



**US Army Corps
of Engineers®**
New York District

Storm Surge Barrier Sub-Appendix

Annex H – Hackensack River Storm Surge Barrier Plan Set

DRAFT

New York – New Jersey Harbor and Tributaries Coastal Storm Risk Management Feasibility Study

Annex B2.H

September 2022



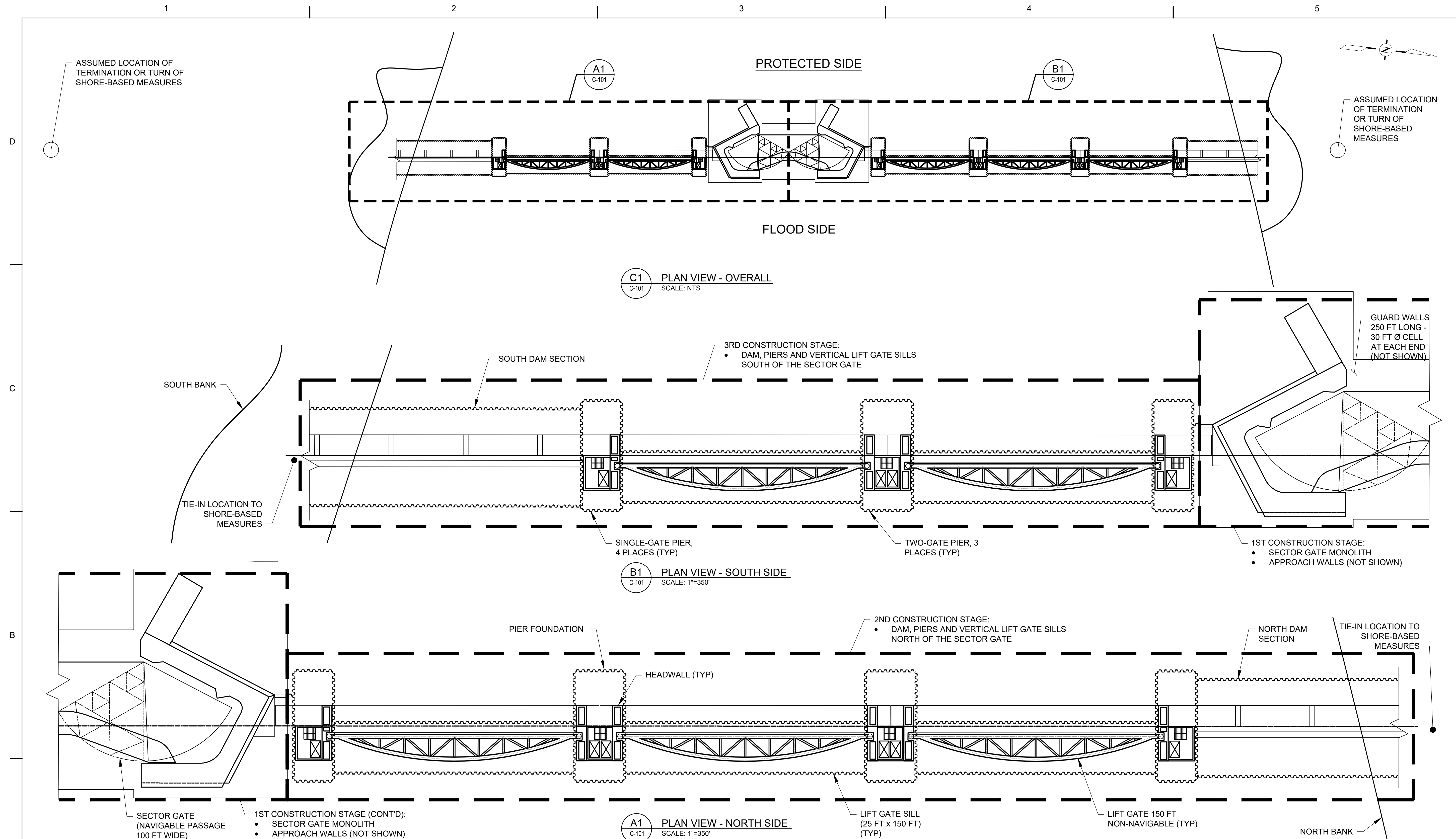
MOFFATT & NICHOL
529 5TH AVENUE, 14TH FLOOR
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EMAIL: MKLUIJVER@MOFFATTNICHOL.COM

An aerial photograph of the Hackensack River area. The river is a prominent dark blue feature winding through a dense urban landscape. A red square is located on the left bank of the river, near the top of the image. A white rectangular box with the text "HACKENSACK RIVER" is positioned in the upper center of the image. The surrounding area is a mix of urban development, green spaces, and water bodies.

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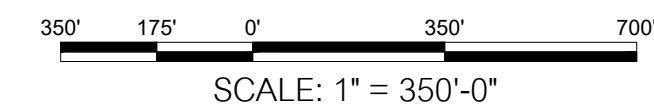
DESIGN FILE	SHEET NO.	DESCRIPTION
W912DS-18-D-0006_HR_G-001.DWG	1	HACKENSACK RIVER - COVER SHEET & DRAWING INDEX
W912DS-18-D-0006_HR_C-101.DWG	2	HACKENSACK RIVER - CONSTRUCTION SEQUENCE PLAN
W912DS-18-D-0006_HR_C-102.DWG	3	HACKENSACK RIVER - SITE PLAN
W912DS-18-D-0006_HR_C-103.DWG	4	HACKENSACK RIVER - PILE LAYOUT PLAN
W912DS-18-D-0006_HR_C-104.DWG	5	HACKENSACK RIVER - DREDGE PLAN
W912DS-18-D-0006_HR_C-301.DWG	6	HACKENSACK RIVER - PIER ELEVATION
W912DS-18-D-0006_HR_C-302.DWG	7	HACKENSACK RIVER - DREDGE SECTION
W912DS-18-D-0006_HR_C-303.DWG	8	HACKENSACK RIVER - SILL & TREMIE
W912DS-18-D-0006_HR_C-304.DWG	9	HACKENSACK RIVER - SCOUR STONE AT SILL
W912DS-18-D-0006_HR_C-305.DWG	10	HACKENSACK RIVER - DAM SECTION TYPICAL ELEVATION
W912DS-18-D-0006_HR_C-401.DWG	11	HACKENSACK RIVER - SCOUR PROTECTION DETAILS
W912DS-18-D-0006_HR_C-402.DWG	12	HACKENSACK RIVER - DAM SECTION PLAN VIEW
W912DS-18-D-0006_HR_C-403.DWG	13	HACKENSACK RIVER - ROADWAY SUPPORT AT DAM SECTION
W912DS-18-D-0006_HR_C-404.DWG	14	HACKENSACK RIVER - GATE PLAN & PROFILE
W912DS-18-D-0006_HR_C-405.DWG	15	HACKENSACK RIVER - SECTOR GATE PILE PLAN
W912DS-18-D-0006_HR_C-501.DWG	16	HACKENSACK RIVER - PIER FOUNDATION
W912DS-18-D-0006_HR_C-502.DWG	17	HACKENSACK RIVER - PIER TOWER DETAILS
W912DS-18-D-0006_HR_C-503.DWG	18	HACKENSACK RIVER - PIER FOUNDATION DETAILS
W912DS-18-D-0006_HR_C-504.DWG	19	HACKENSACK RIVER - CONCRETE PLUG DETAIL
W912DS-18-D-0006_HR_C-505.DWG	20	HACKENSACK RIVER - HEADWALL DETAILS
W912DS-18-D-0006_HR_C-506.DWG	21	HACKENSACK RIVER - GATE DETAIL
W912DS-18-D-0006_HR_C-601.DWG	22	HACKENSACK RIVER - ELEVATIONS SCHEDULES

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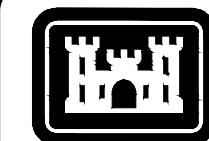


NOTES:

- | | | |
|---|--|---|
| 1. EXCAVATE IF NEEDED, PLACE SAND & GRAVEL FILL TO FORM A SUB-BASE FOR THE TREMIE. | 6. PREPARE PILE CONNECTIONS, WELD HEADED STUDS ONTO SHEET PILES AT SILL/ PILE CAP. | 12. INSTALL THE HEADWALL/ INSPECTION ROAD GIRDERS. |
| 2. DRIVE THE PIPE PILES & INSTALL THE DRILLED SHAFTS. | 7. INSTALL SILL/ PILE CAP REINFORCEMENT. | 13. FLOOD THE COFFERDAM. |
| 3. INSTALL SEALANT IN SHEET PILE INTERLOCKS, DRIVE THE COATED SHEET PILES & INSTALL COFFERDAM BRACING & KING PILES. | 8. POUR CONCRETE FOR SILL/ PILE CAP. | 14. CUT OFF COFFERDAM SHEET PILES FLUSH WITH TOP OF SILL/ PILE CAP. |
| 4. PLACE THE UNDERWATER (TREMIE) CONCRETE COFFERDAM SEAL, DEWATER THE COFFERDAM (USE BARGES AS CAMELS TO PREVENT VESSEL IMPACTS). | 9. ROUGHEN SILL/ PILE CAP CONCRETE AT ANY WALLS/ PIERS (AT SECTOR GATE: INSTALL APPROACH WALL PILES NOW IN ORDER TO AVOID HAVING TO DRIVE PIPE OR SHEET PILES THROUGH ANY STONE FILL). | 15. INSTALL THE STEEL GATES. |
| 5. CLEAN AND ROUGHEN THE EXPOSED SURFACE OF THE CONCRETE WHICH WAS PLACED UNDER | 10. PLACE ROCK FILL TO CREATE SLOPES LEADING TO GATE SILLS WHERE NEEDED. | |
| | 11. FORM AND POUR ANY WALLS/ PIERS. | |



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U.S. ARMY CORPS OF ENGINEERS NEW YORK DISTRICT NEW YORK, NEW YORK	DESIGNED BY: KJ/ JB	DATE: 200404-17
WF BAIRD & ASSOCIATES 2924 MARKETPLACE DR, STE 200 MADISON, WI 53729	DRAWN BY: M. WOODS	SOLICITATION NO.: W912DS-01-0006
	SUBMITTED BY: M. WOODS	CONTRACT NO.: W912DS-01-0006
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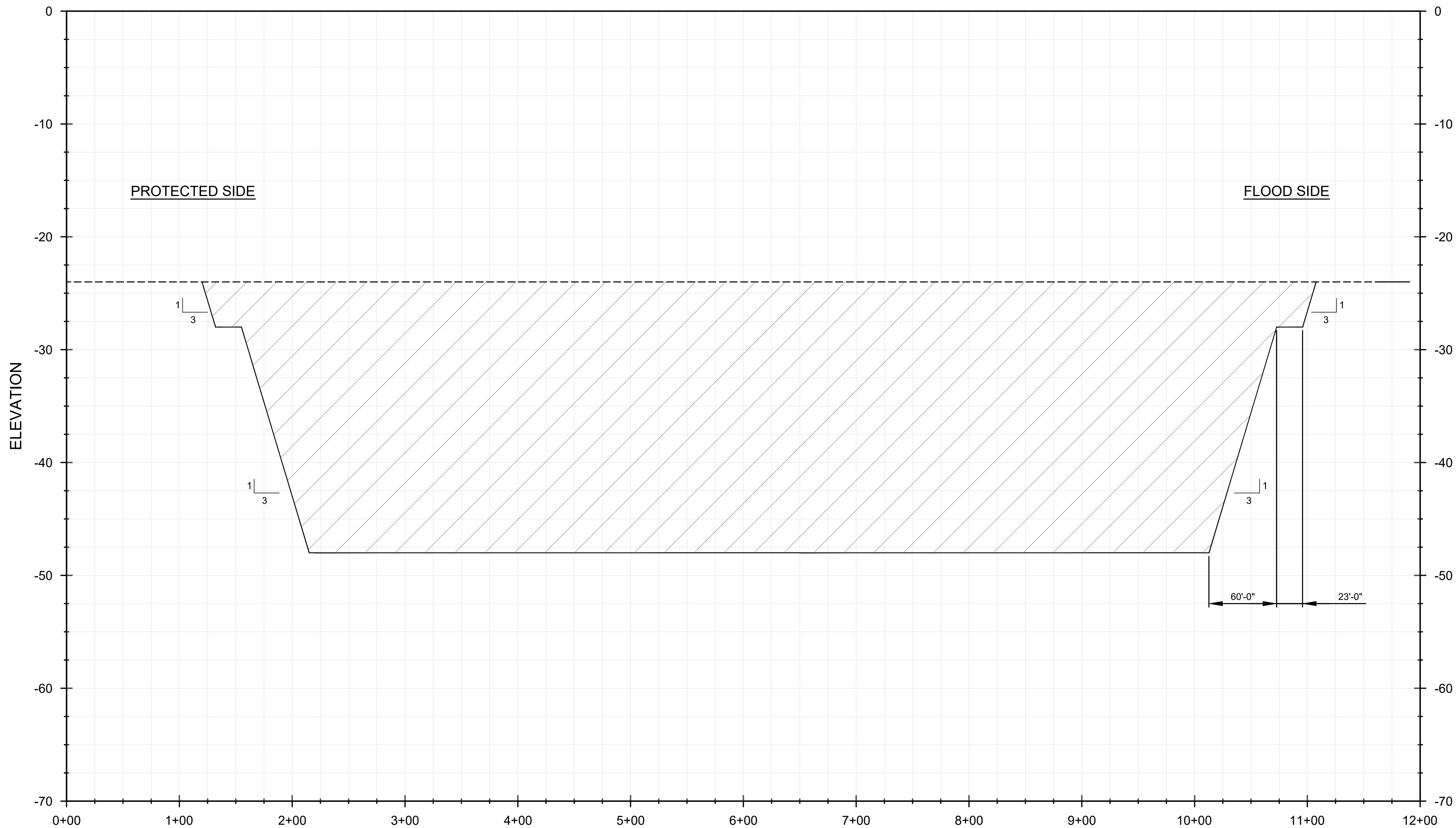
NEW YORK / NEW JERSEY HARBOR &
TRIBUTARIES STUDY (HATS)

HACKENSACK RIVER -
CONSTRUCTION SEQUENCE PLAN

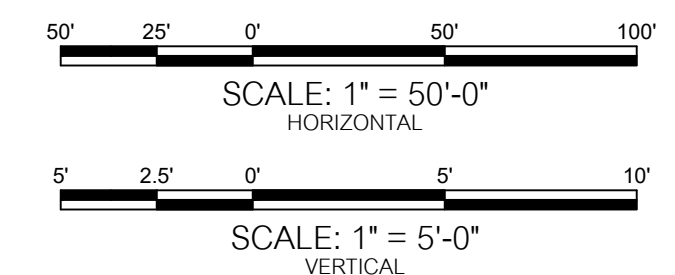
SHEET
IDENTIFICATION
C-101



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A2
C-103



LEGEND:
EXISTING - - - - -
PROPOSED —————

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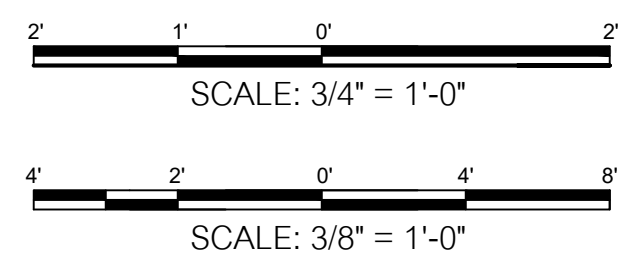
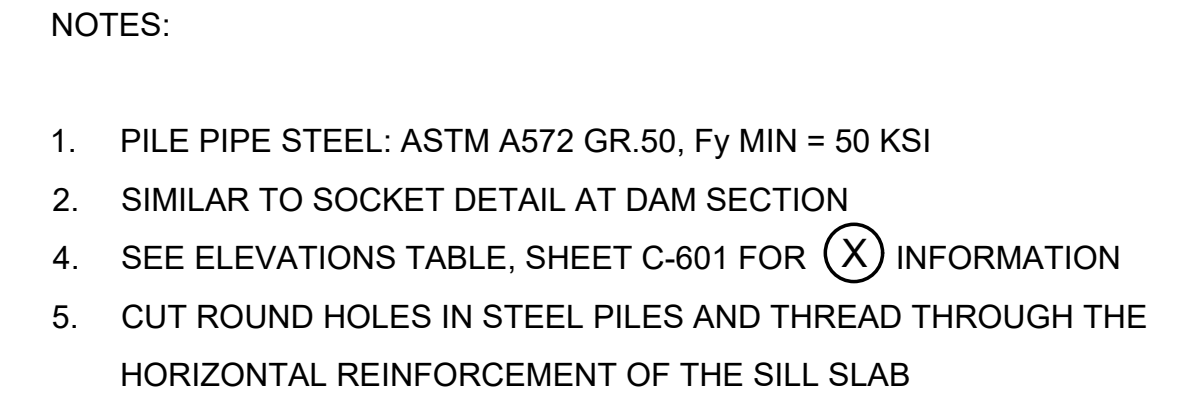
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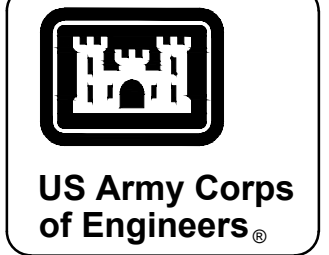
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			M. WOODS	M. WOODS	W912DZ-18-D-0066
WF BAIRD & ASSOCIATES 2924 MARKETPLACE DR., STE 200 MADISON, WI 53729	KJ / JB	2020-04-17	SUBMITTED BY:	ISSUE DATE:	CONTRACT NO.:
			M. WOODS		W912DZ-18-D-0066
			PLOT SCALE:	FILE NUMBER:	
			AGE:	FILE NAME:	
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HACKENSACK RIVER - DREDGE SECTION
 TRIBUTARIES STUDY (HATS)

SHEET
IDENTIFICATION
C-302



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U.S. ARMY CORPS OF ENGINEERS NEW YORK DISTRICT NEW YORK, NEW YORK	DESIGNED BY:	DATE:
	DRAWN BY:	DATE:
	CHECKED BY:	DATE:
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WF BAIRD & ASSOCIATES 2924 MARKETPLACE DR, STE 200 MADISON, WI 53729	PROJECT NO.:	DATE:
	CLIENT:	DATE:
	CONTRACT NO.:	DATE:
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NEW YORK / NEW JERSEY HARBOR & TRIBUTARIES STUDY (HATS)

HACKENSACK RIVER - SILL & TREMIE

SHEET
IDENTIFICATION
C-303

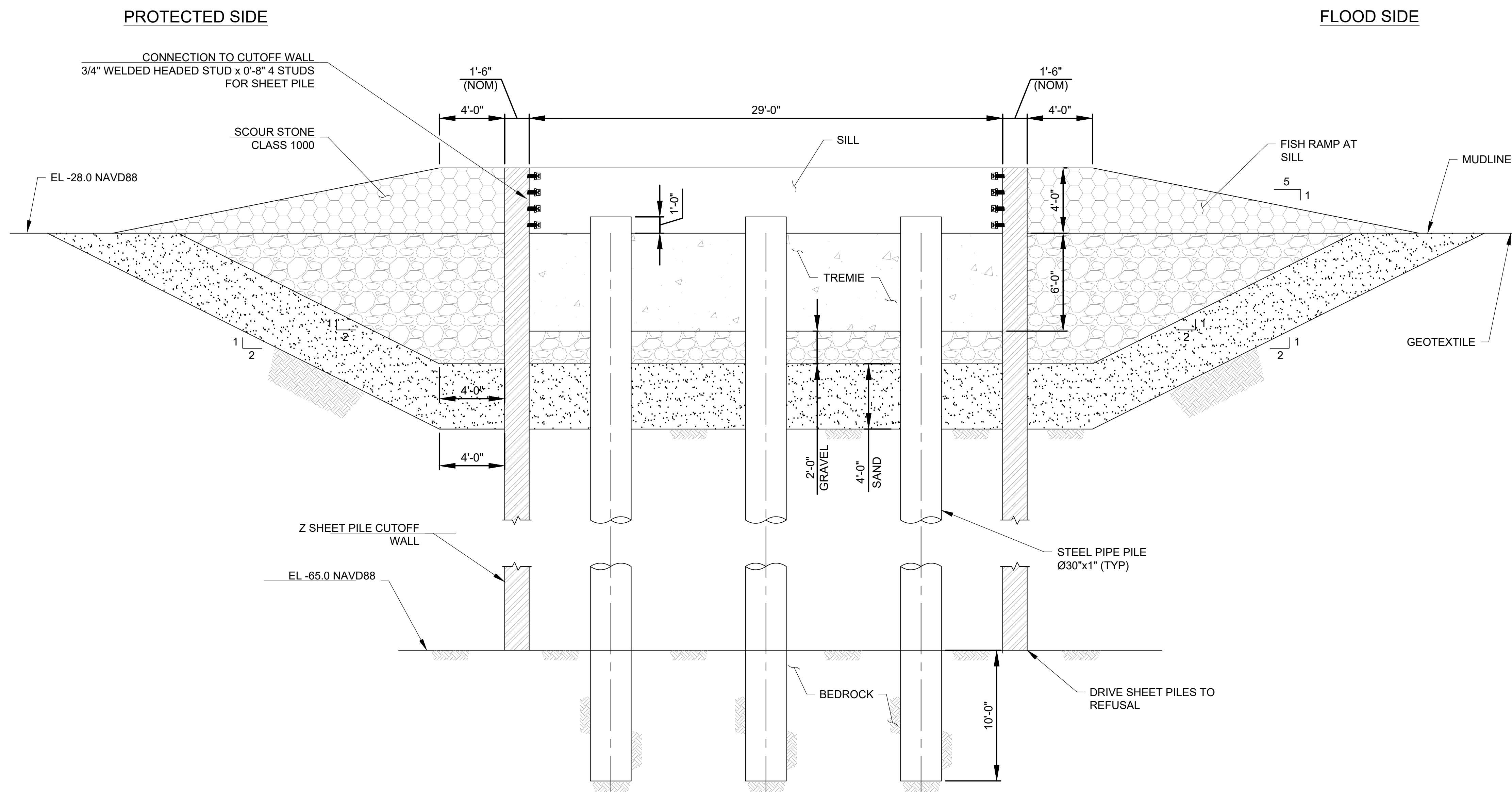
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WF BAIRD & ASSOCIATES 2924 MARKETPLACE DR, STE 200 MADISON, WI 53729	SIZE: FILE NAME:

NEW YORK / NEW JERSEY HARBOR &
TRIBUTARIES STUDY (HATS)

HACKENSACK RIVER - SCOUR
STONE AT SILL

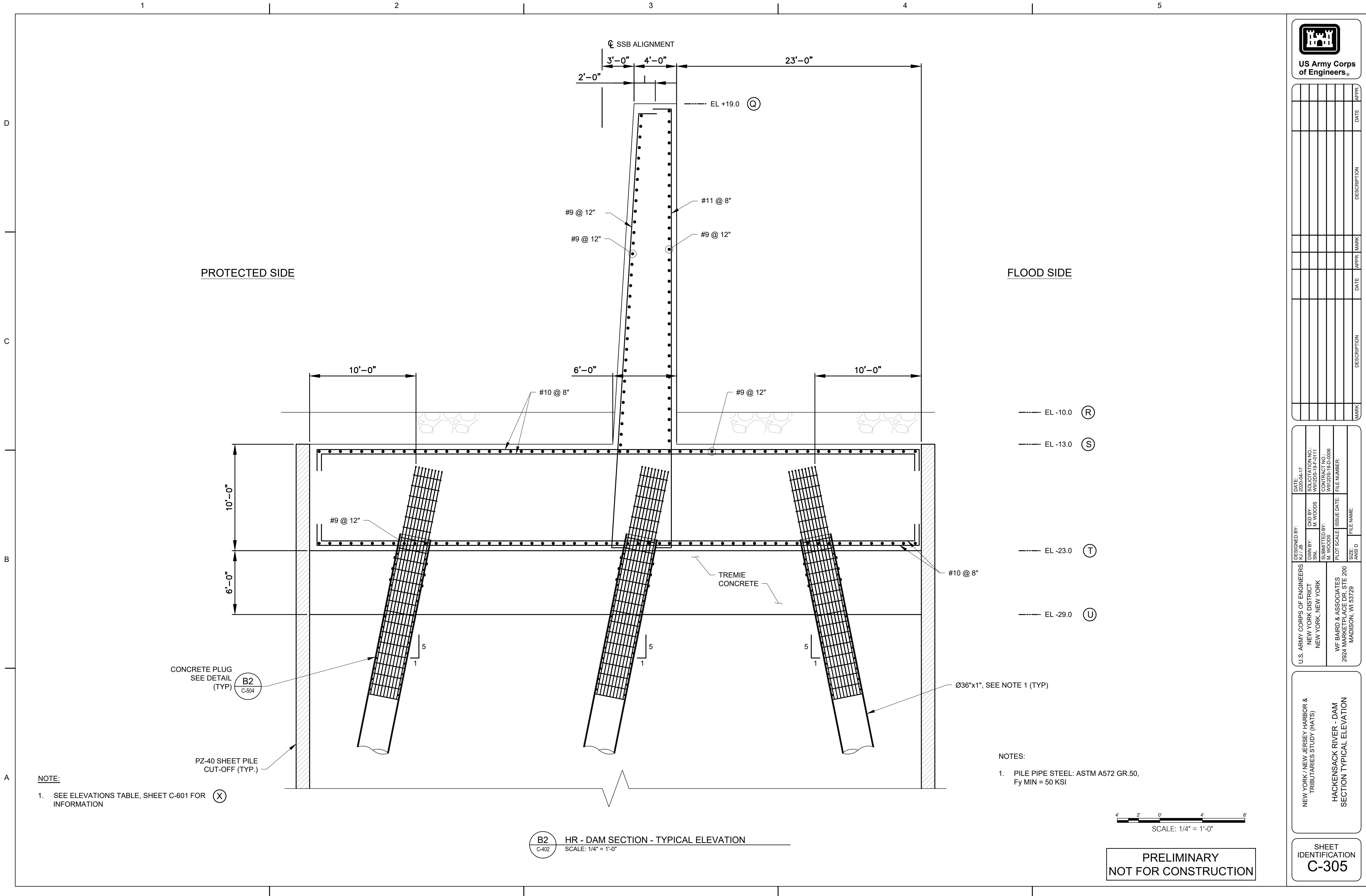
SHEET
IDENTIFICATION
C-304



A2 SCOUR STONE AT SILL
XX-XXX
SCALE: 1/4" = 1'-0"



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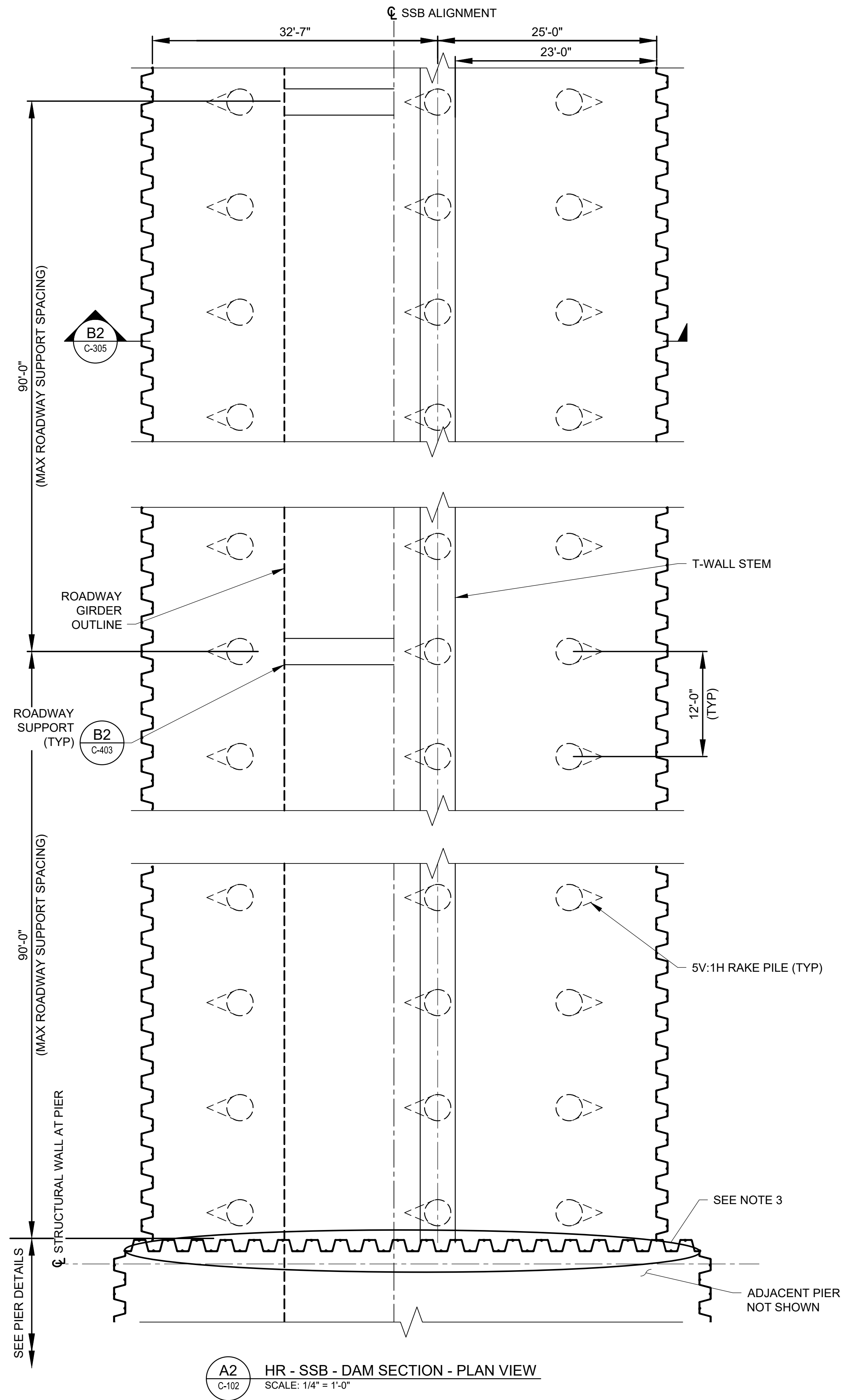
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NEW YORK, NEW YORK	M. WOODS	CONTRACT NO.: W9120S-18-D-0066
	SUBMITTED BY:	FILE NUMBER:
	M. WOODS	
WF BAIRD & ASSOCIATES	ISSUE DATE:	
2924 N. MILWAUKEE AVE 200	SIZE:	
MADISON, WI 53729	FILE NAME:	
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TRIBUTARIES STUDY (HATS)

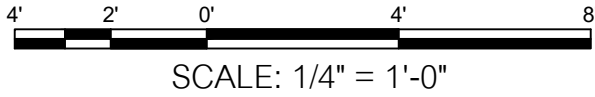
HACKENSACK RIVER - DAM
SECTION PLAN VIEW

SHEET
IDENTIFICATION
C-402



NOTE:

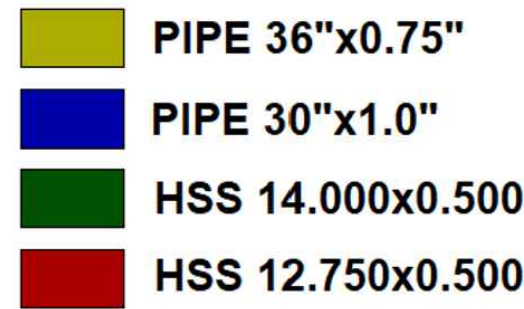
1. ISOLATION JOINTS SHALL BE PLACED EVERY 400'-0" MAX AND BETWEEN THE DAM SECTION AND THE ADJACENT LIFT GATE PIER.
2. ISOLATION JOINT (IJ) DETAILING IS NOT INCLUDED IN THE HATS FEASIBILITY DESIGN STUDY. IT MUST BE PART OF THE 100% DESIGN.
3. WHERE THERE IS NO DIFFERENCE IN GROUND ELEVATION FROM ONE SIDE OF THIS SHEET PILE WALL TO THE OTHER DURING CONSTRUCTION, FLAT SHEET PILES CAN BE USED HERE TO SIMPLIFY IJ DETAILING.



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- C2 VERTICAL LIFT GATE - ELEVATION
C-404 SCALE: NTS



A2 VERTICAL LIFT GATE - ISOMETRIC
C-404 SCALE: NTS

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[illegible]

U.S. ARMY CORPS OF ENGINEERS NEW YORK DISTRICT NEW YORK, NEW YORK		DRAWN BY: J. M. JONES 20X03-04-17	
OWN BY:	CKD BY:	SOLICITATION NO.:	
M. WOODS	M. WOODS	W612DS-194-0111	
SUBMITTED BY:		CONTRACT NO.:	
W612DS-16-0066		W612DS-16-0066	
PLOT SCALE:	ISSUE DATE:	FILE NUMBER:	
SIZE:	FILE NAME:		
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WF BARD & ASSOCIATES 2924 MARKET STREET, SUITE 200 MADISON, WI 53729			

HACKENSACK RIVER - GATE
PLAN & PROFILE

SHEET
IDENTIFICATION
C-404

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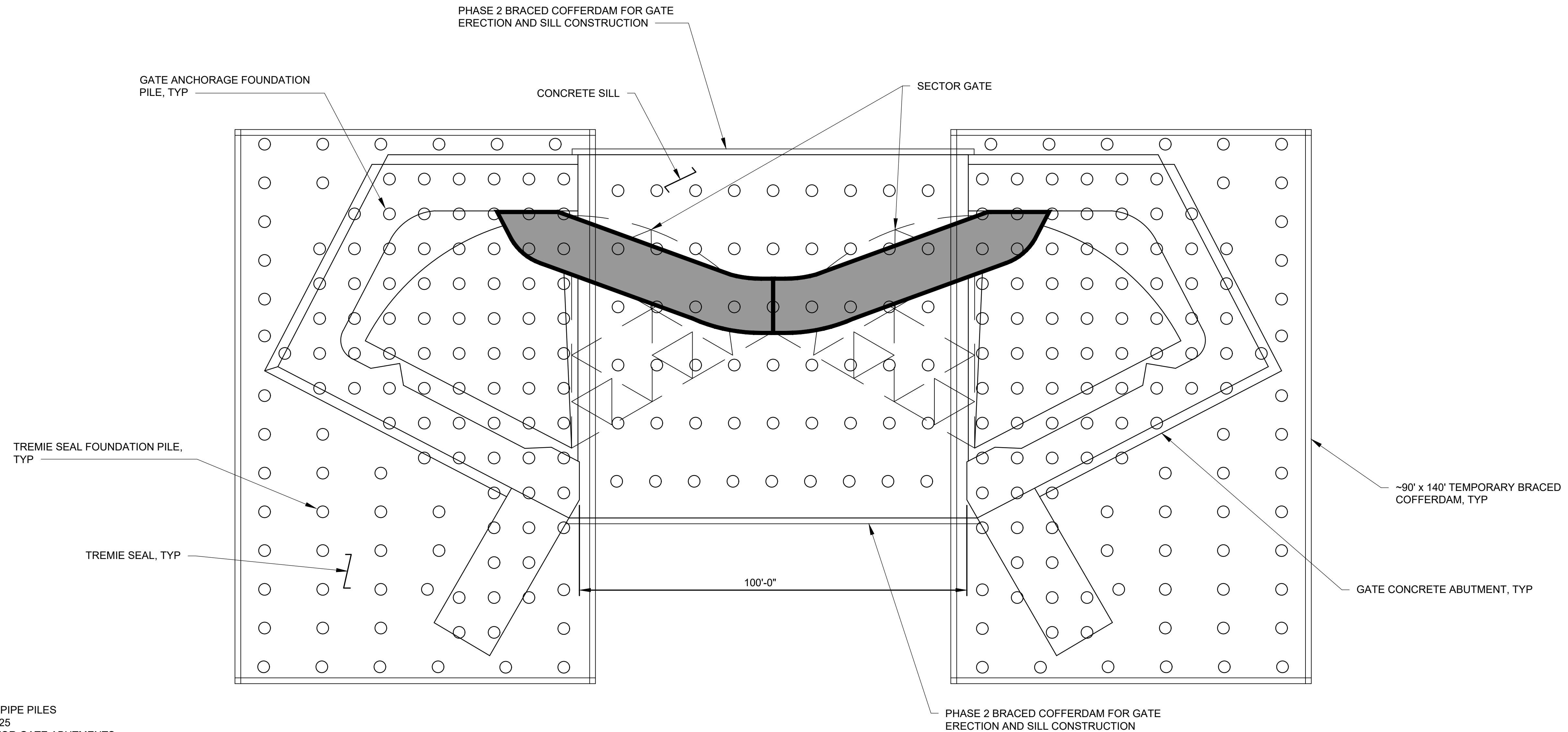
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KJ / JB	2020-04-17	2020-04-17	
DWN BY:	CKD BY:	SOLICITATION NO:	
SNK / WOODS	WJ / WOODS	W912DS-19-0111	
UNAWARDED BY:	UNAWARDED BY:	W912DS-14-0006	
WJ / WOODS	WJ / WOODS	W912DS-14-0006	
PLOT SCALE:	ISSUE DATE:	FILE NUMBER:	
ASST ENGR	FILE NAME:		

NEW YORK / NEW JERSEY HARBOR &
TRIBUTARIES STUDY (HATS)

NEW YORK / NEW JERSEY HARBOUR
TRIBUTARIES STUDY (HATS)

HACKENSACK RIVER -
SECTOR GATE PILE PLAN

SHEET
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C-405



- NOTES:

1. 36" DIA x 3/4" STEEL PIPE PILES
2. TIP EL -70 TOP EL -25
3. 9' X 9' GRID AT SECTOR GATE ABUTMENTS
4. 10' x 15' GRID AT REMAINING TREMIE SEAL
5. AFTER DEWATERING, CONSTRUCT 20' ROCK SOCKET TO EL -90.
6. TOP OF ABUTMENT CONCRETE = +18.0
7. TOP OF GATE SILL CONCRETE = -23.0
8. BOT OF BASE SLAB CONCRETE = -31.0

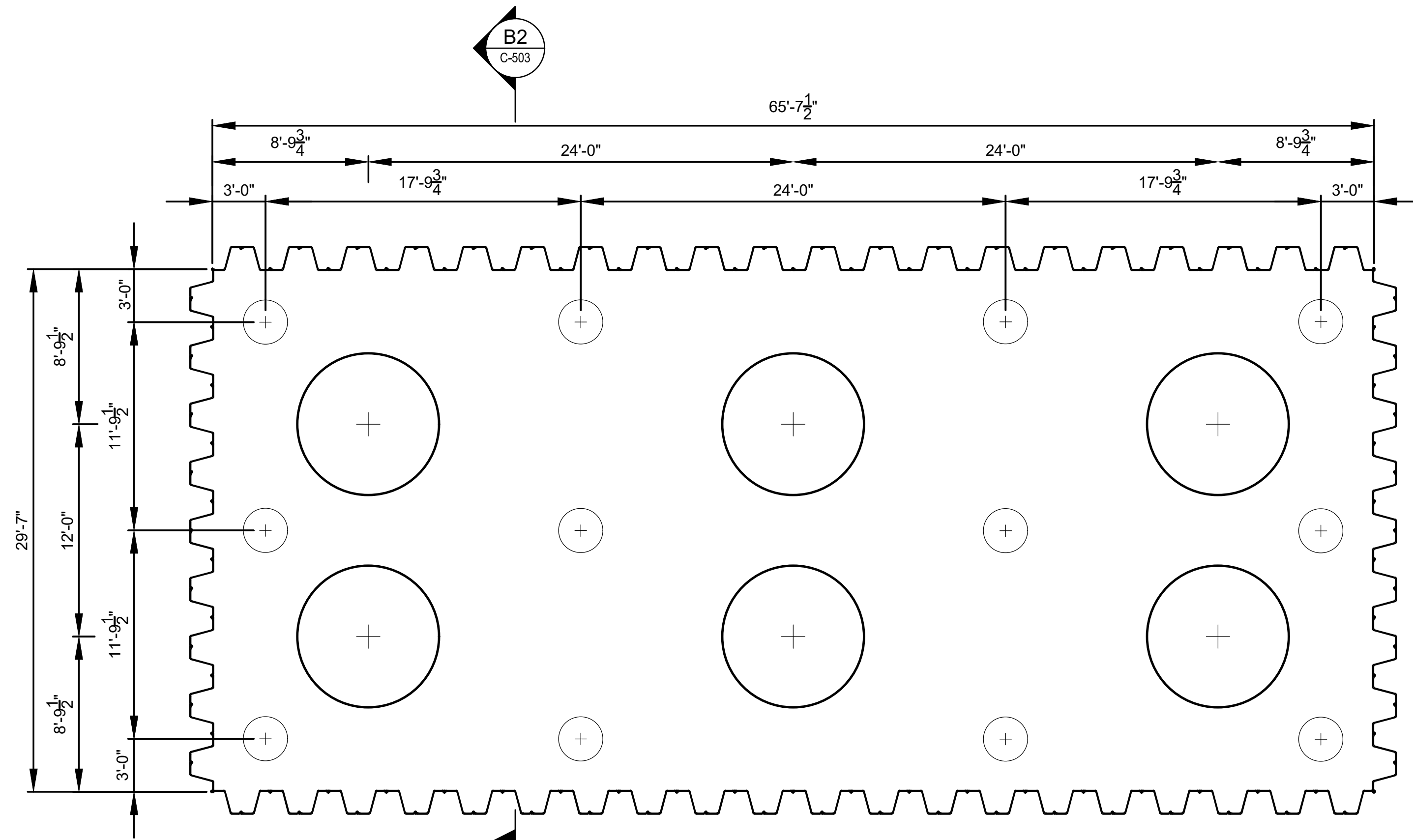
B2

C-103

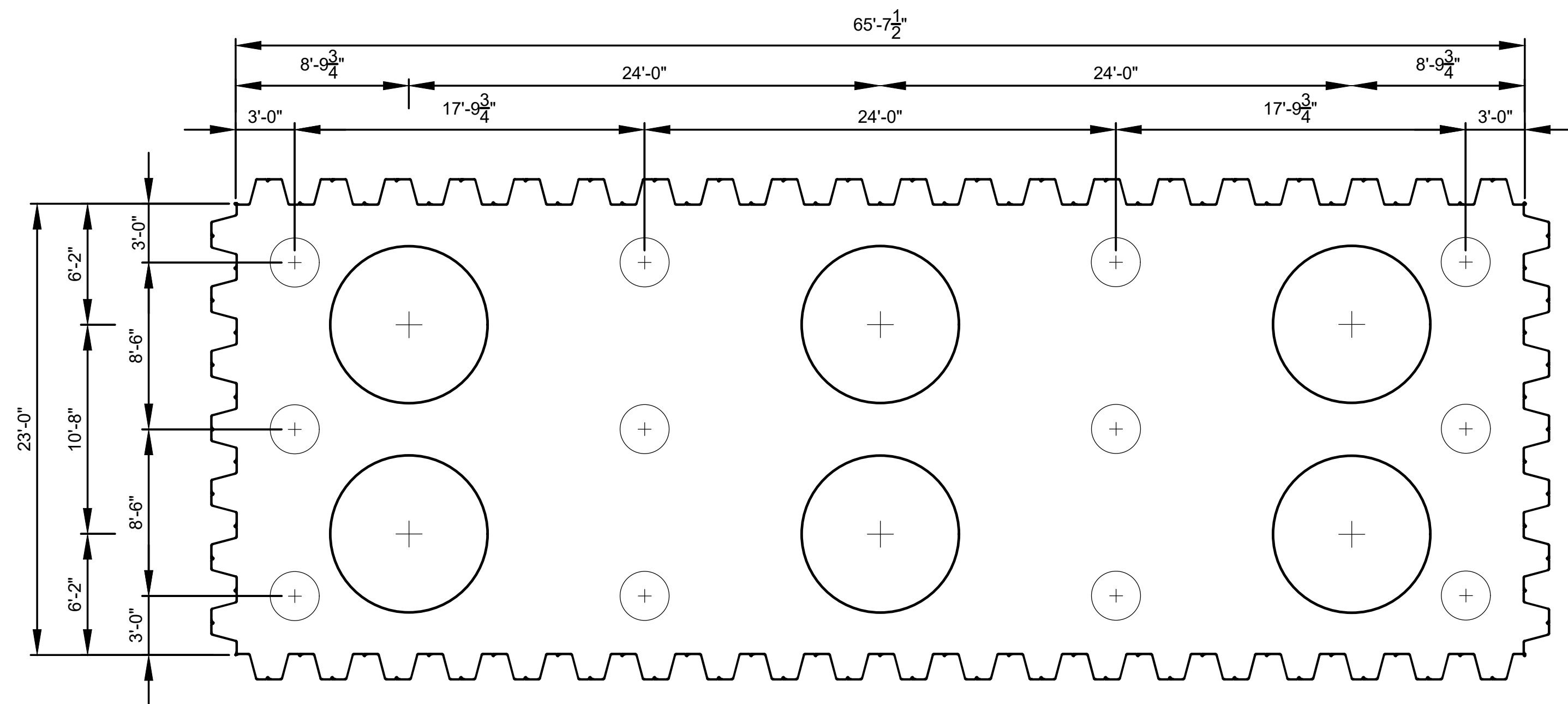
SECTOR GATE PILE PLAN

SCALE: NTS

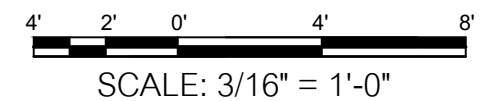
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C2 TWO-GATE PIER FOUNDATION PLAN
 C-103 SCALE: 3/16" = 1'-0"



A2 SINGLE-GATE PIER FOUNDATION PLAN
C-103 SCALE: 3/16" = 1'-0"



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U.S. ARMY CORPS OF ENGINEERS NEW YORK DISTRICT NEW YORK, NEW YORK	2020-04-17
KJ / JB DWN BY: M. WOODS SUBMITTED BY: M. WOODS PLOT SCALE:	SOLICITATION NO.: W912DS-18-D-0006 CONTRACT NO.: W912DS-18-D-0006 FILE NUMBER:
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HACKENSACK RIVER - PIER FOUNDATION

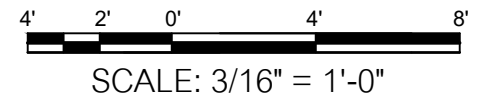
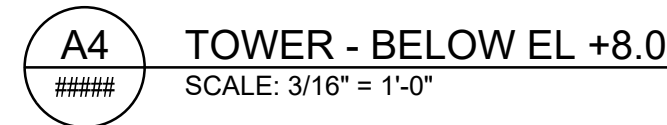
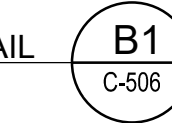
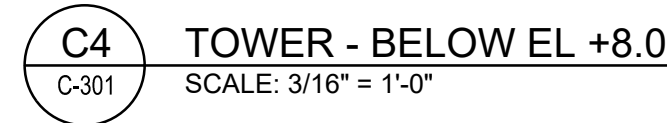
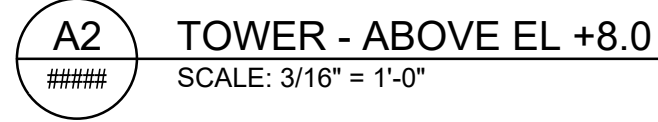
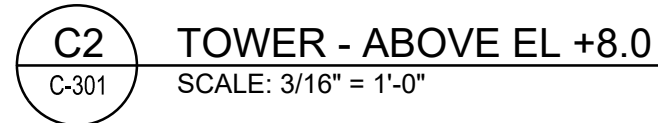
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IDENTIFICATION
C-501

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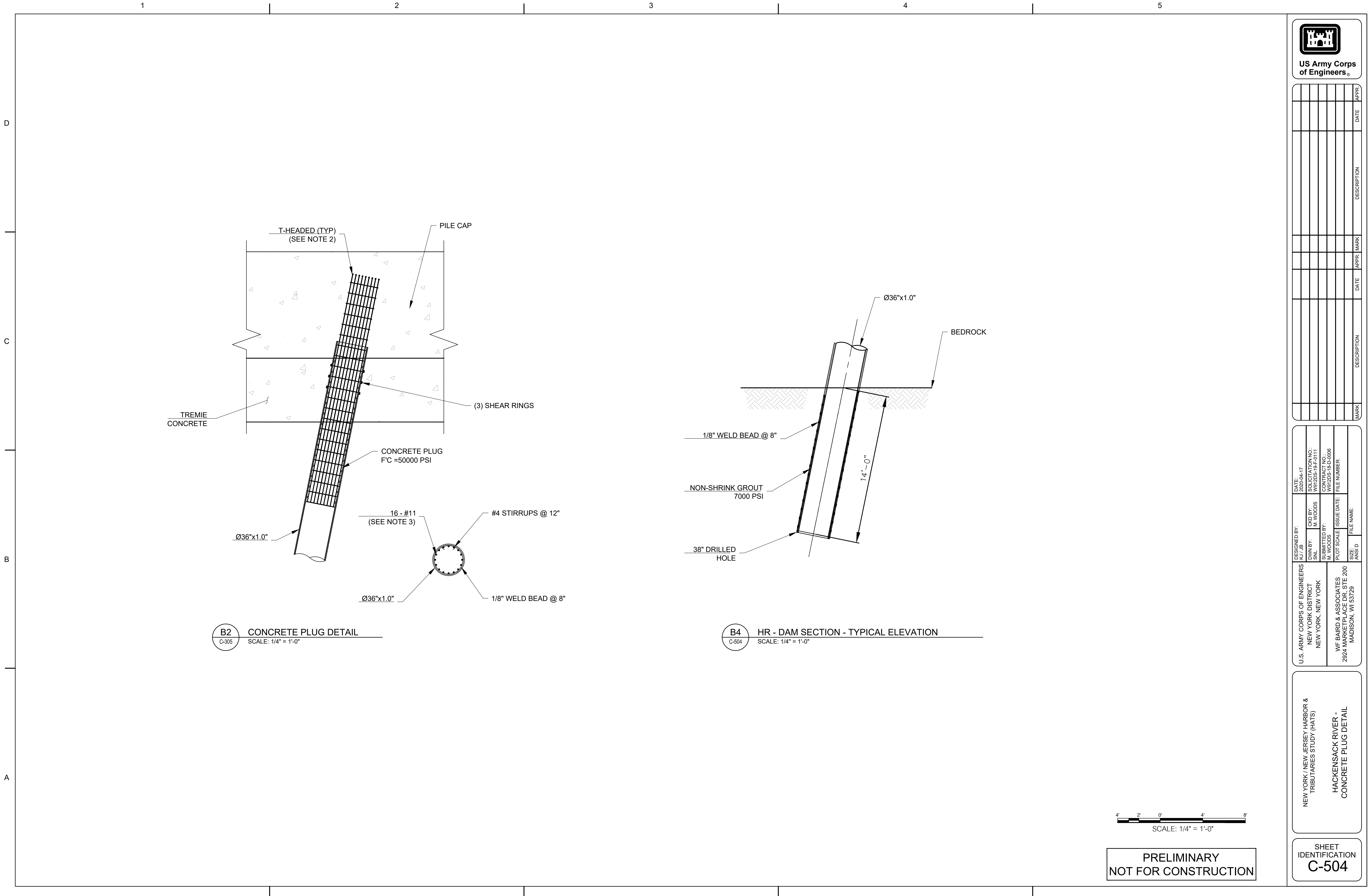
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NEW YORK DISTRICT	OWN BY:	SUBMITTATION NO.: W91205-19-0-0111
NEW YORK, NEW YORK	M. WOODS	CONTRACT NO.: W91205-18-D-0066
	SUBMITTED BY:	FILE NUMBER:
	M. WOODS	
WF BAIRD & ASSOCIATES	ISSUE DATE:	
2924 N. MILWAUKEE AVE 200	SIZE:	
MADISON, WI 53729	FILE NAME:	
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HACKENSACK RIVER - PIER
TOWER DETAILS

SHEET
IDENTIFICATION
C-502



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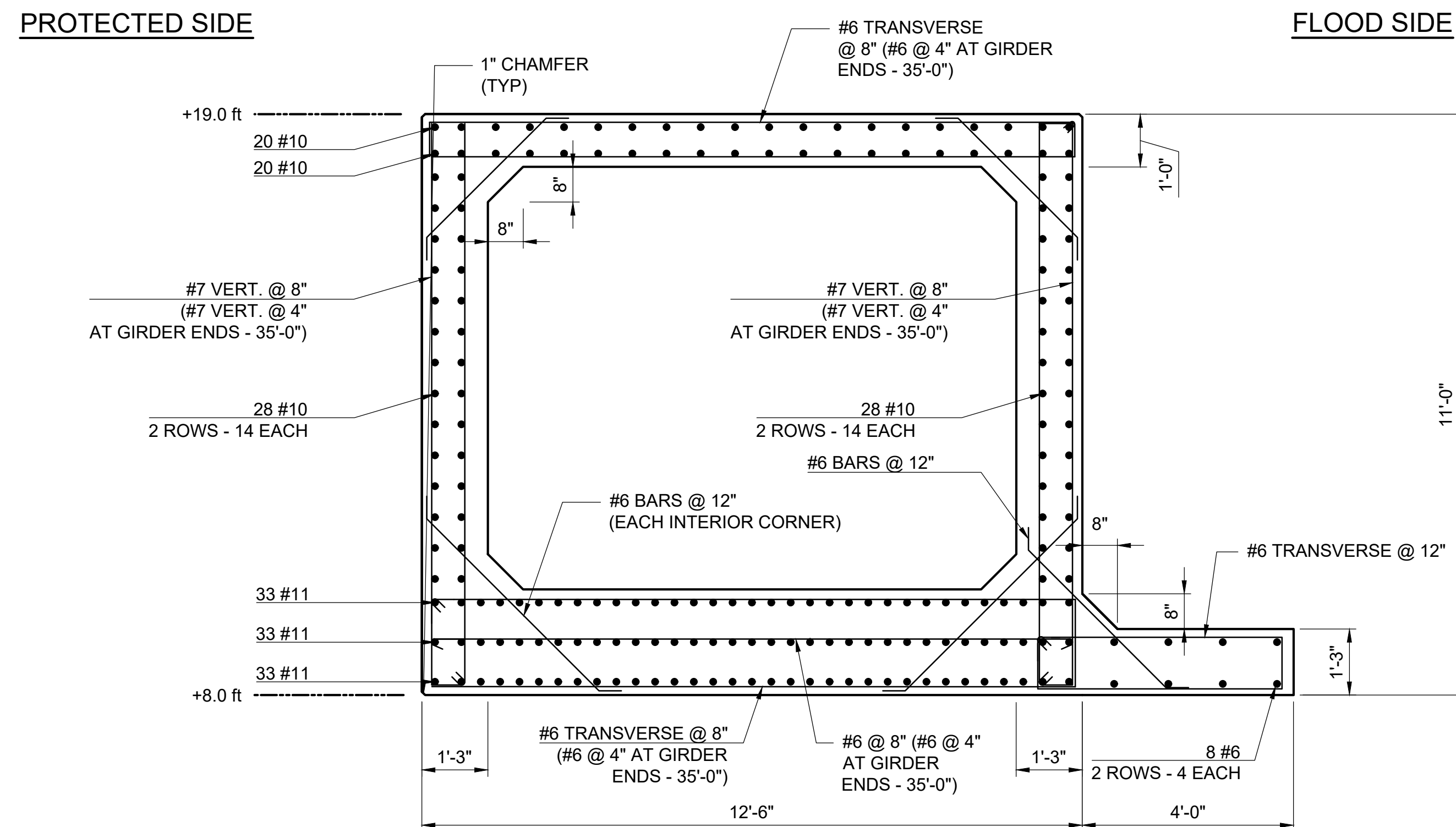
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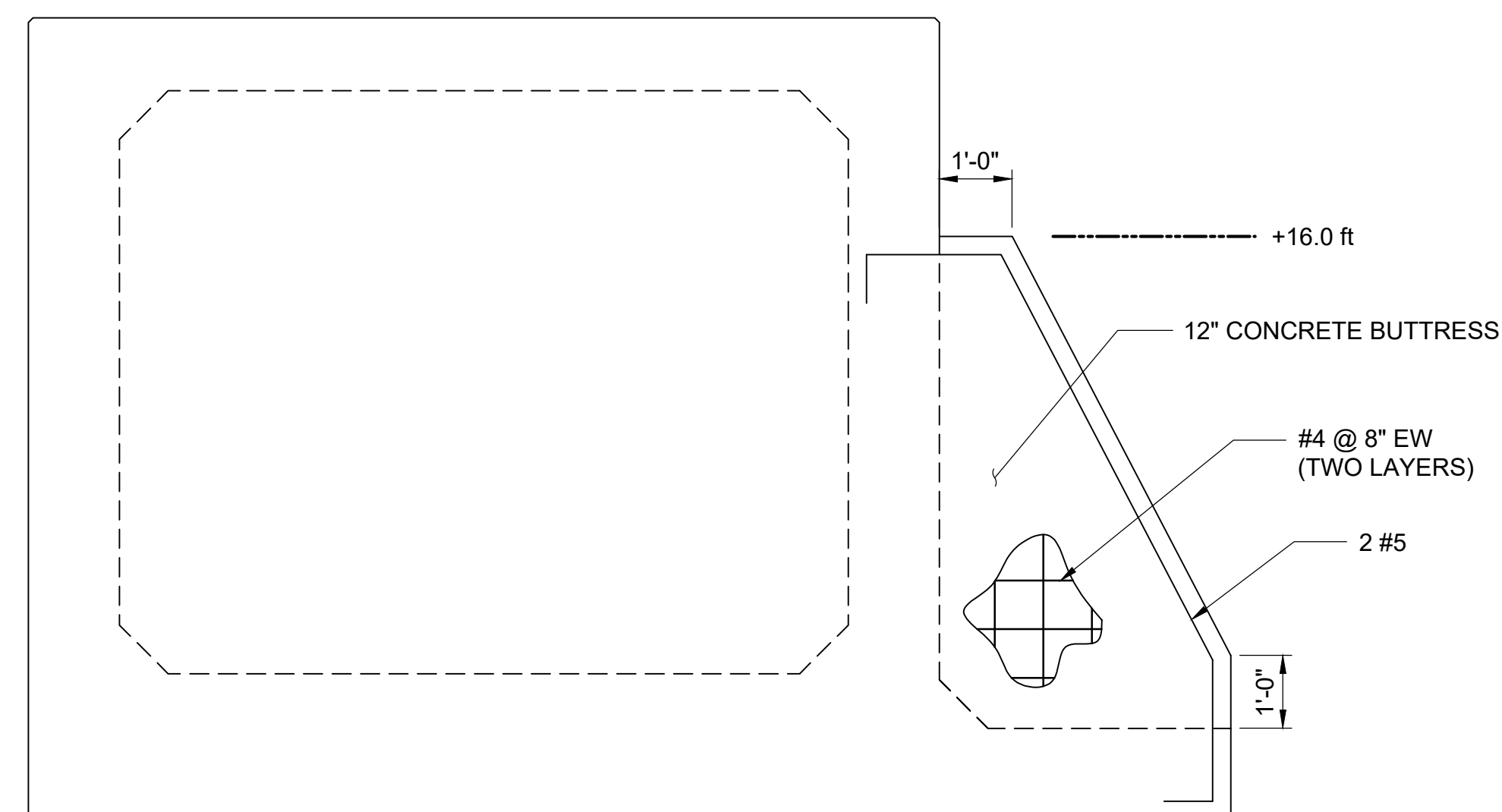
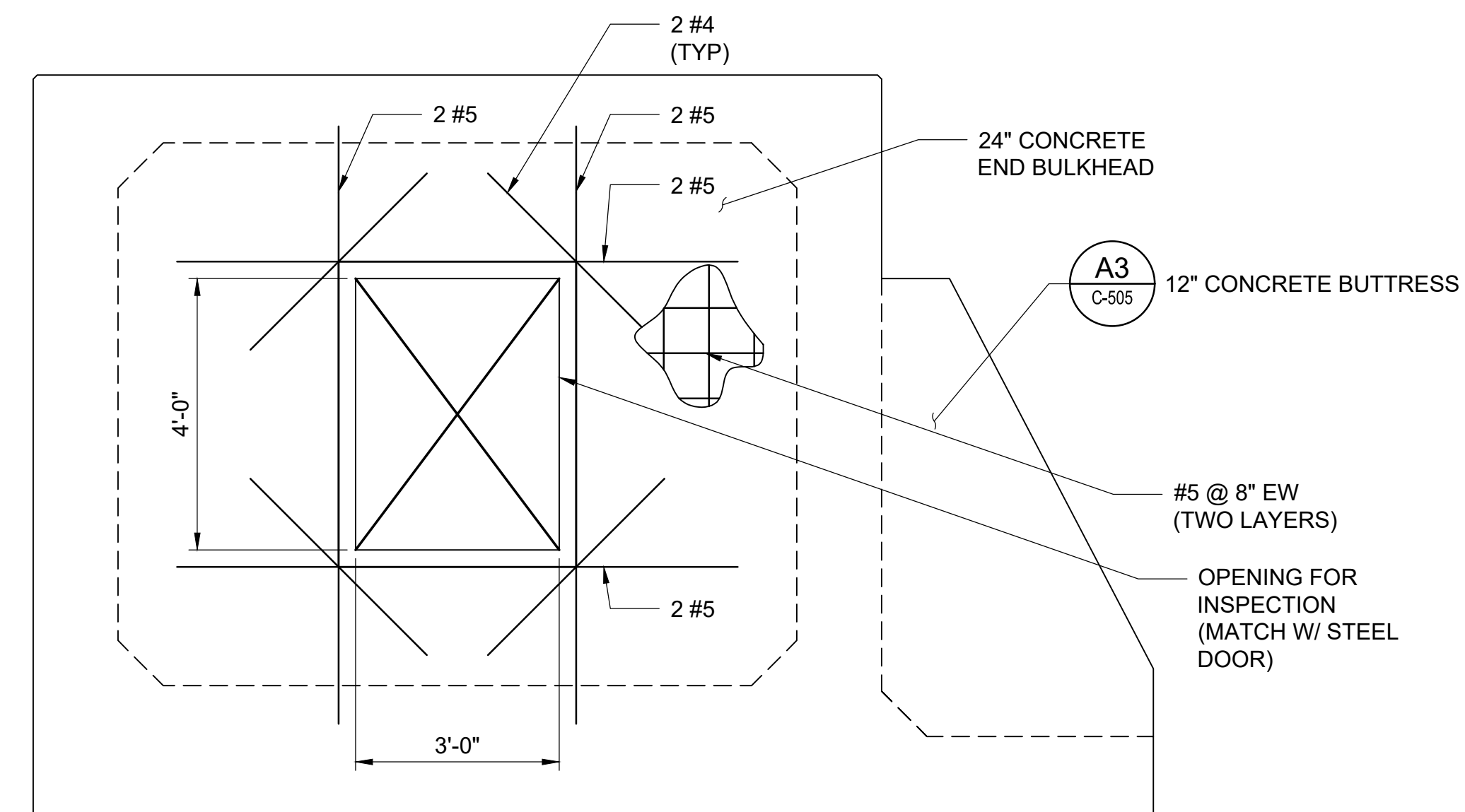
NEW YORK / NEW JERSEY HARBOR & TRIBUTARIES STUDY (HATS)

HACKENSACK RIVER - HEADWALL DETAILS

SHEET
IDENTIFICATION
C-505



- NOTE:
1. FACE-MOUNTED VEHICLE GUARDRAIL AT EACH FACE (NOT SHOWN).
 2. 10 FT SPACING BETWEEN BUTTRESSES.



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