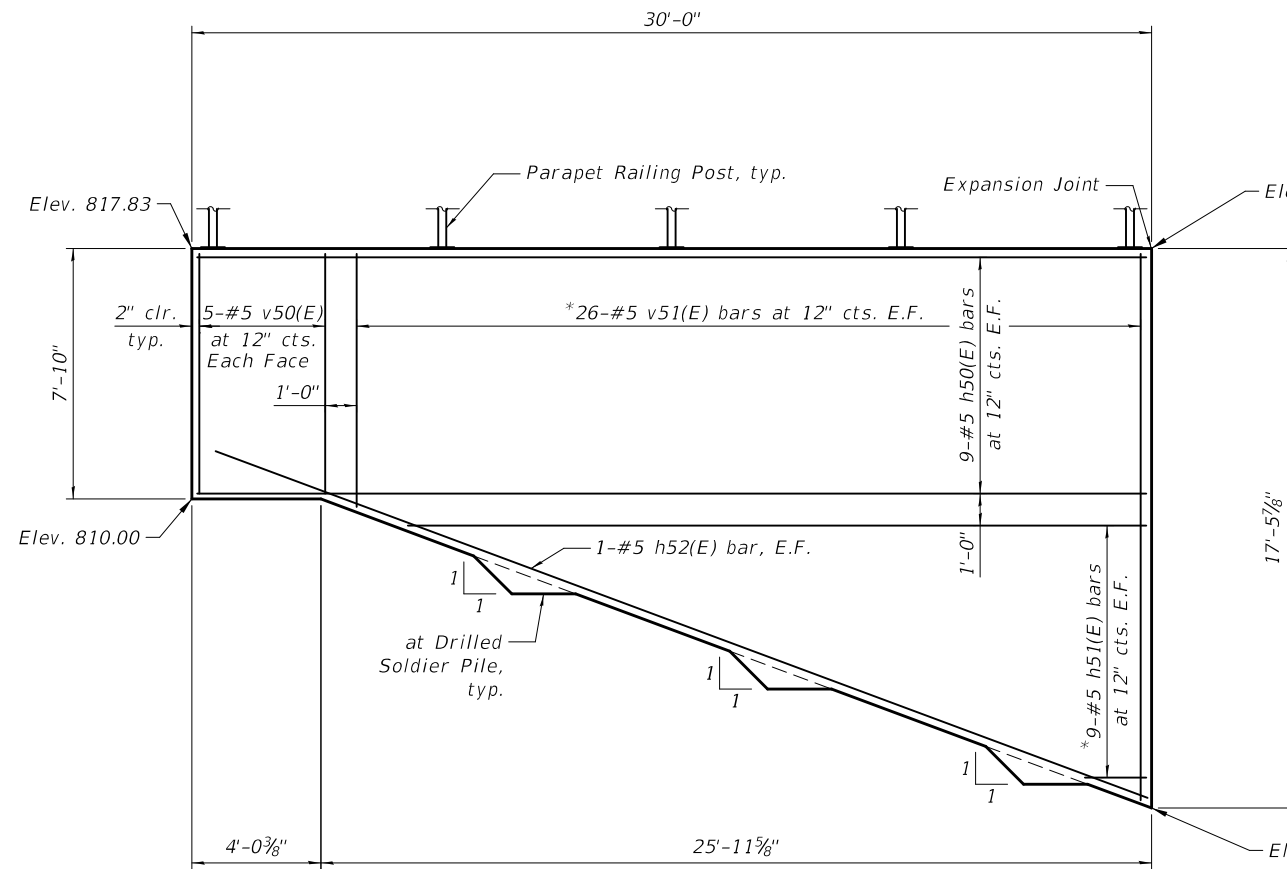
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PLOT SCALE =	N/A	DRAWN -	KLK	REVISED -	
PLOT DATE =	10/1/2024	CHECKED -	GJH	REVISED -	
		DATE -	10/01/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALL PILE DATA TABLES
STRUCTURE NO. 049-0008

SHEET SA-16 OF SA-26 SHEETS

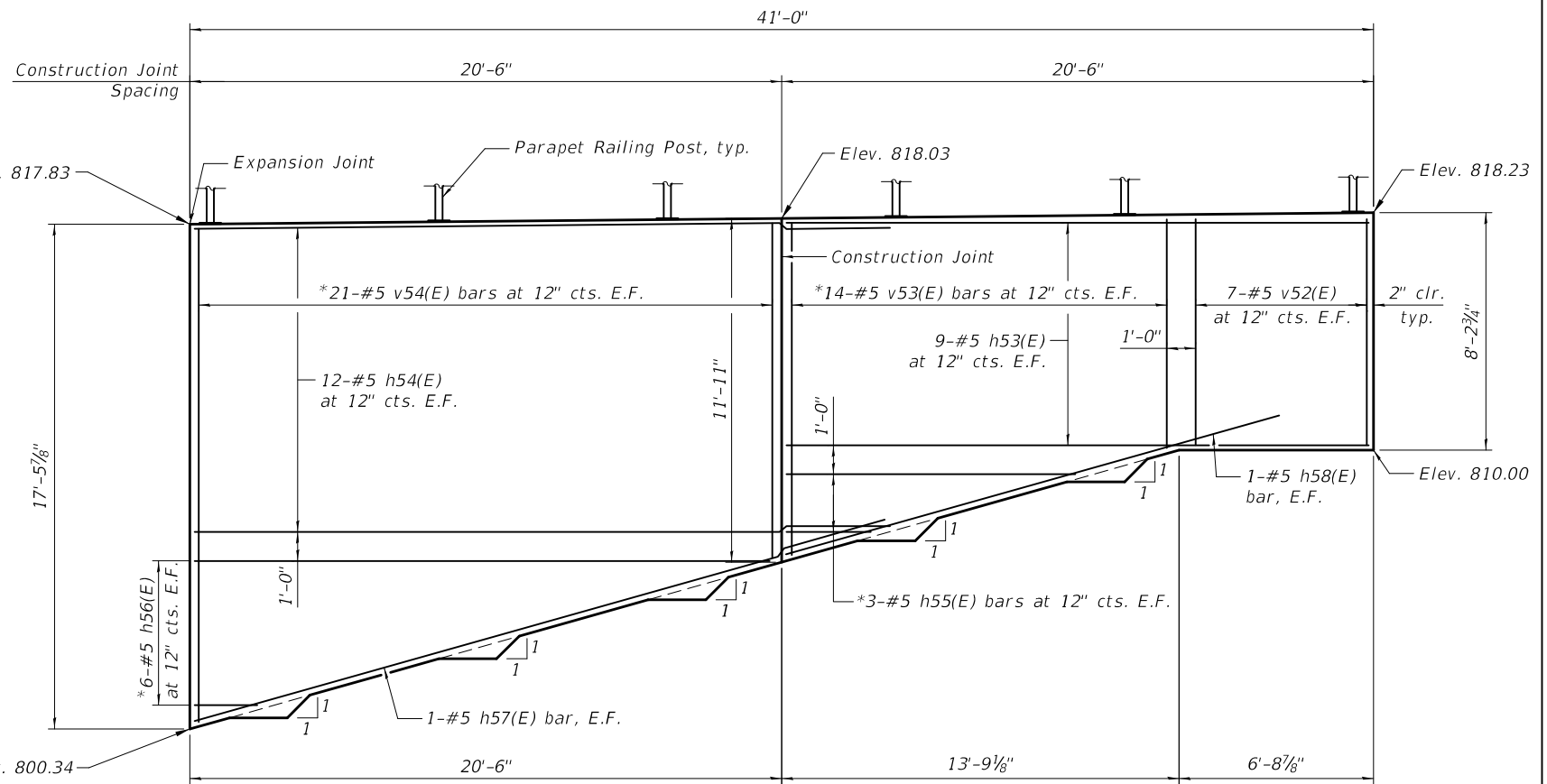
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	402
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



WALL I ELEVATION

Unfolded Elevation
Dimensions Measured along Front Face of Wall
E.F. = Each Face

* See Field Cutting Diagram on this sheet.

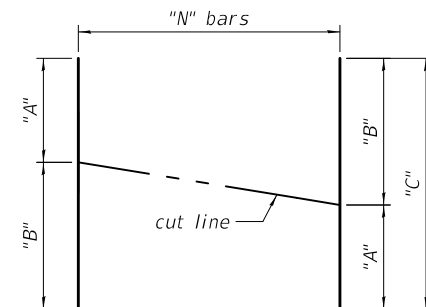


WALL II ELEVATION

Unfolded Elevation
Dimensions Measured along Front Face of Wall
E.F. = Each Face

MINIMUM BAR LAP

#5 bar = 3'-7"



FIELD CUTTING DIAGRAM

Order bars in table below full length.
Cut as shown and use remainder of bars in opposite face of panel.

Bar	"A"	"B"	"C"	"N"
h51(E)	1'-7"	23'-1"	24'-8"	9
h55(E)	2'-11"	10'-0"	12'-11"	3
h56(E)	2'-2"	19'-11"	22'-1"	6
v51(E)	7'-11"	17'-1"	25'-0"	26
v53(E)	7'-11"	11'-6"	19'-5"	14
v54(E)	11'-7"	17'-1"	28'-8"	21

BILL OF MATERIAL - WALLS I & II

Bar	No.	Size	Length	Shape
h50(E)	18	#5	29'-8"	————
h51(E)	9	#5	24'-8"	————
h52(E)	2	#5	31'-1"	————
h53(E)	18	#5	20'-2"	————
h54(E)	24	#5	24'-1"	————
h55(E)	3	#5	12'-11"	————
h56(E)	6	#5	22'-1"	————
h57(E)	2	#5	24'-11"	————
h58(E)	2	#5	17'-9"	————
v50(E)	10	#5	7'-6"	————
v51(E)	26	#5	25'-0"	————
v52(E)	14	#5	7'-10"	————
v53(E)	14	#5	19'-5"	————
v54(E)	21	#5	28'-8"	————
Protective Coat			Sq. Yd.	16
Concrete Structures (Retaining Wall)			Cu. Yd.	32.0
Reinforcement Bars, Epoxy Coated			Pound	3,890

- Notes:
1. For Construction Joint Detail and Expansion Joint Detail, see Sheet SA-15.
2. For Typical Wall Section, See Sheet SA-14.

MODEL: Default
FILE NAME: ...0490008-61187-017-Walls I & II Elevations

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Two Pierce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
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	DATE - 10/01/2024	REVISED -

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DEPARTMENT OF TRANSPORTATION

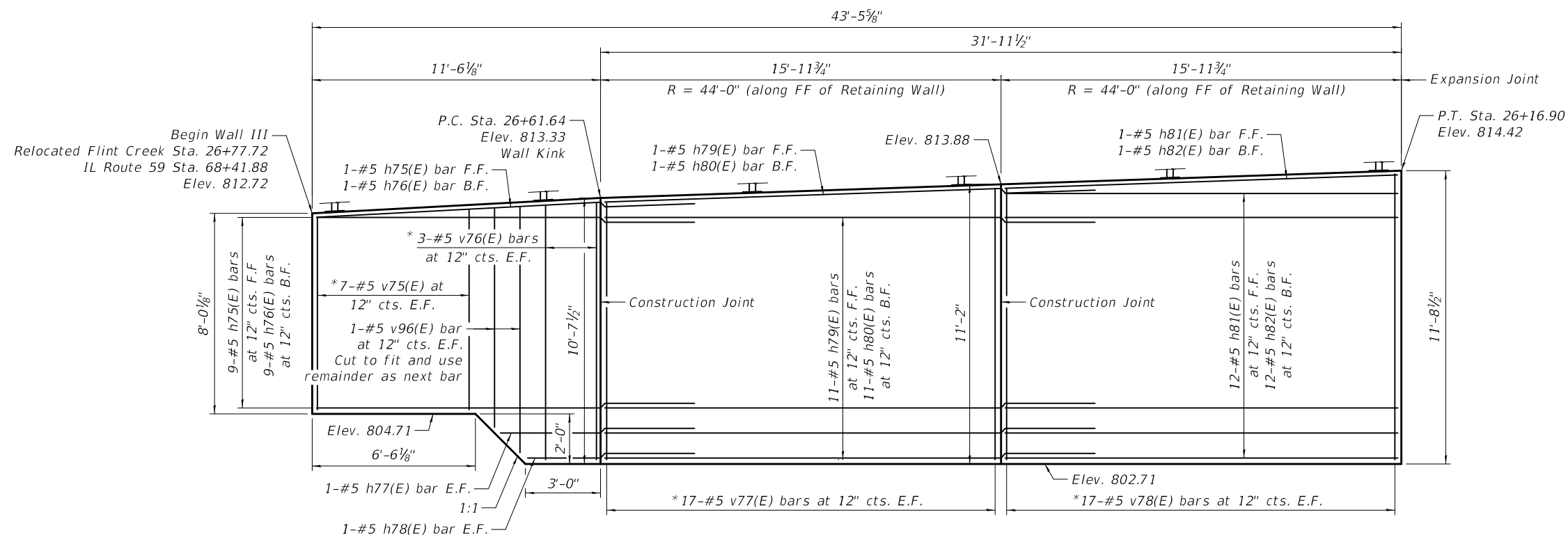
WALLS I & II ELEVATIONS
STRUCTURE NO. 049-0008

SHEET SA-17 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	403
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MINIMUM BAR LAP

#5 Bar = 3'-7"

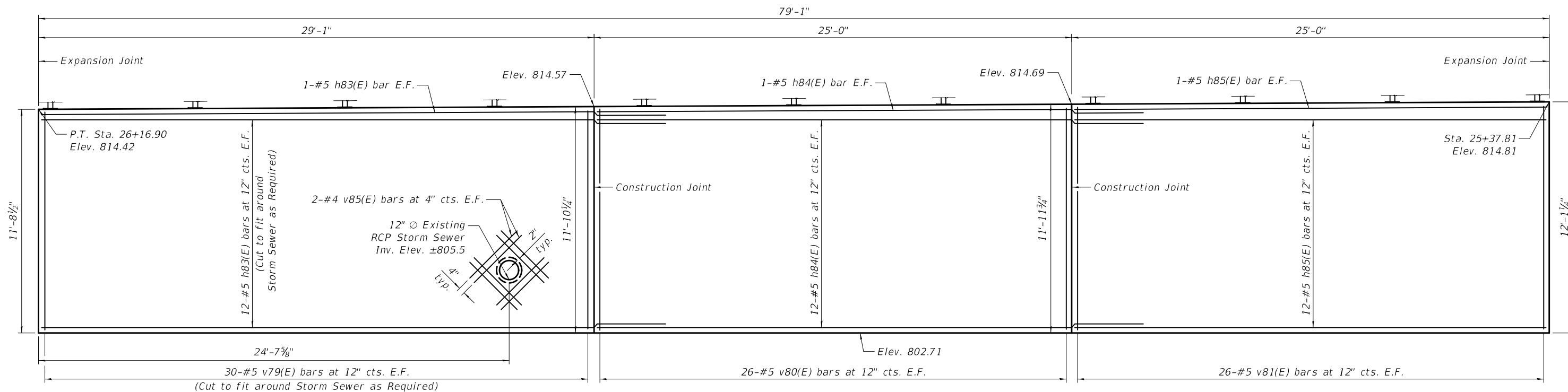


WALL III - ELEVATION A

Unfolded Elevation
 Dimensions Measured along Front Face of Wall
 E.F. = Each Face
 * See Field Cutting Diagram on Sheet SA-19

Notes:

1. For Construction Joint Detail and Expansion Joint Detail, see Sheet SA-15.
2. For Typical Wall Section, See Sheet SA-14.



WALL III - ELEVATION B

Unfolded Elevation
 Dimensions Measured along Front Face of Wall
 E.F. = Each Face

MODEL: Default
 FILE NAME: ...0490008-61187-018-Wall III Elevations A & B

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 Moline, IL 61401
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PLOT SCALE =	N/A	DRAWN -	KLK	REVISED -	
PLOT DATE =	10/1/2024	CHECKED -	GJH	REVISED -	
		DATE -	10/01/2024	REVISED -	

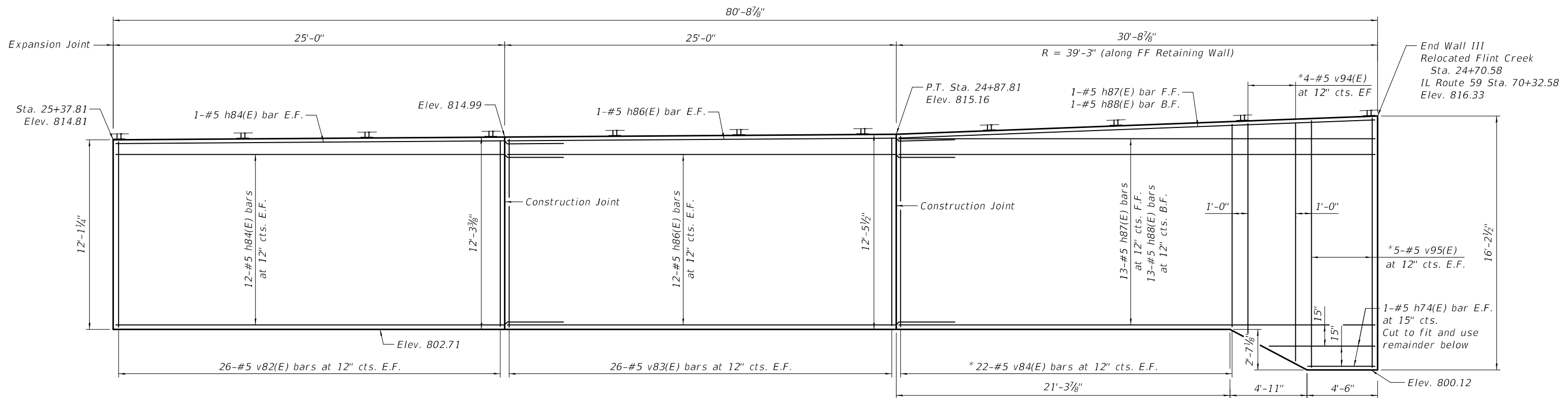
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALL III ELEVATIONS A & B
STRUCTURE NO. 049-0008

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	404
CONTRACT NO. 61187				

SHEET SA-18 OF SA-26 SHEETS

ILLINOIS FED. AID PROJECT



WALL III - ELEVATION C

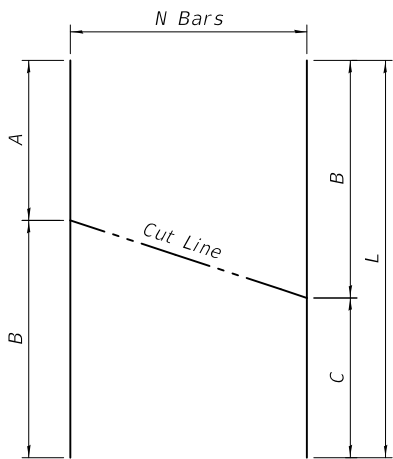
Unfolded Elevation
 Dimensions Measured along Front Face of Wall
 E.F. = Each Face
 * See Field Cutting Diagram this Sheet

- Notes:
- For Construction Joint Detail and Expansion Joint Detail, see Sheet SA-15.
 - For Typical Wall Section, See Sheet SA-14.

MINIMUM BAR LAP
 #5 Bar = 3'-7"

**WALL III
 BILL OF MATERIAL**

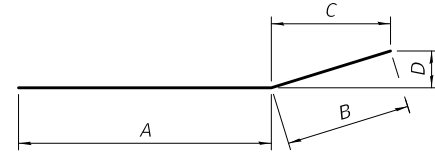
Bar	No.	Size	Length	Shape
h74(E)	2	#5	11'-0"	—
h75(E)	10	#5	15'-1"	—
h76(E)	10	#5	14'-11"	—
h77(E)	2	#5	7'-9"	—
h78(E)	2	#5	6'-7"	—
h79(E)	12	#5	19'-6"	—
h80(E)	12	#5	19'-1"	—
h81(E)	13	#5	15'-7"	—
h82(E)	13	#5	15'-4"	—
h83(E)	26	#5	32'-8"	—
h84(E)	52	#5	28'-7"	—
h85(E)	26	#5	24'-8"	—
h86(E)	26	#5	28'-7"	—
h87(E)	14	#5	30'-6"	—
h88(E)	14	#5	31'-1"	—
v75(E)	7	#5	15'-8"	—
v76(E)	3	#5	20'-5"	—
v77(E)	17	#5	21'-2"	—
v78(E)	17	#5	22'-3"	—
v79(E)	60	#5	11'-5"	—
v80(E)	52	#5	11'-7"	—
v81(E)	52	#5	11'-8"	—
v82(E)	52	#5	11'-10"	—
v83(E)	52	#5	12'-0"	—
v84(E)	22	#5	25'-1"	—
v85(E)	16	#4	3'-6"	—
v94(E)	4	#5	28'-9"	—
v95(E)	5	#5	31'-8"	—
v96(E)	2	#5	18'-7"	—
Concrete Structures (Retaining Wall)			Cu. Yd.	90.2
Reinforcement Bars, Epoxy Coated			Pound	11,210



FIELD CUTTING DIAGRAM

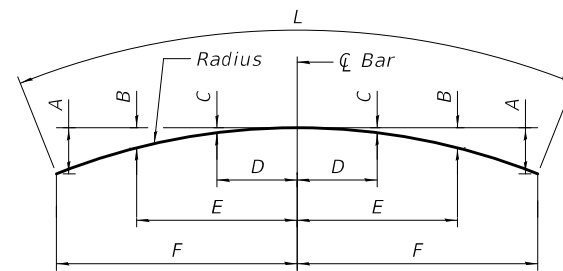
Order bars full length. Cut as shown on the Field Cutting Diagram, and use the remainder of bars on the other face of wall.

Bar	A	B	L	N
v75(E)	7'-8"	8'-0"	15'-8"	7
v76(E)	10'-2"	10'-3"	20'-5"	3
v77(E)	10'-4"	10'-10"	21'-2"	17
v78(E)	10'-10"	11'-5"	22'-3"	17
v84(E)	12'-2"	12'-11"	25'-1"	22
v94(E)	13'-7"	15'-2"	28'-9"	4
v95(E)	15'-9"	15'-11"	31'-8"	5



BARS h75(E), h76(E), h77(E), h78(E), and h86(E)

Bar	A	B	C	D
h75(E)	11'-4"	3'-9"	3'-4 1/4"	1'-8 1/8"
h76(E)	11'-2"	3'-9"	3'-4 1/4"	1'-8 1/8"
h77(E)	4'-0"	3'-9"	3'-4 1/4"	1'-8 1/8"
h78(E)	2'-10"	3'-9"	3'-4 1/4"	1'-8 1/8"
h86(E)	24'-10"	3'-9"	3'-9"	2 1/8"



RADIAL HORIZONTAL BARS

Bar	Radius	L	A	B	C	D	E	F
h79(E)	43'-10"	19'-6"	1'-1"	5 3/4"	1 1/8"	3'-2 5/8"	6'-5 3/8"	9'-8"
h80(E)	43'-2"	19'-1"	1'-0 3/8"	5 1/2"	1 3/8"	3'-1 1/8"	6'-3 3/4"	9'-5 1/2"
h81(E)	43'-10"	15'-7"	8 1/4"	3 3/8"	0 1/8"	2'-7"	5'-2"	7'-9"
h82(E)	43'-2"	15'-4"	8 1/8"	3 3/8"	0 1/8"	2'-6 1/2"	5'-1"	7'-7 1/2"
h87(E)	39'-5"	30'-6"	2'-11"	1'-3 1/4"	3 3/4"	4'-11 1/2"	9'-11"	14'-10 1/2"
h88(E)	40'-1"	31'-1"	2'-11 3/4"	1'-3 1/2"	3 3/8"	5'-0 3/8"	10'-1 1/4"	15'-1 1/8"

MODEL: Default
 FILE NAME: ...0490008-61187-019-Wall III Elevation C

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 Two Plerce Place, Suite 1400
 Itasca, Illinois 60143
 Tel: 630.773.3900
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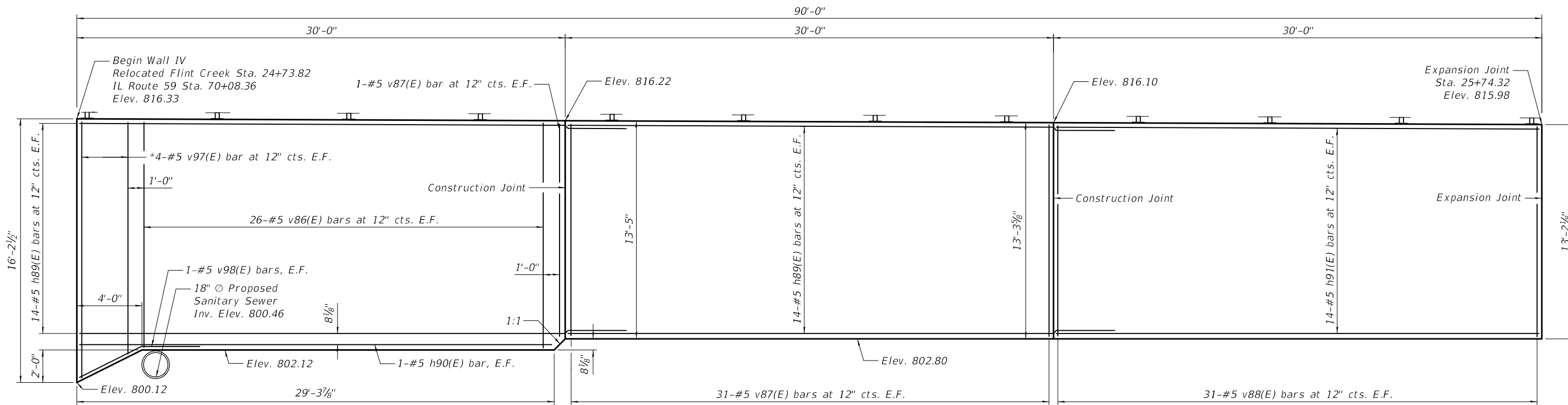
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PLOT SCALE = N/A	DRAWN - KLK	REVISED -
PLOT DATE = 10/1/2024	CHECKED - GJH	REVISED -
	DATE - 10/01/2024	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**WALL III ELEVATION C
 STRUCTURE NO. 049-0008**

SHEET SA-19 OF SA-26 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 405
CONTRACT NO. 61187			ILLINOIS FED. AID PROJECT	



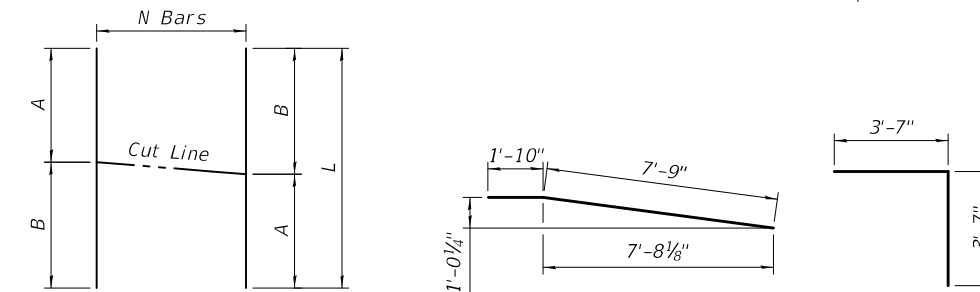
WALL IV - ELEVATION A

Unfolded Elevation
Dimensions Measured along Front Face of Wall
E.F. = Each Face

- Notes:
* See Field Cutting Diagram
1. For Section D-D, See Sheet SA-15.
2. For Construction Joint Detail and Expansion Joint Detail, see Sheet SA-15.
3. For Typical Wall Section, See Sheet SA-14.

MINIMUM BAR LAP

#5 Bar = 3'-7"



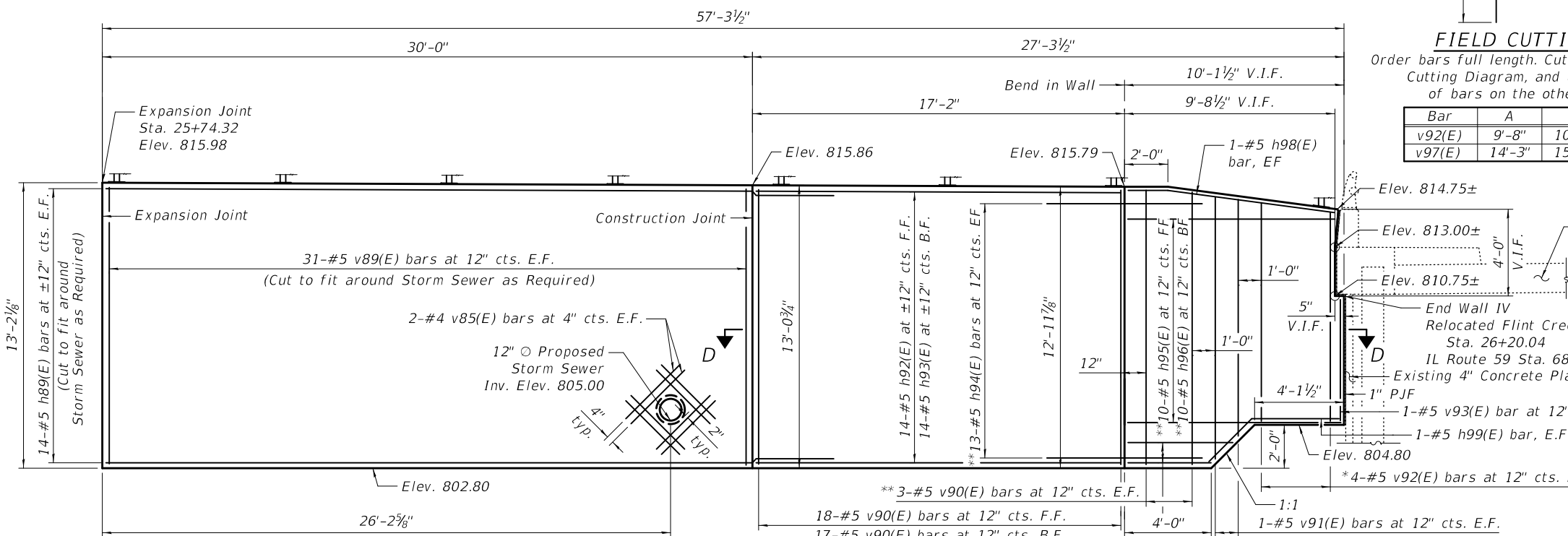
FIELD CUTTING DIAGRAM

Order bars full length. Cut as shown on the Field Cutting Diagram, and use the remainder of bars on the other face of wall.

Bar	A	B	L	N
v92(E)	9'-8"	10'-1"	19'-9"	4
v97(E)	14'-3"	15'-9"	30'-0"	4

h98(E) BAR

h94(E) BAR



WALL IV - ELEVATION B

Unfolded Elevation
Dimensions Measured along Front Face of Wall
** Cut in Field as Needed
V.I.F. = Verify in Field

h99(E) BAR

v98(E) BAR

WALL IV BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h89(E)	84	#5	33'-7"	—
h90(E)	2	#5	29'-0"	—
h91(E)	28	#5	29'-8"	—
h92(E)	14	#5	16'-10"	—
h93(E)	14	#5	16'-1"	—
h94(E)	26	#5	7'-2"	—
h95(E)	10	#5	9'-10"	—
h96(E)	10	#5	9'-0"	—
h97(E)	2	#5	8'-4"	—
h98(E)	2	#5	9'-7"	—
h99(E)	2	#5	6'-9"	—
v85(E)	16	#4	3'-6"	—
v86(E)	52	#5	13'-10"	—
v87(E)	64	#5	13'-0"	—
v88(E)	62	#5	12'-11"	—
v89(E)	62	#5	12'-9"	—
v90(E)	41	#5	12'-8"	—
v91(E)	2	#5	23'-0"	—
v92(E)	4	#5	19'-9"	—
v93(E)	2	#5	5'-7"	—
v97(E)	4	#5	30'-0"	—
v98(E)	2	#5	7'-10"	—
Protective Coat		Sq. Yd.	54	
Concrete Structures (Retaining Wall)		Cu. Yd.	72.2	
Reinforcement Bars, Epoxy Coated		Pound	8,940	

MODEL: Default
FILE NAME: ...0490008-61187-020-Wall IV Elevations A & B

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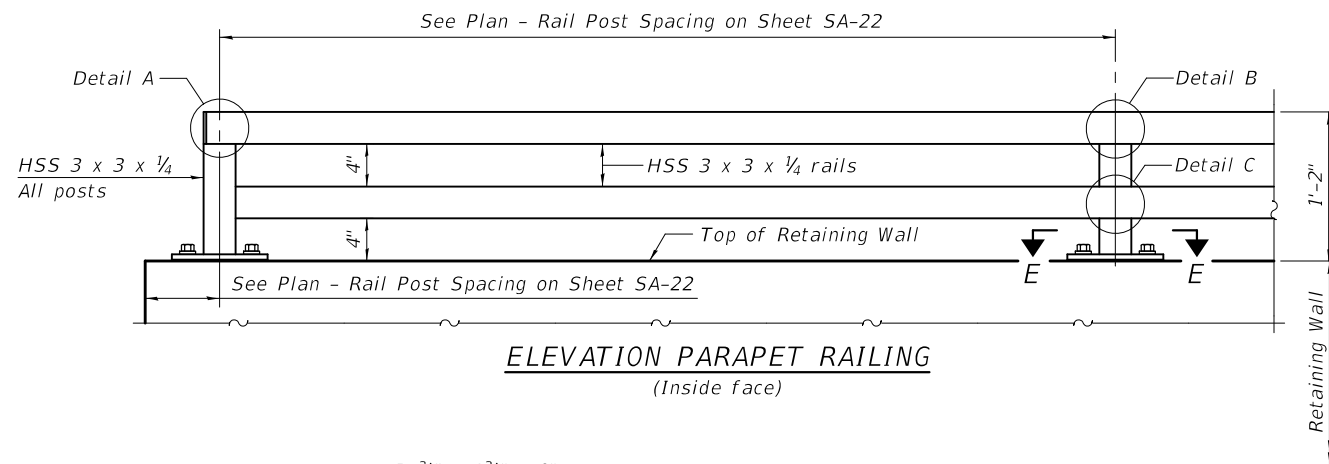
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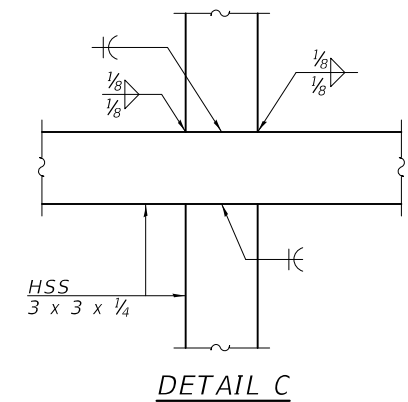
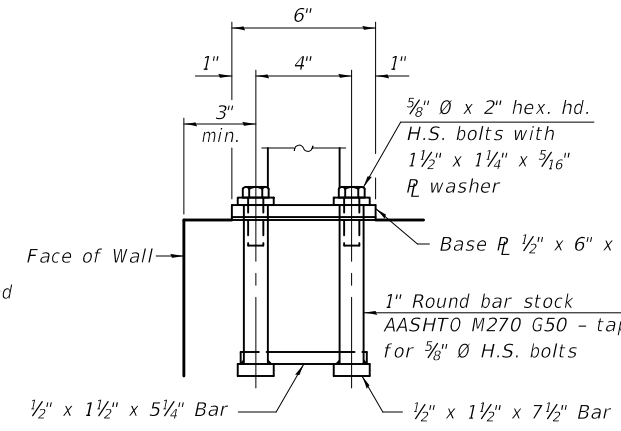
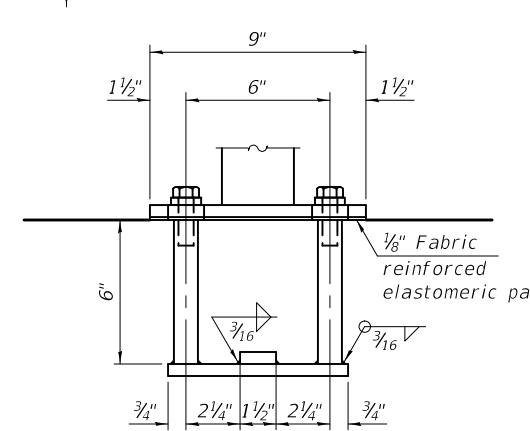
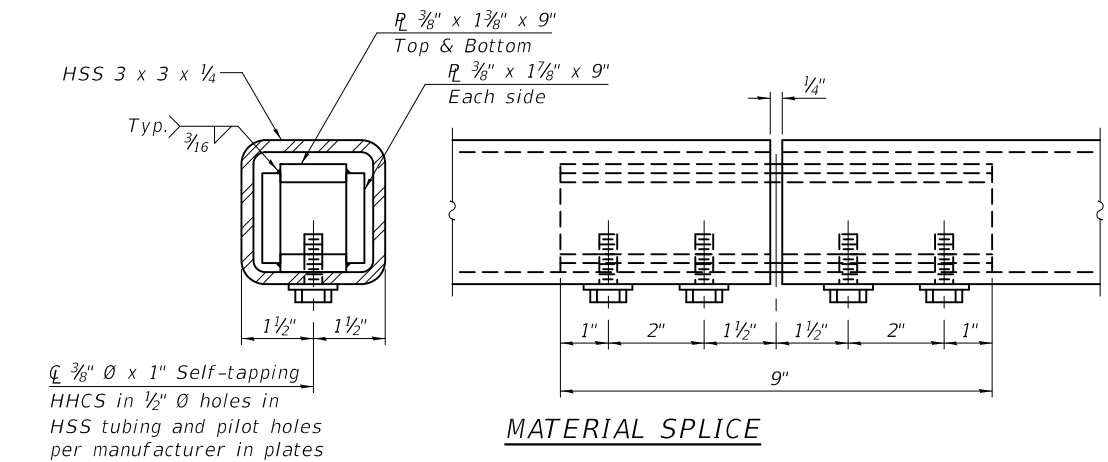
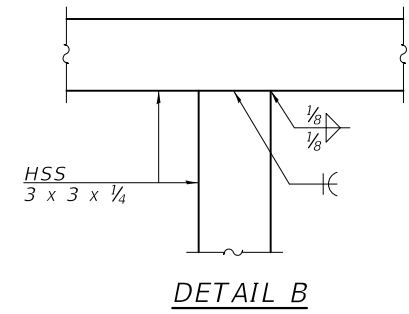
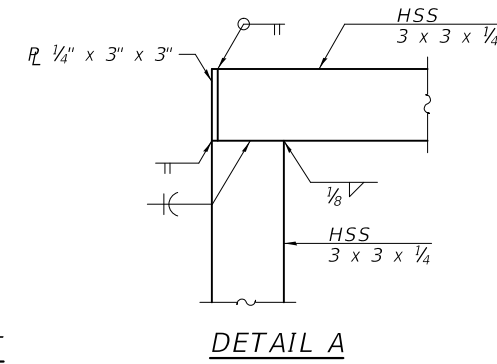
**WALL IV ELEVATIONS A & B
STRUCTURE NO. 049-0008**

SHEET SA-20 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	406
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



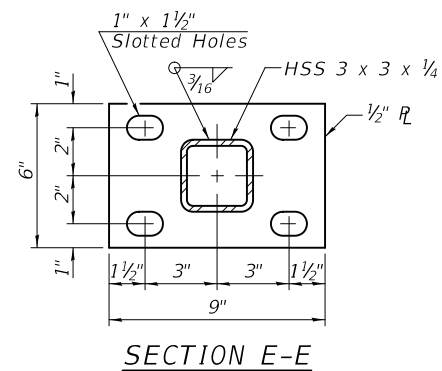
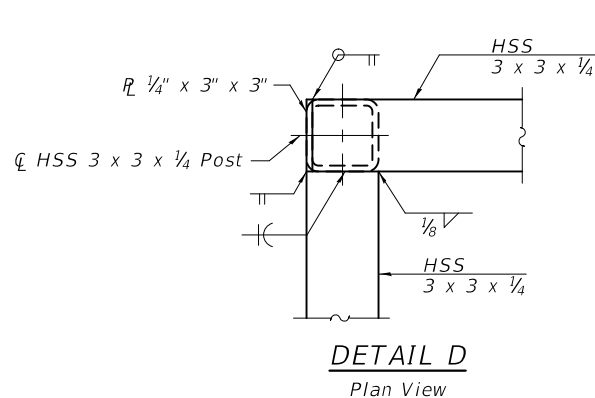
PARAPET RAILING
ELEVATION AT EXPANSION JOINT



ANCHORAGE ASSEMBLY

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8" Ø fully threaded anchor rods with the same plate washers as specified above and heavy hex lock nuts according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

- Notes:
- Place reinforcement bars to miss anchor rod locations.
 - All HSS tubing used for the Parapet Railing shall be CVN tested according to Article 1006.34(b) of the Standard Specifications.
 - All HSS tubing used for the Parapet Railing shall be ASTM A500 grade C.
 - All base plates used for the Parapet Railing shall be AASHTO M270 grade 50.
 - All heavy hex nuts shall be according to ASTM A 563 grade DH.
 - All fully threaded anchor rods shall be ASTM F1554 grade 105.
 - The post base plate shall be fastened to the curb snug tight and given an additional 1/8" turn.
 - Rail splice inserts may be built out of bent plates of the same thicknesses and outside geometry limits as the 4 plate rail splice inserts shown.
 - All steel rail elements shall be galvanized according to Section 509.05 of the Standard Specification.
 - All posts, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black.
 - For Rail Post Spacing for Retaining Walls I through IV and the culvert headwalls, see Sheet SA-22 - 'Wall Railing Details I'.



RAILING CRITERIA

MASH 2016 Test Level	4
Parapet Railing Weight (plf)	25
Max Post Spacing	10'-0"

MODEL: Default
FILE NAME: ...0490008-61187-021-Wall Railing Details I

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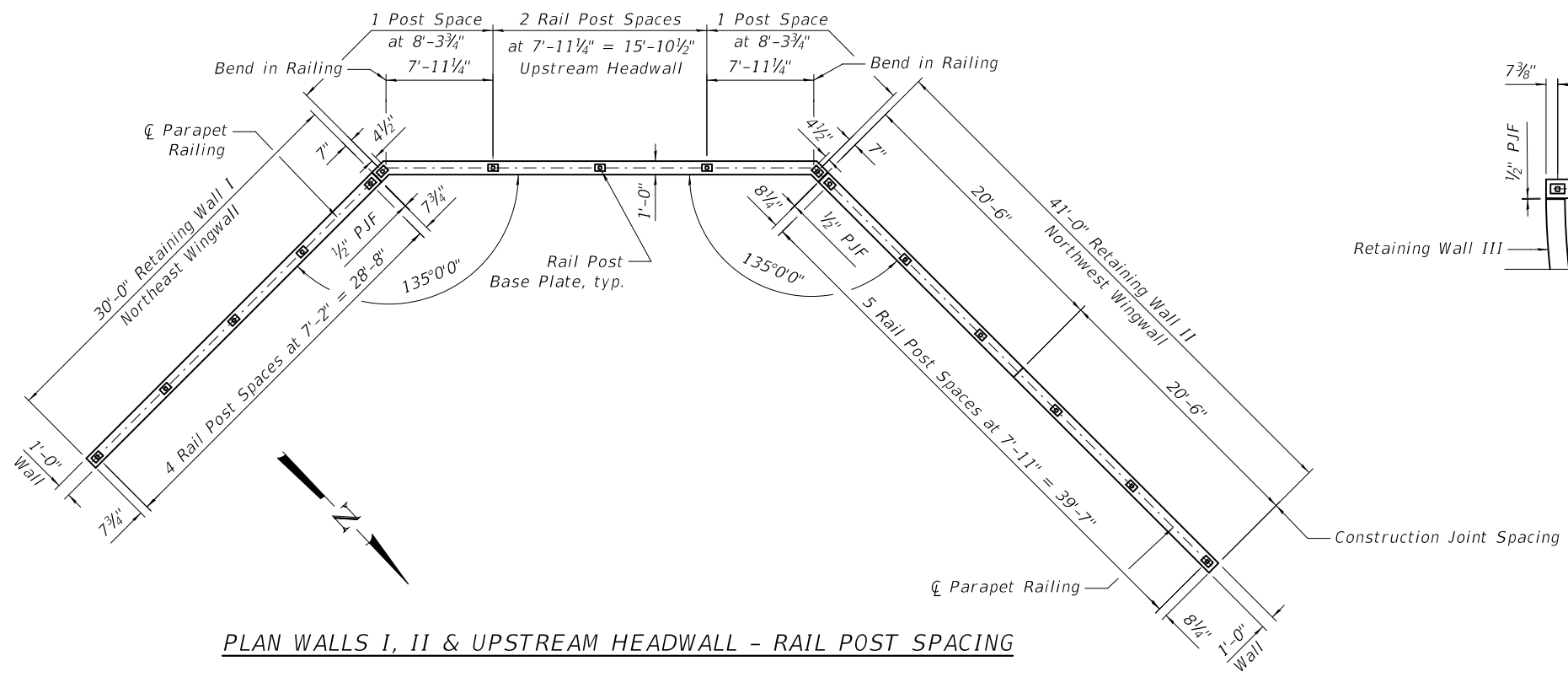
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PLOT SCALE = N/A	DRAWN - KLK	REVISED -
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WALL RAILING DETAILS I
STRUCTURE NO. 049-0008

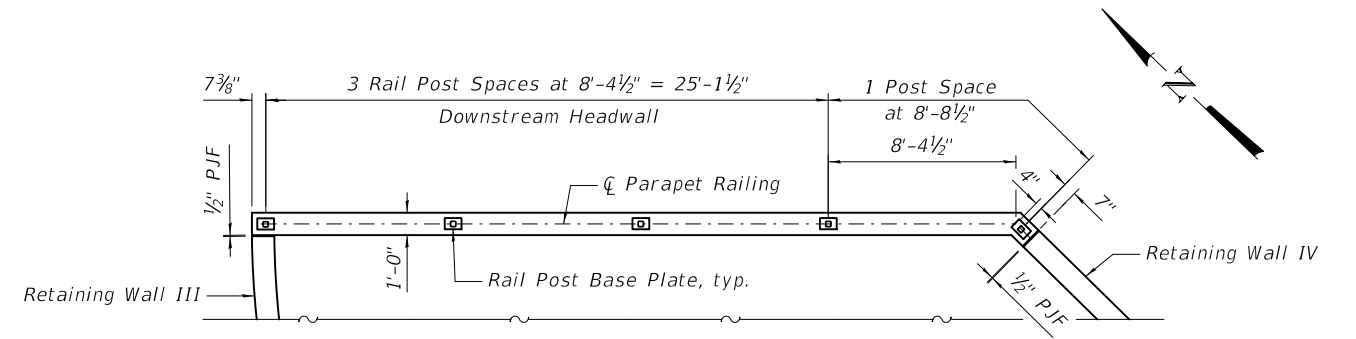
SHEET SA-21 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	407
				CONTRACT NO. 61187
ILLINOIS FED. AID PROJECT				



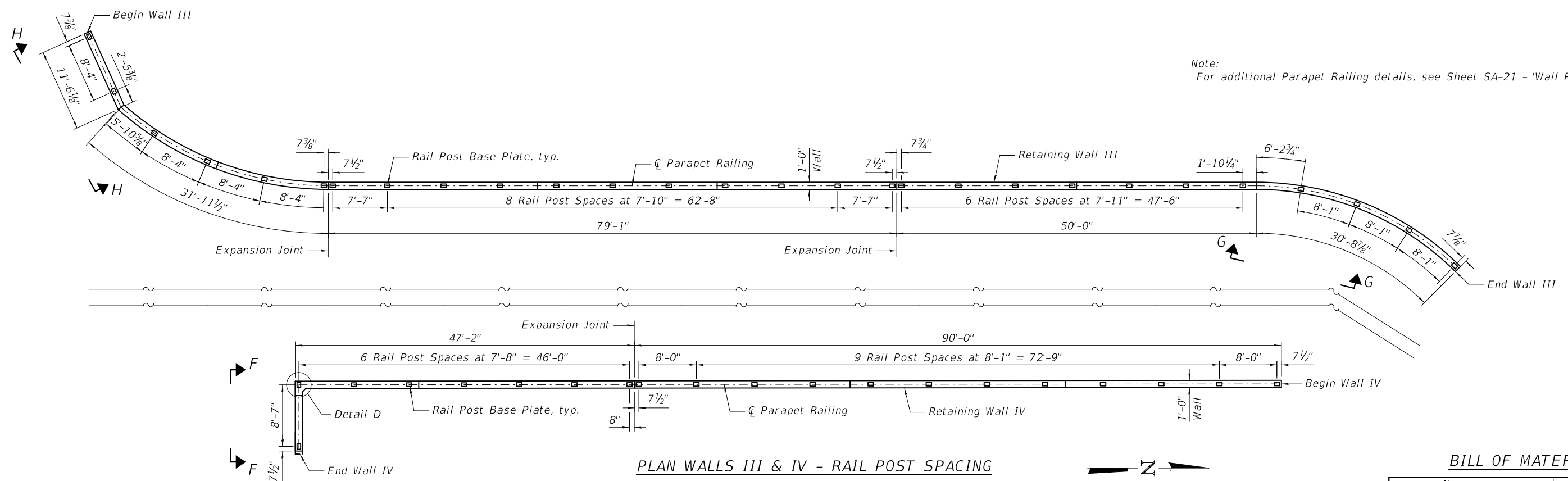
PLAN WALLS I, II & UPSTREAM HEADWALL - RAIL POST SPACING

Culvert not shown for clarity purposes.
Dimensions measured along \bar{C} railing.



PLAN DOWNSTREAM HEADWALL - RAIL POST SPACING

Culvert not shown for clarity purposes.
Dimensions measured along \bar{C} railing.



PLAN WALLS III & IV - RAIL POST SPACING

See Sheet SA-15 for Views F-F, G-G, and H-H.
See Sheet SA-21 for Detail D.

Note:
For additional Parapet Railing details, see Sheet SA-21 - 'Wall Railing Details I'.

BILL OF MATERIAL

Item	Unit	Quantity
Parapet Railing	Foot	487

MODEL: Default
FILE NAME: ...0490008-61187-022-Wall Railing Details II

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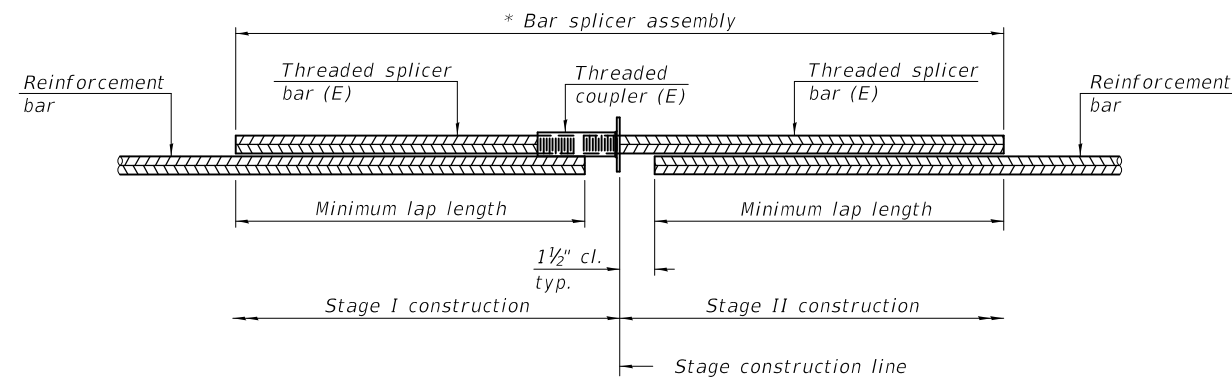
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**WALL RAILING DETAILS II
STRUCTURE NO. 049-0008**

SHEET SA-22 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	408
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



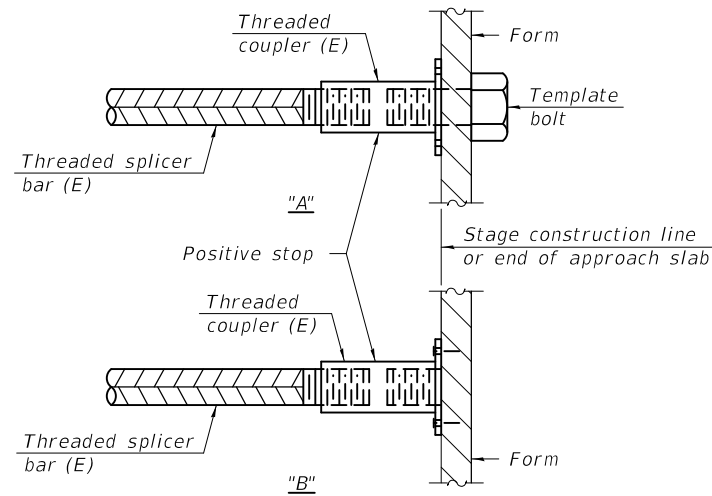
STANDARD BAR SPLICER ASSEMBLY PLAN

Only bar splicer assemblies as presented on the approved QPL list may be used.

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Minimum lap length
Bottom Slab of Culvert	#4	56	2'-3"
Top Slab of Culvert	#4	56	2'-3"
Exterior & Interior Culvert Walls	#5	72	2'-9"

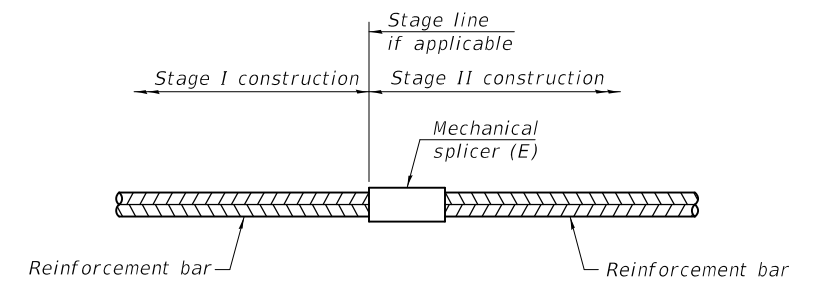


INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.

"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.

(E) : Indicates epoxy coating.



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required

Notes:
 Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.
 All reinforcement shall be lapped and tied to the splicer bars.
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.
 See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1

5-15-2023

MODEL: Default
 FILE NAME: ...0490008-61187-023-Bar_Splicer_Assembly

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		DRAWN -	KLK	REVISED -	
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PLOT DATE =	10/1/2024	DATE -	10/01/2024	REVISED -	

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
 STRUCTURE NO. 049-0008**

SHEET SA-23 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	409
			CONTRACT NO. 61187	
		ILLINOIS	FED. AID PROJECT	

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 1

Date 2/12/13

ROUTE US 14 DESCRIPTION US Route 14 and WCL RR LOGGED BY MHP

SECTION 11-00087-00-GS LOCATION IL Rt 59: Creek Realignment

COUNTY Lake STRUCTURE NO. 049-0008 (Exist) (Prop.)

BORING NO. SB-17 DRILLING METHOD HSA HAMMER TYPE Manual

Station 71+30
Offset 35' R of CL
Ground Surface Elev. 814.8 (ft.)

ELEV (ft.)	DEPTH (ft.)	BLOS Qu (/6")	UCS (tsf) (%)	MOST
811.8	6-10-6	--	5	
808.3	9-7-9	--	--	
806.3	7-11-14	4.85	19	
806.3	5-12-14	6.21	18	
	4-6-9	2.60	21	
	ST	2.0	P	19
798.8	10-17-17	--	10	
	7-14-14	--	11	
791.8	10-12-12	--	11	
	5-12-30	2.17	BS	16
	2-6-7	1.09	B	20
	7-7-8	0.89	B	20

Groundwater Depth
First Encounter 16.0' (ft.)
Upon Completion 12.5' (ft.)
After Hrs. (ft.)

ELEV (ft.)	DEPTH (ft.)	BLOS Qu (/6")	UCS (tsf) (%)	MOST
764.8	35-6-10	4	1.09	B 20
	5-5-5	1.24	B	22
	6-10-14	1.55	B	15
	4-8-14	2.25	B	18

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 1

Date 2/12/13

ROUTE US 14 DESCRIPTION US Route 14 and WCL RR LOGGED BY MHP

SECTION 11-00087-00-GS LOCATION IL Rt 59: Creek Realignment

COUNTY Lake STRUCTURE NO. 049-0008 (Exist) (Prop.)

BORING NO. SB-18 DRILLING METHOD HSA HAMMER TYPE Manual

Station 70+35
Offset 30' L of CL
Ground Surface Elev. 814.3 (ft.)

ELEV (ft.)	DEPTH (ft.)	BLOS Qu (/6")	UCS (tsf) (%)	MOST
810.3	6-6-8	--	34	
	6-7-4	3.0	22	
806.3	11-17-23	5.74	BS	19
	8-17-19	7.19	BS	17
	5-8-11	3.34	BS	18
799.8	4-10-15	2.83	--	14
	11-19-20	--	8	
	10-12-18	4.46	BS	16
	6-16-24	4.69	BS	17
	6-12-20	3.34	BS	16
	4-6-11	1.36	B	21
	7-8-12	1.28	B	19

Groundwater Depth
First Encounter 15.5' (ft.)
Upon Completion 17.0' (ft.)
After Hrs. (ft.)

ELEV (ft.)	DEPTH (ft.)	BLOS Qu (/6")	UCS (tsf) (%)	MOST
765.3	35-13-15	8	0.70	B 20
	8-13-13	1.36	B	14
764.3	10-30-33	2.99	--	11
	10-12-18	4.46	BS	16
	6-16-24	4.69	BS	17
	6-12-20	3.34	BS	16
	4-6-11	1.36	B	21
	7-8-12	1.28	B	19

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

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FILE NAME: ...0490008-61187-024-Soil Boring Logs 1

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS I
STRUCTURE NO. 049-0008

SHEET SA-24 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	410
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 1

Date 5/27/2014

ROUTE US 14 DESCRIPTION US Route 14 at CNRR LOGGED BY GF

SECTION 11-00087-00-GS LOCATION IL Route 59

COUNTY Lake STRUCTURE NO. (Exist) (Prop.)

BORING NO. SB-47 DRILLING METHOD CFA HAMMER TYPE Automatic

Station 69+41
Offset 47' L
Ground Surface Elev. 814 (ft.)

Groundwater Depth:
First Encounter 9.0 (ft.)
Upon Completion 11.3' (ft.)
After Hrs. (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Black CLAY, trace Organics, A-6: FILL	811.5		3 3-4	-	20						
Brown and Grey to Brown CLAY, trace Sand, A-6 hard to very hard		5	3 5-6	4.25 P	18						
			5 7-9	9.70 BS	18						
Brown and Grey SAND and GRAVEL, A-1, medium dense	805		7 13-13	-	9						
			4 12-8	-	11						
Grey SAND and GRAVEL, A-1, dense to medium dense	800.5		15 16-14	-	8						
			7 11-8	-	9						
Grey CLAY, A-6, stiff	795.5		14 12-11	-	17						
			8 11-14	1.75 B	21						
		25	4 5-6	1.63 B	21						
			5 6-7	1.55 B	20						
			5 5-6	1.55 B	19						
End of Boring @ 30'	784	30									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 1

Date 5/27/2014

ROUTE US 14 DESCRIPTION US Route 14 at CNRR LOGGED BY GF

SECTION 11-00087-00-GS LOCATION IL Route 59

COUNTY Lake STRUCTURE NO. (Exist) (Prop.)

BORING NO. SB-48 DRILLING METHOD CFA HAMMER TYPE Automatic

Station 68+46
Offset 91' L
Ground Surface Elev. 812 (ft.)

Groundwater Depth:
First Encounter 8.5 (ft.)
Upon Completion 4.5 (ft.)
After Hrs. (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
4" Black Clay TOPSOIL	811.67										
Black CLAY, trace Sand, A-6: FILL			2 4-6	-	18						
Sand layer	809										
Brown and Grey CLAY, A-6, hard to very hard		5	3 5-8	7.76 BS	17						
			4 7-10	9.70 BS	17						
Orange-Brown SAND and GRAVEL, A-1, medium dense	803		11 12-14	-	8						
Grey SAND and GRAVEL, A-1, medium dense	801		6 9-15	-	14						
		15	12 14-13	-	8						
			8 6-10	-	13						
			3 6-9	-	-						
			3 5-7	-	13						
Grey CLAY, A-6, stiff to very stiff	789		4 6-7	1.82 B	19						
		25	5 6-7	2.13 B	20						
			6 9-9	2.10 B	19						
End of Boring @ 30'	782	30									

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS II
STRUCTURE NO. 049-0008

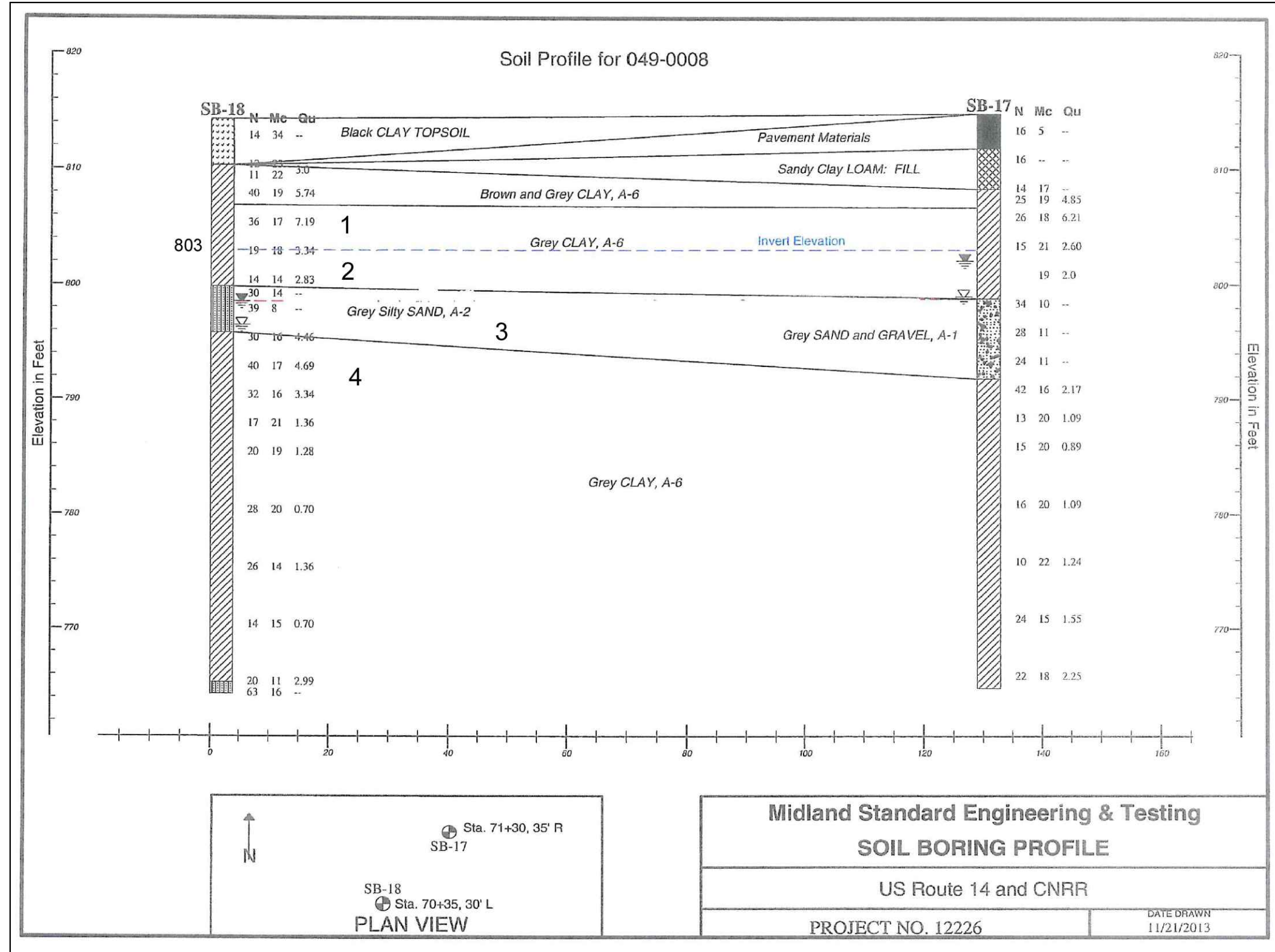
SHEET SA-25 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	411
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

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FILE NAME: ...0490008-61187-025-Soil Boring Logs II

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PLOT DATE = 10/1/2024	CHECKED - GJH	REVISED -
	DATE - 10/01/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
SOIL BORING PROFILE
STRUCTURE NO. 049-0008

SHEET SA-26 OF SA-26 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-G5	LAKE	816	412
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

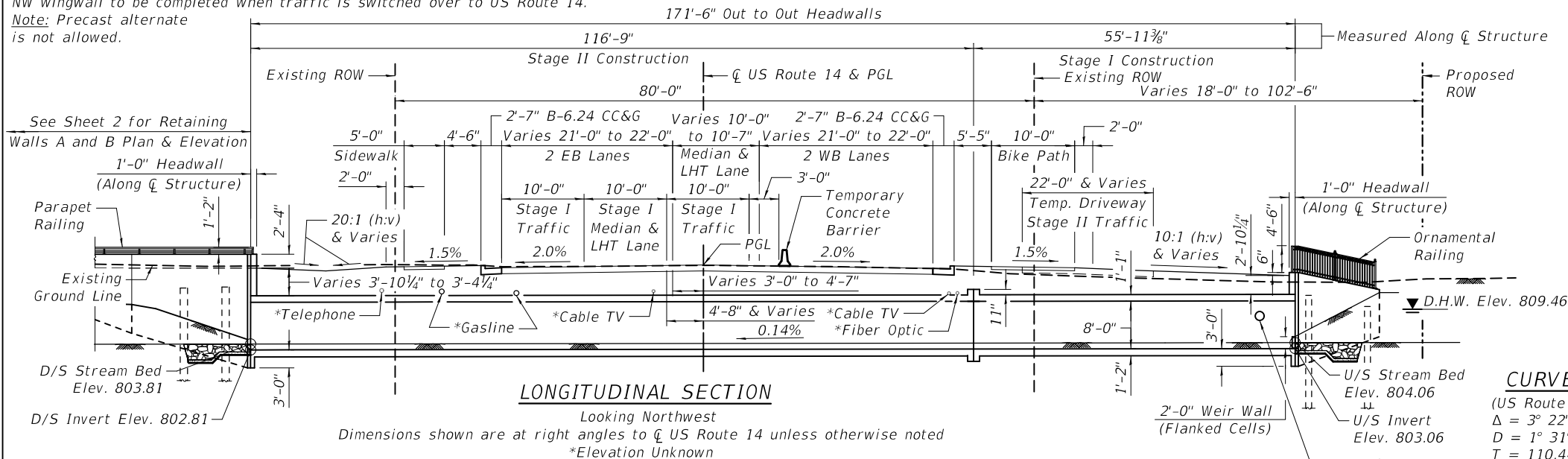
Benchmark: Northeast bolt on fire hydrant at the Northwest corner of IL Route 59 (North Hough Street) and US Route 14 (Northwest Highway), Sta. 200+90.62, Offset 62.1' Lt., Elevation 818.85

Existing Structure: None.

Maintenance of Traffic: Traffic will be detoured to a temporary roadway during construction of structure.

NW wingwall to be completed when traffic is switched over to US Route 14.

Note: Precast alternate is not allowed.



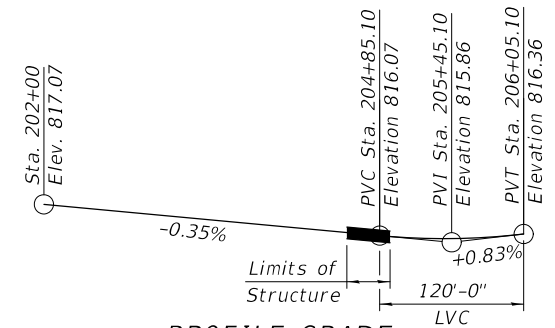
LOADING HL-93
Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES
FIELD UNITS
 $f'_c = 3,500$ psi
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (M270 Grade 50)

DESIGN SPECIFICATIONS
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

CURVE DATA
(US Route 14 Curve C1)
 $\Delta = 3^\circ 22' 26''$ (Lt.)
 $D = 1^\circ 31' 40''$
 $T = 110.44'$
 $L = 220.83'$
 $E = 1.63'$
 $R = 3,750'$
P.C. = Sta. 203+85.35
P.T. = Sta. 206+06.18
P.I. = Sta. 204+95.80

CURVE DATA
(Temporary Flint Creek Curve C3)
 $\Delta = 88^\circ 41' 23''$ (RT)
 $D = 67^\circ 24' 24''$
 $T = 83.08'$
 $L = 131.57'$
 $E = 33.86'$
 $R = 85.00'$
P.C. STA = 20+68.40
P.T. STA = 21+99.98
P.I. STA = 21+51.48

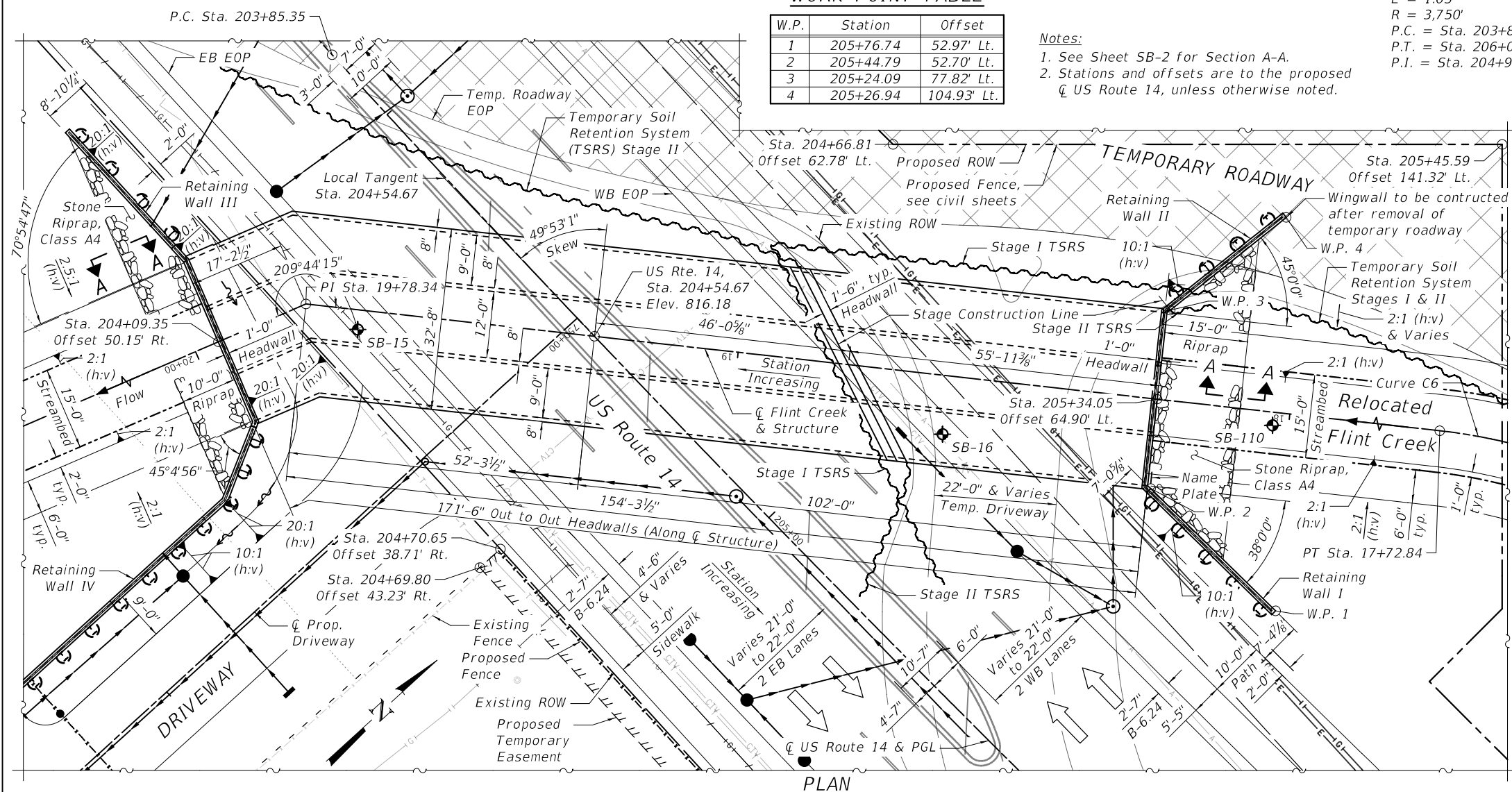


Gregory J. Hatlestad, S.E.
081-005562
Exp 11/30/2024
Date 7/25/2024

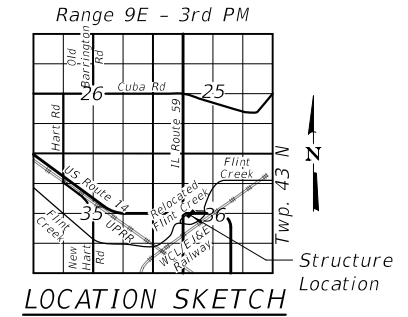
WORK POINT TABLE

W.P.	Station	Offset
1	205+76.74	52.97' Lt.
2	205+44.79	52.70' Lt.
3	205+24.09	77.82' Lt.
4	205+26.94	104.93' Lt.

Notes:
1. See Sheet SB-2 for Section A-A.
2. Stations and offsets are to the proposed \bar{C} US Route 14, unless otherwise noted.



CURVE DATA
(Proposed Flint Creek Curve C6)
 $\Delta = 56^\circ 45' 17''$ (Lt.)
 $D = 57^\circ 17' 45''$
 $T = 54.02'$
 $L = 99.06'$
 $E = 13.66'$
 $R = 100'$
P.C. = Sta. 16+73.78
P.T. = Sta. 17+72.84
P.I. = Sta. 17+27.80



LEGEND

	Existing Gasline to be Relocated or Supported During Construction
	Existing Underground Telephone to be Relocated or Supported During Construction
	Existing Underground Cable TV to be Relocated or Supported During Construction
	Existing Aerial Lines to be Relocated or Supported During Construction
	Existing Fiber Optic to be Relocated or Supported During Construction
	Proposed Storm Sewer
	Proposed Gasline
	Proposed Aerial Lines
	Soil Boring

GENERAL PLAN & LONGITUDINAL SECTION
US ROUTE 14 OVER RELOCATED FLINT CREEK
FAP 305 - SECTION 11-00087-00-GS
LAKE COUNTY
STATION 204+54.67
STRUCTURE NUMBER 049-0110

Two Pierce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltech.com

USER NAME = mc	DESIGNED - KLK	REVISED -
PLOT SCALE = 24.0000' / in.	DRAWN - KLK	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND LONGITUDINAL SECTION
STRUCTURE NO. 049-0110

SHEET SB-1 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	413
CONTRACT NO. 61187				
ILLINOIS / FED. AID PROJECT				

GENERAL NOTES

CULVERT

- Layout of the slope protection system may be varied to suit ground conditions in the field as directed by the Engineer.
- Precast alternate is not allowed.

RETAINING WALLS

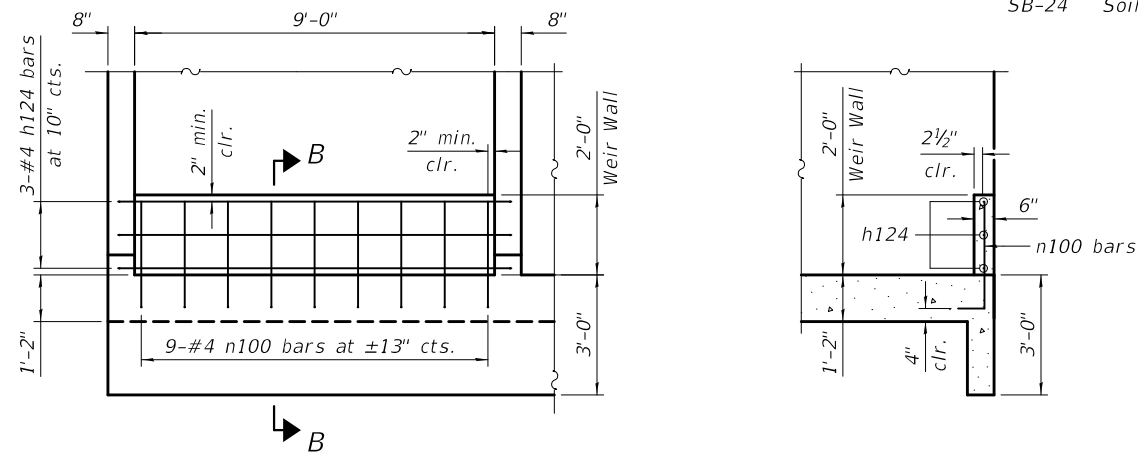
- Reinforcement bars designated (E) shall be epoxy coated.
- All exposed edges shall have 3/4" chamfer.
- All structural steel shall be AASHTO M270 Grade 50.
- The Contractor is responsible for the design and performance of the lagging using no less than a 3" nominal rough-sawn thickness and timber with a minimum allowable bending stress of 1000 psi.

INDEX OF SHEETS

- SB-1 General Plan and Longitudinal Section
- SB-2 General Data
- SB-3 Stage I Construction Details
- SB-4 Stage II Construction Details
- SB-5 Temporary Concrete Barrier for Stage Construction
- SB-6 Bottom Slab Plan
- SB-7 Culvert Wall Elevations
- SB-8 Top Slab Plan
- SB-9 Culvert Details
- SB-10 General Plan and Elevation - Walls I & II
- SB-11 General Plan and Elevation - Walls III & IV
- SB-12 Wall Details
- SB-13 Wall Pile Data Tables
- SB-14 Walls I, II, & III Elevations
- SB-15 Wall IV Elevations A & B
- SB-16 Wall Reinforcement Details
- SB-17 Walls I & II Railing Details
- SB-18 Walls III & IV Railing Details I
- SB-19 Walls III & IV Railing Details II
- SB-20 Bar Splicer Assembly and Mechanical Splicer Details
- SB-21 Soil Boring Logs I
- SB-22 Soil Boring Logs II
- SB-23 Soil Boring Logs III
- SB-24 Soil Boring Profile

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stone Riprap, Class A4	Sq. Yd.	134
Filter Fabric	Sq. Yd.	134
Structure Excavation	Cu. Yd.	3,544
Protective Coat	Sq. Yd.	87
Stud Shear Connectors	Each	249
Reinforcement Bars	Pound	183,400
Reinforcement Bars, Epoxy Coated	Pound	10,990
Bar Splicers	Each	86
Parapet Railing	Foot	213
Name Plates	Each	1
Temporary Soil Retention System	Sq. Ft.	4,612
Furnishing Soldier Piles (W Section)	Foot	840
Furnishing Soldier Piles (Built-Up Section)	Foot	26
Drilling and Setting Soldier Piles (In Soil)	Cu. Ft.	4,524
Untreated Timber Lagging	Sq. Ft.	1,361
Concrete Structures (Retaining Wall)	Cu. Yd.	84.3
Concrete Box Culverts	Cu. Yd.	629.7
Geocomposite Wall Drain	Sq. Yd.	741
Membrane Waterproofing System for Buried Structures	Sq. Yd.	694
Ornamental Railing	Foot	91



TYPICAL WEIR REINFORCEMENT DETAIL

SECTION B-B

For Weir Reinforcement Bar Bending Diagrams and Bill of Material, see Sheet SB-9.

WATERWAY INFORMATION

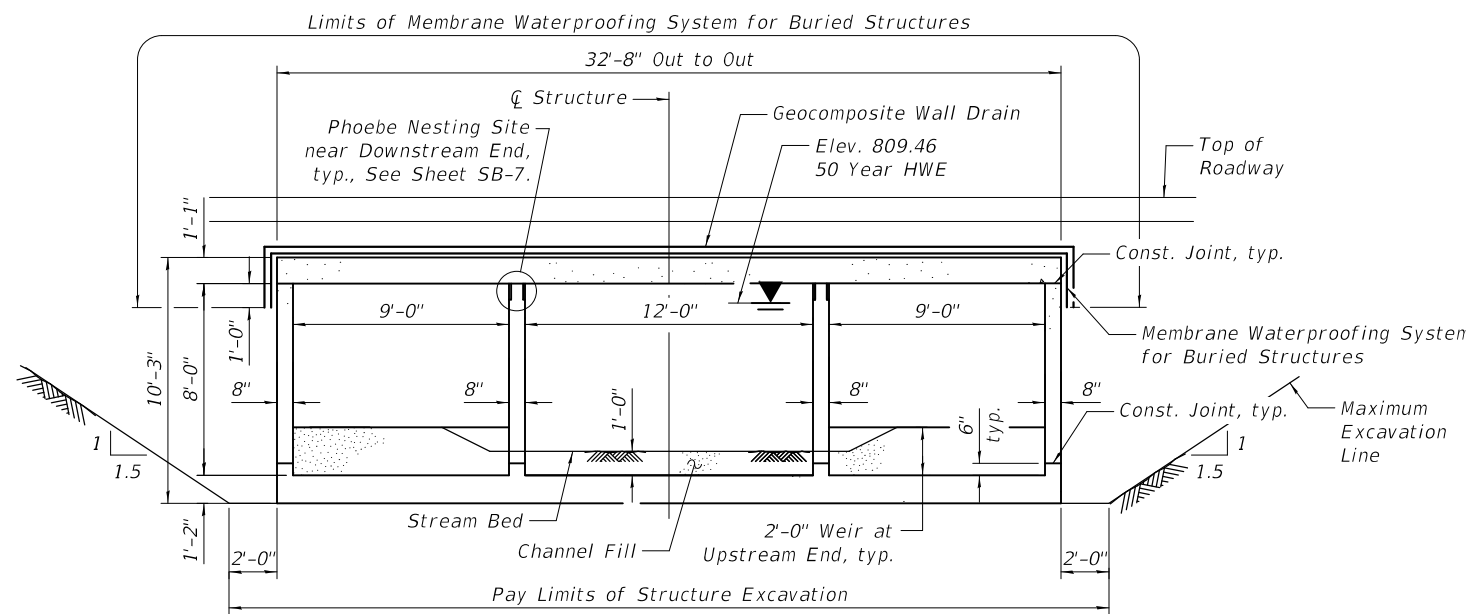
Drainage Area = 7.2 Square Miles Low Grade Elev. 816.01 @ Sta. 205+45.10

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft.		Nat. H.W.E.	Head - Ft.		Headwater El	
			Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
	2		N/A			N/A		N/A	
Design	10	328	N/A	118	808.59	N/A	0.06	N/A	808.65
Base	50	417	N/A	141	809.36	N/A	0.10	N/A	809.46
Max. Calc.	100	452	N/A	149	809.64	N/A	0.13	N/A	809.77
	500	585	N/A	171	810.36	N/A	0.18	N/A	810.54

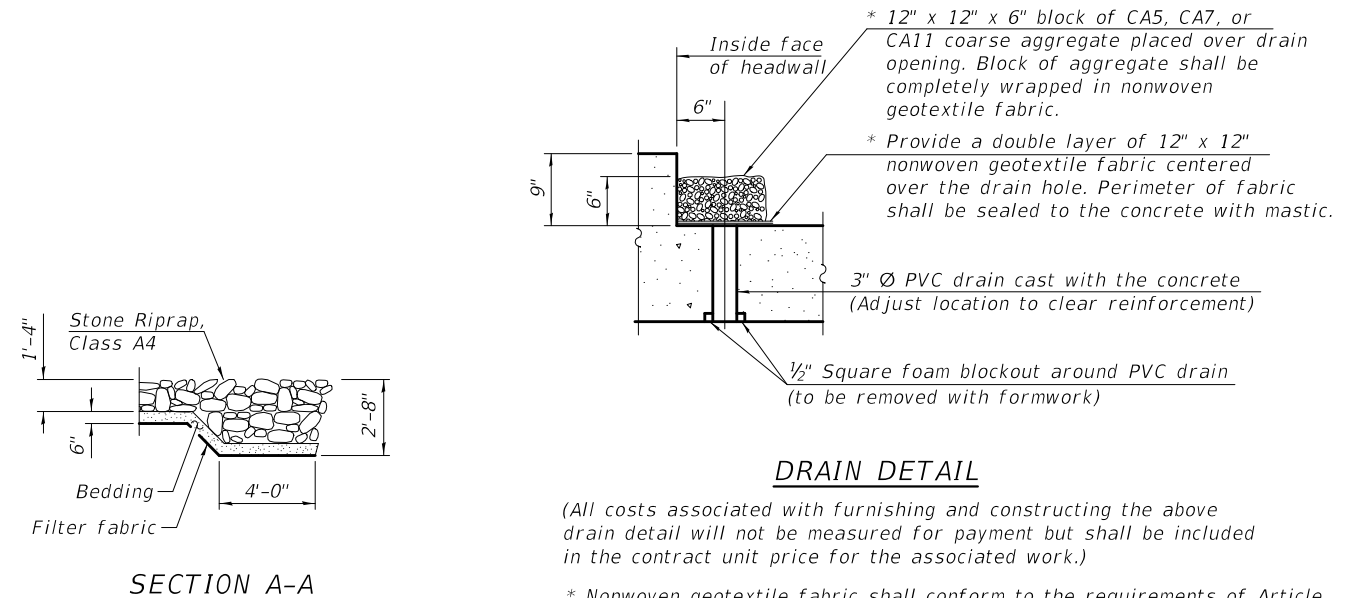
10-Year Velocity through Existing Structure = N/A
10-Year Velocity through Proposed Structure = 2.82 ft/sec

STATION 204+54.67
BUILT 202_ BY
STATE OF ILLINOIS
F.A.P. RT. 305
SEC. 11-00087-00-GS
LOADING HL-93
STR. NO. 049-0110

NAME PLATE
See Std. 515001



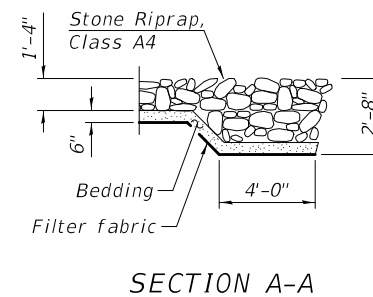
SECTION THROUGH BARREL
(@ Rt. L's to Center Structure)



DRAIN DETAIL

(All costs associated with furnishing and constructing the above drain detail will not be measured for payment but shall be included in the contract unit price for the associated work.)

* Nonwoven geotextile fabric shall conform to the requirements of Article 1080.01 of the Standard Specifications. The minimum weight of the fabric shall be 6 ounces per square yard.



SECTION A-A

MODEL: Default
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CIVILTECH
Two Plerce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
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USER NAME = mc	DESIGNED - KLK	REVISED -
PLOT SCALE = N/A	DRAWN - KLK	REVISED -
PLOT DATE = 10/1/2024	CHECKED - GJH	REVISED -
	DATE - 10/01/2024	REVISED -

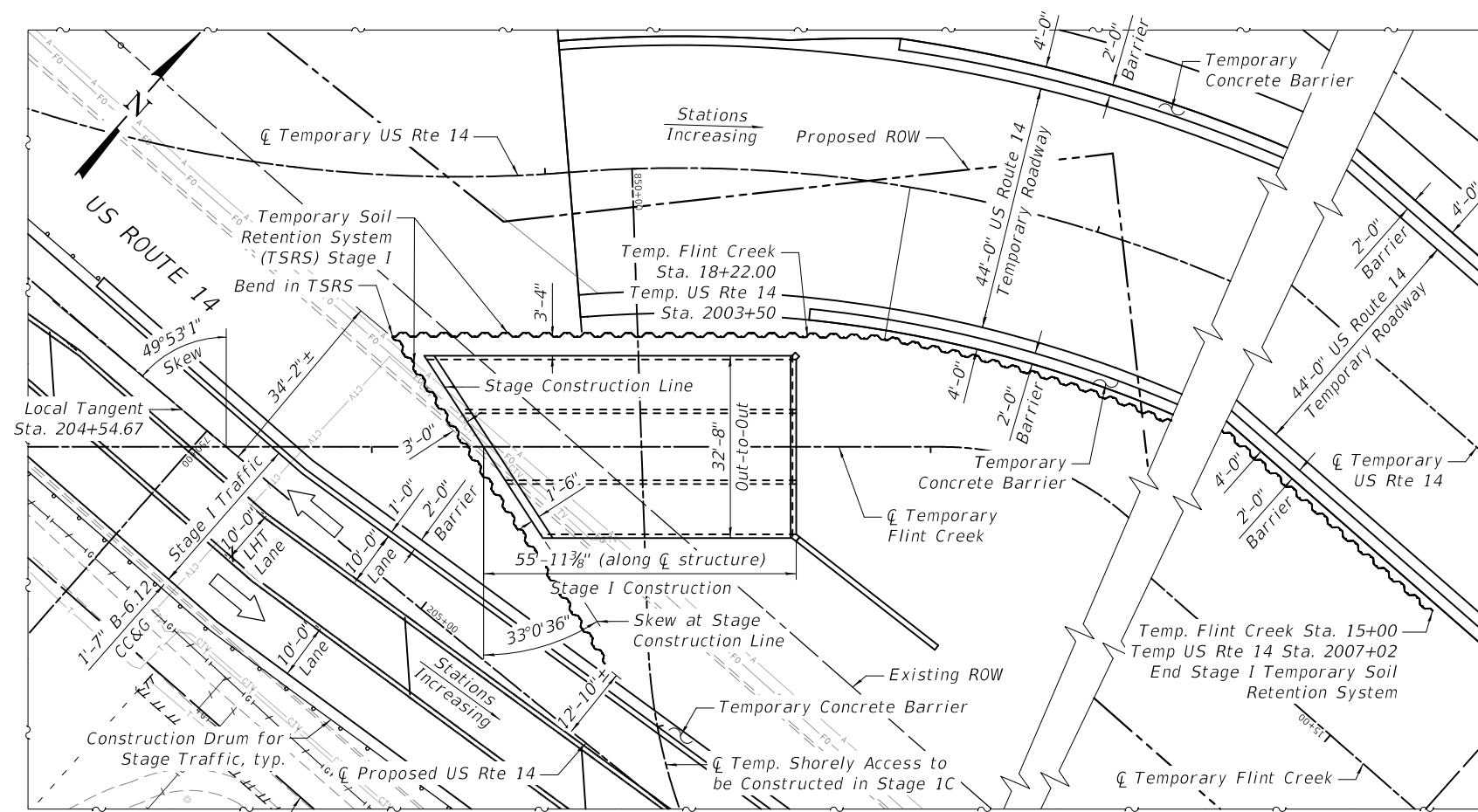
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA
STRUCTURE NO. 049-0110**

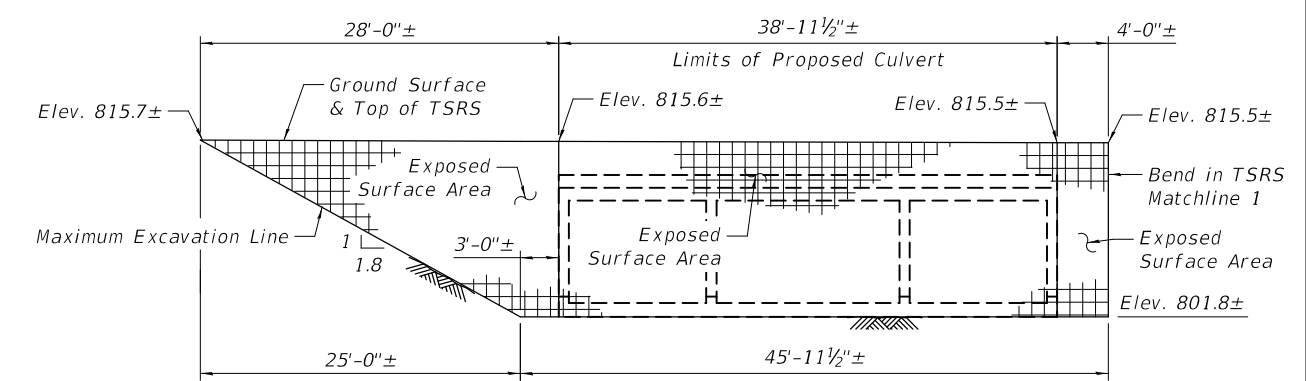
SHEET SB-2 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	414
CONTRACT NO. 61187				

ILLINOIS FED. AID PROJECT

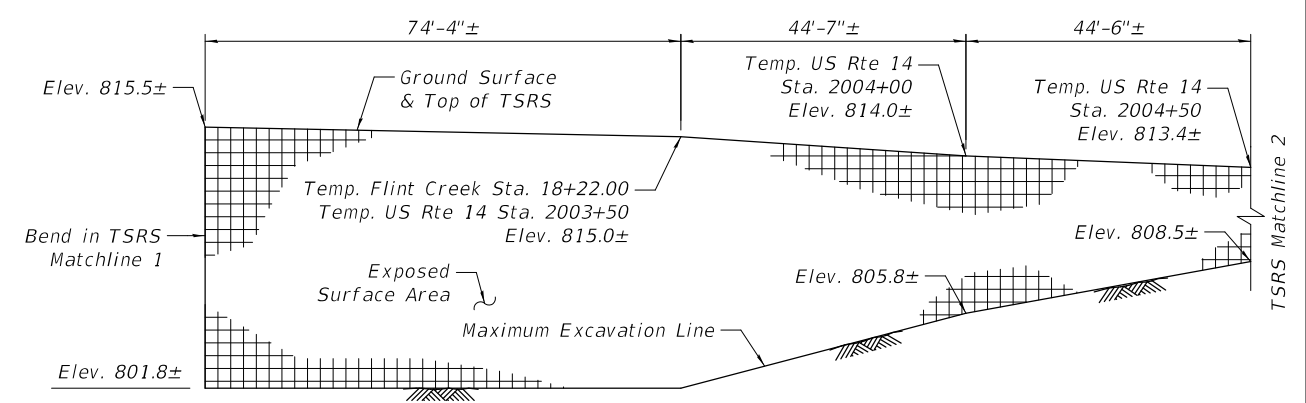


PLAN - STAGE I CONSTRUCTION



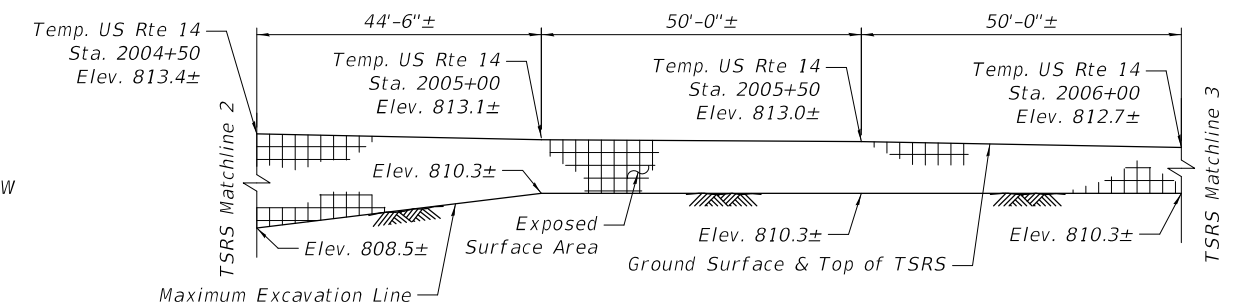
TEMPORARY SOIL RETENTION SYSTEM UNFOLDED ELEVATION

Shown at Stage Construction Line
(Looking South)



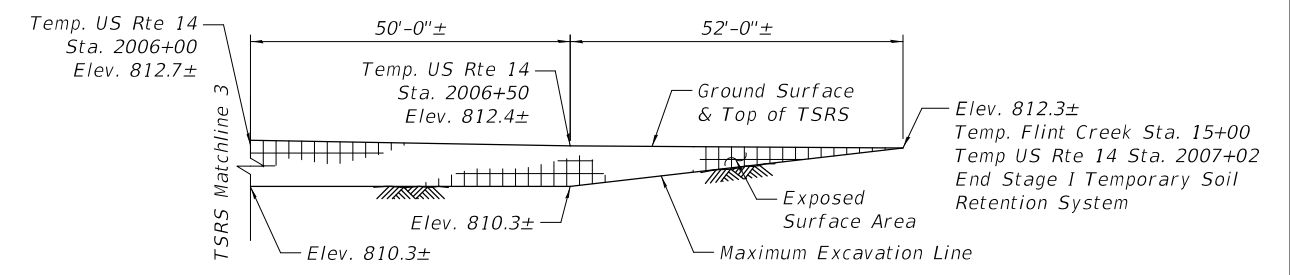
TEMPORARY SOIL RETENTION SYSTEM UNFOLDED ELEVATION

Shown at North Side of Culvert and along South Side of Temporary US Route 14
(Looking Northwest)



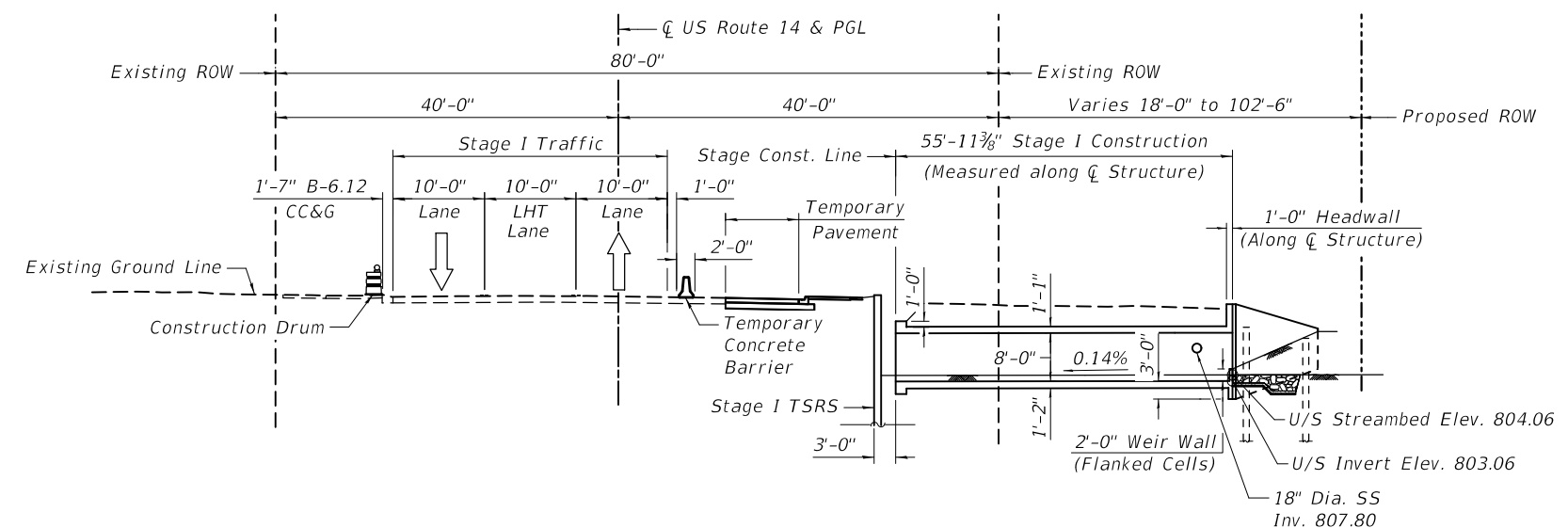
TEMPORARY SOIL RETENTION SYSTEM UNFOLDED ELEVATION

Shown along South Side of Temporary US Route 14
(Looking North)



TEMPORARY SOIL RETENTION SYSTEM UNFOLDED ELEVATION

Shown along South Side of Temporary US Route 14
(Looking North)



LONGITUDINAL SECTION - STAGE I CONSTRUCTION

(Looking Northwest)

Dimensions shown are at right angles to \bar{C} US Route 14 unless otherwise noted.

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**STAGE I CONSTRUCTION DETAILS
STRUCTURE NO. 049-0110**

SHEET SB-3 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	415
CONTRACT NO. 61187				

ILLINOIS FED. AID PROJECT

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FILE NAME: ...0490110-91547-003-Stage I Construction

CIVILTECH
Two Pierce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
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USER NAME = mc
PLOT SCALE = N/A
PLOT DATE = 8/28/2024

DESIGNED - KLK
DRAWN - KLK
CHECKED - GJH
DATE - 7/26/2024

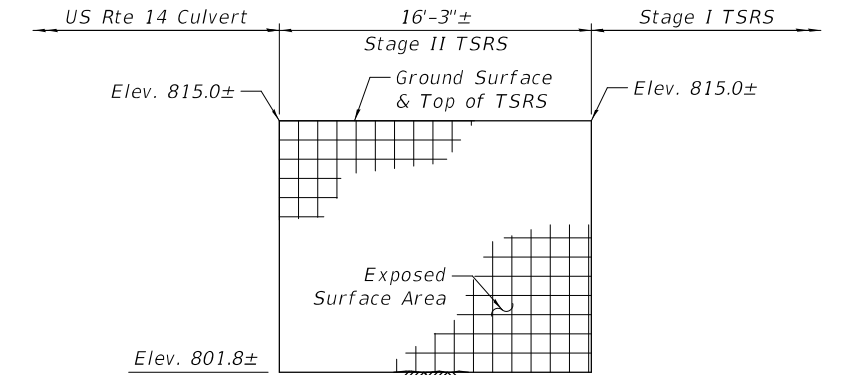
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REVISED -
REVISED -
REVISED -

8/28/2024 7:34:31 AM

BILL OF MATERIAL

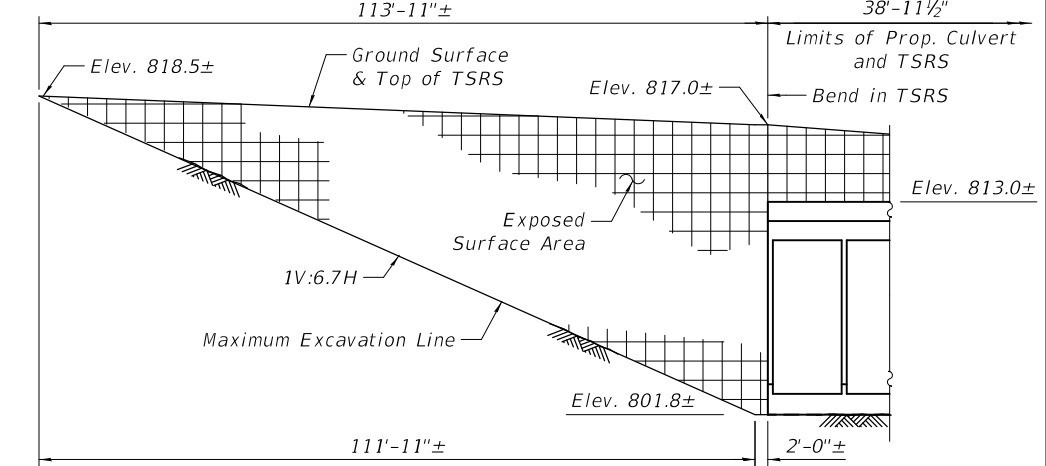
Item	Unit	Quantity
Temporary Soil Retention System	Sq. Ft.	4,612

A cantilevered sheet piling design does not appear feasible and additional members or other retention systems may be necessary. The Contractor shall submit a temporary soil retention system design including plan details and calculations for review and acceptance by the Engineer.



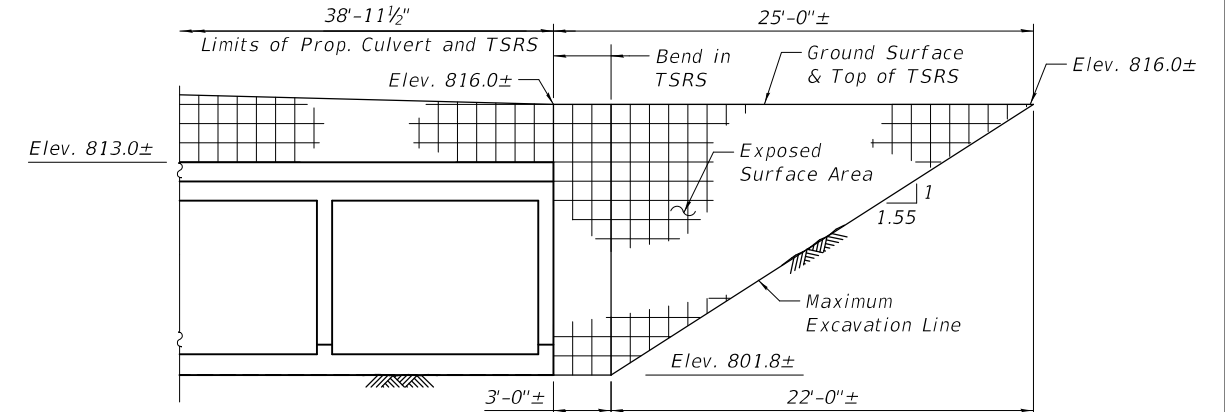
TEMPORARY SOIL RETENTION SYSTEM ELEVATION

Located at Northwest Side of Culvert and along South Side of Temporary US Route 14 (Looking West)



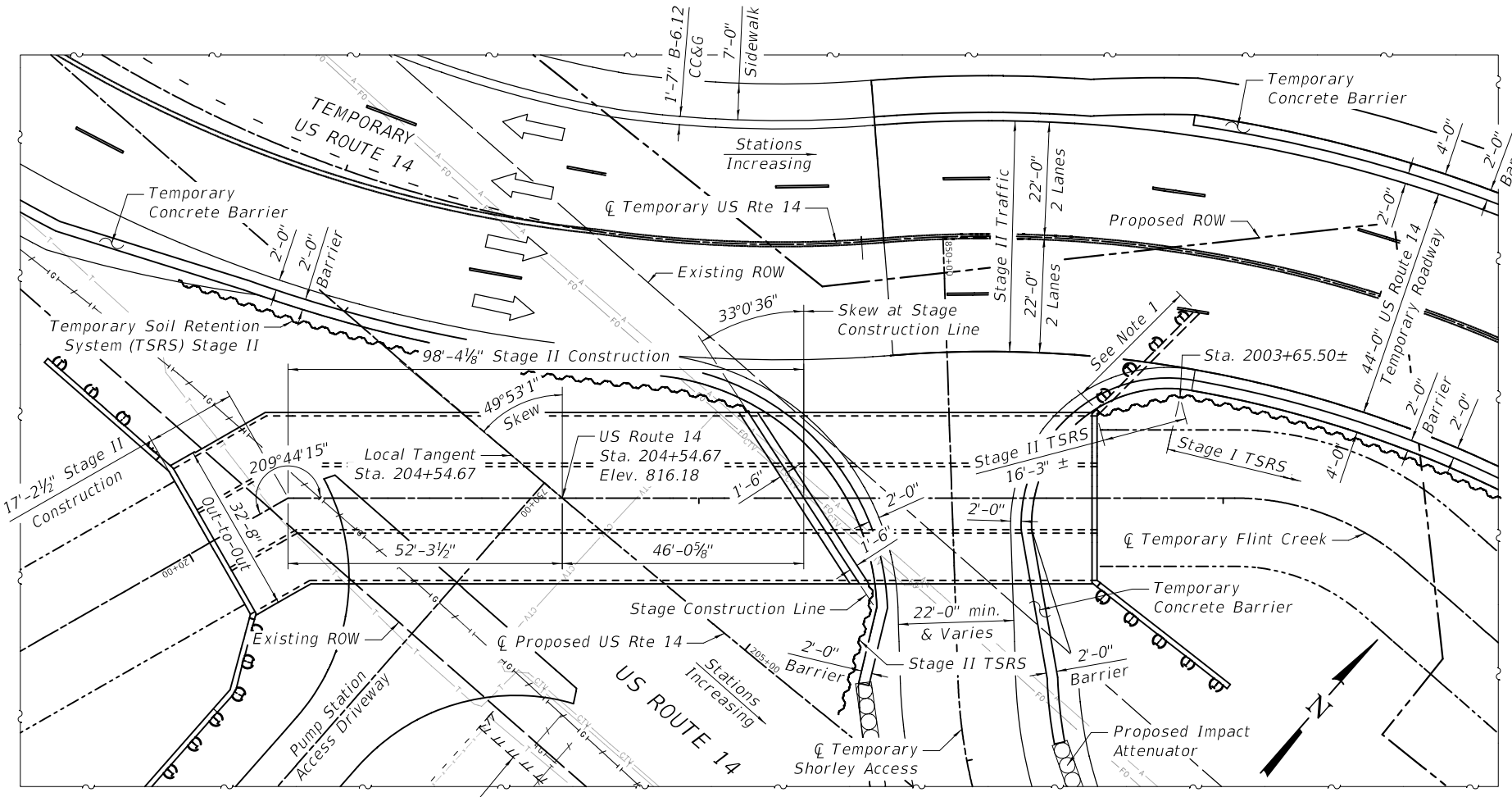
TEMPORARY SOIL RETENTION SYSTEM UNFOLDED ELEVATION

Located at Northwest Side of Culvert at Stage Construction Line and along South Side of Temporary US Route 14 (Looking Northwest)



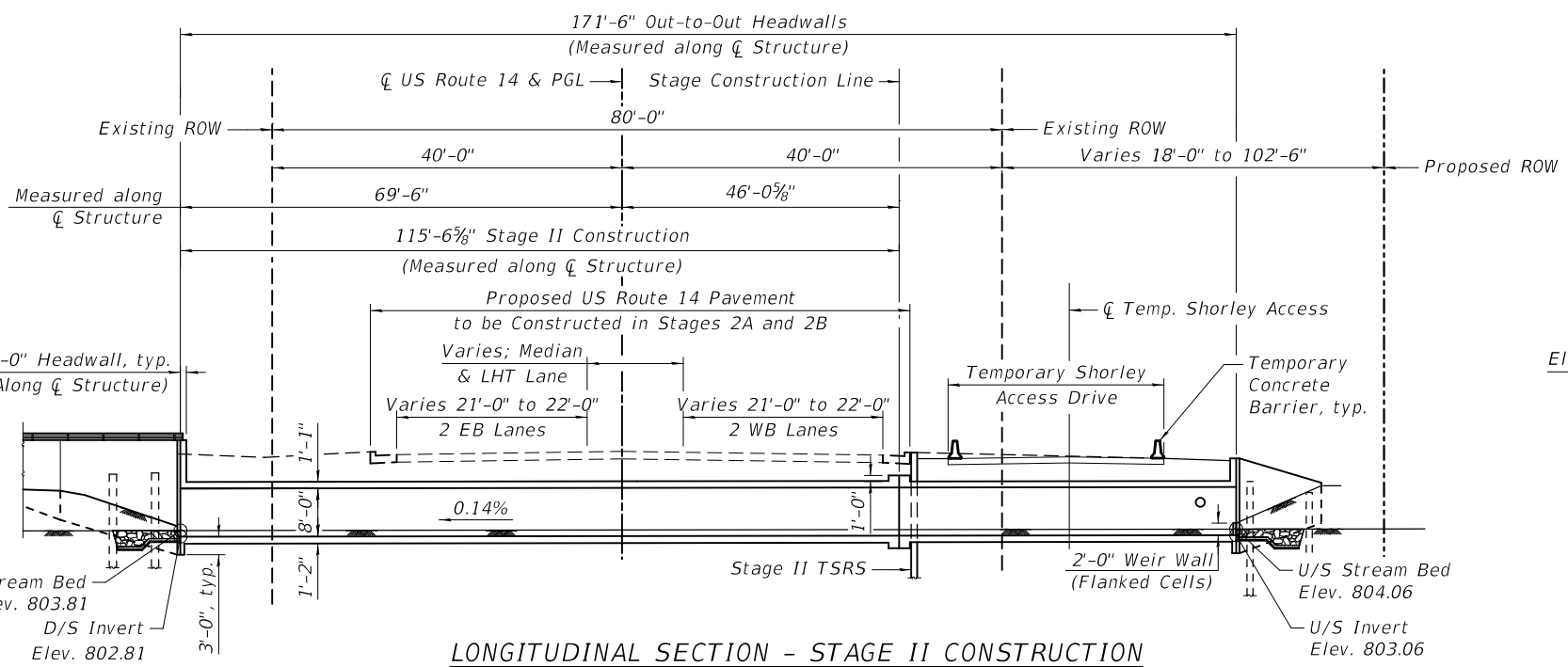
TEMPORARY SOIL RETENTION SYSTEM UNFOLDED ELEVATION

Located at Southeast Side of Culvert at Stage Construction Line and along Temporary Shorley Access (Looking East)



PLAN - STAGE II CONSTRUCTION

Note 1: Retaining Wall II to be constructed in Stage 3 after Temporary US Route 14 Roadway Removal



LONGITUDINAL SECTION - STAGE II CONSTRUCTION

(Looking Northwest)
Dimensions shown are at right angles to \bar{C} US Route 14 unless otherwise noted.

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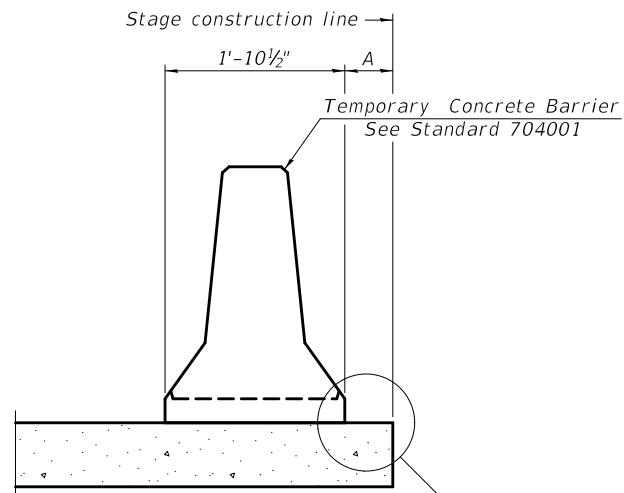
CIVILTECH
Two Plerce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME = mc	DESIGNED - KLK	REVISED -
PLOT SCALE = N/A	DRAWN - KLK	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

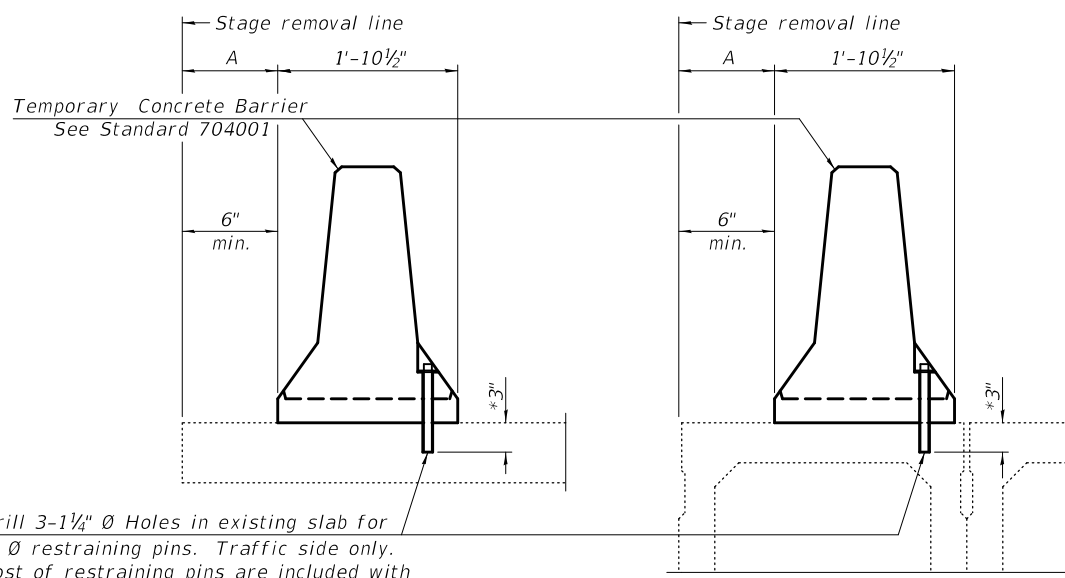
**STAGE II CONSTRUCTION DETAILS
STRUCTURE NO. 049-0110**

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 416
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



When "A" is 3'-1" or less, the temporary concrete barrier shall be restrained to the new slab according to Detail I, II or III. No restraint is required when "A" is greater than 3'-1".

NEW SLAB OR NEW DECK BEAM

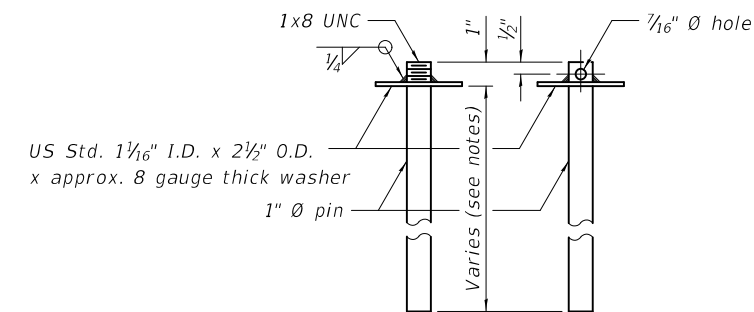


Drill 3-1 1/4" Ø Holes in existing slab for 1" Ø restraining pins. Traffic side only. Cost of restraining pins are included with Temporary Concrete Barrier. No restraint is required when "A" is greater than 3'-1".

EXISTING SLAB

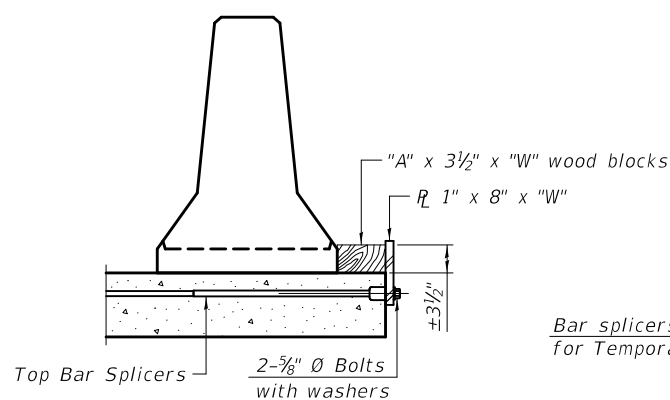
* When hot-mix asphalt wearing surface is present, embedment shall be 3" plus the wearing surface depth.

EXISTING DECK BEAM

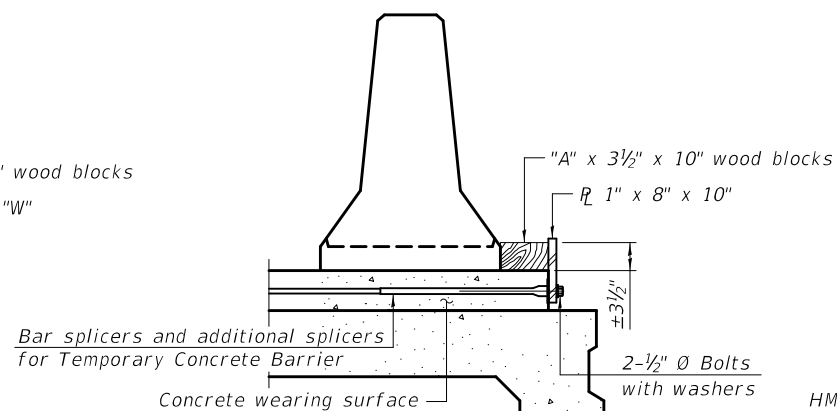


RESTRAINING PIN

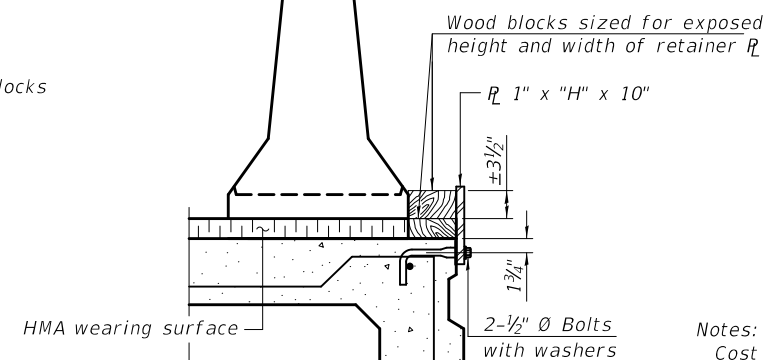
SECTIONS THRU SLAB OR DECK BEAM



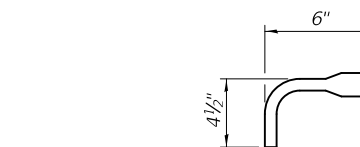
DETAIL I



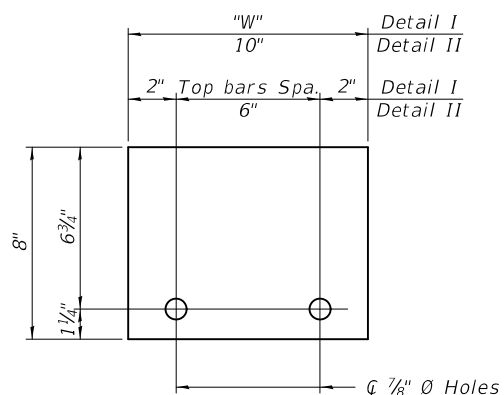
DETAIL II



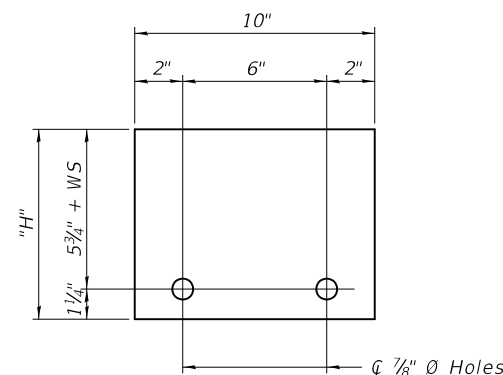
DETAIL III



BAR SPLICER FOR #4 BAR - DETAIL III



STEEL RETAINER R 1" x 8" x "W" (Detail I and II)



STEEL RETAINER R 1" x "H" x 10" (Detail III)

Notes:
 Cost of retainer assembly is included with Temporary Concrete Barrier.
 A retainer assembly shall be located at the approximate C of each temporary concrete barrier.
 The retainer plate shall not be removed until the concrete on the adjacent stage is ready to be poured. For Detail III applications the retainer plate shall not be removed until just prior to placing the adjacent beam.
 When the 'A' dimension is less than 1 1/2", the wood block shall be omitted and the barrier shall be placed in direct contact with the steel retainer plate. For deck beam applications the minimum required 'A' distance is 6" to accommodate the shear key clamping device.

Detail I - Installation for a new bridge deck or bridge slab.
 Detail II - Installation for a new deck beam with an initial concrete wearing surface. Additional bar splicers shall be provided at 6'-0" centers and paired with the bar splicers of the concrete wearing surface reinforcement to accommodate the installation of the retainer assemblies. The cost of the additional bar splicers is included with the concrete wearing surface.
 Detail III - Installation for a new deck beam with no initial wearing surface or with an initial hot-mix asphalt (HMA) wearing surface present. The deck beam directly beneath the temporary concrete barrier shall be fabricated with bar splicer inserts in the side of the beam, as detailed, to accommodate the installation of the retainer assemblies. A pair of bar splicers, 6" apart, shall be placed at 6'-0" centers along the length of the beam. The cost of the bar splicers is included with the deck beam.

RAILING CRITERIA

NCHRP 350 Test Level	3
Railing Weight (plf)	440

R-27 5-15-2023

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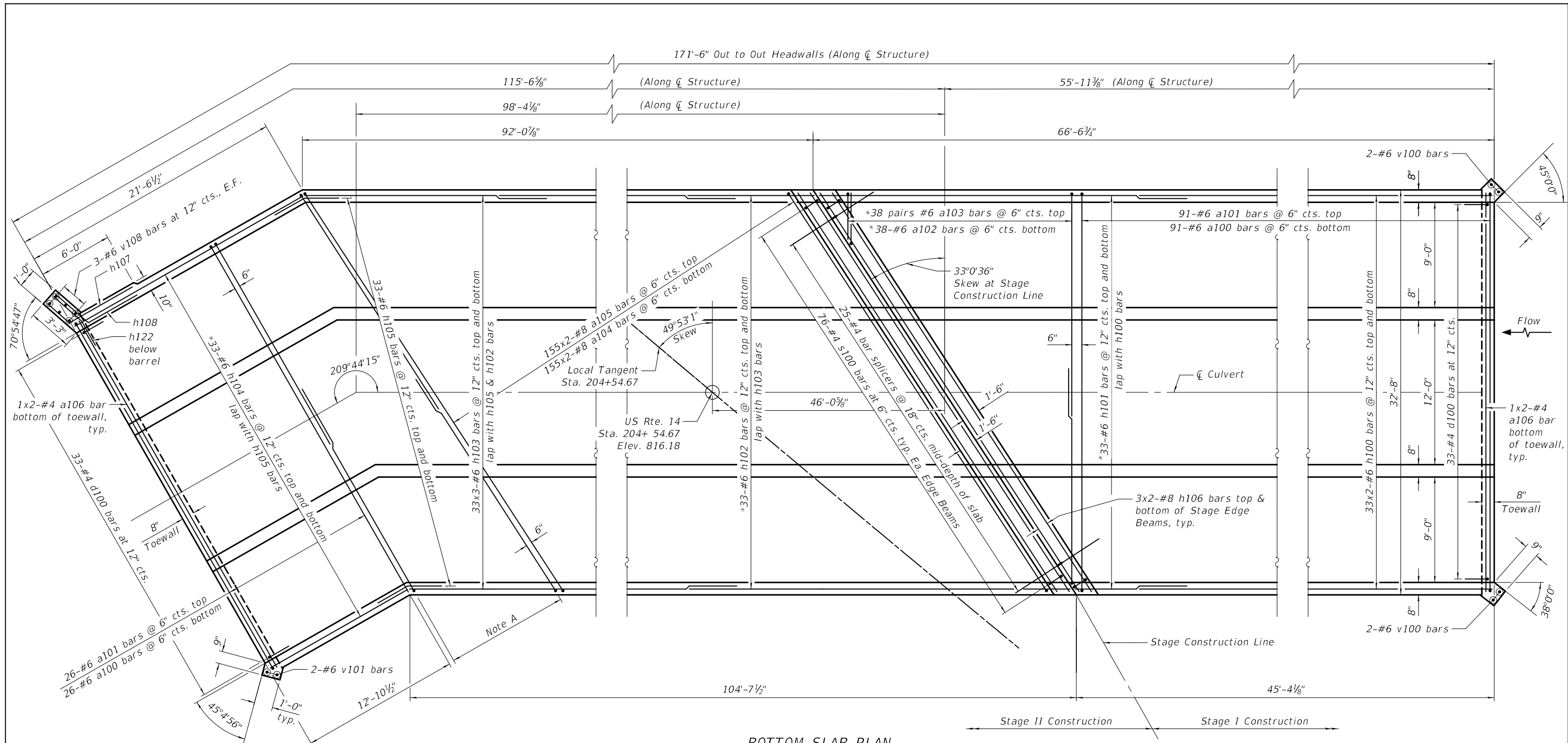
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PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION
 STRUCTURE NO. 049-0110

SHEET SB-5 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	417
			CONTRACT NO. 61187	
ILLINOIS FED. AID PROJECT				



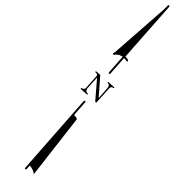
BOTTOM SLAB PLAN

* See Field Cutting Diagram on Sheet SB-9

Note A: 21x2-#8 a105 bars @ ± 6" cts. fanned, top
21x2-#8 a104 bars @ ± 6" cts. fanned, bottom

- Notes:
1. See Sheet SB-9 for reinforcement details, Section through Barrel, and Bill of Material.
 2. Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
 3. For Bar Splicer Details, see Sheet SB-20.
 4. For Weir Reinforcement Details, see Sheet SB-2.

MINIMUM BAR LAP
 #4 bar = 1'-9"
 #6 bar = 3'-4"
 #8 bar = 4'-5"



MODEL: Default
 FILE NAME: ...0490110-91547-006-Bottom Slab Plan.dgn

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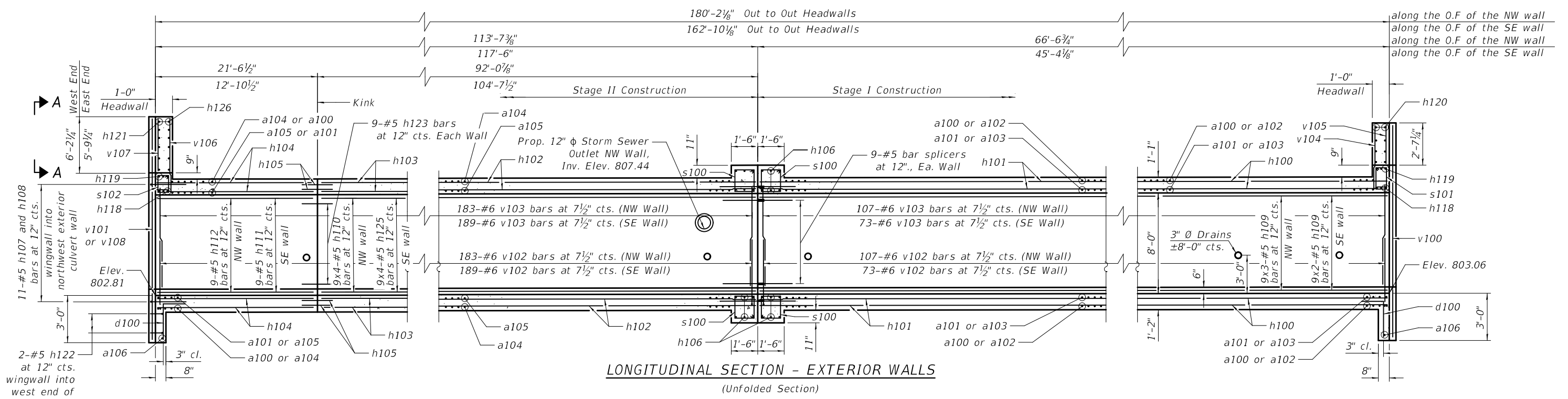
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		DATE -	7/26/2024	REVISED -	

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

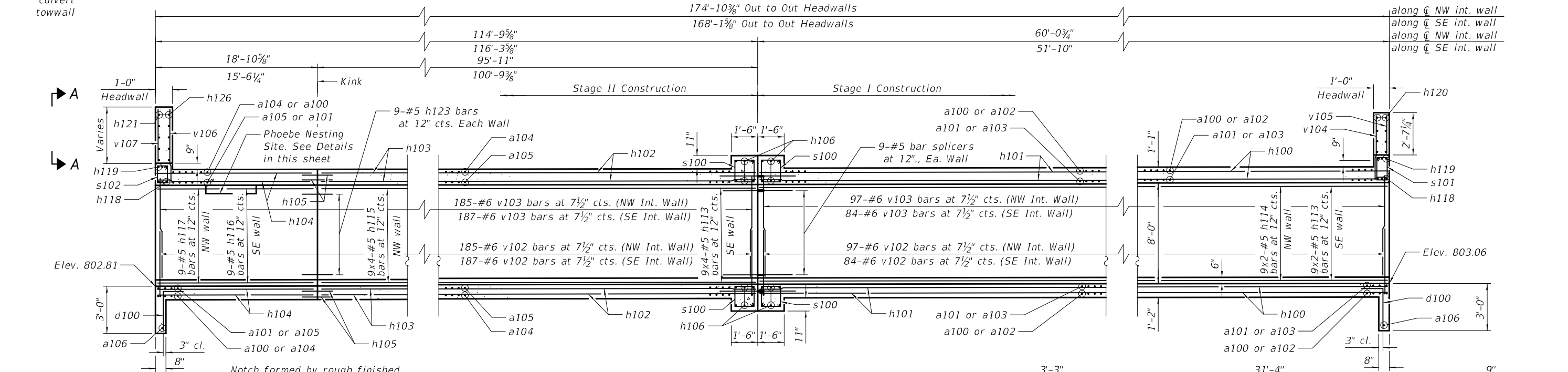
**BOTTOM SLAB PLAN
 STRUCTURE NO. 049-0110**

SHEET SB-6 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	418
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

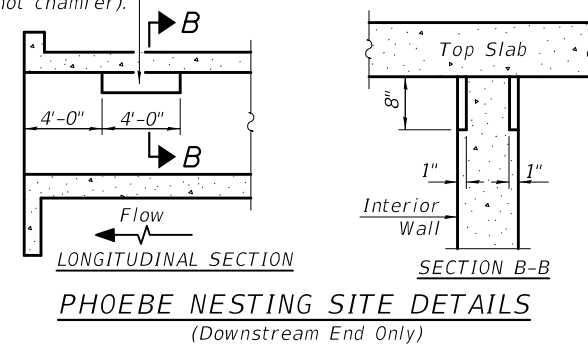


LONGITUDINAL SECTION - EXTERIOR WALLS
(Unfolded Section)

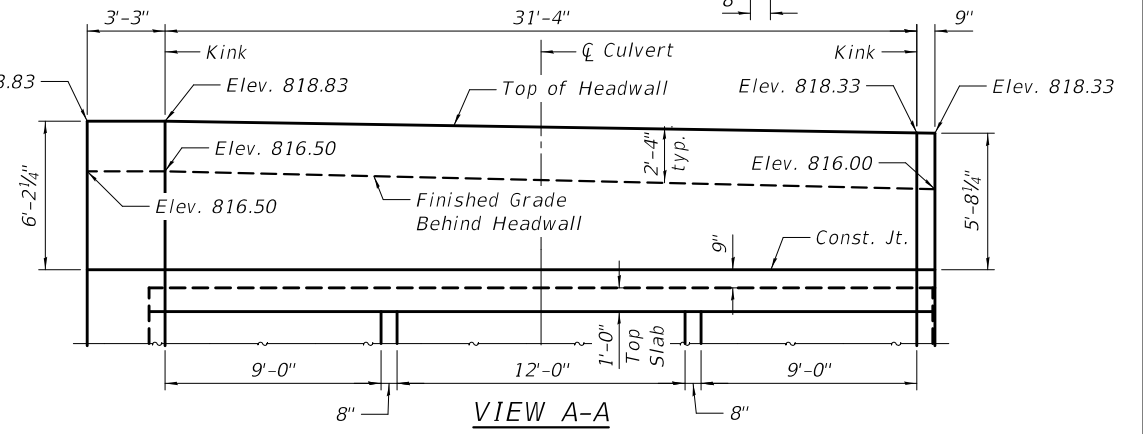


LONGITUDINAL SECTION - INTERIOR WALLS
(Unfolded Section)

- Notes:
1. See Sheet SB-9 for reinforcement details, Section through Barrel, and Bill of Material.
 2. Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
 3. For Bar Splicer Details, see Sheet SB-20.
 4. For Weir Reinforcement Details, see Sheet SB-2.

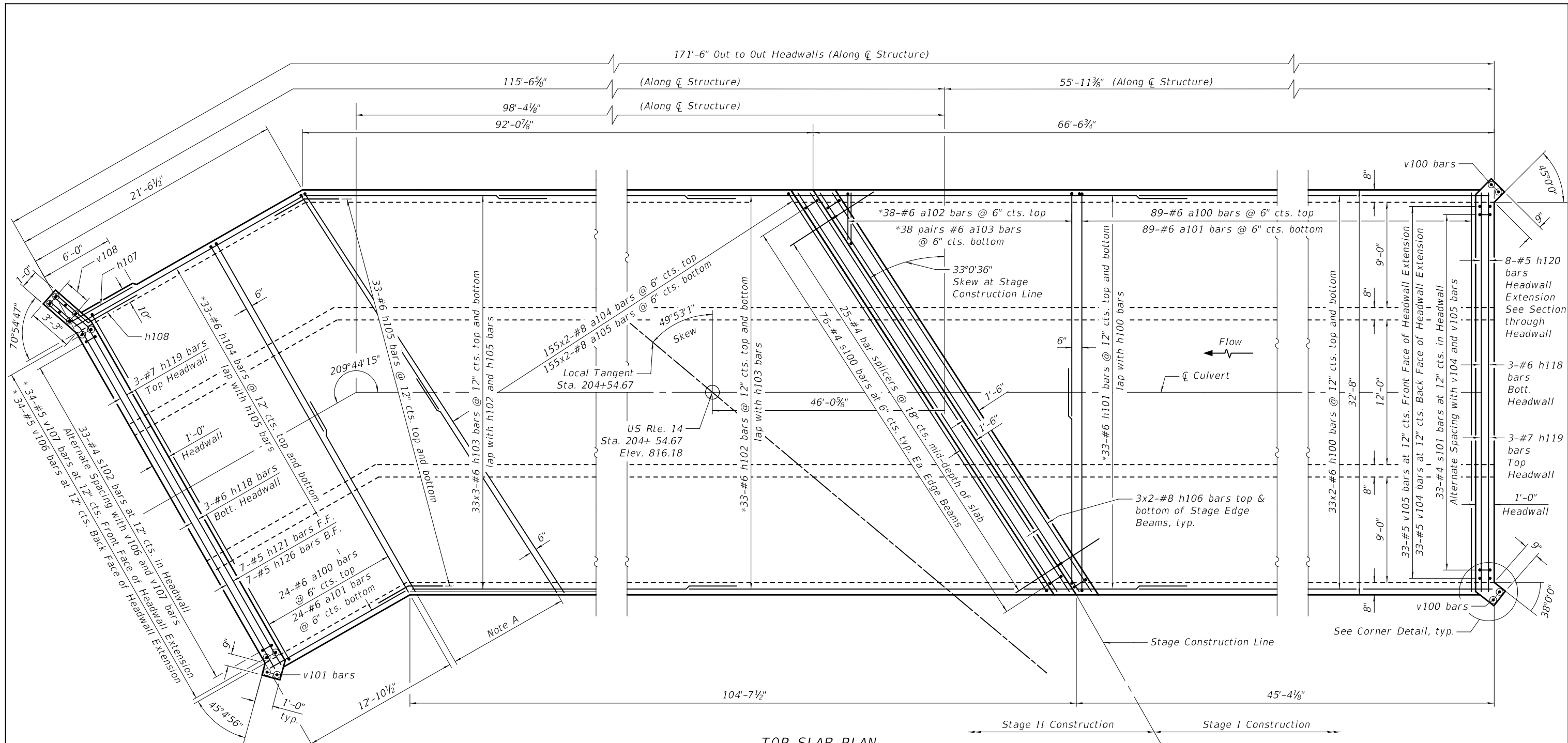


MINIMUM BAR LAP
#5 bar = 2'-9"



MODEL: Default
FILE NAME: ...0490110-91547-007-Culvert Wall Elevations.dgn

<p>Two Pierce Place, Suite 1400 Mascota, Illinois 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com</p>	USER NAME = mc	DESIGNED - JAL	REVISED -	<p align="center">STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</p>	<p align="center">CULVERT WALL ELEVATIONS STRUCTURE NO. 049-0110</p>	F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 419
	PLOT SCALE = N/A	CHECKED - GJH	REVISED -			CONTRACT NO. 61187	ILLINOIS FED. AID PROJECT			
PLOT DATE = 8/28/2024	DATE = 7/26/2024	REVISED -		SHEET SB-7 OF SB-24 SHEETS						



TOP SLAB PLAN

* See Field Cutting Diagram on Sheet SB-9

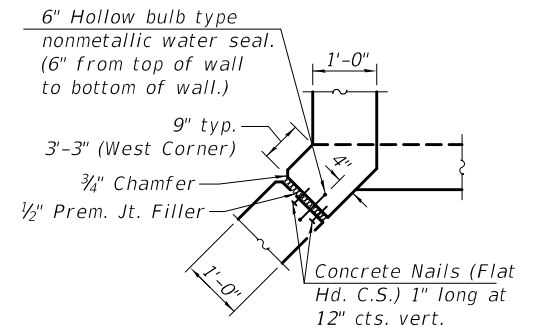
Note A: 21x2-#8 a104 bars @ ± 6" cts. fanned, top
21x2-#8 a105 bars @ ± 6" cts. fanned, bottom

MINIMUM BAR LAP

- #4 bar = 1'-9"
- #6 bar = 3'-4"
- #8 bar = 4'-5"

Notes:

1. See sheet SB-9 for reinforcement details, Section through Barrel, Section through Headwall, and Bill of Material.
2. Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
3. For Bar Splicer Details, see Sheet SB-20.



CORNER DETAIL

MODEL: Default
FILE NAME: ...0490110-91547-008-Top_Slab_Plan.dgn

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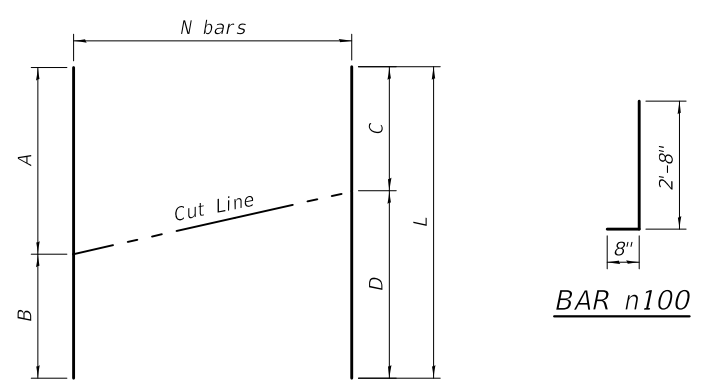
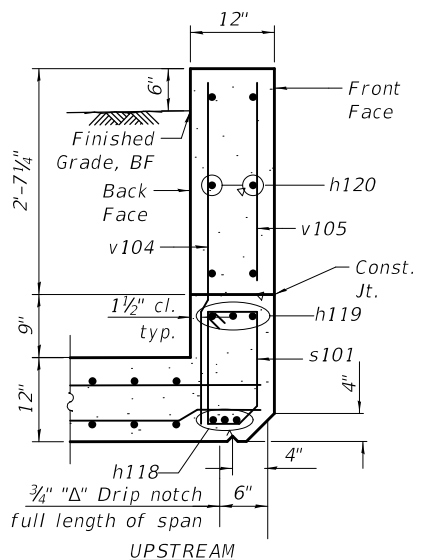
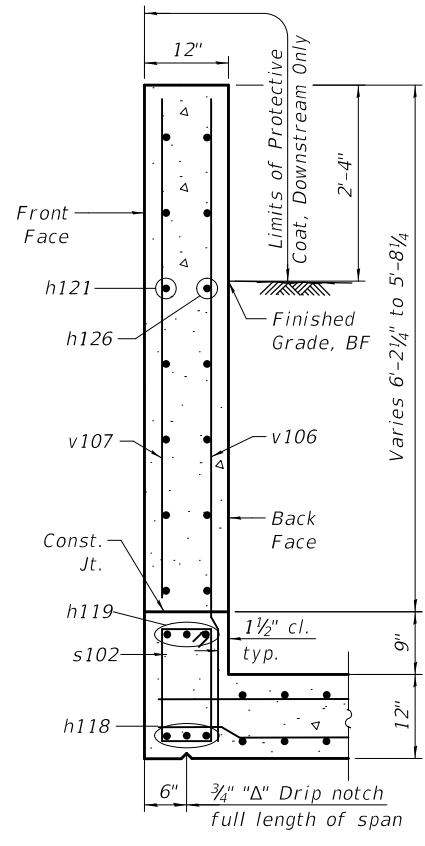
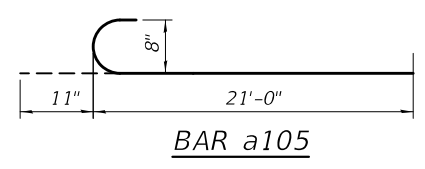
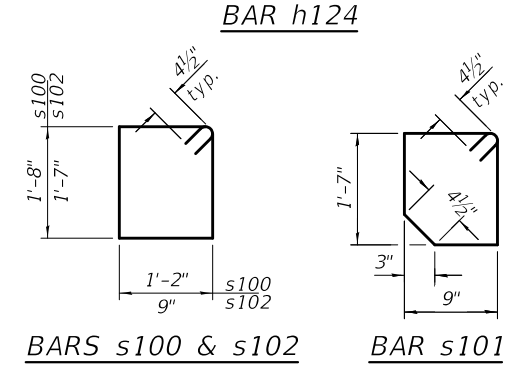
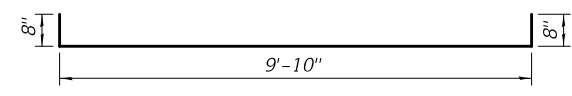
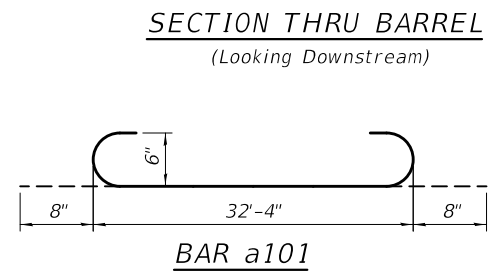
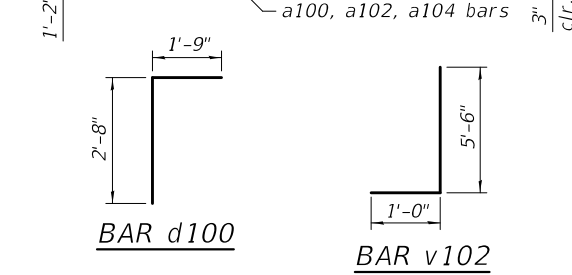
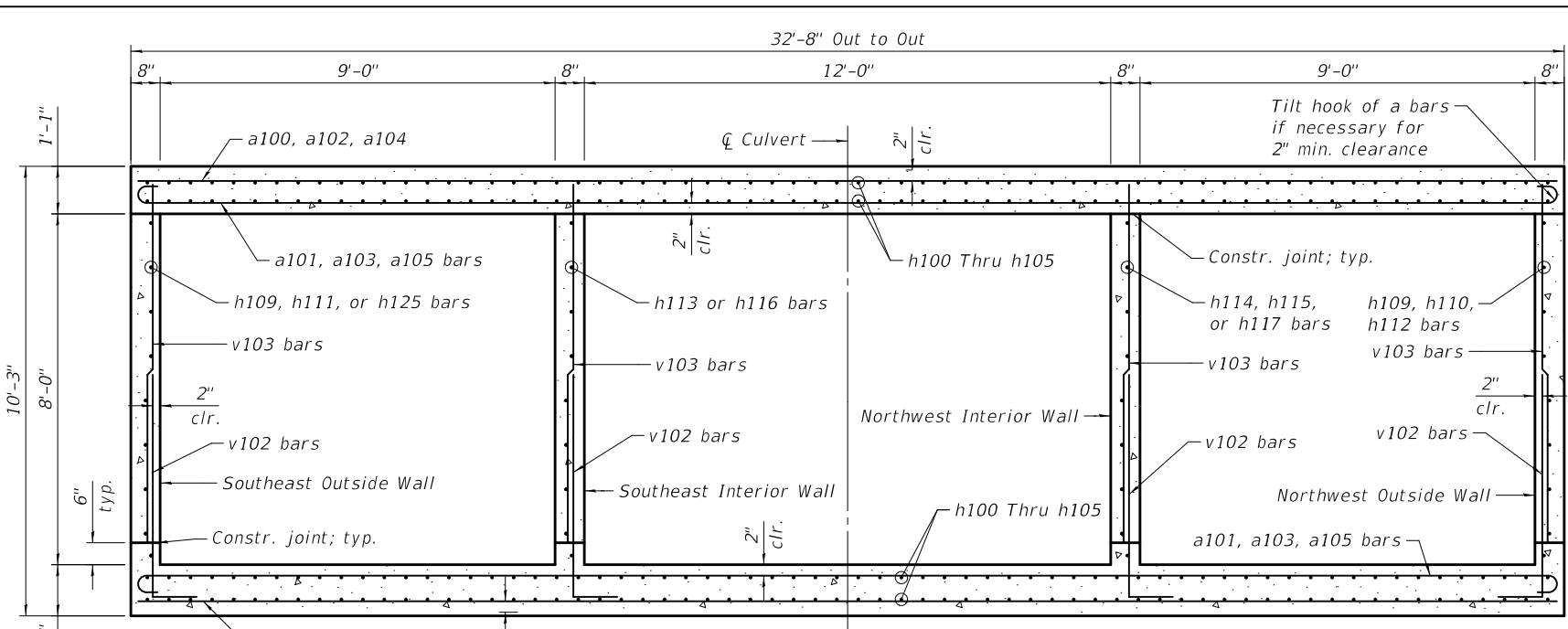
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		DATE -	7/26/2024	REVISED -	

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**TOP SLAB PLAN
STRUCTURE NO. 049-0110**

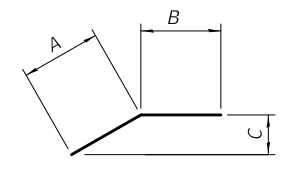
SHEET SB-8 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	420
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



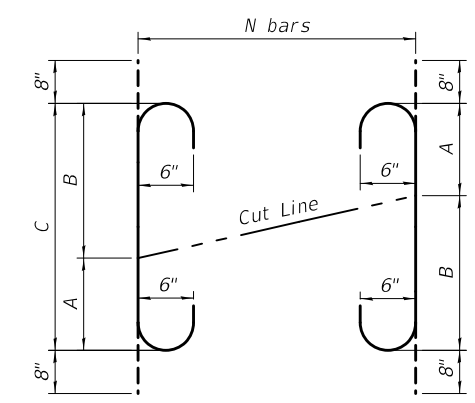
FIELD CUTTING DIAGRAM
Order bars in table below full length. Cut as shown and use remainder of bars in other half of slab

Bar	A	B	C	D	L	N
v106	7'-2"	7'-8"	7'-5"	7'-5"	14'-10"	17
v107	5'-4"	5'-10"	5'-7"	5'-7"	11'-2"	17
a102	3'-3"	31'-8"	17'-1"	17'-10"	34'-11"	19



BARS h105, h107, h108, h121, h122, h123, h126

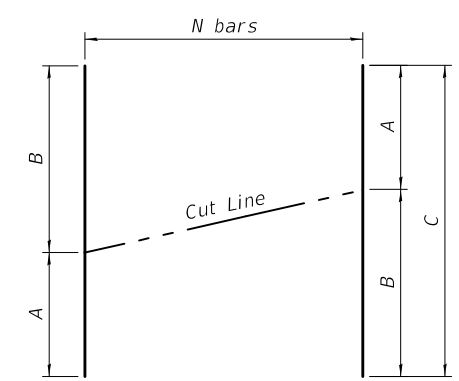
Bar	A	B	C
h105	3'-4"	3'-4"	1'-7 ⁷ / ₈ "
h107	2'-5"	6'-0"	2'-3 ¹ / ₂ "
h108	3'-0"	3'-3"	2'-10"
h121	3'-1"	31'-10"	1'-0 ¹ / ₈ "
h122	2'-2"	4'-3"	1'-4 ⁵ / ₈ "
h123	2'-9"	2'-9"	1'-4 ¹ / ₂ "
h126	3'-3"	31'-10"	1'-0 ³ / ₄ "



FIELD CUTTING DIAGRAM

Order bars in table below full length. Cut as shown and use remainder of bars in opposite end of slab.

Bar	A	B	C	N
a103	3'-4"	17'-7"	20'-11"	38



FIELD CUTTING DIAGRAM

Order bars in table below full length. Cut as shown and use remainder of bars in opposite face of slab

Bar	A	B	C	N
h101	4'-4"	25'-3"	29'-7"	33
h102	11'-11"	24'-4"	36'-3"	33
h104	12'-8"	21'-3"	33'-11"	33

BILL OF MATERIAL

(US14 Culvert)

Bar	No.	Size	Length	Shape
a100	230	#6	32'-4"	—
a101	230	#6	33'-8"	—
a102	38	#6	34'-11"	—
a103	76	#6	22'-3"	—
a104	704	#8	21'-0"	—
a105	704	#8	21'-11"	—
a106	4	#4	17'-1"	—
d100	66	#4	4'-5"	—
h100	264	#6	23'-9"	—
h101	66	#6	29'-7"	—
h102	66	#6	36'-3"	—
h103	396	#6	30'-0"	—
h104	66	#6	33'-11"	—
h105	132	#6	6'-8"	—
h106	48	#8	21'-7"	—
h107	11	#5	8'-5"	—
h108	11	#5	6'-3"	—
h109	45	#5	24'-1"	—
h110	36	#5	25'-1"	—
h111	9	#5	12'-9"	—
h112	9	#5	21'-3"	—
h113	18	#5	27'-3"	—
h114	18	#5	31'-4"	—
h115	36	#5	26'-0"	—
h116	9	#5	15'-3"	—
h117	9	#5	18'-7"	—
h118	6	#6	32'-4"	—
h119	6	#7	32'-4"	—
h120	8	#5	32'-4"	—
h121	7	#5	34'-11"	—
h122	2	#5	6'-5"	—
h123	36	#5	5'-6"	—
h124	6	#4	11'-2"	—
h125	36	#5	28'-2"	—
h126	7	#5	35'-1"	—
n100	18	#4	3'-4"	—
s100	304	#4	6'-5"	—
s101	33	#4	5'-4"	—
s102	33	#4	5'-5"	—
v100	4	#6	15'-1"	—
v101	2	#6	18'-2"	—
v102	1105	#6	6'-6"	—
v103	1105	#6	8'-0"	—
v104	33	#5	4'-1"	—
v105	33	#5	2'-3"	—
v106	17	#5	14'-10"	—
v107	17	#5	11'-2"	—
v108	6	#6	18'-8"	—
Protective Coat			Sq. Yd.	14
Concrete Box Culverts			Cu. Yd.	629.7
Reinforcement Bars			Pound	183,400

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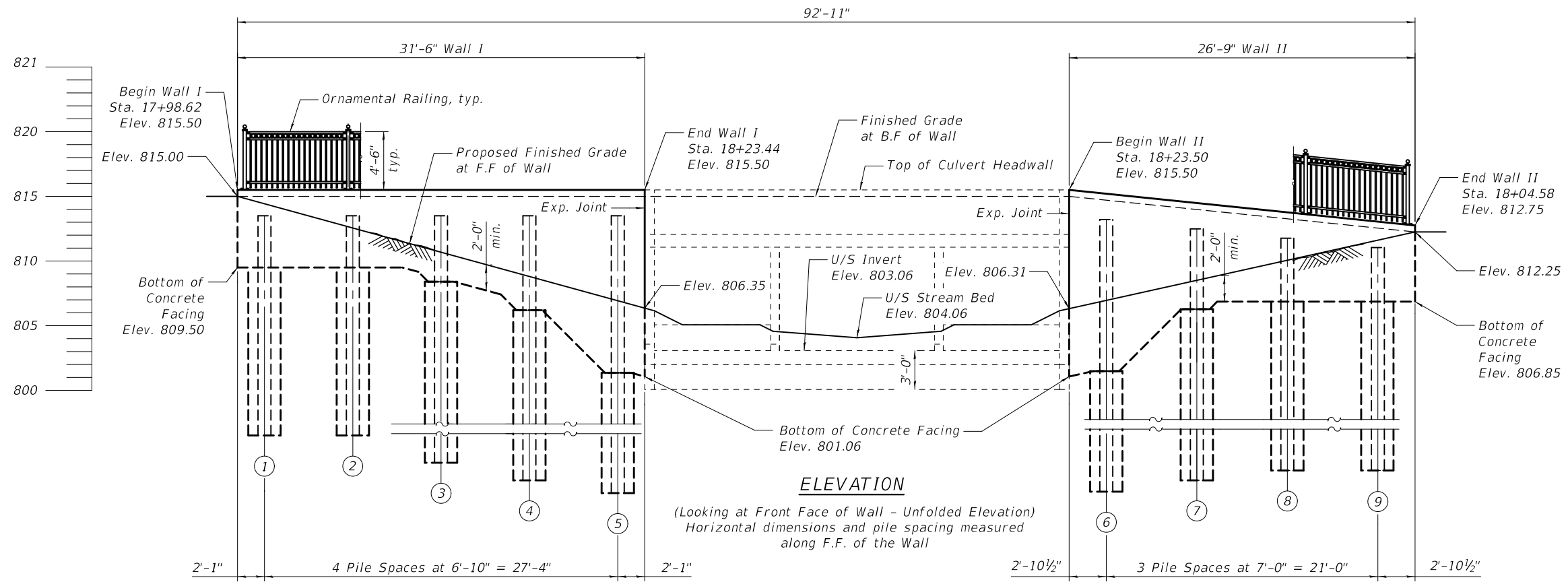
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**STATE OF ILLINOIS
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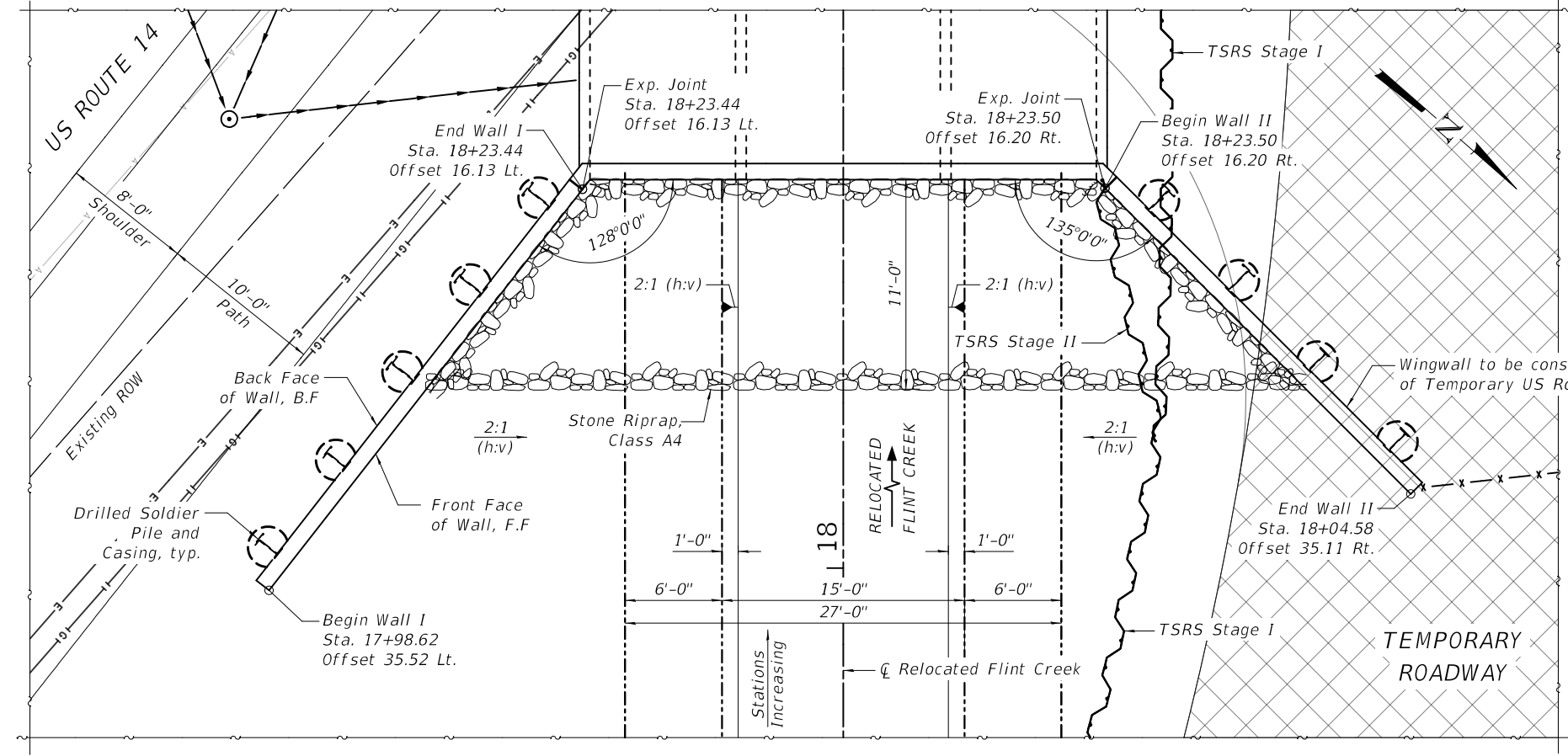
**CULVERT DETAILS
STRUCTURE NO. 049-0110**

SHEET SB-9 OF SB-24 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 421
			CONTRACT NO. 61187	
ILLINOIS FED. AID PROJECT				



ELEVATION
 (Looking at Front Face of Wall - Unfolded Elevation)
 Horizontal dimensions and pile spacing measured along F.F. of the Wall



PLAN

- Notes:**
1. Wall stations and offsets are to the proposed ϕ Relocated Flint Creek.
 2. See roadway plans for the profile grade of the Relocated Flint Creek.
 3. Offsets and stations are given at the front face of the walls.
 4. F.F. = Front Face
B.F. = Back Face

LEGEND

- → → → → Proposed Storm Sewer
- x - x - x - x - x - x Proposed Fence
- |G|—|G|—|G|— Proposed Underground Gasline
- ▲—▲—▲—▲— Proposed Aerial Lines
- A—A—A—A— Existing Aerial Lines

MODEL: Default
 FILE NAME: ...0490110-61187-010-GPE Walls I & II

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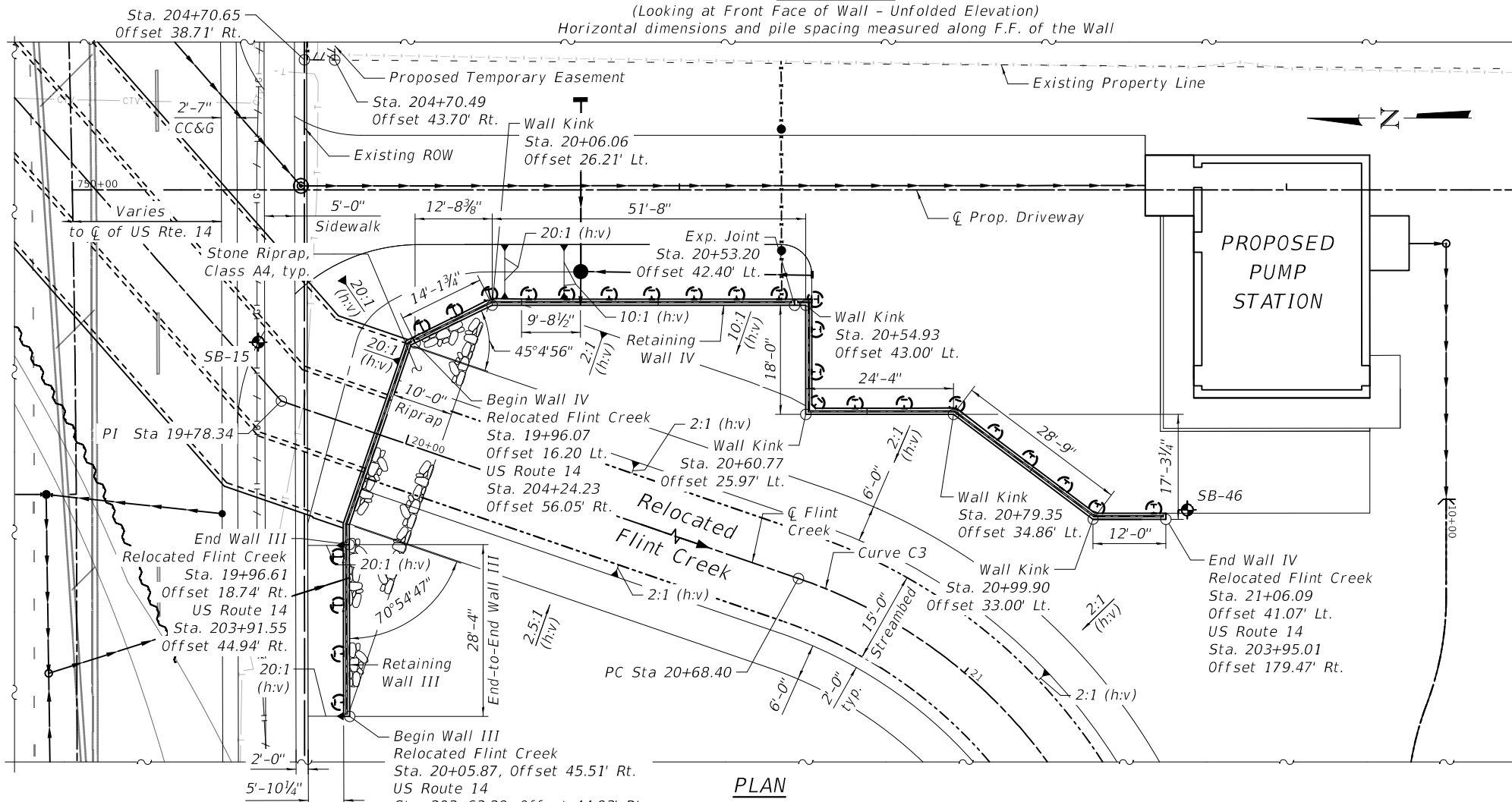
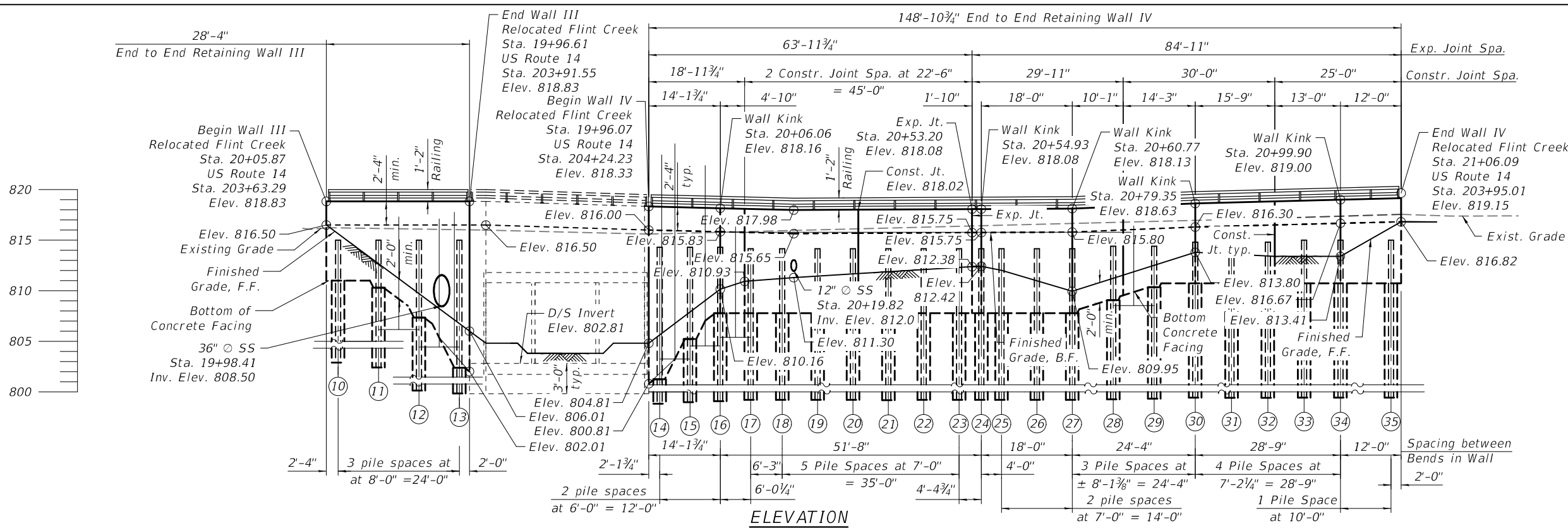
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STATE OF ILLINOIS
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GENERAL PLAN AND ELEVATION - WALLS I & II
STRUCTURE NO. 049-0110

SHEET SB-10 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	422
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



- Notes:**
1. Wall stations and offset are to the proposed \bar{C} Relocated Flint Creek.
 2. See roadway plans for the profile grade of the Relocated Flint Creek.
 3. Offsets and stations are given at the front face of the walls.
 4. F.F. - Front Face
B.F. - Back Face

LEGEND

	Existing Underground Telephone
	Existing Underground Gasline to be Abandoned
	Existing Underground Cable TV
	Proposed Storm Sewer

MODEL: Default
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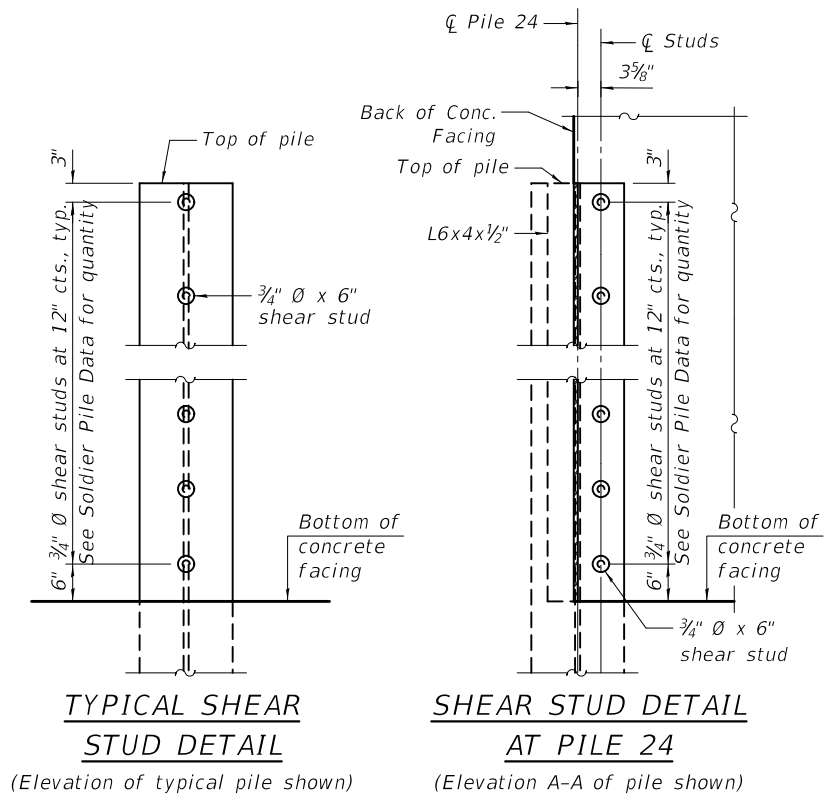
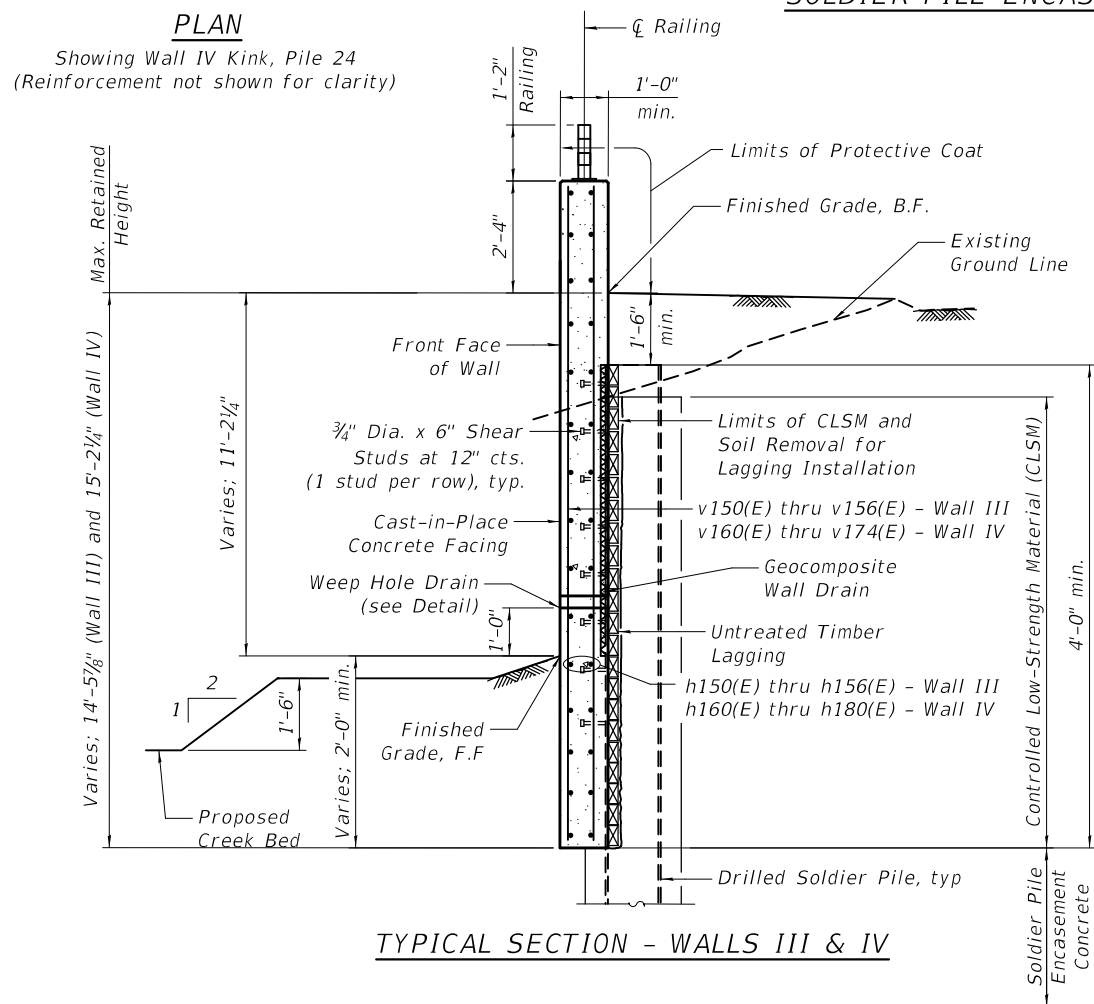
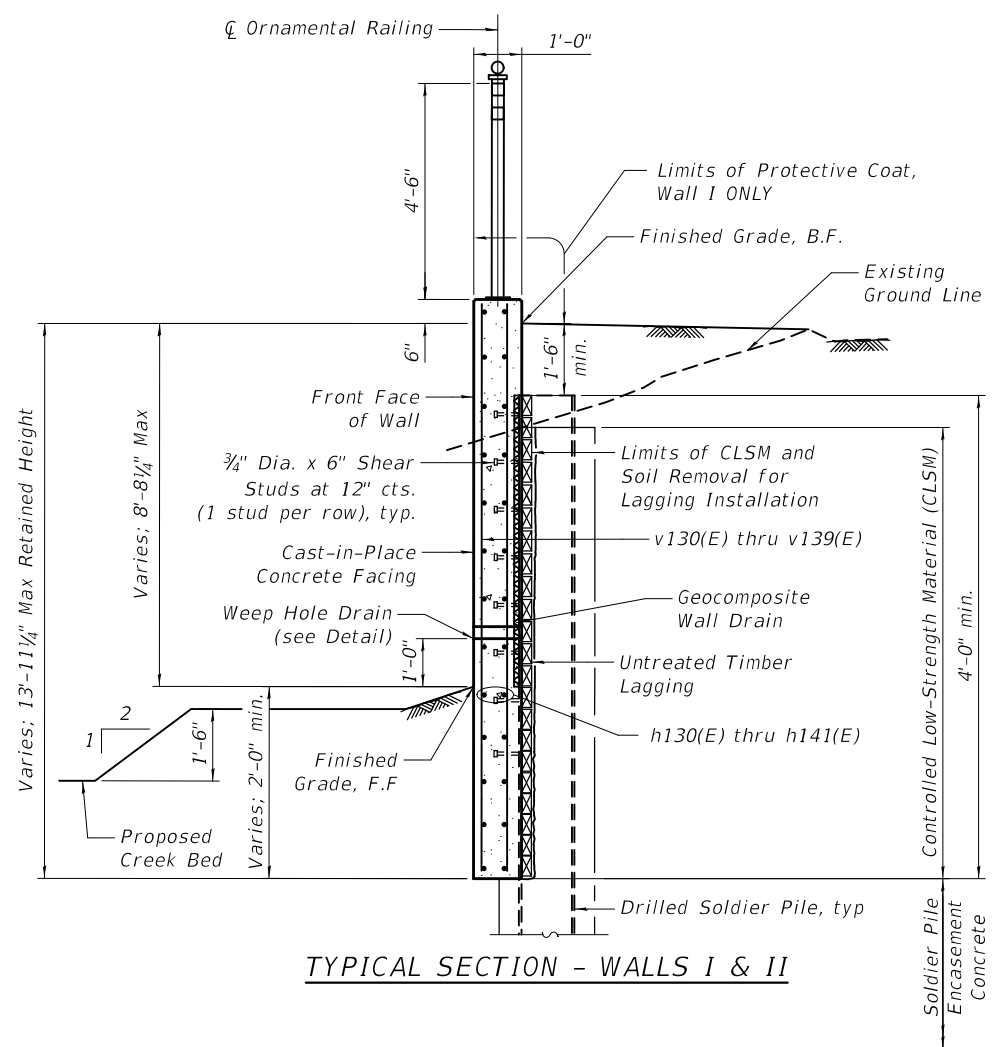
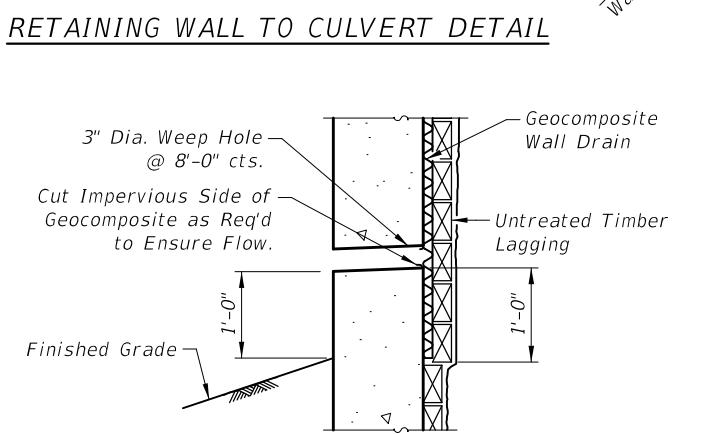
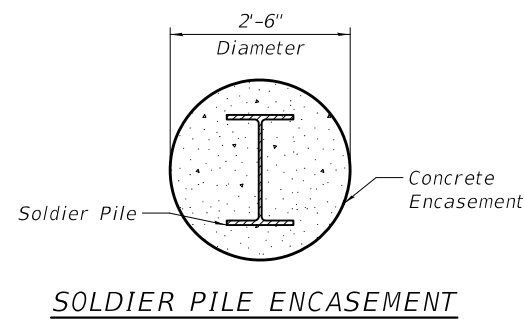
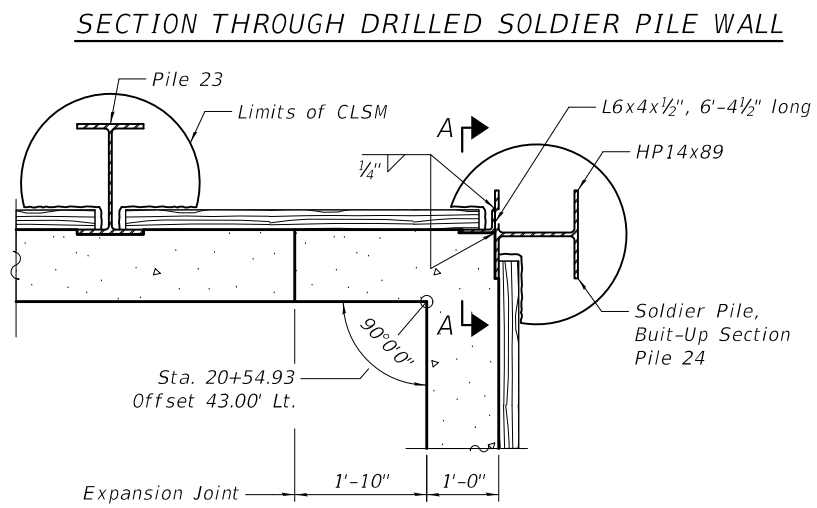
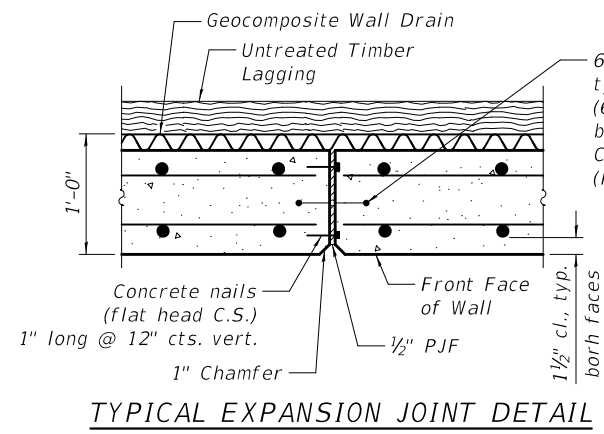
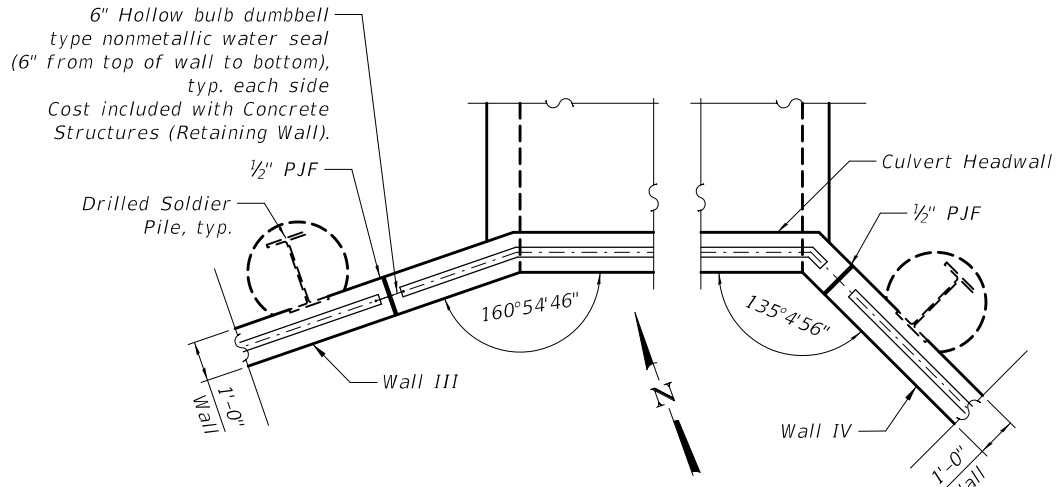
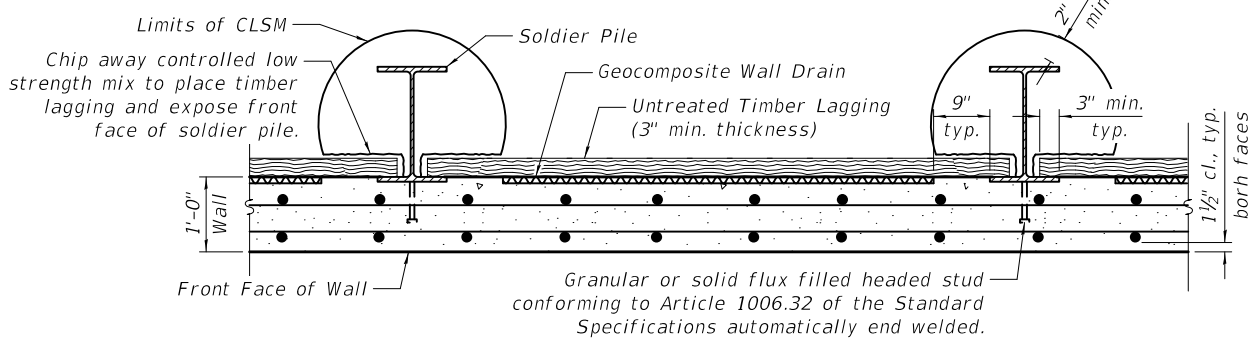
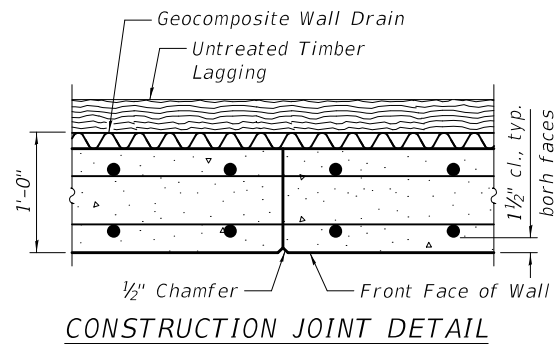
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION - WALLS III & IV
STRUCTURE NO. 049-0110
 SHEET SB-11 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



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STATE OF ILLINOIS
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WALL DETAILS
STRUCTURE NO. 049-0110

SHEET SB-12 OF SB-24 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 424
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

SOLDIER PILE DATA TABLE - WALLS I AND II

Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
1	W18x76	18+01.31	35.58 Lt.	813.50	796.50	17.00	809.50	5
2	W18x76	18+06.70	31.37 Lt.	813.50	796.50	17.00	809.50	5
3	W21x111	18+12.16	27.26 Lt.	813.50	787.40	26.10	808.40	6
4	W21x111	18+17.54	23.05 Lt.	813.50	785.20	28.30	806.20	8
5	W21x111	18+22.93	18.85 Lt.	813.50	779.30	34.20	801.36	13
6	W21x111	18+22.76	19.52 Rt.	813.20	780.40	32.80	801.47	13
7	W21x111	18+17.81	24.47 Rt.	812.48	785.20	27.28	806.28	7
8	W18x76	18+12.78	29.33 Rt.	811.77	790.80	20.97	806.85	6
9	W18x76	18+07.83	34.28 Rt.	811.05	790.80	20.25	806.85	5

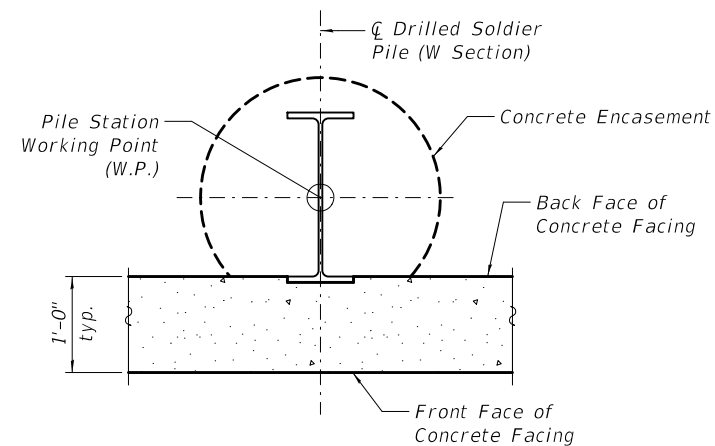
SOLDIER PILE DATA TABLE - WALLS IV

Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
14	W21x132	19+96.30	19.00 Lt.	814.30	778.00	36.30	801.24	14
15	W21x132	20+00.53	23.25 Lt.	814.30	783.00	31.30	805.24	10
16	W21x132	20+05.10	27.75 Lt.	814.30	785.50	28.80	807.78	7
17	W18x76	20+11.20	29.78 Lt.	814.15	788.50	25.65	807.78	7
18	W18x76	20+17.11	31.81 Lt.	814.15	788.50	25.65	807.78	7
19	W18x76	20+23.73	34.08 Lt.	814.15	788.50	25.65	807.78	7
20	W18x76	20+30.35	36.36 Lt.	814.15	788.50	25.65	807.78	7
21	W18x76	20+36.97	38.63 Lt.	814.15	788.50	25.65	807.78	7
22	W18x76	20+43.59	40.90 Lt.	814.15	788.50	25.65	807.78	7
23	W18x76	20+50.22	43.18 Lt.	814.15	788.50	25.65	807.78	7
* 24	HP14x89	20+56.06	44.40 Lt.	814.15	788.50	25.65	807.78	7
25	W18x76	20+57.84	39.76 Lt.	814.15	788.50	25.65	807.78	7
26	W18x76	20+60.11	33.14 Lt.	814.15	788.50	25.65	807.78	7
27	W18x76	20+61.90	28.28 Lt.	814.15	788.50	25.65	807.78	7
28	W18x76	20+67.89	30.21 Lt.	814.40	790.00	24.40	809.07	6
29	W18x76	20+73.57	33.06 Lt.	814.40	796.00	18.40	810.36	5
30	W18x76	20+79.19	36.55 Lt.	814.80	796.50	18.30	810.73	5
31	W18x76	20+84.56	35.44 Lt.	814.80	796.50	18.30	810.73	5
32	W18x76	20+89.62	34.76 Lt.	814.80	796.50	18.30	810.73	5
33	W18x76	20+94.73	34.51 Lt.	815.00	796.50	18.50	810.73	5
34	W18x76	20+99.40	34.77 Lt.	815.00	796.50	18.50	810.73	5
35	W18x76	21+04.32	40.92 Lt.	815.00	796.50	18.50	810.73	5

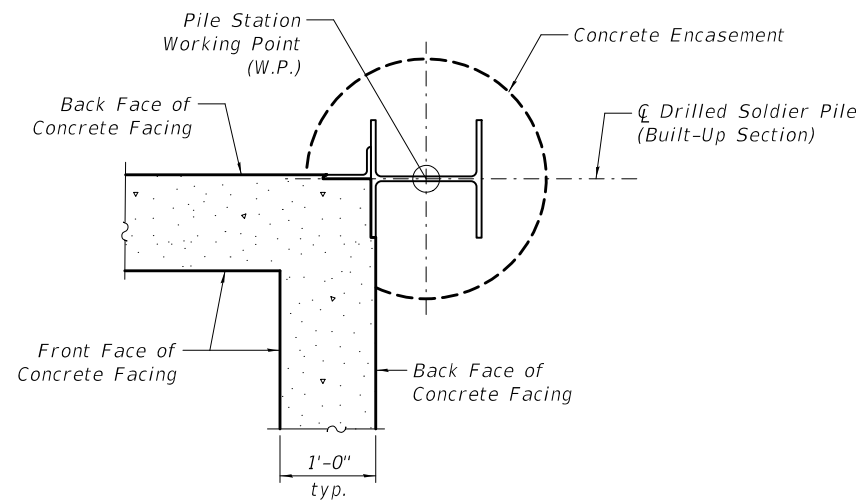
SOLDIER PILE DATA TABLE - WALL III

Pile Number	Pile Size	Station at Pile W.P.	Offset at Pile W.P.	Top of Pile Elevation	Bottom of Pile Elevation	Length of Pile	Bottom of CIP Facing	No. Shear Studs
10	W18x76	20+03.50	43.87 Rt.	815.00	794.00	21.00	811.00	5
11	W18x76	20+00.88	36.31 Rt.	815.00	793.00	22.00	810.31	6
12	W21x132	19+98.15	28.78 Rt.	815.00	785.00	30.00	807.34	8
13	W21x132	19+95.54	21.22 Rt.	815.00	779.00	36.00	802.38	13

* Built-Up Section



SOLDIER PILE WORKING POINT AT BUILT-UP SECTION
(Timber Lagging not shown for clarity)



SOLDIER PILE WORKING POINT AT BUILT-UP SECTION
(Timber Lagging not shown for clarity)

MODEL: Default
FILE NAME: ...0490110-61187-013-Wall Pile Data.dgn

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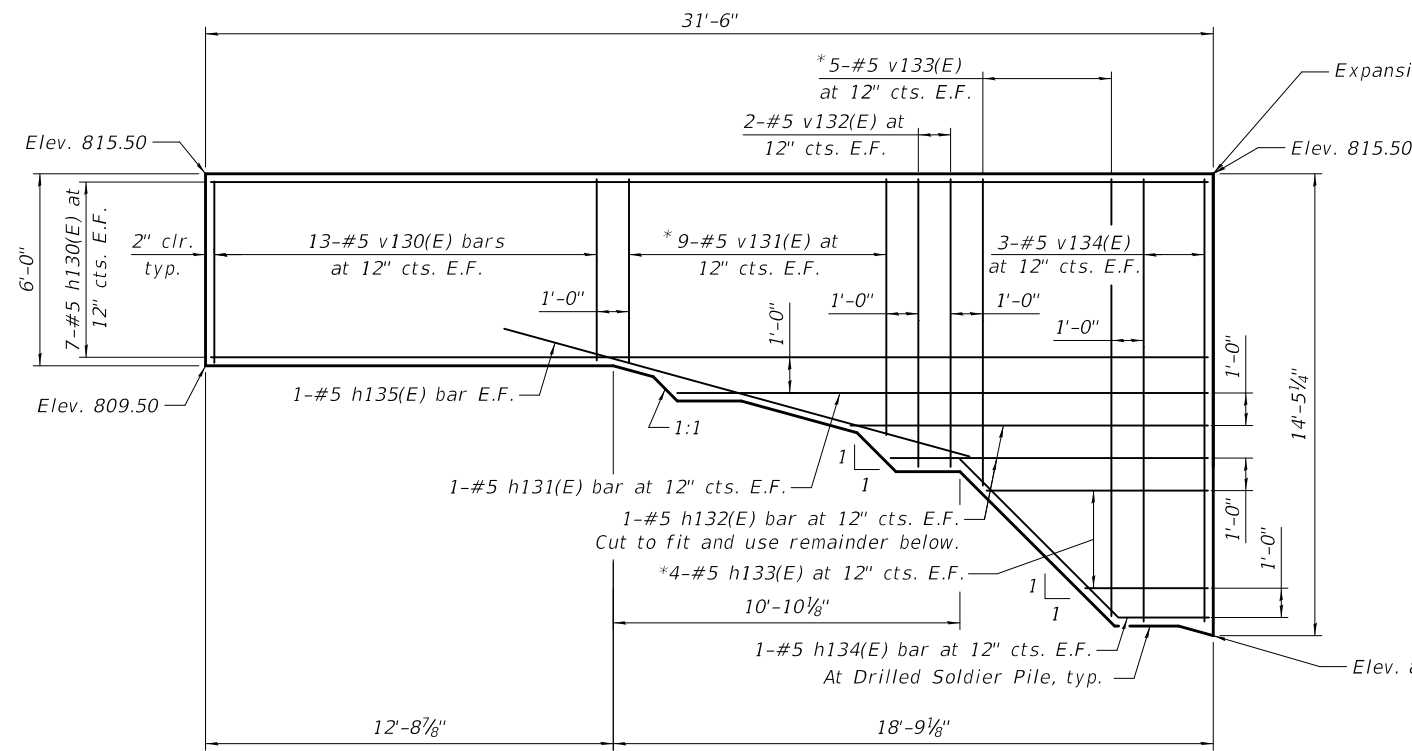
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**WALL PILE DATA TABLES
STRUCTURE NO. 049-0110**

SHEET SB-13 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 61187				

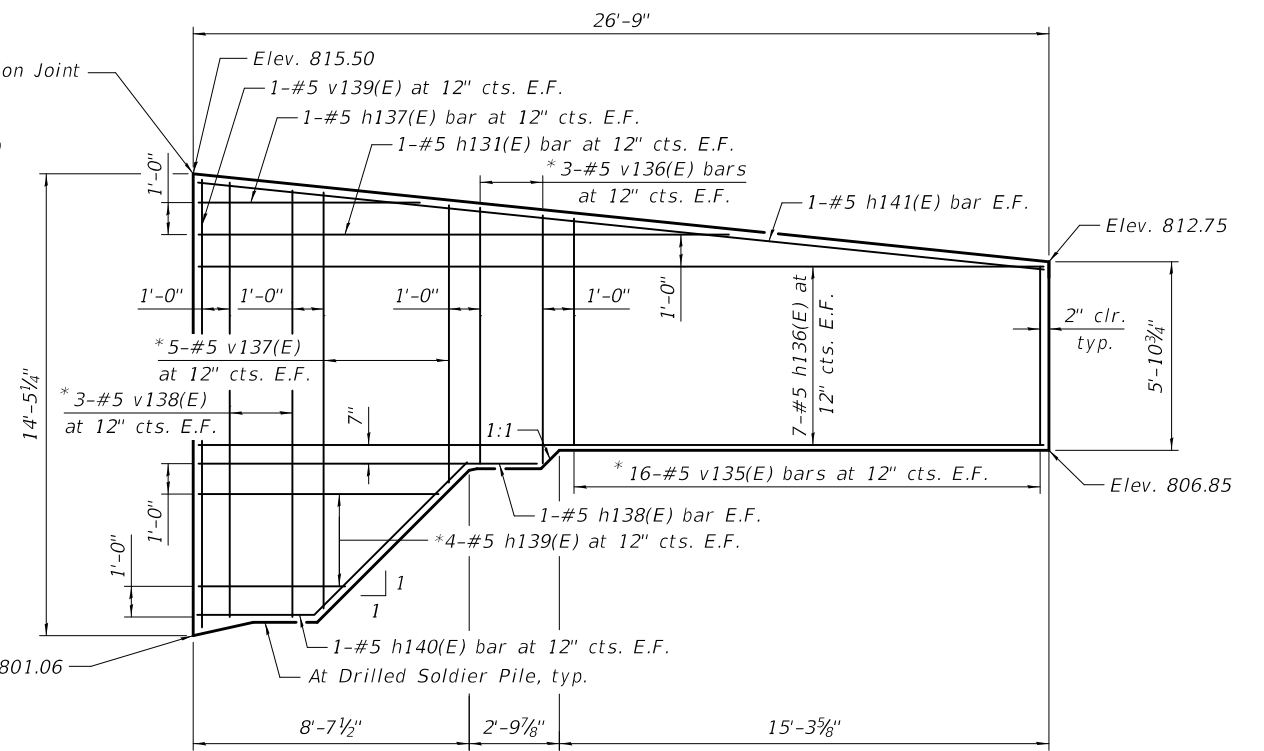
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WALL I ELEVATION

Unfolded Elevation

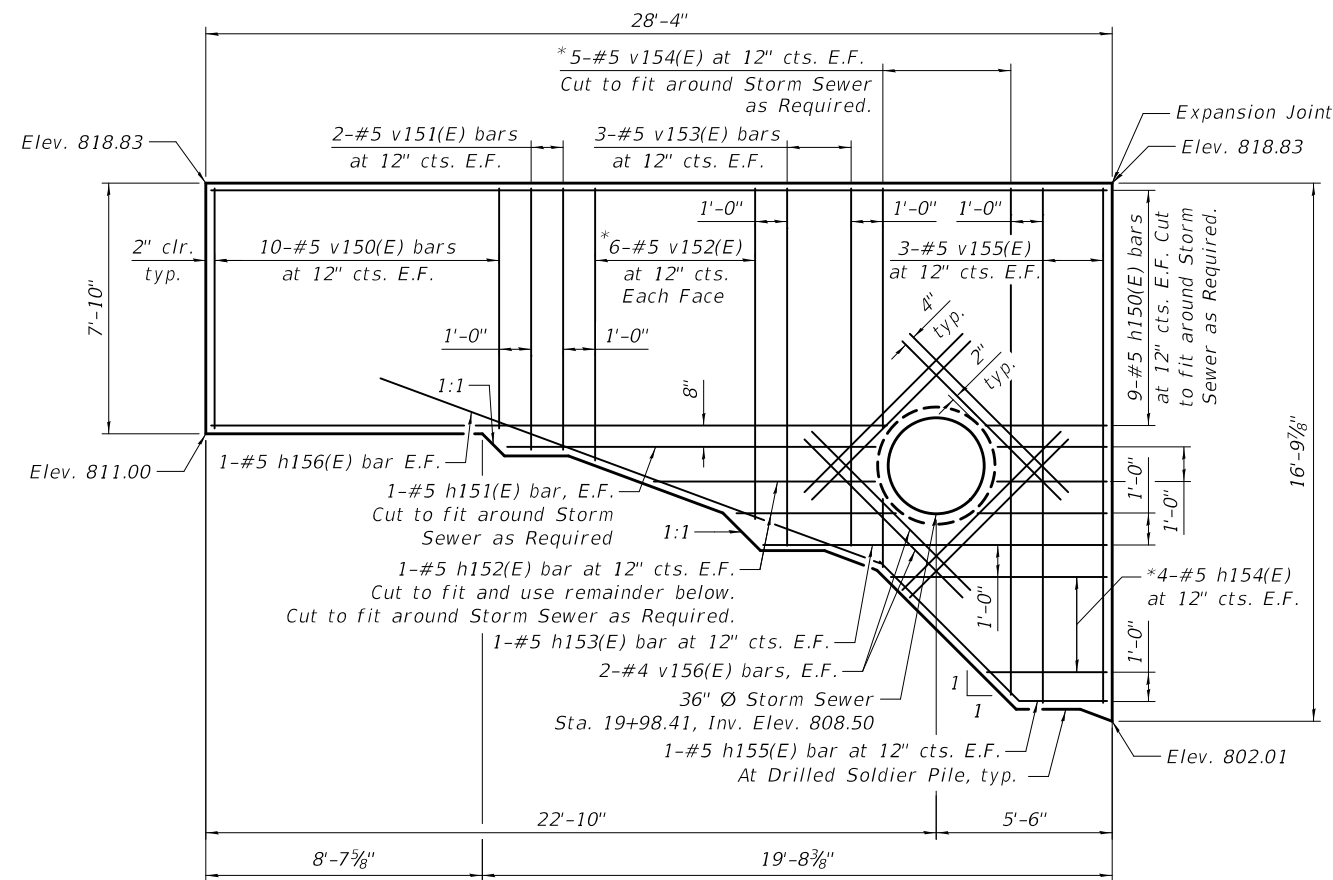
*See Field Cutting Diagram on Sheet SB-16.



WALL II ELEVATION

Unfolded Elevation

*See Field Cutting Diagram on Sheet SB-16.



WALL III ELEVATION

Unfolded Elevation

*See Field Cutting Diagram on Sheet SB-16.

Notes:

1. Dimensions measured along Front Face of Wall.
2. E.F. = Each Face
3. See Sheet SB-16 for Bill of Materials and Bar Bending Diagrams.
4. See Sheet SB-12 for Typical Wall Section.

MODEL: Default
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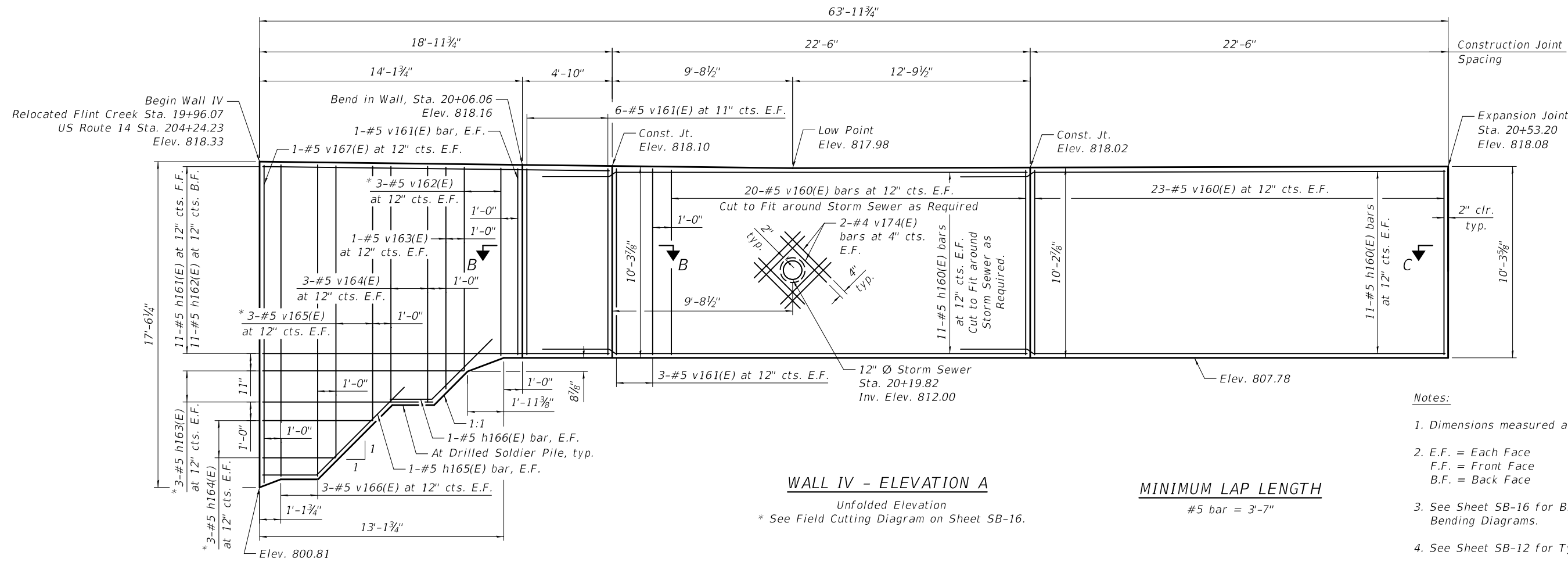
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**WALLS I, II, & III ELEVATIONS
STRUCTURE NO. 049-0110**

SHEET SB-14 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	426
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



WALL IV - ELEVATION A

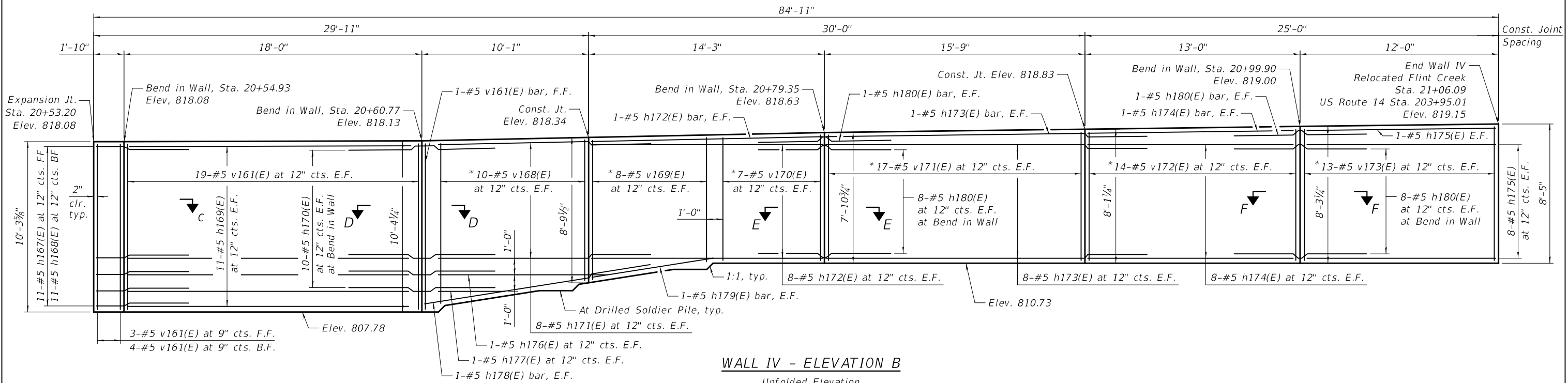
Unfolded Elevation
* See Field Cutting Diagram on Sheet SB-16.

MINIMUM LAP LENGTH

#5 bar = 3'-7"

Notes:

1. Dimensions measured along Front Face of Wall.
2. E.F. = Each Face
F.F. = Front Face
B.F. = Back Face
3. See Sheet SB-16 for Bill of Materials and Bar Bending Diagrams.
4. See Sheet SB-12 for Typical Wall Section.
5. See Sheet SB-16 for Sections B-B, C-C, D-D, E-E, and F-F.



WALL IV - ELEVATION B

Unfolded Elevation
* See Field Cutting Diagram on Sheet SB-16.

MODEL: Default
FILE NAME: ...0490110-61187-015-Wall IV Elevations A & B.dgn



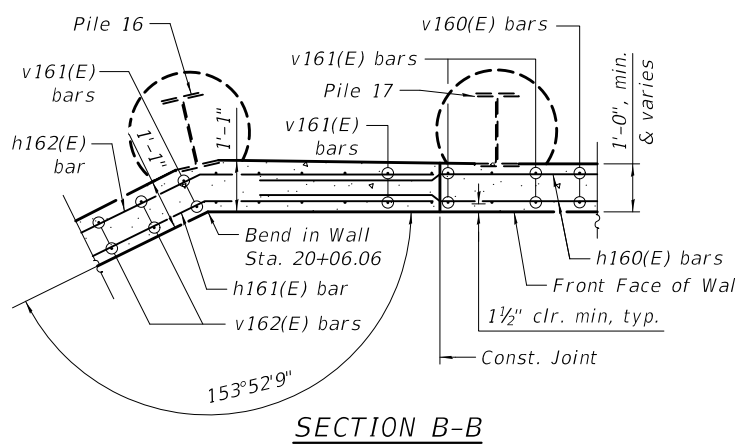
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PLOT SCALE = N/A	DRAWN - KLK	REVISED -
PLOT DATE = 10/1/2024	CHECKED - GJH	REVISED -
	DATE - 10/01/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

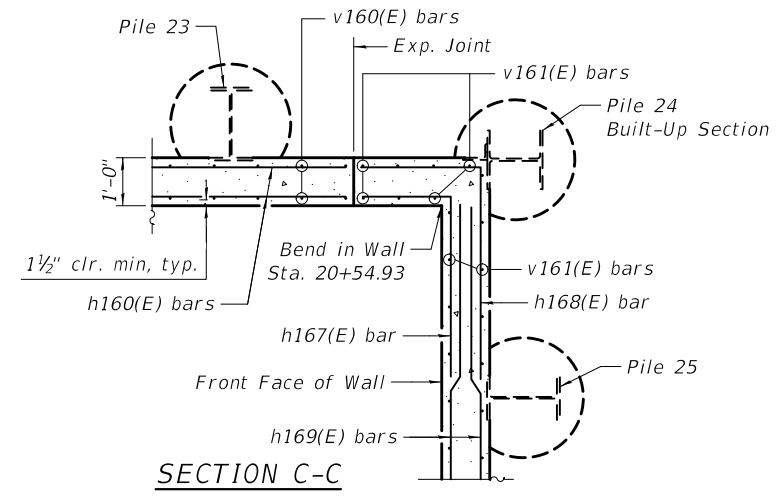
**WALL IV ELEVATIONS A & B
STRUCTURE NO. 049-0110**

SHEET SB-15 OF SB-24 SHEETS

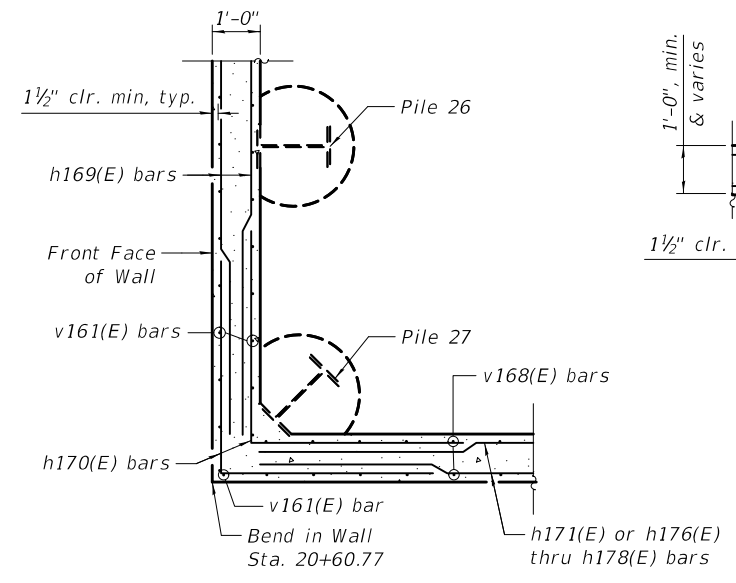
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CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



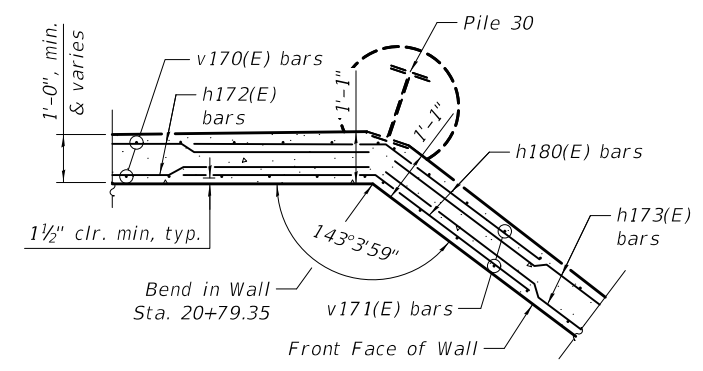
SECTION B-B



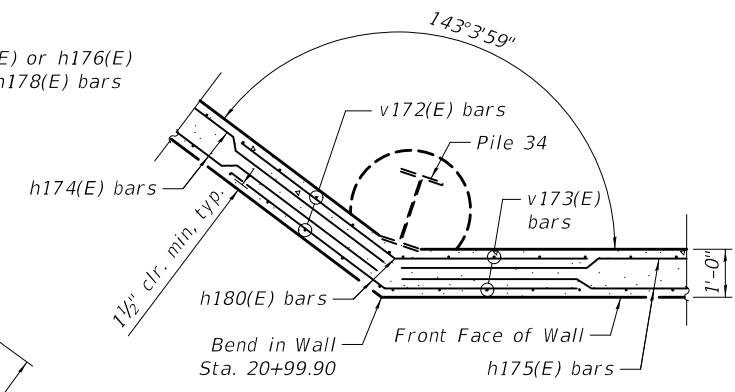
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

FIELD CUTTING DIAGRAM

Order bars in table below full length. Cut as shown and use remainder of bars in opposite face of wall.

Bar	A	B	C	N
h133(E)	3'-10"	6'-11"	10'-9"	4
h139(E)	4'-7"	7'-6"	12'-1"	4
h154(E)	3'-9"	6'-9"	10'-6"	4
h163(E)	9'-2"	10'-10"	20'-0"	3
h164(E)	3'-11"	5'-11"	9'-10"	3
v131(E)	5'-9"	8'-0"	13'-9"	9
v133(E)	9'-7"	13'-8"	23'-3"	5
v135(E)	5'-7"	7'-1"	12'-8"	16
v136(E)	7'-9"	8'-0"	15'-9"	3
v137(E)	8'-8"	13'-0"	21'-8"	5
v138(E)	13'-4"	13'-7"	26'-11"	3
v152(E)	8'-6"	10'-4"	18'-10"	6
v154(E)	11'-10"	15'-10"	27'-8"	5
v162(E)	10'-1"	10'-11"	21'-0"	3
v165(E)	13'-8"	15'-8"	29'-4"	3
v168(E)	8'-6"	9'-8"	18'-2"	10
v169(E)	7'-6"	8'-5"	15'-11"	8
v170(E)	7'-5"	7'-7"	15'-0"	7
171(E)	7'-7"	7'-9"	15'-4"	17
v172(E)	7'-9"	7'-11"	15'-8"	14
v173(E)	7'-11"	8'-1"	16'-0"	13

h134(E), h140(E), h155(E), h165(E), h166(E), & h180(E) BARS

Bar	A	B	C
h134(E)	2'-10"	7'-0"	4'-11 3/8"
h140(E)	3'-8"	6'-9"	4'-9 1/4"
h155(E)	2'-9"	6'-2"	4'-4 3/8"
h165(E)	2'-11"	6'-8"	4'-8 3/8"
h166(E)	2'-3"	4'-7"	3'-2 7/8"
h180(E)	4'-0"	4'-0"	2'-4 1/8"

h161(E) & h162(E) BARS

Bar	A	B	C
h161(E)	14'-0"	4'-9"	2'-1 1/8"
h162(E)	14'-2"	4'-10"	2'-1 1/2"

BILL OF MATERIAL WALLS I AND II

Bar	No.	Size	Length	Shape
h130(E)	14	#5	31'-2"	—
h131(E)	4	#5	16'-7"	—
h132(E)	2	#5	21'-1"	—
h133(E)	4	#5	10'-9"	—
h134(E)	2	#5	9'-10"	—
h135(E)	2	#5	15'-1"	—
h136(E)	14	#5	26'-5"	—
h137(E)	2	#5	6'-11"	—
h138(E)	2	#5	10'-7"	—
h139(E)	4	#5	12'-1"	—
h140(E)	2	#5	10'-5"	—
h141(E)	2	#5	26'-7"	—
v130(E)	26	#5	5'-8"	—
v131(E)	9	#5	13'-9"	—
v132(E)	4	#5	9'-0"	—
v133(E)	5	#5	23'-3"	—
v134(E)	6	#5	13'-10"	—
v135(E)	16	#5	12'-8"	—
v136(E)	3	#5	15'-9"	—
v137(E)	5	#5	21'-8"	—
v138(E)	3	#5	26'-11"	—
v139(E)	2	#5	14'-0"	—
Protective Coat		Sq. Yd.	6	
Reinforcement Bars, Epoxy Coated		Pound	2,240	
Concrete Structures (Retaining Wall)		Cu. Yd.	18.3	

BILL OF MATERIAL WALL III

Bar	No.	Size	Length	Shape
h150(E)	18	#5	28'-0"	—
h151(E)	2	#5	18'-9"	—
h152(E)	2	#5	25'-9"	—
h153(E)	2	#5	10'-9"	—
h154(E)	4	#5	10'-6"	—
h155(E)	2	#5	8'-11"	—
h156(E)	2	#5	16'-8"	—
v150(E)	20	#5	7'-6"	—
v151(E)	4	#5	8'-2"	—
v152(E)	6	#5	18'-10"	—
v153(E)	6	#5	11'-2"	—
v154(E)	5	#5	27'-8"	—
v155(E)	6	#5	16'-1"	—
v156(E)	16	#4	7'-0"	—
Protective Coat		Sq. Yd.	11	
Reinforcement Bars, Epoxy Coated		Pound	1,440	
Concrete Structures (Retaining Wall)		Cu. Yd.	11.3	

BILL OF MATERIAL WALL IV

Bar	No.	Size	Length	Shape
h160(E)	44	#5	26'-1"	—
h161(E)	11	#5	18'-9"	—
h162(E)	11	#5	19'-0"	—
h163(E)	3	#5	20'-0"	—
h164(E)	3	#5	9'-10"	—
h165(E)	2	#5	9'-7"	—
h166(E)	2	#5	6'-10"	—
h167(E)	11	#5	5'-7"	—
h168(E)	11	#5	6'-11"	—
h169(E)	22	#5	17'-0"	—
h170(E)	20	#5	8'-10"	—
h171(E)	16	#5	12'-10"	—
h172(E)	18	#5	14'-0"	—
h173(E)	18	#5	19'-5"	—
h174(E)	18	#5	12'-5"	—
h175(E)	18	#5	11'-5"	—
h176(E)	2	#5	10'-3"	—
h177(E)	2	#5	4'-0"	—
h178(E)	2	#5	13'-10"	—
h179(E)	2	#5	7'-5"	—
h180(E)	36	#5	8'-0"	—
v160(E)	86	#5	9'-11"	—
v161(E)	66	#5	10'-0"	—
v162(E)	3	#5	21'-0"	—
v163(E)	2	#5	11'-11"	—
v164(E)	6	#5	12'-8"	—
v165(E)	3	#5	29'-4"	—
v166(E)	6	#5	16'-9"	—
v167(E)	2	#5	17'-1"	—
v168(E)	10	#5	18'-2"	—
v169(E)	8	#5	15'-11"	—
v170(E)	7	#5	15'-0"	—
v171(E)	17	#5	15'-4"	—
v172(E)	14	#5	15'-8"	—
v173(E)	13	#5	16'-0"	—
v174(E)	16	#4	3'-6"	—
Protective Coat		Sq. Yd.	56	
Reinforcement Bars, Epoxy Coated		Pound	7,310	
Concrete Structures (Retaining Wall)		Cu. Yd.	54.7	

h167(E), h168(E), & h170(E) BARS

Bar	A	B
h167(E)	1'-10"	3'-9"
h168(E)	2'-6"	4'-5"
h170(E)	4'-5"	4'-5"

MODEL: Default
FILE NAME: ...0490110-91547-016-Wall Reinforcement Details.dgn

CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME =	mc
PLOT SCALE =	N/A
PLOT DATE =	8/28/2024

DESIGNED -	KLK
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CHECKED -	GJH
DATE -	7/26/2024

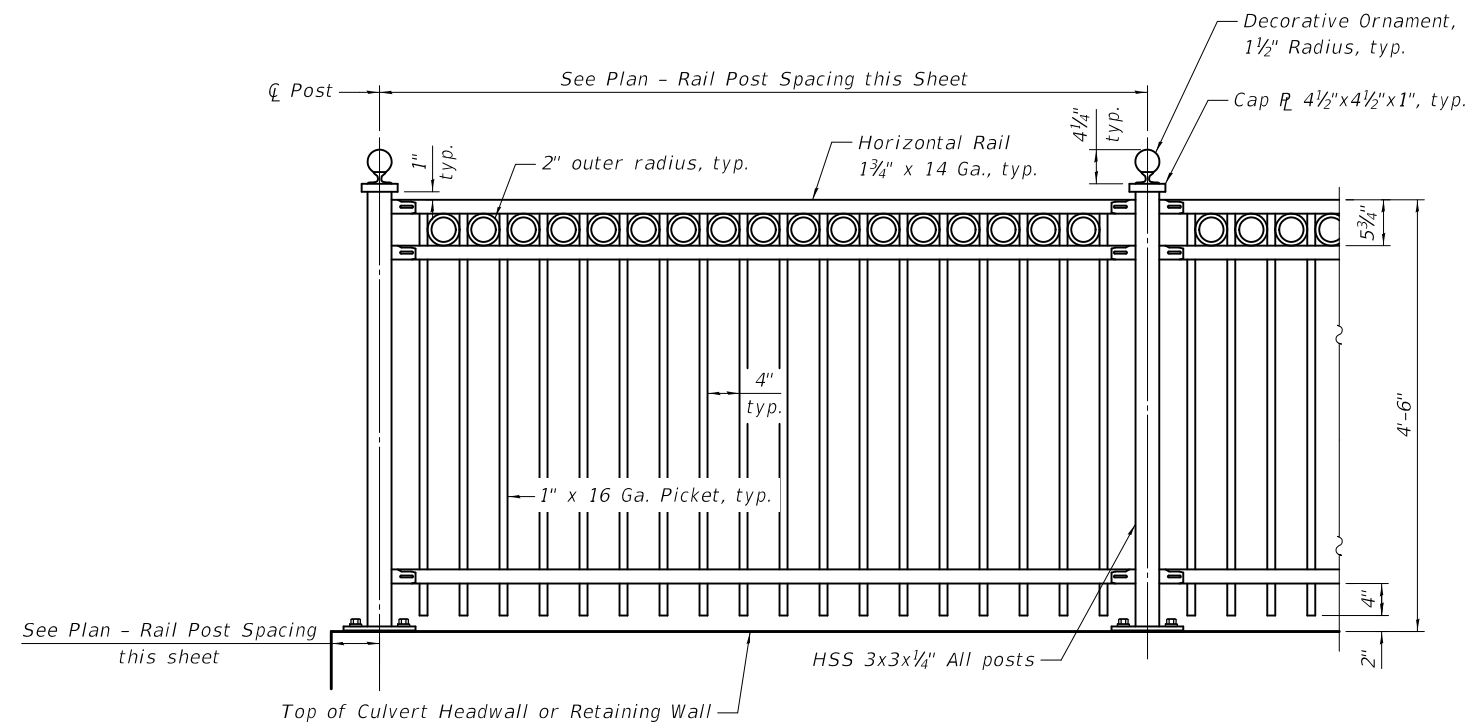
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STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

WALL REINFORCEMENT DETAILS STRUCTURE NO. 049-0110

SHEET SB-16 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	428
CONTRACT NO. 6187				
ILLINOIS FED. AID PROJECT				

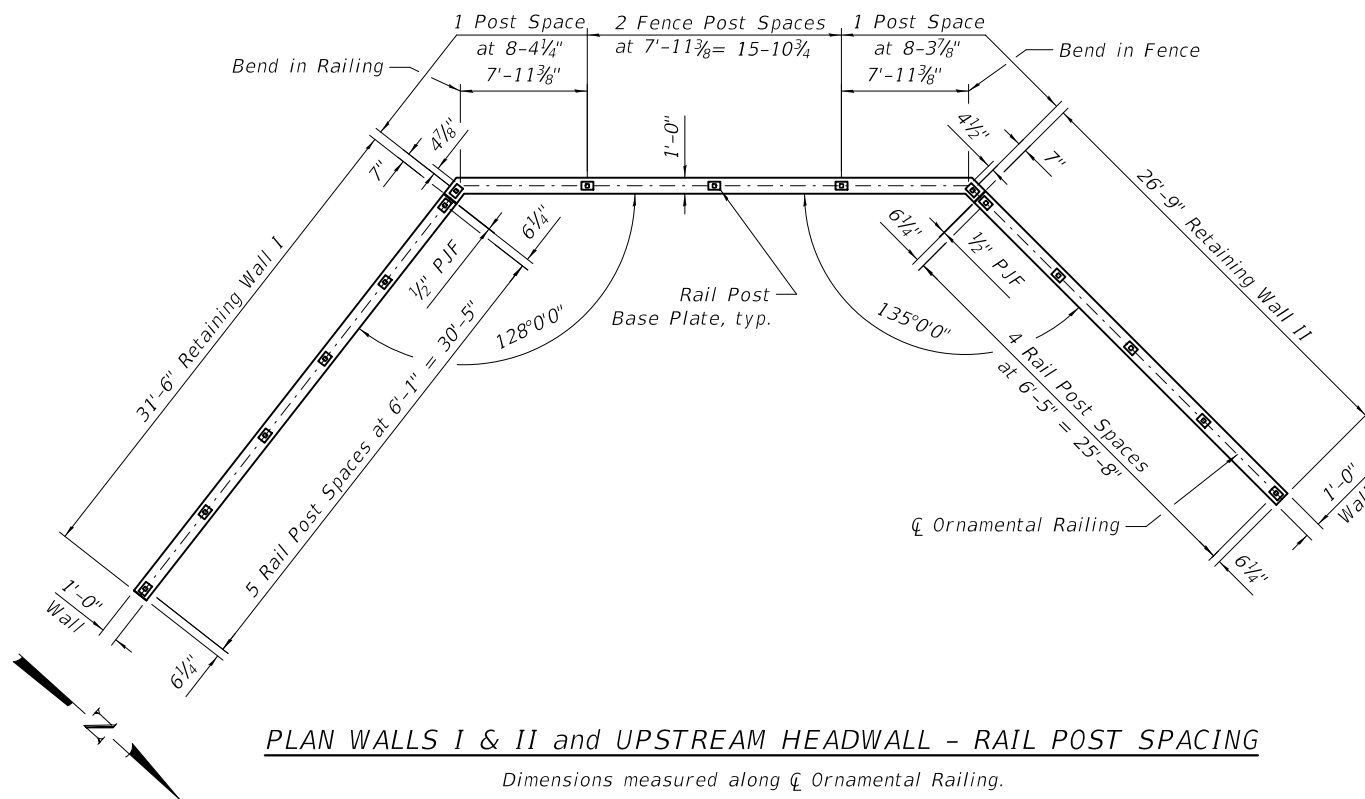


ORNAMENTAL RAILING DETAILS

See Plan - Rail Post Spacing this sheet

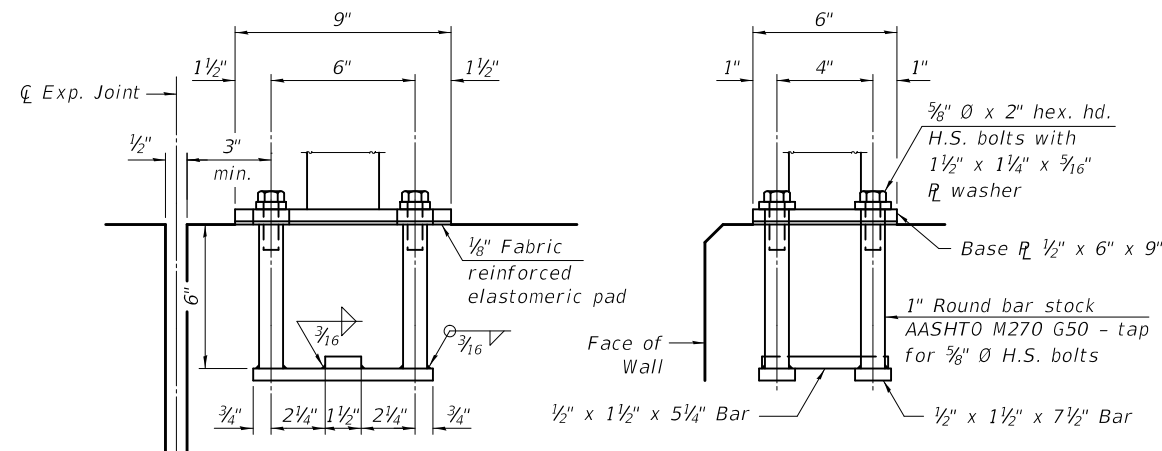
Top of Culvert Headwall or Retaining Wall

HSS 3x3x1/4" All posts



PLAN WALLS I & II and UPSTREAM HEADWALL - RAIL POST SPACING

Dimensions measured along ϕ Ornamental Railing.
Culvert not shown for clarity purposes.



ANCHORAGE ASSEMBLY

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting $\frac{5}{8}$ " ϕ fully threaded anchor rods with the same plate washers as specified above and heavy hex lock nuts according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

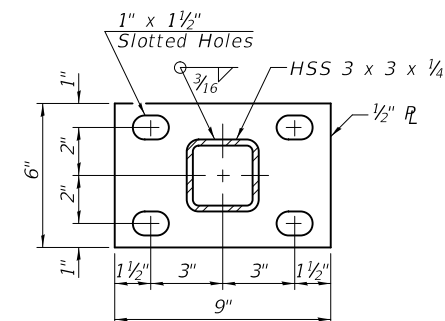
INTERNAL RETAINING ROD, CONTINUOUS
VARIABLE PITCH CONNECTION SYSTEM
ELIMINATES EXTERNAL FASTENERS

HORIZONTAL RAIL
DOUBLE-WALLED "U" CHANNEL
SPECIALLY FORMED HIGH
STRENGTH ARCHITECTURAL SHAPE.

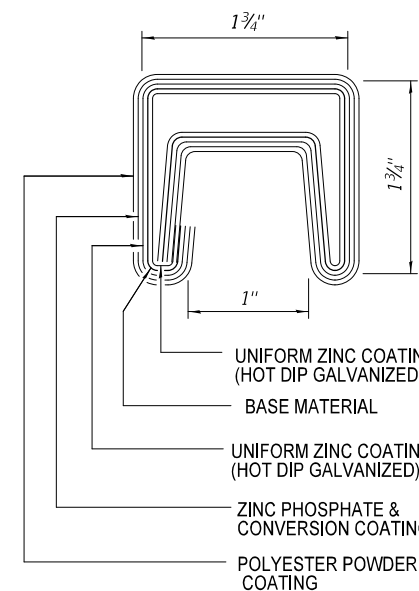
PANEL BRACKET
TWO-POINT RAIL
END CONNECTION

OPTIONAL 45 DEGREE
SWIVEL BRACKET

ISOMETRIC VIEW



BASE PLATE



HORIZONTAL RAIL CROSS SECTION

BILL OF MATERIAL

Item	Unit	Quantity
Ornamental Railing	Foot	91

Notes:

- All steel rail elements shall be galvanized according to Section 509.05 of the Standard Specification.
- All posts, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black. See Special Provisions.

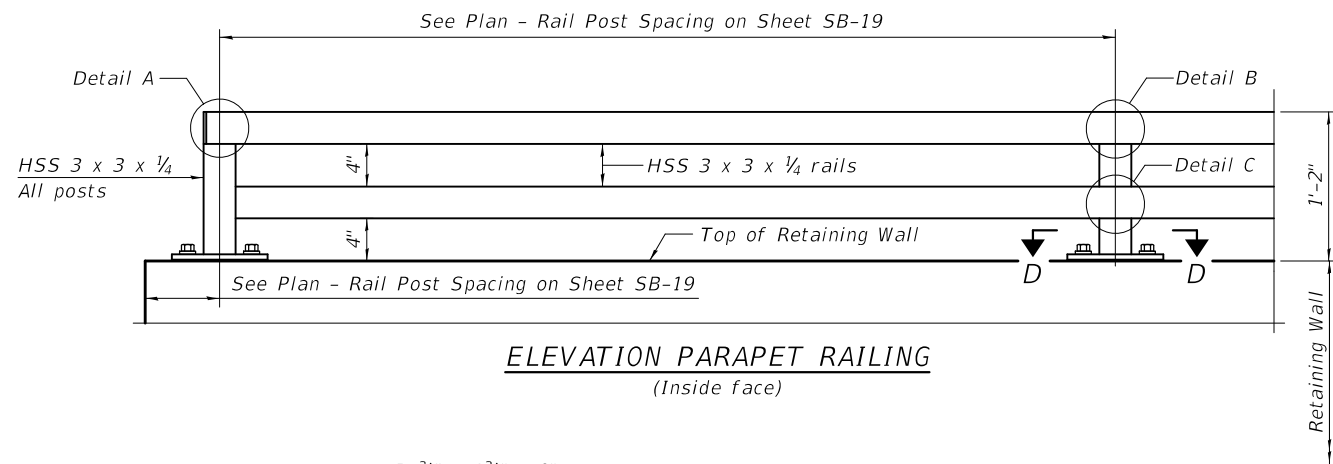
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**WALLS I & II RAILING DETAILS
STRUCTURE NO. 049-0110**

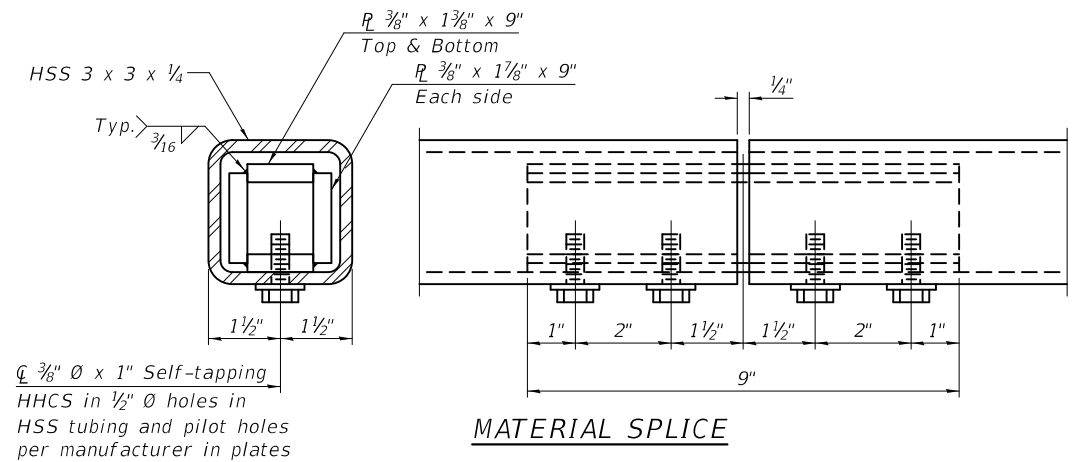
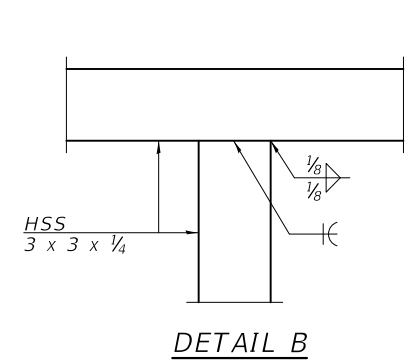
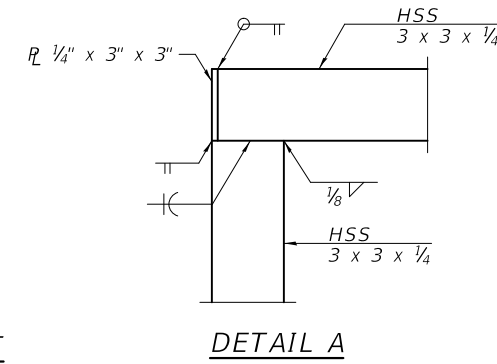
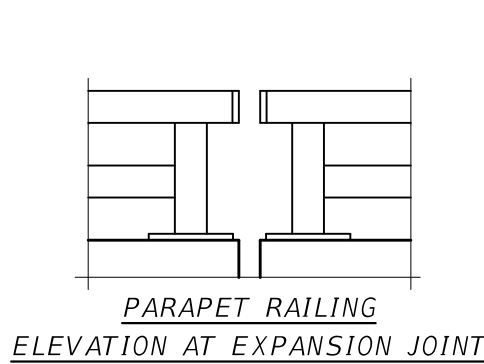
SHEET SB-17 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	429
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

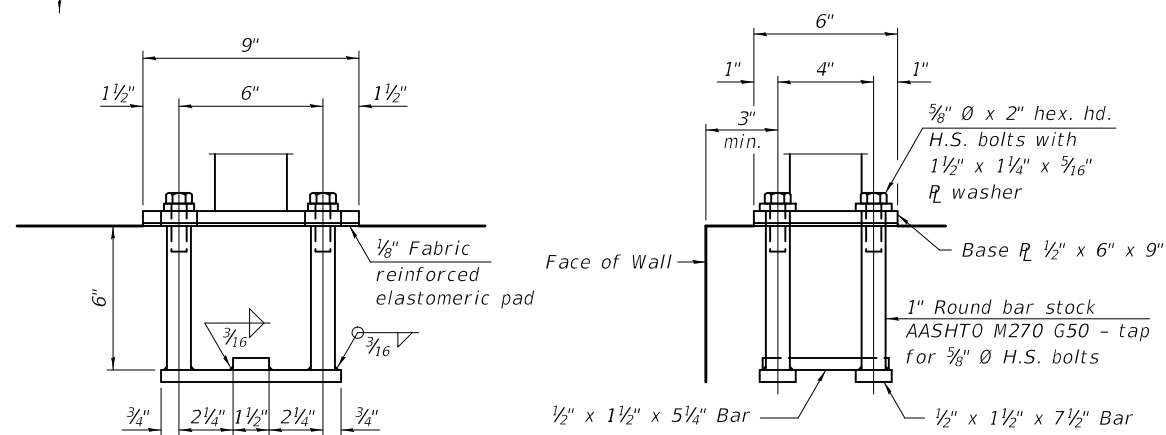
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PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -



ELEVATION PARAPET RAILING
(Inside face)

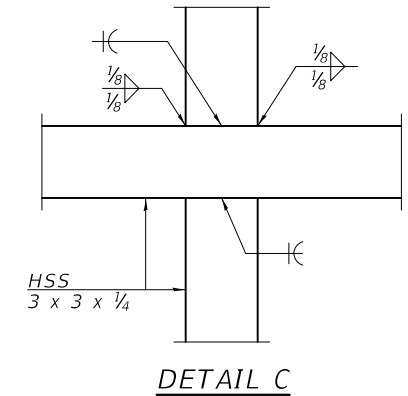


MATERIAL SPLICE

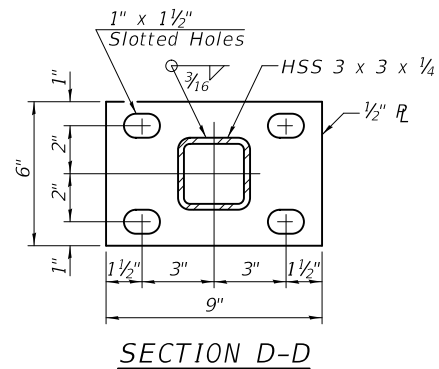


ANCHORAGE ASSEMBLY

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8" Ø fully threaded anchor rods with the same plate washers as specified above and heavy hex lock nuts according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.



DETAIL C



SECTION D-D

- Notes:
- Place reinforcement bars to miss anchor rod locations.
 - All HSS tubing used for the Parapet Railing shall be CVN tested according to Article 1006.34(b) of the Standard Specifications.
 - All HSS tubing used for the Parapet Railing shall be ASTM A500 grade C.
 - All base plates used for the Parapet Railing shall be AASHTO M270 grade 50.
 - All heavy hex nuts shall be according to ASTM A 563 grade DH.
 - All fully threaded anchor rods shall be ASTM F1554 grade 105.
 - The post base plate shall be fastened to the curb snug tight and given an additional 1/8" turn.
 - Rail splice inserts may be built out of bent plates of the same thicknesses and outside geometry limits as the 4 plate rail splice inserts shown.
 - All steel rail elements shall be galvanized according to Section 509.05 of the Standard Specification.
 - All posts, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black.
 - For Rail Post Spacing for Retaining Walls III and IV and the culvert headwalls, see Sheet SB-19 - 'Walls III & IV Railing Details II.'

RAILING CRITERIA

MASH 2016 Test Level	4
Parapet Railing Weight (plf)	25
Max Post Spacing	10'-0"

MODEL: Default
FILE NAME: ...0490110-91547-018-Walls III & IV Railing Details.lgdgn

CIVILTECH
Two Plerce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

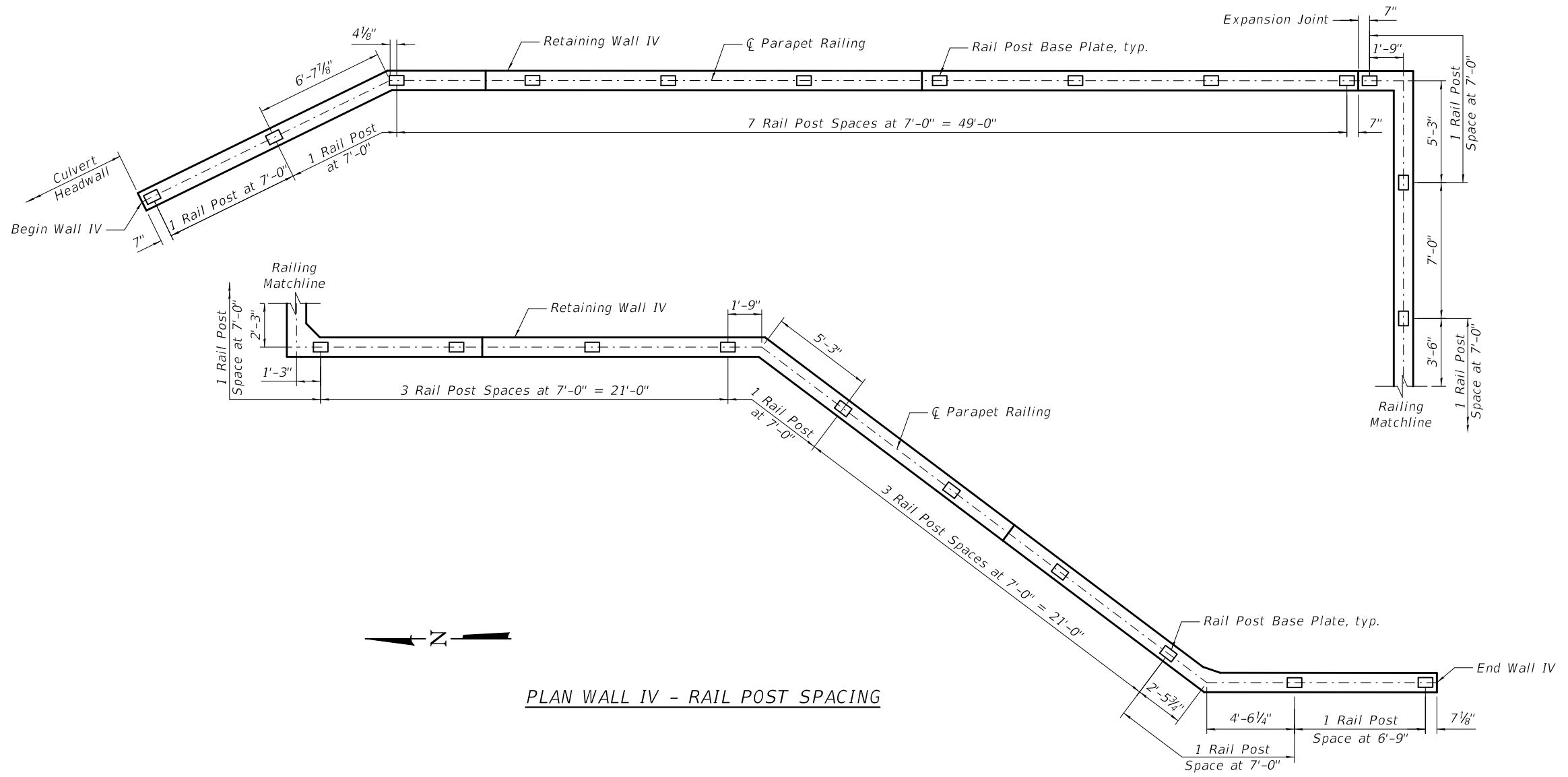
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	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

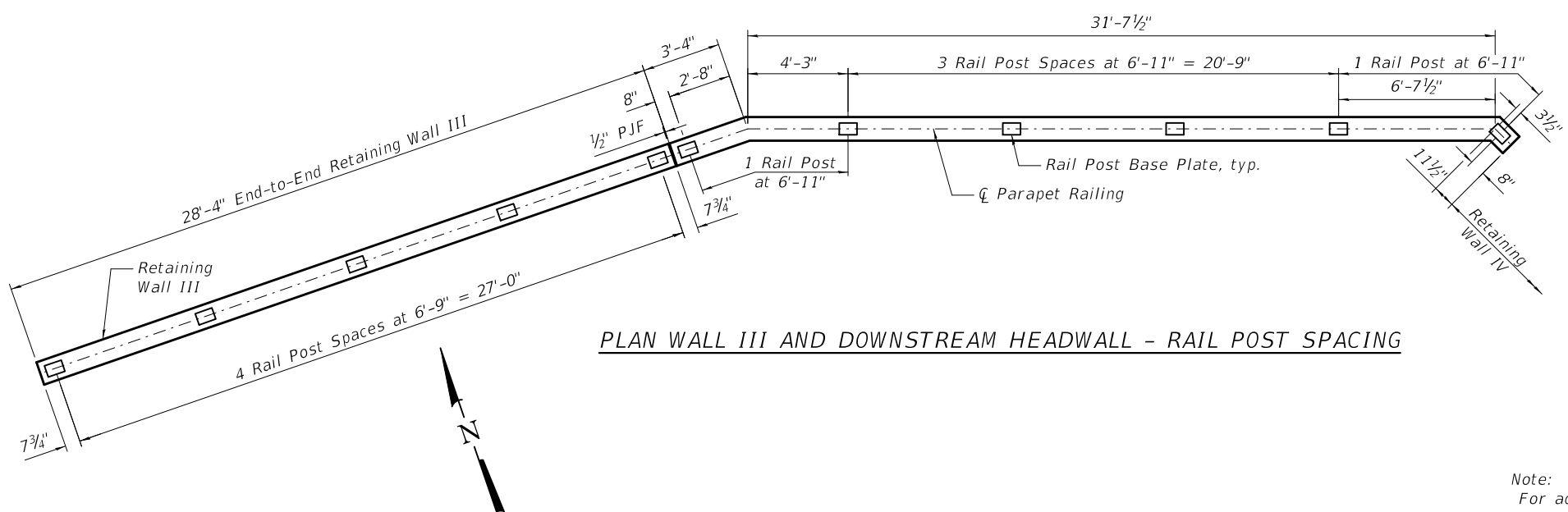
**WALLS III & IV RAILING DETAILS I
STRUCTURE NO. 049-0110**

SHEET SB-18 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	430
			CONTRACT NO. 61187	
ILLINOIS FED. AID PROJECT				



PLAN WALL IV - RAIL POST SPACING



PLAN WALL III AND DOWNSTREAM HEADWALL - RAIL POST SPACING

BILL OF MATERIAL

Item	Unit	Quantity
Parapet Railing	Foot	213.0

Note:
For additional Parapet Railing details, see Sheet SB-18 - "Walls III & IV Railing Details I".

MODEL: Default
FILE NAME: ...04901110-91547-019-Walls III & IV Railing Details II.dgn

CIVILTECH
Two Piers Place, Suite 1400
Mascota, IL 60143
Tel: 630.773.3900
Fax: 630.773.3975
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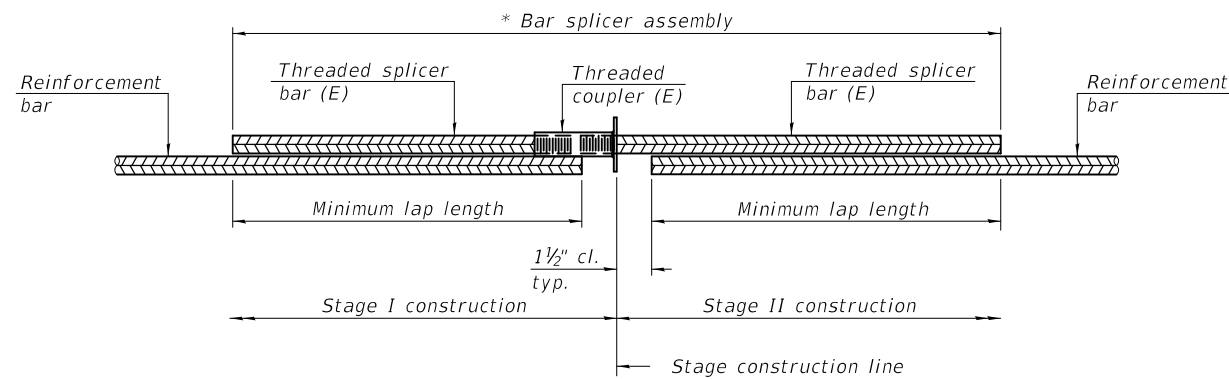
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		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALLS III & IV RAILING DETAILS II
STRUCTURE NO. 049-0110

SHEET SB-19 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	431
			CONTRACT NO. 61187	
ILLINOIS		FED. AID PROJECT		



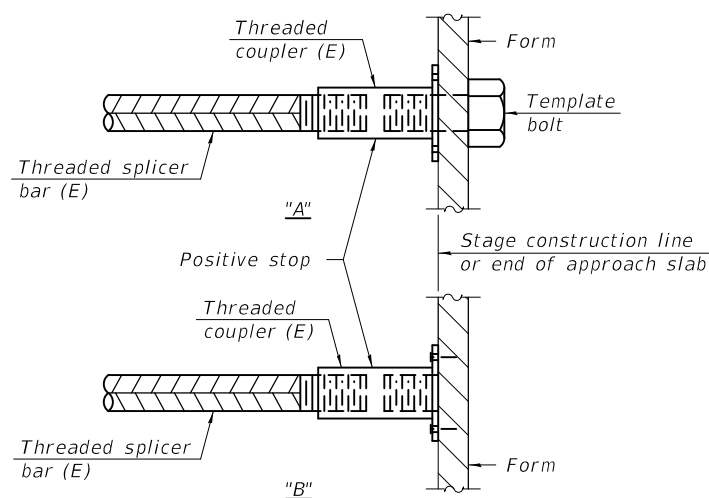
STANDARD BAR SPLICER ASSEMBLY PLAN

Only bar splicer assemblies as presented on the approved QPL list may be used.

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Minimum lap length
Bottom Slab of Culvert	#4	25	2'-3"
Top Slab of Culvert	#4	25	2'-3"
Exterior & Interior Culvert Walls	#5	36	2'-9"

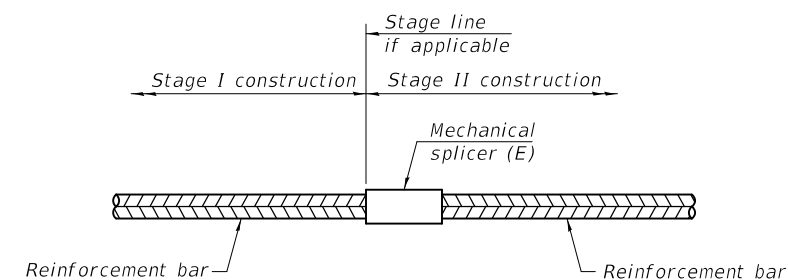


INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.

"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.

(E) : Indicates epoxy coating.



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required

Notes:
 Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.
 All reinforcement shall be lapped and tied to the splicer bars.
 Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.
 See approved list of bar splicer assemblies and mechanical splicers for alternatives.

MODEL: Default
 FILE NAME: ...0490110-91547-020-Bar_Splicer_Assembly

BSD-1

5-15-2023



USER NAME =	mc	DESIGNED -	KLK	REVISED -	
		DRAWN -	KLK	REVISED -	
PLOT SCALE =	N/A	CHECKED -	GJH	REVISED -	
PLOT DATE =	8/28/2024	DATE -	7/26/2024	REVISED -	

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BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
 STRUCTURE NO. 049-0110

SHEET SB-20 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	432
ILLINOIS FED. AID PROJECT			CONTRACT NO. 61187	

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 2/13/13

ROUTE US 14 DESCRIPTION US Route 14 and WCL RR LOGGED BY MHP
SECTION 11-00087-00-GS LOCATION US Route 14: Retaining Wall
COUNTY Lake STRUCTURE NO. 049-0110 (Exist) (Prop.)
BORING NO. SB-15 DRILLING METHOD HSA HAMMER TYPE Manual

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	ELEV	DEPTH	BL	UCS	MOIST
Black Clay LOAM, A-7-6 top 13" frozen	5	4-6	--	63		812.6				
Brown and Grey CLAY, trace Sand and Gravel, A-6, firm to hard	2	3-8	0.70	22		812.6				
	6	9-16	4.89	20		805.6				
	6	15-37	6.40	19		805.6				
Grey CLAY, trace Sand and Gravel, A-6, hard to stiff	4	8-11	4.27	19		805.6				
	4	7-11	2.91	20		805.6				
	4	6-7	2.48	20		805.6				
	3	6-9	2.33	21		805.6				
	5	7-10	1.98	21		805.6				
	5	7-12	1.94	20		805.6				
Grey SAND and GRAVEL, A-1, medium dense	4	10-12	1.25	18		789.6				
	11	14-19	--	10		784.1				
Grey CLAY, trace Sand and Gravel, A-6, very stiff						784.1				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 2/12/13

ROUTE US 14 DESCRIPTION US Route 14 and WCL RR LOGGED BY MHP
SECTION 11-00087-00-GS LOCATION US 14: Creek Realignment
COUNTY Lake STRUCTURE NO. 049-0110 (Exist) (Prop.)
BORING NO. SB-16 DRILLING METHOD HSA HAMMER TYPE Manual

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	ELEV	DEPTH	BL	UCS	MOIST
Pavement: 4" Bituminous Concrete over 8" PCC over 2" Granular BC						814.5				
Black CLAY, A-7-6, very stiff	5	7-9	2.13	32		814.5				
Olive-Grey CLAY, A-6, very stiff	12	5-9	2.83	21		812.7				
Brown CLAY, trace Sand and Gravel, A-6, hard	7	9-13	5.82	20		810.2				
	5	12-16	5.82	20		810.2				
to Brown and Grey	4	9-15	5.28	19		803.2				
Grey CLAY, trace Sand and Gravel, A-6, very stiff to stiff	7	11-14	3.41	20		803.2				
	2	5-9	2.33	21		765.7				
	3	4-7	1.90	21		765.7				
	7	7-11	2.02	19		790.2				
	5	8-16	1.63	19		790.2				
Grey SAND (f-m), some Gravel, A-2, medium dense	2	5-10	--	17		786.2				
Grey Clayey GRAVEL, A-4, very dense	24	30-24	--	10		783.7				
Grey SAND (f-m), some Gravel, A-2, dense						783.7				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 5/27/2014

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY GF
SECTION 11-00087-00-GS LOCATION US Route 14
COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.)
BORING NO. SB-46 DRILLING METHOD CFA HAMMER TYPE Automatic

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	ELEV	DEPTH	BL	UCS	MOIST
Pavement Materials: 4.5" Bituminous Concrete over 6.5" Sand and Gravel						817.1				
Dark Grey CLAY, trace Sand, A-6: FILL, very stiff	3	4-5	3.10	17		814				
Brown and Grey CLAY, trace Sand, A-6, hard to very hard	4	6-8	8.54	19		814				
	8	9-13	7.53	19		805				
	9	13-17	10.55	18		805				
	6	8-11	5.06	19		805				
Grey CLAY, A-6, very stiff	5	7-9	3.88	19		800				
	3	5-7	2.72	19		800				
Grey SAND and GRAVEL, A-1, medium dense	25	13-12	--	17		794				
	10	10-13	--	8		794				
Grey CLAY, A-6, very stiff	4	4-7	3.88	14		788				
	6	7-27	2.52	21		788				
	6	7-10	3.30	13		788				

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MODEL: Default
FILE NAME: ...0490110-91547-021-Soil Boring Logs 1

CIVILTECH
Two Plerce Place, Suite 1400
Mascota, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME =	mc	DESIGNED -	KLK	REVISED -	
PLOT SCALE =	N/A	DRAWN -	KLK	REVISED -	
PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS I
STRUCTURE NO. 049-0110

SHEET SB-21 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	433
			CONTRACT NO. 61J87	
		ILLINOIS FED. AID PROJECT		

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-101		Page 1 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 204+26, 223'R			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS	
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc%		Dry Unit Weight, pcf
0		FILL - Black and Brown Clay LOAM, trace Roots, A-6	817.5						
		Black to Dark Grey CLAY, A-7-6 to A-8, very stiff	817.0	SS	1	8	29		3.0 Qp
		Brown and Grey Clay LOAM, A-6, hard	815.0	SS	2	13	19	105	5.28
5				SS	3	18	19	106	7.57
				SS	4	25	19		
10		Grey Clay LOAM, A-6, hard to very stiff	806.5	SS	5	19	19	104	5.32
				SS	6	14	18	104	4.11
15				SS	7	16	16	105	3.49
		Grey GRAVEL with Sand, A-1, very dense, wet probable boulder at 18.0'	799.5	SS	8	68	13		
20		Grey Clay LOAM, A-6, stiff to very stiff	797.0	SS	9	22	20		
				SS	10	10	23	100	1.13
25				SS	11	12	21	103	2.72
				SS	12	13	23	101	2.48
30		Grey Clay LOAM, A-6, stiff to very stiff, cont.							
				SS	13	12	13		3.0 Qp
35									

WATER LEVEL OBSERVATIONS, ft.
 DURING DRILLING: 18.0'
 IMMEDIATELY AFTER DRILLING: 15.5'
 DELAYED READING AFTER 24 Hrs: 15.0'



BORING STARTED: 1/6/21
 BORING COMPLETED: 1/6/21
 LOGGED BY: GPF
 BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 f(847) 844-3875

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-101		Page 2 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 204+26, 223'R			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS	
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc%		Dry Unit Weight, pcf
40				SS	14	16	18	107	2.41
				SS	15	17	16	110	2.68
45									
				SS	16	12	14	120	1.40
50									
				SS	17	12	14	120	1.05
55									
				SS	18	14	14	120	1.13
60		Grey Clay LOAM, A-6, stiff to very stiff, cont.							
				SS	19	14	14	120	1.40
65									
				SS	20	13	16	115	1.94
70									
				SS	21	21	22	99	3.57
75		End of Boring at 75'	742.5						

WATER LEVEL OBSERVATIONS, ft.
 DURING DRILLING: 18.0'
 IMMEDIATELY AFTER DRILLING: 15.5'
 DELAYED READING AFTER 24 Hrs: 15.0'



BORING STARTED: 1/6/21
 BORING COMPLETED: 1/6/21
 LOGGED BY: GPF
 BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 f(847) 844-3875

MODEL: Default
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CIVILTECH
 Two Pierce Place, Suite 1400
 Itasca, Illinois 60143
 Tel: 630.773.3900
 Fax: 630.773.3975
 www.civiltechinc.com

USER NAME = mc	DESIGNED - KLK	REVISED -
PLOT SCALE = N/A	DRAWN - KLK	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS II
 STRUCTURE NO. 049-0110

SHEET SB-22 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	434
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-110		Page 1 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 205+52, 76' L			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS			REMARKS
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc%	Dry Unit Weight, pcf	
0		Topsoil - Black CLAY (10")	815.0						
		Dark Grey CLAY, A-7-6, very stiff	814.2	SS	1	8	27	86	3.30
		Grey and Reddish-Brown Clay LOAM, A-6, very stiff to hard	812.0	SS	2	10	21	86	3.88
5		to Brown, trace Grey		SS	3	20	17	102	8.34
		Grey Clay LOAM, A-6, hard to very stiff	807.0	SS	4	20	16	105	6.01
10				SS	5	15	18	105	5.12
				SS	6	9	21	102	2.72
				SS	7	10	20	104	2.37
		Grey SAND (f-c) with Gravel, A-3, medium dense, wet	797.0	SS	8	20	15		
20				SS	9	24	10		
				SS	10	20	11		
		Grey Clay LOAM, A-6, very stiff to stiff	788.5	SS	11A	12	12		--
				SS	11B	16	18	111	2.37
				SS	12	12	19	104	2.02
30				SS	13	13	18	101	2.13
35									

WATER LEVEL OBSERVATIONS, ft.
DURING DRILLING: 18.0'
IMMEDIATELY AFTER DRILLING: 10.0'
DELAYED READING AFTER 72 Hrs: 8.5'



BORING STARTED: 1/8/21
BORING COMPLETED: 1/8/21
LOGGED BY: GPF
BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 f(847) 844-3875

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-110		Page 2 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 205+52, 76' L			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS			REMARKS
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc%	Dry Unit Weight, pcf	
40		Grey Clay LOAM, A-6, stiff		SS	14	13	19	105	1.59
		End of Boring at 40'	775.0						

WATER LEVEL OBSERVATIONS, ft.
DURING DRILLING: 18.0'
IMMEDIATELY AFTER DRILLING: 10.0'
DELAYED READING AFTER 72 Hrs: 8.5'



BORING STARTED: 1/8/21
BORING COMPLETED: 1/8/21
LOGGED BY: GPF
BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 f(847) 844-3875

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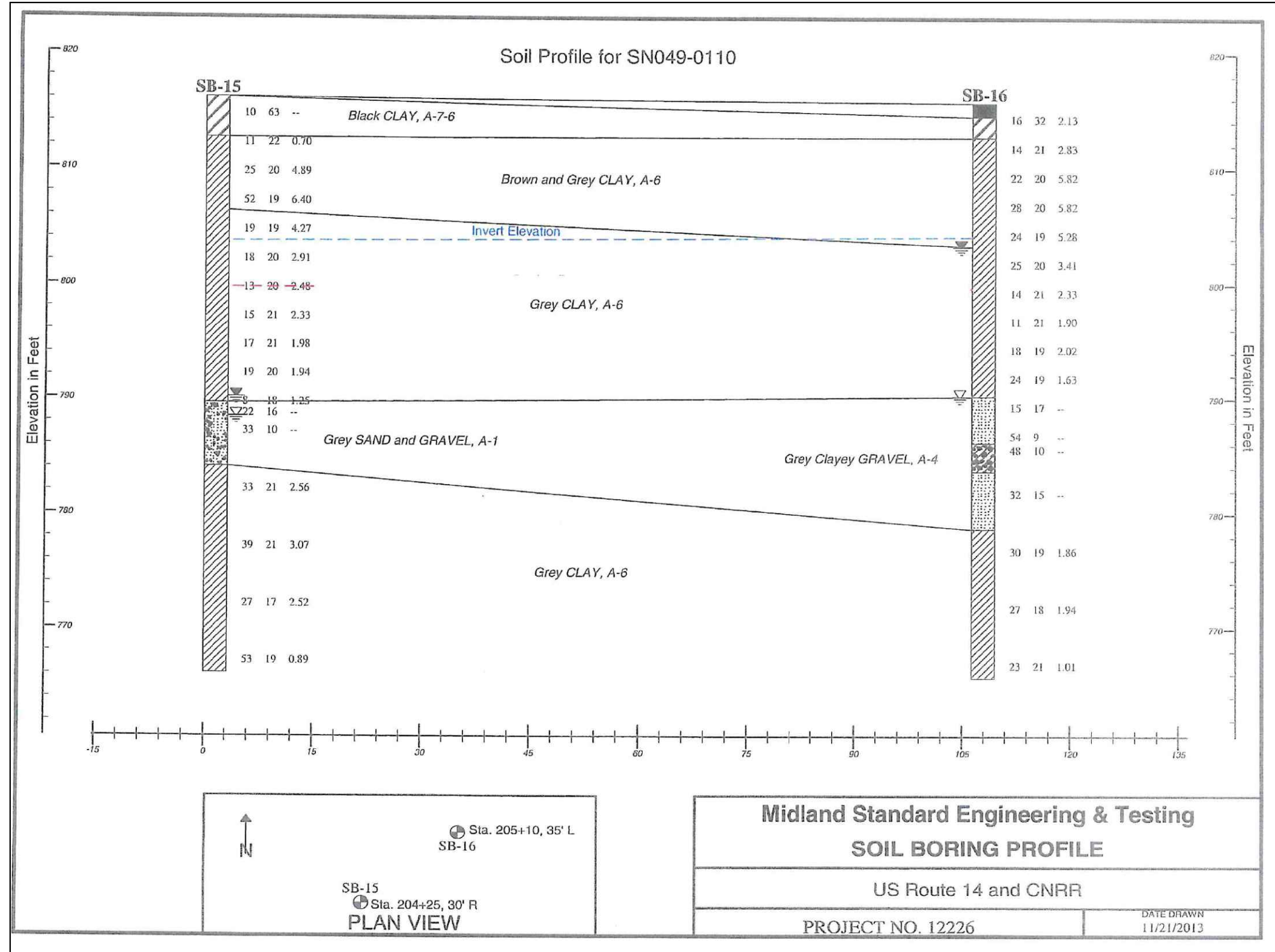
<p>Two Plerce Place, Suite 1400 Mascia, Illinois 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com</p>	USER NAME = mc	DESIGNED - KLK	REVISED -	
	PLOT SCALE = N/A	CHECKED - GJH	REVISED -	
	PLOT DATE = 8/28/2024	DATE - 7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS III
STRUCTURE NO. 049-0110

SHEET SB-23 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	435
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



MODEL: Default
FILE NAME: ...0490110-91547-024-Soil Boring Profile

CIVILTECH
Two Pierce Place, Suite 1400
Mascoutah, IL 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

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PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**SOIL BORING PROFILE
STRUCTURE NO. 049-0110**

PROJECT NO. 12226

DATE DRAWN
11/21/2013

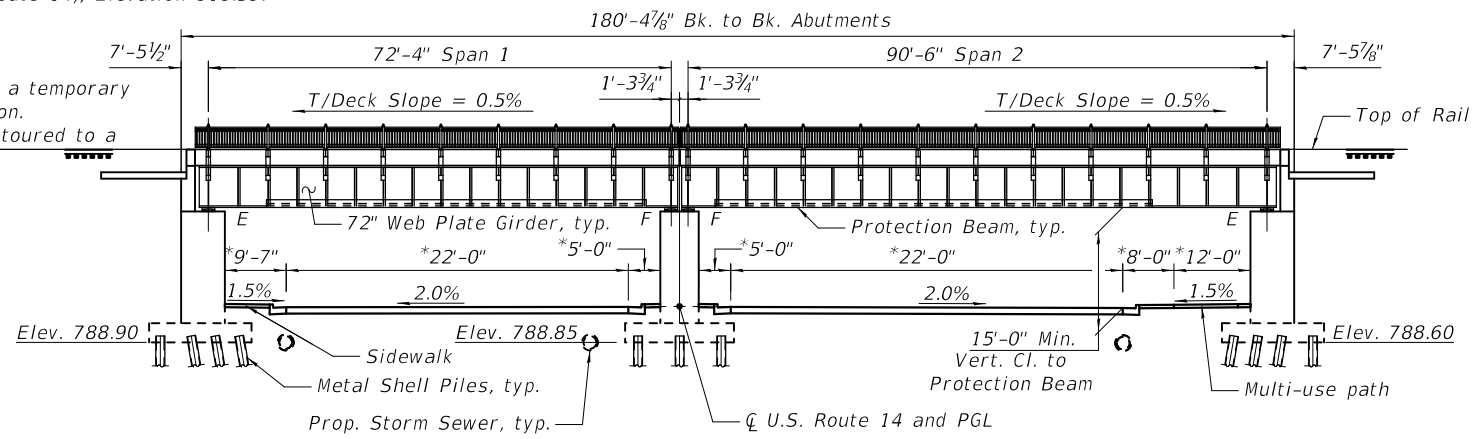
SHEET SB-24 OF SB-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	436
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				

Benchmark: East bolt on fire hydrant at the East corner of North Avenue and Park Lane, Sta. 215+68.79, Offset 80.93' Rt. (US Route 14), Elevation 818.39.

Existing Structure: None.

Maintenance of Traffic: Traffic will be detoured to a temporary roadway during construction.
Railroad traffic will be detoured to a shoofly track.



ELEVATION

* Measured at right angles to \bar{C} U.S. Route 14

DESIGN SPECIFICATIONS

2023 AREMA Manual for Railway Engineering
2006 CN Guidelines for Design of Railway Structures
Live Load + Impact Deflection: L/750
Design Speed: 45 mph

LOADING COOPER E-90

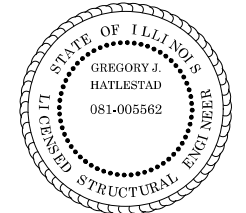
Cooper E-90 or Alternate Load plus Diesel Impact w/o hammer blow
Allow Imposed Dead Load of 28" Ballast

SEISMIC DATA

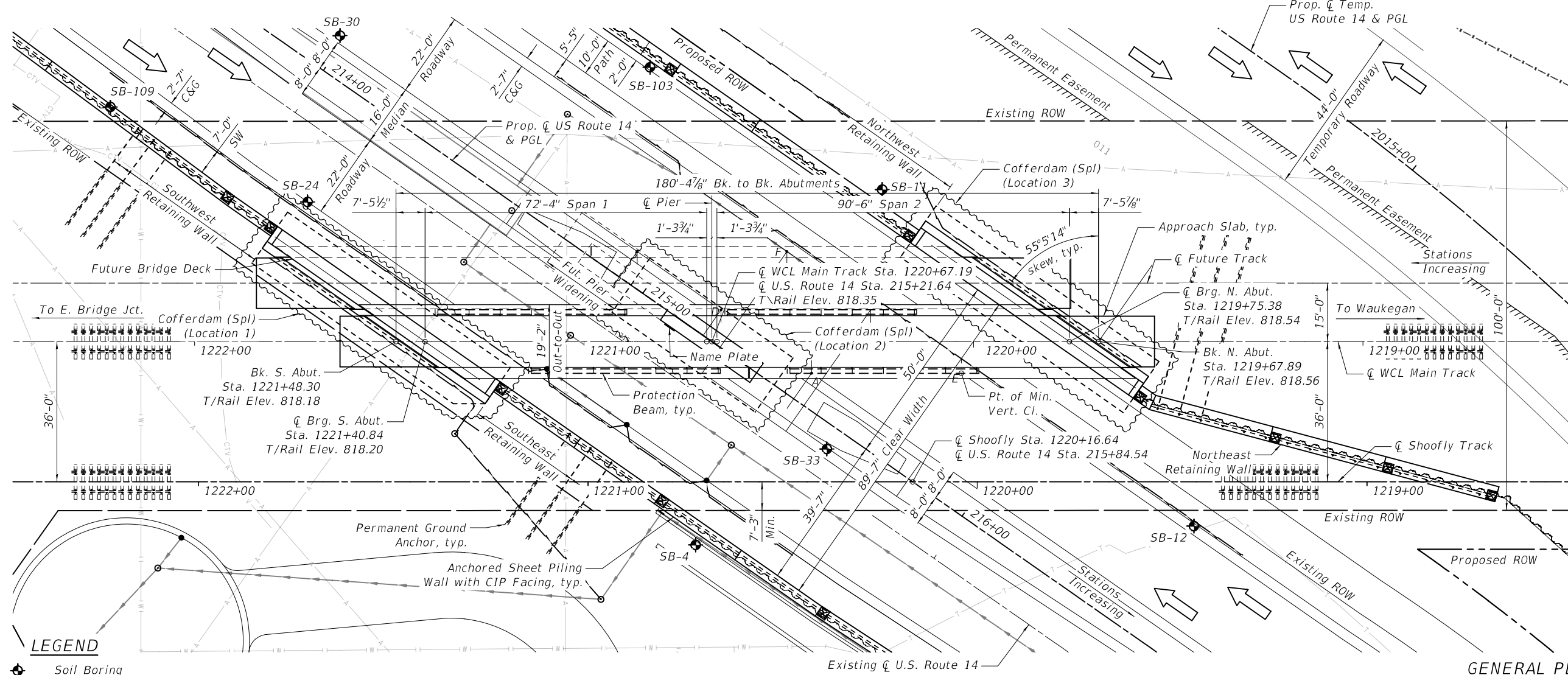
Seismic Performance Zone (SPZ) = 1
Design Spectral Acceleration at 1.0 sec. (S_{D1}) = 0.081g
Design Spectral Acceleration at 0.2 sec. (S_{D5}) = 0.140g
Soil Site Class = D

DESIGN STRESSES

FIELD UNITS
f'c = 5,000 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (ASTM A709 Gr. 50)



Gregory J. Hatlestad, S.E.
081-005562
Exp 11/30/2024
Date 7/25/2024

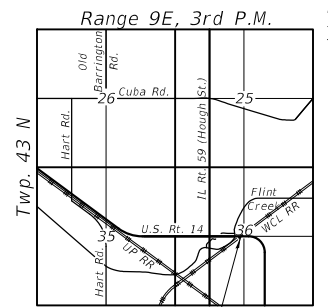


PLAN

- LEGEND**
- Soil Boring
 - Existing Aerial Lines (to be relocated)
 - Existing Storm Sewer (to be removed)
 - Proposed Storm Sewer
 - Existing Gas Line (to be relocated)
 - Existing Water Main (to be relocated)
 - Existing Fiber Optic (to be relocated)
 - Existing Telephone (to be relocated)
 - Existing Sanitary Sewer (to be relocated)
 - Existing Electric (to be relocated)

PROPOSED CONSTRUCTION SEQUENCE

1. Construct shoofly track at grade.
2. Build the bridge.
3. Shift railroad traffic onto the bridge.
4. Remove the shoofly track and build retaining walls.



LOCATION SKETCH

**GENERAL PLAN & ELEVATION
WISCONSIN CENTRAL LTD.
OVER U.S. ROUTE 14
F.A.P. RTE. 305 - SECTION 11-00087-00-GS
LAKE COUNTY
STA. 215+21.64
STRUCTURE NO. 049-0014**

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GENERAL PLAN & ELEVATION
STRUCTURE NO. 049-0014**

SHEET SC-1 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	437
			CONTRACT NO. 6187	
ILLINOIS FED. AID PROJECT				

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8/28/2024 7:38:06 AM

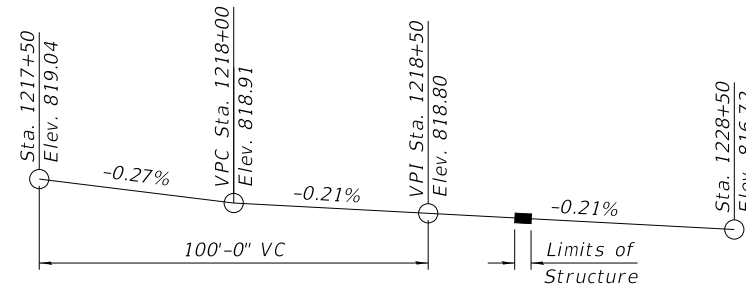
CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltech.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = 30,0000' / in.	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

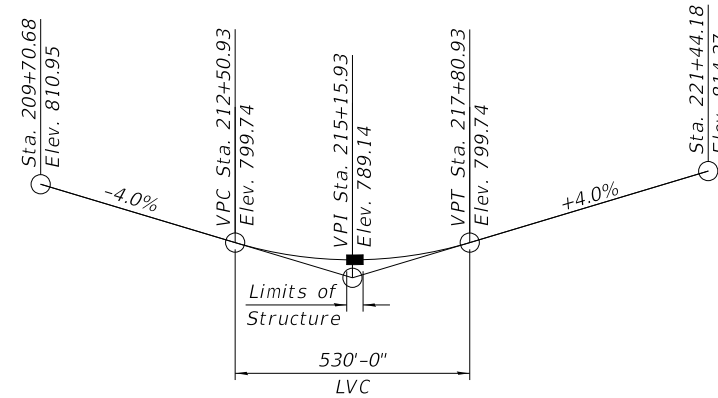
GENERAL NOTES

- Specifications: Steel Design in accordance with 2023 AREMA specifications for Steel Structures as modified and supplemented by CN Railway Guidelines for Design of Railway Structures, January 2006 revision. Concrete Design and Placement to be in accordance with AREMA Specifications for Concrete Structures and Foundations, dated 2023. Workmanship and Materials in accordance with the Standard Specifications for Road and Bridge Construction of the State of Illinois, Department of Transportation, adopted Jan. 1, 2022, except that wherever applicable, Steel Fabrication shall be in accordance with the AREMA Specification as modified by CN Railway's Specification HC05121 Structural Steel Fabrication for Railway Bridges, dated 2010.
- All structural steel shall be carbon structural steel conforming to the requirements of structural steel, ASTM A709, Grade 50.
- The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the final finish coat for all interior steel surfaces shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams, exterior of the curb plates, as well as the stiffeners and brackets outside of the fascia beams, shall be Reddish Brown Munsell No. 2.5YR 3/4.
- The webs and top and bottom flanges of the deck plate girders are designated as "Fracture Critical Members", Article 1.14, Part 1, Chapter 15 of the AREMA Specifications. The impact test requirements for the fracture critical members shall be as required for Zone 3 service temperature (ASTM A709, Grade 50). These components are noted on the Plans as Notch Toughness Resistance (NTR).
- Rimmed or coped steel will not be permitted.
- Material noted on the plans to be corrosion-resistant (C.R.) steel shall conform to High-Strength, low-alloy steel, ASTM A709, Grade 50W.
- Estimated weight of Structural Steel:
 Structural Steel (ASTM A709, Grade 50) = 489,300 lbs.
 (Girders and Secondary Members)
 Corrosion Resistant Structural Steel (C.R.) (ASTM A709 Grade 50W) = 116,780 lbs.
 (Deck and Curb Plates)
- Metal Shell Piles shall be ASTM A252, Grade 3, except the material shall have a minimum yield strength of 50,000 psi.
- All shop and field connections shall be bolted with High-Strength bolts, except where otherwise shown or noted on the plans to be bolted with machine bolts or welded. All High-Strength bolts, nuts and washers shall conform to ASTM F3125 Grade ASTM A325, Type I, mechanically galvanized bolts in painted areas, and have a hardened washer under the element turned in tightening. Bolts shall be 7/8" diameter unless otherwise noted. Holes shall be 1/16" larger than bolts size unless otherwise noted. Holes for shop fasteners shall be subpunched or subdrilled and reamed through a template in accordance with AREMA Specifications and as specified in the Special Provisions.
- Tightening of high strength bolts shall be done by the Turn-of-the-Nut Method unless otherwise noted as specified under Chapter 15, Part 3, Clause 3.2.3 of the AREMA Specification.
- All connections shall be slip-critical.
- Reinforcement bars shall conform to the requirements of ASTM A706 Grade 60. Fabrication shall be in accordance with Chapter 7 of the CRSI Manual of Standard Practice. Reinforcement bars shall have a minimum cover of 3 inches of concrete for surfaces formed against earth and 2" for all other surfaces unless otherwise noted. Reinforcing steel is to be blocked to proper locations and securely wired against displacement. Tack welding of reinforcement is prohibited. Reinforcing steel shall be spaced to miss anchor bolts.
- All exposed corners of Cast-in-Place Concrete shall be chamfered 3/4", unless otherwise shown or noted on the plans. The railroad bridge abutments shall have an aesthetic treatment as noted on the plans. At construction and expansion joints between form liner panels, chamfers shall be eliminated to avoid interferences. All other surfaces to have a smooth and uniform appearance, free of float or travel marks.
- All elevations shown are based on USGS Datum, NAVD 88.
- Contractor must verify all existing geometry, as well as proposed dimensions and layout in the field prior to fabrication and construction and notify the Engineer of any discrepancies.
- Exterior fascia and bottom of bottom flange areas shall be metallized and shop painted with System 3. The color of the final finish coat of paint of fascia areas shall be Reddish Brown, Munsell No. 2.5YR 3/4. See Special Provision for "Metallizing of Structural Steel".
- The contractor shall drive test piles to 110% of the design load indicated for each location before ordering the remainder of piles. The furnished length for test piles shall be at least 10 feet in excess of the estimated production pile length at each location.

- All welding on the bridge shall be in accordance with the requirements of Chapter 15 of the current edition of AREMA Specifications and the applicable provisions of Article 505.04(q) of the Standard Specifications.
- All flange to web welds, shop welded splices in flanges or webs shall be by approved continuous automatic feed and travel submerged arc welding (SAW). All other welds must be done with shielded metal-arc welding (SMAW).
- Field welding of construction accessories to the beams or girders will not be permitted. Field welding in other areas will only be permitted when approved by the Engineer.
- All railroad related work of the contract shall be completed to the satisfaction of the Railroad Engineer. The decision of the Railroad Engineer shall be final on all questions which may arise regarding, including but not limited to, the quality and acceptability of materials and work; the manner of performance; acceptable rates of progress on the work; the interpretation of the contract plans and specifications; and the fulfillment of the contract.
- Discussion note: The intent is that all conflicting items will be discussed with the Railroad and agreed during tender letting, RFIs or during project execution. It is our intent for the WCL Railroad to review and approve all submittals and questions that pertain to rail carrying structures. Designated Engineer will coordinate all issues with the Contractor. In addition to this, it is reminded that ALL WCL reviews shall be preceded by Designated Engineer's review.



TOP OF RAIL ELEVATIONS
(Along Proposed \bar{C} WCL Main Track)



PROFILE GRADE
(Along Proposed \bar{C} U.S. Route 14)

WISCONSIN CENTRAL LTD. R.R.
 BUILT 202 BY
 STATE OF ILLINOIS
 F.A.P. RTE. 305
 SEC. 11-00087-00-GS
 STA. 215+21.64 LOADING E90
 STR. NO. 049-0014

NAME PLATE
See Std. 515001

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Cofferdam Excavation	Cu. Yd.	-	4,720	4,720
Rubbed Finish	Sq. Ft.	-	469	469
Seal Coat Concrete	Cu. Yd.	-	68	68
Form Liner Textured Surface	Sq. Ft.	-	3,023	3,023
Furnishing and Erecting Structural Steel	L. Sum	1	-	1
Reinforcement Bars, Epoxy Coated	Pound	-	100,510	100,510
Furnishing Metal Shell Piles 14" x 0.312"	Foot	-	7,526	7,526
Driving Piles	Foot	-	7,526	7,526
Test Pile Metal Shells	Each	-	6	6
Pile Shoes	Each	-	119	119
Name Plates	Each	-	1	1
Anchor Bolts, 1 1/2"	Each	-	64	64
Granular Backfill for Structures	Cu. Yd.	-	803	803
Controlled Low-Strength Material	Cu. Yd.	-	7.4	7.4
Anti-Graffiti Coating	Sq. Ft.	-	5,238	5,238
Concrete Structures (Special)	Cu. Yd.	-	1,197.2	1,197.2
Staining Concrete Structures	Sq. Ft.	-	3,491	3,491
Ornamental Railing	Foot	-	89	89
Bridge Fence Railing (Special)	Foot	345	-	345
Membrane Waterproofing (Special)	Sq. Ft.	3,212	-	3,212
Pipe Drains 8" (Special)	Foot	-	201	201
Furnish and Install Walkway	Foot	345	-	345
Cofferdam (Type 2) (Location-1)	Each	-	1	1
Cofferdam (Type 2) (Location-2)	Each	-	1	1
Cofferdam (Type 2) (Location-3)	Each	-	1	1
Concrete Waterproofing	Sq. Ft.	-	1,272	1,272

INDEX OF SHEETS

- SC-1 General Plan & Elevation
- SC-2 General Data
- SC-3 Foundation Plan
- SC-4 Cofferdam Details
- SC-5 Deck Plate Plan
- SC-6 Deck Plate Details
- SC-7 Superstructure Cross Section & Details
- SC-8 Framing Plan - Span 1
- SC-9 Framing Plan - Span 2
- SC-10 Girder Elevation & Details - Span 1
- SC-11 Girder Elevation & Details - Span 2
- SC-12 Framing Details I
- SC-13 Framing Details II
- SC-14 Fixed Bearing Details
- SC-15 Expansion Bearing Details
- SC-16 Deck Joint & Waterproofing Details
- SC-17 Deck Drainage Details
- SC-18 Walkway Details I
- SC-19 Walkway Details II
- SC-20 Ornamental Railing Details
- SC-21 Approach Slab Details
- SC-22 Abutment Footings
- SC-23 Abutment Stem Plans
- SC-24 Abutment Stem Elevation
- SC-25 Abutment Backwall
- SC-26 Abutment Section & Details
- SC-27 Pier Plan & Elevation
- SC-28 Pier Details
- SC-29 Metal Shell Pile Details
- SC-30 Architectural Details
- SC-31 Soil Boring Logs I
- SC-32 Soil Boring Logs II
- SC-33 Soil Boring Logs III
- SC-34 Soil Boring Logs IV

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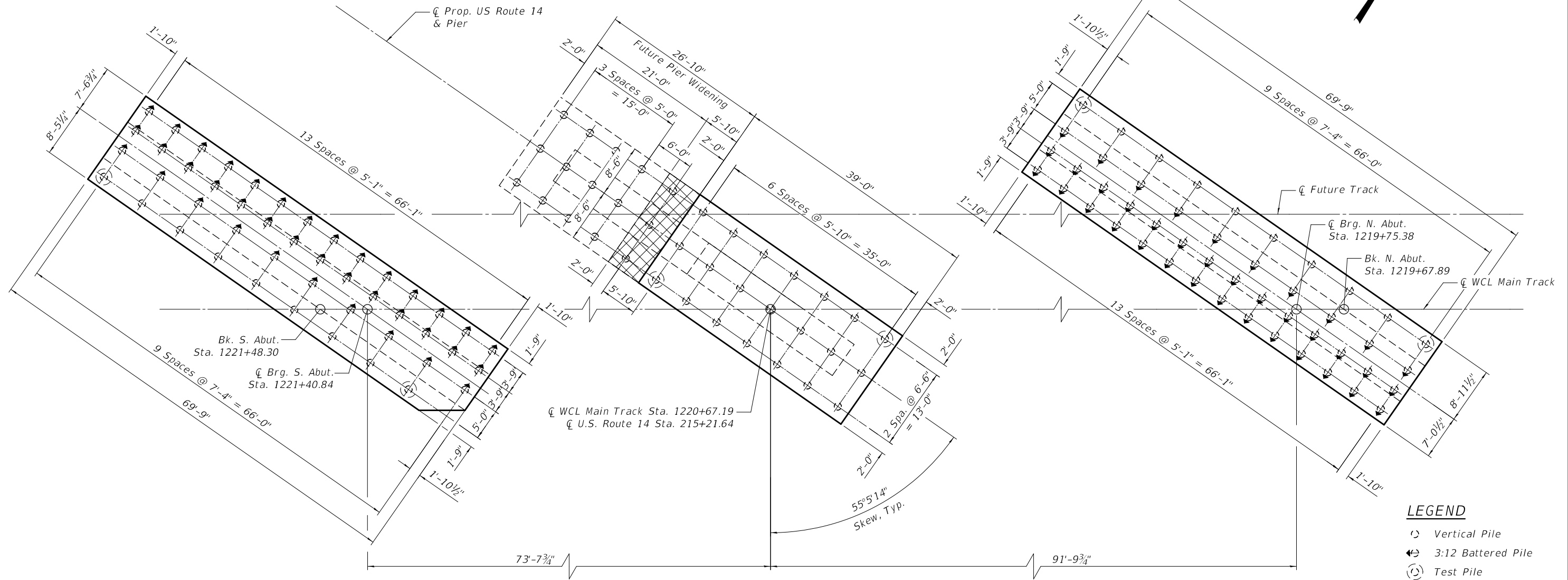
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	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA
STRUCTURE NO. 049-0014
 SHEET SC-2 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	438
			CONTRACT NO. 61187	
		ILLINOIS FED. AID PROJECT		



PLAN

LEGEND

- Vertical Pile
- 3:12 Battered Pile
- Test Pile
- CLSM

PILE DATA

All Piles Metal Shell Pile 14" Φ x 0.312" with pile shoes

Estimated Pile Tip Elevations:
 S. Abut. = 728.0
 Pier = 728.0
 N. Abut. = 720.0

Nominal Resistance Required:
 S. Abut. = 238 tons
 Pier = 249 tons
 N. Abut. = 272 tons

* Test pile length furnished shall be at least 10' greater than estimated production pile lengths shown.

Metal Shell 14" x 0.312" (* Excludes Test Piles)						
LOCATION	TYPE	NO.	ESTIMATED LENGTH (FEET)		ALLOWABLE RESISTANCE AVAILABLE (TONS)	CUT-OFF ELEVATION
			FT. PER PILE	TOTAL FT.		
SOUTH ABUTMENT	*Vertical	7	62	434	119	789.85
	Battered	38	64	2,432	119	789.85
PIER	*Vertical	22	62	1,364	124.5	789.80
	Battered	-	-	-	-	-
NORTH ABUTMENT	*Vertical	8	70	560	136	789.55
	Battered	38	72	2,736	136	789.55

NOTE:

- See Sheets SC-26 and SC-28 for Metal Shell Pile Quantities.
- Pile splice location shall not be closer than 20 feet below the bottom of footing.

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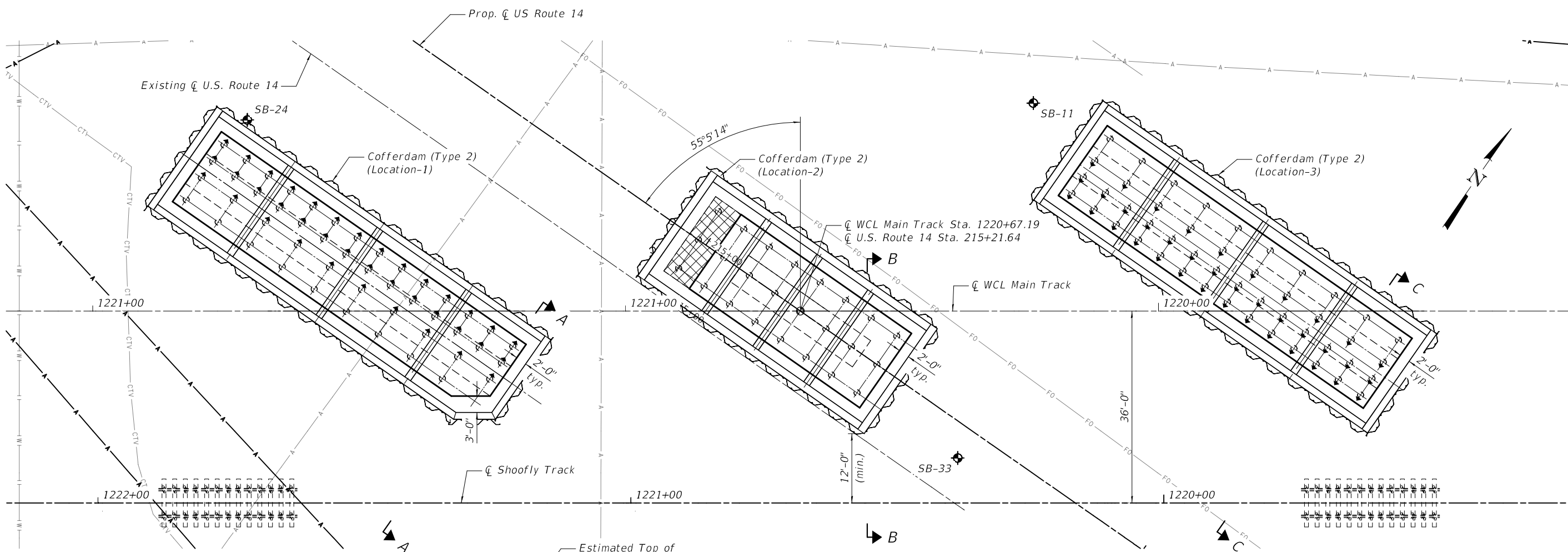
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**FOUNDATION PLAN
STRUCTURE NO. 049-0014**

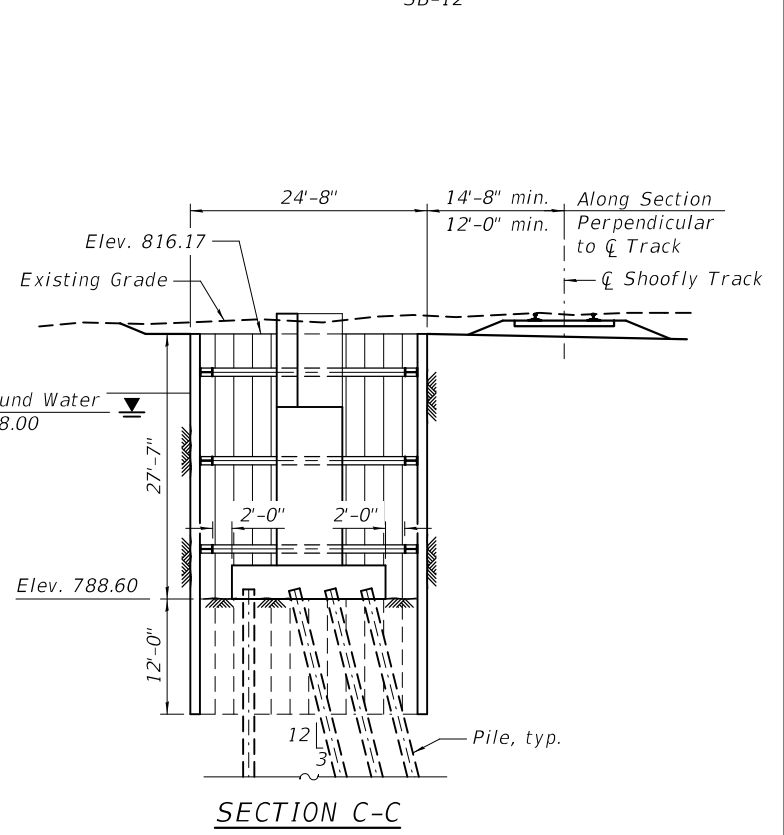
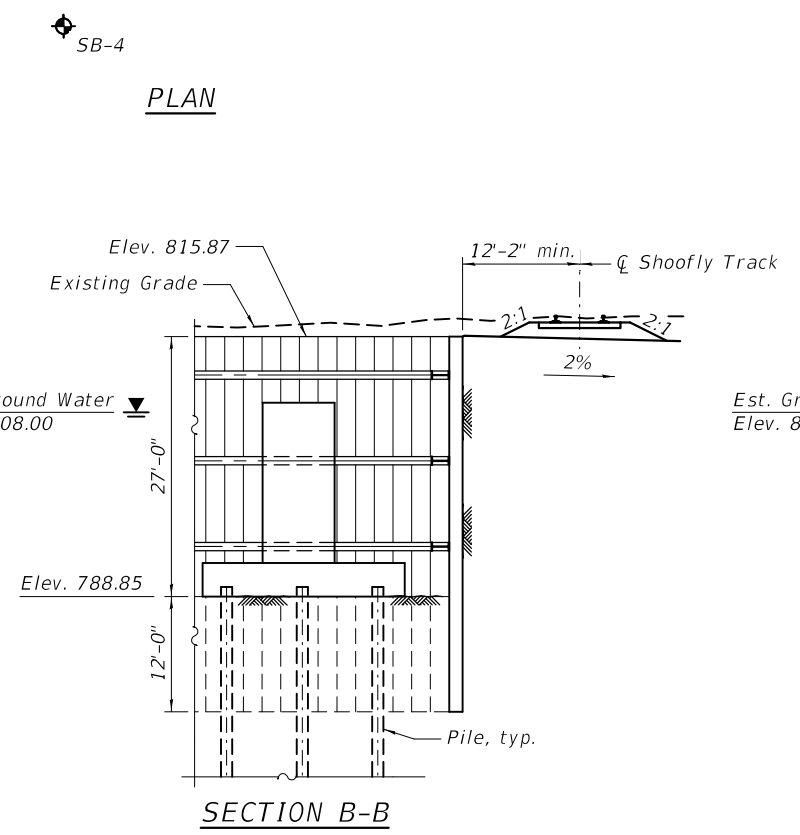
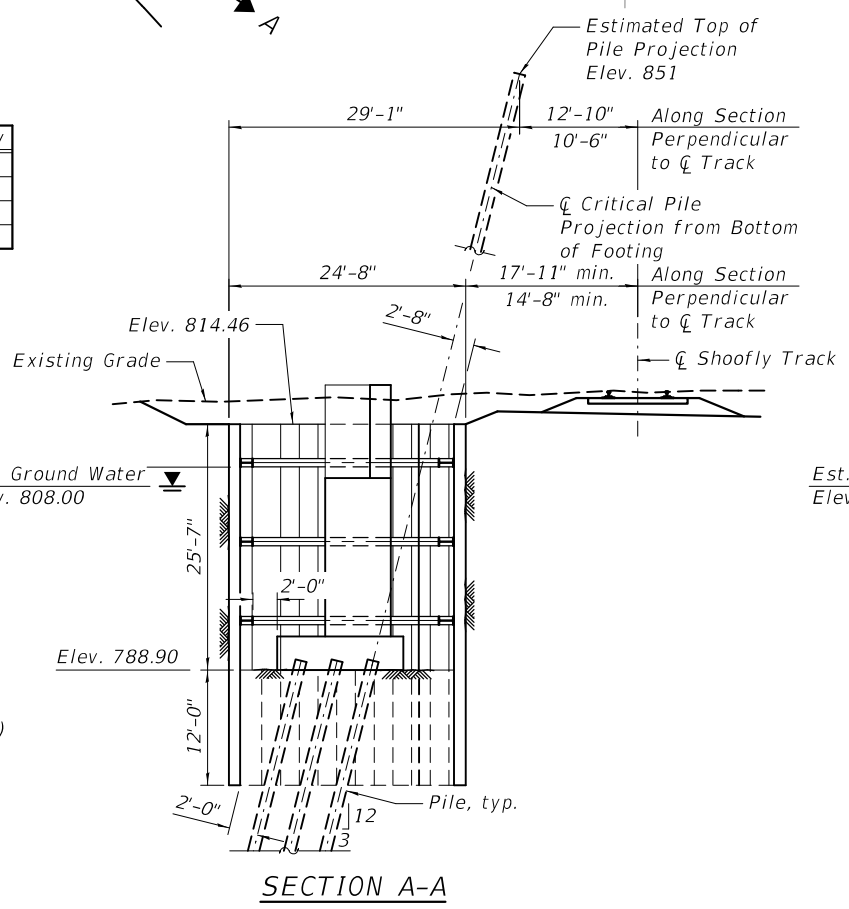
SHEET SC-3 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	439
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



BILL OF MATERIAL

Item	Unit	Quantity
Cofferdam Excavation	Cu Yd	4,720
Cofferdam (Type 2) (Location 1)	Each	1
Cofferdam (Type 2) (Location 2)	Each	1
Cofferdam (Type 2) (Location 3)	Each	1



- LEGEND**
- ◆ Soil Boring
 - Existing Aerial Lines (to be relocated)
 - Proposed Aerial Lines
 - Existing TV Cable (to be relocated)
 - Existing Water Main (to be relocated)
 - Existing Fiber Optic (to be relocated)
 - Existing Telephone (to be relocated)

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**COFFERDAM DETAILS
STRUCTURE NO. 049-0014**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 61187				

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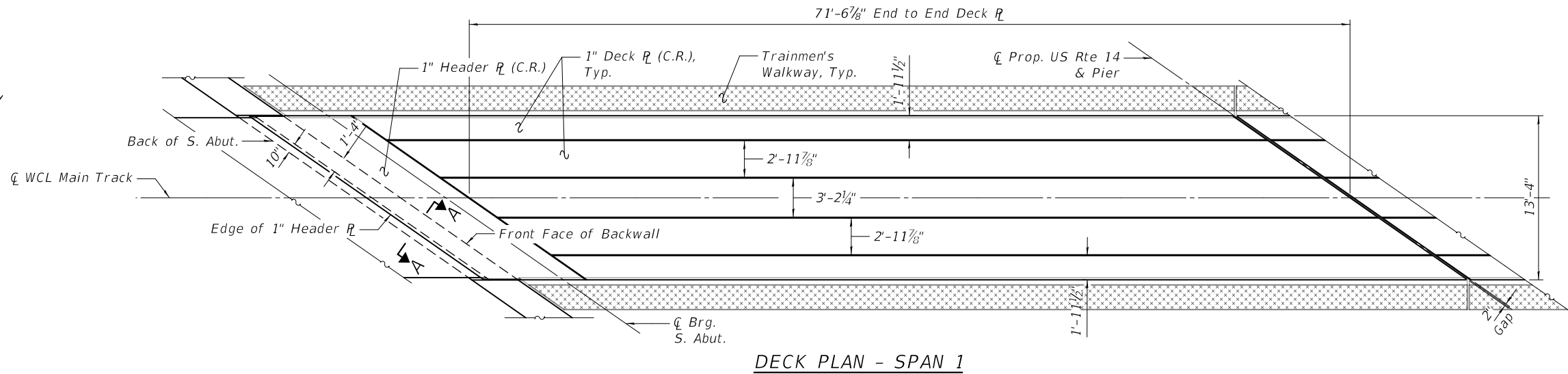
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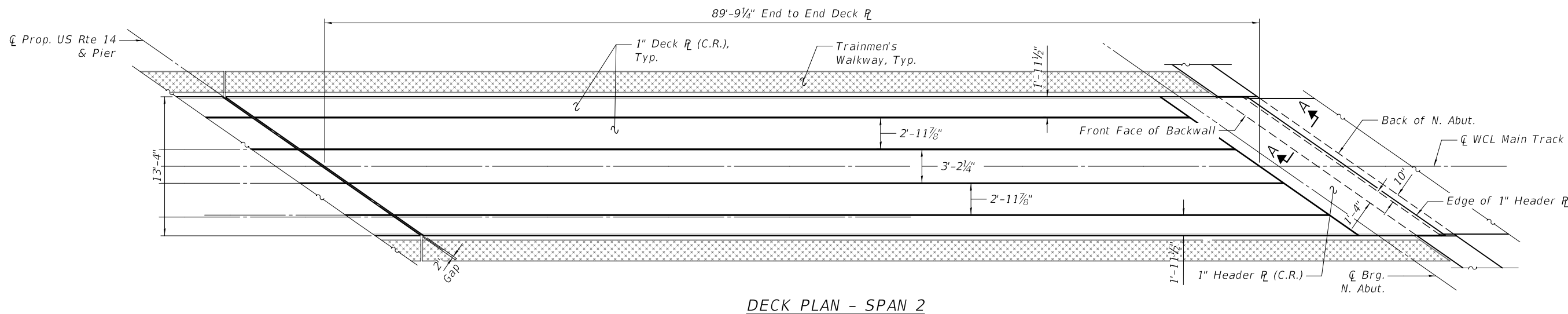
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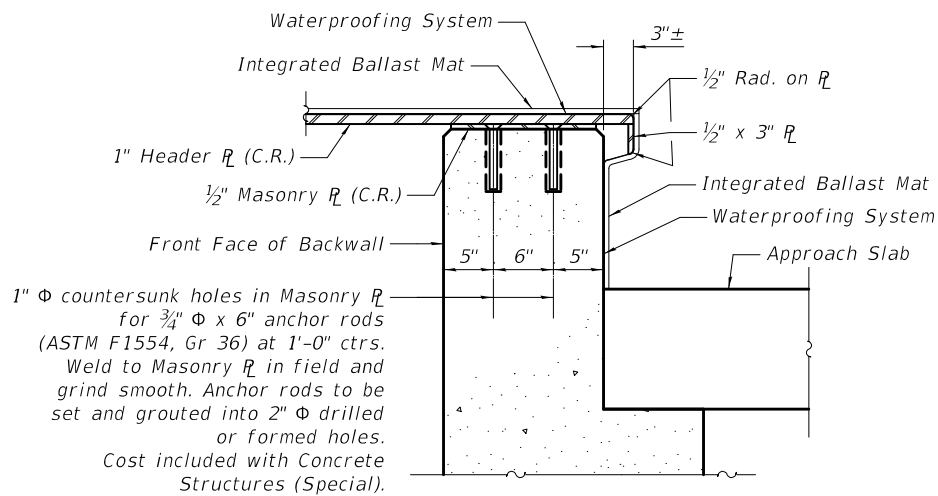
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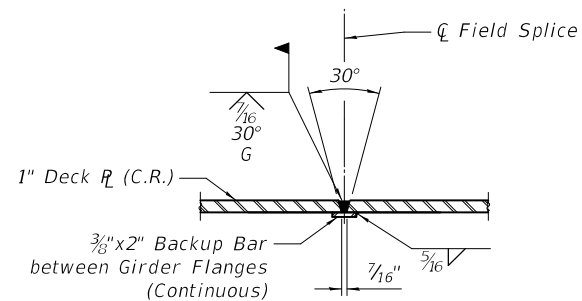
DECK PLAN - SPAN 1



DECK PLAN - SPAN 2

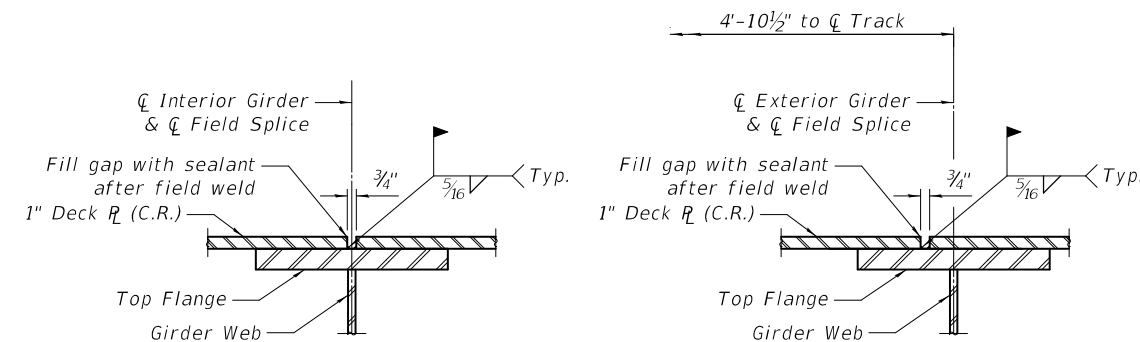


SECTION A-A
HEADER PLATE AT ABUTMENTS



HEADER PLATE TRANSVERSE
FIELD SPICE DETAIL

Also applies to Optional Transverse Field Splices



TYPICAL LONGITUDINAL DECK
PLATE FIELD SPICE DETAIL

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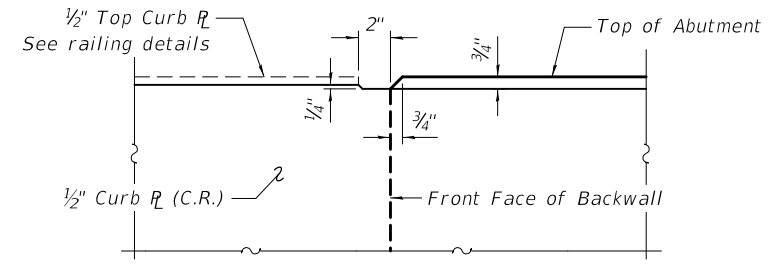
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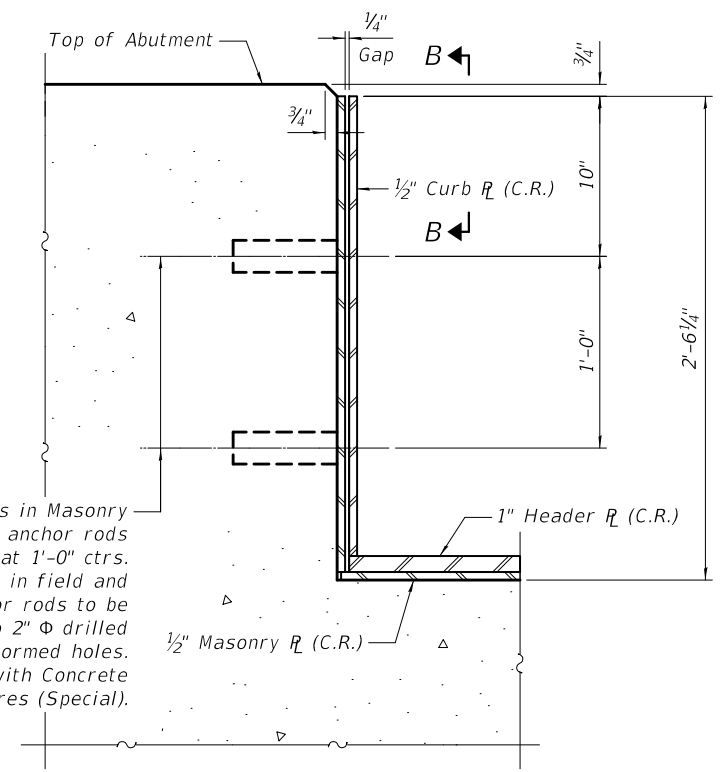
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DECK PLATE PLAN
STRUCTURE NO. 049-0014
SHEET SC-5 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

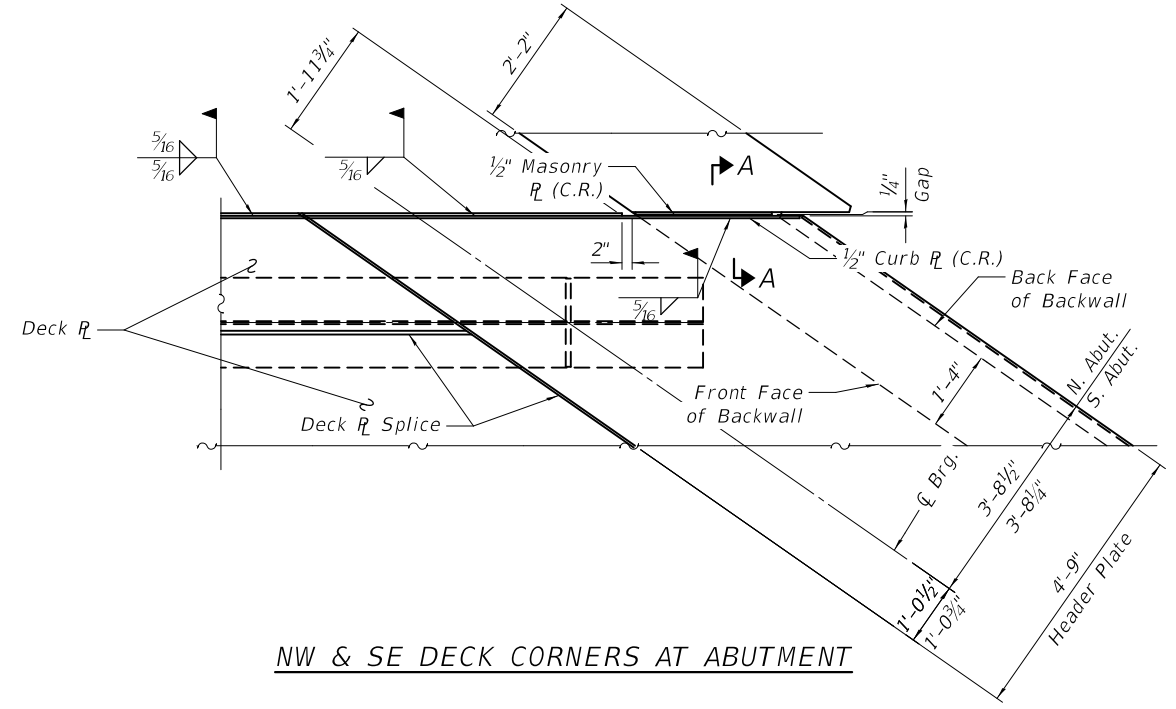


VIEW B-B

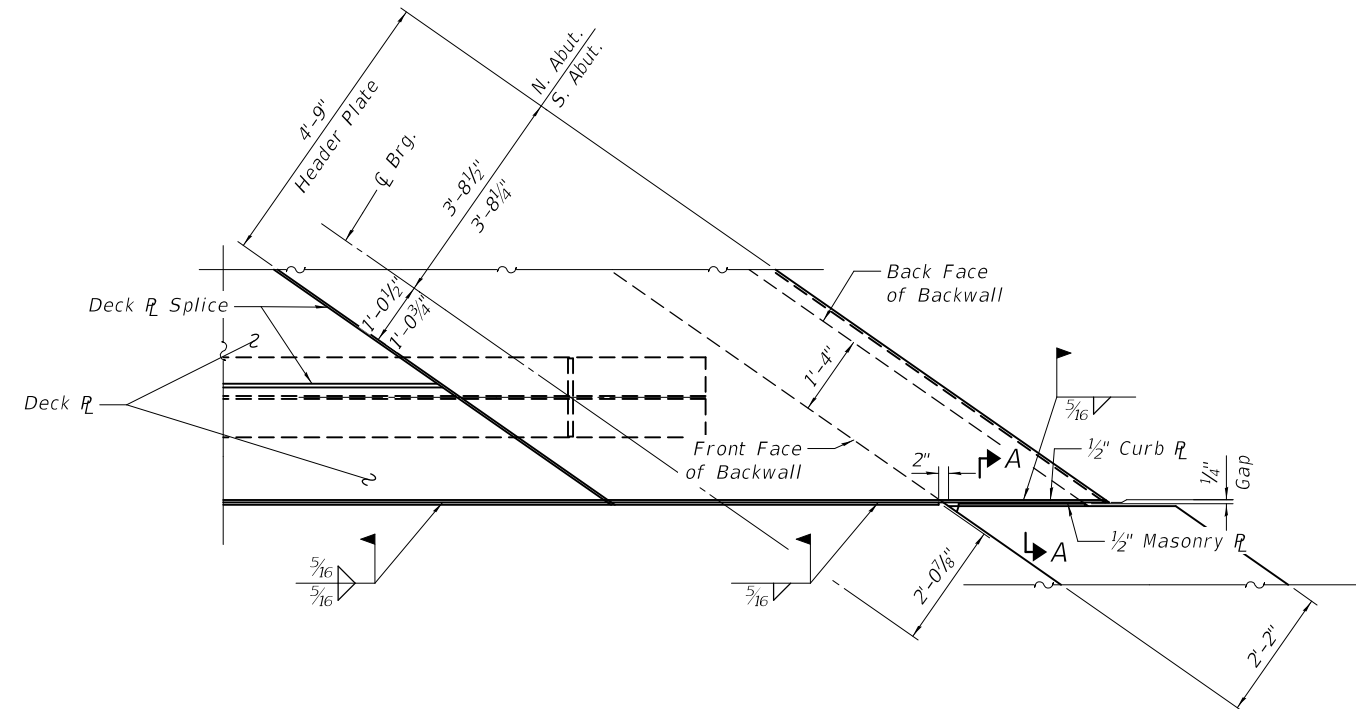


SECTION A-A

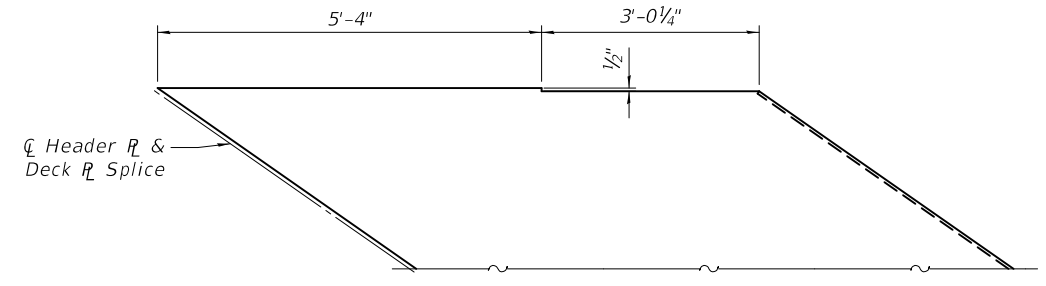
1" Φ countersunk holes in Masonry R (C.R.) for $\frac{3}{4}$ " Φ x 6" anchor rods (ASTM F1554, Gr 36) at 1'-0" ctrs. Weld to Masonry R in field and grind smooth. Anchor rods to be set and grouted into 2" Φ drilled or formed holes. Cost included with Concrete Structures (Special).



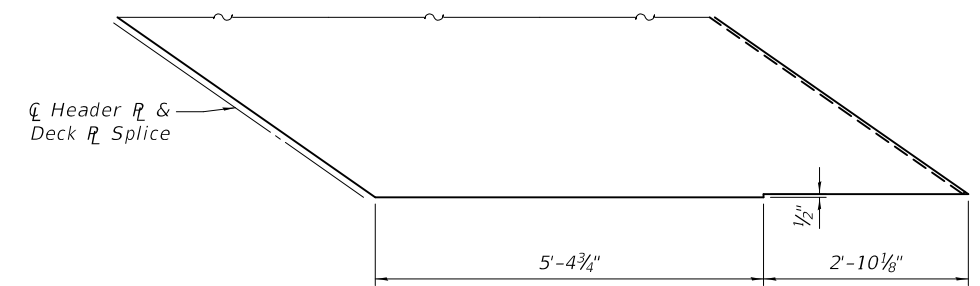
NW & SE DECK CORNERS AT ABUTMENT



NE & SW DECK CORNERS AT ABUTMENT



HEADER R AT NW & SE DECK CORNERS



HEADER R AT NE & SW DECK CORNERS

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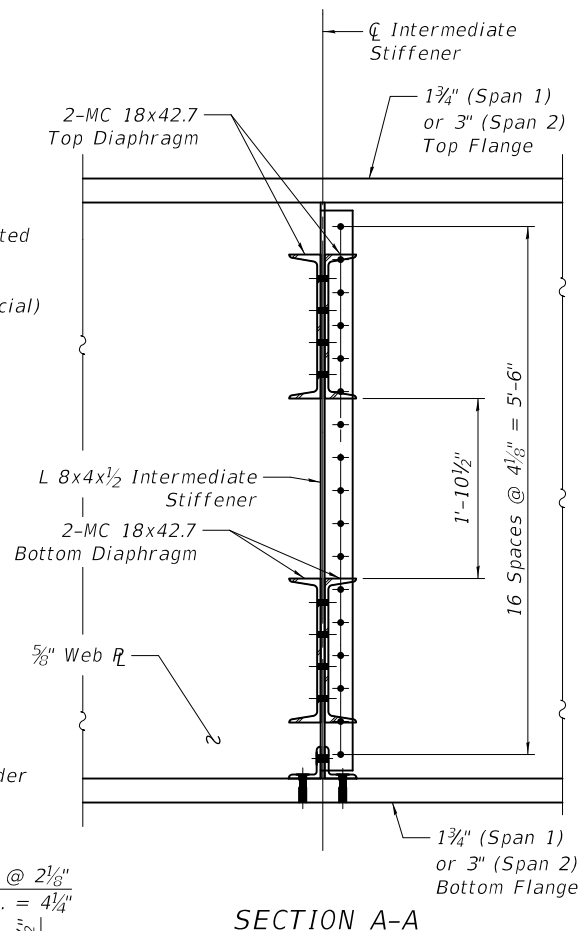
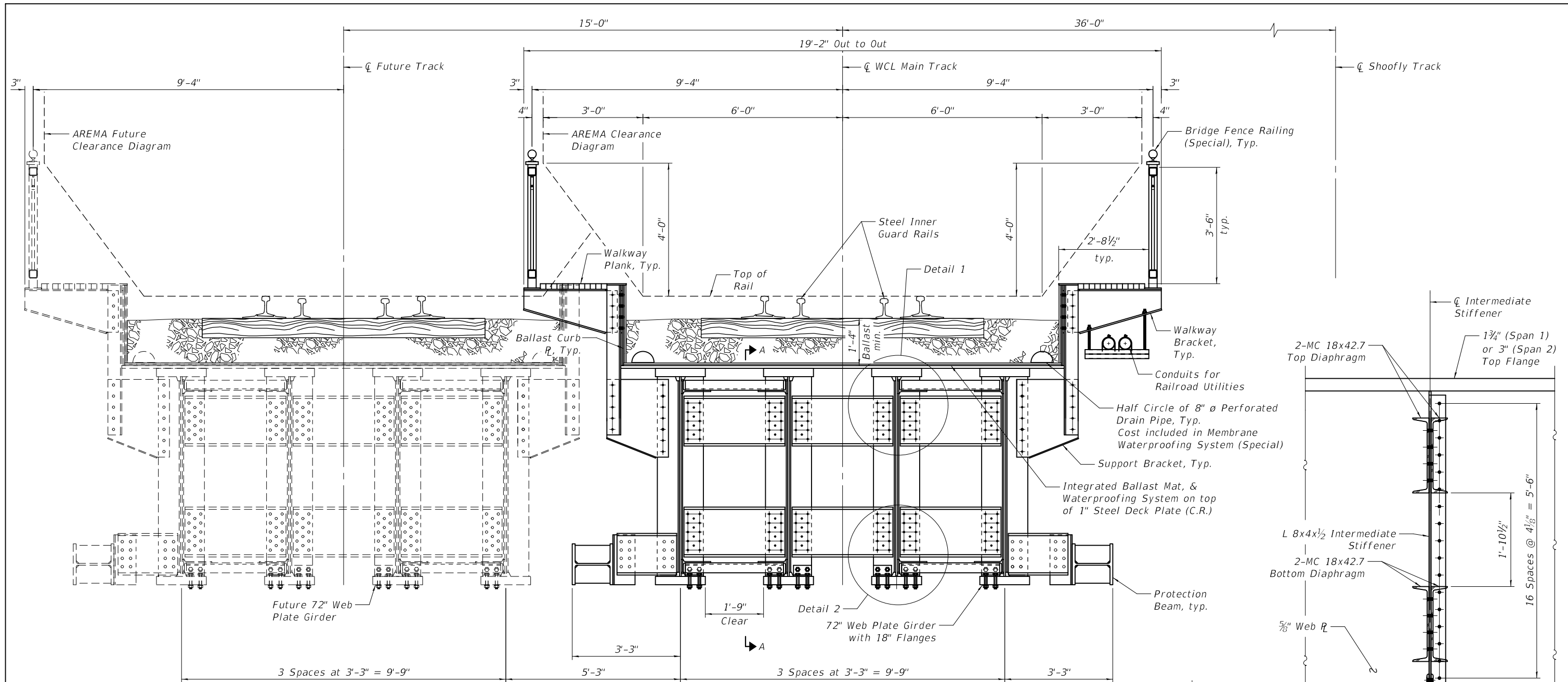
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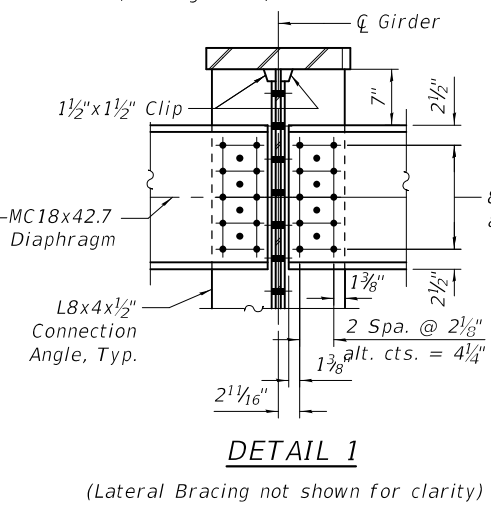
DECK PLATE DETAILS
STRUCTURE NO. 049-0014

SHEET SC-6 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				

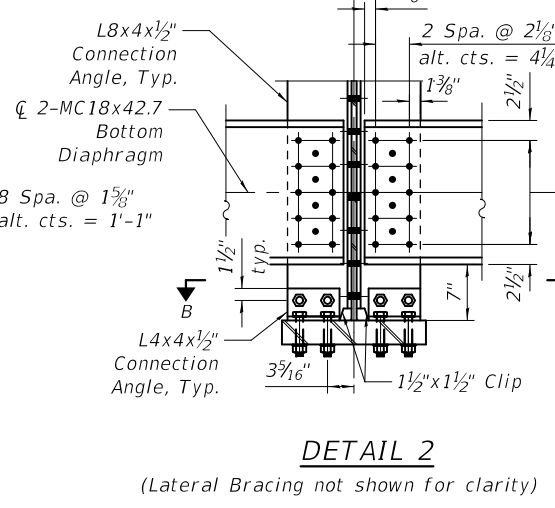


CROSS SECTION
(Looking North)



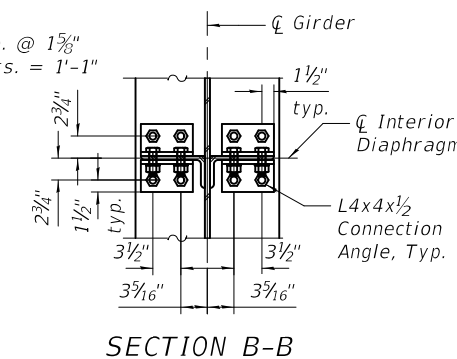
DETAIL 1

(Lateral Bracing not shown for clarity)

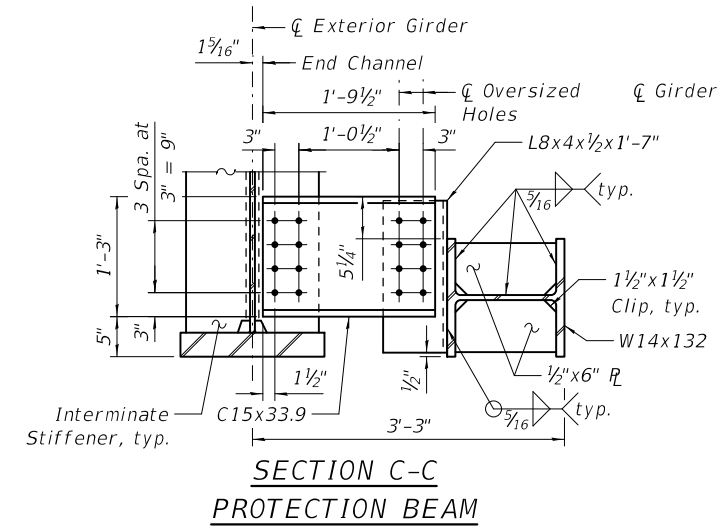


DETAIL 2

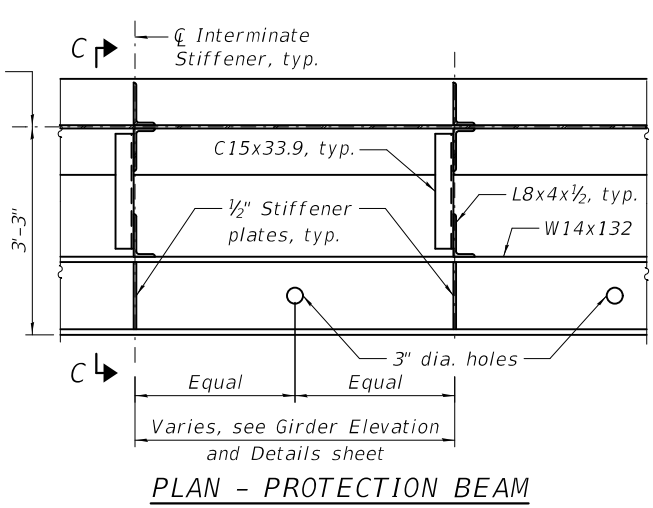
(Lateral Bracing not shown for clarity)



SECTION B-B



SECTION C-C
PROTECTION BEAM



PLAN - PROTECTION BEAM

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE CROSS SECTION & DETAILS
STRUCTURE NO. 049-0014

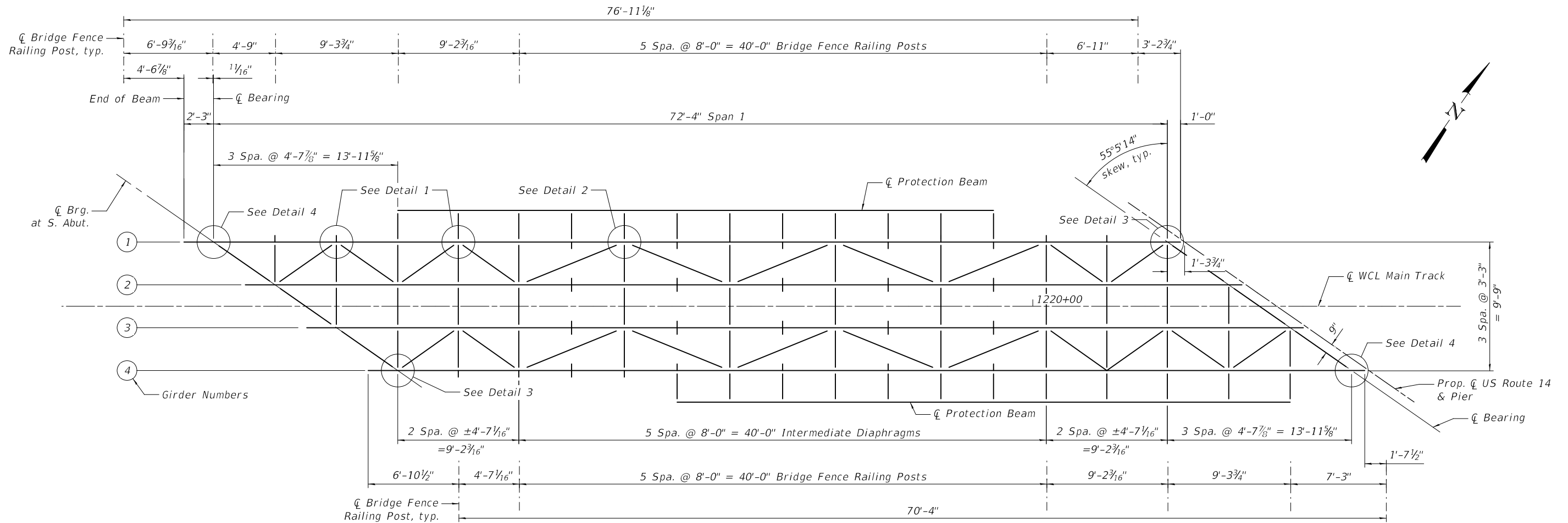
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CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

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FRAMING PLAN - SPAN #1

NOTES:

- See Sheet SC-12 for Details 1 & 2.
- See Sheet SC-13 for Details 3 & 4.
- See Sheets SC-18 and SC-19 for Bridge Fence Railing Details.
- The top surface of the beams shall be adjusted to form a straight line at any transverse section throughout the span. Tolerance is plus or minus 1/8".
- Spans shall be fully shop assembled to ensure accurate fit.

MOMENT & SHEAR TABLE

DESCRIPTION	MOMENT	SHEAR
Dead Load	1,105 k-ft.	63 k
Live Load	2,032 k-ft.	128 k
Impact+RE	890 k-ft.	56 k
Total	4,027 k-ft.	247 k
Steel	ASTM A709 GR. 50 NTR Zone 2	
Net I	95,619 in.4	
Net S (Bottom)	2,704 in.3	
FST (Bottom)	17.9 ksi	
Gross I	105,121 in.4	
Gross S (Top)	2,785 in.3	
FSC (Top)	17.4 ksi	
(LL+I) Deflection	0.90 in.	
Allowable (LL+I) Deflection	1.16 in.	

I - Non-Composite moment of inertia of the steel section.

S - Non-Composite section modulus of the steel section.

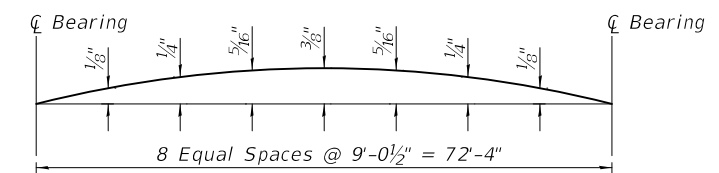
FST - Max unfactored tension stress in steel section due to DL+LL+Impact.

FSC - Max unfactored compression stress in steel section due to DL+LL+Impact.

Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

DEAD LOAD: (Assumed)

Rail	200 #/ft.
Ballast (9" + tie)	2,107 #/ft.
Steel Deck & Curb	742 #/ft.
Walkways	65 #/ft.
Waterproofing	227 #/ft.
Girders (incl. misc.)	1,840 #/ft.
Future Ballast	1,580 #/ft.
Total	6,761 #/ft. of track



CAMBER DIAGRAM
Camber calculated for Dead Load

MODEL: Default
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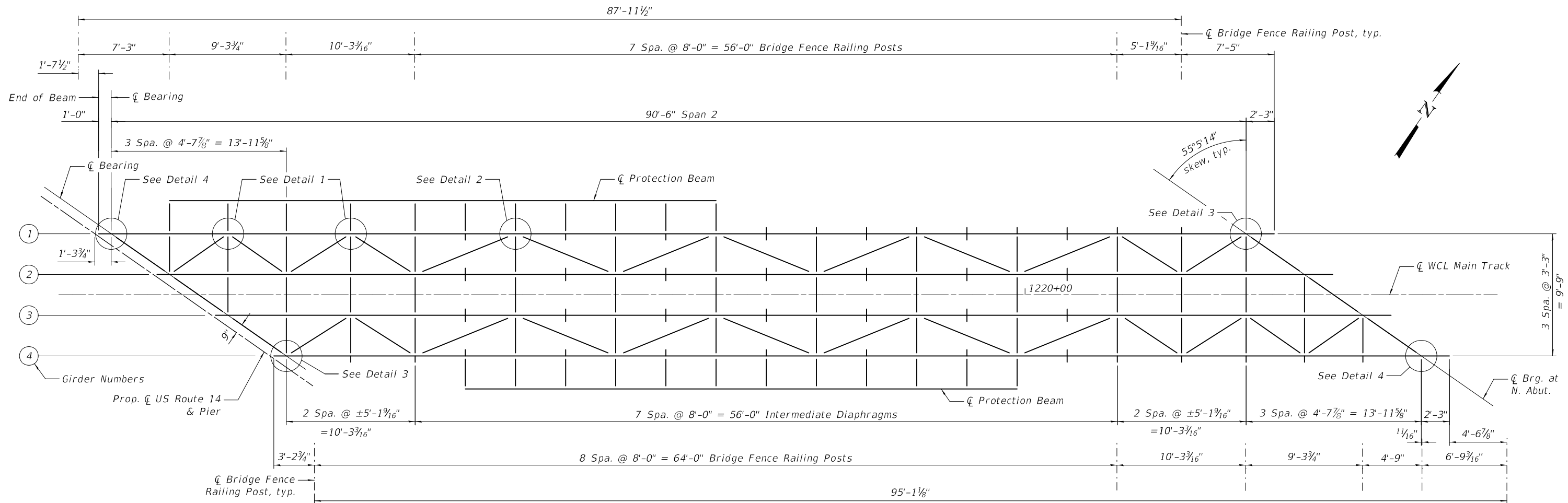
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DEPARTMENT OF TRANSPORTATION**

**FRAMING PLAN - SPAN 1
STRUCTURE NO. 049-0014**

SHEET SC-8 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	444
			CONTRACT NO. 61187	

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FRAMING PLAN - SPAN #2

NOTES:

- See Sheet SC-12 for Details 1 & 2.
- See Sheet SC-13 for Details 3 & 4.
- See Sheets SC-18 and SC-19 for Bridge Fence Railing Details.
- The top surface of the beams shall be adjusted to form a straight line at any transverse section throughout the span. Tolerance is plus or minus 1/8".
- Spans shall be fully shop assembled to ensure accurate fit.

MOMENT & SHEAR TABLE

DESCRIPTION	MOMENT	SHEAR
Dead Load	1,926 k-ft.	87 k
Live Load	3,033 k-ft.	155 k
Impact+RE	1,212 k-ft.	62 k
Total	6,171 k-ft.	304 k
Steel	ASTM A709 GR. 50 NTR Zone 2	
Net I	154,312 in.4	
Net S (Bottom)	3,676 in.3	
FST (Bottom)	20.1 ksi	
Gross I	171,396 in.4	
Gross S (Top)	4,395 in.3	
FSC (Top)	16.8 ksi	
(LL+I) Deflection	1.26 in.	
Allowable (LL+I) Deflection	1.45 in.	

I - Non-Composite moment of inertia of the steel section.

S - Non-Composite section modulus of the steel section.

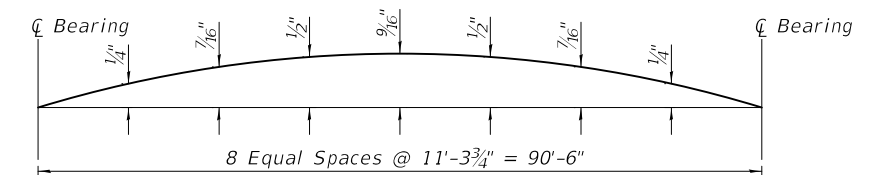
FST - Max unfactored tension stress in steel section due to DL+LL+Impact.

FSC - Max unfactored compression stress in steel section due to DL+LL+Impact.

Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

DEAD LOAD: (Assumed)

Rail	200 #/ft.
Ballast (9" + tie)	2,107 #/ft.
Steel Deck & Curb	742 #/ft.
Walkways	65 #/ft.
Waterproofing	227 #/ft.
Girders (incl. misc.)	2,604 #/ft.
Future Ballast	1,580 #/ft.
Total	7,525 #/ft. of track



CAMBER DIAGRAM
Camber calculated for Dead Load

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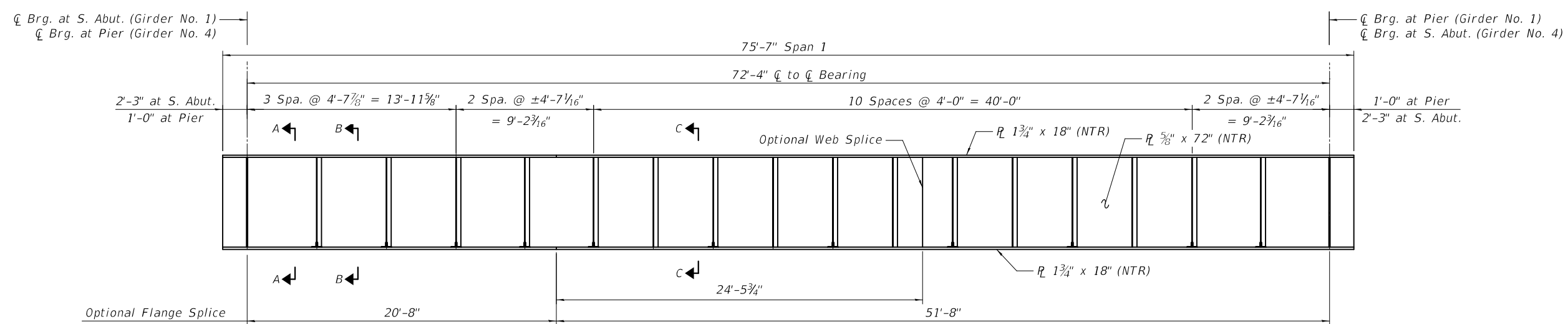
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**FRAMING PLAN - SPAN 2
STRUCTURE NO. 049-0014**

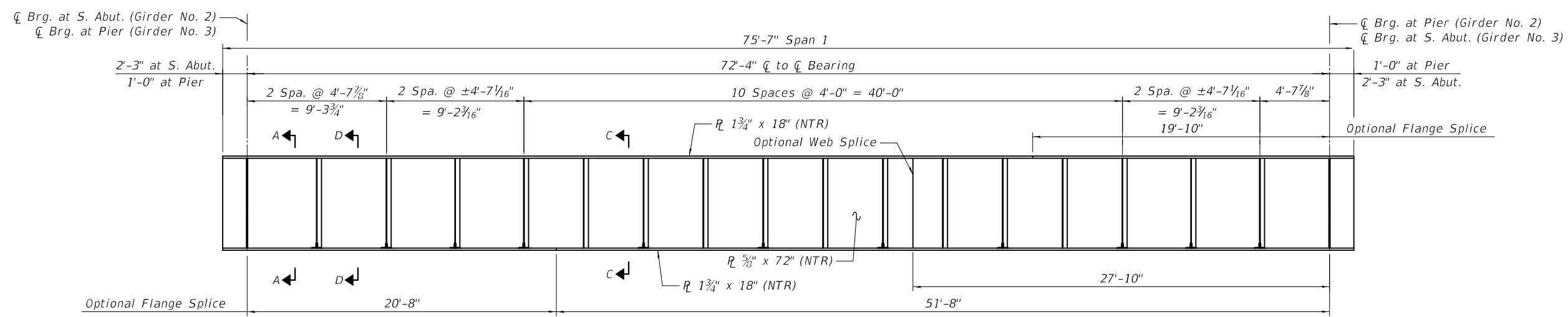
SHEET SC-9 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 61187				

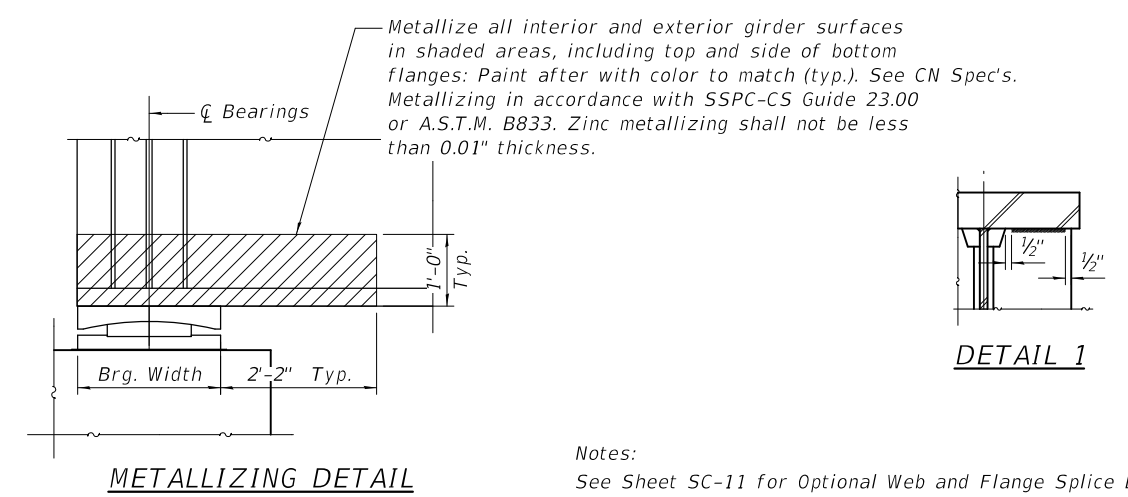
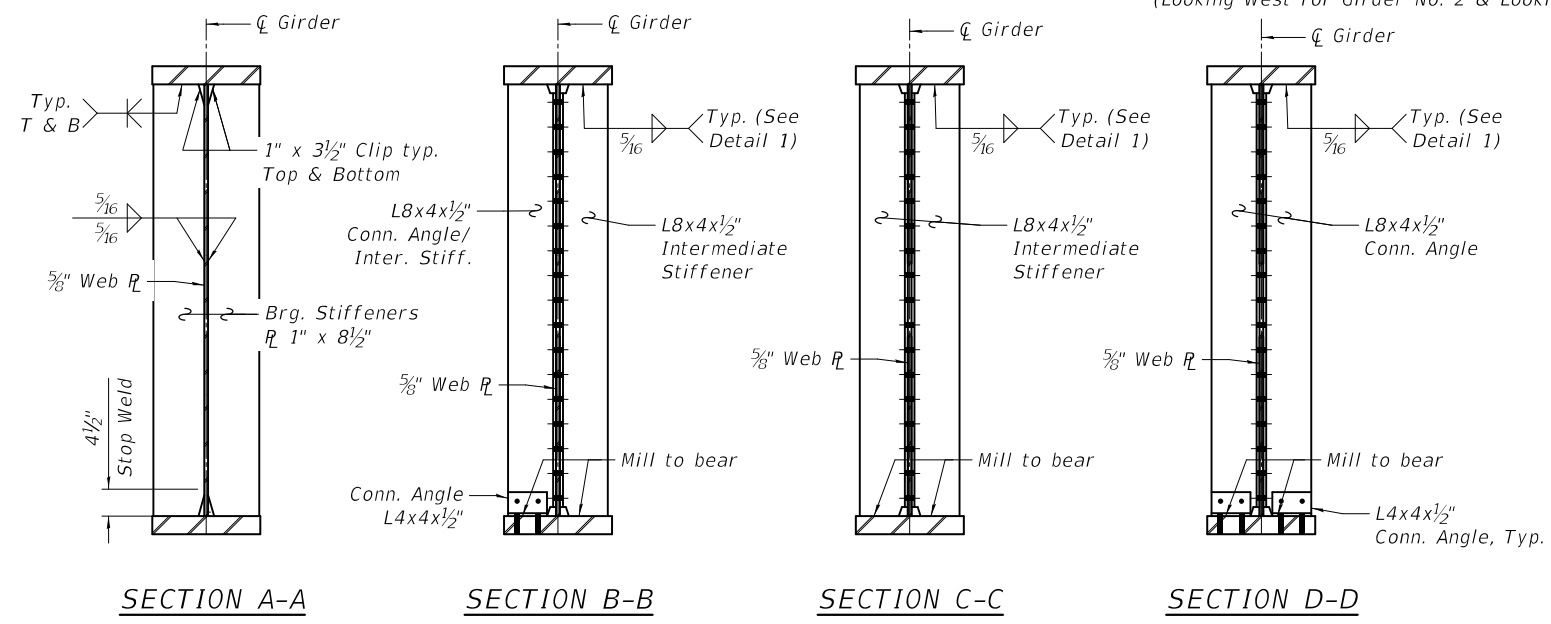
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ELEVATION - GIRDER No.'s 1 & 4
(Looking West for Girder No. 1 & Looking East for Girder No. 4)



ELEVATION - GIRDER No.'s 2 & 3
(Looking West for Girder No. 2 & Looking East for Girder No. 3)



DETAIL 1

Notes:
See Sheet SC-11 for Optional Web and Flange Splice Details.
See Sheet SC-11 for Top Flange Coping Detail.
Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

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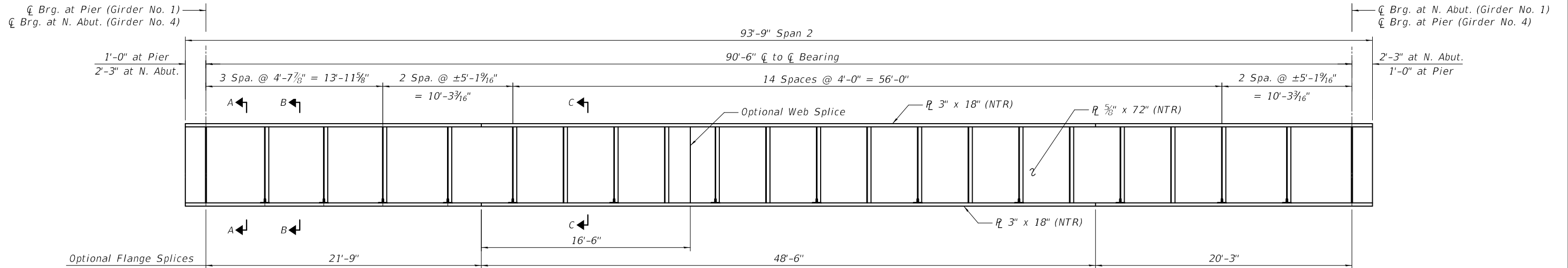
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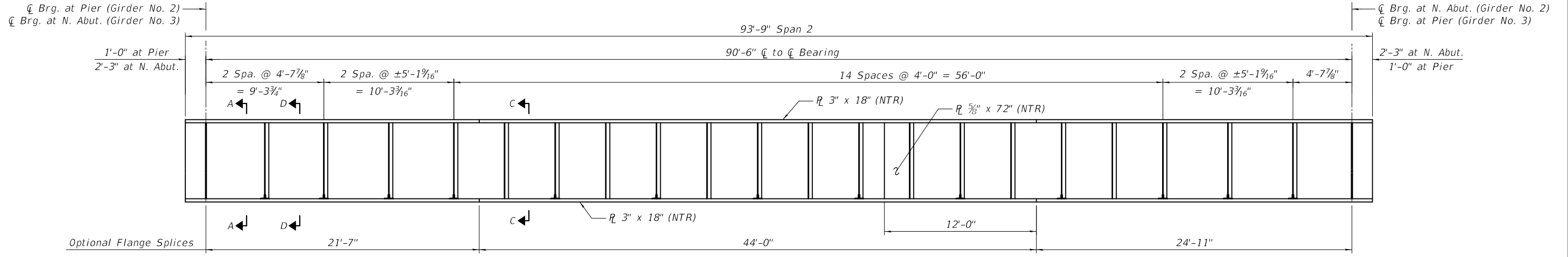
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GIRDER ELEVATION & DETAILS - SPAN 1
STRUCTURE NO. 049-0014
SHEET SC-10 OF SC-34 SHEETS

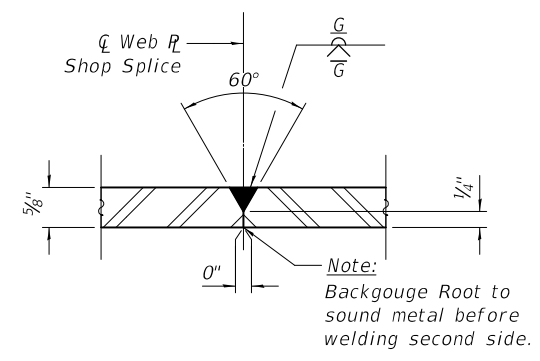
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	446
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



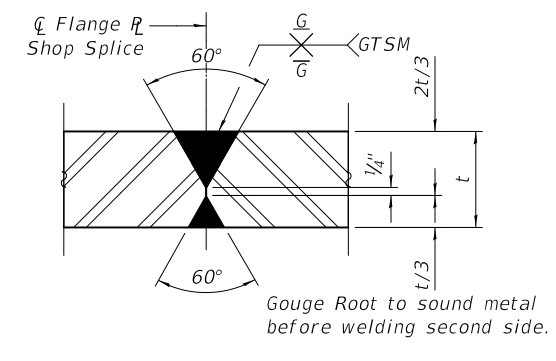
ELEVATION - GIRDER No.'s 1 & 4
 (Looking West for Girder No. 1 & Looking East for Girder No. 4)



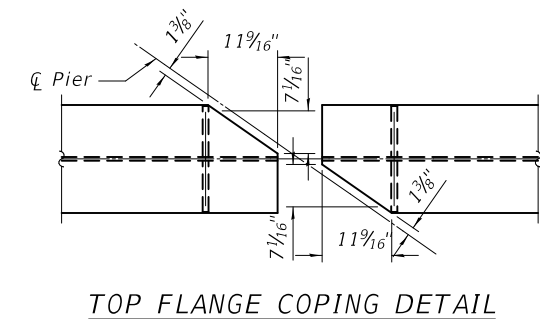
ELEVATION - GIRDER No.'s 2 & 3
 (Looking West for Girder No. 2 & Looking East for Girder No. 3)



OPTIONAL WEB SPLICE
(BUTT WELD) B-L2c-S



OPTIONAL FLANGE SPLICE
B-U3c-S



TOP FLANGE COPING DETAIL

Notes:
 See Sheet SC-10 for Sections A-A, B-B, C-C & D-D.
 Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.

MODEL: Default
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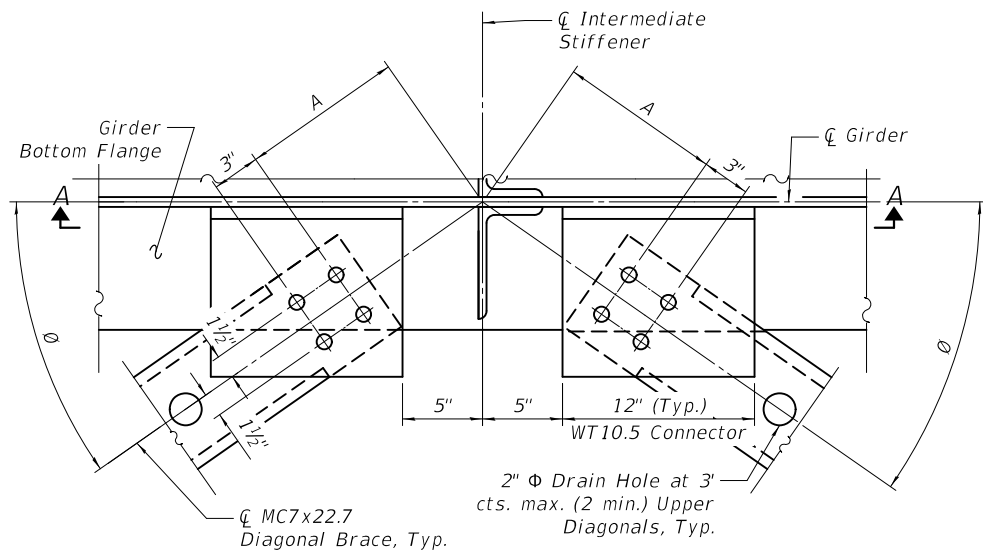
CIVILTECH
 Two Pierce Place, Suite 1400
 Moline, IL 61401
 Tel: 630.773.3900
 Fax: 630.773.3975
 www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION & DETAILS - SPAN 2
STRUCTURE NO. 049-0014
 SHEET SC-11 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	447
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

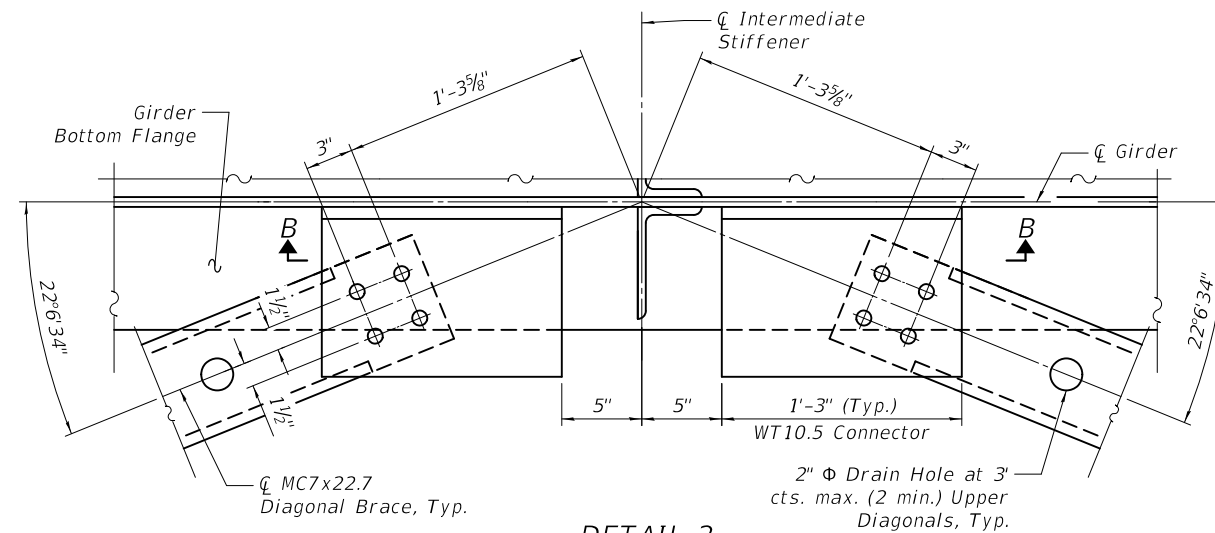


DETAIL 1

(Diaphragm and bottom connection angles not shown for clarity)

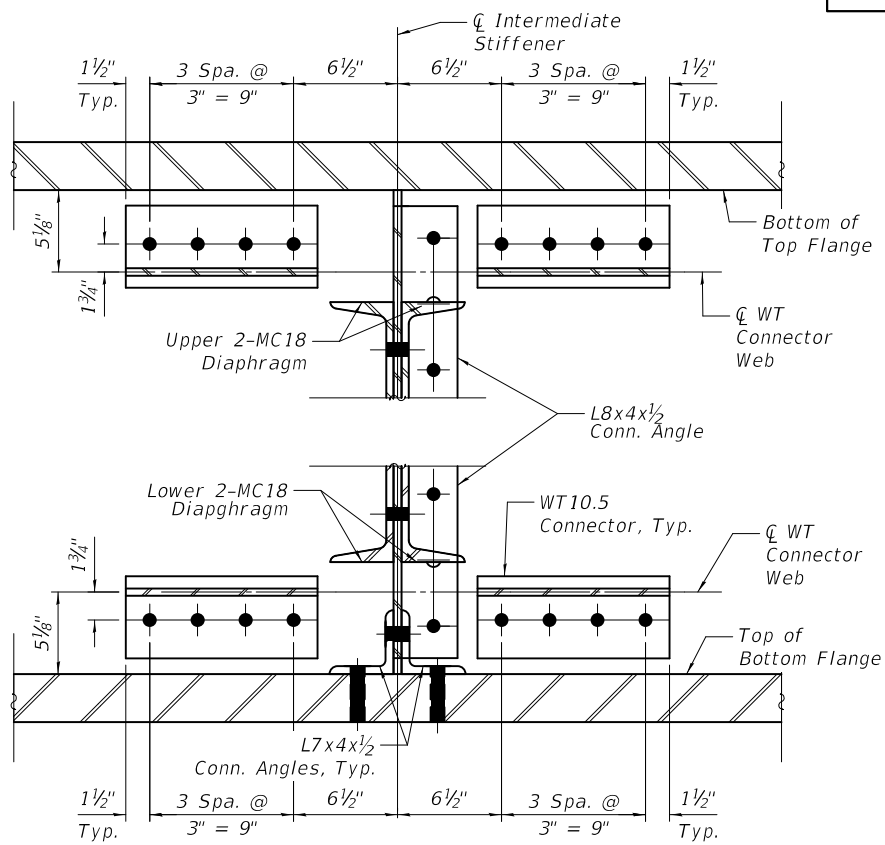
DETAIL 1 DIMENSIONS

Dist. btw Int. Diaphragms	Angle "θ"	Dimension "A"
4'-7 1/8"	35°-17'-43"	10"
4'-7 7/8"	34°-54'-46"	10 1/8"
5'-1 5/8"	32°-20'-32"	10 7/8"

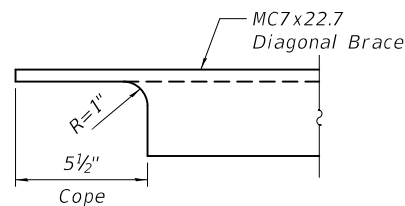


DETAIL 2

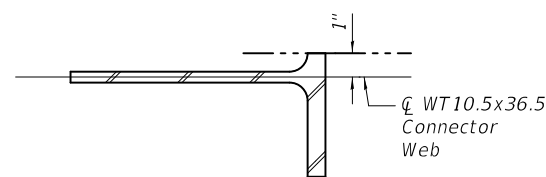
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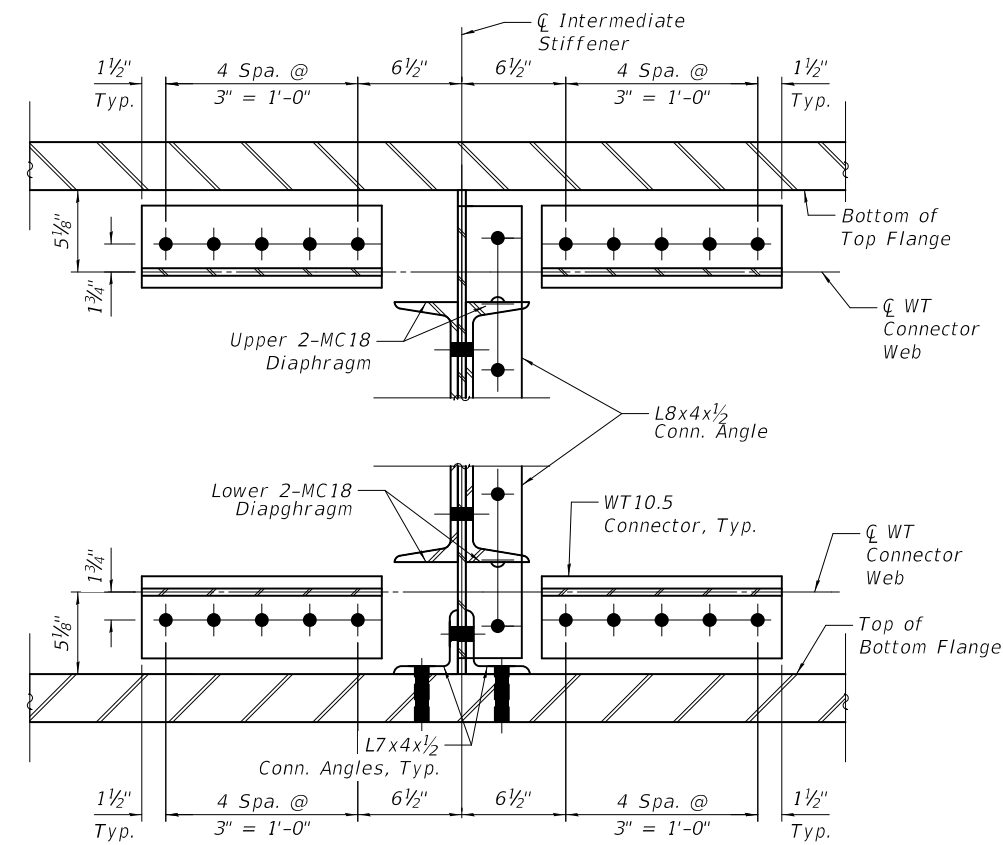
SECTION A-A



CHANNEL COPE DETAIL



WT CONNECTOR DETAIL



SECTION B-B

MODEL: Default
FILE NAME: ...0490014-91547-012-Framing_Details_1.dgn

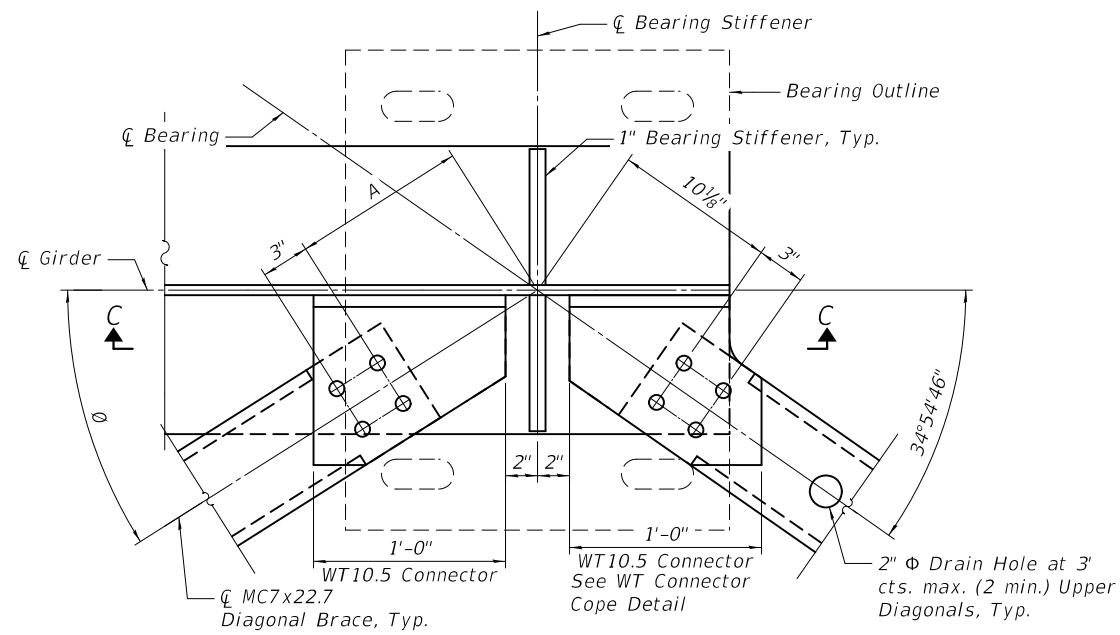
CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
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USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**FRAMING DETAILS I
STRUCTURE NO. 049-0014**
SHEET SC-12 OF SC-34 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 448
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				

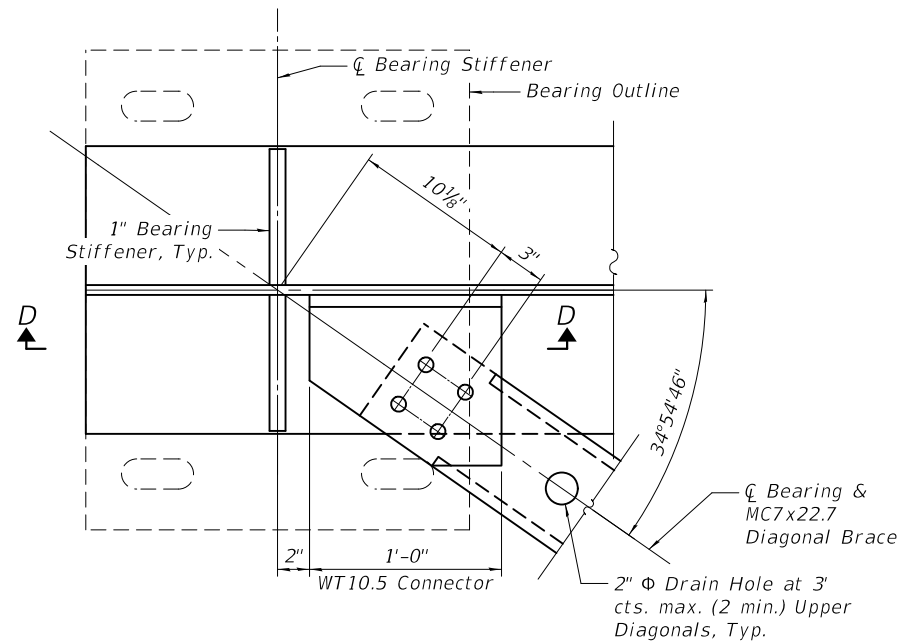


DETAIL 3

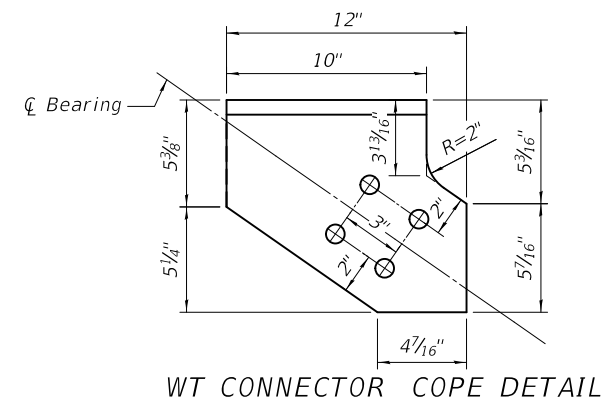
(Diaphragm not shown for clarity)

DETAIL 3 DIMENSIONS

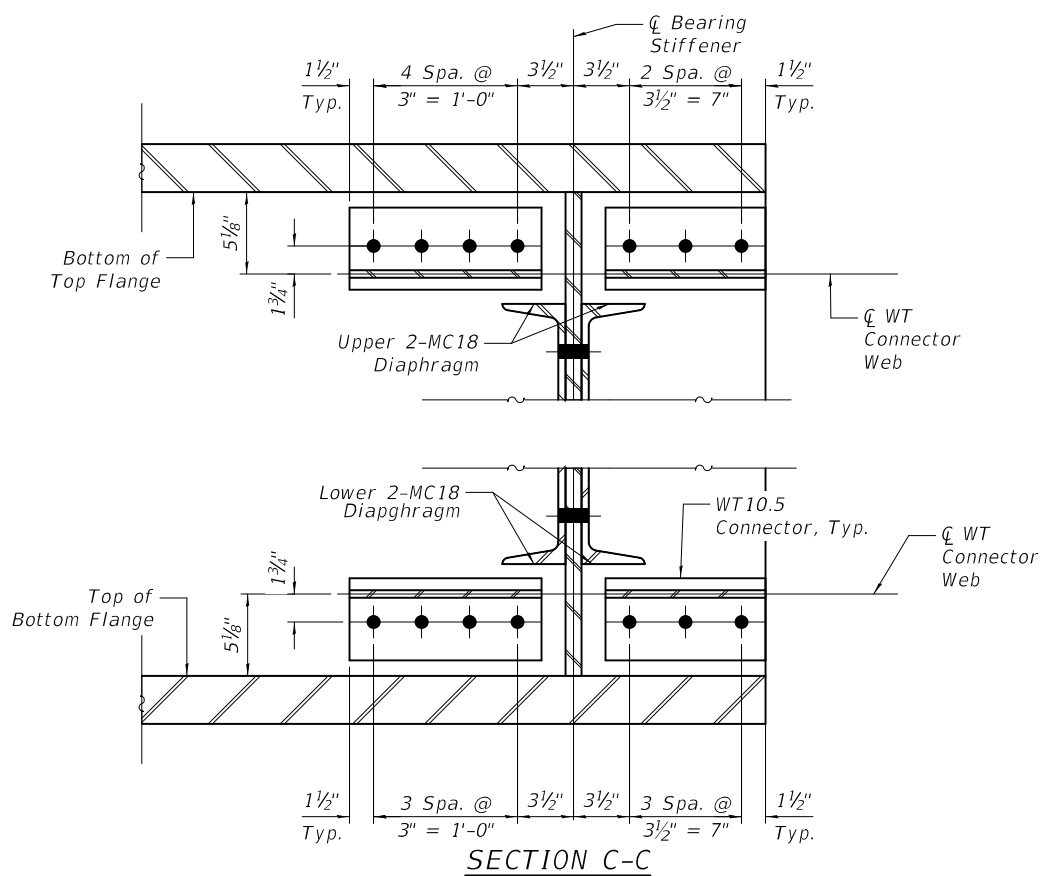
Dist. btw Int. Diaphragms	Angle "θ"	Dimension "A"
4'-7 1/8"	35°-17'-43"	10"
5'-1 3/8"	32°-20'-32"	10 1/8"



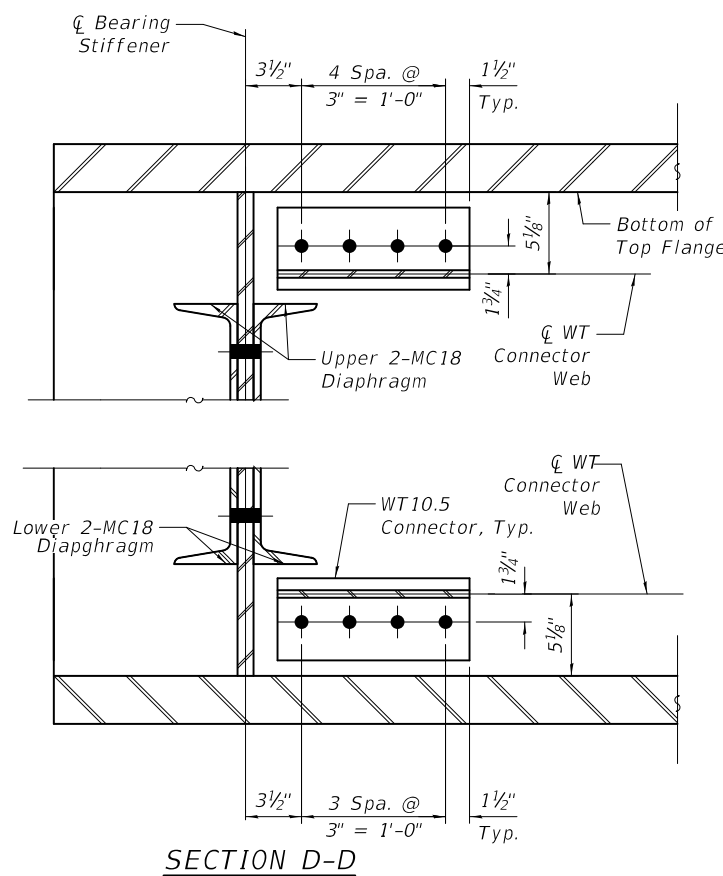
DETAIL 4



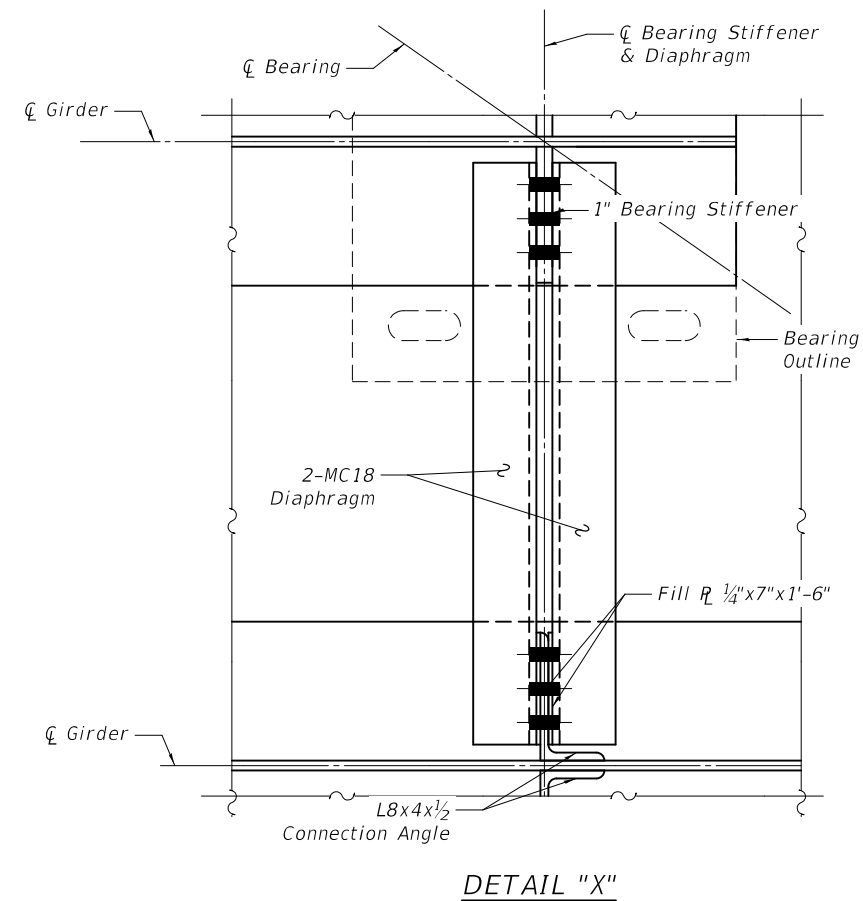
WT CONNECTOR COPE DETAIL



SECTION C-C



SECTION D-D



DETAIL "X"

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FILE NAME: ...0490014-91547-013-Framing Details 2.dgn

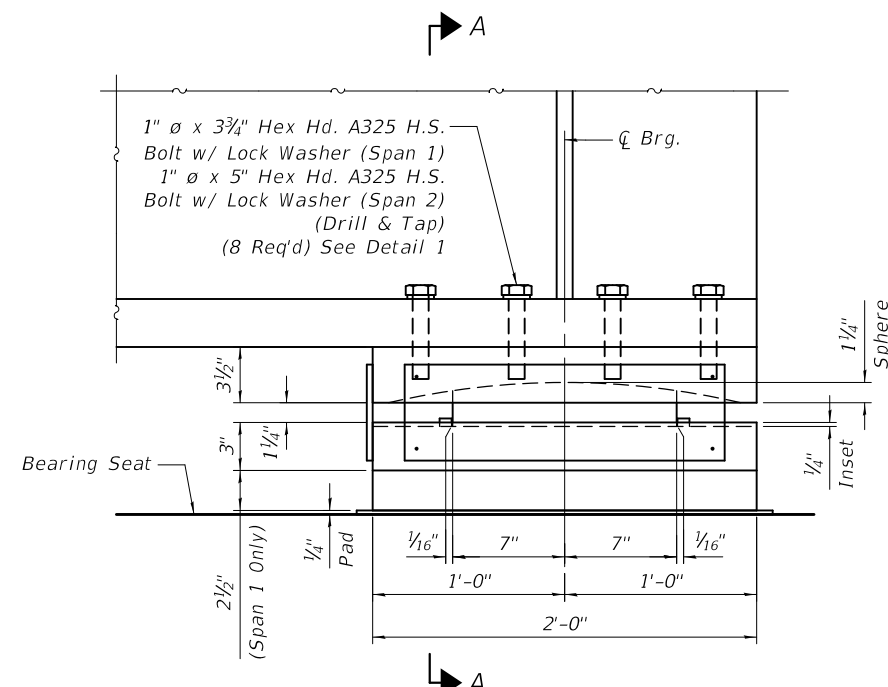
CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
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USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

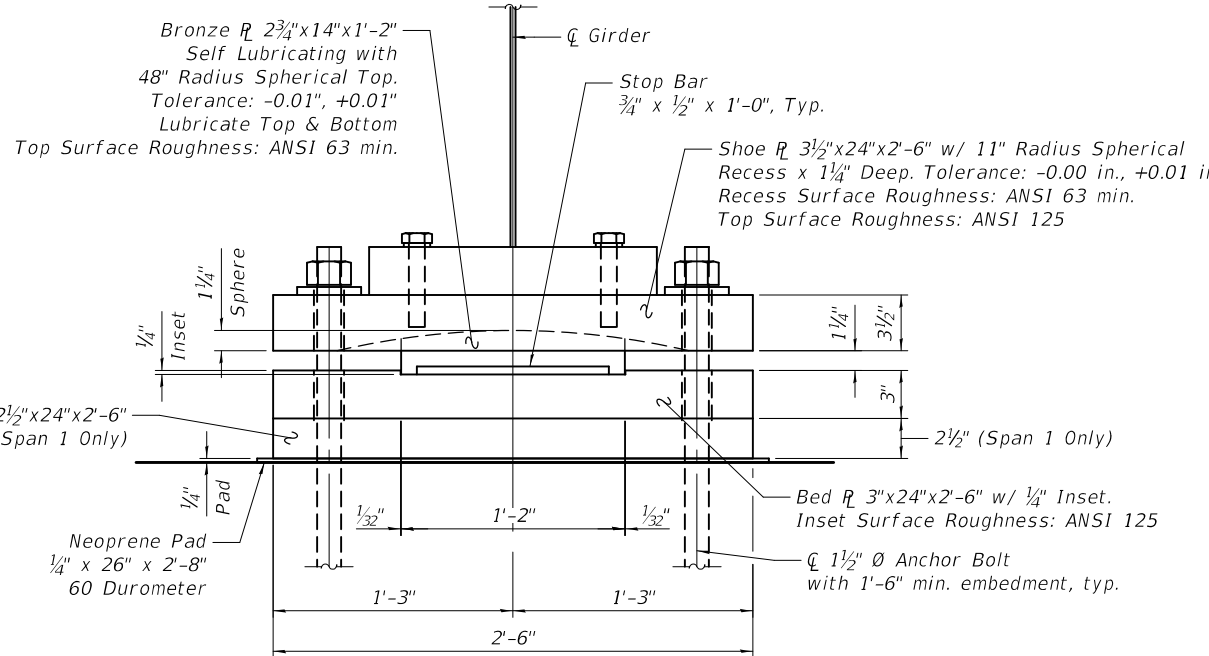
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**FRAMING DETAILS II
STRUCTURE NO. 049-0014**
SHEET SC-13 OF SC-34 SHEETS

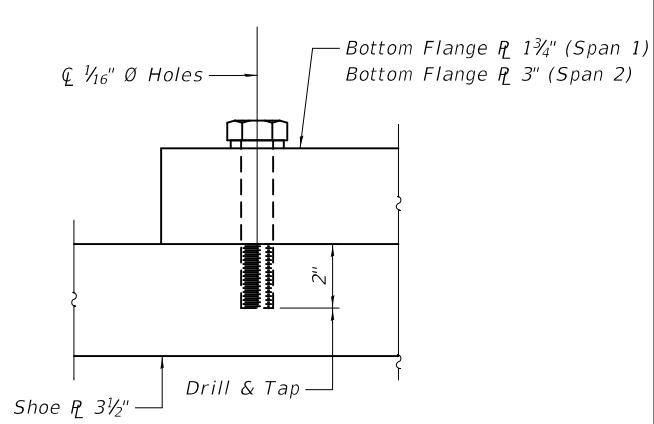
F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 449
CONTRACT NO. 61187			ILLINOIS FED. AID PROJECT	



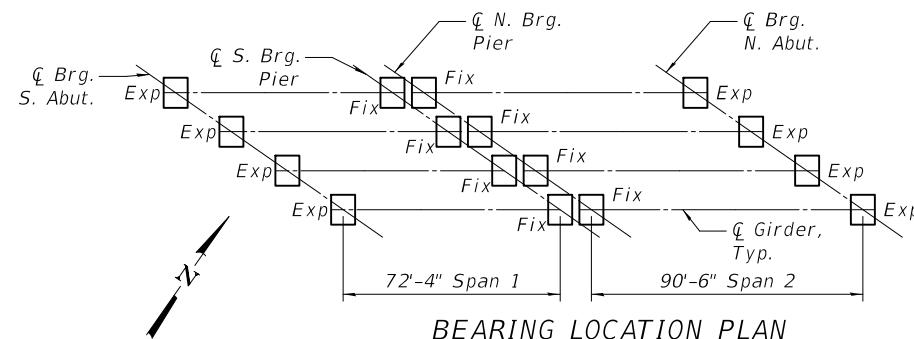
BEARING ELEVATION
(at Pier)



SECTION A-A



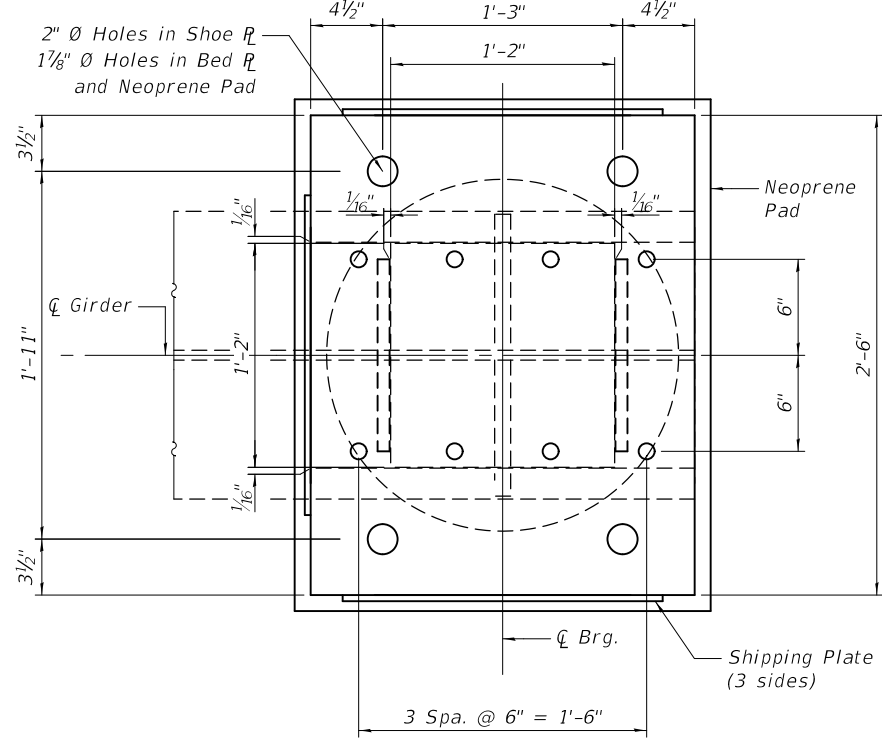
DETAIL 1



BEARING LOCATION PLAN

STANDARD NOTES:

- Design and Workmanship shall be in accordance with the current AREMA Manual Chapter 15.
- Material shall be in accordance with the following specifications:
 Structural Steel: ASTM A572 Grade 50 for Bearing Plates
 Bronze Plates: ASTM B22-08 Copper Alloy UNS No. C86300.
 Welding: 2023 AREMA Specifications
 Anchor Bolts: ASTM F1554 (Galv.) Gr. 105
 High Strength Bolts: ASTM A325 Type 1
- All holes shall be drilled or sub-punched and reamed.
- All non-sliding surfaces of bearing shall be zinc-metallized in accordance with ASTM B833. Zinc coating shall not be less than 0.01".
- Anchor bolts shall meet the requirements of ASTM F1554, hot dip galvanized or shall be corrosion resistant, low alloy structural steel, conforming to the requirements of ASTM Specification A588 or A276, Type 410, annealed.
- Bearings shall be shipped assembled with Shipping Plates 3/8"x6"x1'-8" and 5/8" ϕ Machine Bolts. Shipping Plates shall be removed after Anchor Bolts have been installed (3 Plates per Bearing).
- Two 1/8" adjusting, galv. shim plates shall be provided for each bearing in addition to all other plates or shims shall be placed between the Bed Plate and neoprene Pad if required. Shim plates shall match the footprint of the Bed Plate.
- Bearings shall be anchored vertically.
- Concrete to be drilled after determining anchor bolt locations. Anchor bolts to be grouted using non-shrink grout. Anchor bolts, nuts and washers shall be fully galvanized. Cost of drilling and grouting included in Anchor Bolts pay item.
- Cost of Fixed Bearings and Bronze Plates included with Furnishing and Erecting Structural Steel.



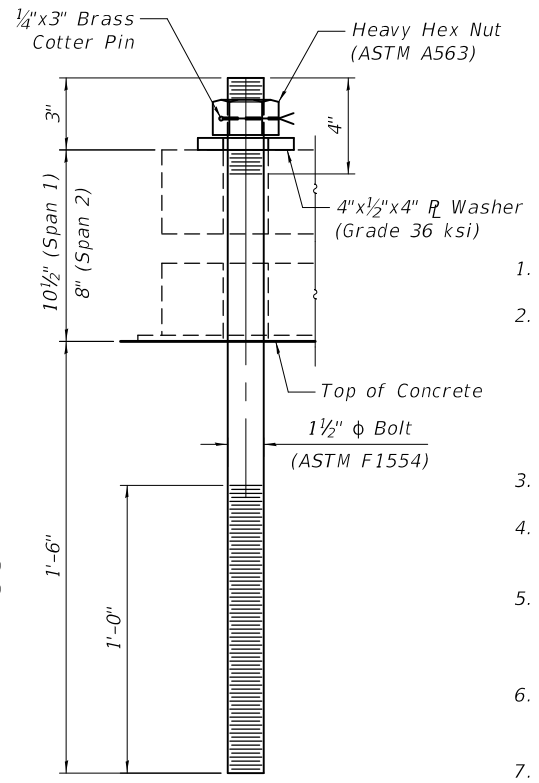
BEARING PLAN
(at Pier)

BEARING SERVICE LOADS

	Span 1	Span 2
V_D	62	85
V_{L+I}	184	217
V_{Total}	246	302
H_{Long}	66	74
H_{Trans}	9	11

Estimated weight of fixed bearings =
 1854 pounds each (4 required, Span 1)
 1346 pounds each (4 required, Span 2)

Weight of bronze plates =
 150 pounds each (8 required)



ANCHOR BOLT DETAIL

BILL OF MATERIAL

Item	Unit	Quantity
Anchor Bolts, 1 1/2"	Each	64

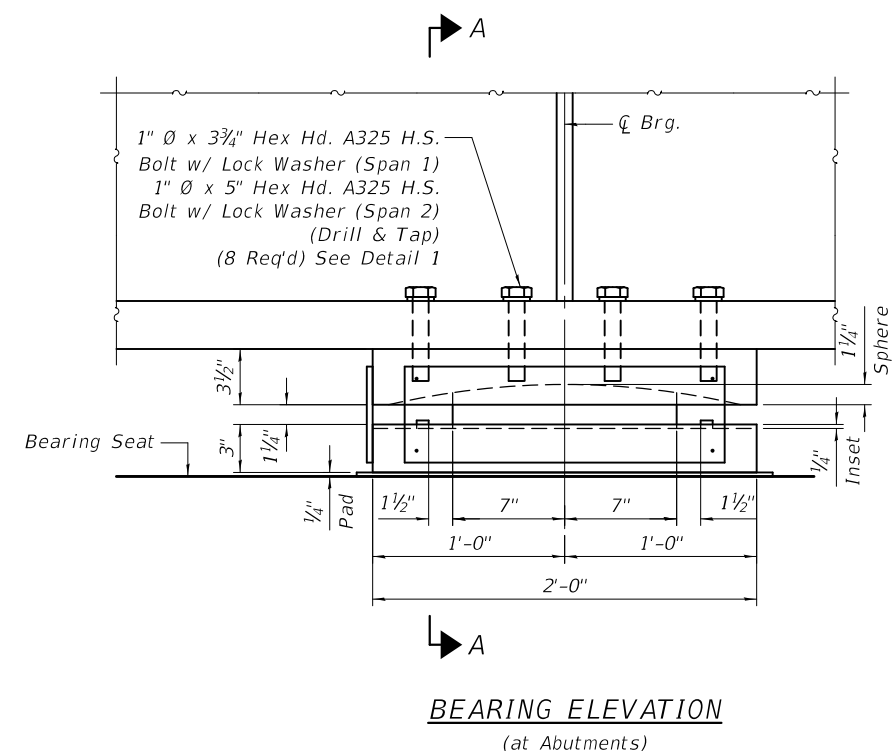
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**FIXED BEARING DETAILS
STRUCTURE NO. 049-0014**

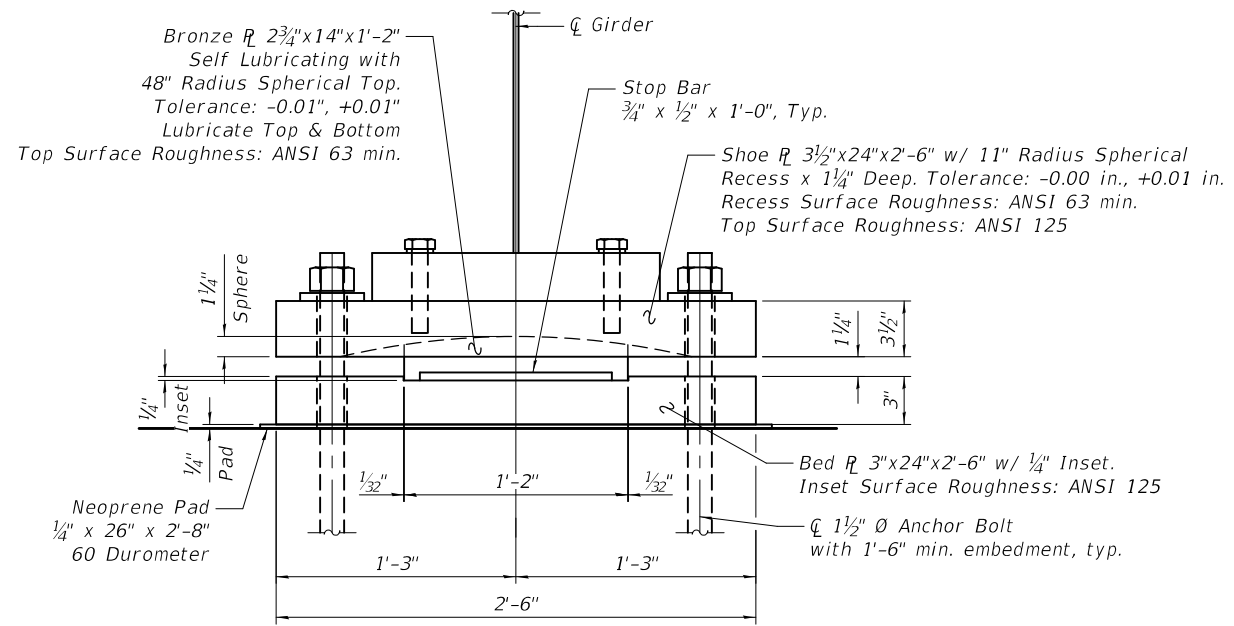
MODEL: Default
FILE NAME: ...0490014-91547-014-Fixed Bearing.dgn

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 Masca, Illinois 60143
 Tel: 630.773.3900
 Fax: 630.773.3975
 www.civiltechinc.com

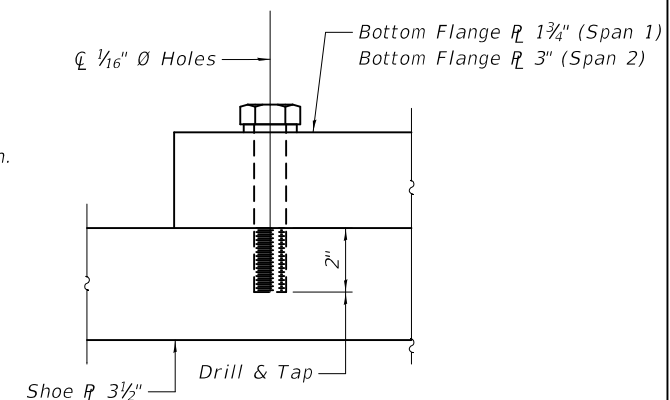
USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -



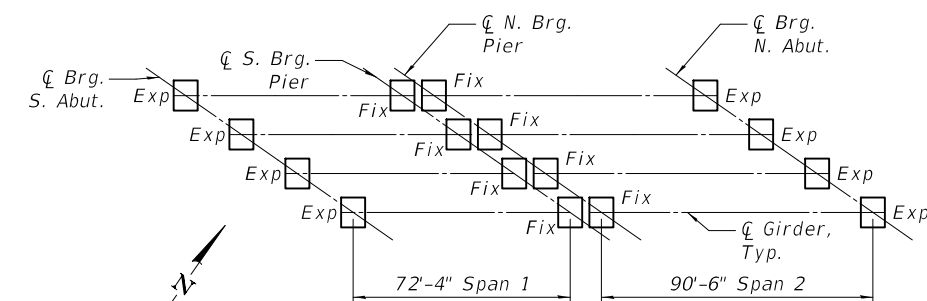
BEARING ELEVATION
(at Abutments)



SECTION A-A



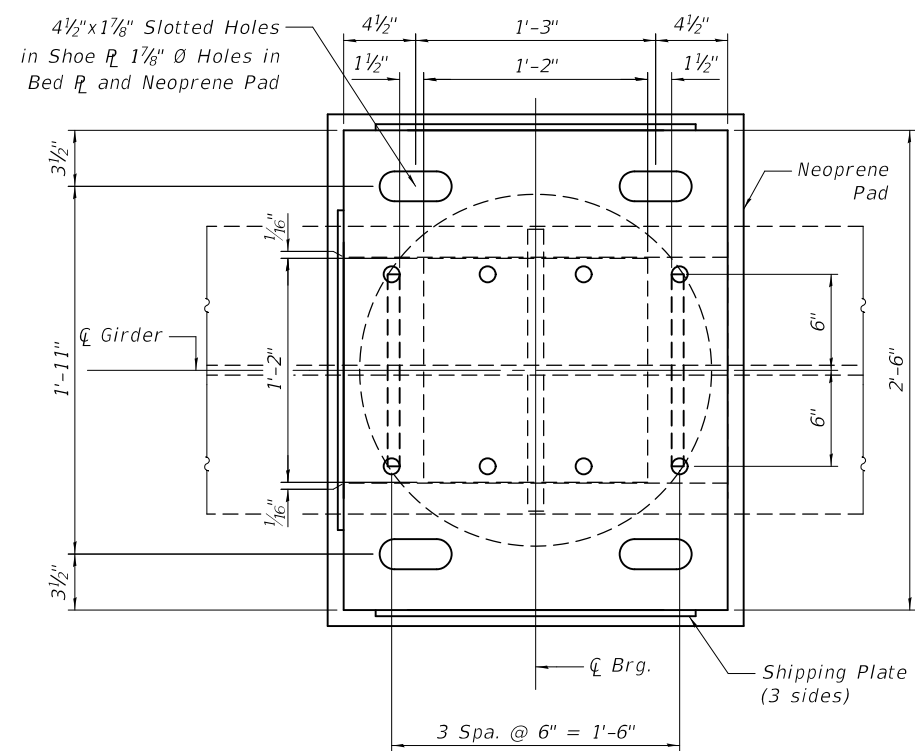
DETAIL 1



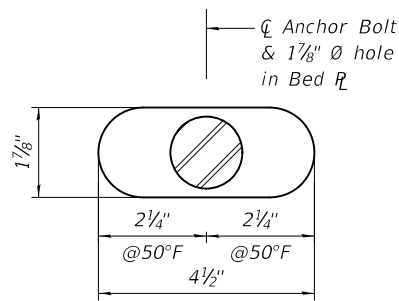
BEARING LOCATION PLAN

STANDARD NOTES:

- Design and Workmanship shall be in accordance with the current AREMA Manual Chapter 15.
- Material shall be in accordance with the following specifications:
Structural Steel: ASTM A572 Grade 50 for Bearing Plates
Bronze Plates: ASTM B22-08 Copper Alloy UNS No. C86300.
Welding: 2023 AREMA Specifications
Anchor Bolts: ASTM F1554 (Galv.) Gr. 105
High Strength Bolts: ASTM A325 Type 1
- All holes shall be drilled or sub-punched and reamed.
- All non-sliding surfaces of bearing shall be zinc-metallized in accordance with ASTM B833. Zinc coating shall not be less than 0.01".
- Anchor bolts shall meet the requirements of ASTM F1554, hot dip galvanized or shall be corrosion resistant, low alloy structural steel, conforming to the requirements of ASTM Specification A588 or A276. Type 410, annealed.
- Bearings shall be shipped assembled with Shipping Plates $\frac{3}{8}'' \times 6'' \times 1'-8''$ and $\frac{3}{8}''$ Ø Machine Bolts. Shipping Plates shall be removed after Anchor Bolts have been installed (3 Plates per Bearing).
- Two 1/8" adjusting, galv. shim plates shall be provided for each bearing in addition to all other plates or shims shall be placed between the Bed Plate and neoprene Pad if required. Shim plates shall match the footprint of the Bed Plate.
- Bearings shall be anchored vertically.
- Concrete to be drilled after determining anchor bolt locations. Anchor bolts to be grouted using non-shrink grout. Anchor bolts, nuts and washers shall be fully galvanized. Cost of drilling and grouting included in Anchor Bolts pay item.
- Cost of Expansion Bearings and Bronze Plates included with Furnishing and Erecting Structural Steel.



BEARING PLAN
(at Abutments)



SLOTTED HOLE DETAIL

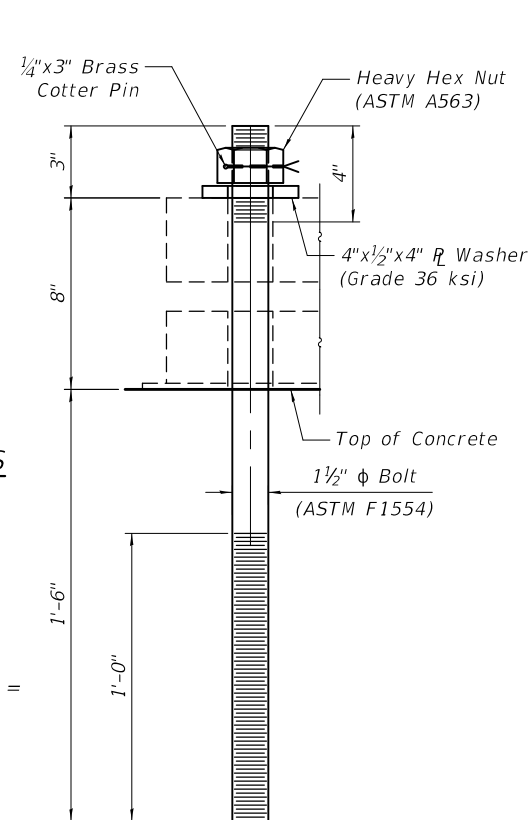
(In Shoe R)

BEARING SERVICE LOADS

	Span 1	Span 2
V_D	62	85
V_{L+I}	184	217
V_{Total}	246	302
H_{Long}	7	9
H_{Trans}	9	11

Estimated weight of expansion bearings = 1346 pounds each (8 required)

Weight of bronze plates = 150 pounds each (8 required)



ANCHOR BOLT DETAIL

BILL OF MATERIAL

Item	Unit	Quantity
Anchor Bolts, 1 1/2"	Each	64

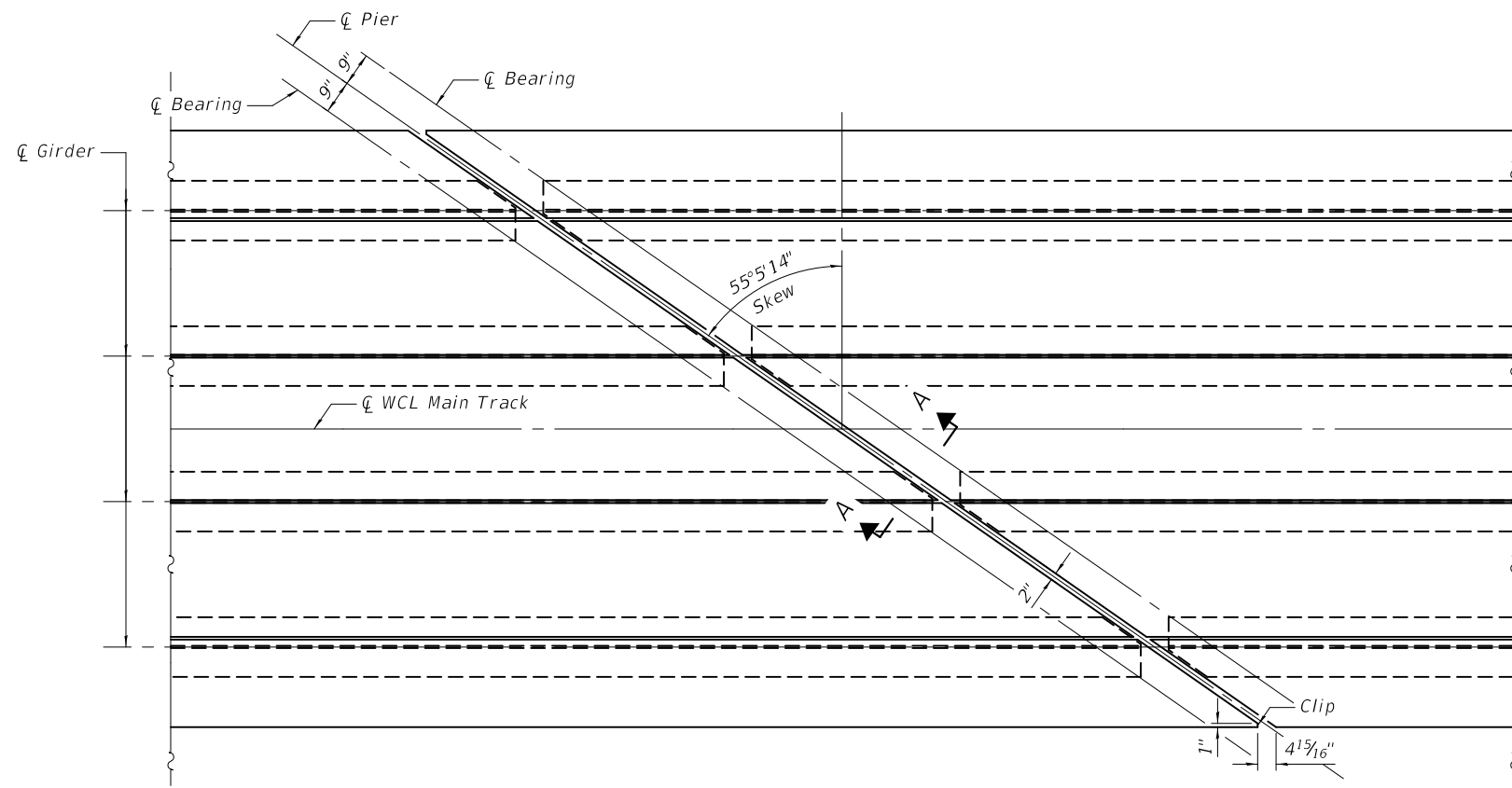
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXPANSION BEARING DETAILS
STRUCTURE NO. 049-0014

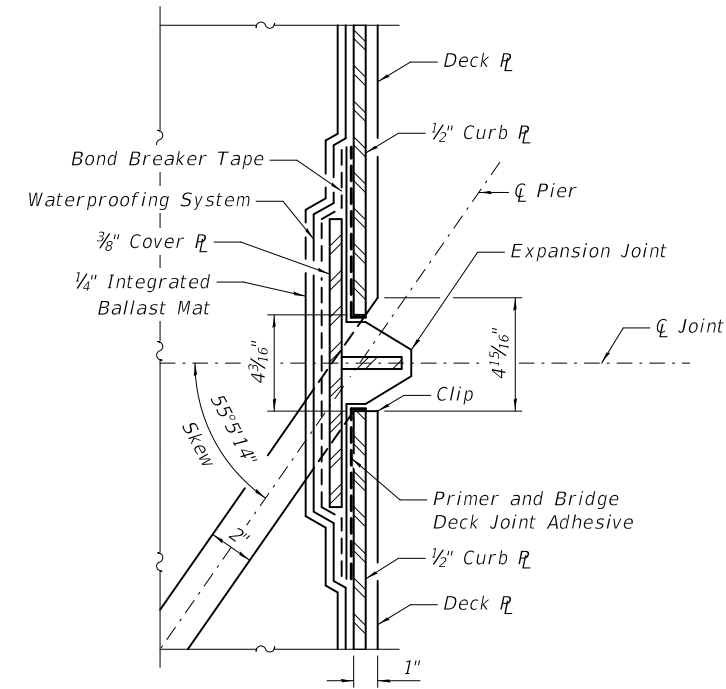
SHEET SC-15 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	451
CONTRACT NO. 61187				

ILLINOIS FED. AID PROJECT



PLAN VIEW - PIER



SECTION B-B AT PIER JOINT

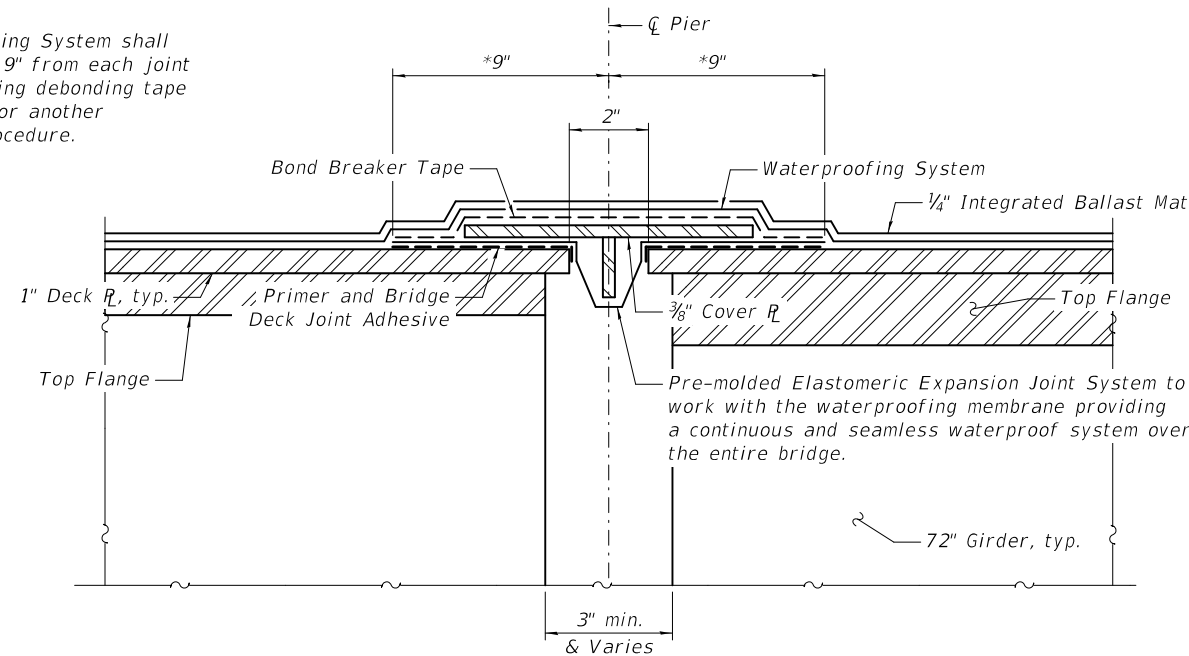
NOTES:

1. The joint details shall be provided by the waterproofing manufacturer and shall meet all requirements as per the detailed specifications.
2. An integrated ballast mat shall also be required in accordance with the detailed specifications.
3. The joint shall be protected with a steel cover plate in accordance with the detailed specifications.
4. Contractor shall place first 6" of railroad approved ballast on the bridge deck following the completion of deck waterproofing.
5. Cost of Cover R included with Membrane Waterproofing (Special).

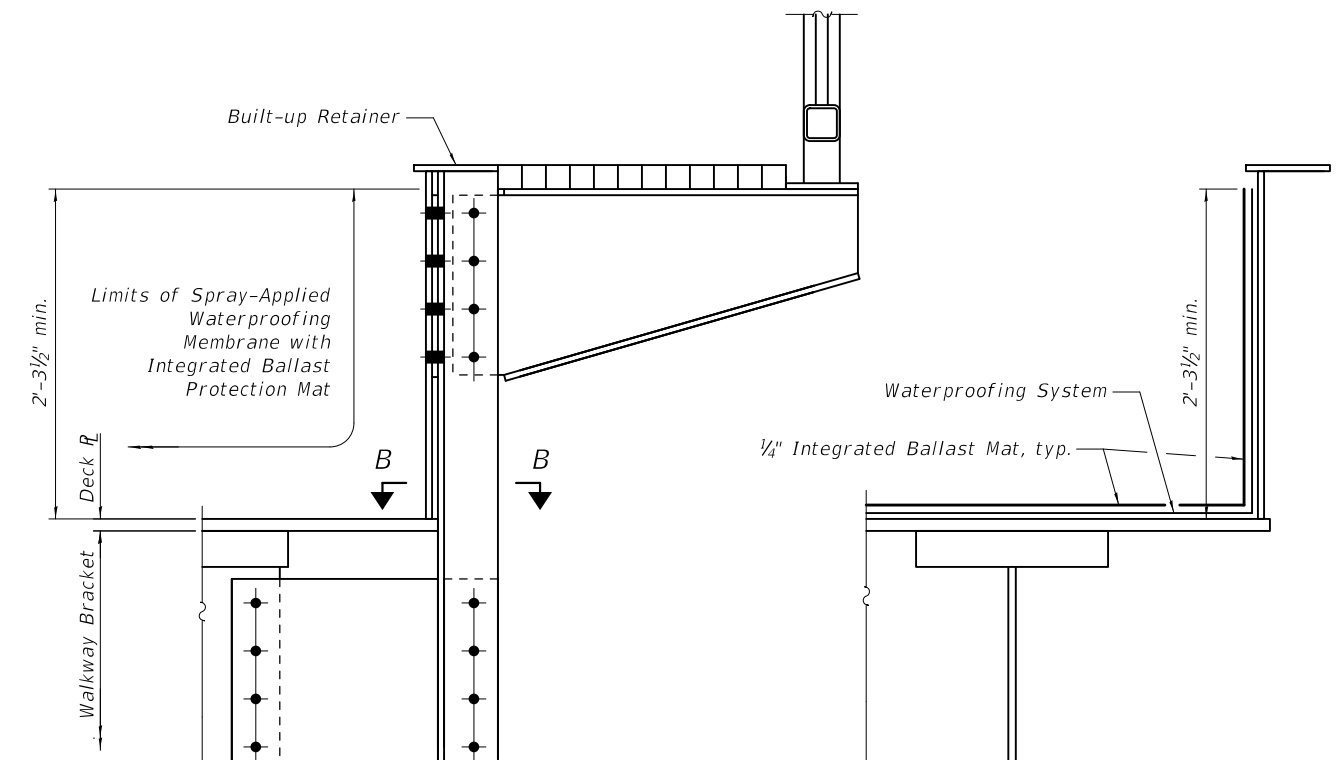
BILL OF MATERIAL

Item	Unit	Quantity
Membrane Waterproofing (Special)	Sq. Ft.	3,212

* Waterproofing System shall be debonded 9" from each joint center by using debonding tape at the joint or another approved procedure.



SECTION A-A PIER JOINT DETAIL



CURB R DETAIL AT JOINT

TYPICAL CURB R DETAIL

MODEL: Default
FILE NAME: ...0490014-91547-016-Deck Jnt & Waterproofing.dgn

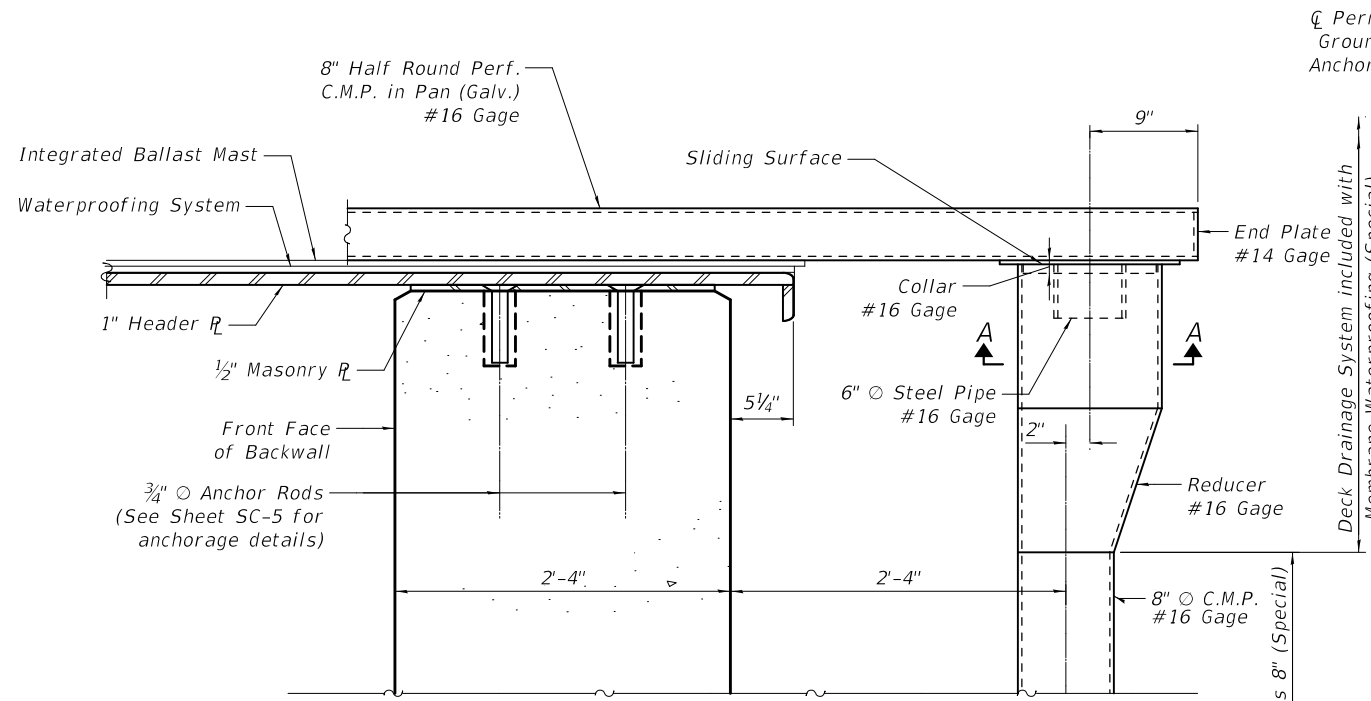
CIVILTECH
Two Pierce Place, Suite 1400
Mascoutah, IL 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
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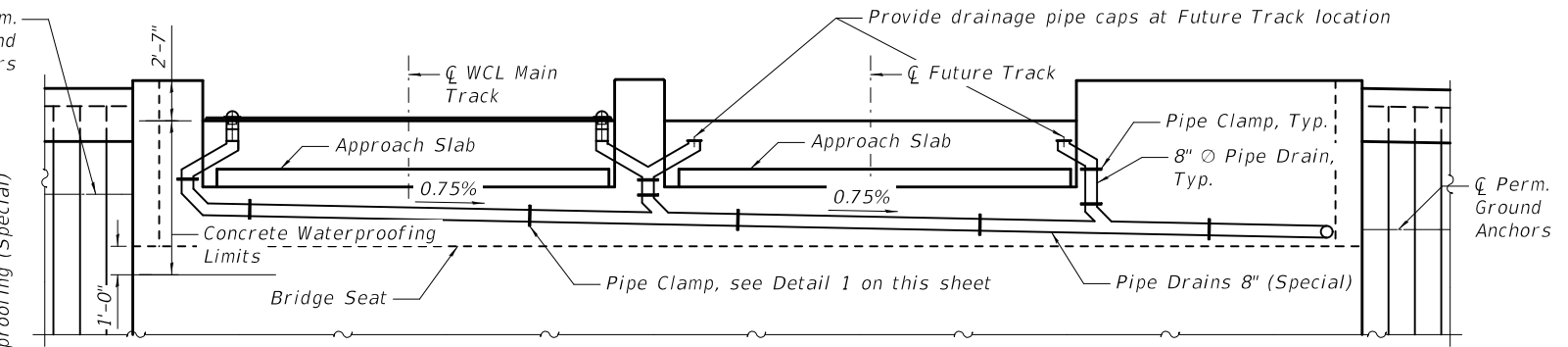
**DECK JOINT & WATERPROOFING DETAILS
STRUCTURE NO. 049-0014**

F.A.P. RTE. 305	SECTION 11-00087-00-G5	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 452
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



SECTION THRU ABUTMENT - DOWNSPOUT

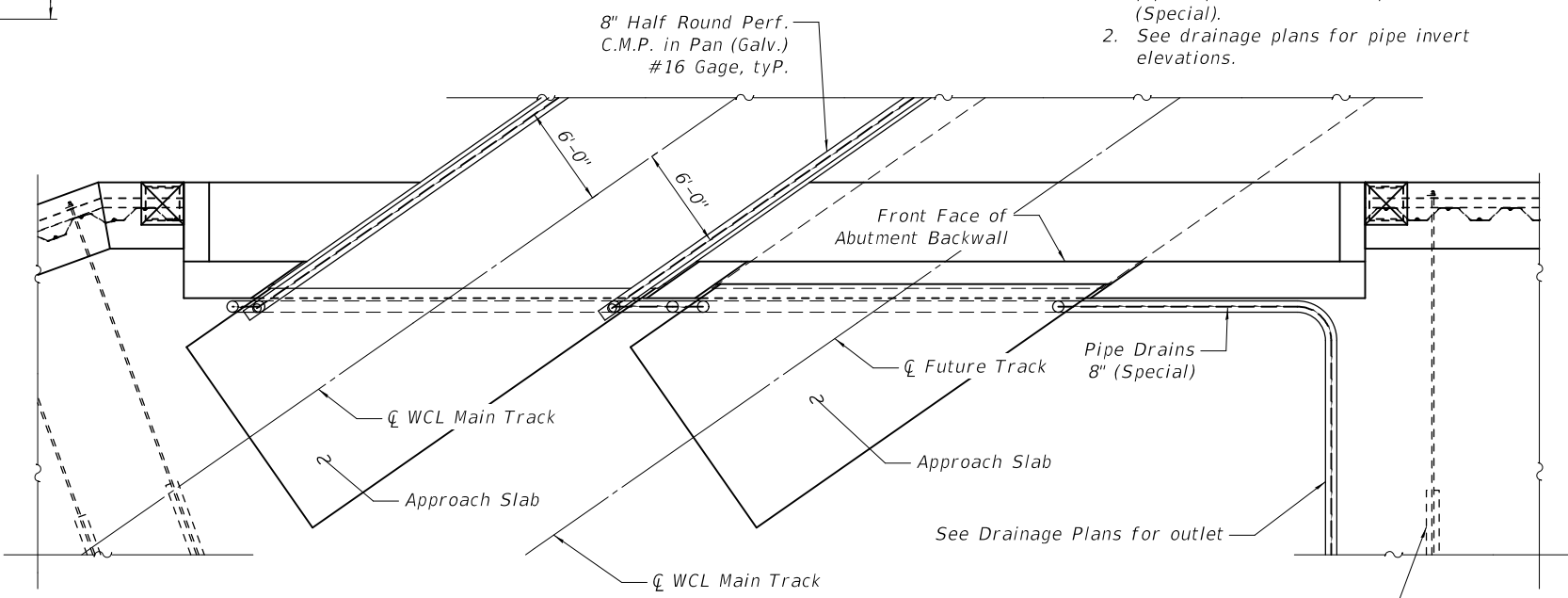
(Horizontal dimension measured along the ϕ Track)



NORTH ABUTMENT ELEVATION

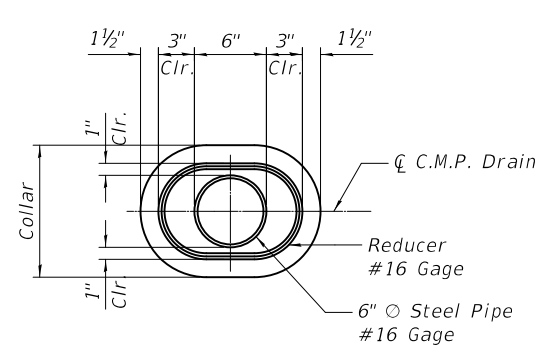
(South Abutment Elevation is similar, location of Future Track is opposite)

- Note:**
1. Provide drainage cap which can be removed for Future Track (by Others). Caps shall be secured so they cannot be tampered with after project is complete. Cost of drainage pipe cap included with Pipe Drains 8" (Special).
 2. See drainage plans for pipe invert elevations.

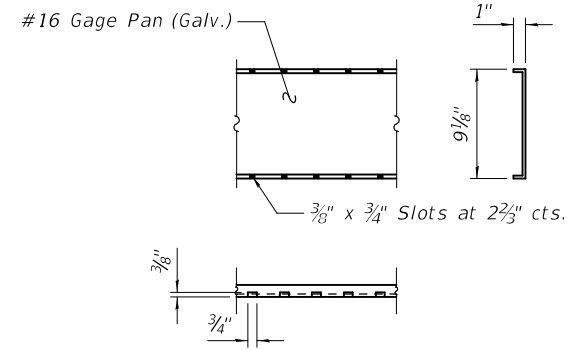


NORTH ABUTMENT PLAN

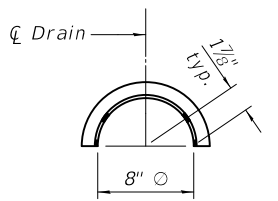
(South Abutment Plan is similar, location of Future Track is opposite)



SECTION A-A

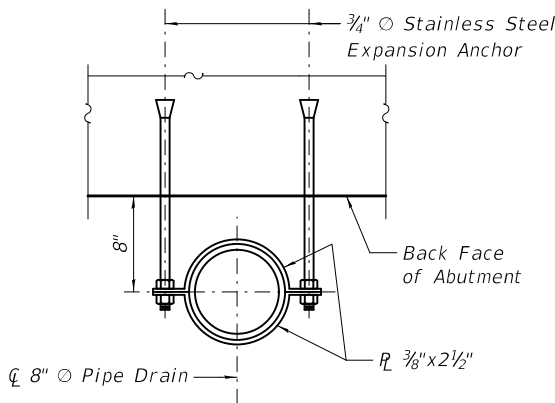
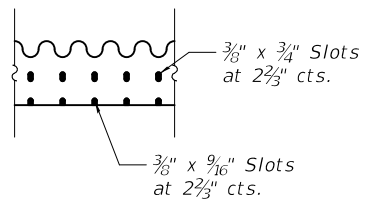


DECK DRAIN - BOTTOM PAN



DECK DRAIN - HALF ROUND PIPE

(Cost included with Membrane Waterproofing (Special))



DETAIL 1 - PIPE CLAMP DETAIL

(Cost included with Pipe Drains 8" (Special))

BILL OF MATERIAL

Item	Unit	Quantity
Pipe Drains 8" (Special)	Foot	201
Concrete Waterproofing	Sq. Ft.	1,272

MODEL: Default
FILE NAME: ...0490014-91547-017-Deck Drainage.dgn

CIVILTECH
Two Pierce Place, Suite 1400
Mascota, Illinois 60143
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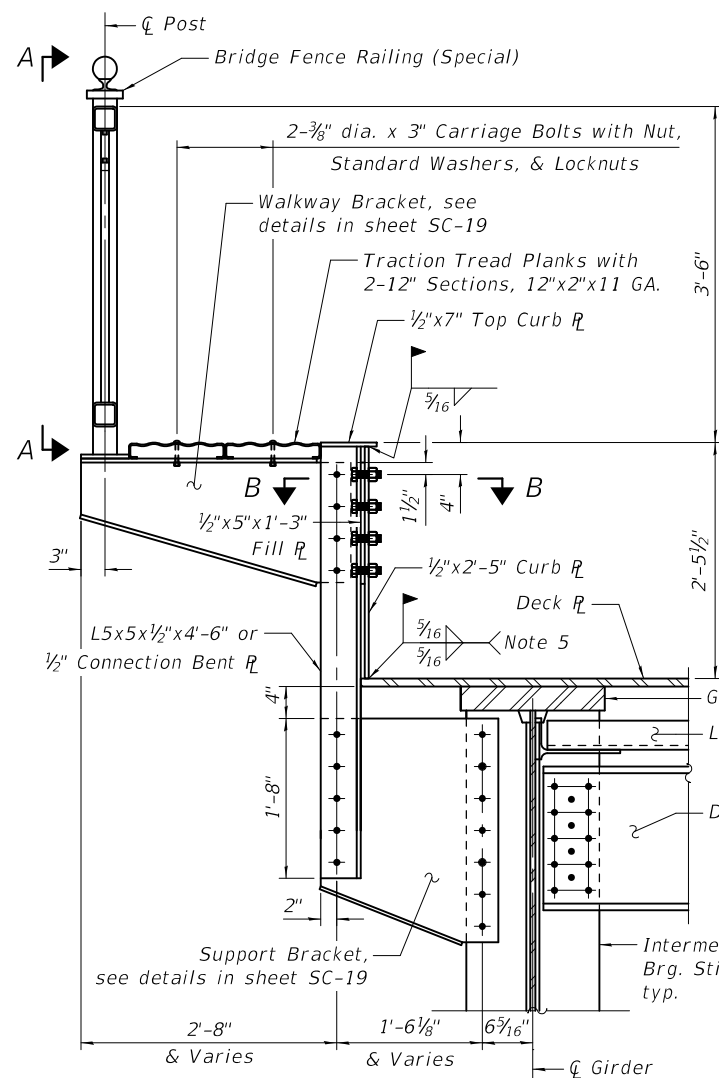
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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**DECK DRAINAGE DETAILS
STRUCTURE NO. 049-0014**

SHEET SC-17 OF SC-34 SHEETS

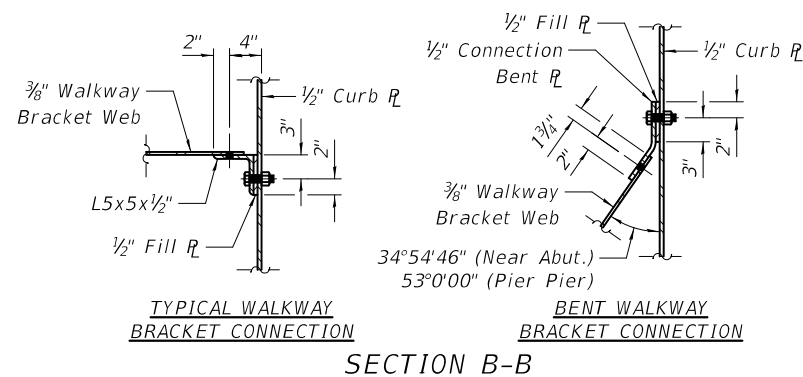
F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 453
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



TRAINMEN'S WALKWAY

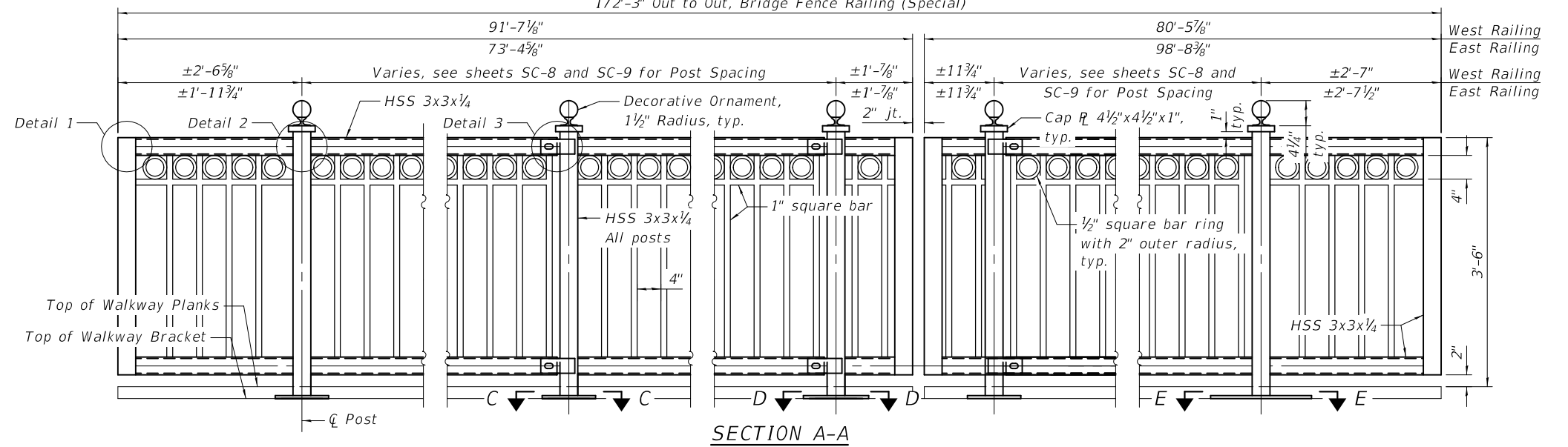
(Horizontal dimensions perpendicular to \bar{C} Bridge)

- Notes:**
1. Furnish and Install Walkway shall be paid by Foot for the total walkway width, equal to 2-12" Traction Tread Planks.
 2. Walkway Brackets, connection angles and plates, and Support Brackets are included in Furnishing and Erecting Structural Steel.
 3. All steel rail elements shall be galvanized according to According 509.05 of the Standard Specification.
 4. All post, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black. See Special Provisions.
 5. Gap outside fillet weld 6" at connection angle locations.

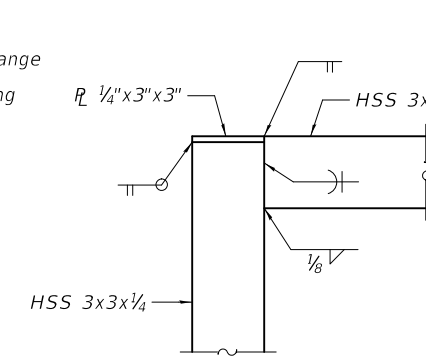


SECTION B-B

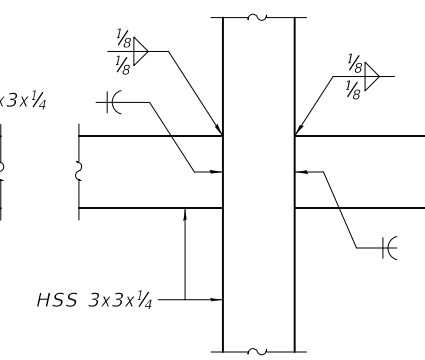
SECTION C-C



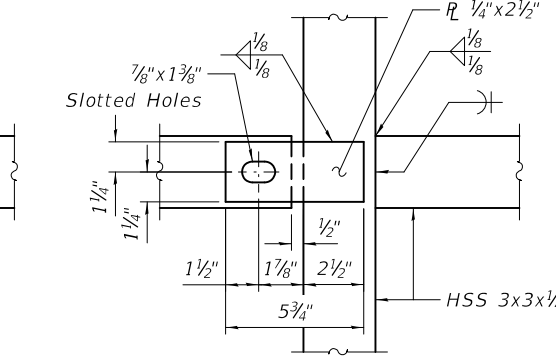
SECTION A-A



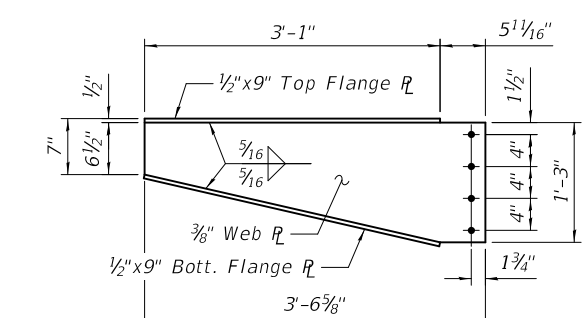
DETAIL 1



DETAIL 2

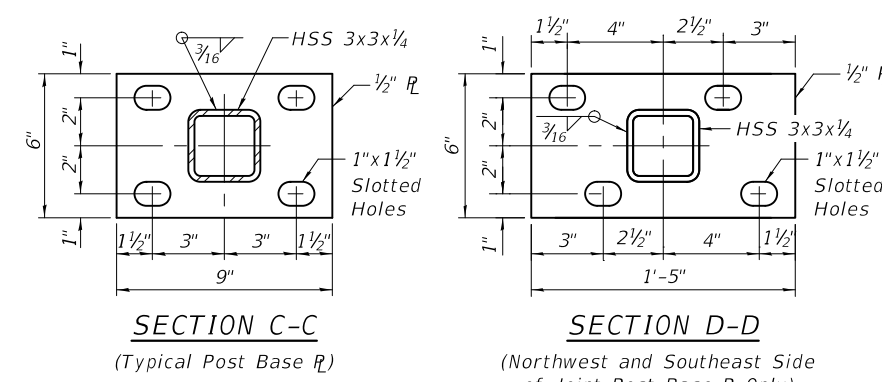


DETAIL 3



NORTHWEST AND SOUTHEAST SIDE OF JOINT WALKWAY BRACKET DETAIL

(Horizontal dimensions measured along \bar{C} Web \bar{R})

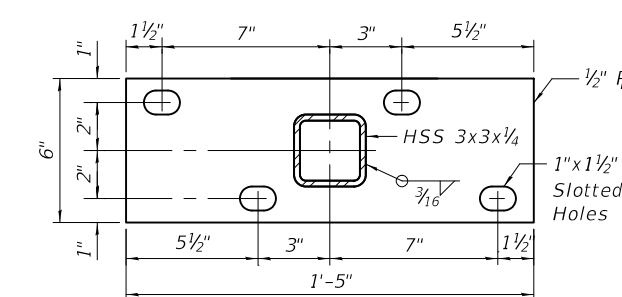


SECTION C-C

(Typical Post Base \bar{R})

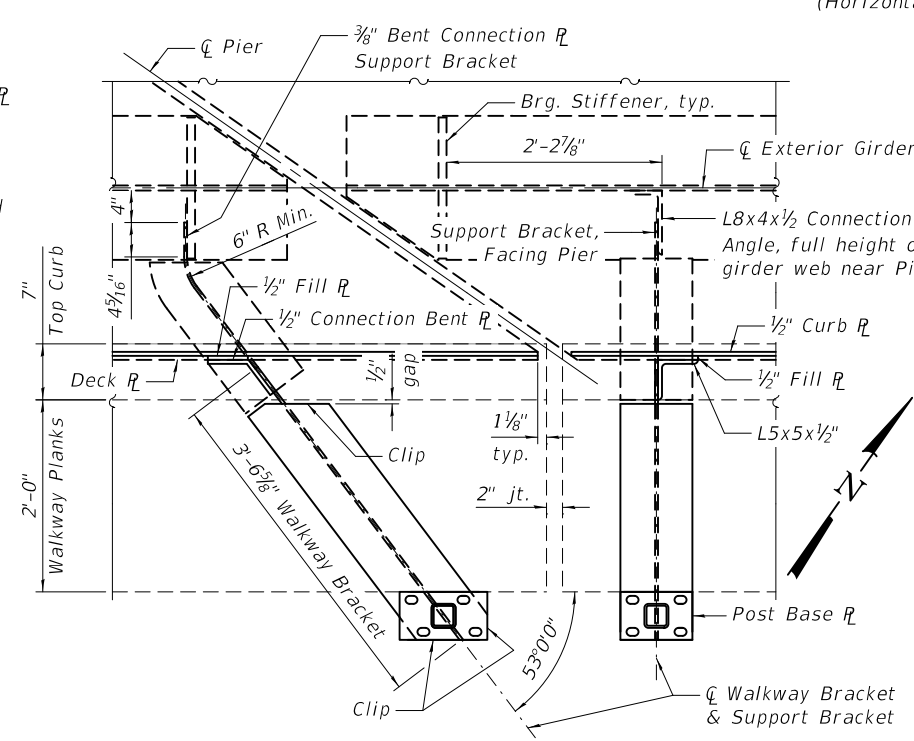
SECTION D-D

(Northwest and Southeast Side of Joint Post Base \bar{R} Only)



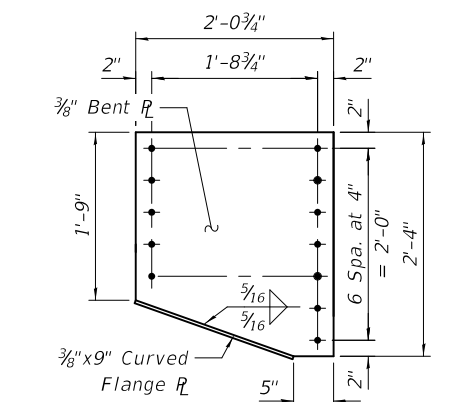
SECTION E-E

(Southwest and Northeast End Post Base \bar{R} Only)



WALKWAY PARTIAL PLAN AT JOINT

(East Railing Shown, West Railing Similar)



NORTHWEST AND SOUTHEAST SIDE OF JOINT SUPPORT BRACKET DETAIL

Unfolded View
(Horizontal dimensions measured along Face of Web \bar{R} with Min. Radius)

BILL OF MATERIAL

Item	Unit	Quantity
Bridge Fence Railing (Special)	Foot	345
Furnish and Install Walkway	Foot	345

**STATE OF ILLINOIS
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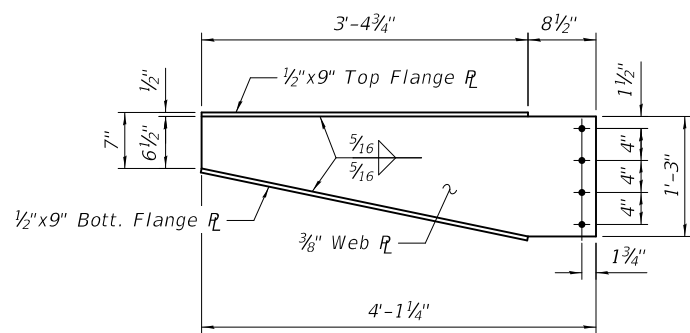
**WALKWAY DETAILS I
STRUCTURE NO. 049-0014**

SHEET SC-18 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	454
				CONTRACT NO. 61187

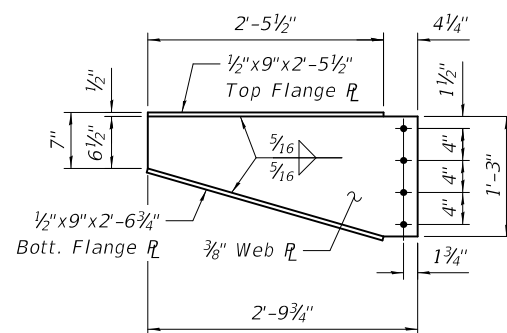
ILLINOIS FED. AID PROJECT

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

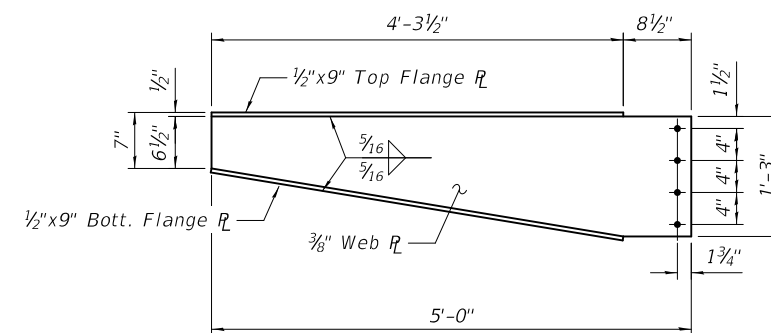


**NORTHWEST AND SOUTHEAST
WALKWAY BRACKET DETAIL**

(Horizontal dimensions
measured along \bar{C} Web \bar{R}_L)

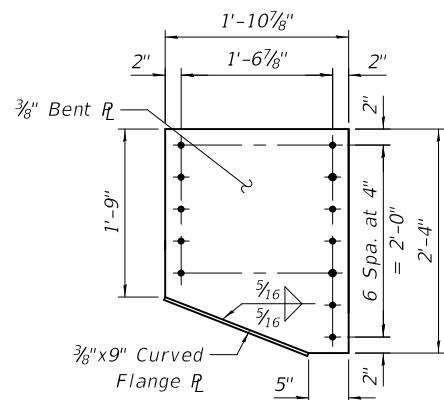


**TYPICAL WALKWAY
BRACKET DETAIL**



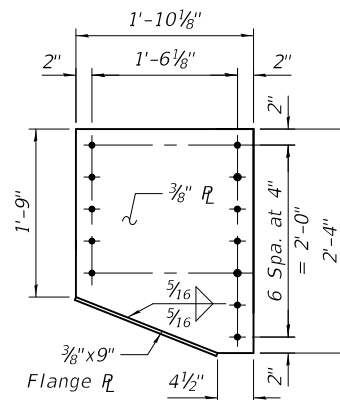
**SOUTHWEST AND NORTHEAST
WALKWAY BRACKET DETAIL**

(Horizontal dimensions
measured along \bar{C} Web \bar{R}_L)

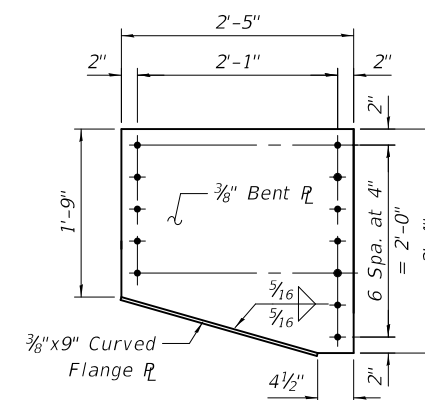


**NORTHWEST AND SOUTHEAST
SUPPORT BRACKET DETAIL**

Unfolded View
(Horizontal dimensions measured
along Face of Web \bar{R}_L with Min. Radius)

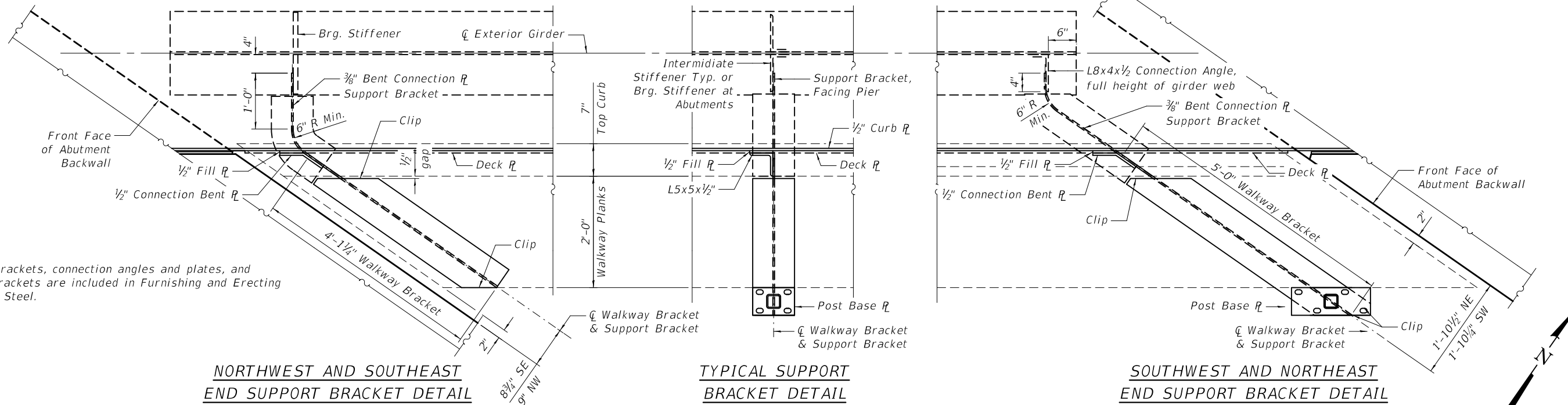


**TYPICAL SUPPORT
BRACKET DETAIL**



**SOUTHWEST AND NORTHEAST
SUPPORT BRACKET DETAIL**

Unfolded View
(Horizontal dimensions measured
along Face of Web \bar{R}_L with Min. Radius)



**NORTHWEST AND SOUTHEAST
END SUPPORT BRACKET DETAIL**

**TYPICAL SUPPORT
BRACKET DETAIL**

**SOUTHWEST AND NORTHEAST
END SUPPORT BRACKET DETAIL**

WALKWAY PARTIAL PLAN
(East Railing Shown, West Railing Similar)

Notes:

1. Walkway Brackets, connection angles and plates, and Support Brackets are included in Furnishing and Erecting Structural Steel.

MODEL: Default
FILE NAME: ...0490014-91547-019-Walkway_2.dgn

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Tel: 630.773.3900
Fax: 630.773.3975
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		DATE -	7/26/2024	REVISED -	

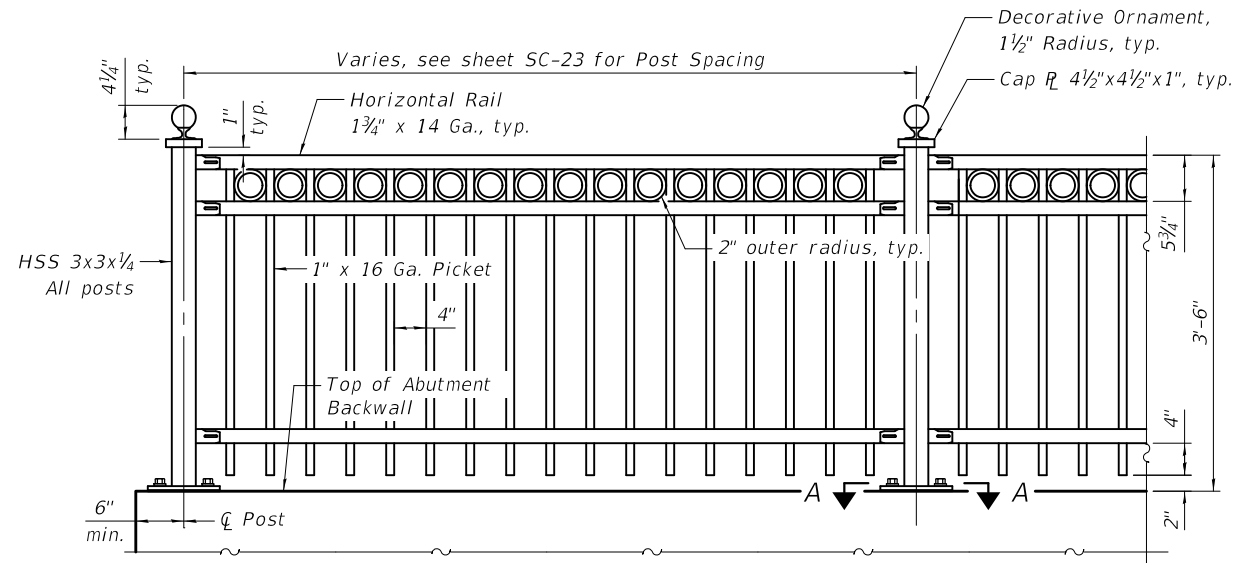
**STATE OF ILLINOIS
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**WALKWAY DETAILS II
STRUCTURE NO. 049-0014**

SHEET SC-19 OF SC-34 SHEETS

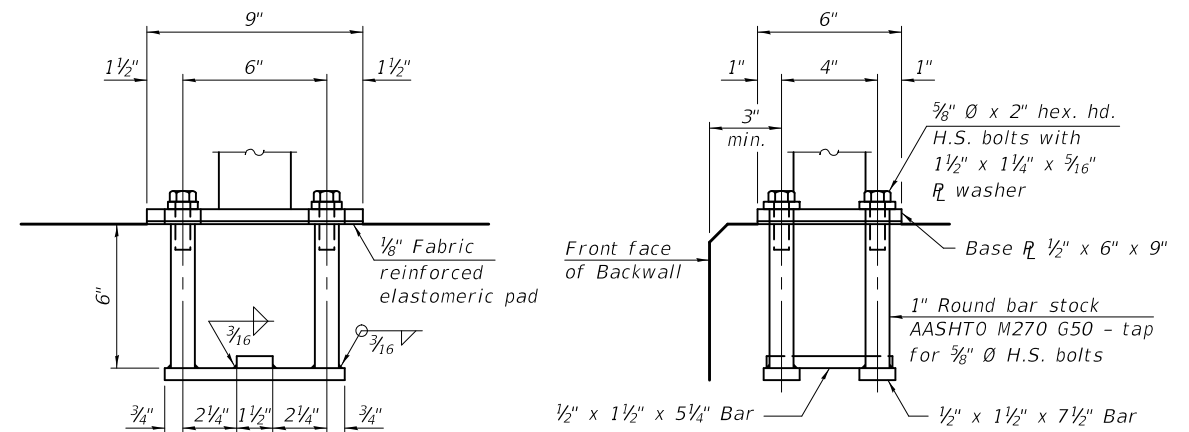
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	455
CONTRACT NO. 61187				

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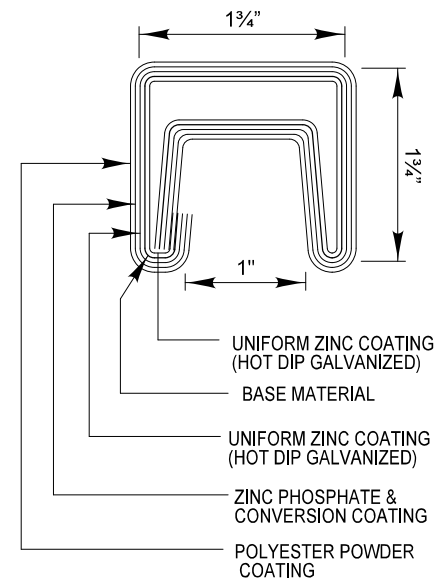
ORNAMENTAL RAILING ELEVATION

(Located at Abutment Backwalls)

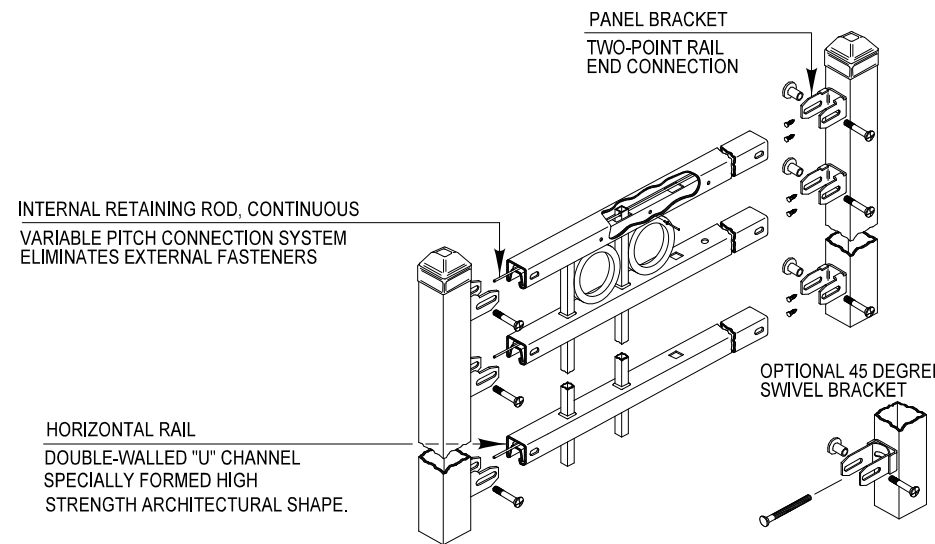


ANCHORAGE ASSEMBLY

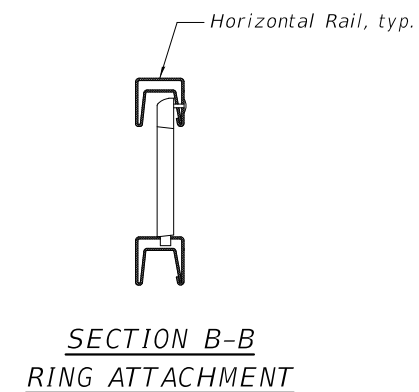
In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8" Ø fully threaded anchor rods with the same plate washers as specified above and heavy hex lock nuts according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.



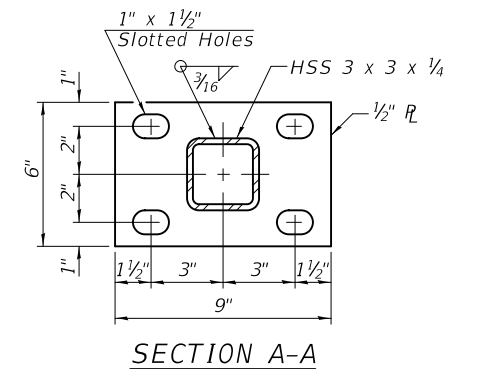
HORIZONTAL RAIL CROSS SECTION



ISOMETRIC VIEW



**SECTION B-B
RING ATTACHMENT**



SECTION A-A

Notes:

1. All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specification.
2. All post, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black. See Special Provisions.

BILL OF MATERIAL

Item	Unit	Quantity
Ornamental Railing	Foot	89

MODEL: Default
FILE NAME: ...0490014-91547-020-Ornamental Railing.dgn

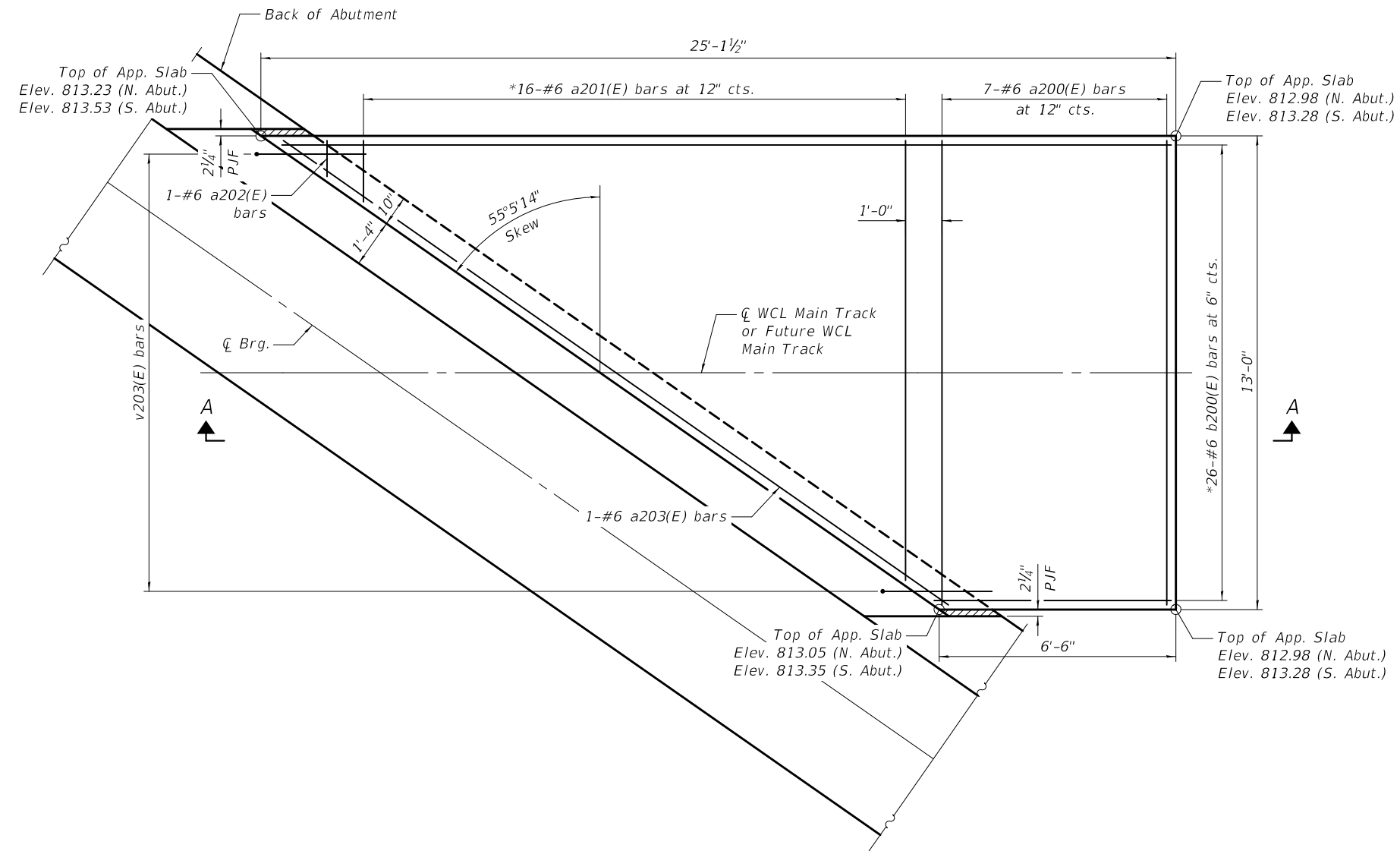
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Two Plerce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
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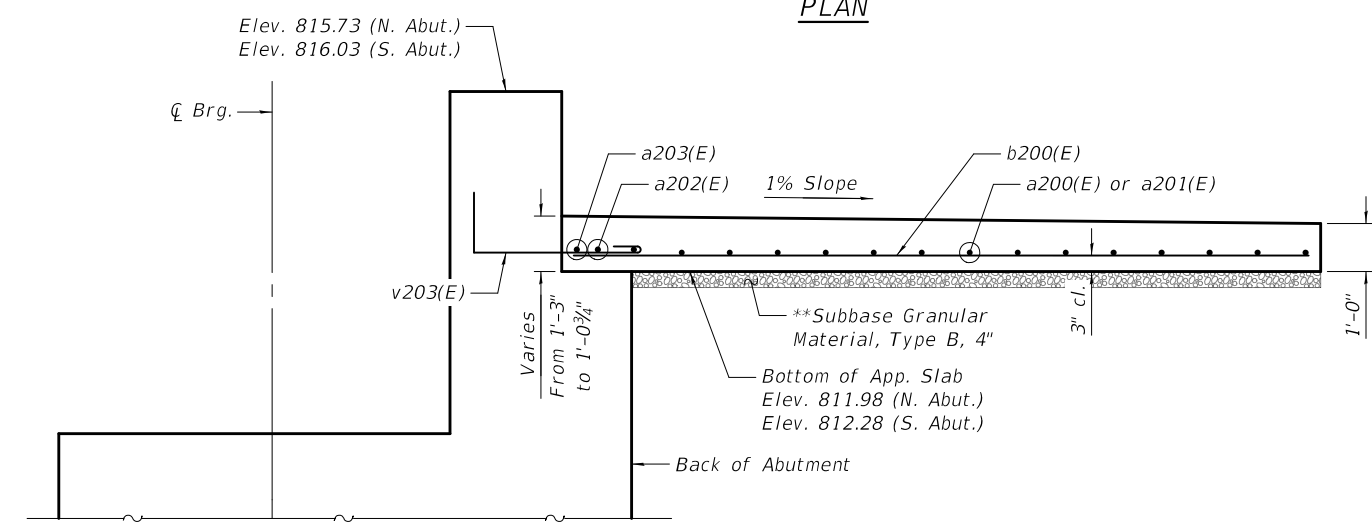
**STATE OF ILLINOIS
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**ORNAMENTAL RAILING DETAILS
STRUCTURE NO. 049-0014**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	456
			CONTRACT NO. 61J87	
ILLINOIS FED. AID PROJECT				



PLAN

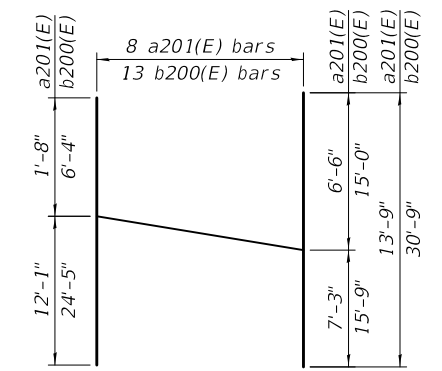


SECTION A-A

**Included in the cost of Concrete Structures (Special)

FOUR APPROACH SLABS
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a200(E)	28	#6	12'-8"	—
a201(E)	32	#6	13'-9"	—
a202(E)	4	#6	11"	—
a203(E)	4	#6	22'-1"	—
b200(E)	52	#6	30'-9"	—
Reinforcement Bars, Epoxy Coated			Pound	3,740
Concrete Structures (Special)			Cu. Yd.	33.8



FIELD CUTTING DIAGRAM

* Order bars full length. Cut as shown and use remainder of bars in opposite side of slab.

MODEL: Default
FILE NAME: ...0490014-91547-021-Approach Slab.dgn

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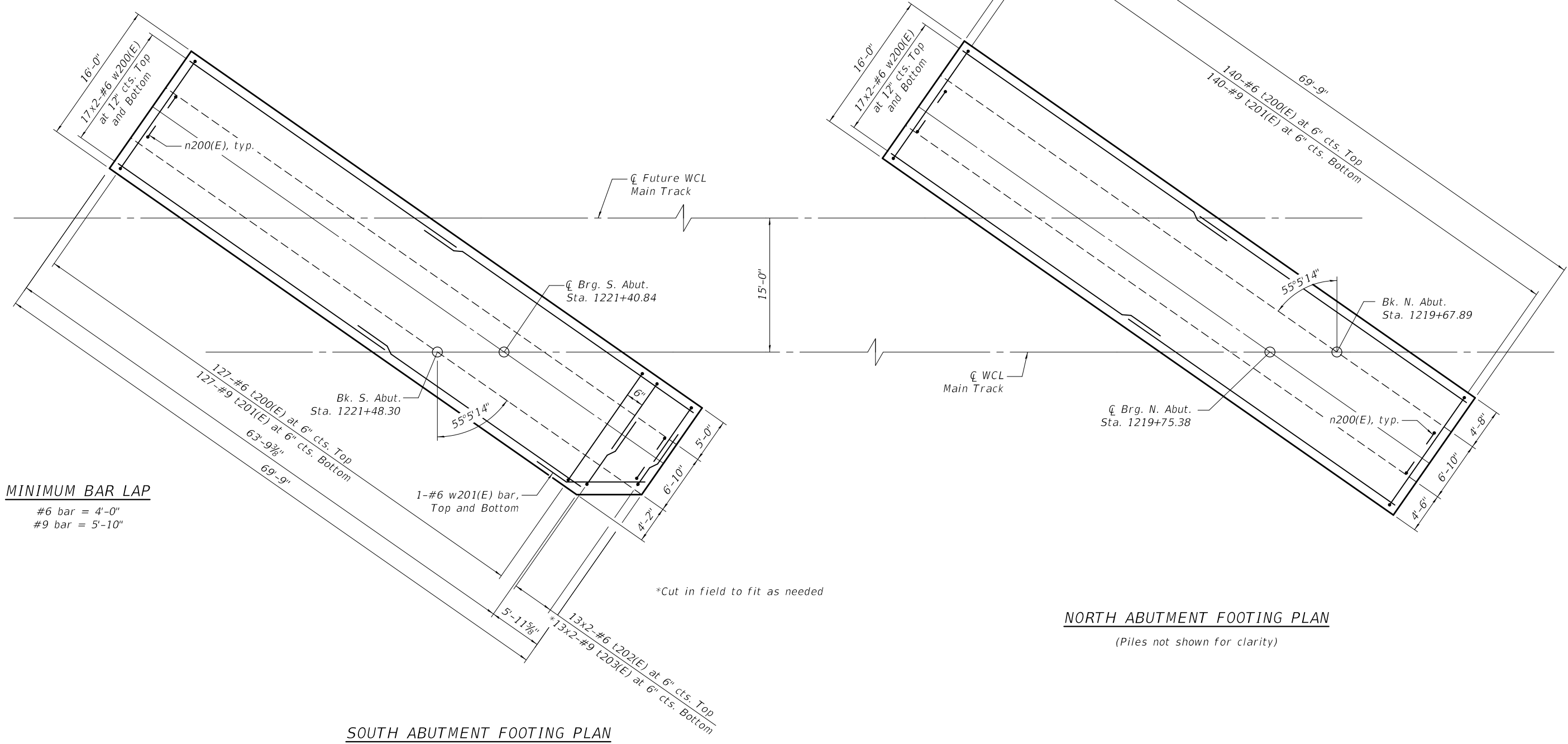
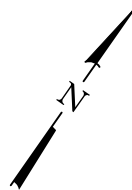
USER NAME =	mc	DESIGNED -	JAL	REVISED -	
PLOT SCALE =	N/A	DRAWN -	JAL	REVISED -	
PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
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APPROACH SLAB DETAILS
STRUCTURE NO. 049-0014

SHEET SC-21 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	457
ILLINOIS FED. AID PROJECT			CONTRACT NO. 61J87	



MINIMUM BAR LAP
 #6 bar = 4'-0"
 #9 bar = 5'-10"

SOUTH ABUTMENT FOOTING PLAN
 (Piles not shown for clarity)

NORTH ABUTMENT FOOTING PLAN
 (Piles not shown for clarity)

NOTES:
 See Sheet SC-26 for Section thru Abutment, bar bending details and Bill of Material.
 Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 per line.

MODEL: Default
 FILE NAME: ...0490014-91547-022-Abutment Footing.dgn

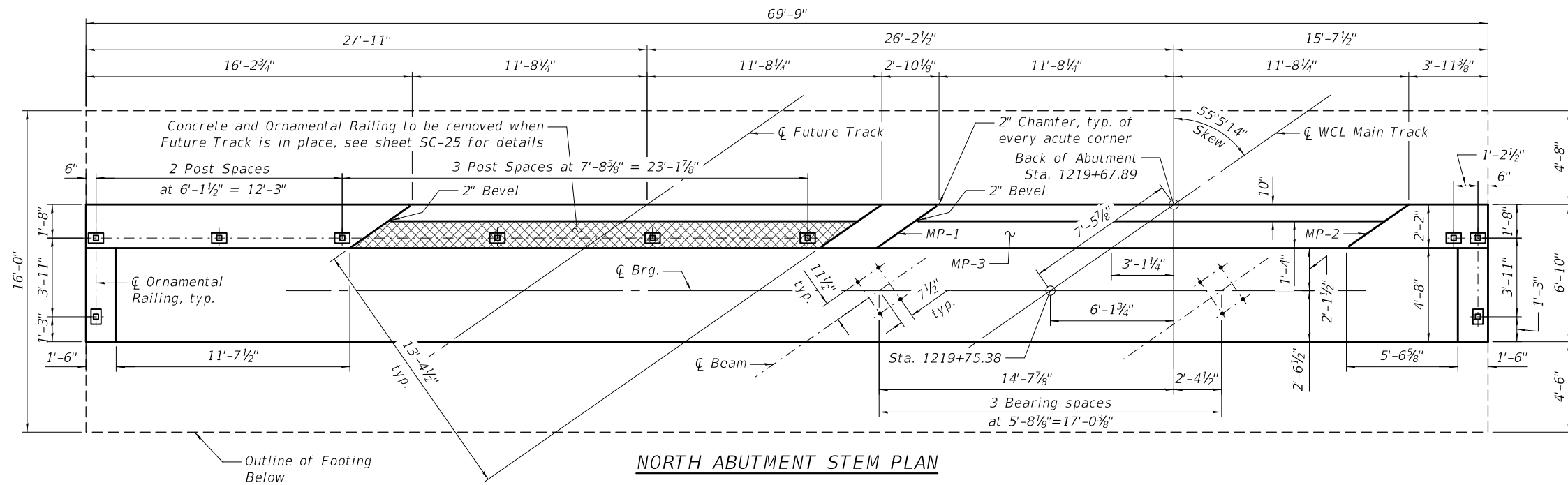
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 Two Pierce Place, Suite 1400
 Itasca, Illinois 60143
 Tel: 630.773.3900
 Fax: 630.773.3975
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USER NAME =	mc	DESIGNED -	JAL	REVISED -	
PLOT SCALE =	N/A	DRAWN -	JAL	REVISED -	
PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

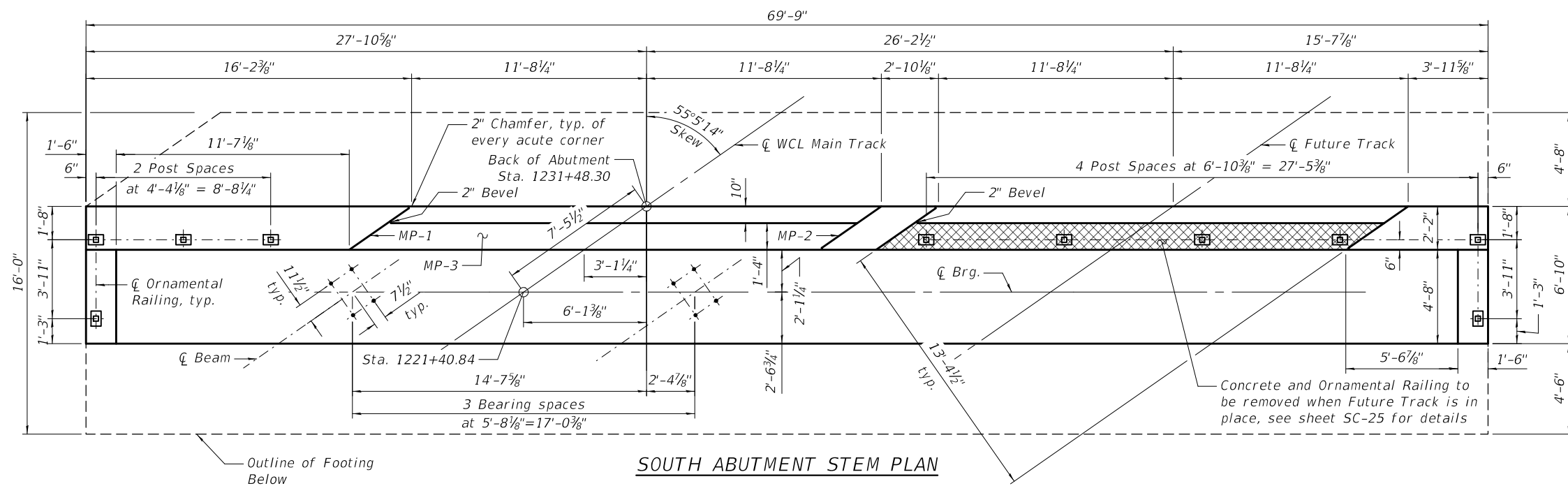
STATE OF ILLINOIS
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ABUTMENT FOOTINGS
STRUCTURE NO. 049-0014
 SHEET SC-22 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	458
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



NORTH ABUTMENT STEM PLAN



SOUTH ABUTMENT STEM PLAN

NOTES:

See Sheet SC-26 for Section thru Abutment, bar bending details, Masonry Plate Details and Bill of Material.

See Sheet SC-20 for Ornamental Railing Details..

MODEL: Default
FILE NAME: ...0490014-91547-023-Abutment Stem Plan.dgn

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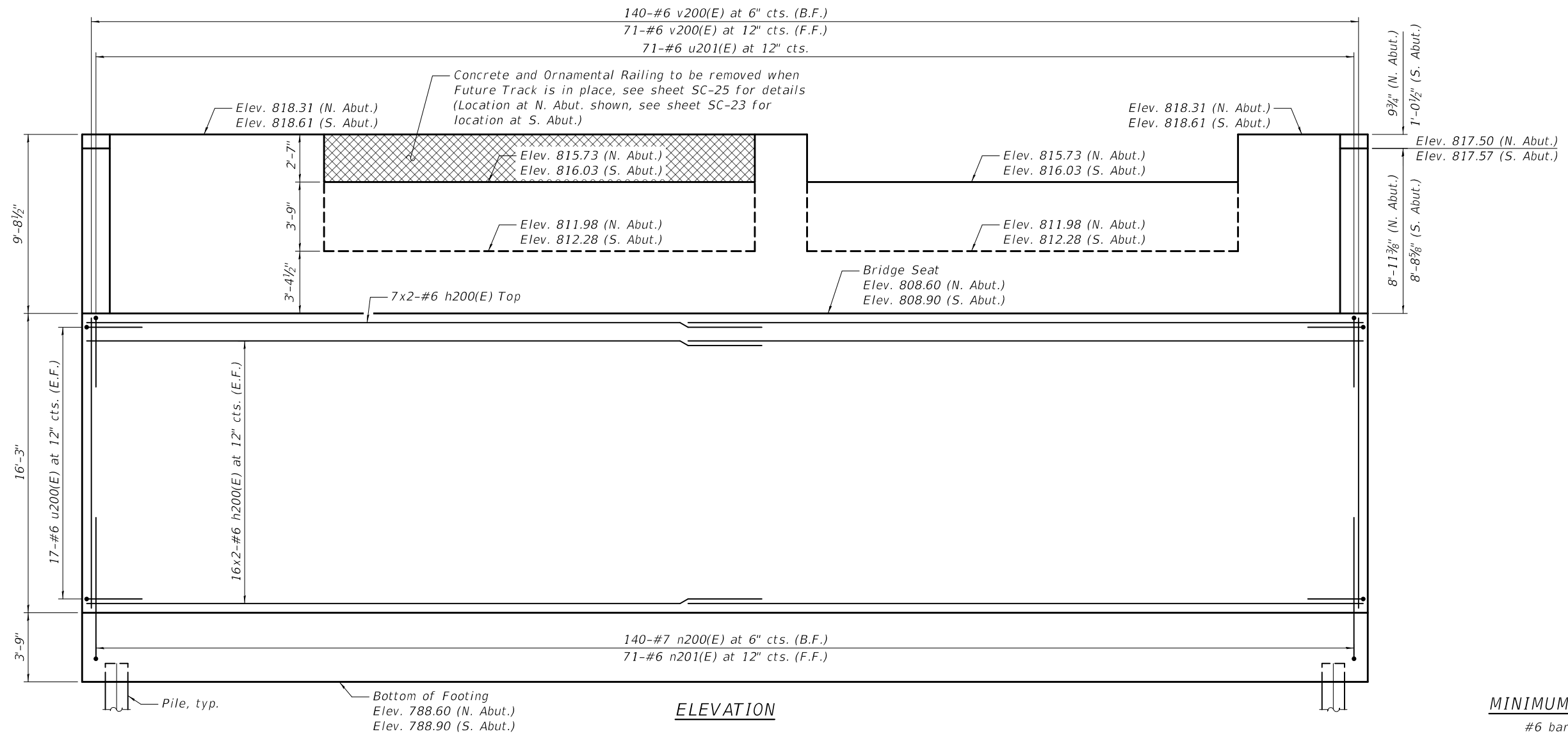
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PLOT SCALE =	N/A	DRAWN -	JAL	REVISED -	
PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**ABUTMENT STEM PLANS
STRUCTURE NO. 049-0014**

SHEET SC-23 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	459
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



ELEVATION

MINIMUM BAR LAP
 #6 bar = 4'-0"

NOTES:
 See Sheet SC-26 for Section thru Abutment, bar bending details and Bill of Material.

Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 per line.

MODEL: Default
 FILE NAME: ...0490014-91547-024-Abutment Stem Elevation.dgn

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 Tel: 630.773.3900
 Fax: 630.773.3975
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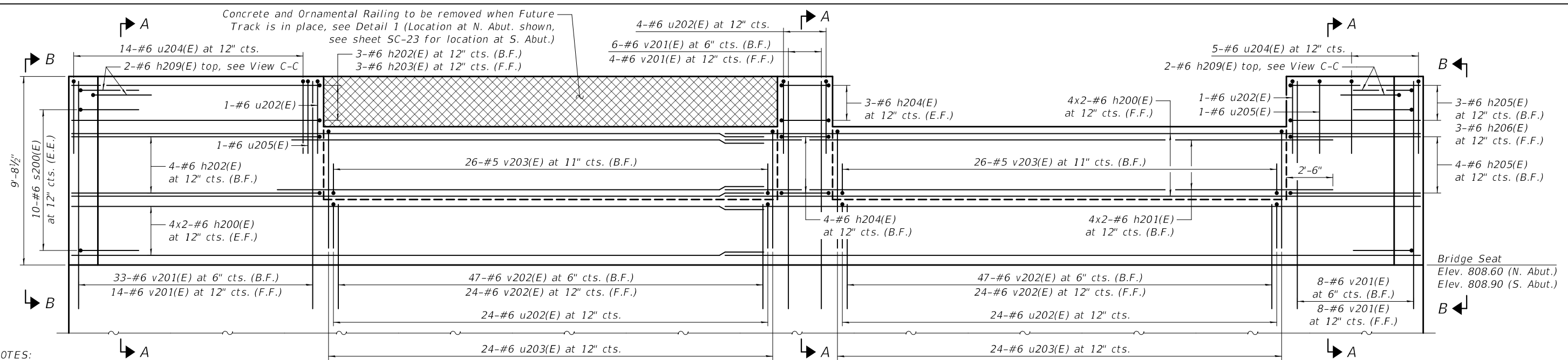
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		DRAWN -	JAL	REVISED -	
PLOT SCALE =	N/A	CHECKED -	GJH	REVISED -	
PLOT DATE =	8/28/2024	DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ABUTMENT STEM ELEVATION
STRUCTURE NO. 049-0014

SHEET SC-24 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-G5	LAKE	816	460
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				

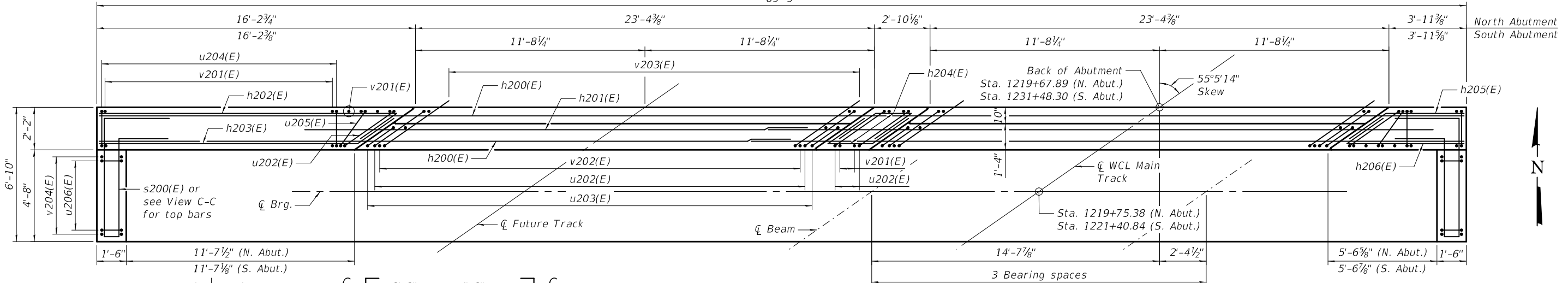


NOTES:

1. See Sheet SC-26 for Section thru Abutment, bar bending details and Bill of Material.
2. See Sheet SC-23 and SC-24 for additional backwall dimensions and elevations.
3. Bars indicated thus 20x3-#5 etc. indicates 20 lines of bars with 3 per line.

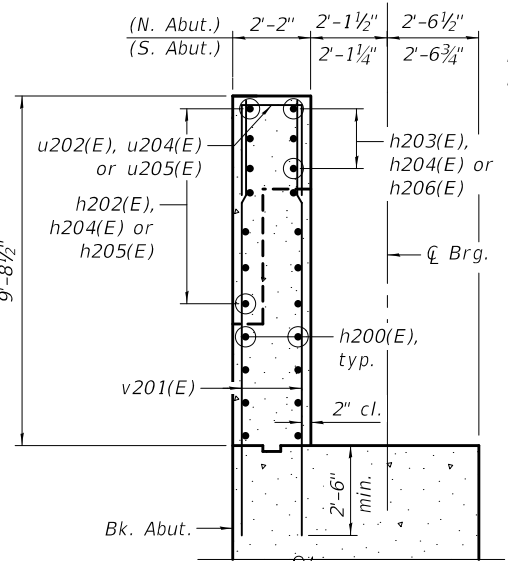
ELEVATION

MINIMUM BAR LAP
#6 bar = 4'-0"

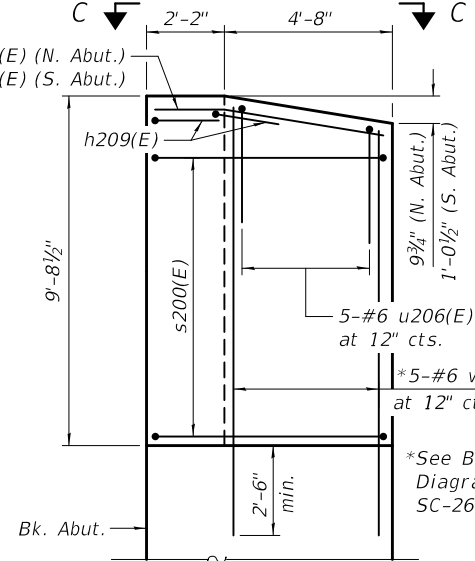


TOP VIEW

(Track alignment, stationing, and beam location at North Abutment shown, see sheet SC-23 for location at South Abutment)

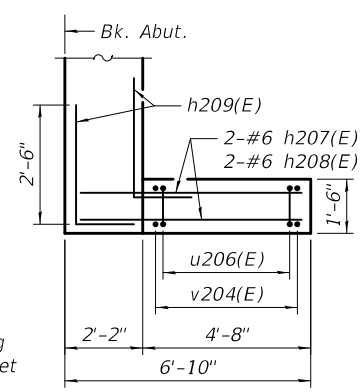


SECTION A-A



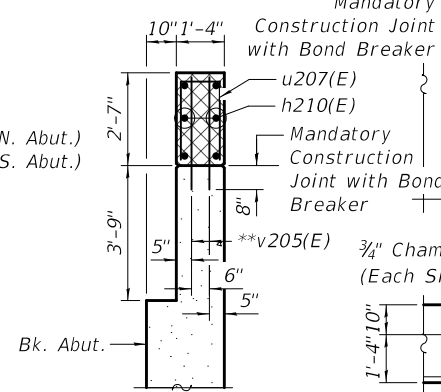
VIEW B-B

West End shown, East End equal and opposite (N. Abut.)
East End shown, West End equal and opposite (S. Abut.)



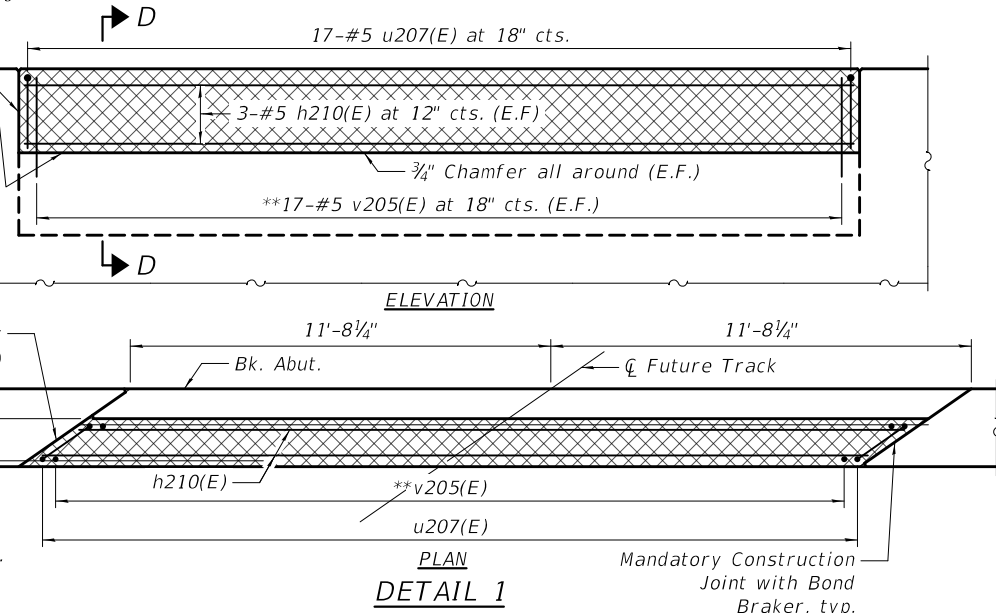
VIEW C-C

(West End of N. Abut. shown, East End equal and opposite)



SECTION D-D

**Drill and grout bars or formed holes. Bars to be cut with future concrete removal. Cut flush with concrete to remain and cover cut ends with epoxy.



PLAN DETAIL 1

MODEL: Default
FILE NAME: ...0490014-91547-025-Abutment Backwall.dgn

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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
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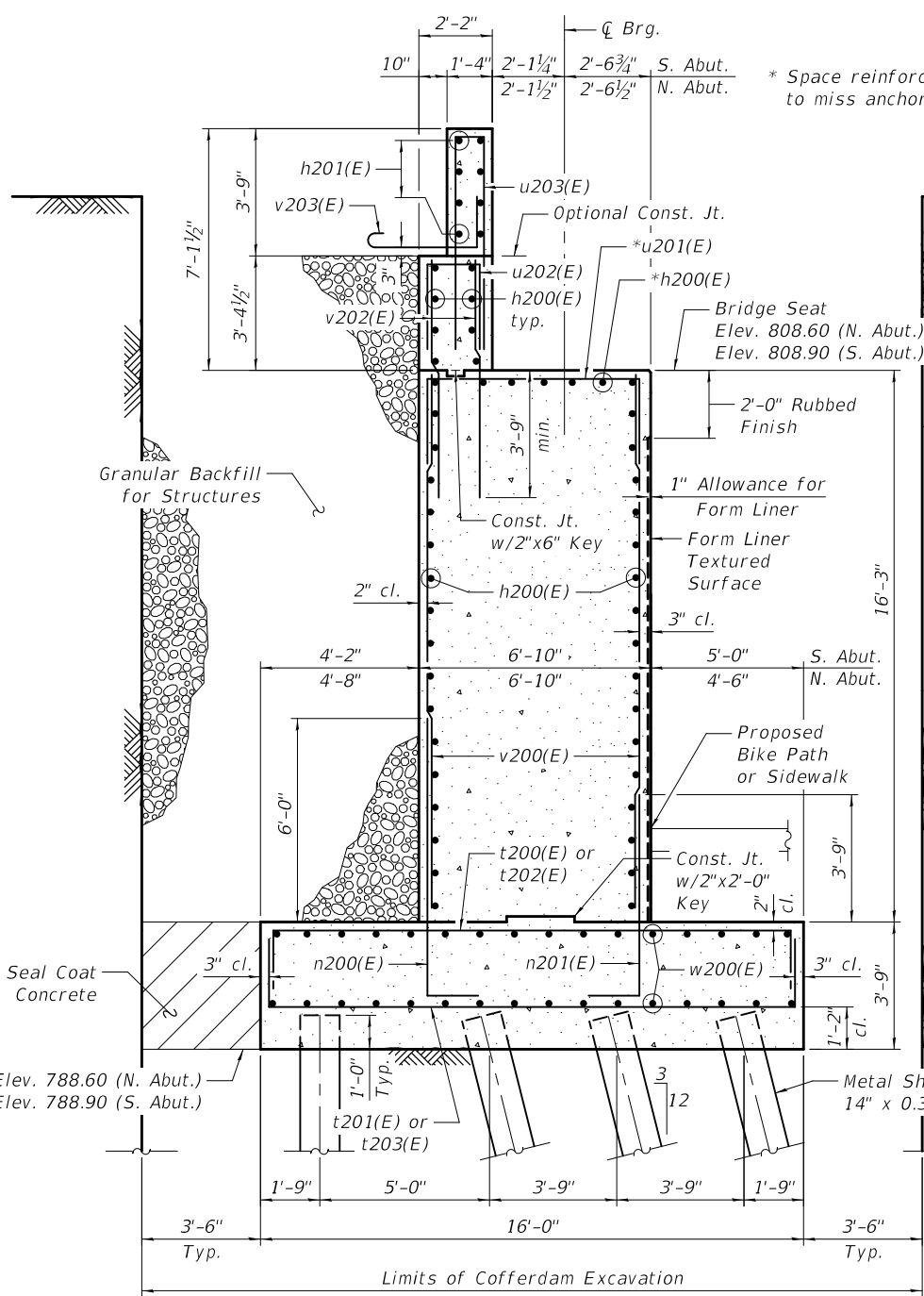
ABUTMENT BACKWALL
STRUCTURE NO. 049-0014

SHEET SC-25 OF SC-34 SHEETS

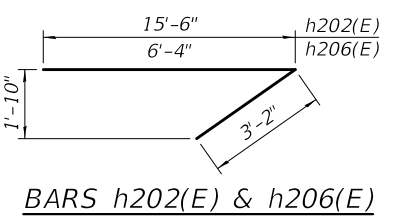
F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 461
			CONTRACT NO. 61187	
ILLINOIS FED. AID PROJECT				

**NORTH & SOUTH ABUTMENT
BILL OF MATERIAL**

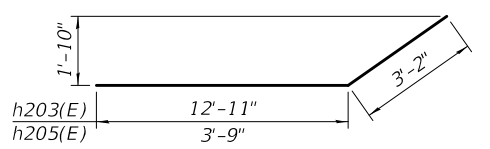
Bar	No.	Size	Length	Shape
h200(E)	204	#6	36'-9"	
h201(E)	16	#6	29'-4"	
h202(E)	14	#6	18'-8"	
h203(E)	6	#6	16'-1"	
h204(E)	20	#6	8'-7"	
h205(E)	14	#6	6'-11"	
h206(E)	6	#6	9'-6"	
h207(E)	4	#6	6'-7"	
h208(E)	4	#6	6'-7"	
h209(E)	8	#6	4'-6"	
h210(E)	12	#5	22'-9"	
n200(E)	280	#7	10'-1"	
n201(E)	142	#6	7'-10"	
s200(E)	40	#6	18'-0"	
t200(E)	267	#6	18'-8"	
t201(E)	267	#9	20'-4"	
t202(E)	26	#6	11'-2"	
t203(E)	26	#9	13'-7"	
u200(E)	68	#6	12'-5"	
u201(E)	142	#6	13'-7"	
u202(E)	108	#6	8'-6"	
u203(E)	96	#6	15'-1"	
u204(E)	38	#6	7'-2"	
u205(E)	4	#6	7'-7"	
u206(E)	20	#6	6'-6"	
u207(E)	34	#5	6'-1"	
v200(E)	422	#6	15'-11"	
v201(E)	146	#6	12'-1"	
v202(E)	284	#6	5'-9"	
v203(E)	104	#5	6'-1"	
v204(E)	20	#6	23'-4"	
v205(E)	68	#5	3'-1"	
w200(E)	68	#6	36'-8"	
w201(E)	2	#6	11'-11"	
Rubbed Finish		Sq. Ft.	333	
Seal Coat Concrete		Cu. Yd.	68	
Form Liner Textured Surface		Sq. Ft.	2,023	
Reinforcement Bars, Epoxy Coated		Pound	78,660	
Furnishing Metal Shell Piles 14" x 0.312"		Foot	6,162	
Driving Piles		Foot	6,162	
Test Pile Metal Shells		Each	4	
Pile Shoes		Each	95	
Granular Backfill for Structures		Cu. Yd.	803	
Anti-Graffiti Coating		Sq. Ft.	4,126	
Concrete Structures (Special)		Cu. Yd.	973.5	
Staining Concrete Structures		Sq. Ft.	2,355	



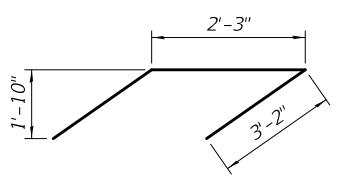
SECTION THRU ABUTMENT



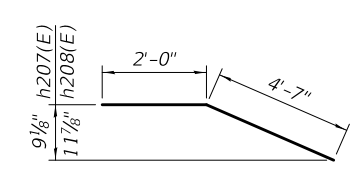
BARS h202(E) & h206(E)



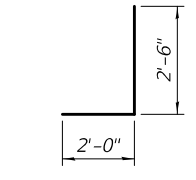
BARS h203(E) & h205(E)



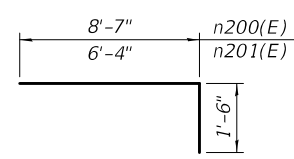
BAR h204(E)



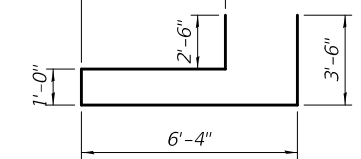
BARS h207(E) & h208(E)



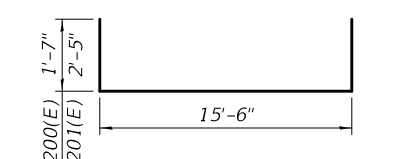
BAR h209(E)



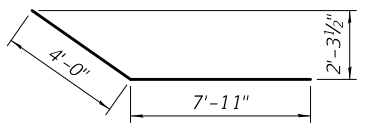
BARS n200(E) & n201(E)



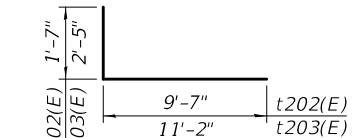
BAR s200(E)



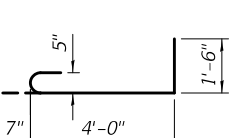
BARS t200(E) & t201(E)



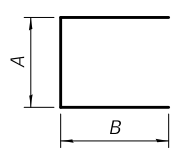
BARS w201(E)



BAR t202(E) AND t203(E)

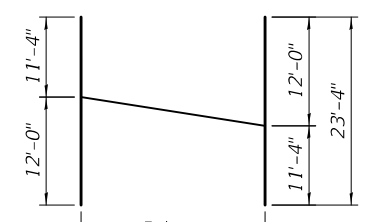


BAR v203(E)



BAR u200(E) TO u207(E)

Bar	A	B
u200(E)	6'-5"	3'-0"
u201(E)	6'-5"	3'-7"
u202(E)	3'-2"	2'-8"
u203(E)	1'-9"	6'-8"
u204(E)	1'-10"	2'-8"
u205(E)	2'-3"	2'-8"
u206(E)	1'-2"	2'-8"
u207(E)	1'-9"	2'-2"

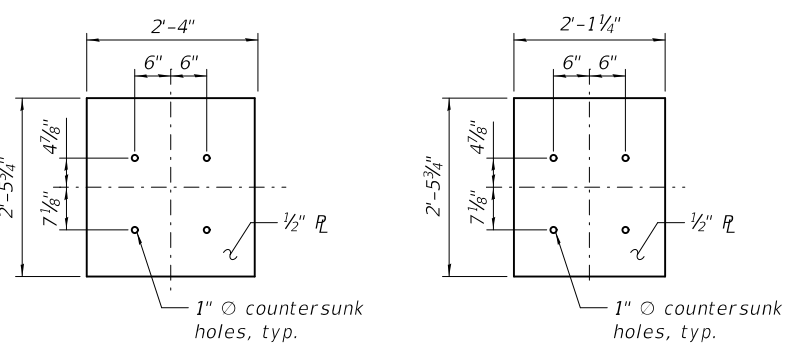


BAR v204(E)

FIELD CUTTING DIAGRAM

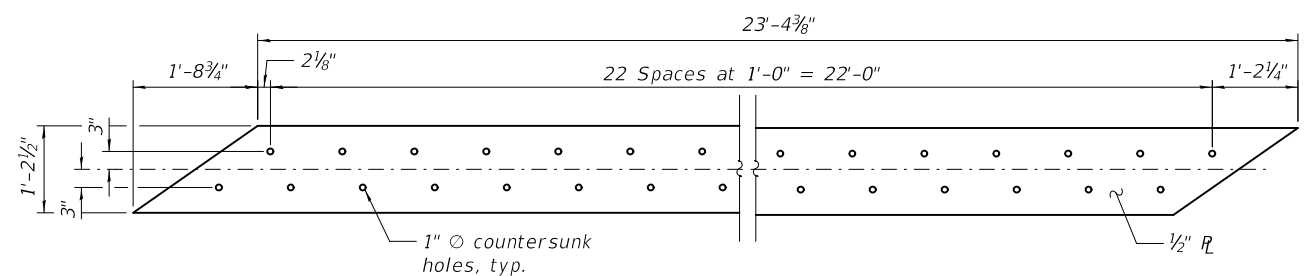
Order bars full length. Cut as shown and use remainder of bars in opposite face of wall.

* North Abutment only
** South Abutment only



MASONRY PLATE MP-1
Estimated Weight = 119 lbs.
2 Total Required (1 per Abutment)

MASONRY PLATE MP-2
Estimated Weight = 107 lbs.
2 Total Required (1 per Abutment)



MASONRY PLATE MP-3
Estimated Weight = 577 lbs.
2 Total Required (1 per Abutment)

NOTES:

- See Sheet SC-3 for Pile Data.
- Masonry Plates included in Cost of Concrete Structures (Special).
- Bridge seats shall be sloped 1/4" between bearing to provide drainage.
- Space reinforcement in the Bridge Seats to miss anchor bolts.
- Anti-Graffiti Coating shall be applied to all exposed surfaces.
- See Sheet SC-30 for limits of Form Liner Textured Surface and Staining Concrete Structures.

MODEL: Default
FILE NAME: ...0490014-91547-026-Abutment Details.dgn

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Itasca, Illinois 60143
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Fax: 630.773.3975
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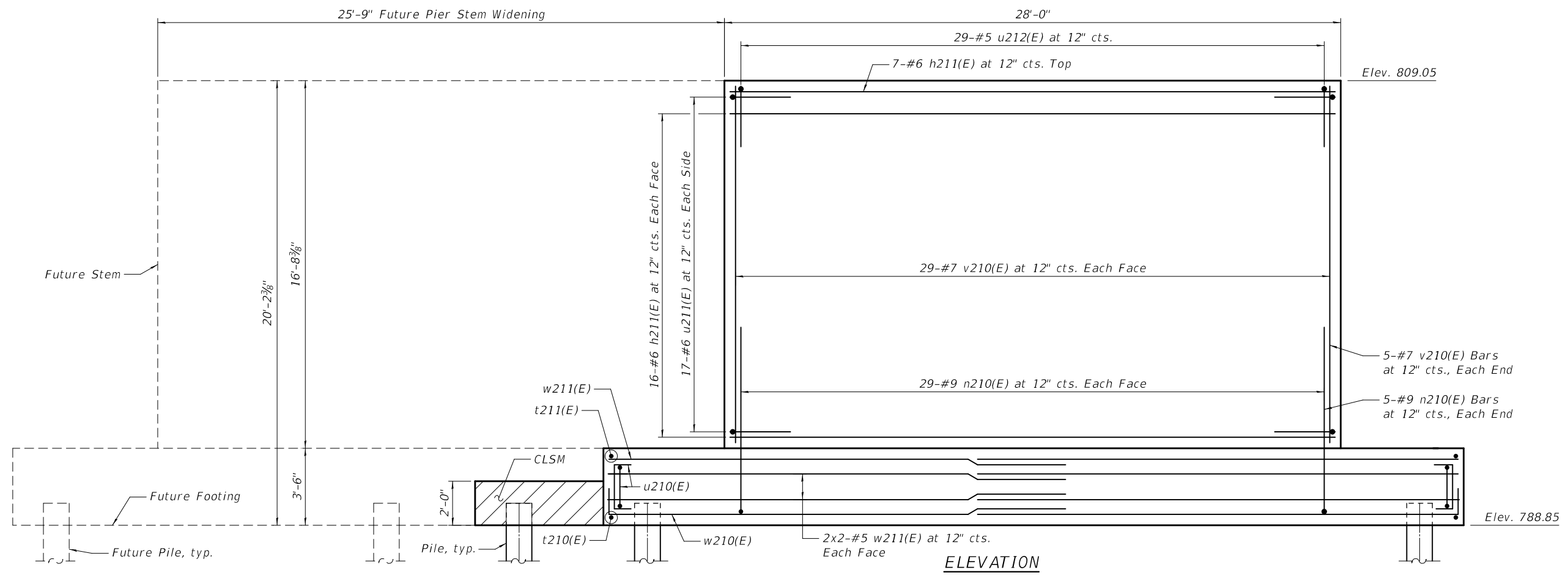
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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
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	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

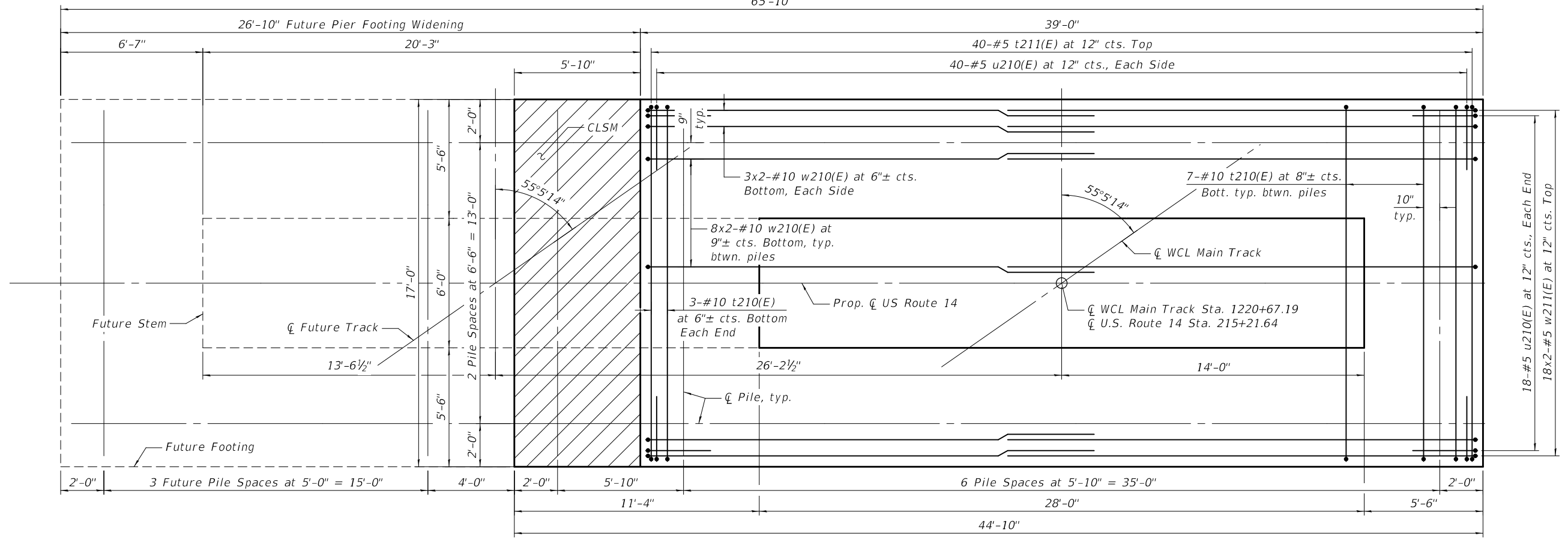
**ABUTMENT SECTION & DETAILS
STRUCTURE NO. 049-0014**

SHEET SC-26 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	462
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



ELEVATION



PLAN

MODEL: Default
FILE NAME: ...0490014-91547-027-Pier Plan & Elev.dgn

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Fax: 630.773.3975
www.civiltechinc.com

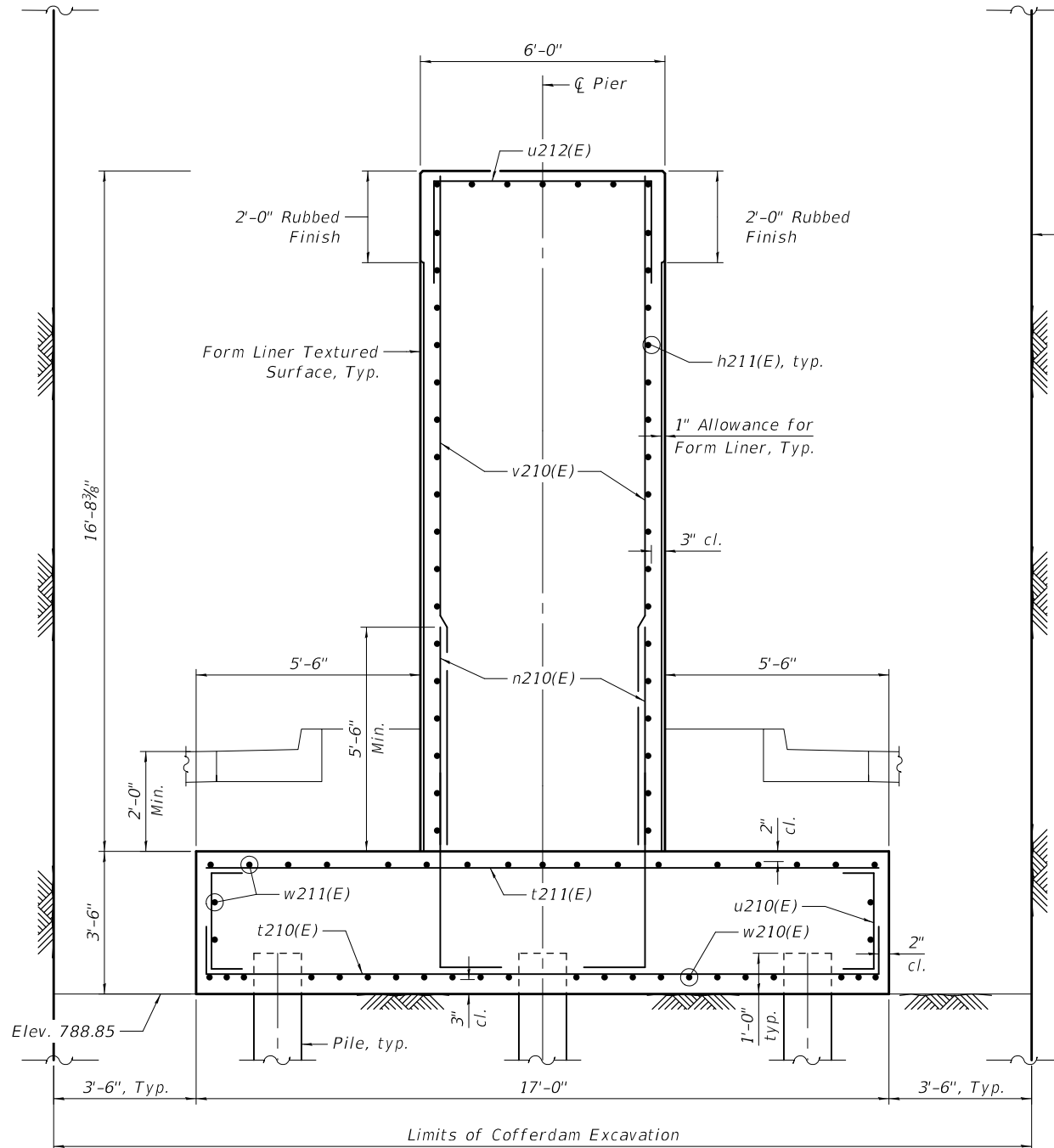
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PLOT SCALE =	N/A	DRAWN -	JAL	REVISED -	
PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

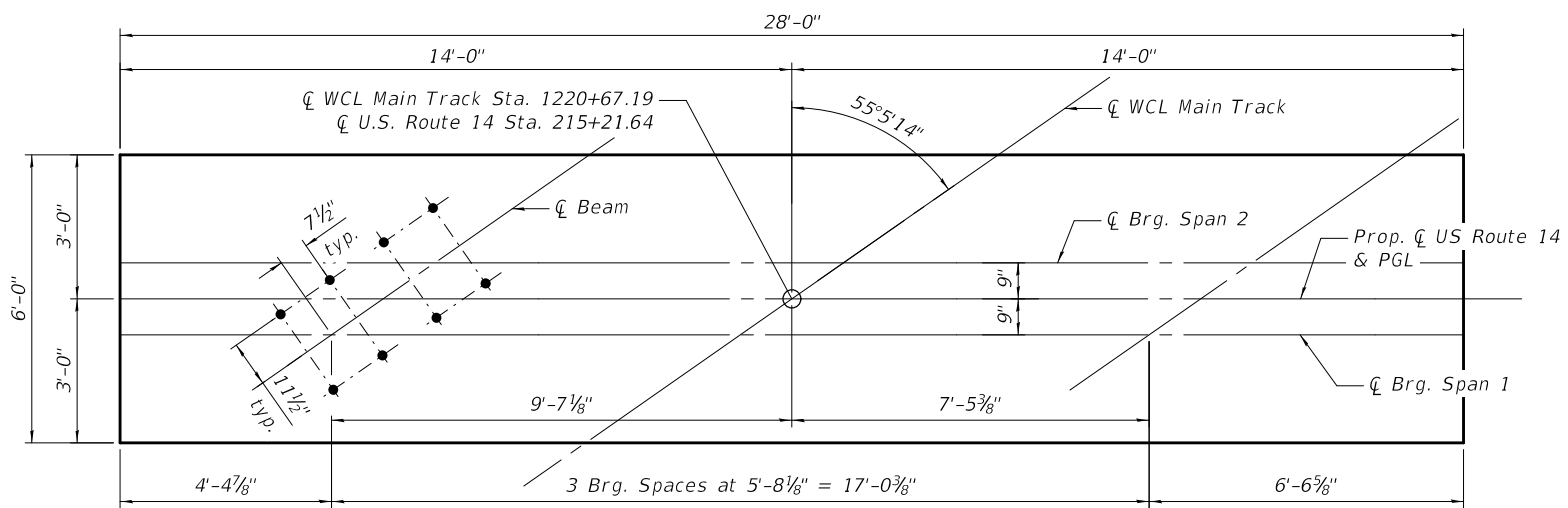
**PIER PLAN & ELEVATION
STRUCTURE NO. 049-0014**

SHEET SC-27 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	463
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



END VIEW

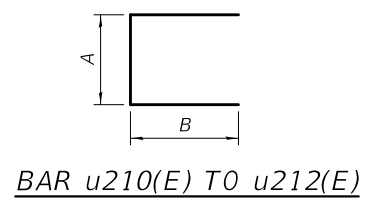
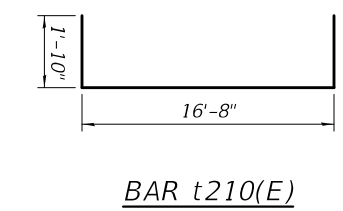
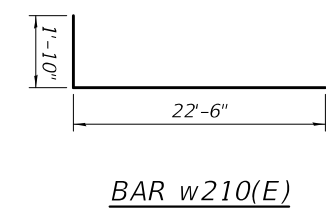
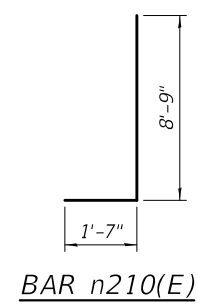


TOP PLAN

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h211(E)	39	#6	27'-6"	—
n210(E)	68	#9	10'-4"	—
t210(E)	48	#10	20'-4"	—
t211(E)	40	#5	16'-8"	—
u210(E)	116	#5	5'-5"	—
u211(E)	34	#6	12'-8"	—
u212(E)	29	#5	8'-6"	—
v210(E)	68	#7	16'-3"	—
w210(E)	44	#10	24'-4"	—
w211(E)	36	#5	21'-0"	—
Rubbed Finish			Sq. Ft.	136
Form Liner Textured Surface			Sq. Ft.	1,000
Reinforcement Bars, Epoxy Coated			Pound	18,110
Furnishing Metal Shell Piles 14" x 0.312"			Foot	1,364
Driving Piles			Foot	1,364
Test Pile Metal Shells			Each	2
Pile Shoes			Each	24
Controlled Low-Strength Material			Cu. Yd.	7.4
Anti-Graffiti Coating			Sq. Ft.	1,112
Concrete Structures (Special)			Cu. Yd.	189.9
Staining Concrete Structures			Sq. Ft.	1,136

Cofferdam (Special), Typ. See Sheet SC-4 for more information.



Bar	A	B
u210(E)	3'-1"	1'-2"
u211(E)	5'-6"	3'-7"
u212(E)	5'-6"	1'-6"

NOTES:
 Space reinforcement in the top of the pier stem to miss anchor bolts.
 Anti-Graffiti Coating shall be applied to all exposed concrete surfaces.
 Bridge seat shall be sloped 1/4" between bearings to provide drainage.
 See Sheet SC-30 for limits of Form Liner Textured Surface and Staining Concrete Structures.
 See Sheet SC-3 for Pile Data.

MODEL: Default
 FILE NAME: ...0490014-91547-028-Pier_Details.dgn

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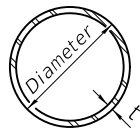
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PLOT SCALE =	N/A	DRAWN -	JAL	REVISED -	
PLOT DATE =	8/28/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

PIER DETAILS
 STRUCTURE NO. 049-0014

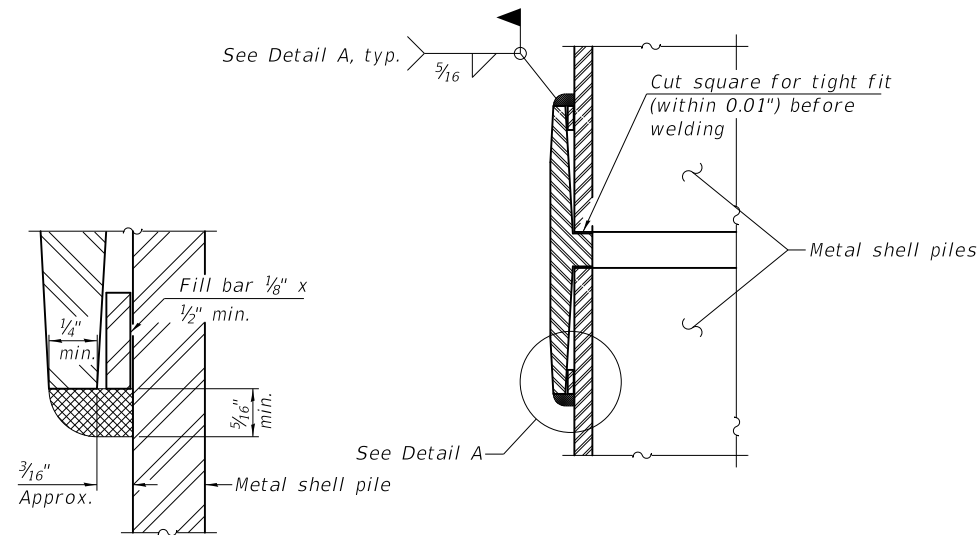
SHEET SC-28 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	464
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

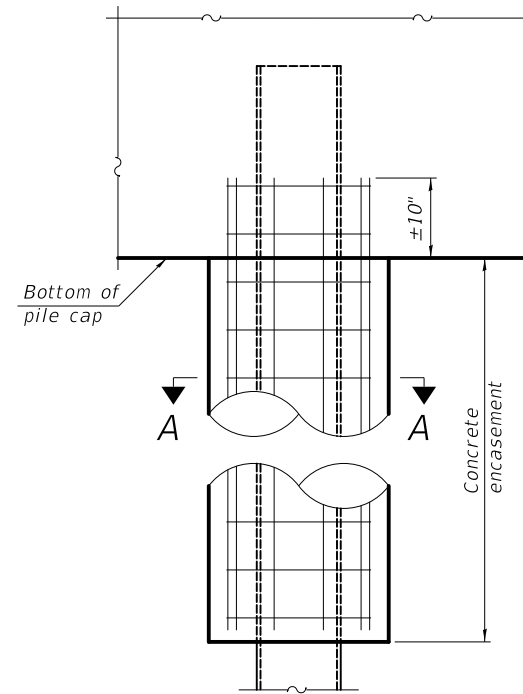


METAL SHELL PILE TABLE

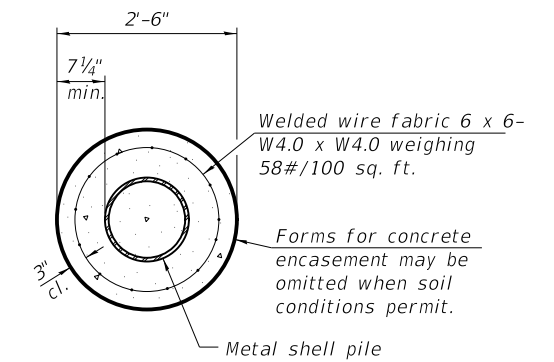
Designation and outside diameter	Wall thickness t	Weight per foot (Lbs./ft.)	Inside volume (yd. ³ /ft.)
PP12	0.250"	31.40	0.0267
PP14	0.250"	36.75	0.0368
PP14	0.312"	45.65	0.0361
PP16	0.312"	52.32	0.0478
PP16	0.375"	62.64	0.0470



DETAIL A

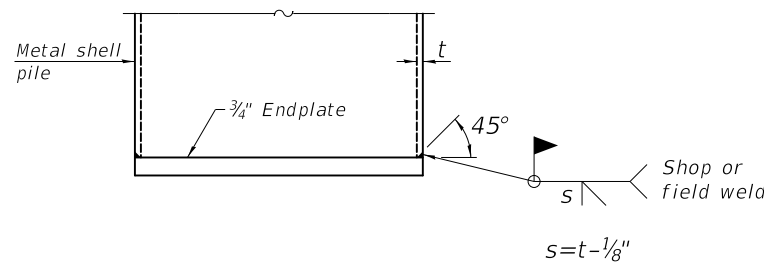


ELEVATION



SECTION A-A

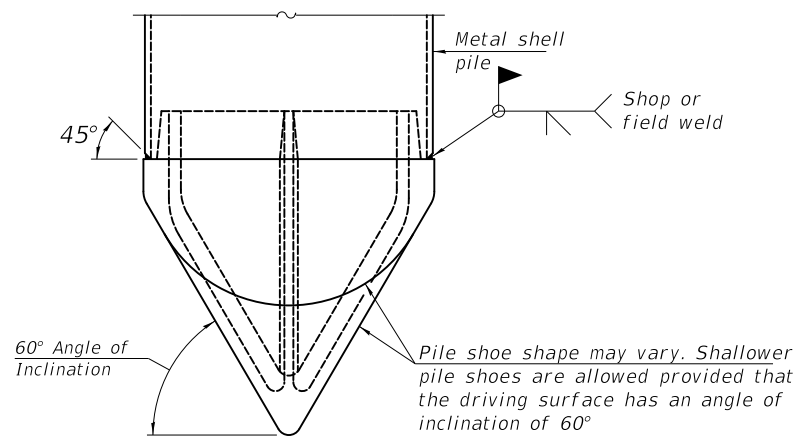
INDIVIDUAL PILE CONCRETE ENCASUREMENT
(When specified)



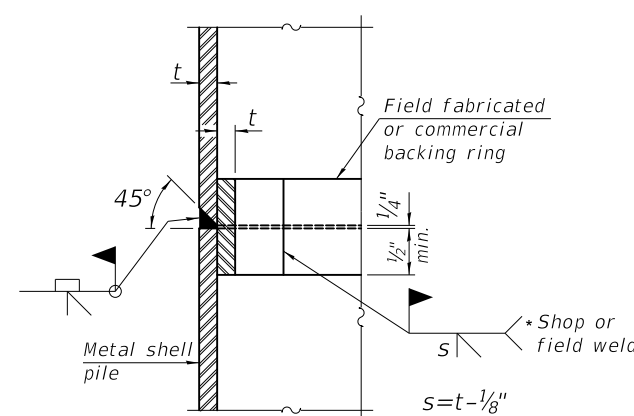
END PLATE ATTACHMENT

WELDED COMMERCIAL SPLICE

Notes:
The 1/8" x 1/2" min. fill bar may be constructed of 2 bars with a 1/8" max. gap between them.
Pile segments shall be driven to solid contact with splicer before welding.

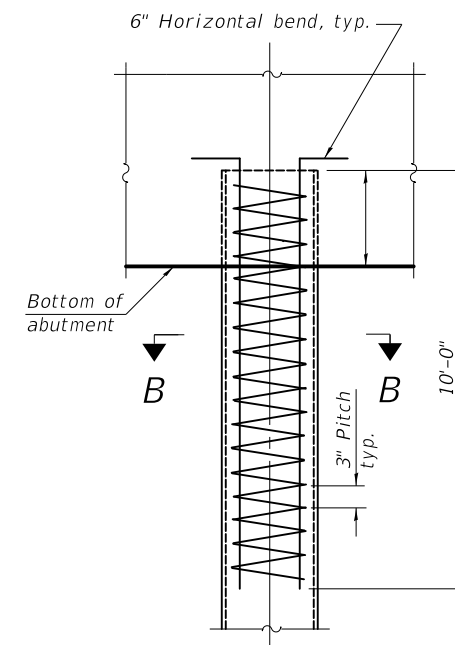


PILE SHOE ATTACHMENT

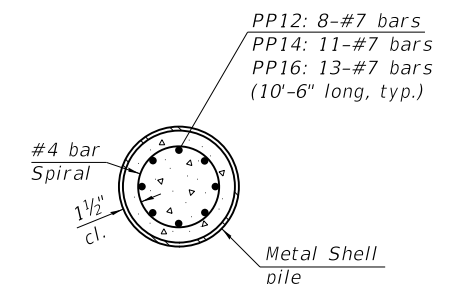


COMPLETE PENETRATION WELD SPLICE

* Field fabricated backing ring may be made from pile shell by removing segment to allow reducing circumference and vertically rejoin with partial joint penetration weld.



ELEVATION



SECTION B-B

REINFORCEMENT AT ABUTMENTS
(Omit when concrete encasement is specified)

Note:
The metal shell piles shall be according to Article 1006.05 of the Standard Specifications.

(When called for on the plans, the Contractor shall furnish metal shell pile shoes consisting of a single piece conical pile point as shown. The pile shoes shall be cast in one piece steel according to either ASTM A 148 Grade 80-50 or AASHTO M 103 Grade 65-35 and shall provide full bearing over the full circumference of the metal shell pile. The pile shoe shall have tapered leads to ensure proper alignment and fitting and shall be secured to the pile with a circumferential weld).

F-MS 5-15-2023

MODEL: Default
FILE NAME: ...0490014-61187-029-MS Pile Details.dgn

 Two Pierce Place, Suite 1400 Itasca, Illinois 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com	USER NAME = mc	DESIGNED - JAL	REVISED -
	PLOT SCALE = N/A	DRAWN - JAL	REVISED -
	PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
		DATE - 7/26/2024	REVISED -

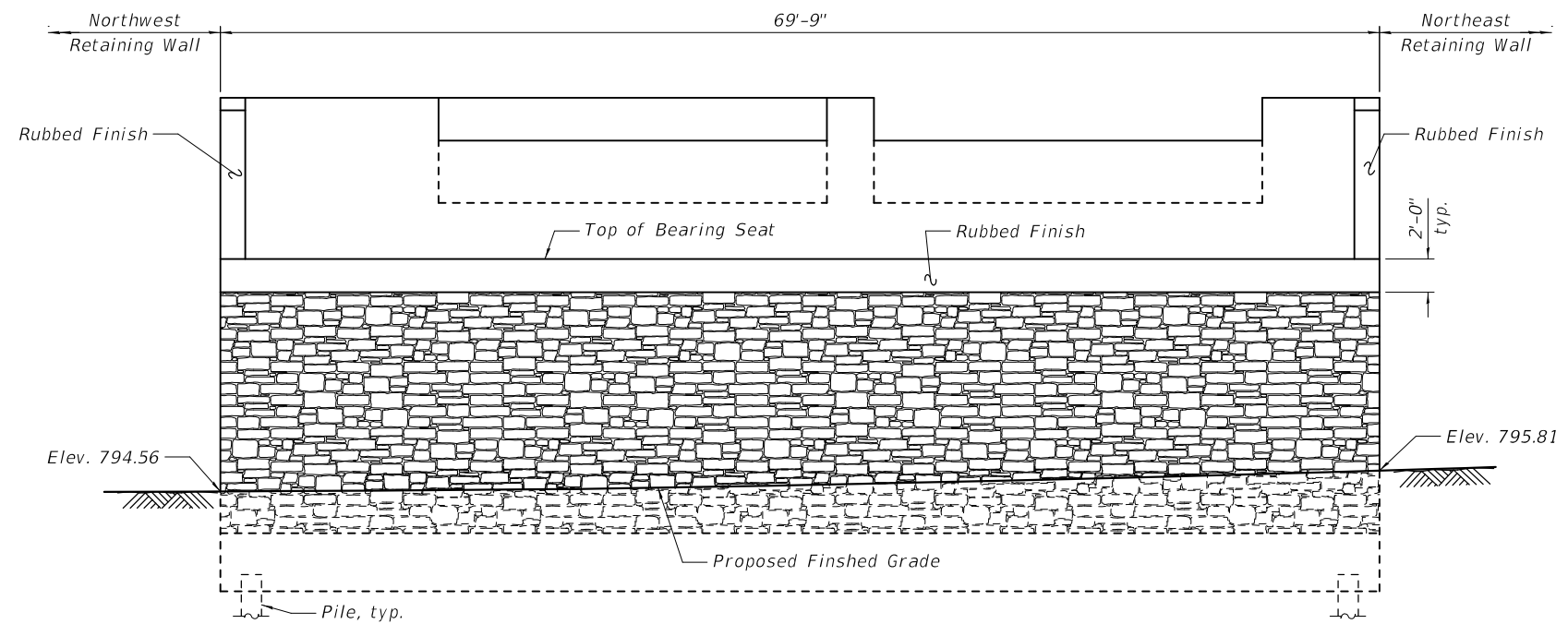
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**METAL SHELL PILE DETAILS
STRUCTURE NO. 049-0014**

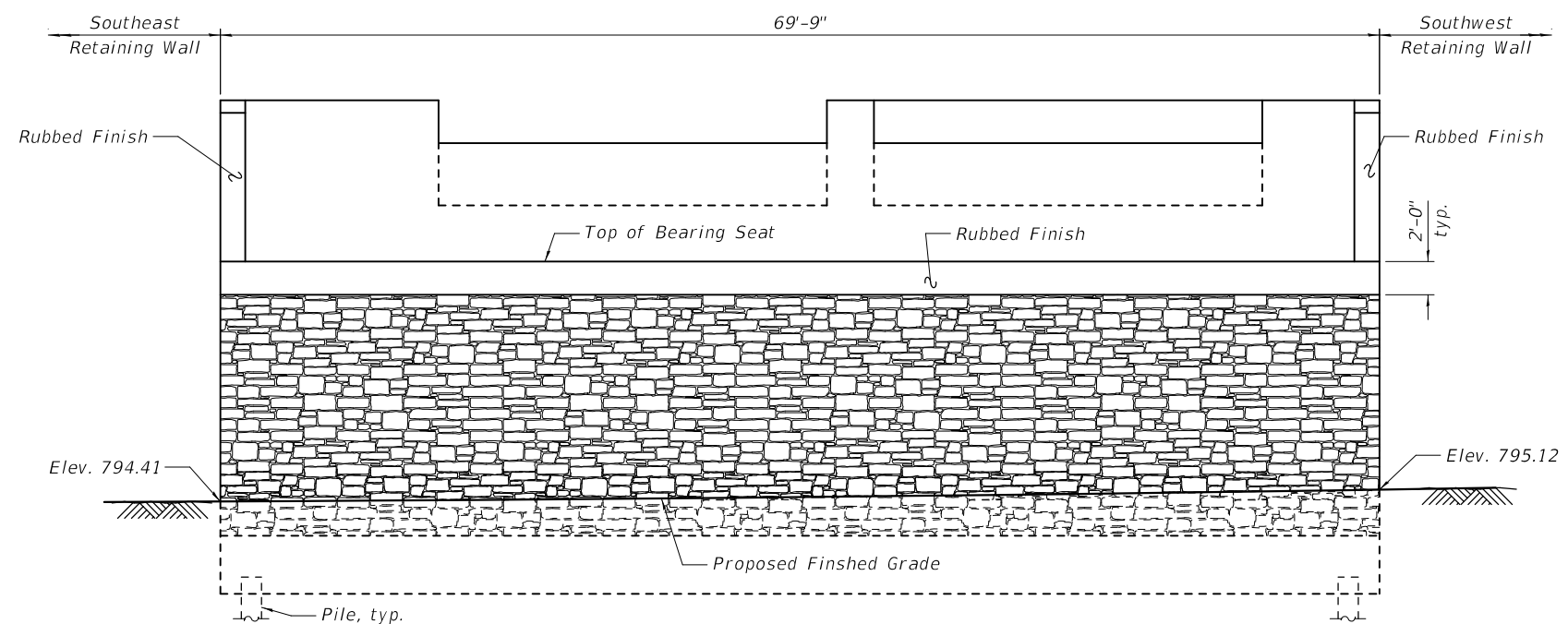
SHEET SC-29 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	465
CONTRACT NO. 61187				

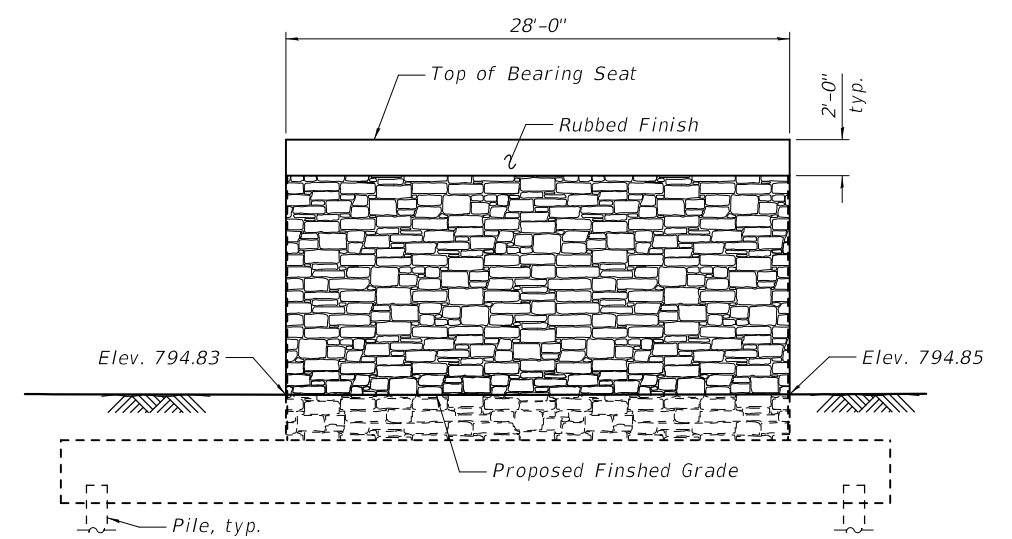
ILLINOIS FED. AID PROJECT



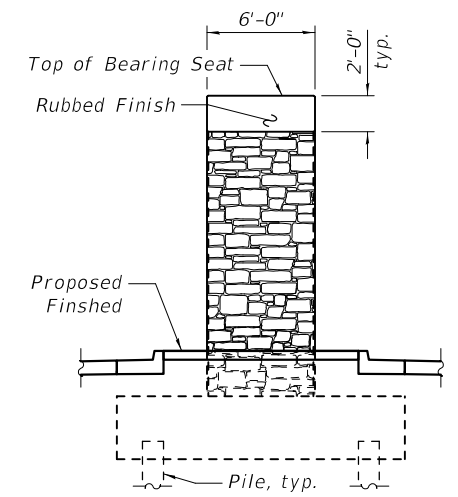
NORTH ABUTMENT ELEVATION
(Looking North)



SOUTH ABUTMENT ELEVATION
(Looking South)



PIER ELEVATION
(South elevation shown, North elevation equal and opposite)




PIER END

Notes:

1. Patterns in elevations shown for information only. Contractor shall be responsible for all layout and detailing of formliner, as approved by the Engineer.
2. Limits of payment assume Form Liner Textured Surface shall include entire front face of abutment stems except for the 2'-0" rubbed finish banding at top, and shall include all faces of pier stem except for the 2'-0" rubbed finish banding at top.
3. Form Liner Textured Surface shall be color-stained as required by Lake County and as laid out in the Special Provision for Staining Concrete Structures. Limits of payment assume staining will be applied to all surfaces with form liner and the rubbed finish banding.
4. See sheets SC-26 and SC-28 for Form Liner Textured Surface and Staining Concrete Structures quantities.

LEGEND

 Pattern shall be similar to Pattern #12005 "Bearpath Coursed Stone" manufactured by Custom Rock.

MODEL: Default
FILE NAME: ...0490014-91547-030-Arch_Details.dgn

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Mascota, Illinois 60143
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DRAWN	JAL	REVISIONS			
PLOT SCALE =	N/A	CHECKED -	GJH	REVISED -	
PLOT DATE =	8/28/2024	DATE	7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ARCHITECTURAL DETAILS
STRUCTURE NO. 049-0014

SHEET SC-30 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	466
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 2

Date 3/22/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MHP

SECTION 11-00087-00-GS LOCATION US Route 14 @ WCL Railroad

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.) X

BORING NO. SB-4 DRILLING METHOD HSA HAMMER TYPE Manual

Station 215+55
Offset 35' R of CL
Ground Surface Elev. 817.3 (ft.)

Groundwater Depth
First Encounter 8.0' (ft.)
Upon Completion 10.0' (ft.)
After Hrs. (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Pavement: 4" Bituminous Concrete over 8" PC Concrete	816.3					Grey CLAY, trace Sand and Gravel, A-6, very stiff		5	2.17		17
Brown SAND and GRAVEL, mixed with Concrete: FILL, dense		9	15-16	--	9		35	8-10	B		
		20	14-19	--	8						
	811.8	5					40	8	1.71	BS	17
Brown SAND and GRAVEL, little Clay, A-1, medium dense		10	8-10	--	13						
	809.3					Grey Silt LOAM, A-4 to A-6, very stiff	775.3				
Grey SAND and GRAVEL, A-1-b, wet, medium dense to dense		7	14-13	--	12						
some Clay		9	12-11	--	10		45	8			13
		12	17-16	--	11						
		15					50	7	2.02	B	13
		10	4-13	--	8						
		10				Grey CLAY, trace Sand and Gravel, A-6, stiff to hard	765.3				
		20	11-16	--	14						
Grey Gravelly CLAY, A-6 to A-4, stiff	796.3						55	6	1.94	BS	16
		1	2-6		1.94						
		7	23-12		2.0						
	791.8	25									
Grey CLAY, trace Sand and Gravel, A-6, stiff to very stiff		4	6-11		1.78		60	10	4.66	B	16
		5	7-12		2.79						
		30									
							65	14	2.95	B	18

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 2 of 2

Date 3/22/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MHP

SECTION 11-00087-00-GS LOCATION US Route 14 @ WCL Railroad

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.) X

BORING NO. SB-4 DRILLING METHOD HSA HAMMER TYPE Manual

Station 215+55
Offset 35' R of CL
Ground Surface Elev. 817.3 (ft.)

Groundwater Depth
First Encounter 8.0' (ft.)
Upon Completion 10.0' (ft.)
After Hrs. (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Grey CLAY, trace Sand and Gravel, A-6, very stiff											
		10	21-19		2.95		70				19
		11	18-29		2.52						20
	742.3	75									
End of Boring at 75'											

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MODEL: Default
FILE NAME: ...0490014-91547-031-Boring_Logs_1.dgn

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Itasca, Illinois 60143
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Fax: 630.773.3975
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USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 8/28/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS I
STRUCTURE NO. 049-0014

SHEET SC-31 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	467
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 2

Date 4/30/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MP

SECTION 11-00087-00-GS LOCATION Bridge at WCL RR, North Side of Route 14

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.) X

BORING NO. SB-11 DRILLING METHOD HSA HAMMER TYPE Safety

Station _____
Offset 55' L
Ground Surface Elev. 815.8 (ft.)

Groundwater Depth
First Encounter 8.0' (ft.)
Upon Completion 21.0' (ft.)
After _____ Hrs. _____ (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Railroad Ballast (8")	815.2								7	1.86	24
Black Silty Clay LOAM, A-7-6 very stiff			10	2.5	40		35	14-14			
	812.3										
Brown and Grey CLAY, A-6 firm			3	0.5	39						
	810.3								4	1.86	23
Brown and Grey Sandy Clay LOAM, A-4 medium dense			12		13		40	8-12			
	807.8										
Brown SAND and GRAVEL, A-1-b medium dense, saturated			10		16						
		10									
			6		15		45	9-21	1.71		22
	802.8										
Grey SAND and GRAVEL, A-1-b medium dense, saturated			11		12						
		15									
	799.3						50	9-11	1.5		27
Grey Clay LOAM, A-6 stiff			3	0.78	14						
	797.8										
Grey Silty LOAM, A-4 to A-6			3		15						
	795.3										
Grey Clay LOAM, A-6 very stiff			3	2.0	13		55	7-12	1.63		16
	792.8										
Grey CLAY, A-6 very stiff to hard			6	3.49	20						
		25									
			4	2.95	20		60	7-8	1.78		18
			5	4.27	22						
		30									
							65	8-11	4.46		19

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 2 of 2

Date 4/30/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MP

SECTION 11-00087-00-GS LOCATION Bridge at WCL RR, North Side of Route 14

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.) X

BORING NO. SB-11 DRILLING METHOD HSA HAMMER TYPE Safety

Station _____
Offset 55' L
Ground Surface Elev. 815.8 (ft.)

Groundwater Depth
First Encounter 8.0' (ft.)
Upon Completion 21.0' (ft.)
After _____ Hrs. _____ (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Grey CLAY, A-6 very stiff to hard			11	2.95	20						
		70									
			8	1.63	21						
		75									
			7	1.78	19						
		80									
no recovery			50/4"		18						
		85									
			10	2.64	18						
		90									
			6		13						
		95									
			19	3.80	18						
		100									
End of Boring at 100 Feet											

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MODEL: Default
FILE NAME: ...0490014-91547-032-Boring_Logs_2.dgn

<p>Two Pierce Place, Suite 1400 Mascota, Illinois 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com</p>	USER NAME = mc	DESIGNED - JAL	REVISED -
	PLOT SCALE = N/A	CHECKED - GJH	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS II
STRUCTURE NO. 049-0014

SHEET SC-32 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	468
			CONTRACT NO. 61J87	
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 1

Date 2/13/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MHP

SECTION 11-00087-00-GS LOCATION US Route 14: Retaining Wall

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.) X

BORING NO. SB-12 DRILLING METHOD HSA HAMMER TYPE Manual

Station 216+50
Offset 45' L of CL
Ground Surface Elev. 816.2 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Black Clay LOAM, A-7-6, stiff						Grey CLAY, trace Sand and Gravel, A-6, very stiff to stiff	35	10	18-14	2.33	18
			3	1.16	32						
			5-6	B							
	812.2										
Yellow-Brown Sandy LOAM, A-1-b, medium dense			3	--	36						
			5	5-7	19						
			7	--	12						
			7-9								
	807.2										
Grey Gravel, trace Sand, A-1, dense			13	--	9						
			10	24-13	1						
	805.7										
Grey SAND (f-m), little Gravel, A-3, medium dense			5	--	16						
			9-9								
			4	--	15						
			15	9-6							
	799.2										
Grey CLAY, trace Sand and Gravel, A-6, very stiff			6	--	12						
			7-6	3.25	17						
			18	2.37	17						
			20	6-13							
	795.7										
Grey Clayey GRAVEL, A-2-4, very dense			25	--	16						
			28-23								
	793.2										
Grey CLAY, trace Sand and Gravel, A-6, very stiff to stiff			6	3.53	18						
			14-22	B							
			4	1.55	19						
			5-11	B							
			4	1.94	20						
			6-7	B							
			30								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 2

Date 10/15/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MP

SECTION 11-00087-00-GS LOCATION Railroad Bridge, South Abutment

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.) X

BORING NO. SB-24 DRILLING METHOD HSA HAMMER TYPE Safety

Station 214+16
Offset 30' R
Ground Surface Elev. 817.0 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Black CLAY, A-6 Topsoil						Grey CLAY, trace Sand & Gravel, A-6 stiff	35				
			6	-	21						
			8-11								
	813.5										
Brown SAND and GRAVEL, A-1-a medium dense			8	-	9						
			5	9-10							
			7	-	7						
			10-12								
	807.5										
Grey Silty LOAM, A-4 very stiff			9	-	13						
			10	8	17						
			2	2.0	13						
			4-6	Qp							
	804										
Grey CLAY, trace Sand & Gravel, A-6 hard to very stiff			5	5.43	17						
			15	10-17	BS						
			4	4.20	20						
			7-11	B							
			3	2.02	21						
			20	6-8	B						
			3	2.52	20						
			5-9	B							
			2	1.37	19						
			25	4-6	B						
			3	2.45	20						
			5-7	B							
			3	2.37	18						
			30	5-6	B						
			4	1.36	19						

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

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Mascota, Illinois 60143
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	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS III
STRUCTURE NO. 049-0014

SHEET SC-33 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	469
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 1 of 2

Date 10/17/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MP

SECTION 11-00087-00-GS LOCATION Railroad Bridge, Center

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.)

BORING NO. SB-33 DRILLING METHOD HSA HAMMER TYPE Safety

Station _____
Offset 8'L
Ground Surface Elev. 817.8 (ft.)

Groundwater Depth
First Encounter 10.5 (ft.)
Upon Completion 15.0 (ft.)
After _____ Hrs. _____ (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Pavement: 5" Bit. Concrete, 12" PCC Base	816.4					Grey CLAY, trace Sand & Gravel, A-6 very stiff to hard	4	7-12	3.51	B	20
Black Clay LOAM, A-7-6 FILL stiff		3	6-7	1.94	B						
to Brown and Black		4	4-7	-							
Brown SAND and GRAVEL, A-1-b medium dense	812.3	5					4	9-11	2.74	B	19
		12	10-12	-							
		10	13-12	-							
Grey SAND, little Gravel, A-1-b medium dense	807.3	10					6	8-12	2.74	B	17
		10	9-12	-							
		3	5	-							
Grey CLAY, trace Sand & Gravel, A-6 hard to very stiff	803.3	15	5-8	4.63	B		11	18-24	-		18
		5	6-8	4.14	B						19
		6	7-9	2.25	Qp						17
		5	6-8	2.74	B						21
		4	7-10	3.14	B						18
		4	5-7	2.68	B						19
		3	4-8	2.37	B					22	
		10	17-23	4.55	BS					16	

(continued)

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC.
STRUCTURE FOUNDATION BORING LOG

Page 2 of 2

Date 10/17/13

ROUTE US 14 DESCRIPTION US Route 14 at WCL RR LOGGED BY MP

SECTION 11-00087-00-GS LOCATION Railroad Bridge, Center

COUNTY Lake STRUCTURE NO. 049-0014 (Exist) (Prop.)

BORING NO. SB-33 DRILLING METHOD HSA HAMMER TYPE Safety

Station _____
Offset 8'L
Ground Surface Elev. 817.8 (ft.)

Groundwater Depth
First Encounter 10.5 (ft.)
Upon Completion 15.0 (ft.)
After _____ Hrs. _____ (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)
Grey CLAY, trace Sand & Gravel, A-6 hard to very stiff	746.3	70	10	12-20	3.47	B				20	
Grey Silt LOAM, A-4 dense to medium dense		75	13	15-27	-					16	
		80	14	11-12	1.74	BS				16	
Grey CLAY, trace Sand & Gravel, A-6 very stiff	735.8	85	6	8-13	2.56	B				16	
		90	6	13-19	2.63	B				16	
		95	9	15-23	3.33	B				16	
		100	12	19-20	3.70	B				14	

End of Boring at 100 Feet

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS IV
STRUCTURE NO. 049-0014

SHEET SC-34 OF SC-34 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	470
			CONTRACT NO. 61187	
		ILLINOIS FED. AID PROJECT		

Benchmark: East bolt on fire hydrant at the East corner of North Avenue and Park Lane,
Sta. 215+68.79, Offset 80.93' Rt. (U.S. Route 14), Elevation 818.39.

Existing Structure: None.

Maintenance of Traffic: Traffic will be detoured to a temporary roadway during construction.
Railroad traffic will be detoured to a shoofly track.

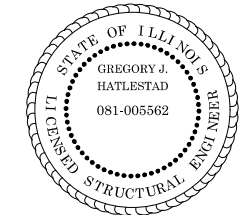
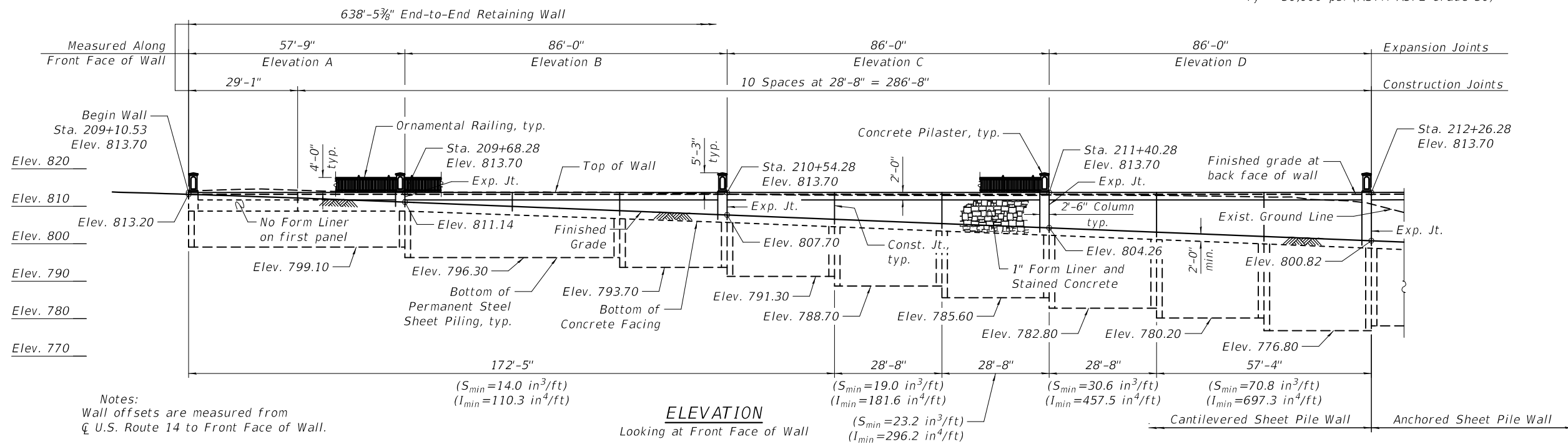
DESIGN SPECIFICATIONS

2020 AASHTO LRFD Bridge Design
Specifications, 9th Edition

DESIGN STRESSES

FIELD UNITS

$f'_c = 3,500$ psi (Wall Facing)
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (ASTM A572 Grade 50)



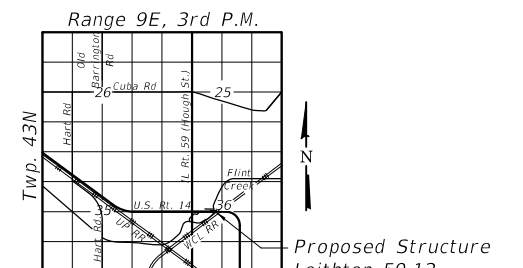
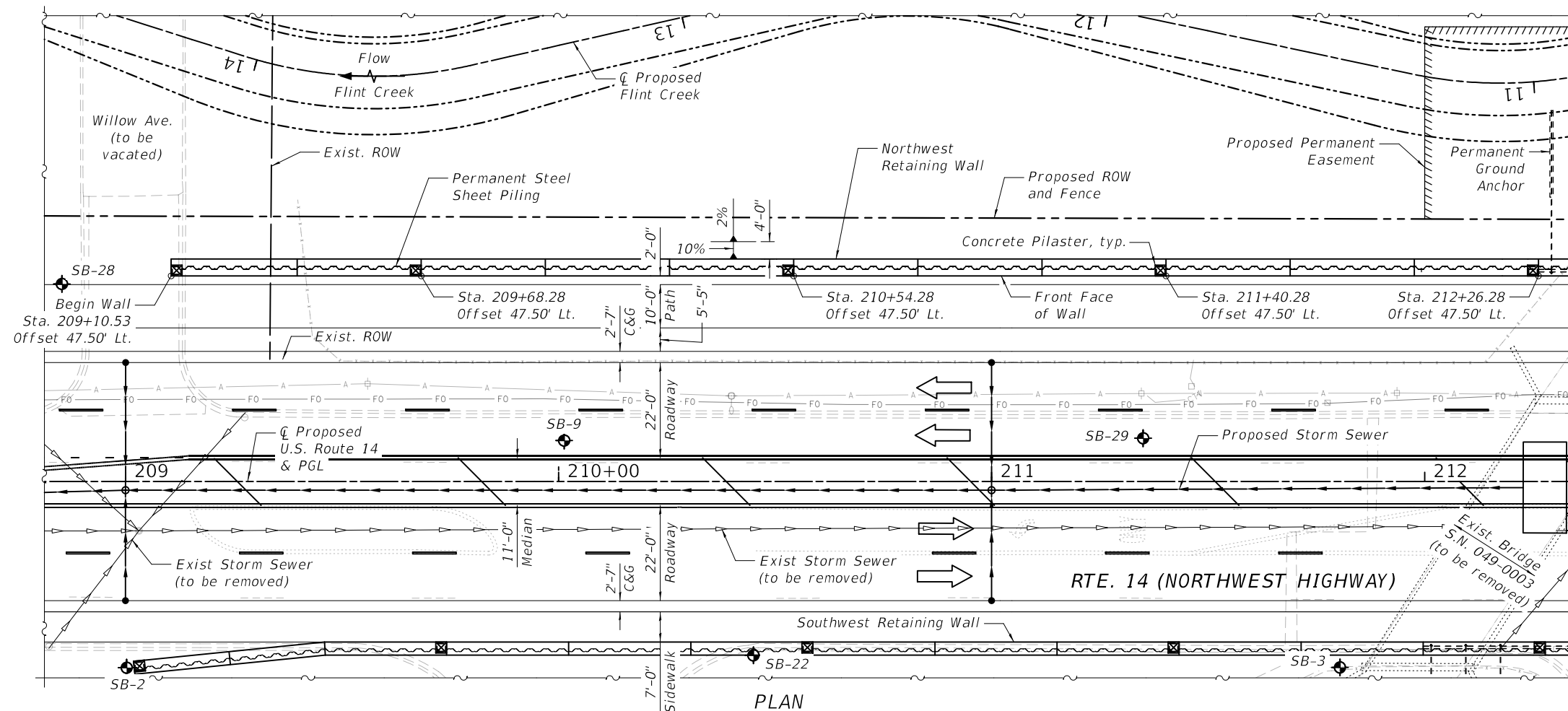
Gregory J. Hatlestad, S.E.
081-005562

Exp 11/30/2024

Date 7/25/2024

LEGEND

- A — Existing Aerial Lines
- G — Existing Gas Line
- W — Existing Water Main
- S — Existing Storm Sewer
- SS — Existing Sanitary Sewer
- E — Existing Electric Line
- SS — Proposed Storm Sewer
- S — Soil Boring



LOCATION SKETCH

GENERAL PLAN AND ELEVATION 1
NORTHWEST RETAINING WALL
F.A.P. RTE. 305 - U.S. ROUTE 14
SECTION 11-00087-00-GS
LAKE COUNTY
STA. 209+10.56 TO STA. 215+48.95
STRUCTURE NO. 049-W1000

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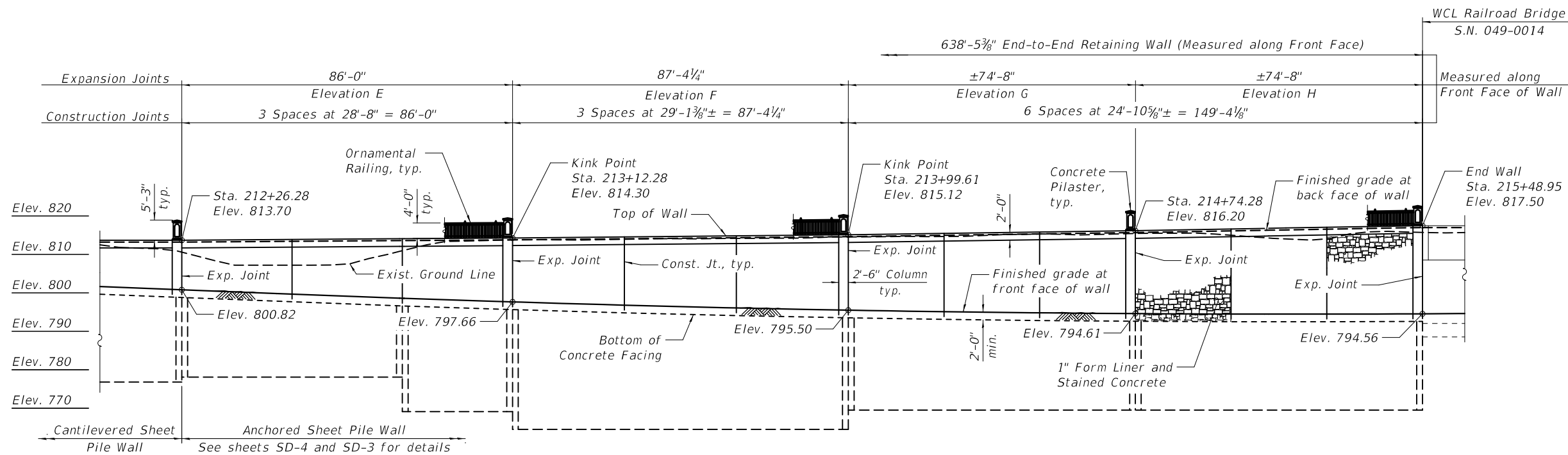
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USER NAME = mc	DESIGNED - JAL	REVISED -
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PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
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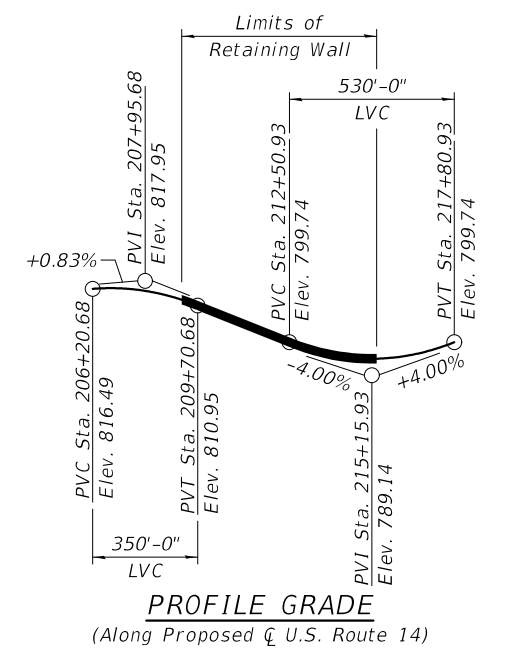
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION 1
STRUCTURE NO. 049-W1000
SHEET SD-1 OF SD-15 SHEETS

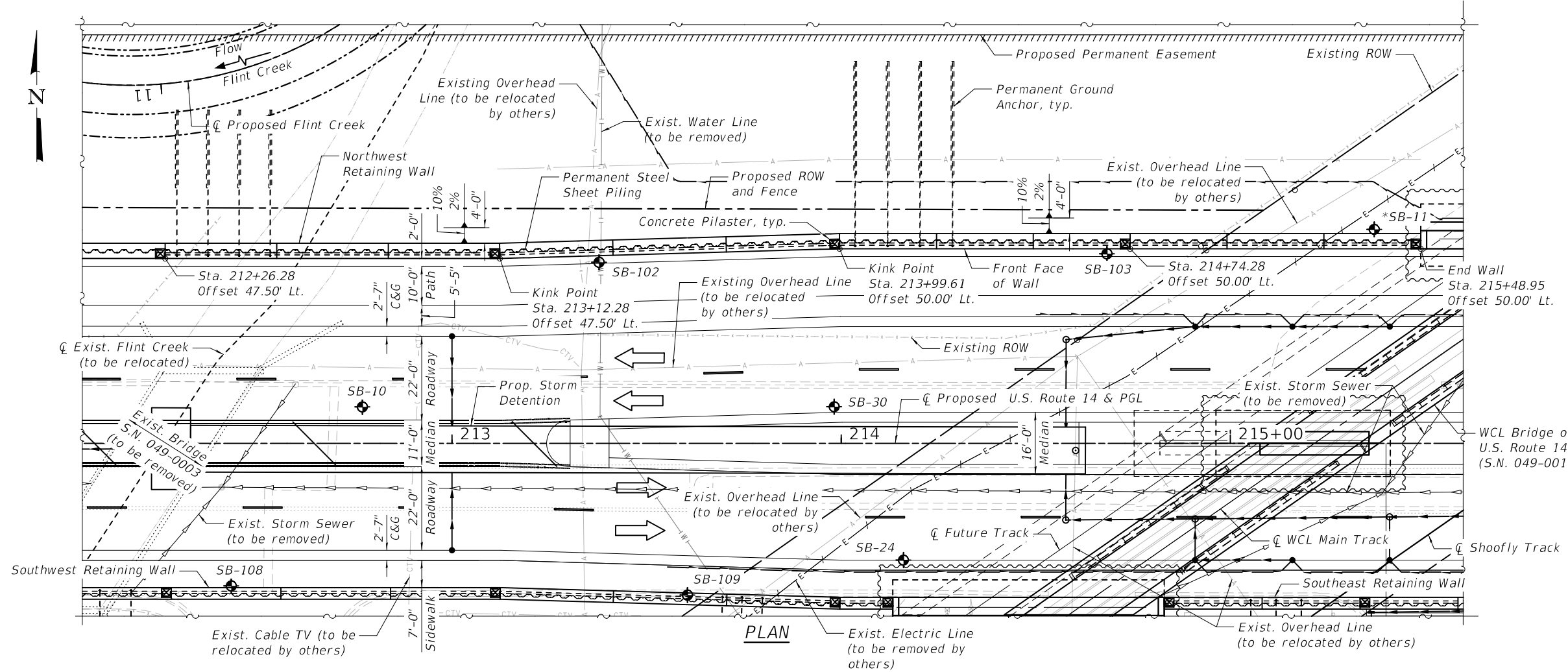
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	471
CONTRACT NO. 6187				
ILLINOIS FED. AID PROJECT				



ELEVATION
Looking at Front Face of Wall



PROFILE GRADE
(Along Proposed \bar{C} U.S. Route 14)



PLAN

LEGEND

- A — Existing Aerial Lines
- G — Existing Gasline
- W — Existing Water Main
- S — Existing Storm Sewer
- SS — Existing Sanitary Sewer
- E — Existing Electric Line
- SB — Proposed Storm Sewer
- S — Soil Boring

*See Bridge SN 049-0014 plans for boring log SB-11.

Notes:
Wall offsets are measured from \bar{C} U.S. Route 14 to Front Face of Wall.

GENERAL PLAN AND ELEVATION 2
NORTHWEST RETAINING WALL
F.A.P. RTE. 305 - U.S. ROUTE 14
SECTION 11-00087-00-GS
LAKE COUNTY
STA. 209+10.56 TO STA. 215+48.95
STRUCTURE NO. 049-W1000

MODEL: Default
FILE NAME: ...049W1000-61187-002-GPE2.dgn

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Fax: 630.773.3975
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION 2
STRUCTURE NO. 049-W1000

SHEET SD-2 OF SD-15 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 472
			CONTRACT NO. 61187	
ILLINOIS FED. AID PROJECT				

GENERAL NOTES

- The Contractor shall be responsible for confirming or establishing the existence of all utility facilities relevant to their exact locations, and schedule all necessary utility relocations.
- All elevations and dimensions must be verified in the field.
- The centerline of a ground anchor shall not be within 12" of a vertical wall joint. Contractor may shift horizontal position of ground anchors and/or joints to avoid interference. Any horizontal shift, and all subsequent modifications required, will be the responsibility of the Contractor and submit to the Engineer for approval.
- All structural steel shall be AASHTO M 270 Grade 50.
- No field welding is permitted except as specified in the contract documents.
- Reinforcement bars designated (E) shall be epoxy coated.
- Sheet piling dimensions, alcove dimensions and anchor spacing for the retaining wall are based on NZ sheet piling. These may be adjusted in the field based on actual sheet piling section selected by the Contractor.
- Anti-Graffiti Coating shall be applied to the exposed surfaces of the facing, coping, and pilasters.
- Stiff soils are present, pre-drilling may be required for sheet piling installation. Cost included with "Permanent Sheet Piling."

PROPOSED CONSTRUCTION SEQUENCE:

- Construction of Northwest Retaining Wall will occur in Stage 2.
- Install sheet piles to tip elevations shown. Anchored portion of wall will be buried until all sheet piles are installed.
- Excavation for proposed U.S. Route 14 roadway will be ongoing during Stage 2. All excavation in front of wall shall be coordinated with proposed ground anchor elevations. When excavation reaches 1'-0" below elevation of ground anchors, drill and install anchors and waler. Do not further excavate below anchor elevations until all anchors are stressed and load locked in. Anchor installation requirements are specified in the Special Provisions.
- Repeat operation 3 for lower rows of ground anchors, where applicable.
- Excavate to bottom of concrete facing.
- Install studs and pour concrete facing and pilasters with form liners and rubbed finish as specified.
- Stain surfaces of concrete as specified and apply Anti-Graffiti Coating.
- Install railings.

GROUND ANCHOR SCHEDULE

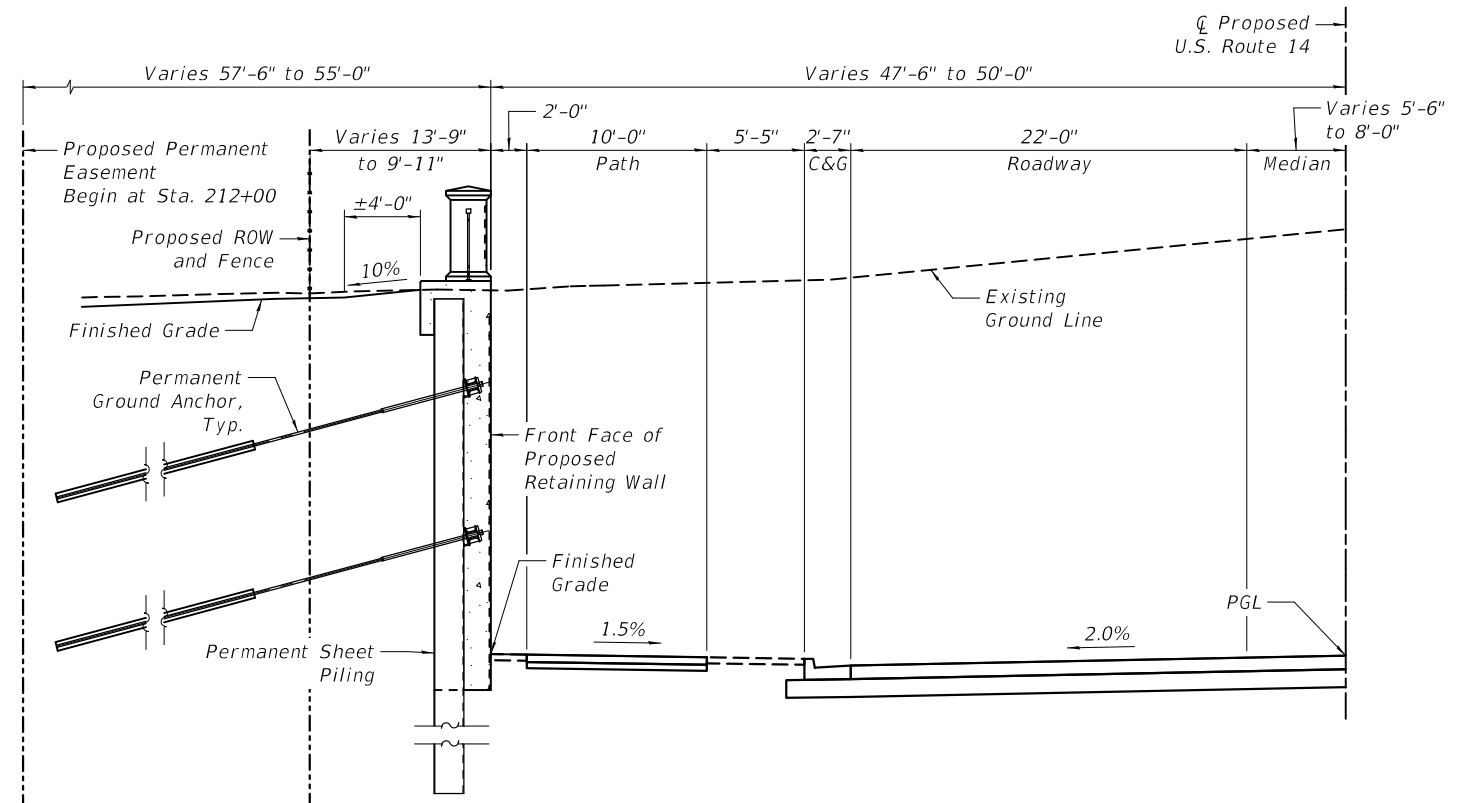
Anchor Type	Service Load (Kip)	Minimum Unbounded Length (Foot)	Estimated Bonded Length (Feet)	Estimated Total Length (Feet)	Angle (Degree)	Grout Diameter (Inch)
1A	52.0	15	25	40	30	6
1B	56.4	15	28	43	30	6
1C	43.8	15	21	36	30	6
1D	47.5	15	23	38	20	6
1E	56.1	15	24	39	20	6
1F	63.9	16	31	47	20	6
1G	70.5	15	33	48	20	6
1H	67.3	17	34	51	20	6

INDEX OF SHEETS

- SD-1 General Plan and Elevation 1
- SD-2 General Plan and Elevation 2
- SD-3 General Data
- SD-4 Anchored Wall Plan and Elevation 1
- SD-5 Anchored Wall Plan and Elevation 2
- SD-6 Wall Facing Elevation 1
- SD-7 Wall Facing Elevation 2
- SD-8 Wall Facing Elevation 3
- SD-9 Retaining Wall Details 1
- SD-10 Retaining Wall Details 2
- SD-11 Retaining Wall Details 3
- SD-12 Ornamental Railing Details
- SD-13 Boring Logs 1
- SD-14 Boring Logs 2
- SD-15 Boring Logs 3

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	1,450
Rubbed Finish	Sq. Ft.	6,483
Form Liner Textured Surface	Sq. Ft.	7,901
Stud Shear Connectors	Each	2,612
Reinforced Bars, Epoxy Coated	Pound	55,670
Permanent Sheet Piling	Sq. Ft.	21,477
Concrete Structures (Retaining Wall)	Cu. Yd.	944.5
Permanent Ground Anchor	Each	49
Anti-Graffiti Coating	Sq. Ft.	14,384
Staining Concrete Structures	Sq. Ft.	14,384
Ornamental Railing	Foot	616



TYPICAL SECTION
(Looking East)

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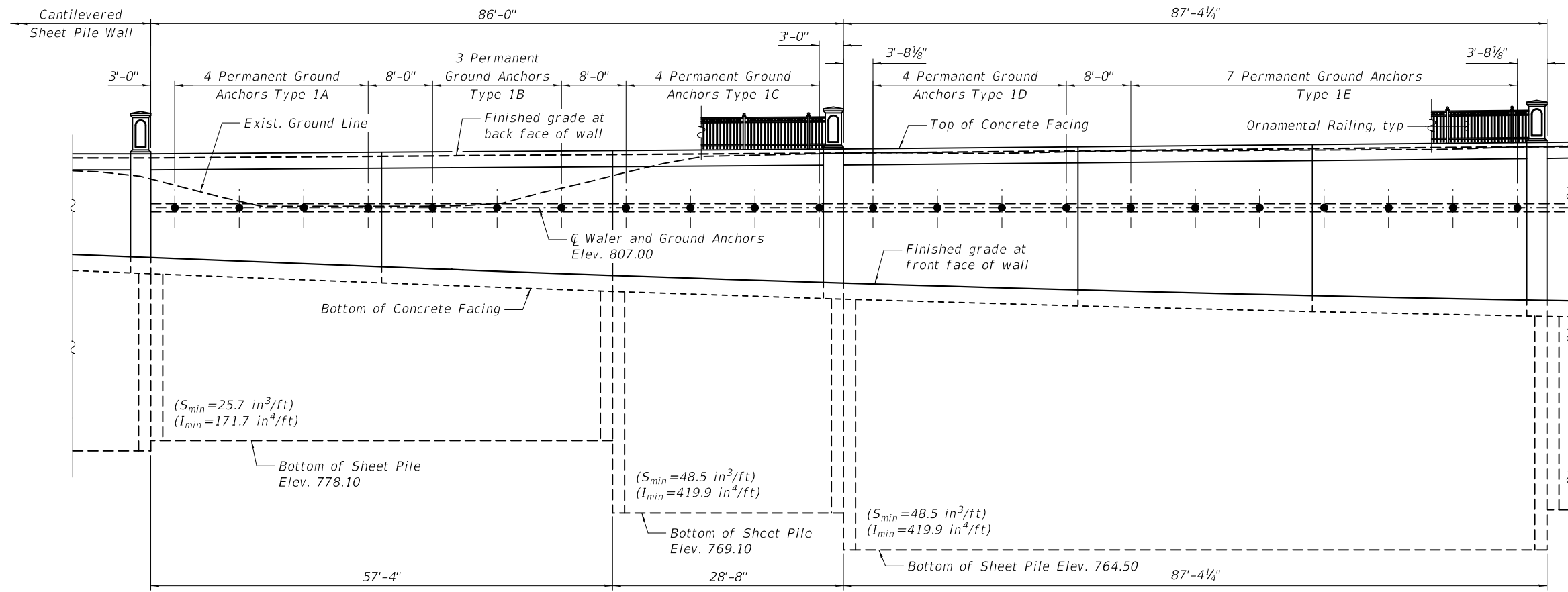
<p>Two Pierce Place, Suite 1400 Mascoutah, IL 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com</p>	USER NAME = mc	DESIGNED - JAL	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA
STRUCTURE NO. 049-W1000

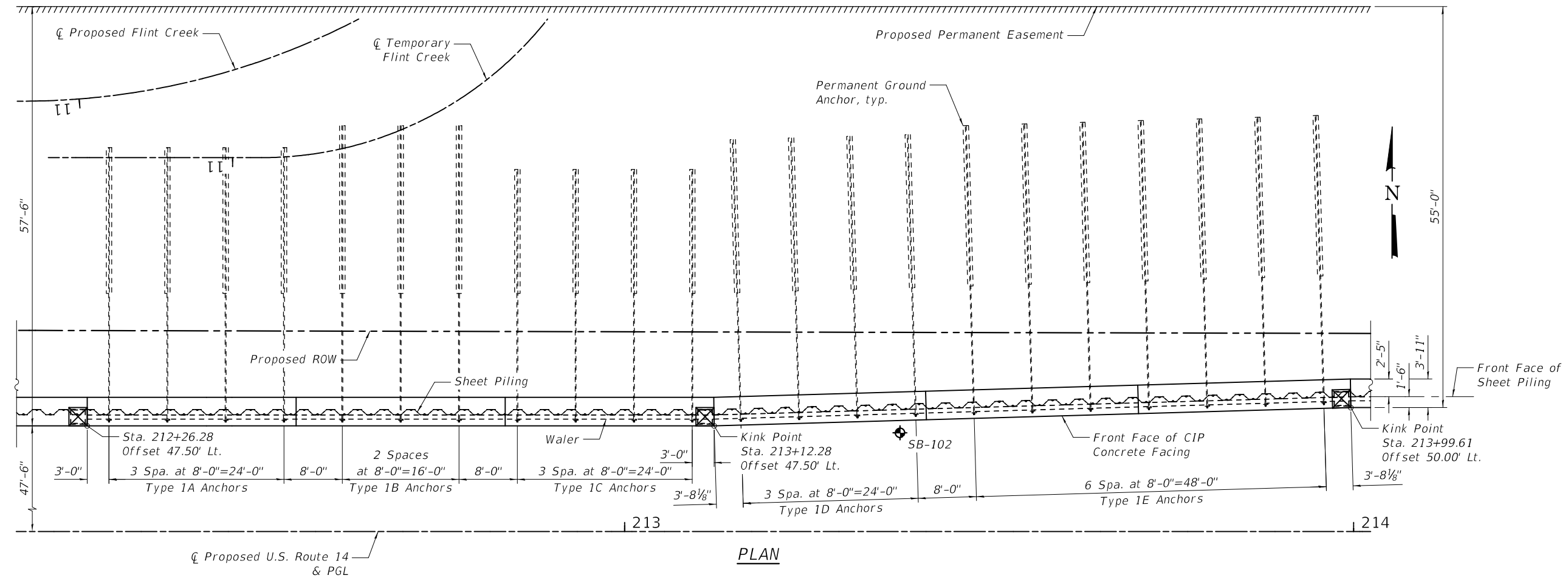
SHEET SD-3 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	473
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



ELEVATION

- Notes:
1. See Sheets SD-6, SD-7, and SD-8 for concrete facing details.
 2. See Sheet SD-3 for general notes and ground anchor designations.
 3. See special provisions for testing requirements.
 4. See Sheet SD-12 for Ornamental Railing Details.
 5. Sheet pile stations and offsets measured from $\bar{\bar{C}}$ Proposed US Route 14 to front face of CIP Concrete Facing.



PLAN

MODEL: Default
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PLOT DATE =	9/10/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

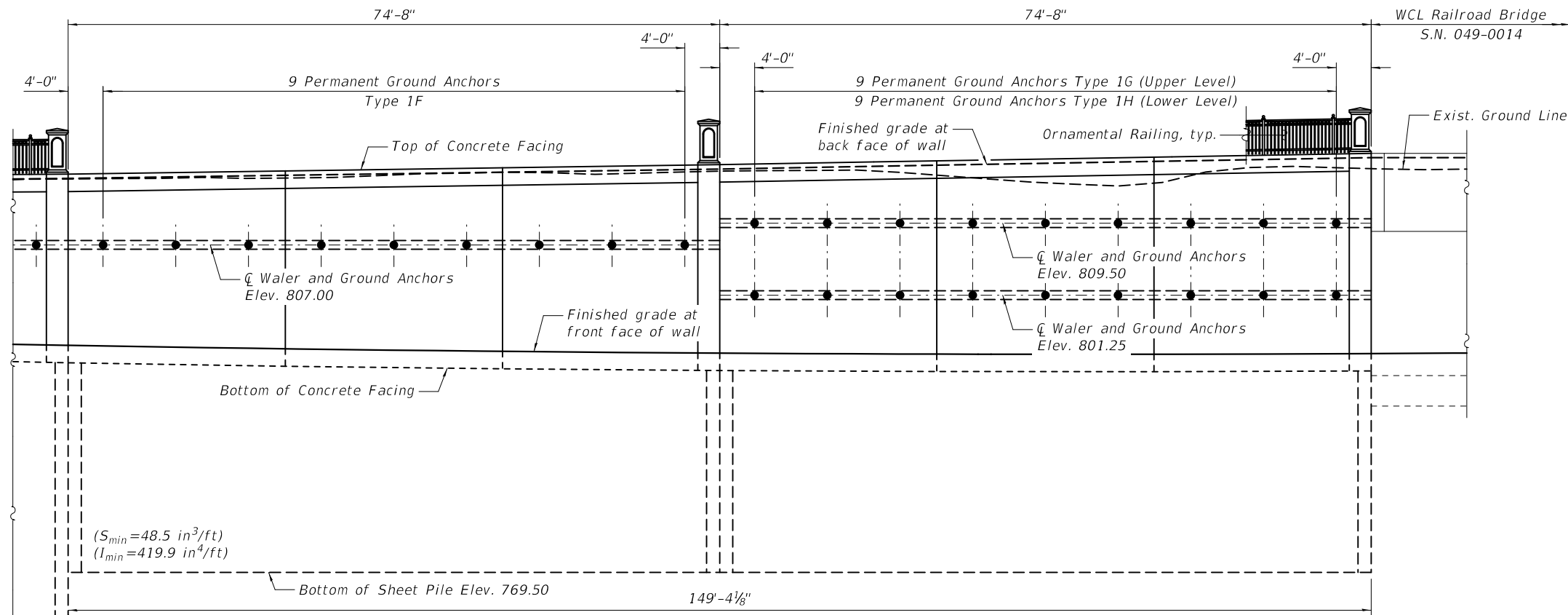
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ANCHORED WALL PLAN AND ELEVATION 1
STRUCTURE NO. 049-W1000

SHEET SD-4 OF SD-15 SHEETS

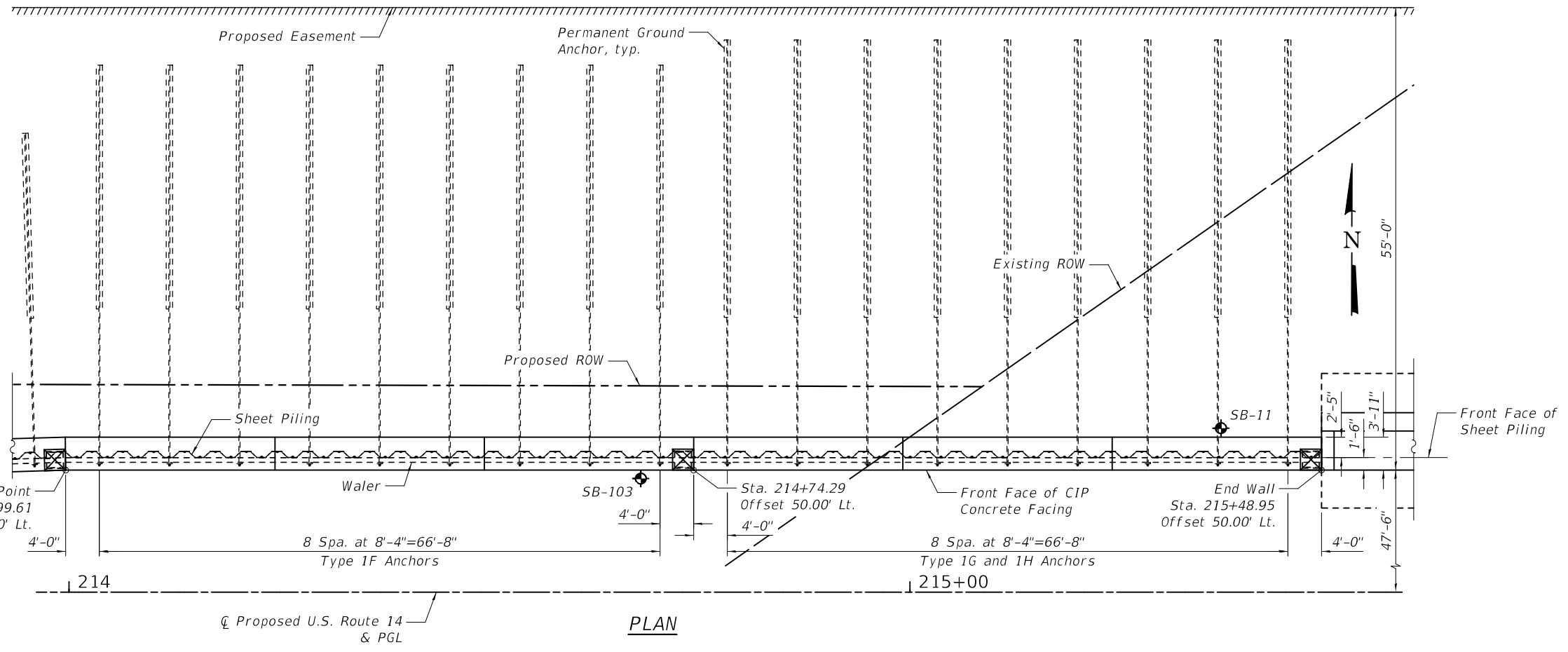
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-G5	LAKE	816	474
CONTRACT NO. 61187				

ILLINOIS FED. AID PROJECT



ELEVATION

- Notes:
1. See Sheets SD-6, SD-7, and SD-8 for concrete facing details.
 2. See Sheet SD-1 for general notes and ground anchor designations.
 3. See special provisions for testing requirements.
 4. See Sheet SD-12 for Ornamental Railing Details.
 5. Sheet pile stations and offsets measured from \bar{C} Proposed US Route 14 to front face of CIP Concrete Facing.



PLAN

MODEL: Default
FILE NAME: ...049W1000-61187-005-Anchored Wall 2.dgn

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Mascoutah, Illinois 60143
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PLOT DATE =	9/10/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

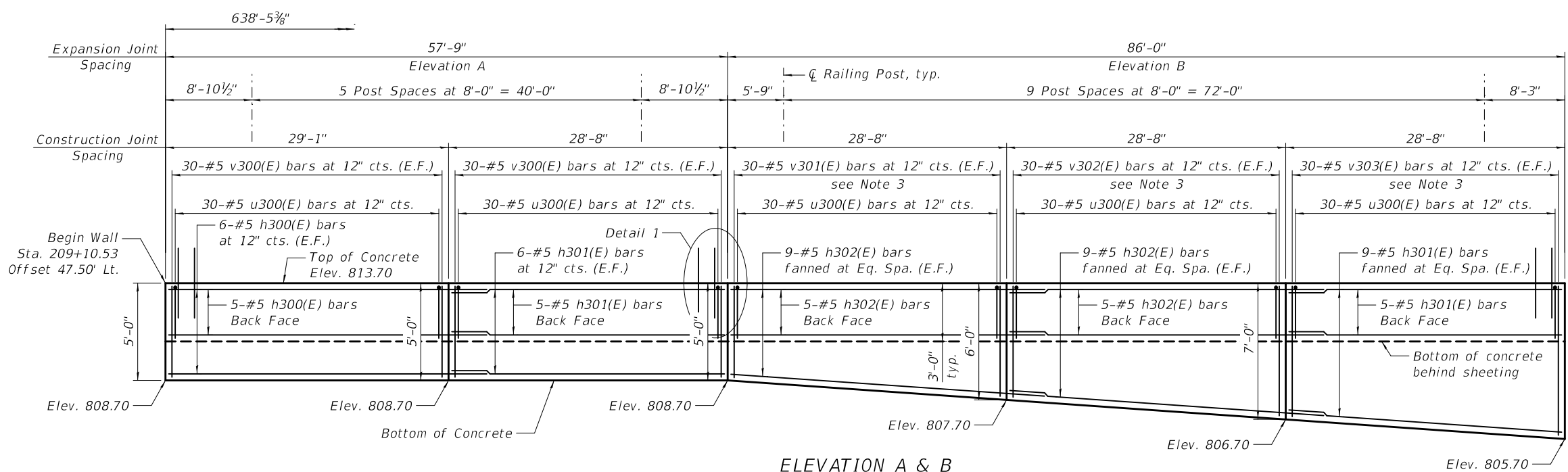
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**ANCHORED WALL PLAN AND ELEVATION 2
STRUCTURE NO. 049-W1000**

SHEET SD-5 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	475
CONTRACT NO. 61187				

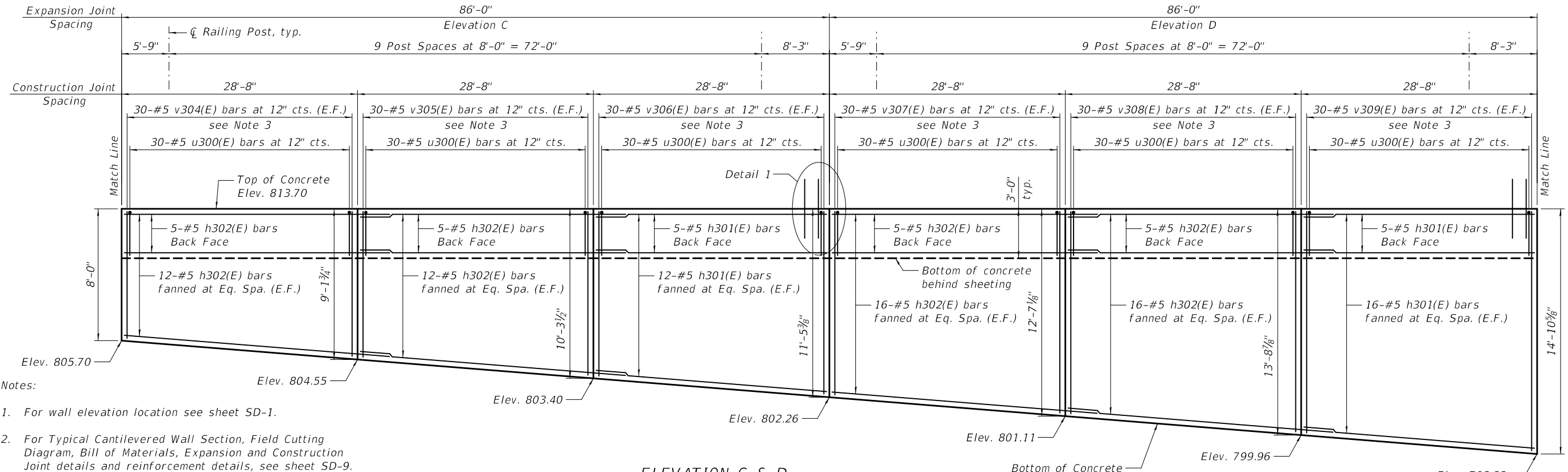
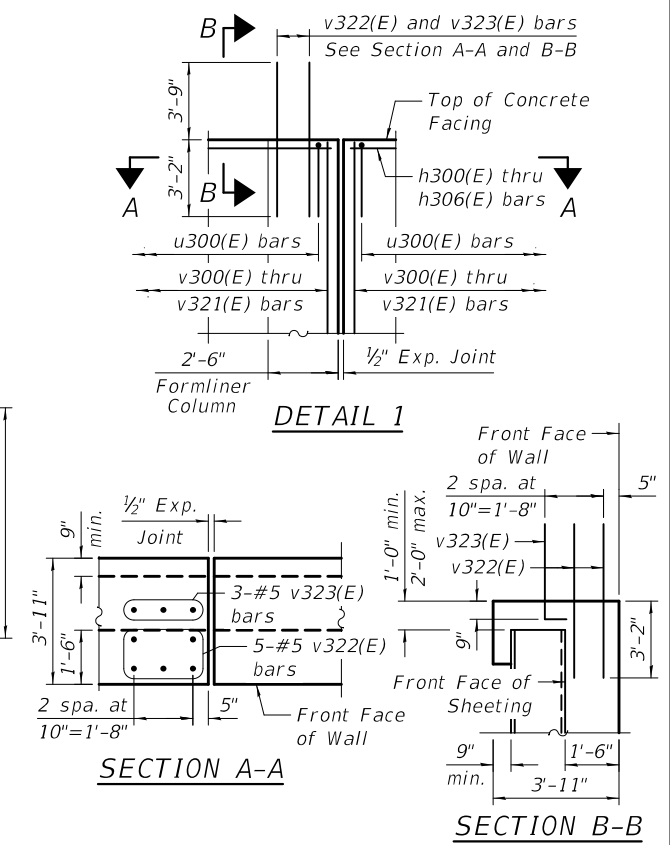
ILLINOIS FED. AID PROJECT



ELEVATION A & B

(Looking at Front Face of wall)
Horizontal dimensions measured along wall Front Face

MINIMUM BAR LAP
#5 bar = 3'-7"



ELEVATION C & D

(Looking at Front Face of wall)
Horizontal dimensions measured along wall Front Face

- Notes:
1. For wall elevation location see sheet SD-1.
 2. For Typical Cantilevered Wall Section, Field Cutting Diagram, Bill of Materials, Expansion and Construction Joint details and reinforcement details, see sheet SD-9. For Anchored wall sections, see sheet SD-10.
 3. Order bar full length. Cut bar in field as shown on Field Cutting Diagram and use the remained of bar at the other face of wall.
 4. For Pilaster, Ornamental Railing and architectural details, see sheet SD-12.

MODEL: Default
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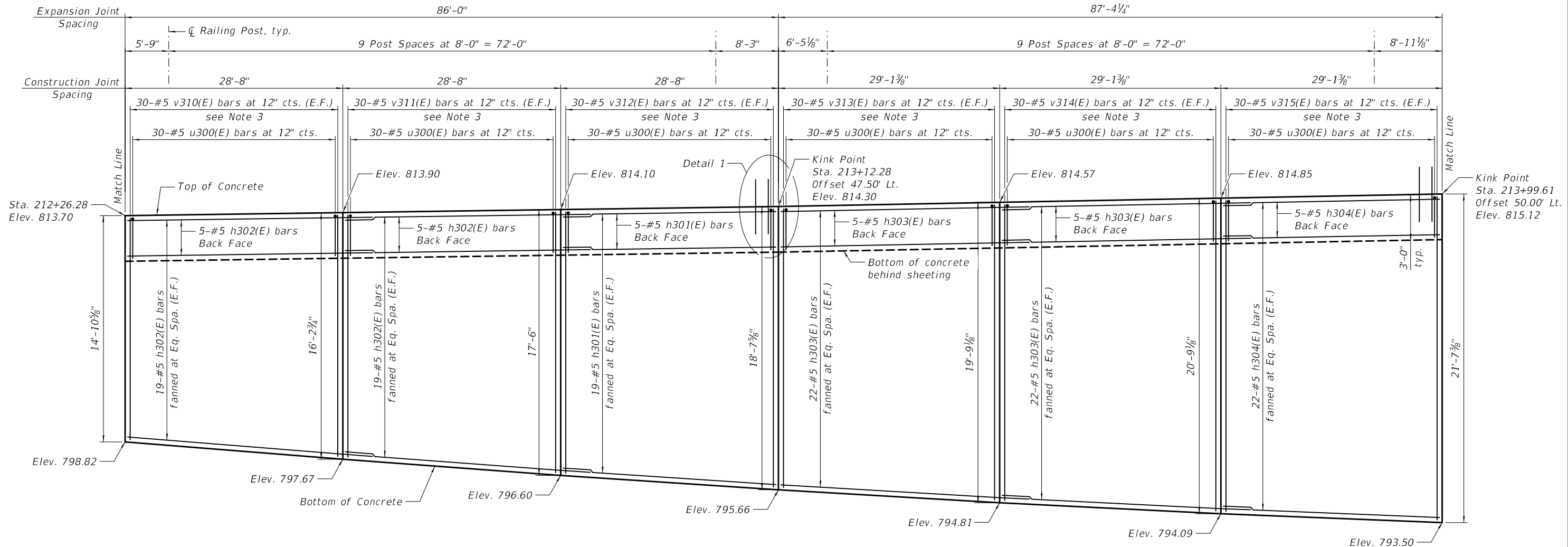
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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**WALL FACING ELEVATION 1
STRUCTURE NO. 049-W1000**

SHEET SD-6 OF SD-15 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 476
ILLINOIS FED. AID PROJECT			CONTRACT NO. 61187	



MINIMUM BAR LAP
 #5 bar = 3'-7"

ELEVATION E & F
 (Looking at Front Face of wall)
 Horizontal dimensions measured along wall Front Face

- Notes:
1. For wall elevation location see sheet SD-2.
 2. For Typical Cantilevered Wall Section, Field Cutting Diagram, Bill of Materials, Expansion and Construction Joint details and reinforcement details, see sheet SD-9. For Anchored wall sections, see sheet SD-10.
 3. Order bar full length. Cut bar in field as shown on Field Cutting Diagram and use the remained of bar at the other face of wall.
 4. For Pilaster, Ornamental Railing and architectural details, see sheet SD-12.
 5. For Detail 1 see sheet SD-6.

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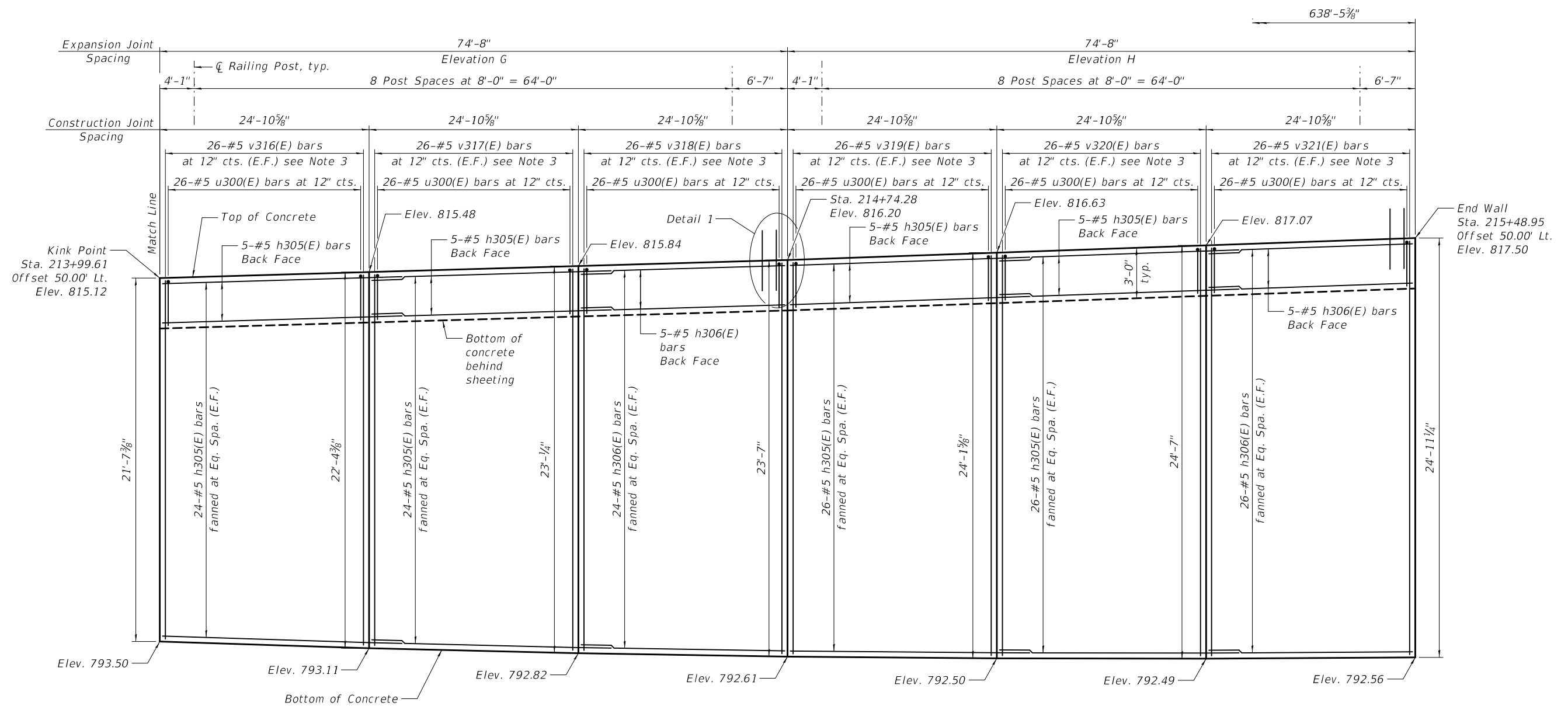
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PLOT DATE =	9/10/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALL FACING ELEVATION 2
STRUCTURE NO. 049-W1000

SHEET SD-7 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	477
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



ELEVATION G & H
 (Looking at Front Face of wall)
 Horizontal dimensions measured along wall Front Face

MINIMUM BAR LAP
 #5 bar = 3'-7"

Notes:

1. For wall elevation location see sheet SD-2.
2. For Typical Cantilevered Wall Section, Field Cutting Diagram, Bill of Materials, Expansion and Construction Joint details and reinforcement details, see sheet SD-9. For Anchored wall sections, see sheet SD-10.
3. Order bar full length. Cut bar in field as shown on Field Cutting Diagram and use the remained of bar at the other face of wall.
4. For Pilaster, Ornamental Railing and architectural details, see sheet SD-12.
5. For Detail 1 see sheet SD-6.

MODEL: Default
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DRAWN -	JAL	REVISED -			
PLOT SCALE =	N/A	CHECKED -	GJH	REVISED -	
PLOT DATE =	9/10/2024	DATE -	7/26/2024	REVISED -	

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

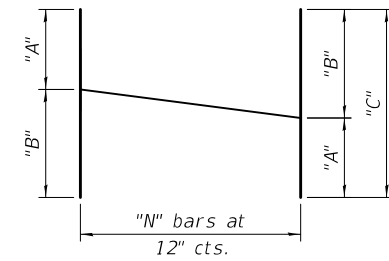
**WALL FACING ELEVATION 3
 STRUCTURE NO. 049-W1000**

SHEET SD-8 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-G5	LAKE	816	478
			CONTRACT NO. 61187	
		ILLINOIS FED. AID PROJECT		

BILL OF MATERIAL

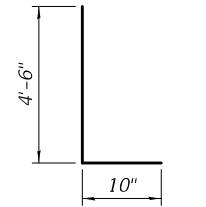
Bar	No.	Size	Length	Shape
h300(E)	17	#5	32'-8"	—
h301(E)	149	#5	28'-4"	—
h302(E)	264	#5	32'-3"	—
h303(E)	98	#5	32'-9"	—
h304(E)	49	#5	28'-9"	—
h305(E)	220	#5	28'-6"	—
h306(E)	110	#5	24'-7"	—
v300(E)	120	#5	4'-8"	—
v301(E)	30	#5	10'-4"	—
v302(E)	30	#5	12'-4"	—
v303(E)	30	#5	14'-4"	—
v304(E)	30	#5	16'-6"	—
v305(E)	30	#5	18'-10"	—
v306(E)	30	#5	21'-1"	—
v307(E)	30	#5	23'-4"	—
v308(E)	30	#5	25'-8"	—
v309(E)	30	#5	28'-0"	—
v310(E)	30	#5	30'-6"	—
v311(E)	30	#5	33'-1"	—
v312(E)	30	#5	35'-6"	—
v313(E)	30	#5	37'-9"	—
v314(E)	30	#5	39'-10"	—
v315(E)	30	#5	41'-8"	—
v316(E)	26	#5	43'-3"	—
v317(E)	26	#5	44'-8"	—
v318(E)	26	#5	45'-11"	—
v319(E)	26	#5	47'-1"	—
v320(E)	26	#5	48'-1"	—
v321(E)	26	#5	48'-10"	—
v322(E)	45	#5	6'-11"	—
v323(E)	27	#5	5'-4"	L
u300(E)	666	#5	8'-11"	└┘
Reinforcement Bars, Epoxy Coated		Pound	55,000	
Concrete Structures (Retaining Wall)		Cu. Yd.	936.6	



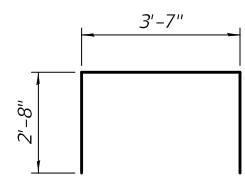
FIELD CUTTING DIAGRAM

Order bars in table below full length. Cut as shown and use remainder of bars in opposite face of panel. Note that additional cuts may be required to avoid water interference.

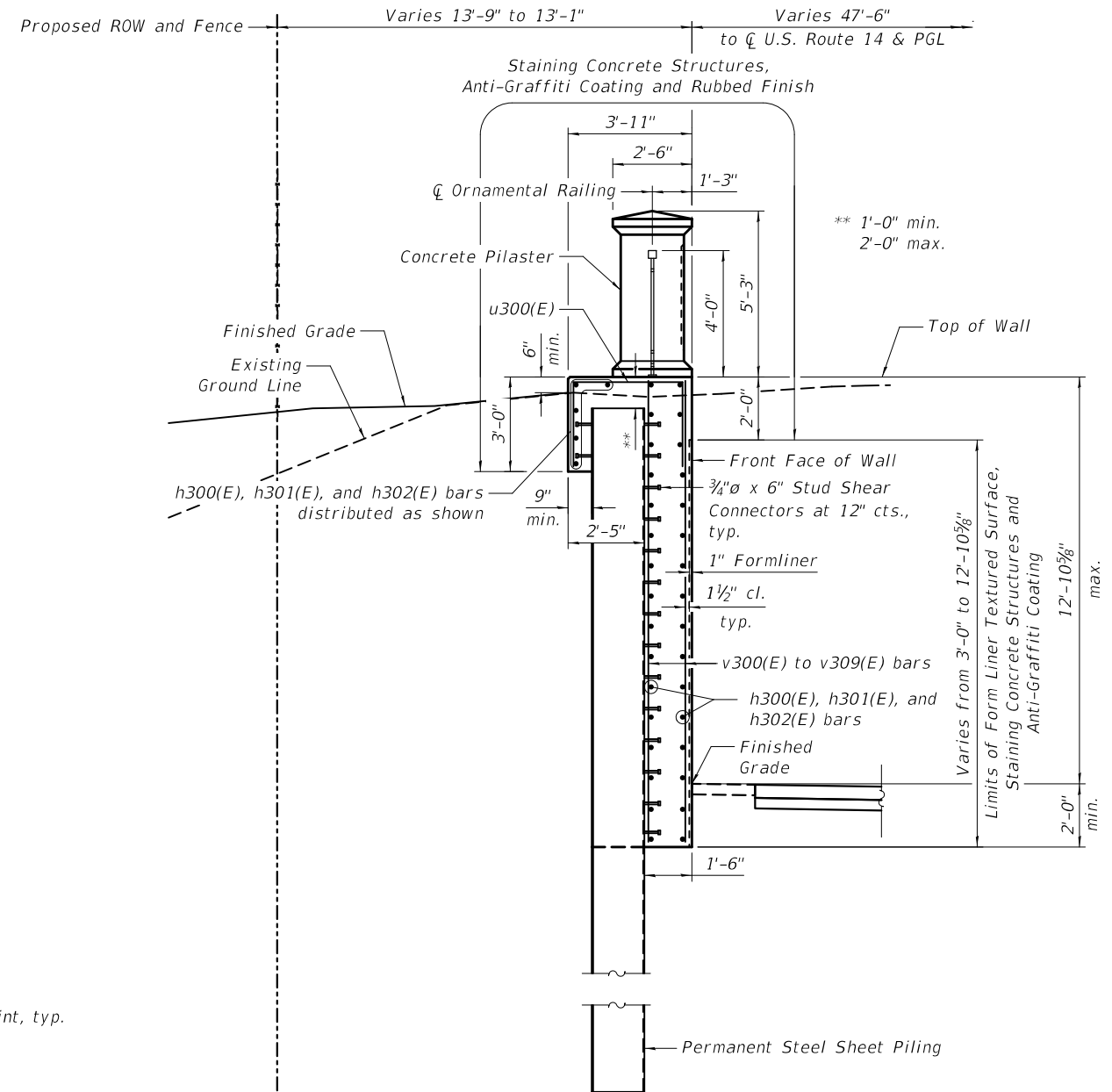
Bar	"A"	"B"	"C"	"N"
v301(E)	4'-8"	5'-8"	10'-4"	30
v302(E)	5'-8"	6'-8"	12'-4"	30
v303(E)	6'-8"	7'-8"	14'-4"	30
v304(E)	7'-8"	8'-10"	16'-6"	30
v305(E)	8'-10"	10'-0"	18'-10"	30
v306(E)	10'-0"	11'-1"	21'-1"	30
v307(E)	11'-1"	12'-3"	23'-4"	30
v308(E)	12'-3"	13'-5"	25'-8"	30
v309(E)	13'-5"	14'-7"	28'-0"	30
v310(E)	14'-7"	15'-11"	30'-6"	30
v311(E)	15'-11"	17'-2"	33'-1"	30
v312(E)	17'-2"	18'-4"	35'-6"	30
v313(E)	18'-4"	19'-5"	37'-9"	30
v314(E)	19'-5"	20'-5"	39'-10"	30
v315(E)	20'-5"	21'-3"	41'-8"	30
v316(E)	21'-3"	22'-0"	43'-3"	26
v317(E)	22'-0"	22'-8"	44'-8"	26
v318(E)	22'-8"	23'-3"	45'-11"	26
v319(E)	23'-3"	23'-10"	47'-1"	26
v320(E)	23'-10"	24'-3"	48'-1"	26
v321(E)	24'-3"	24'-7"	48'-10"	26



BAR v323(E)

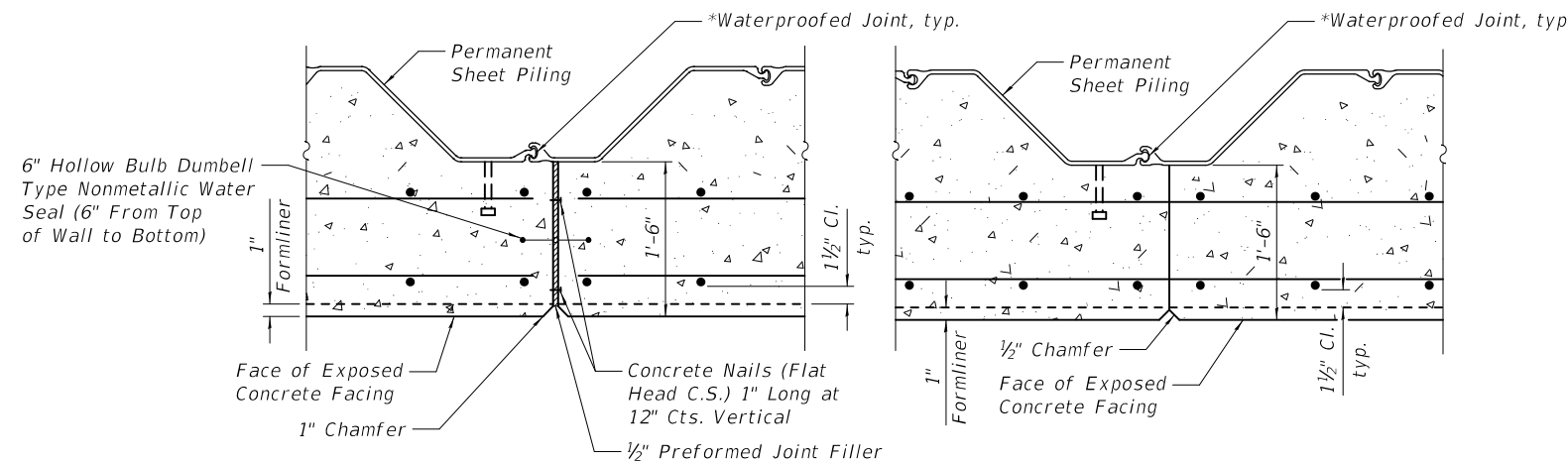


BAR u300(E)



TYPICAL CANTILEVERED WALL SECTION

Sta. 209+10.53 to Sta. 212+26.28



EXPANSION JOINT DETAIL

CONSTRUCTION JOINT DETAIL

*Waterproofing material/sealant shall be placed within each interlocking for the full height of sheeting, and shall be according to the sheet piling manufacturer's recommendations. Cost included with Permanent Sheet Piling.

MODEL: Default
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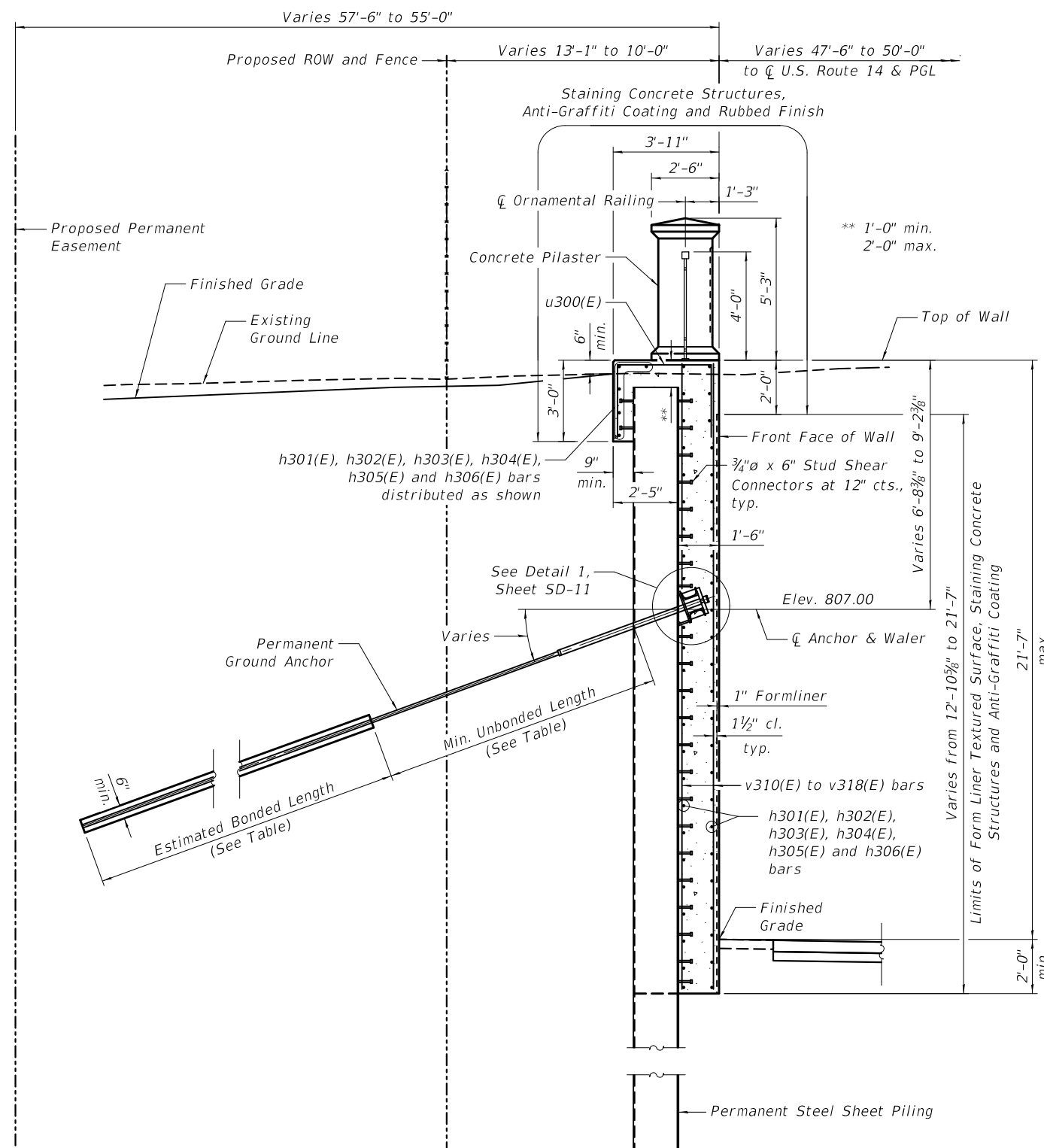
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		DATE -	7/26/2024	REVISED -	

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

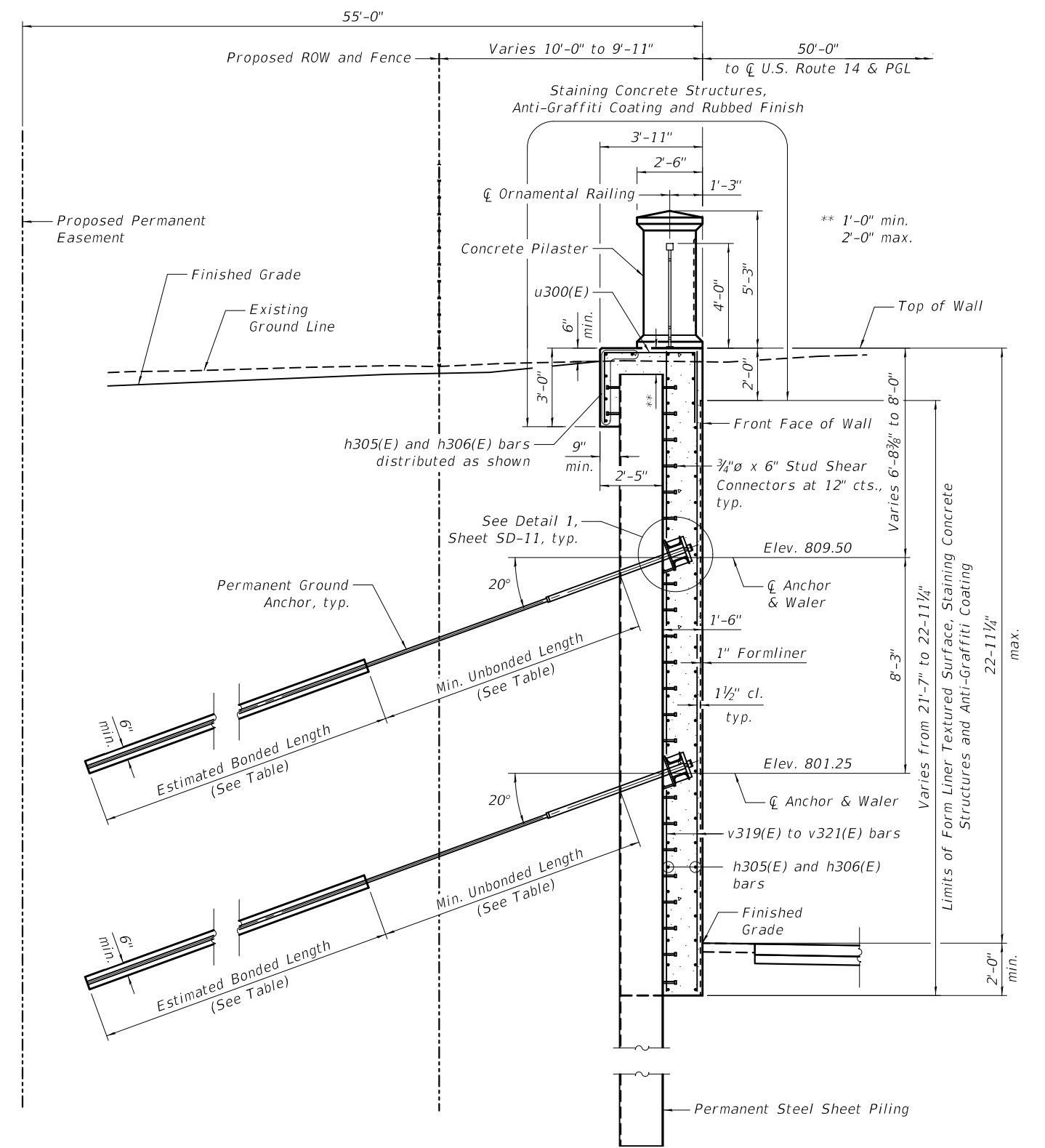
**RETAINING WALL DETAILS 1
STRUCTURE NO. 049-W1000**

SHEET SD-9 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	479
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				



TYPICAL ANCHORED WALL SECTION
 Sta. 212+26.28 to Sta. 214+74.28
 (See table on sheet SD-3 for anchor length and forces)



TYPICAL ANCHORED WALL SECTION
 Sta. 214+74.28 to Sta. 215+48.95
 (See table on sheet SD-3 for anchor length and forces)

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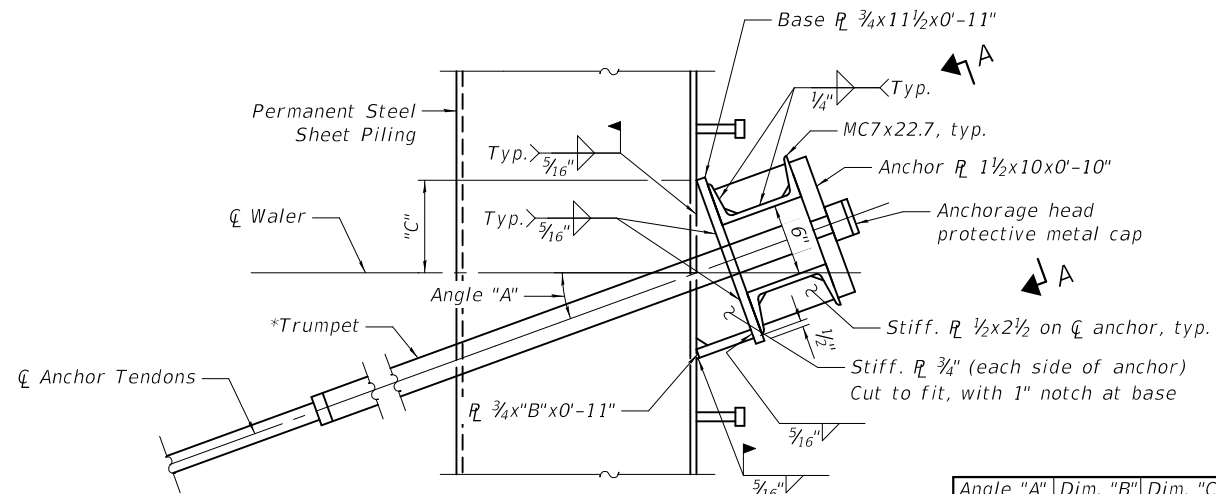
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PLOT DATE =	9/10/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**RETAINING WALL DETAILS 2
 STRUCTURE NO. 049-W1000**

SHEET SD-10 OF SD-15 SHEETS

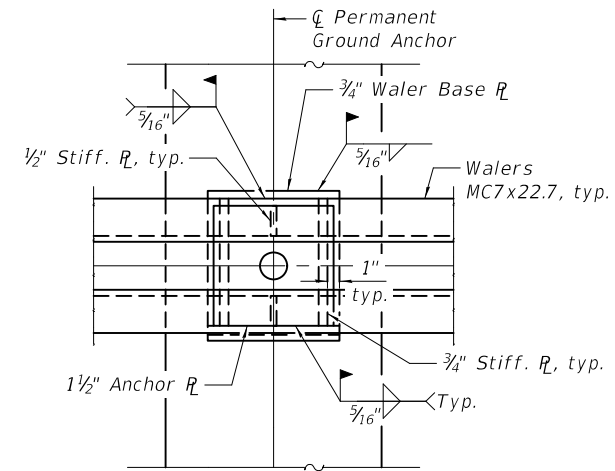
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	480
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



DETAIL 1

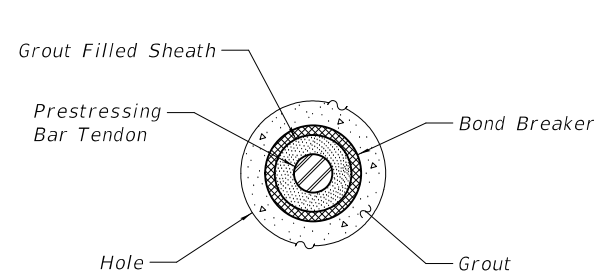
*Fill Trumpet and void areas behind anchorage head with anti-corrosion grout

Angle "A"	Dim. "B"	Dim. "C"
20°	4 1 3/16"	7 1 1/16"
30°	7 3/8"	8 3/8"

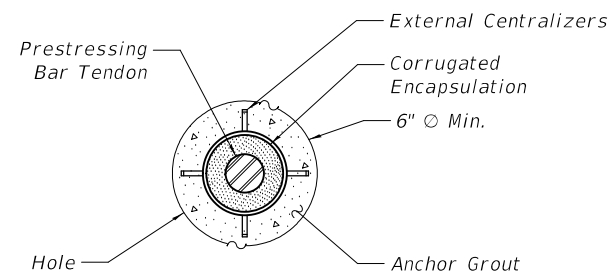


VIEW A-A

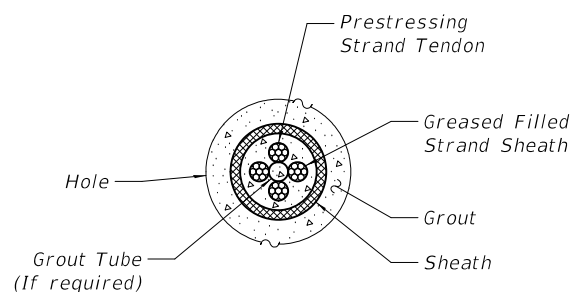
(Waler support plates, except anchor plate, to be installed at each point of contact between waler and front face of sheet piling)



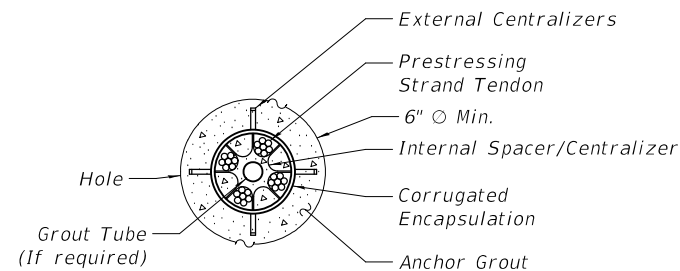
BAR TENDON DETAIL**
(Unbonded)



BAR TENDON DETAIL**
(Bonded)



STRAND TENDON DETAIL**
(Unbonded)



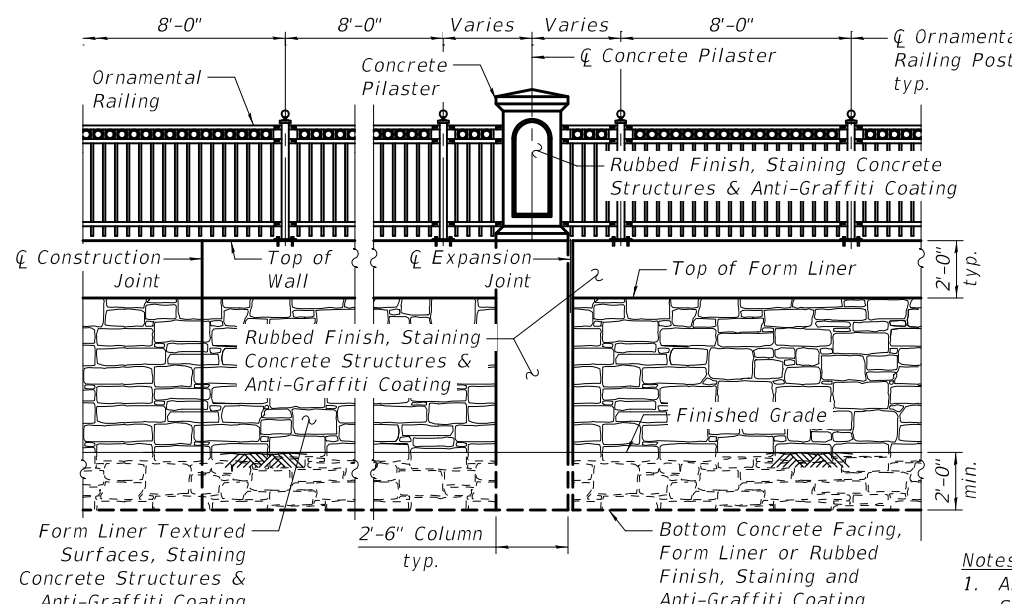
STRAND TENDON DETAIL**
(Bonded)

** The Contractor shall furnish and install Permanent Ground Anchors meeting the requirements for design load and unbonded length as shown on the plans, and fitting within the R.O.W. limits of the site. All elements (drilled hole, sheath bondbreaker, encapsulation, tendons, bonded length, etc.) shall be selected and designed by the Contractor. All materials and work shall be in compliance with the special provision.

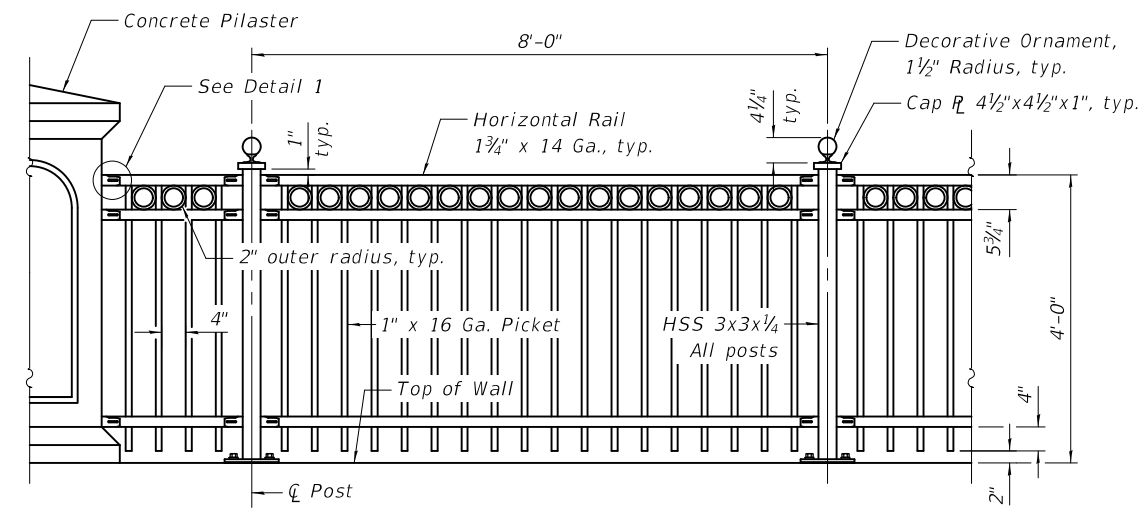
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BILL OF MATERIAL

Bar	No.	Size	Length	Shape
v324(E)	72	#4	4'-9"	
s310(E)	45	#4	7'-1"	□
s311(E)	18	#4	8'-9"	□
s312(E)	18	#4	9'-9"	□
Rubbed Finish		Sq. Ft.	6,483	
Form Liner Textured Surfaces		Sq. Ft.	7,901	
Reinforcement Bars, Epoxy Coated		Pound	670	
Concrete Structures (Retaining Wall)		Cu. Yd.	7.9	
Anti-Graffiti Coating		Sq. Ft.	14,384	
Staining Concrete Structures		Sq. Ft.	14,384	
Ornamental Railing		Foot	616	



FORM LINER TEXTURED SURFACE DETAIL



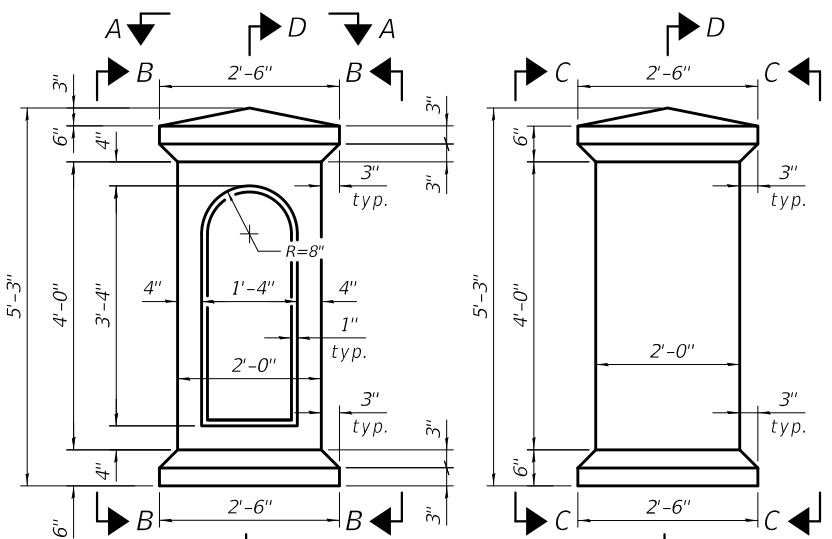
ORNAMENTAL RAILING DETAILS

Notes:

1. All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specification.
2. All post, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black. See Special Provisions.
3. Space reinforcement in the sides of pylasters to miss anchor bolts.
4. Rubbed Finish shall be applied to all non-form liner textured surfaces of concrete, including the pilasters, bandings, "columns", top of wall and back of coping.
5. Staining Concrete Structures and Anti-Graffiti Coating shall be applied to all exposed surfaces of concrete, 2 feet min. below grade and back of coping.

LEGEND

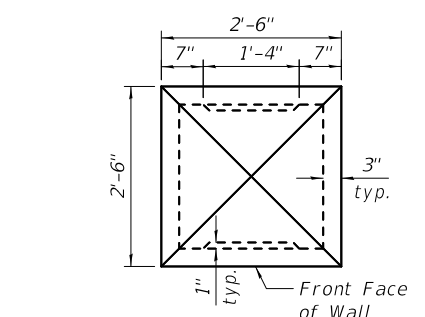
Pattern shall be similar to Pattern #12005 "Bearpath Coursed Stone" manufactured by Custom Rock.



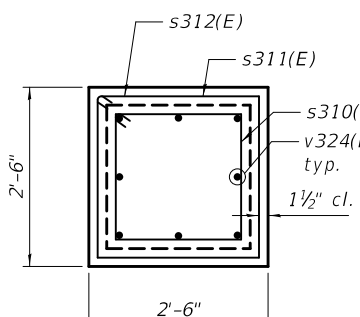
VIEW C-C

VIEW B-B

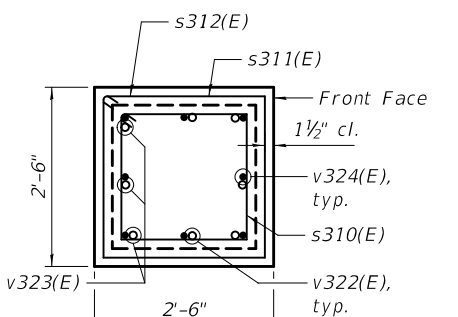
SECTION D-D



VIEW A-A

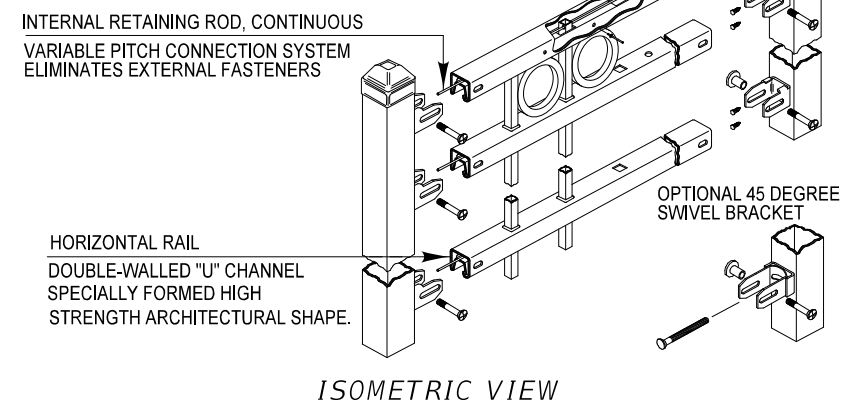


SECTION E-E

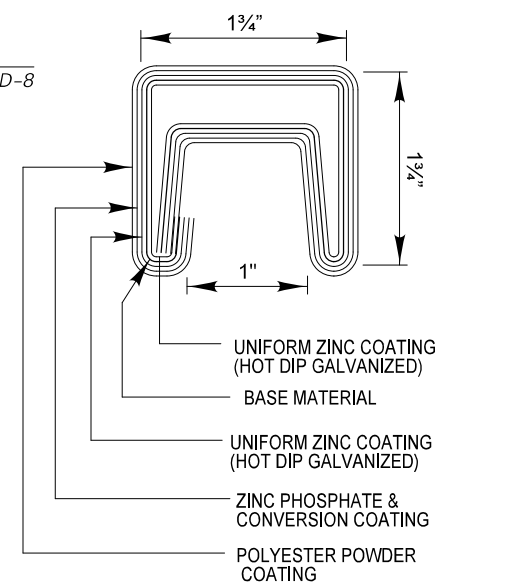


SECTION F-F

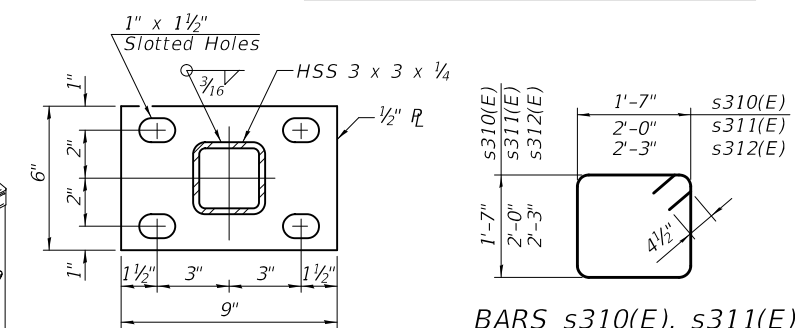
CONCRETE PILASTER DETAILS



ISOMETRIC VIEW

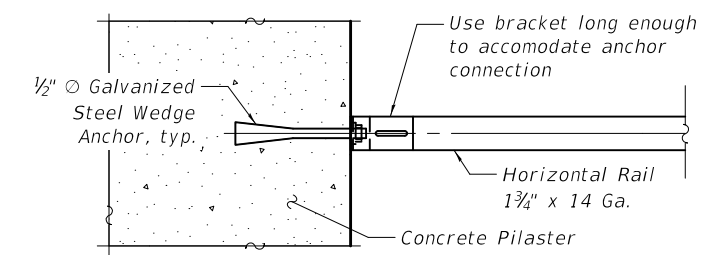


HORIZONTAL RAIL CROSS SECTION

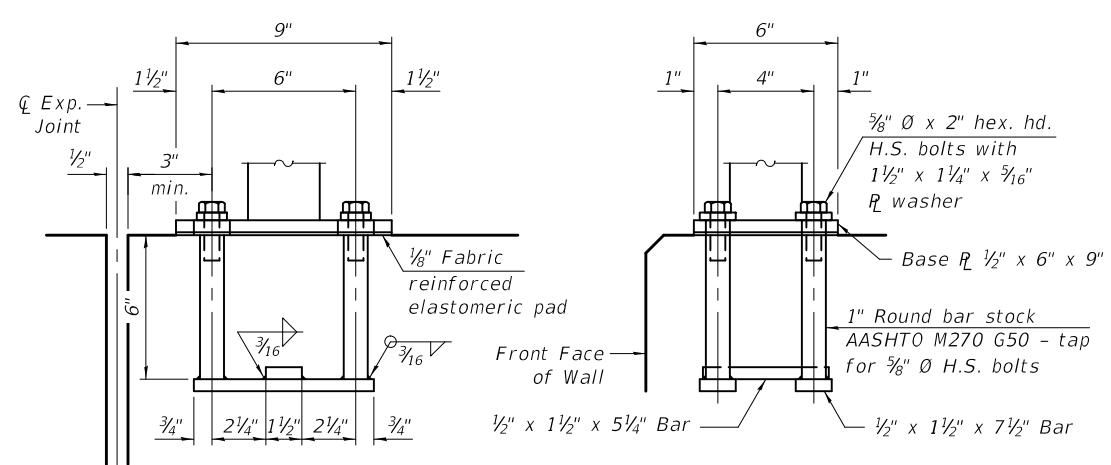


BASE PLATE

BARS s310(E), s311(E) & s312(E)



DETAIL 1



ANCHORAGE ASSEMBLY

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8" Ø fully threaded anchor rods with the same plate washers as specified above and heavy hex lock nuts according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**ORNAMENTAL RAILING DETAILS
STRUCTURE NO. 049-W1000**

SHEET SD-12 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-G5	LAKE	816	482
				CONTRACT NO. 61187
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 2/25/13

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MHP
SECTION 11-00087-00-GS LOCATION US Route 14: Retaining Wall
COUNTY Lake STRUCTURE NO. (Exist) 049-0132 (Prop.)
BORING NO. SB-9 DRILLING METHOD HSA HAMMER TYPE Manual

Station	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS Qu	MOIST	Groundwater Depth:	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS Qu	MOIST
210+00						First Encounter 20.5' (ft.)					
Offset 7' L of CL						Upon Completion 16.0' (ft.)					
Ground Surface Elev. 814.7 (ft.)						After Hrs. (ft.)					
SOIL DESCRIPTION (ft.)	(ft.)	/ft	(tsf)	(%)	SOIL DESCRIPTION (ft.)	(ft.)	/ft	(tsf)	(%)		
Pavement: 4" Bituminous Concrete over 8" PCC	813.7				Grey CLAY, trace Sand and Gravel, A-6, very stiff to stiff	35	5-8-10	3.10	16		
Brown and Black CLAY, little Sand and Gravel: FILL, stiff	811.7	11-11-9	1.5	13							
Brown and Grey CLAY, little Sand and Gravel, A-6, very stiff	809.2	6-8-8	3.72	21							
Brown and Grey SAND and GRAVEL, A-2-4(0), medium dense	774.7	9-9-10		11	End of Boring at 40'	40	5-8	1.47	17		
Grey CLAY, trace Sand and Gravel, A-6, hard to very stiff	805.2	4-4-7	3.57	20							
		5-9-14	5.32	18							
		5-9-11	3.54	19							
		4-5-9	2.88	17							
Grey Clayey SILT, A-4, medium dense	795.2	4-10-13	2.33	15							
Grey CLAY, trace Sand and Gravel, A-6, stiff to very stiff	794.2	44-12-8	1.36	16							
		7-10-12	3.80	19							
		7-10-18	2.87	19							
		7-13-22	3.14	17							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 2/25/13

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MHP
SECTION 11-00087-00-GS LOCATION US Route 14: Retaining Wall
COUNTY Lake STRUCTURE NO. (Exist) 049-0132 (Prop.)
BORING NO. SB-10 DRILLING METHOD HSA HAMMER TYPE Automatic

Station	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS Qu	MOIST	Groundwater Depth:	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS Qu	MOIST
212+75						First Encounter none (ft.)					
Offset 7' L of CL						Upon Completion dry (ft.)					
Ground Surface Elev. 816.0 (ft.)						After Hrs. (ft.)					
SOIL DESCRIPTION (ft.)	(ft.)	/ft	(tsf)	(%)	SOIL DESCRIPTION (ft.)	(ft.)	/ft	(tsf)	(%)		
Pavement: 4" Bituminous Concrete over 8" PCC	815				Grey CLAY, trace Sand and Gravel, A-6, stiff	35	6-7-10	1.40	20		
Black to Dark Grey CLAY, A-7-6, very stiff	813	6-5-14	3.03	18							
Brown and Grey Sandy LOAM, A-2-4(0), with cobbles	779	9-8-14		11	Grey Clayey SILT, A-4 to A-6, medium dense						
		8-16-17		9							
Grey CLAY, trace Sand and Gravel, A-6(14), stiff to hard	807.5	8-10-11	1.36	16	End of Boring at 40'	40	6-8	0.5	16		
		7-13-20	5.16	17							
		16-16-22	6.21	15							
		5-7-13	5.43	16							
		4-8-15	4.93	17							
		7-9-12	2.29	20							
		ST	1.5	20							
		8-13-16	1.0	18							
		5-7-9	1.63	18							
		7-12-16	1.82	20							

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 10/4/13

ROUTE US 14 DESCRIPTION US Route 14 at WCLRR LOGGED BY MP
SECTION 11-00087-00-GS LOCATION US Route 14: Retaining Wall
COUNTY Lake STRUCTURE NO. (Exist) 049-0132 (Prop.)
BORING NO. SB-28 DRILLING METHOD HSA HAMMER TYPE Safety

Station	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS Qu	MOIST	Groundwater Depth:	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS Qu	MOIST
208+8.5						First Encounter 24.0' (ft.)					
Offset 7' L						Upon Completion 12.0' (ft.)					
Ground Surface Elev. 813.9 (ft.)						After Hrs. (ft.)					
SOIL DESCRIPTION (ft.)	(ft.)	/ft	(tsf)	(%)	SOIL DESCRIPTION (ft.)	(ft.)	/ft	(tsf)	(%)		
Black CLAY, A-6 Topsoil					Grey CLAY, trace Sand & Gravel, A-6 stiff	35	4-7-11	1.59	18		
		9-8-14		27							
Brown, Grey, and Black Clay LOAM, A-6 FILL	810.9	6-6-6		16							
Brown and Grey to Grey CLAY, trace Sand & Gravel, A-6 stiff to hard	808.4	4-5-7	2.33	27	End of Boring at 40 Feet	40	14-7-11	1.55	20		
		5-5-5	0.93	26							
		4-8-11	4.46	20							
		6-8-15	3.49	18							
		6-10-15	4.49	16							
		4-6-8	2.25	18							
		3-4-7	2.14	20							
Grey SAND and GRAVEL, A-1-b dense to very dense	789.9	10-22-11	2.40	18							
		12-27-50		7							
		50/6"		13							
Grey CLAY, trace Sand & Gravel, A-6 stiff	781.9										

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MODEL: Default
FILE NAME: ...049W1000-013-Boring_Logs_1.dgn

CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME =	mc	DESIGNED -	JAL	REVISED -	
PLOT SCALE =	N/A	DRAWN -	JAL	REVISED -	
PLOT DATE =	9/10/2024	CHECKED -	GJH	REVISED -	
		DATE -	7/26/2024	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS 1
STRUCTURE NO. 049-W1000

SHEET SD-13 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	483
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 10/7/13

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MP
SECTION 11-00087-00-GS LOCATION North West Retaining Wall
COUNTY Lake STRUCTURE NO. (Exist) 049-0132 (Prop.)
BORING NO. SB-29 DRILLING METHOD HSA HAMMER TYPE Safety

Station 211+3.5
Offset 9'L
Ground Surface Elev. 815.4 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS	MOIST
Pavement: 4" Bit. Concrete, 14" PCC	813.9					35				
Brown, Black, & Grey Silty Clay LOAM, A-6 FILL very stiff		11-8-7	-	19			5	1.55	20	
	809.9	4-5-5	2.29	23			6	2.09	17	
Orange Brown Sandy LOAM, with Gravel, A-2-4(0) medium dense	807.4	12-12-8	-	13			40			
Grey CLAY, trace Sand & Gravel, A-6 hard to very stiff		9-13-18	7.37	16			10			
		5-11-16	4.95	18						
		3-7-14	2.72	16			15			
		5-11-16	5.04	19						
		7-14-21	-	23			20			
		4-7-10	2.87	22						
		7-11-23	2.87	18			25			
		6-10-13	2.64	18						
		6-9-12	2.10	19			30			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG Date 10/7/13

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MP
SECTION 11-00087-00-GS LOCATION North West Retaining Wall
COUNTY Lake STRUCTURE NO. 049-0008 (Exist) 049-0132 (Prop.)
BORING NO. SB-30 DRILLING METHOD HSA HAMMER TYPE Safety

Station 214+00
Offset 9'L
Ground Surface Elev. 816.5 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/6"	(tsf)	(%)	ELEV (ft.)	DEPTH (ft.)	BLOW S	UCS	MOIST
Pavement: 4" Bit. Concrete, 8" PCC Base	815.5					35				
Black CLAY, A-7-6 stiff		7-4-3	1.47	27			6	1.86	19	
Brown Sandy Clay LOAM, A-2-4 stiff	813.5	4-8-13	1.37	18			7	1.47	19	
Brown SAND and GRAVEL, A-1 medium dense	811	11-12-11	-	9			40			
Grey CLAY, trace Sand & Gravel, A-6(12) very stiff to hard	808.5	8-10-9	3.88	13			10			
		3-8-12	3.72	17						
		7-12-14	4.95	16			15			
		3-5-9	2.29	18						
		4-6-9	1.75	14			20			
Grey SAND, A-1-a, coarse, saturated dense	796	16-18-19	-	7						
Grey CLAY, trace Sand & Gravel, A-6 stiff	792	33-6-6	1.01	18			25			
		2-6-10	2.40	20						
		5-7-16	2.10	20			30			

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MSET PROJECT NO.: 20618 LOG OF BORING NO. SB-102 Page 1 of 2

PROJECT: Route 14 Underpass Phase 2 SITE LOCATION: Barrington, Illinois
BORING LOCATION: Station 213+38, 46' L CLIENT: Civiltech Engineering, Inc.

DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE			TESTS			REMARKS
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc %	Dry Unit Weight, pcf	Unconfined Compressive Strength, tsf	
0		Topsoil - Black CLAY (12")	814.0							
		Reddish-Brown and Grey Sandy LOAM with Gravel, A-2-4 to A-3, slightly to medium dense	813.0	SS	1	6	12			
				SS	2	20	9			
5		Brownish-Grey to Dark Grey SAND (f. c) with Gravel, A-3, medium dense, wet	808.6	SS	3	19	12			
		Grey Clay LOAM, A-6, hard	806.0	SS	4	21	17	104	6.67	
10				SS	5	23	15	108	6.40	
				SS	6	22	15	111	5.63	
15		Grey SAND (f-c) with Gravel, A-3, medium dense, wet	798.6	SS	7	21	10			
		Grey CLAY, A-6, very stiff to hard	796.0	SS	8	14	19	108	2.83	
20				SS	9	17	17	106	4.07	
		to stiff	791.0	SS	10	9	20	105	1.75	
25				SS	11	8	19	97	1.44	
				SS	12	10	21	102	1.63	
30				SS	13	6	20	97	1.09	

WATER LEVEL OBSERVATIONS, ft.
DURING DRILLING: 6.0'
IMMEDIATELY AFTER DRILLING: 6.2'
DELAYED READING AFTER



BORING STARTED: 1/11/21
BORING COMPLETED: 1/11/21
LOGGED BY: GPF
BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1896 (847) 844-3875

MODEL: Default
FILE NAME: ...049W1000-61187-014-Boring_Logs_2.dgn

CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS 2
STRUCTURE NO. 049-W1000

SHEET SD-14 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	484
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-102		Page 2 of 2						
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois							
BORING LOCATION: Station 213+38, 46' L			CLIENT: Civiltech Engineering, Inc.							
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS		
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf		Unconfined Compressive Strength, tsf	
40		Grey CLAY, A-6, stiff cont.	775.0	SS	14	13	16	116	1.47	
45				SS	15	12	16	111	1.44	
50				SS	16	16	14	120	1.94	
55				SS	17	13	17	112	0.97	
60		Grey CLAY, A-6, hard to very stiff	757.0	SS	18	27	18	105	4.07	
65				SS	19	15	19	106	2.91	
70				SS	20	17	19	109	2.79	
75				SS	21	17	19	110	2.52	
End of Boring at 75'			739.0							

WATER LEVEL OBSERVATIONS, ft. DURING DRILLING: 6.0' IMMEDIATELY AFTER DRILLING: 6.2' DELAYED READING AFTER:		BORING STARTED: 1/12/21 BORING COMPLETED: 1/12/21 LOGGED BY: GPF BORING METHOD: HSA
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MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-103		Page 1 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 214+68, 49' L			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS	
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf		Unconfined Compressive Strength, tsf
0		Topsoil - Black CLAY, A-8, stiff	816.1	SS	1A	4	22	1.0 Cp	
		Brown CLAY, A-6, very stiff	814.6	SS	1B	7	19	3.0 Cp	
5		Brown and Grey Sandy LOAM with Gravel, A-2-4 to A-3, medium dense	813.1	SS	2	23	6		
				SS	3	22	10		
10		Grey CLAY, A-6, hard to very stiff	808.1	SS	4	14	16	109	5.59
				SS	5	11	13	110	3.34
15		Sand seam at 16.5', wet	799.6	SS	7	9	14	111	2.10
				SS	8	12	16	103	3.30
20				SS	9	13	17	109	5.55
25				SS	10	13	20	108	2.02
				SS	11	8	19	103	1.98
30				SS	12	13	19	107	2.52
35		Sand seam at 34.5', wet	781.6	SS	13	12	19	103	2.41

WATER LEVEL OBSERVATIONS, ft. DURING DRILLING: 16.5' IMMEDIATELY AFTER DRILLING: Dry DELAYED READING AFTER 24 Hrs: 11.5'		BORING STARTED: 1/12/21 BORING COMPLETED: 1/12/21 LOGGED BY: GPF BORING METHOD: HSA
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MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-103		Page 2 of 2						
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois							
BORING LOCATION: Station 214+68, 49' L			CLIENT: Civiltech Engineering, Inc.							
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS		
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf		Unconfined Compressive Strength, tsf	
40		Grey CLAY, A-6, very stiff to hard, cont.	777.1	SS	14	14	13	122	2.47	
45				SS	15	16	13	116	4.38	
50		Sand seam at 49.5', wet	766.6	SS	16	13	13	118	2.79	
55				SS	17	12	15	116	1.90	
60		probable cobble at 59.5'		SS	18	29	16	113	7.26	
65				SS	19	21	12	116	2.72	
70				SS	20	17	18	114	2.91	
75				SS	21	16	18	113	2.91	
End of Boring at 75'			741.1							

WATER LEVEL OBSERVATIONS, ft. DURING DRILLING: 16.5' IMMEDIATELY AFTER DRILLING: Dry DELAYED READING AFTER 24 Hrs: 11.5'		BORING STARTED: 1/12/21 BORING COMPLETED: 1/12/21 LOGGED BY: GPF BORING METHOD: HSA
---	---	--

MODEL: Default
FILE NAME: ...049W1000-61187-015-Boring_Logs_3.dgn


 Two Plerce Place, Suite 1400
 Itasca, Illinois 60143
 Tel: 630.773.3900
 Fax: 630.773.3975
 www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS 3
STRUCTURE NO. 049-W1000
 SHEET SD-15 OF SD-15 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	485
CONTRACT NO. 61187				

ILLINOIS FED. AID PROJECT

Benchmark: East bolt on fire hydrant at the East corner of North Avenue and Park Lane,
Sta. 215+68.79, Offset 80.93' Rt. (U.S. Route 14), Elevation 818.39.

Existing Structure: None.

Maintenance of Traffic: Traffic will be detoured to a temporary roadway during construction.
Railroad traffic will be detoured to a shoofly track.

DESIGN STRESSES

FIELD UNITS

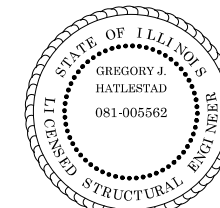
$f'_c = 3,500$ psi (Wall Facing)
 $f_y = 60,000$ psi (Reinforcement)
 $f_y = 50,000$ psi (ASTM A572 Grade 50)

DESIGN SPECIFICATIONS

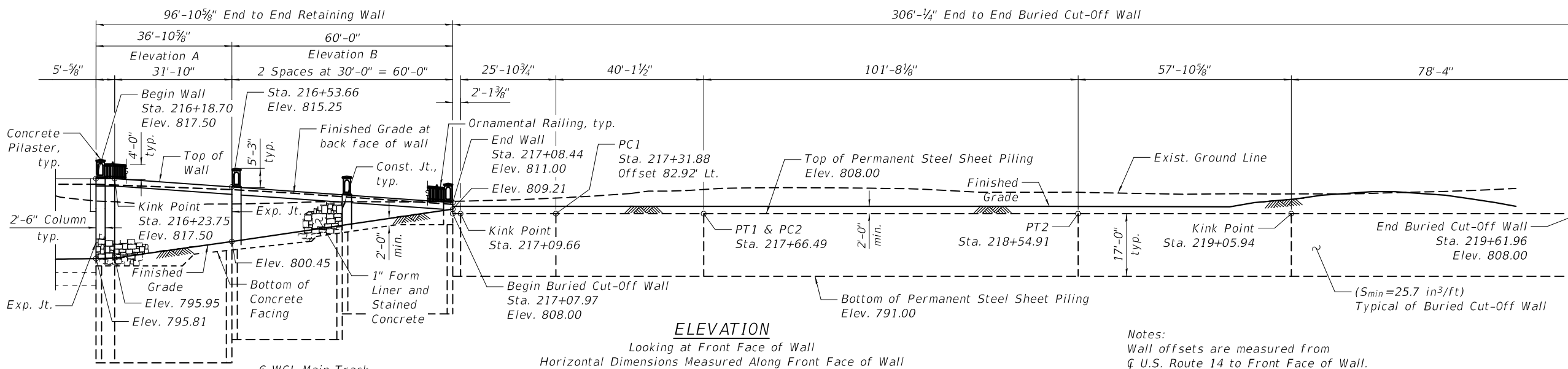
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition
2023 AREMA Manual for Railway Engineering

LOADING

Cooper E-90 Surcharge

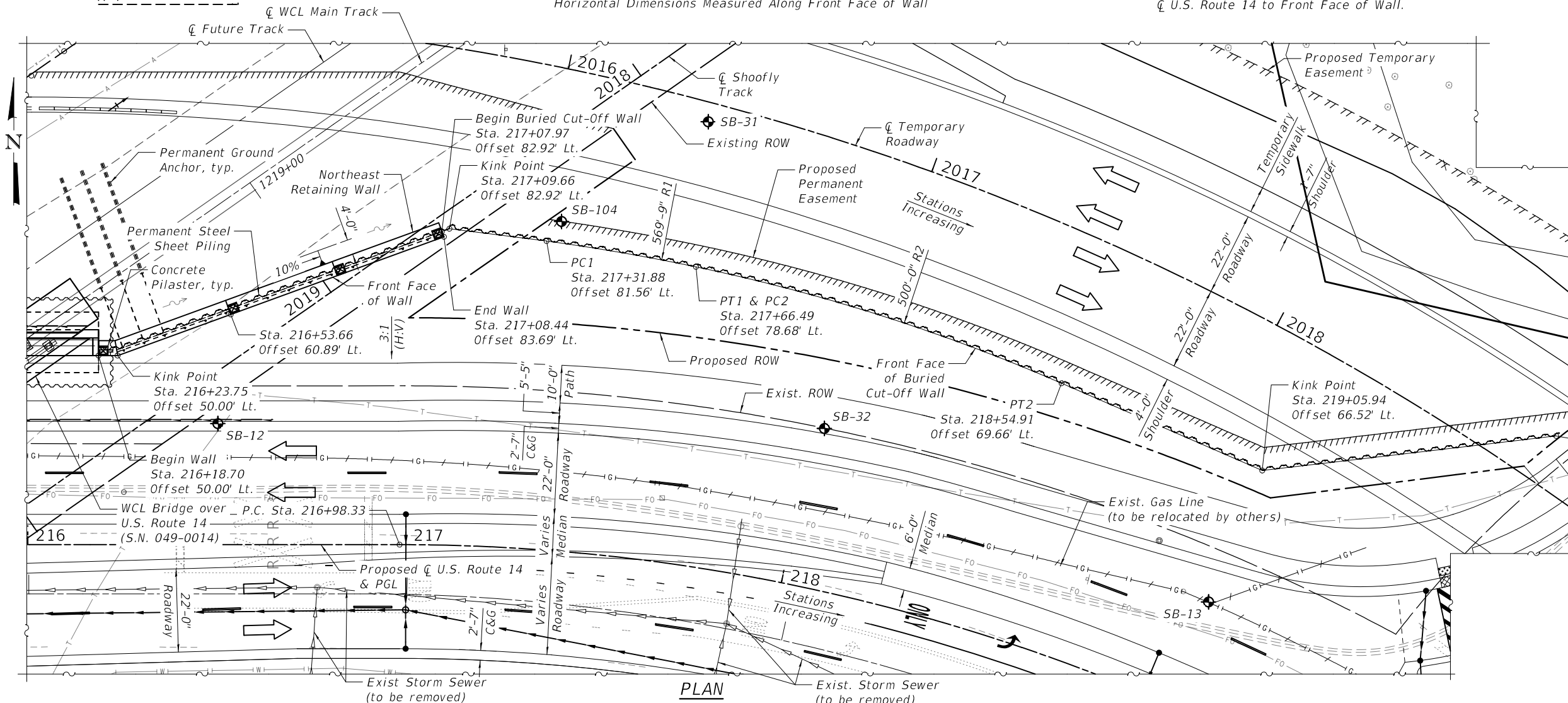


Gregory J. Hatlestad, S.E.
081-005562
Exp 11/30/2024
Date 7/25/2024



ELEVATION
Looking at Front Face of Wall
Horizontal Dimensions Measured Along Front Face of Wall

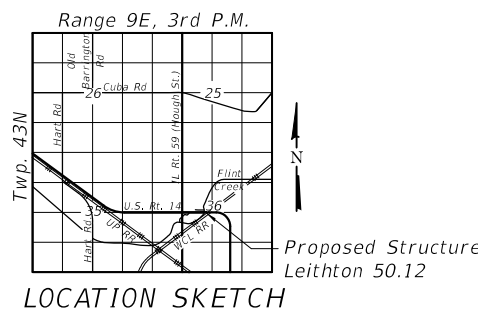
Notes:
Wall offsets are measured from
☐ U.S. Route 14 to Front Face of Wall.



PLAN

LEGEND

- FO Existing Fiber Optic
- A Existing Aerial Lines
- G Existing Gas line
- W Existing Water Main
- T Existing Telephone
- SS Existing Sanitary Sewer
- E Existing Electric Line
- SS Proposed Storm Sewer
- SB Soil Boring



**GENERAL PLAN AND ELEVATION
NORTHEAST RETAINING WALL
F.A.P. RTE. 305 - U.S. ROUTE 14
SECTION 11-00087-00-GS
LAKE COUNTY
STA. 216+18.70 TO STA. 217+08.44
STRUCTURE NO. 049-W1001**

MODEL: Default
FILE NAME: ...049W1001-61187-001-GPE.dgn

CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = 32.0000' / in.	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GENERAL PLAN AND ELEVATION
STRUCTURE NO. 049-W1001**

SHEET SE-1 OF SE-10 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 486
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

GENERAL NOTES

- The Contractor shall be responsible for confirming or establishing the existence of all utility facilities relevant to their exact locations, and schedule all necessary utility relocations.
- All elevations and dimensions must be verified in the field.
- The centerline of a ground anchor shall not be within 12" of a vertical wall joint. Contractor may shift horizontal position of ground anchors and/or joints to avoid interference. Any horizontal shift, and all subsequent modifications required, will be the responsibility of the Contractor and submit to the Engineer for approval.
- All structural steel shall be AASHTO M 270 Grade 50.
- No field welding is permitted except as specified in the contract documents.
- Reinforcement bars designated (E) shall be epoxy coated.
- Sheet piling dimensions, alcove dimensions and anchor spacing for the retaining wall are based on NZ sheet piling. These may be adjusted in the field based on actual sheet piling section selected by the Contractor.
- Anti-Graffiti Coating shall be applied to the exposed surfaces of the facing, coping, and pilasters.
- Stiff soils are present, pre-drilling may be required for sheet piling installation. Cost included with "Permanent Sheet Piling."

PROPOSED CONSTRUCTION SEQUENCE:

- Construction of Northwest Retaining Wall will occur in Stage 2.
- Install sheet piles to tip elevations shown. Anchored portion of wall will be buried until all sheet piles are installed.
- Excavation for proposed U.S. Route 14 roadway will be ongoing during Stage 2. All excavation in front of wall shall be coordinated with proposed ground anchor elevations. When excavation reaches 1'-0" below elevation of ground anchors, drill and install anchors and waler. Do not further excavate below anchor elevations until all anchors are stressed and load locked in. Anchor installation requirements are specified in the Special Provisions.
- Repeat operation 3 for lower rows of ground anchors, where applicable.
- Excavate to bottom of concrete facing.
- Install studs and pour concrete facing and pilasters with form liners and rubbed finish as specified.
- Stain surfaces of concrete as specified and apply Anti-Graffiti Coating.
- Install railings.

GROUND ANCHOR SCHEDULE

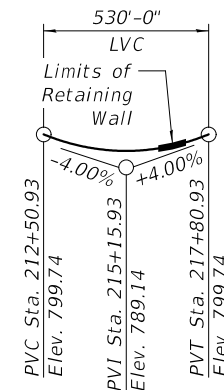
Anchor Type	Service Load (Kip)	Minimum Unbounded Length (Foot)	Estimated Bonded Length (Feet)	Estimated Total Length (Feet)	Angle (Degree)	Grout Diameter (Inch)
2A	69.6	17	32	49	25	8
2B	62.3	15	35	50	25	8
2C	48.1	15	27	42	25	8
2D	67.6	15	28	43	20	8
2E	49.8	15	28	43	20	8
2F	64.0	15	22	37	20	8
2G	37.9	15	21	36	20	8
2H	52.0	15	23	38	20	8
2I	44.3	15	18	33	20	8

INDEX OF SHEETS

- SE-1 General Plan and Elevation
- SE-2 General Data
- SE-3 Anchored Wall Plan and Elevation
- SE-4 Wall Facing Elevation
- SE-5 Retaining Wall Details 1
- SE-6 Retaining Wall Details 2
- SE-7 Ornamental Railing Details
- SE-8 Boring Logs 1
- SE-9 Boring Logs 2
- SE-10 Boring Logs 3

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Structure Excavation	Cu. Yd.	227
Rubbed Finish	Sq. Ft.	1,169
Form Liner Textured Surface	Sq. Ft.	1,174
Stud Shear Connectors	Each	436
Reinforced Bars, Epoxy Coated	Pound	8,390
Permanent Sheet Piling	Sq. Ft.	9,063
Concrete Structures (Retaining Wall)	Cu. Yd.	146.9
Permanent Ground Anchor	Each	27
Anti-Graffiti Coating	Sq. Ft.	2,343
Staining Concrete Structures	Sq. Ft.	2,343
Ornamental Railing	Foot	87

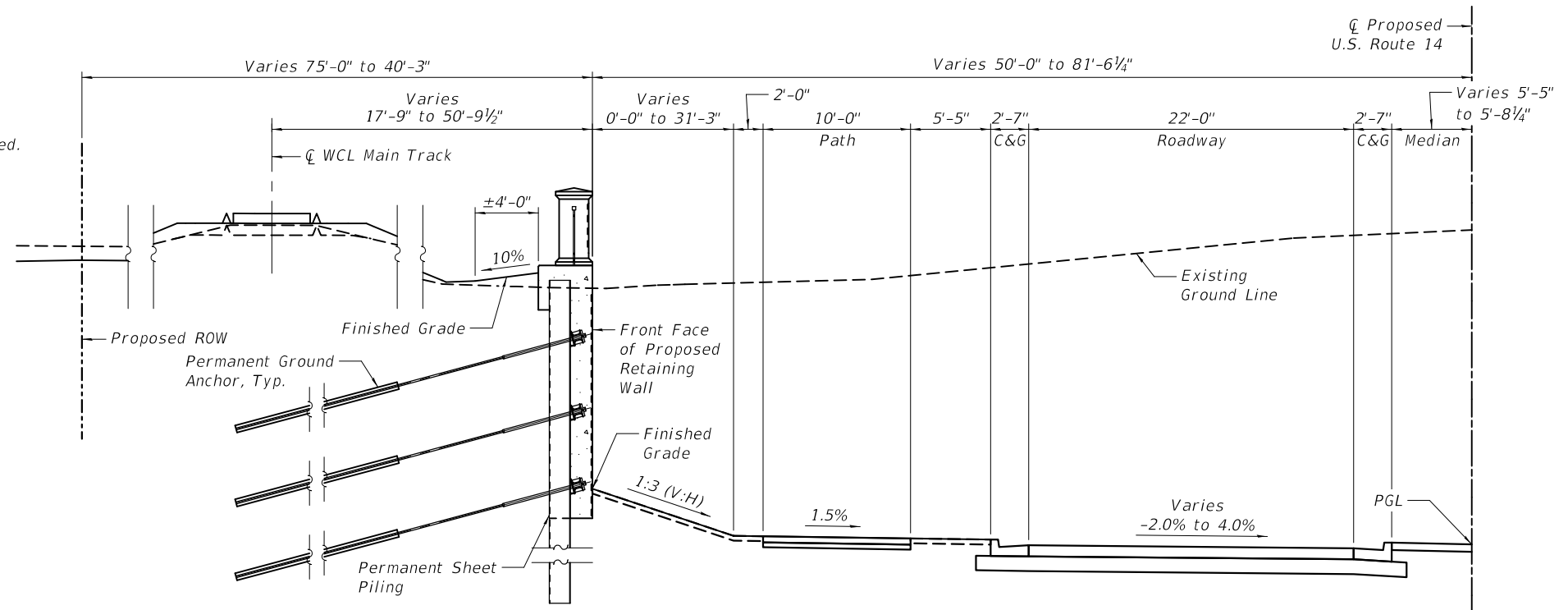


CURVE DATA

$\Delta = 91^\circ 05' 11''$ (Rt.)
 $D = 11^\circ 11' 26''$
 $T = 521.80'$
 $L = 813.96'$
 $E = 219.04'$
 $R = 512.00'$
 $SE = 3.80\%$
 $P.C. = Sta. 216+98.33$
 $P.I. = Sta. 222+20.14$
 $P.T. = Sta. 225+12.29$
 $TR = 190$ ft. (WB)

PROFILE GRADE

(Along Proposed \bar{C} U.S. Route 14)



TYPICAL SECTION

(Looking East)

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

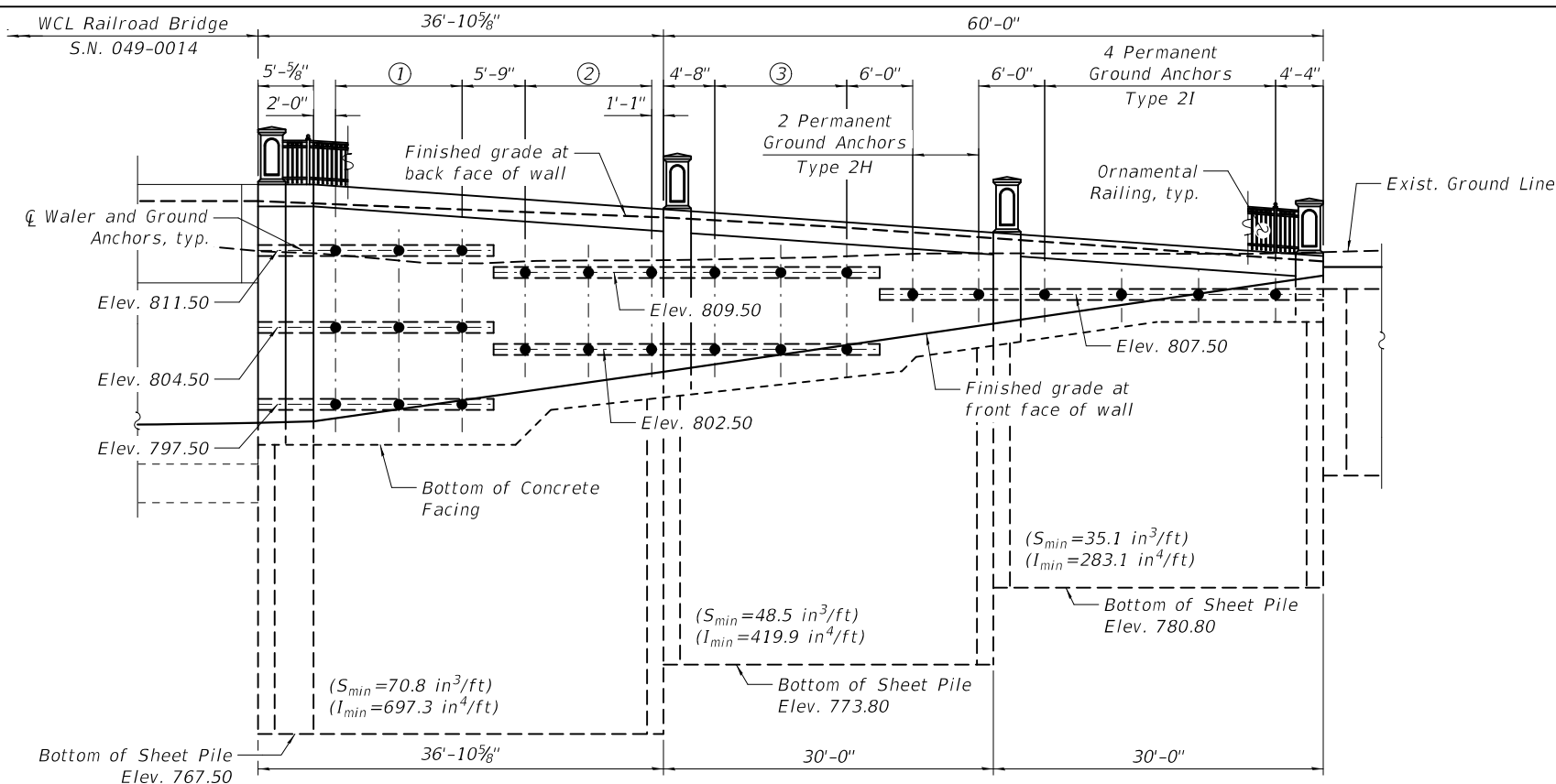
**GENERAL DATA
STRUCTURE NO. 049-W1001**

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	487
CONTRACT NO. 61187				

SHEET SE-2 OF SE-10 SHEETS

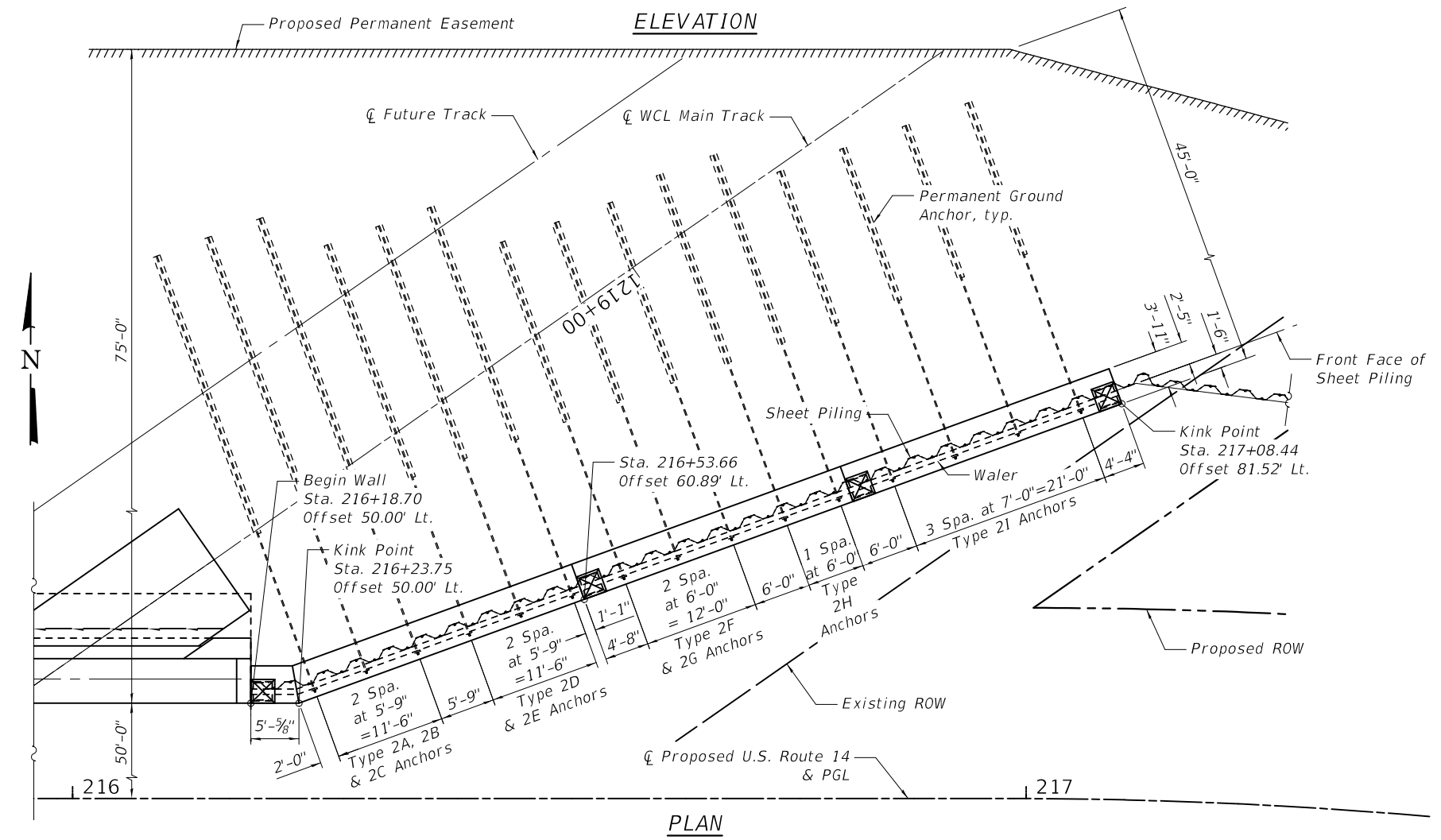
ILLINOIS FED. AID PROJECT

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -



- ① 3 Permanent Ground Anchors Type 2A (Upper Level)
3 Permanent Ground Anchors Type 2B (Middle Level)
3 Permanent Ground Anchors Type 2C (Lower Level)
- ② 3 Permanent Ground Anchors Type 2D (Upper Level)
3 Permanent Ground Anchors Type 2E (Lower Level)
- ③ 3 Permanent Ground Anchors Type 2F (Upper Level)
3 Permanent Ground Anchors Type 2G (Lower Level)

Notes:
 1. See Sheets SE-4 for concrete facing details.
 2. See Sheet SE-2 for general notes and ground anchor designations.
 3. See special provisions for testing requirements.
 4. See Sheet SE-7 for Ornamental Railing Details.
 5. Sheet pile stations and offsets measured from $\bar{\bar{C}}$ Proposed US Route 14 to front face of CIP Concrete Facing.



PLAN

MODEL: Default
 FILE NAME: ...049W1001-6187-003-Anchored Wall.dgn
 9/10/2024 2:40:04 PM

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 Itasca, Illinois 60143
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 Fax: 630.773.3975
 www.civiltechinc.com

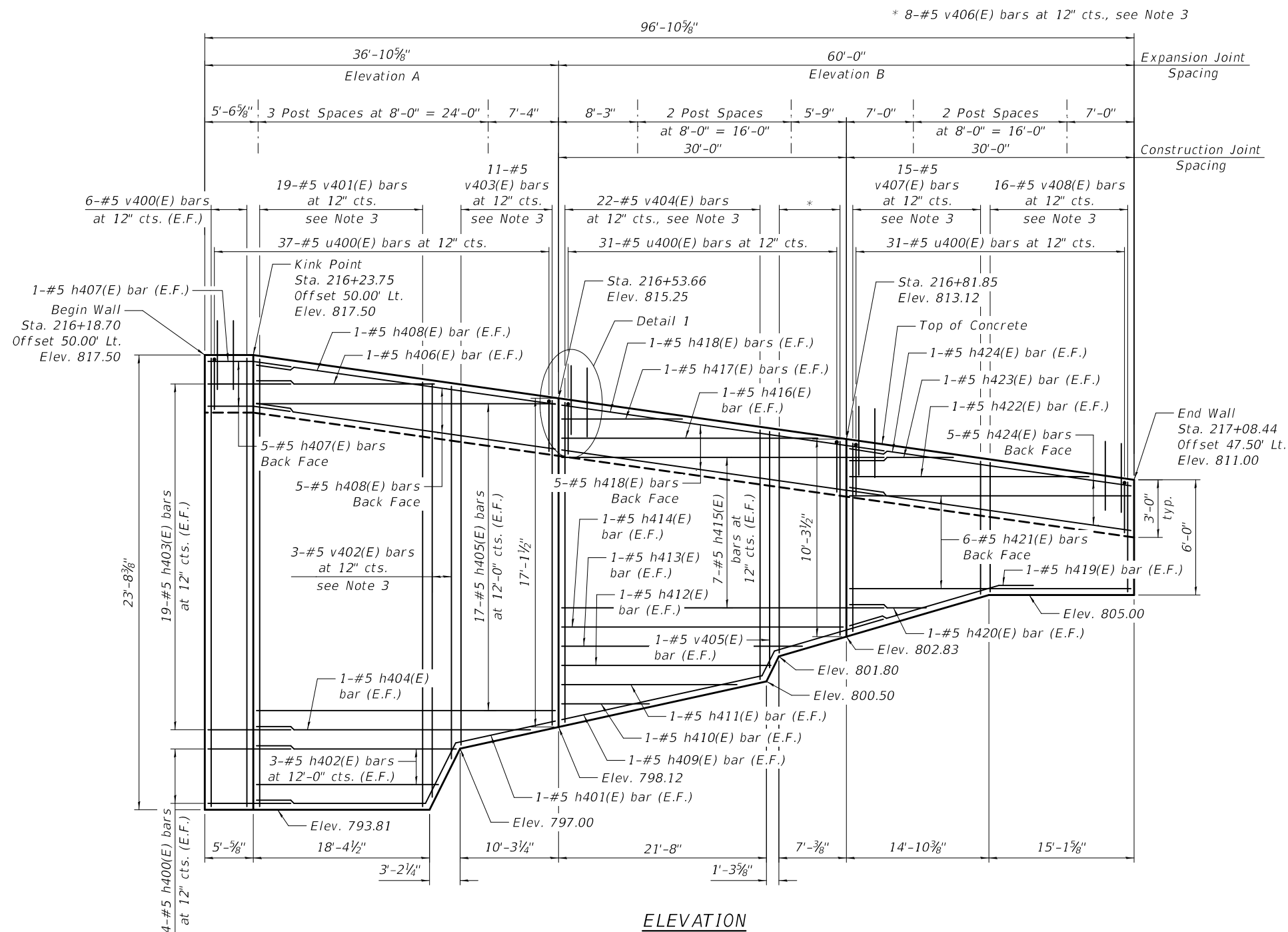
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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**ANCHORED WALL PLAN AND ELEVATION
 STRUCTURE NO. 049-W1001**

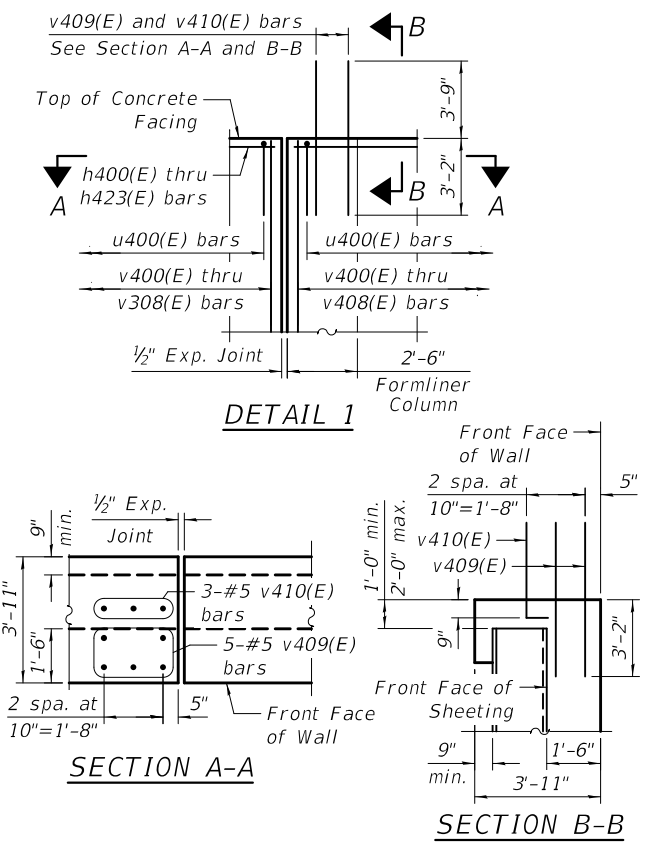
SHEET SE-3 OF SE-10 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	488
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



ELEVATION

MINIMUM BAR LAP
#5 bar = 3'-7"



DETAIL 1

SECTION A-A

SECTION B-B

- Notes:
1. For wall elevation location see sheet SE-1.
 2. For Typical Wall Section, Field Cutting Diagram, Bill of Materials, Expansion and Construction Joint details and reinforcement details, see sheet SE-5.
 3. Order bar full length. Cut bar in field as shown on Field Cutting Diagram and use the remained of bar at the other face of wall.
 4. For Pilaster, Ornamental Railing and architectural details, see sheet SE-7.

MODEL: Default
FILE NAME: ...049W1001-61187-004-Facing.dgn

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		DATE -	7/26/2024	REVISED -	

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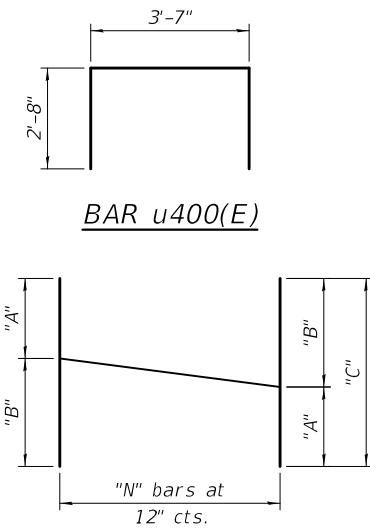
WALL FACING ELEVATION
STRUCTURE NO. 049-W1001

SHEET SE-4 OF SE-10 SHEETS

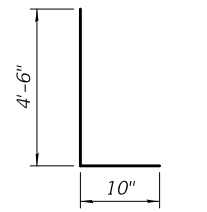
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	489
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

BILL OF MATERIAL

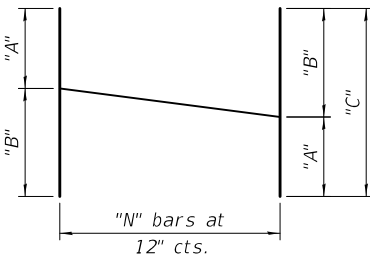
Bar	No.	Size	Length	Shape
h400(E)	8	#5	10'-6"	
h401(E)	2	#5	32'-9"	
h402(E)	6	#5	19'-2"	
h403(E)	38	#5	8'-6"	
h404(E)	2	#5	28'-9"	
h405(E)	34	#5	31'-6"	
h406(E)	2	#5	15'-8"	
h407(E)	7	#5	8'-6"	
h408(E)	7	#5	31'-7"	
h409(E)	2	#5	30'-4"	
h410(E)	2	#5	7'-10"	
h411(E)	2	#5	16'-11"	
h412(E)	2	#5	21'-11"	
h413(E)	2	#5	24'-2"	
h414(E)	2	#5	29'-8"	
h415(E)	14	#5	33'-7"	
h416(E)	2	#5	26'-10"	
h417(E)	2	#5	12'-10"	
h418(E)	7	#5	33'-8"	
h419(E)	2	#5	18'-5"	
h420(E)	2	#5	7'-10"	
h421(E)	12	#5	29'-8"	
h422(E)	2	#5	25'-2"	
h423(E)	2	#5	11'-0"	
h424(E)	7	#5	29'-9"	
v400(E)	12	#5	23'-4"	
v401(E)	19	#5	45'-5"	
v402(E)	3	#5	40'-8"	
v403(E)	11	#5	35'-5"	
v404(E)	22	#5	29'-9"	
v405(E)	2	#5	12'-6"	
v406(E)	8	#5	21'-6"	
v407(E)	15	#5	16'-9"	
v408(E)	16	#5	12'-5"	
v409(E)	15	#5	6'-11"	
v410(E)	9	#5	5'-4"	
u400(E)	99	#5	8'-11"	
Reinforcement Bars, Epoxy Coated	Pound		8,090	
Concrete Structures (Retaining Wall)	Cu. Yd.		143.4	



BAR u400(E)



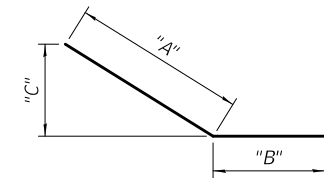
BAR v410(E)



FIELD CUTTING DIAGRAM

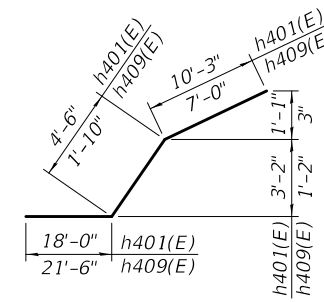
Order bars in table below full length. Cut as shown and use remainder of bars in opposite face of panel. Note that additional cuts may be required to avoid waler interference.

Bar	"A"	"B"	"C"	"N"
v401(E)	23'-4"	22'-1"	45'-5"	19
v402(E)	21'-5"	19'-3"	40'-8"	3
v403(E)	18'-7"	16'-10"	35'-5"	11
v404(E)	16'-9"	13'-0"	29'-9"	22
v406(E)	11'-6"	10'-0"	21'-6"	8
v407(E)	9'-11"	6'-10"	16'-9"	15
v408(E)	6'-9"	5'-8"	12'-5"	16

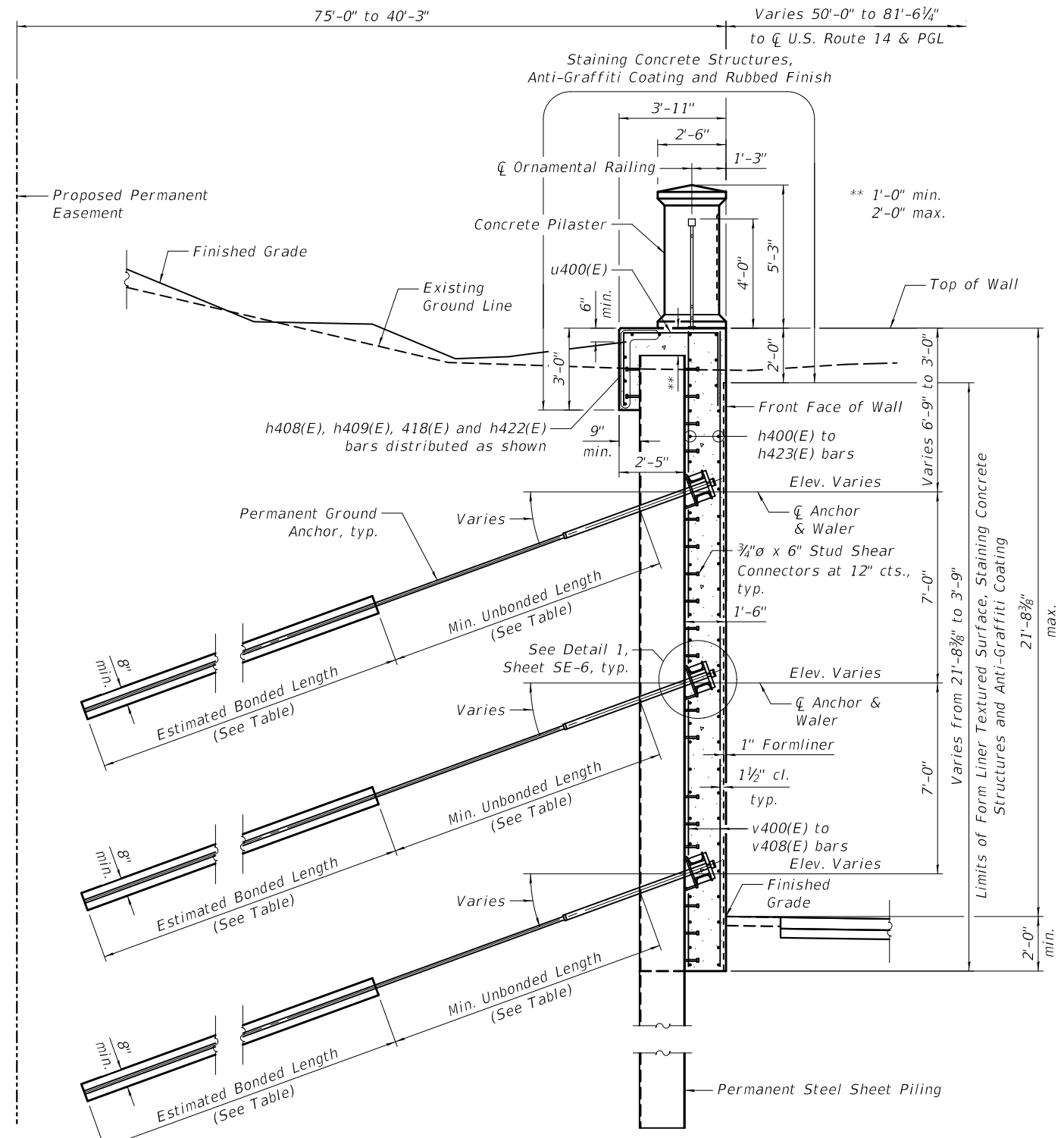


BARS h400(E), h403(E), h407(E) & h419(E)

Bar	"A"	"B"	"C"
h400(E)	4'-9"	5'-9"	1'-8"
h403(E)	4'-9"	3'-9"	1'-8"
h407(E)	4'-9"	3'-9"	0'-6"
h419(E)	14'-10"	3'-7"	2'-2"

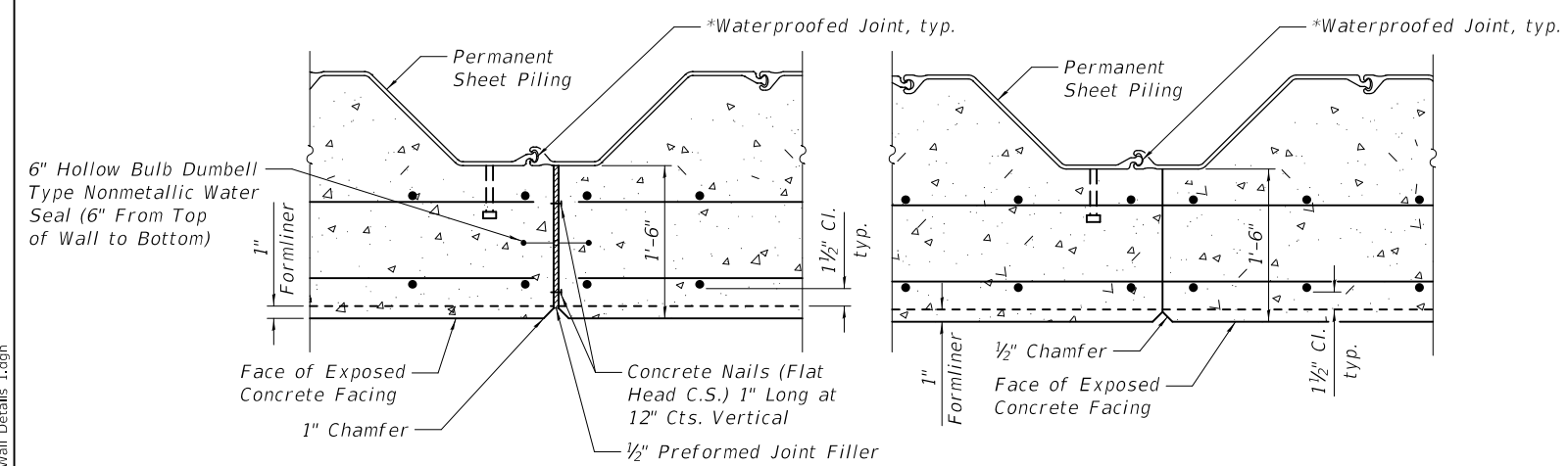


BARS h401(E) & h409(E)



TYPICAL ANCHORED WALL SECTION

Sta. 216+18.70 to Sta. 217+09.66
(See table on sheet SE-1 for anchor length and forces)
(Wall section with three anchors shown)

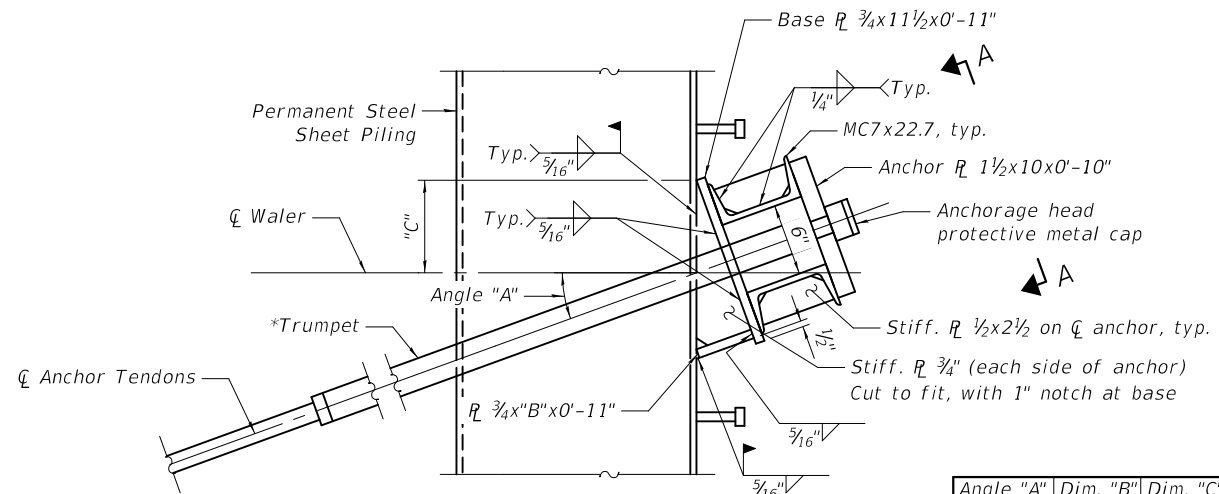


EXPANSION JOINT DETAIL

CONSTRUCTION JOINT DETAIL

*Waterproofing material/sealant shall be placed within each interlocking for the full height of sheeting, and shall be according to the sheet piling manufacturer's recommendations. Cost included with Permanent Sheet Piling.

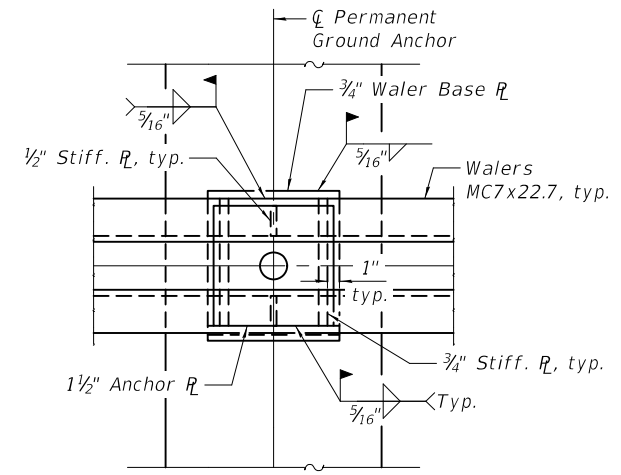
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DETAIL 1

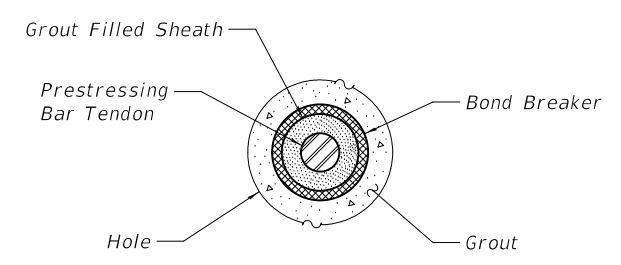
*Fill Trumpet and void areas behind anchorage head with anti-corrosion grout

Angle "A"	Dim. "B"	Dim. "C"
20°	4 1 3/16"	7 1 1/16"
25°	6 7/16"	8"

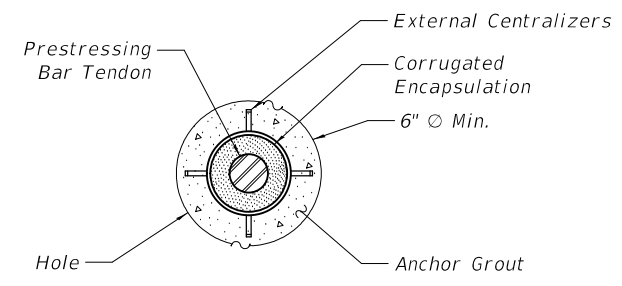


VIEW A-A

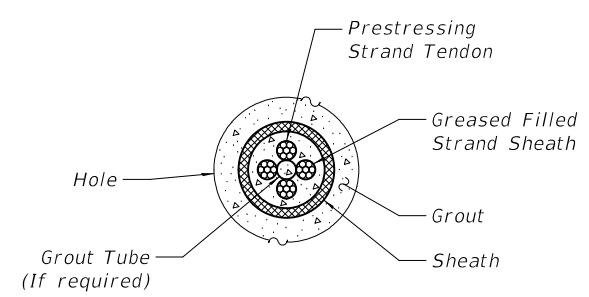
(Waler support plates, except anchor plate, to be installed at each point of contact between waler and front face of sheet piling)



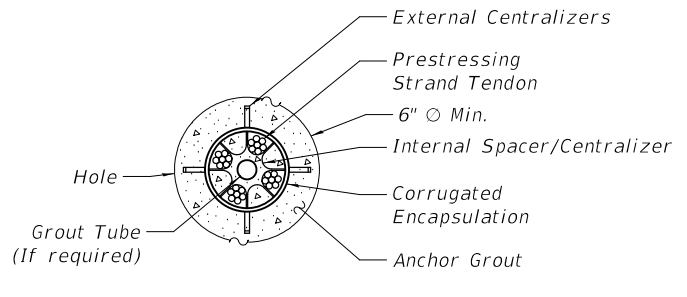
BAR TENDON DETAIL**
(Unbonded)



BAR TENDON DETAIL**
(Bonded)



STRAND TENDON DETAIL**
(Unbonded)



STRAND TENDON DETAIL**
(Bonded)

** The Contractor shall furnish and install Permanent Ground Anchors meeting the requirements for design load and unbonded length as shown on the plans, and fitting within the R.O.W. limits of the site. All elements (drilled hole, sheath bondbreaker, encapsulation, tendons, bonded length, etc.) shall be selected and designed by the Contractor. All materials and work shall be in compliance with the special provision.

MODEL: \$MODELNAMES
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

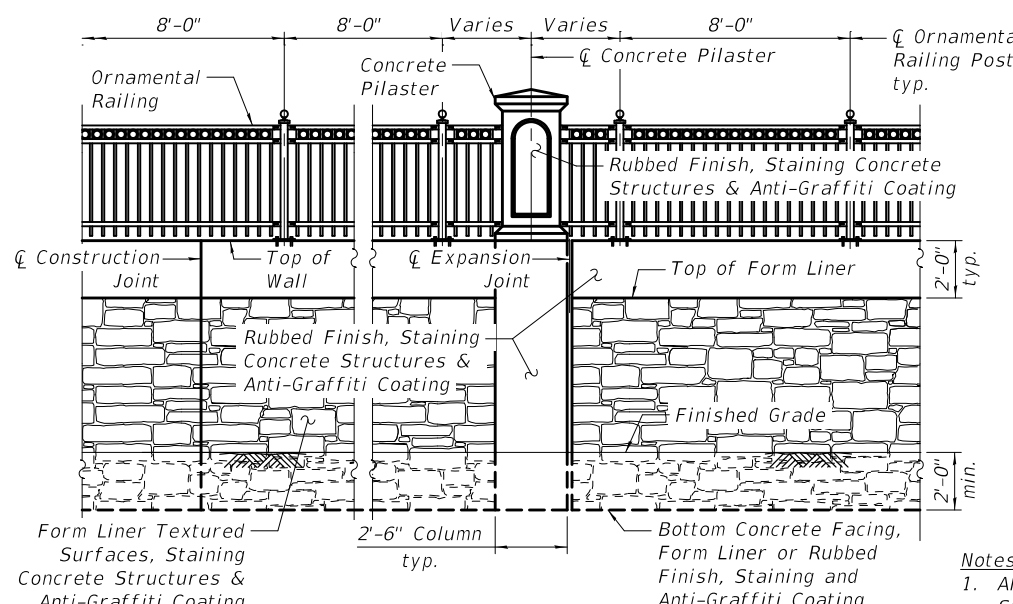
RETAINING WALL DETAILS 2
STRUCTURE NO. 049-W1001

SHEET SE-6 OF SE-10 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	491
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

BILL OF MATERIAL

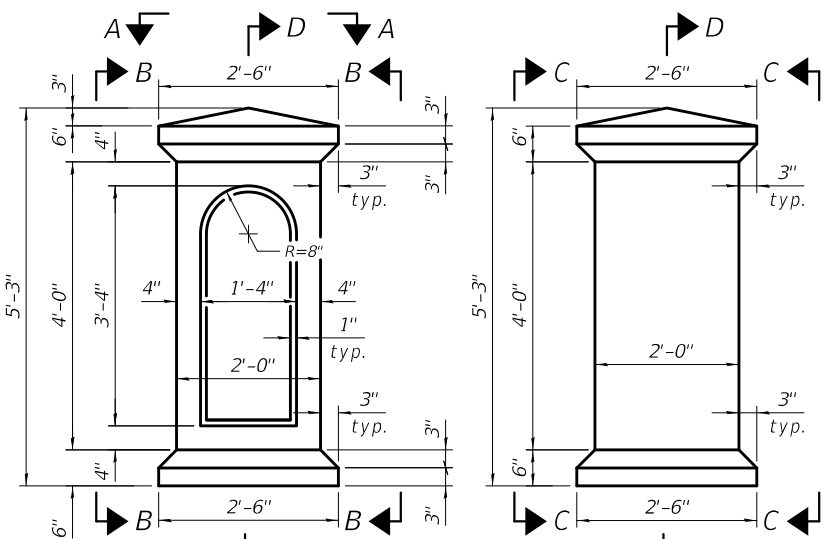
Bar	No.	Size	Length	Shape
v411(E)	32	#4	4'-9"	
u410(E)	20	#4	7'-1"	□
u411(E)	8	#4	8'-9"	□
u412(E)	8	#4	9'-9"	□
Rubbed Finish			Sq. Ft.	1,169
Form Liner Textured Surfaces			Sq. Ft.	1,174
Reinforcement Bars, Epoxy Coated			Pound	300
Concrete Structures (Retaining Wall)			Cu. Yd.	3.5
Anti-Graffiti Coating			Sq. Ft.	2,343
Staining Concrete Structures			Sq. Ft.	2,343
Ornamental Railing			Foot	87



FORM LINER TEXTURED SURFACE DETAIL

LEGEND

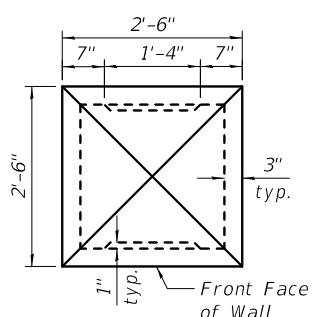
Pattern shall be similar to Pattern #12005 "Bearpath Coursed Stone" manufactured by Custom Rock.



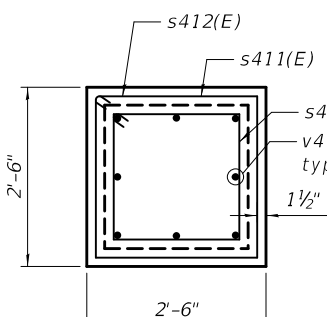
VIEW C-C

VIEW B-B

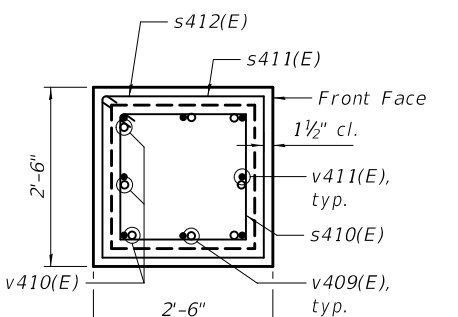
SECTION D-D



VIEW A-A

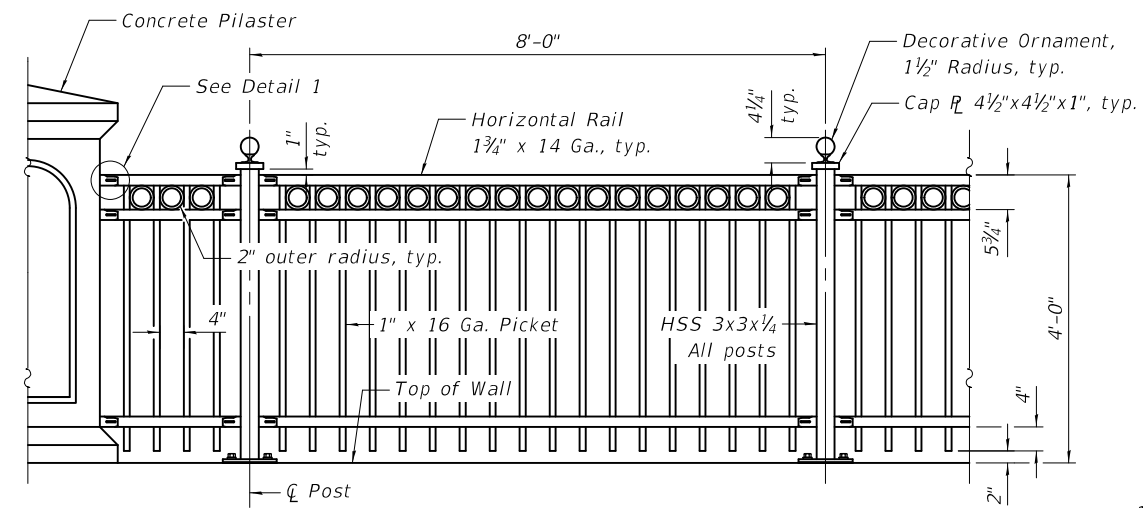


SECTION E-E



SECTION F-F

CONCRETE PILASTER DETAILS



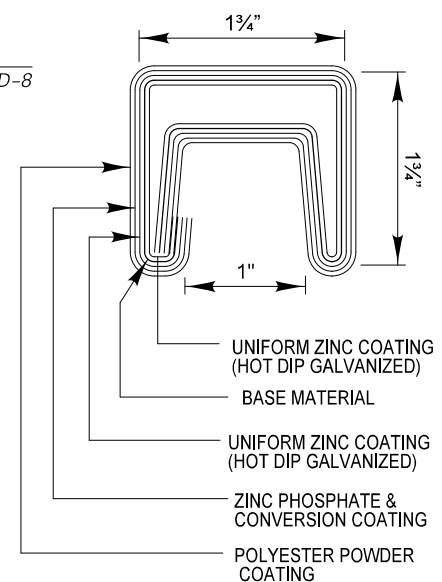
ORNAMENTAL RAILING DETAILS

Notes:

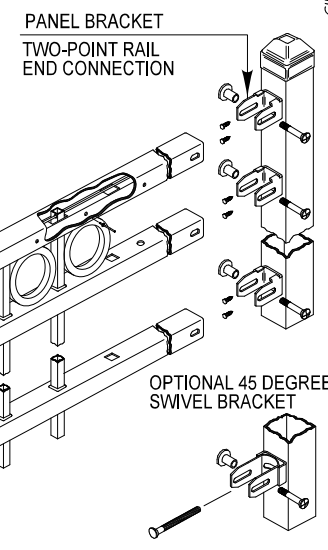
- All steel rail elements shall be galvanized according to Article 509.05 of the Standard Specification.
- All post, railing, splices, anchor devices, and plates shall be coated with 2 coats of electrostatic polyester, TGIC powder coating. The color of the final finish coat for all railing steel shall be Black. See Special Provisions.
- Space reinforcement in the sides of pylasters to miss anchor bolts.
- Rubbed Finish shall be applied to all non-form liner textured surfaces of concrete, including the pilasters, bandings, "columns", top of wall and back of coping.
- Staining Concrete Structures and Anti-Graffiti Coating shall be applied to all exposed surfaces of concrete, 2 feet min. below grade and back of coping.

INTERNAL RETAINING ROD, CONTINUOUS VARIABLE PITCH CONNECTION SYSTEM ELIMINATES EXTERNAL FASTENERS

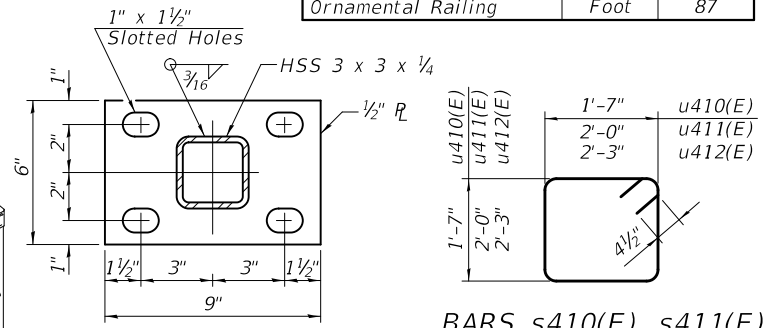
HORIZONTAL RAIL DOUBLE-WALLED "U" CHANNEL SPECIALLY FORMED HIGH STRENGTH ARCHITECTURAL SHAPE.



HORIZONTAL RAIL CROSS SECTION

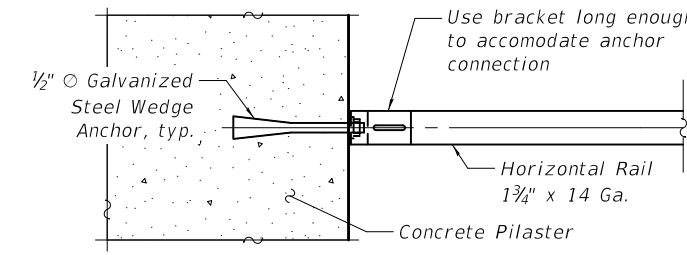


ISOMETRIC VIEW

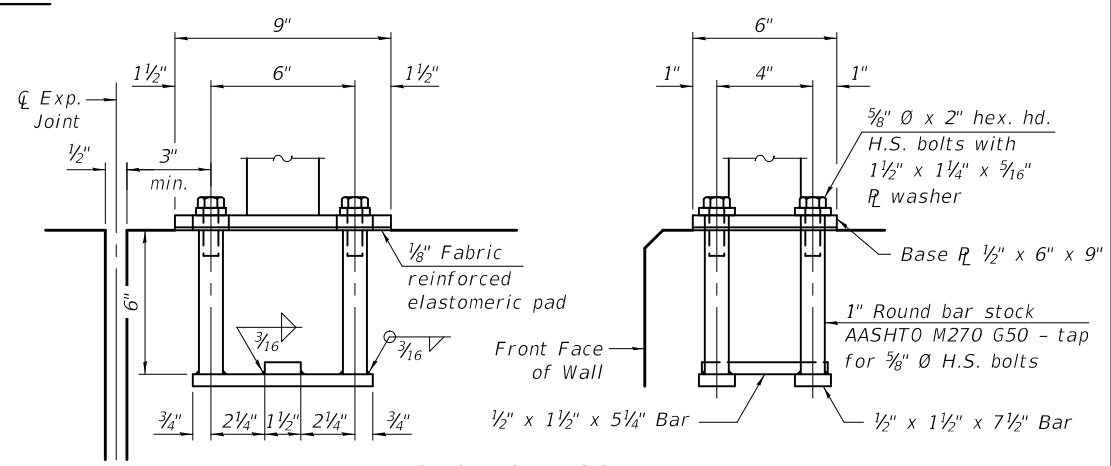


BASE PLATE

BARS s410(E), s411(E) & s412(E)



DETAIL 1



ANCHORAGE ASSEMBLY

In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting 5/8" Ø fully threaded anchor rods with the same plate washers as specified above and heavy hex lock nuts according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

MODEL: Default
FILE NAME: ...049W1001-6187-007-Railing.dgn

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PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**ORNAMENTAL RAILING DETAILS
STRUCTURE NO. 049-W1001**

SHEET SE-7 OF SE-10 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-G5	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 492
CONTRACT NO. 6187				
ILLINOIS FED. AID PROJECT				

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MHP Date 2/13/13

SECTION 11-00087-00-GS LOCATION US Route 14: Retaining Wall

COUNTY Lake STRUCTURE NO. (Exist) 049-0133 (Prop.)

BORING NO. SB-12 DRILLING METHOD HSA HAMMER TYPE Marual

Station 216+50
Offset 32' L of CL
Ground Surface Elev. 816.2 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/ft*	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/ft*	(tsf)	(%)
Black Clay LOAM, A-7-6, stiff		3	1.16		32	Grey CLAY, trace Sand and Gravel, A-6, very stiff to stiff	35	18-14	2.33	B	18
	812.2	5-6									
Yellow-Brown Sandy LOAM, A-1-b, medium dense		3			36						
		5	5-7		19						
		7	7-9		12	End of Boring at 40'	776.2	40	9	1.5	P
		13			9						
Grey Gravel, trace Sand, A-1, dense		10	24-13		1						
	807.2										
Grey SAND (f-m), little Gravel, A-3, medium dense		5	9-9		16						
	805.7										
		4	9-6		15						
		6			12						
Grey CLAY, trace Sand and Gravel, A-6, very stiff		7-6	3.25		17						
	799.2										
		18	2.37		17						
Grey Clayey GRAVEL, A-2-4, very dense		20	6-13		17						
	795.7										
Grey CLAY, trace Sand and Gravel, A-6, very stiff to stiff		25	28-23		16						
	793.2										
		6	3.53		18						
		14-22									
		4	1.55		19						
		5-11									
		4	1.94		20						
		30	6-7								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MHP Date 2/6/13

SECTION 11-00087-00-GS LOCATION US 14: Retaining Wall

COUNTY Lake STRUCTURE NO. (Exist) 049-0133 (Prop.)

BORING NO. SB-13 DRILLING METHOD CFA HAMMER TYPE Automatic

Station 219+07
Offset 29' L of CL
Ground Surface Elev. 818.7 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/ft*	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/ft*	(tsf)	(%)
Black Silty CLAY TOPSOIL (18")					71	Grey CLAY, trace Sand and Gravel, A-6, firm to stiff	35	11	0.78	BS	18
	817.2										
Brown Sandy Clay LOAM, A-4 to A-6: FILL, slightly dense to medium dense		9	4-6		14						
		4	4-3		14						
		5									
		10	11-7		13	End of Boring at 40'	778.7	40	8	1.55	B
		9			12	Installed Well to 38.5'					
Brown Silty SAND, some Gravel, A-2, medium dense		10	9-6		13						
	809.7										
Grey Silty SAND, A-2, slightly dense		6	4-3		14						
	808.2										
Grey Silty CLAY to Clayey SILT, A-6, very stiff		5	2.0		16						
	805.7										
Grey SAND (f-m), A-2, wet, medium dense		5	3-8		14						
	803.2										
Grey GRAVEL, trace Sand, possible Cobbles, A-1, extremely dense		20	32	50/5"	7						
	799.7										
Grey CLAY, trace Sand and Gravel, A-6, very stiff		25	50/4"		5						
	795.7										
		7	2.29		19						
		25	9-13								
		3	2.37		20						
		14-16									
		9	2.06		20						
		30	13-16								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MIDLAND STANDARD ENGINEERING & TESTING, INC. Page 1 of 1
STRUCTURE FOUNDATION BORING LOG

ROUTE US 14 DESCRIPTION US Route 14 and WCLRR LOGGED BY MP Date 10/8/13

SECTION 11-00087-00-GS LOCATION North East Retaining Wall

COUNTY Lake STRUCTURE NO. (Exist) 049-0133 (Prop.)

BORING NO. SB-32 DRILLING METHOD HSA HAMMER TYPE Safety

Station 218+00
Offset 42' L
Ground Surface Elev. 816.5 (ft.)

SOIL DESCRIPTION	(ft.)	(ft.)	/ft*	(tsf)	(%)	SOIL DESCRIPTION	(ft.)	(ft.)	/ft*	(tsf)	(%)
Black CLAY, A-6 Topsoil					35	Grey CLAY, trace Sand & Gravel, A-6 very stiff	35	9	2.84	B	18
	815.5										
Brown Sandy Clay LOAM, A-4 very stiff		6	3.5		12						
		7-13									
Brown SAND and GRAVEL, A-1-b medium dense		12	9-9		9						
		5									
		12	12-14		11	End of Boring at 40 Feet	776.5	40	11	3.10	B
		14			14						
Grey SAND and GRAVEL, A-1-b medium dense		5	10-13		13						
	806										
		10	10-12		13						
		11	13-12		12						
		19	19-26		8						
dense		20									
	796										
Grey CLAY, trace Sand & Gravel, A-6 hard to stiff		5	3.18		15						
		9	5.24		15						
		25	15-23								
		7	2.75		20						
		11-16									
		6	2.02		18						
		30	10-15								

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer).
The Standard Penetration Test (SPT) N Value is per (AASHTO T206)

BBS 137 (9/05)

MODEL: Default
FILE NAME: ...049W1001-61187-008-Boring_Logs_1.dgn

CIVILTECH
Two Pierce Place, Suite 1400
Itasca, Illinois 60143
Tel: 630.773.3900
Fax: 630.773.3975
www.civiltechinc.com

USER NAME = mc	DESIGNED - JAL	REVISED -
PLOT SCALE = N/A	DRAWN - JAL	REVISED -
PLOT DATE = 9/10/2024	CHECKED - GJH	REVISED -
	DATE - 7/26/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BORING LOGS 1
STRUCTURE NO. 049-W1001

SHEET SE-8 OF SE-10 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	493
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				


MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-104		Page 1 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 217+35, 87' L			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS	
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf		Unconfined Compressive Strength, tsf
0		Topsoil - Black to Dark Grey CLAY, A-8	814.9	SS 1A	4	31		1.75 Qp	
		Brown and Grey Sandy LOAM with Gravel, A-2-4 to A-3, medium dense	813.4	SS 1B	6	11			
5		moist to wet at 7.0' clay seam at 9.5'	807.9	SS 2	14	8			
				SS 3	15	10			
10		Grey SAND (f-c) with Gravel and intermittent Clay seams, A-3, slightly to medium densewet	804.4	SS 4	10	10			
				SS 5	8	11			
15				SS 6	12	17			
				SS 7	13	14			
20		Grey CLAY, A-6, very stiff	796.9	SS 8	8	13			2.0 Qp
				SS 9	16	15	113		2.13
25				SS 10	17	18	100		3.69
				SS 11	16	18	107		3.10
30				SS 12	15	16	111		3.34
35				SS 13	16	18	100	2.99	
			777.4						

WATER LEVEL OBSERVATIONS, ft.

DURING DRILLING: 7.0'

IMMEDIATELY AFTER DRILLING: 7.9'

DELAYED READING AFTER: 7.9'



MSET

BORING STARTED: 1/13/21

BORING COMPLETED: 1/13/21

LOGGED BY: GPF

BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 (847) 844-3875


MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-104		Page 2 of 2					
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois						
BORING LOCATION: Station 217+35, 87' L			CLIENT: Civiltech Engineering, Inc.						
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS		REMARKS	
				TYPE/INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf		Unconfined Compressive Strength, tsf
40		Brownish-Grey Clay LOAM, very stiff, A-6	775.9	SS 14	19	15		3.0 Qp	
		probable cobble at 39.5' Grey CLAY, A-6, very stiff to stiff, cont.							
45		Grey CLAY, A-6, stiff to very stiff	769.9	SS 15	17	13	123		1.82
50				SS 16	15	14	116		1.16
55				SS 17	16	25			2.0 Qp
60				SS 18	20	17	110		2.60
65				SS 19	15	20	106		1.78
70				SS 20	17	19	111		2.56
75				SS 21	16	19	111		2.10
		End of Boring at 75'	739.9						

WATER LEVEL OBSERVATIONS, ft.

DURING DRILLING: 7.0'

IMMEDIATELY AFTER DRILLING: 7.9'

DELAYED READING AFTER: 7.9'



MSET

BORING STARTED: 1/13/21


BORING COMPLETED: 1/13/21

LOGGED BY: GPF

BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 (847) 844-3875

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 <p>CIVILTECH</p> <p>Two Pierce Place, Suite 1400 Itasca, Illinois 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com</p>	USER NAME = mc	DESIGNED - JAL	REVISED -	
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	PLOT DATE = 9/10/2024	DATE - 7/26/2024	REVISED -	

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**


**BORING LOGS 2
STRUCTURE NO. 049-W1001**

SHEET SE-9 OF SE-10 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	494
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-105		Page 1 of 2						
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois							
BORING LOCATION: Station 219+75, 103' L			CLIENT: Civiltech Engineering, Inc.							
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS			REMARKS	
				TYPE/ INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf	Unconfined Compressive Strength, tsf		
0		Possible Topsoil FILL - Black CLAY, a-7- 6 to A-8, very stiff	817.3	SS	1	4	31	2.0	Qp	
				SS	2	4	31	3.0	Qp	
5		Brown and Grey Silty LOAM, A-2-4 to A-4, very loose	812.3	SS	3	2	16			
		Reddish-Brown Sandy LOAM, A-2-4, medium dense, wet	809.3	SS	4	13	17			
10		Brown CLAY, A-6, very stiff	806.6	SS	5	13	18	103	3.69	
		Grey CLAY, A-6, very stiff to stiff	804.3	SS	6	13	21	102	3.30	
15				SS	7	8	22	99	2.91	
				SS	8	10	21	101	3.10	
20				SS	9	10	22	96	3.88	
				SS	10	7	11	142	1.16	
25		Brownish-Grey, hard, moist		SS	11	14	17	110	5.32	
				SS	12	11	20	102	2.41	
30				SS	13	13	19	102	3.03	
35										

WATER LEVEL OBSERVATIONS, ft.
 DURING DRILLING: 8.0' Dry
 IMMEDIATELY AFTER DRILLING: Dry
 DELAYED READING AFTER 72 Hrs: Dry




MSET

BORING STARTED: 1/8/21
 BORING COMPLETED: 1/8/21
 LOGGED BY: GPF
 BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 (847) 844-3875

MSET PROJECT NO.: 20618		LOG OF BORING NO. SB-105		Page 2 of 2						
PROJECT: Route 14 Underpass Phase 2			SITE LOCATION: Barrington, Illinois							
BORING LOCATION: Station 219+75, 103' L			CLIENT: Civiltech Engineering, Inc.							
DEPTH (feet)	SOIL TYPE	Material Description	Elevation	SAMPLE		TESTS			REMARKS	
				TYPE/ INTERVAL	NO.	N-VALUE Blows per ft.	Wc% Dry Unit Weight, pcf	Unconfined Compressive Strength, tsf		
40		Grey CLAY, A-6, very stiff, cont.	778.3	SS	14	13	19	102	2.91	
		End of Boring at 40'	777.3							

WATER LEVEL OBSERVATIONS, ft.
 DURING DRILLING: 8.0' Dry
 IMMEDIATELY AFTER DRILLING: Dry
 DELAYED READING AFTER 72 Hrs: Dry




MSET

BORING STARTED: 1/8/21
 BORING COMPLETED: 1/8/21
 LOGGED BY: GPF
 BORING METHOD: HSA

Midland Standard Engineering & Testing, Inc. 410 Nolen Drive, South Elgin, Illinois 60177 (847) 844-1895 (847) 844-3875

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	Two Plerce Place, Suite 1400 Itasca, Illinois 60143 Tel: 630.773.3900 Fax: 630.773.3975 www.civiltechinc.com	USER NAME = mc	DESIGNED - JAL	REVISED -
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			DATE - 7/26/2024	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**BORING LOGS 3
 STRUCTURE NO. 049-W1001**

SHEET SE-10 OF SE-10 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	495
CONTRACT NO. 61187				
ILLINOIS FED. AID PROJECT				

Benchmark: East bolt on fire hydrant at the East corner of North Avenue and Park Lane, Sta. 215+68.79, Offset 80.93' Rt. (U.S. Route 14), Elevation 818.39.

Existing Structure: None.

Maintenance of Traffic: Traffic will be detoured to a temporary roadway during construction. Railroad traffic will be detoured to a shoofly track.

DESIGN STRESSES

FIELD UNITS

f'c = 3,500 psi (Wall Facing)
 fy = 60,000 psi (Reinforcement)
 fy = 50,000 psi (ASTM A572 Grade 50)

DESIGN SPECIFICATIONS

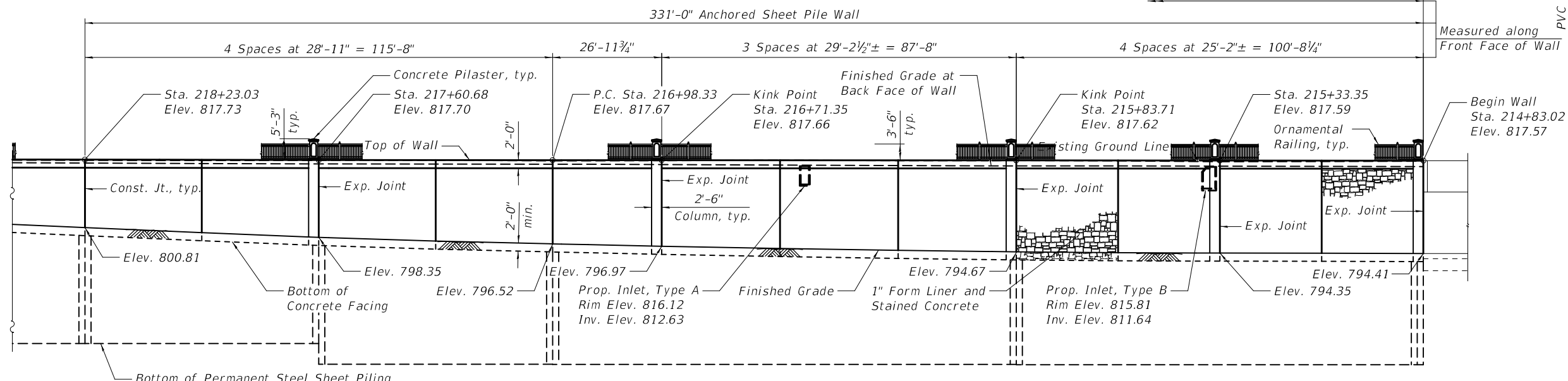
2020 AASHTO LRFD Bridge Design Specifications, 9th Edition

LOADING

Wind Load on Noise Wall = 25 psf

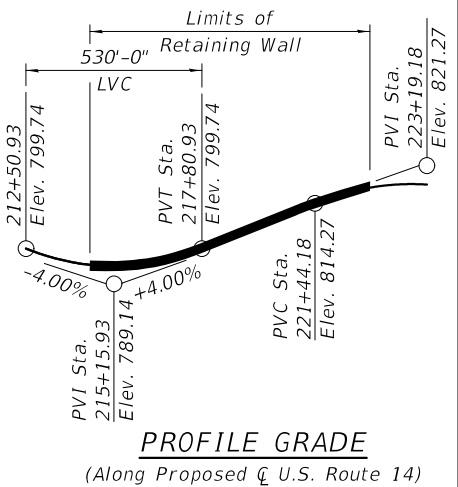
Notes:

Wall offsets are measured from \bar{C} U.S. Route 14 to Front Face of Wall.



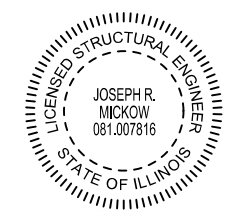
ELEVATION

Looking at Front Face of Wall



PROFILE GRADE

(Along Proposed \bar{C} U.S. Route 14)



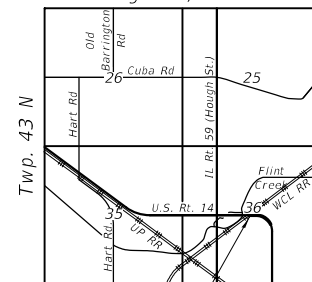
Joseph Mickow

JOSEPH R. MICKOW, P.E., S.E.
 NO. 081-007816
 EXP. DATE 11/30/2024

LEGEND

- Existing Storm Sewer
- Existing Aerial Lines
- Existing Gas Line
- Existing Water Main
- Existing Sanitary Sewer
- Existing Underground Electric
- Proposed Storm Sewer
- Proposed Storm Sewer
- Existing Underground Telephone
- Existing Underground Fiber Optic
- Soil Boring

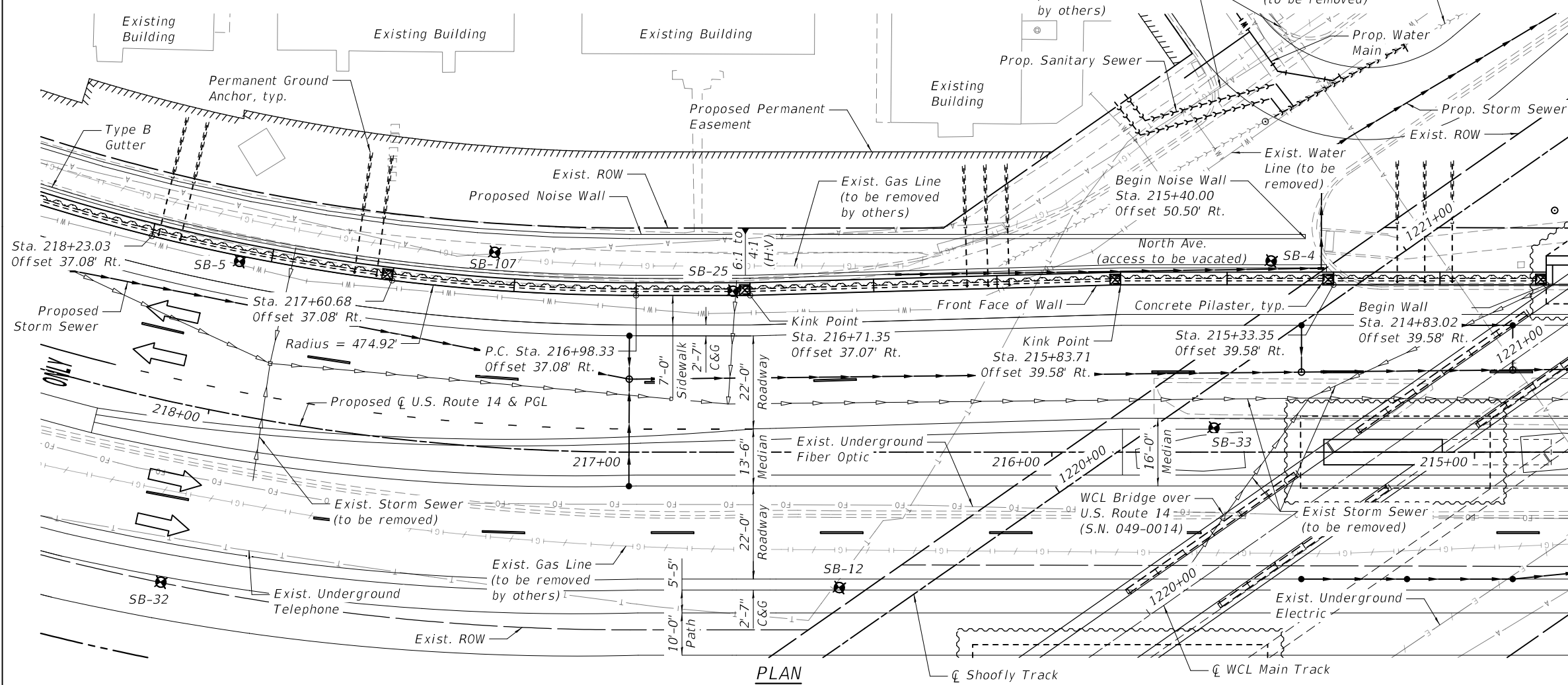
Range 9E, 3rd PM



Proposed Structure
 Leighton 50.12

LOCATION SKETCH

GENERAL PLAN AND ELEVATION 1
SOUTHEAST RETAINING WALL
F.A.P. RTE. 305 - U.S. ROUTE 14
SECTION 11-00087-00-GS
LAKE COUNTY
STA. 214+83.02 TO STA. 222+28.30
STRUCTURE NO. 049-W1002



PLAN

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION 1
 STRUCTURE NO. 049-W1002

SHEET SF-1 OF SF-16 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	496
CONTRACT NO. 6187				

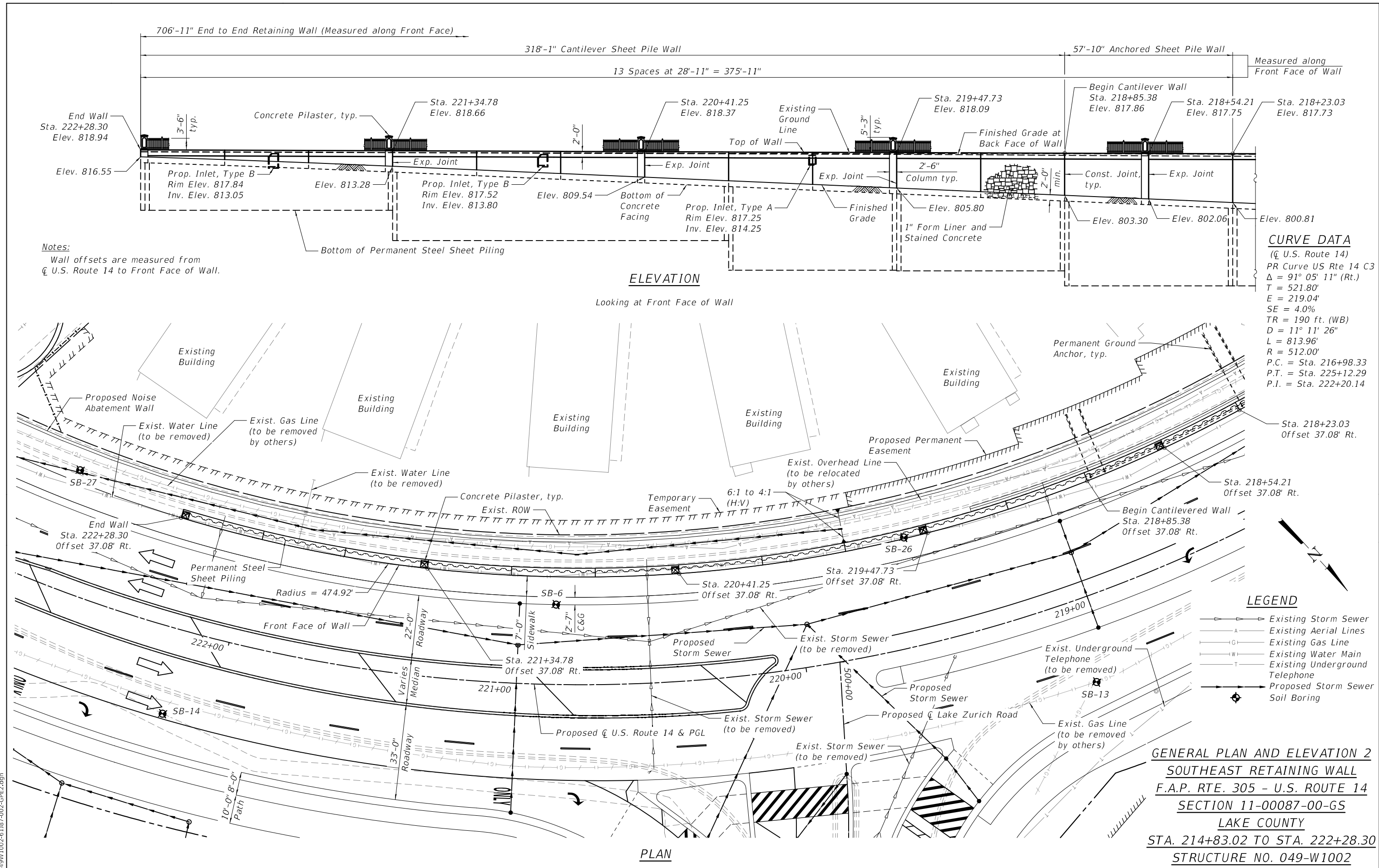
ILLINOIS FED. AID PROJECT

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	DATE - 9/10/2024	REVISED -

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Notes:
 Wall offsets are measured from
 Centerline of U.S. Route 14 to Front Face of Wall.

CURVE DATA
 (Centerline of U.S. Route 14)
 PR Curve US Rte 14 C3
 $\Delta = 91^\circ 05' 11''$ (Rt.)
 $T = 521.80'$
 $E = 219.04'$
 $SE = 4.0\%$
 $TR = 190 \text{ ft. (WB)}$
 $D = 11^\circ 11' 26''$
 $R = 813.96'$
 $R = 512.00'$
 $P.C. = \text{Sta. } 216+98.33$
 $P.T. = \text{Sta. } 225+12.29$
 $P.I. = \text{Sta. } 222+20.14$

- LEGEND**
- Existing Storm Sewer
 - Existing Aerial Lines
 - Existing Gas Line
 - Existing Water Main
 - Existing Underground Telephone
 - Proposed Storm Sewer
 - Soil Boring

GENERAL PLAN AND ELEVATION 2
SOUTHEAST RETAINING WALL
 F.A.P. RTE. 305 - U.S. ROUTE 14
 SECTION 11-00087-00-GS
 LAKE COUNTY
 STA. 214+83.02 TO STA. 222+28.30
 STRUCTURE NO. 049-W1002

TRANSYSTEMS

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PLOT SCALE = N/A	DRAWN - CMD	REVISED -
PLOT DATE = 9/10/2024	CHECKED - JRM	REVISED -
	DATE - 9/10/2024	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION 2
STRUCTURE NO. 049-W1002

SHEET SF-2 OF SF-16 SHEETS

F.A.P. RTE. 305	SECTION 11-00087-00-GS	COUNTY LAKE	TOTAL SHEETS 816	SHEET NO. 497
			CONTRACT NO. 61187	
ILLINOIS FED. AID PROJECT				

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GENERAL NOTES

- The Contractor shall be responsible for confirming or establishing the existence of all utility facilities relevant to their exact locations, and schedule all necessary utility relocations.
- All elevations and dimensions must be verified in the field.
- The centerline of a ground anchor shall not be within 12" of a vertical wall joint. Contractor may shift horizontal position of ground anchors and/or joints to avoid interference. Any horizontal shift, and all subsequent modifications required, will be the responsibility of the Contractor and submit to the Engineer for approval.
- All structural steel shall be AASHTO M 270 Grade 50.
- No field welding is permitted except as specified in the contract documents.
- Reinforcement bars designated (E) shall be epoxy coated.
- Sheet piling dimensions, alcove dimensions and anchor spacing for the retaining wall are based on NZ sheet piling. These may be adjusted in the field based on actual sheet piling section selected by the Contractor.
- Anti-Graffiti Coating shall be applied to the exposed surfaces of the facing, coping, and pilasters. See Sheet SF-12 of SF-16.
- Stiff soils are present, pre-drilling may be required for sheet piling installation. Cost included with "Permanent Sheet Piling".

PROPOSED CONSTRUCTION SEQUENCE:

- Construction of Southeast Retaining Wall will occur in Stage 2.
- Install sheet piles to tip elevations shown. Anchored portion of wall will be buried until all sheet piles are installed.
- Excavation for proposed U.S. Route 14 roadway will be ongoing during Stage 2. All excavation in front of wall shall be coordinated with proposed ground anchor elevations. When excavation reaches 1'-0" below elevation of ground anchors, drill and install anchors and waler. Do not further excavate below anchor elevations until all anchors are stressed and load locked in. Anchor installation requirements are specified in the Special Provisions.
- Repeat operation 3 for lower rows of ground anchors, where applicable.
- Excavate to bottom of concrete facing.
- Install studs and pour concrete facing and pilasters with form liners.
- Stain surfaces of concrete as specified and apply Anti-Graffiti Coating.
- Install railings.

INDEX OF SHEETS

- SF-1 General Plan and Elevation 1
- SF-2 General Plan and Elevation 2
- SF-3 General Data
- SF-4 Wall Plan and Elevation 1
- SF-5 Wall Plan and Elevation 2
- SF-6 Wall Plan and Elevation 3
- SF-7 Wall Facing Elevation 1
- SF-8 Wall Facing Elevation 2
- SF-9 Wall Facing Elevation 3
- SF-10 Retaining Wall Details 1
- SF-11 Retaining Wall Details 2
- SF-12 Aesthetic Details
- SF-13 Ornamental Railing Details
- SF-14 Boring Logs 1
- SF-15 Boring Logs 2
- SF-16 Boring Logs 3

TOTAL BILL OF MATERIAL

Item	Unit	Total
Structure Excavation	Cu. Yd.	1,865
Rubbed Finish	Sq. Ft.	7,171
Form Liner Textured Surface	Sq. Ft.	10,258
Stud Shear Connectors	Each	3,085
Reinforcement Bars, Epoxy Coated	Pound	67,460
Permanent Sheet Piling	Sq. Ft.	28,399
Concrete Structures (Retaining Wall)	Cu. Yd.	1,135.5
Permanent Ground Anchor	Each	144
Anti-Graffiti Coating	Sq. Ft.	17,429
Staining Concrete Structures	Sq. Ft.	17,429
Ornamental Railing	Foot	687

GROUND ANCHOR SCHEDULE

Anchor Type	Design Load (Kip)	Minimum Unbonded Length (Foot)	Estimated Bonded Length (Feet)	*Estimated Total Length (Feet)	Angle (Degree)	Grout Diameter (Inch)
A	62.8	19.3	19.5	38.8	15	8
B	52.3	16.1	15.5	31.6	15	8
**C	60.2	16.4	15.0	31.4	15	9 ³ / ₈
**D	44.3	13.3	18.0	31.3	15	9 ³ / ₈
E	41.5	17.4	18.9	36.3	30	8
F	34.2	15.0	15.0	30.0	30	8
G	44.4	15.8	15.4	31.2	20	8
H	29.4	15.0	15.0	30.0	20	8
**I	43.3	14.6	15.0	29.6	35	8
**J	31.0	11.5	15.0	26.5	35	8

* Actual required anchor length to be determined by the Contractor, but shall not exceed easement/R.O.W. constraints.
 ** Bar tendons are assumed due to R.O.W. constraints.

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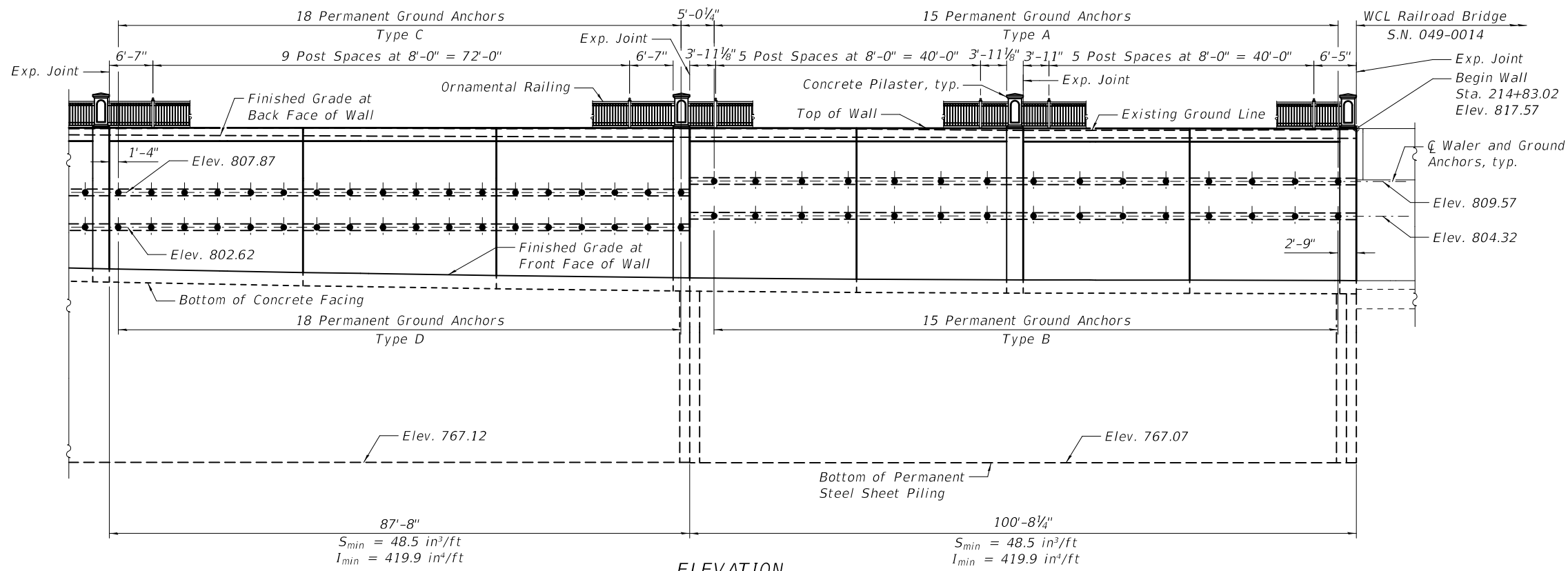
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GENERAL DATA
STRUCTURE NO. 049-W1002**

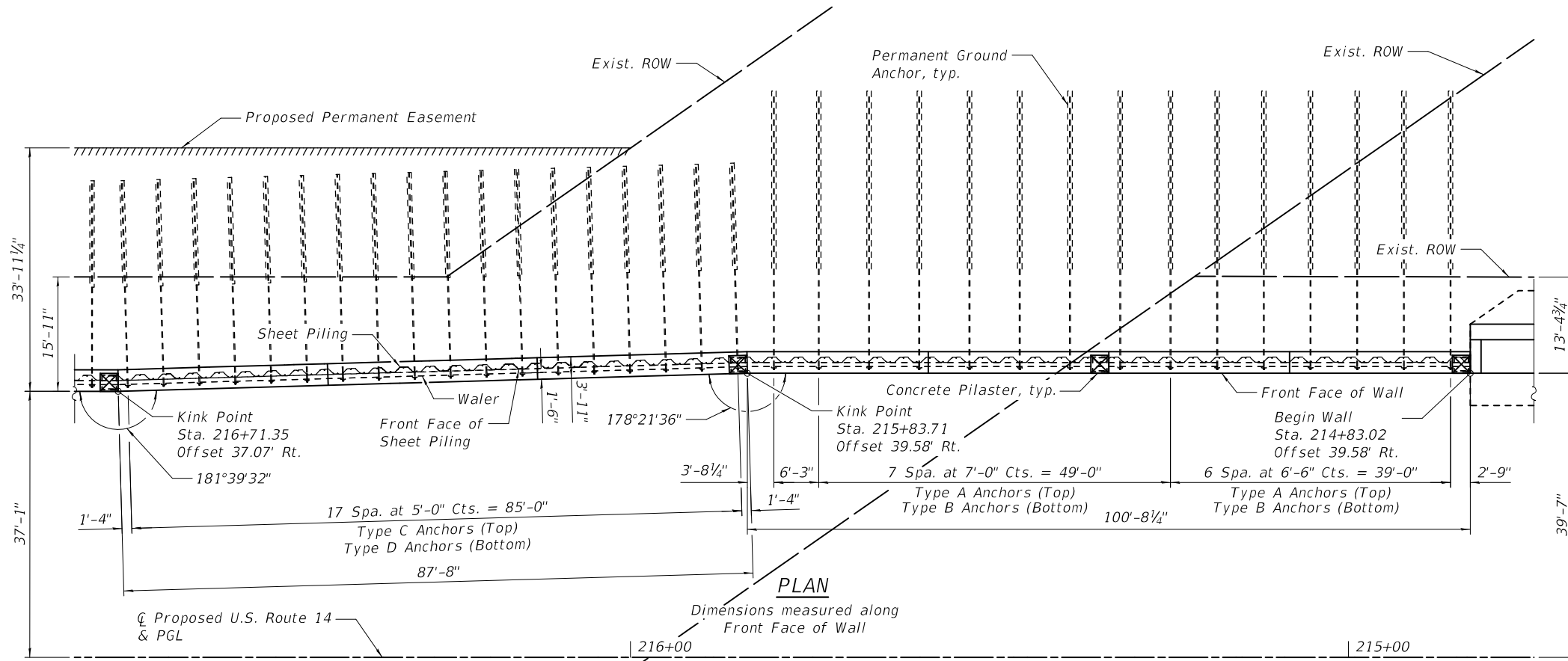
SHEET SF-3 OF SF-16 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	498
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



ELEVATION

Dimensions measured along Front Face of Wall



PLAN

Dimensions measured along Front Face of Wall

Notes:

1. See Sheets SF-7, SF-8, and SF-9 for concrete facing details.
2. See Sheet SF-3 for general notes and ground anchor designations.
3. See Special Provisions for Permanent Ground Anchor information and testing requirements.
4. See Sheets SF-12 and SF-13 for Ornamental Railing details.
5. Wall stations and offsets measured from Proposed \bar{C} U.S. Route 14 to front face of C.I.P. concrete facing.

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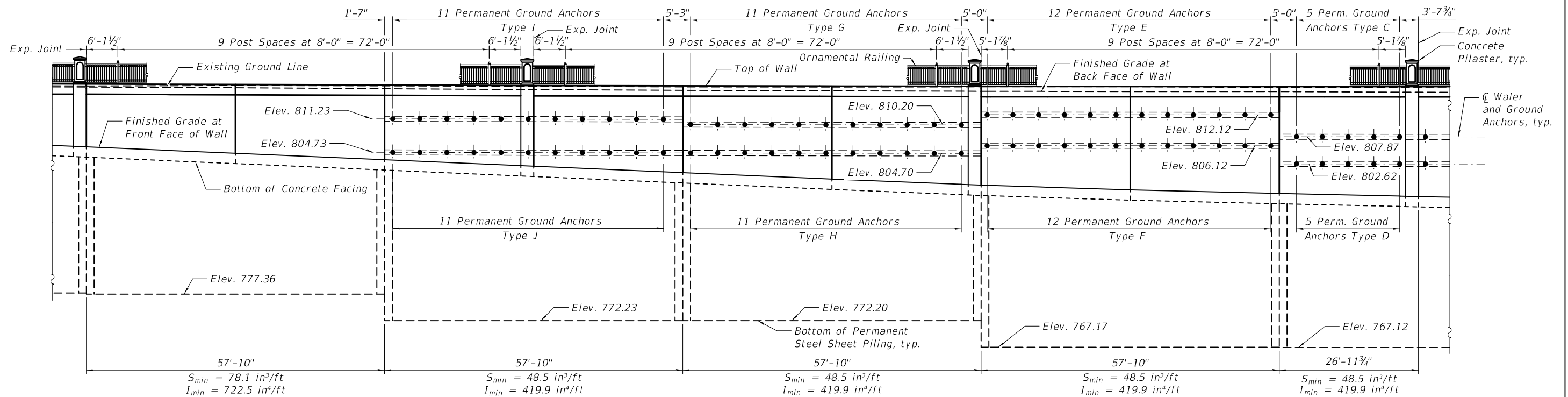
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

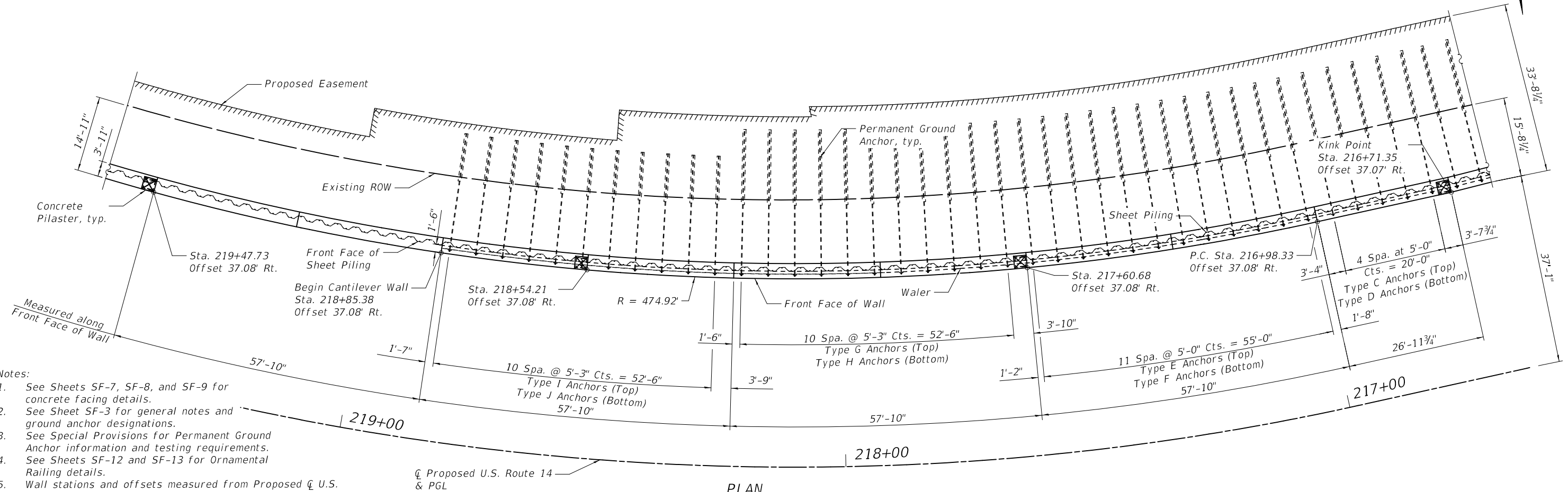
**WALL PLAN AND ELEVATION 1
STRUCTURE NO. 049-W1002**

SHEET SF-4 OF SF-16 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	499
CONTRACT NO. 61J87				
ILLINOIS FED. AID PROJECT				



ELEVATION
Measured along Front Face of Wall



- Notes:
- See Sheets SF-7, SF-8, and SF-9 for concrete facing details.
 - See Sheet SF-3 for general notes and ground anchor designations.
 - See Special Provisions for Permanent Ground Anchor information and testing requirements.
 - See Sheets SF-12 and SF-13 for Ornamental Railing details.
 - Wall stations and offsets measured from Proposed C.L. U.S. Route 14 to front face of C.I.P. concrete facing.

PLAN

MODEL: Default
FILE NAME: ...049W1002-6187-005-Wall Plan and Elevation 2.dgn

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	DATE - 9/10/2024	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**WALL PLAN AND ELEVATION 2
STRUCTURE NO. 049-W1002**

SHEET SF-5 OF SF-16 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
305	11-00087-00-GS	LAKE	816	500
CONTRACT NO. 6187				

ILLINOIS FED. AID PROJECT