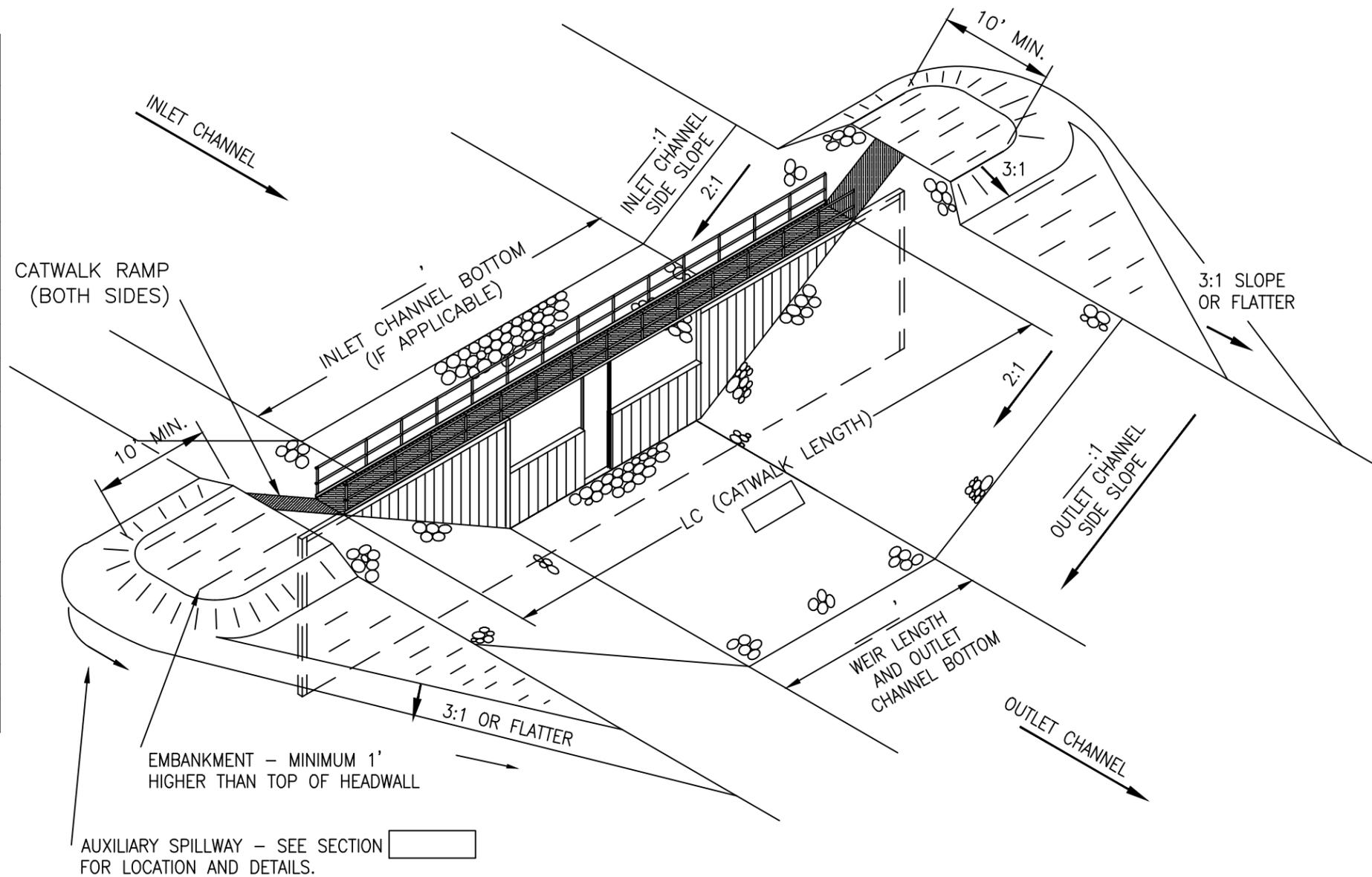
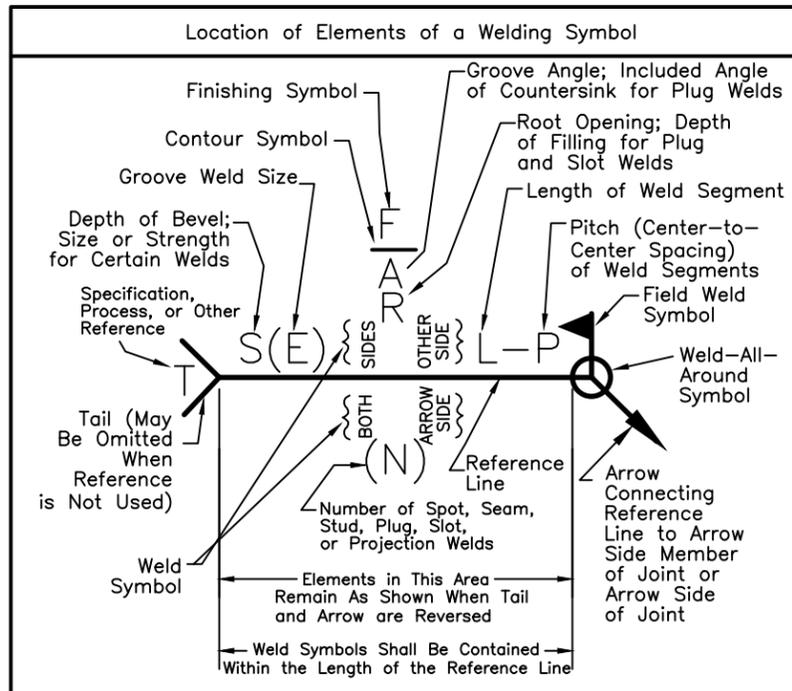


QUANTITY TABLE

	ITEM	UNIT	QUANTITY
SHEET PILING AND CAP	3/8" PLATE	FT.	
	5" x 5" x 3/8" ANGLE IRON	FT.	
	STOP LOG CHANNEL	FT.	
	SHEET PILING	SQ. FT.	
	ROCK RIPRAP	CU. YDS.	
	GEOTEXTILE	SQ. YDS.	
	2x6x3/16 STEEL TUBING (STOP LOGS)	LIN. FT.	
CATWALK	GRATING LENGTH	FT.	
	3x3x1/2 ANGLE (SUPPORT BRACE)	FT.	
	2x2x1/4 ANGLE (CATWALK SUPPORT)	FT.	
	4x1/4 PLATE (TOEBOARD)	FT.	
RAILING	4x3x1/4 ANGLE (TOP RAIL)	FT.	
	3x1/2 PLATE (INTERMEDIATE RAIL)	FT.	
	3x2x1/4 ANGLE (POST)	FT.	
RAILING ALT. DETAIL ANGLE IRON	2.375 OD x 0.154 PIPE (TOP RAIL)	FT.	
	2.375 OD x 0.154 PIPE (INT. RAIL)	FT.	
	2.375 OD x 0.154 PIPE (POST)	FT.	
	5x5x3/8 ANGLE (S.L. BAY STIFFENER)	FT.	
	MISC INCIDENTAL ITEMS	--	



SHEET PILING STRUCTURE WITH CATWALK



WELD SYMBOLS

	Fillet Weld	Square Groove Weld
Arrow Side		
Other Side		
Both Sides		
	Weld-All-Around	

MATERIAL NOTES:

1. ROCK RIPRAP SHALL BE ACCORDING TO WI. CONST. SPEC. 9.
2. GEOTEXTILE SHALL BE TYPE I, NONWOVEN ACCORDING TO WI. CONST. SPEC. 13.
3. STEEL SHEET PILING SHALL BE ACCORDING TO WI. CONST. SPEC. 201.

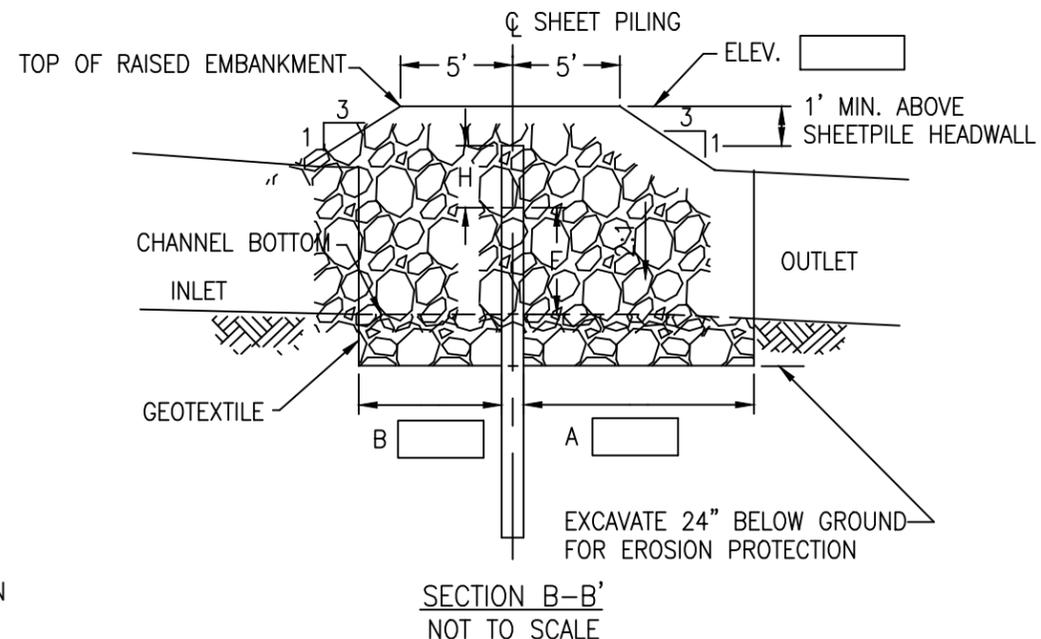
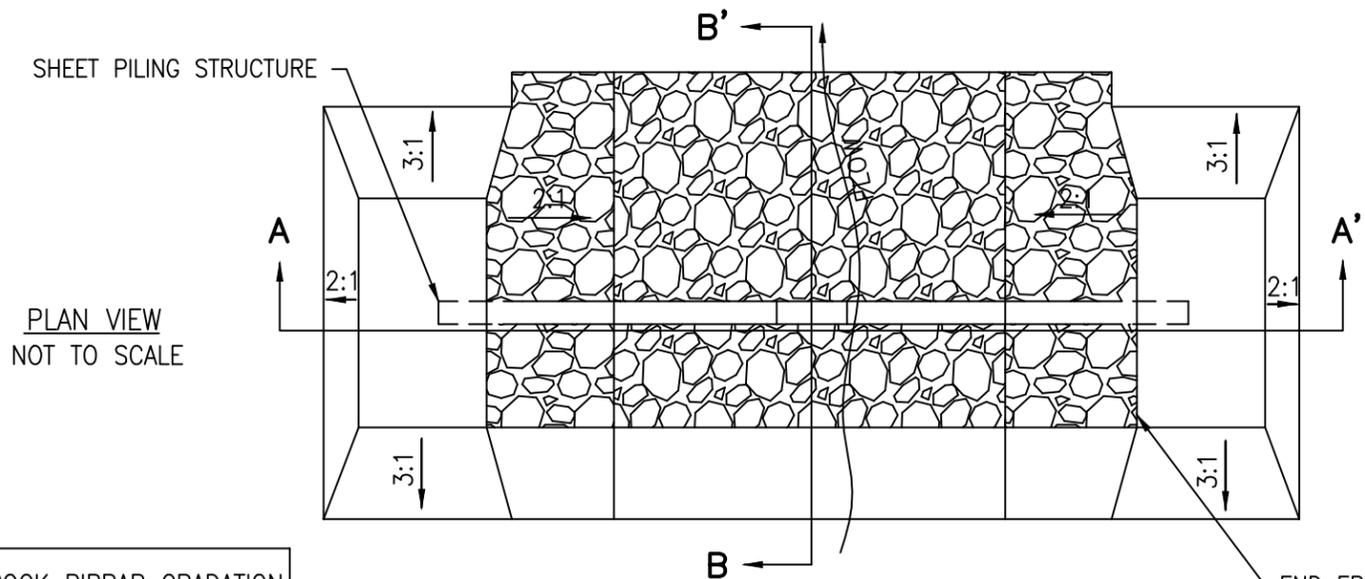
Date \_\_\_\_\_  
 Designed \_\_\_\_\_  
 Drawn \_\_\_\_\_  
 Checked \_\_\_\_\_  
 Approved \_\_\_\_\_

SHEET PILING STRUCTURE WITH CATWALK

Project: \_\_\_\_\_  
 Watershed Name: \_\_\_\_\_

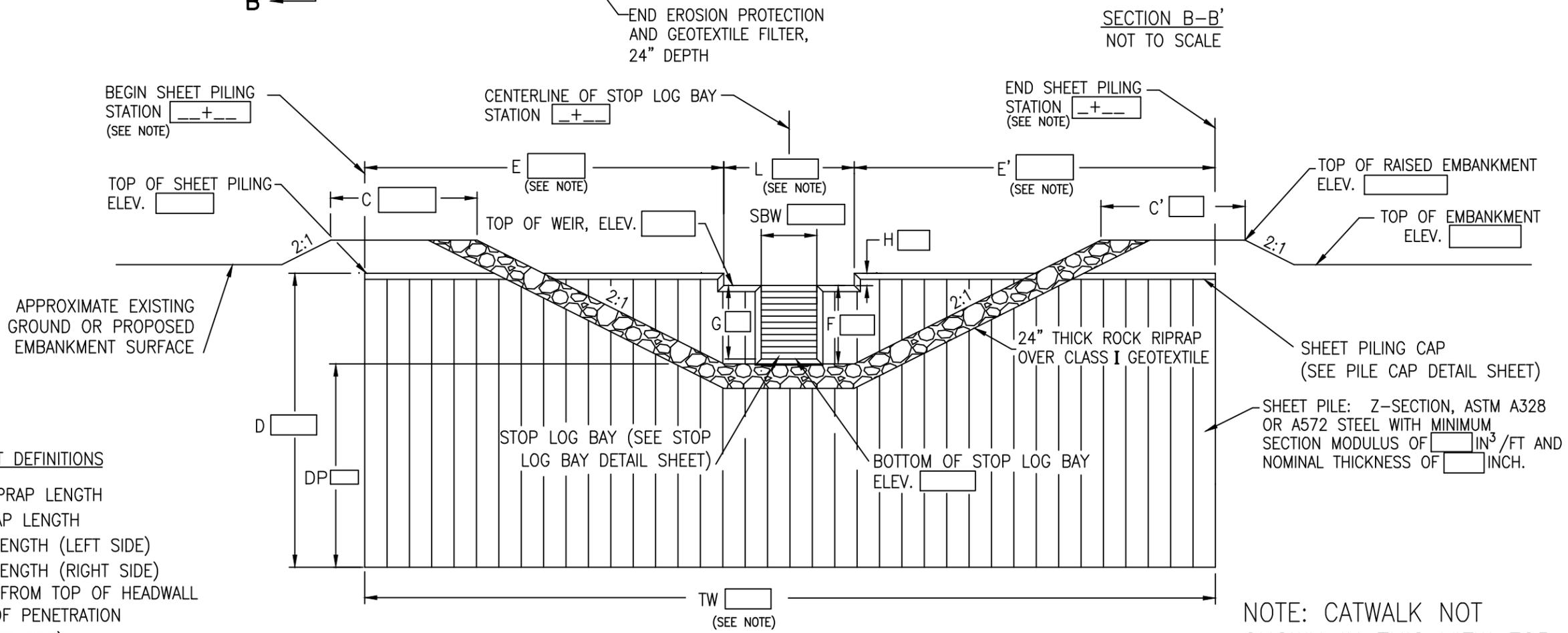


Drawing No. WI-303a  
 Date 07/14  
 Sheet: \_\_\_\_\_



ROCK RIPRAP GRADATION	
% PASSING BY WEIGHT	SIZE (INCHES)
100	---
60-85	---
25-50	---
5-20	---
0-5	---

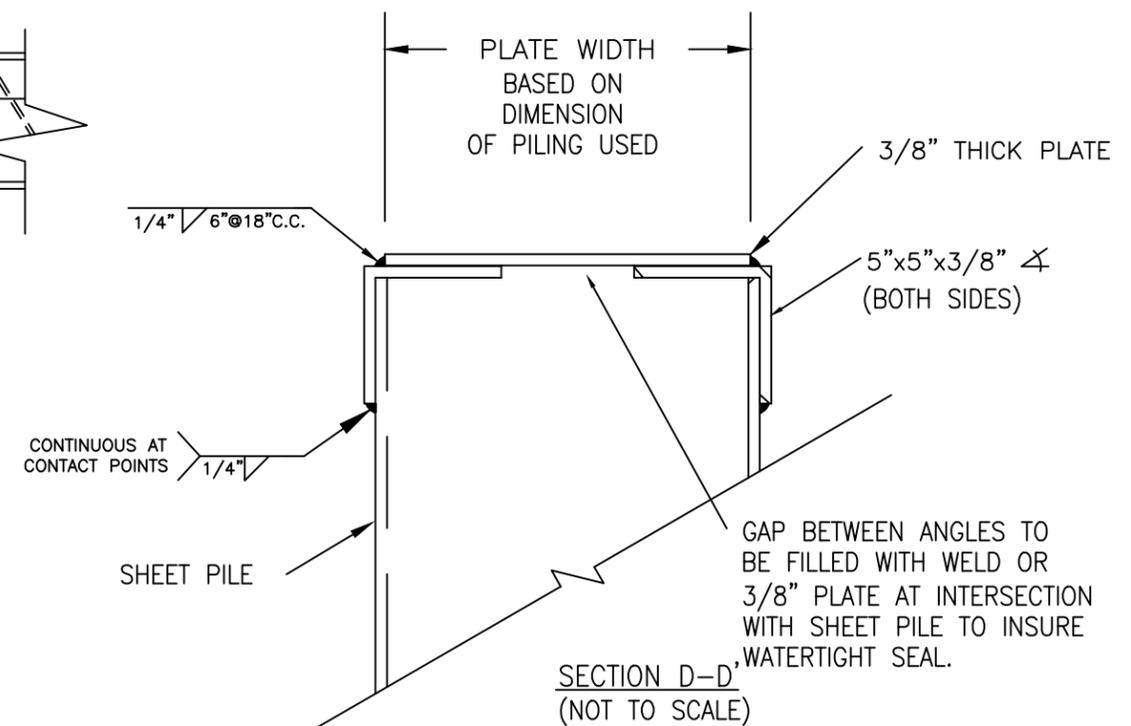
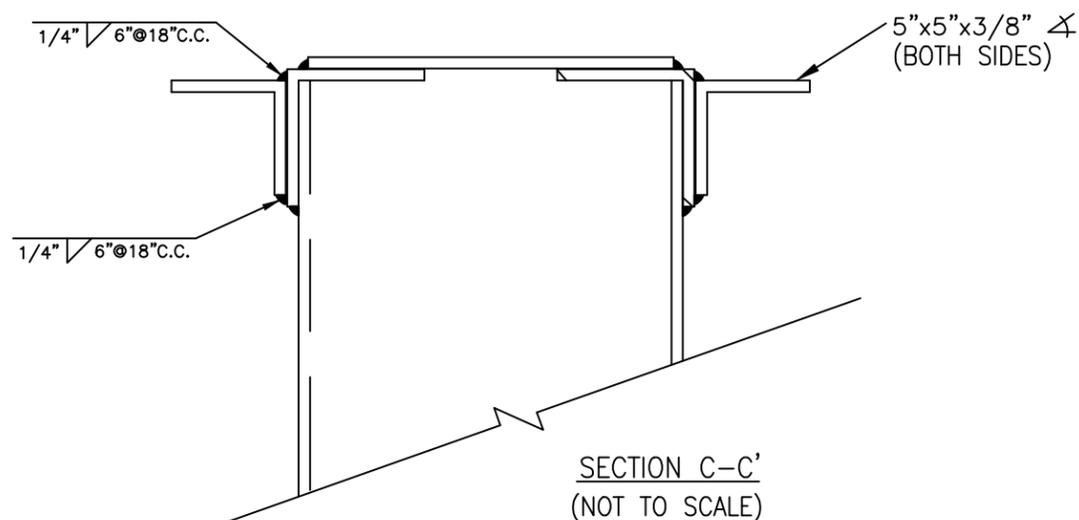
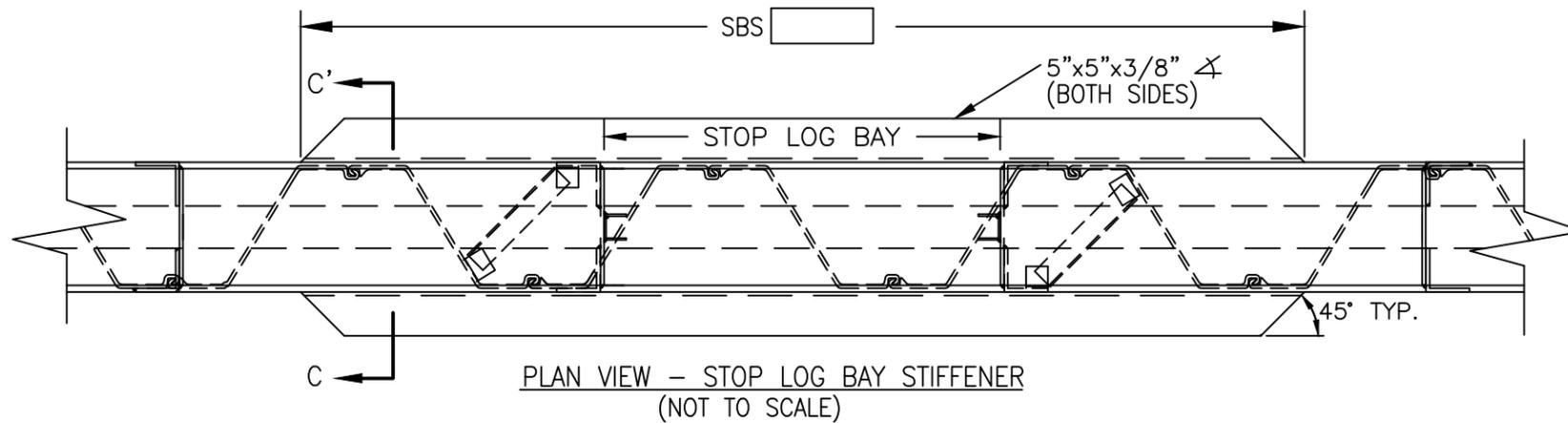
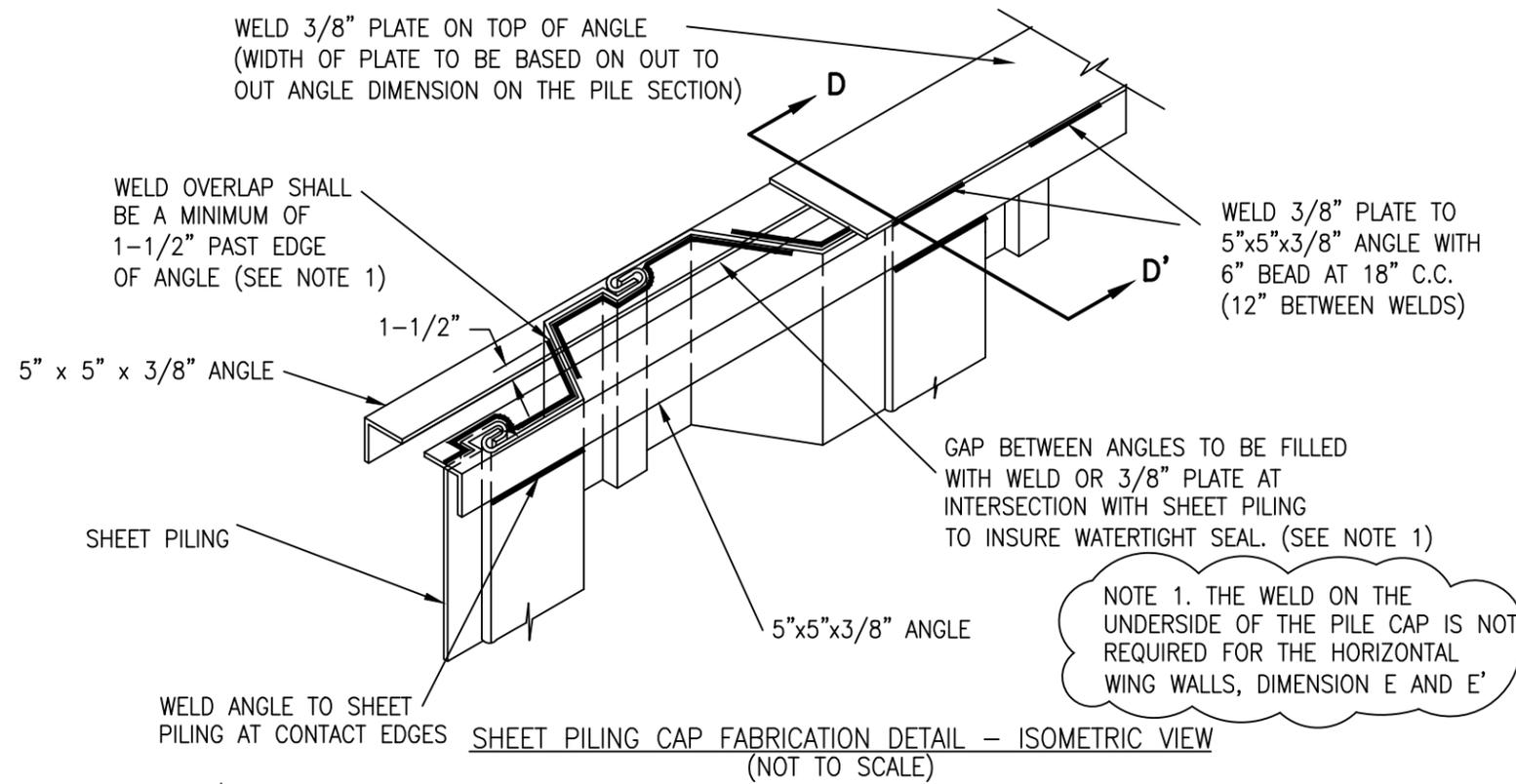
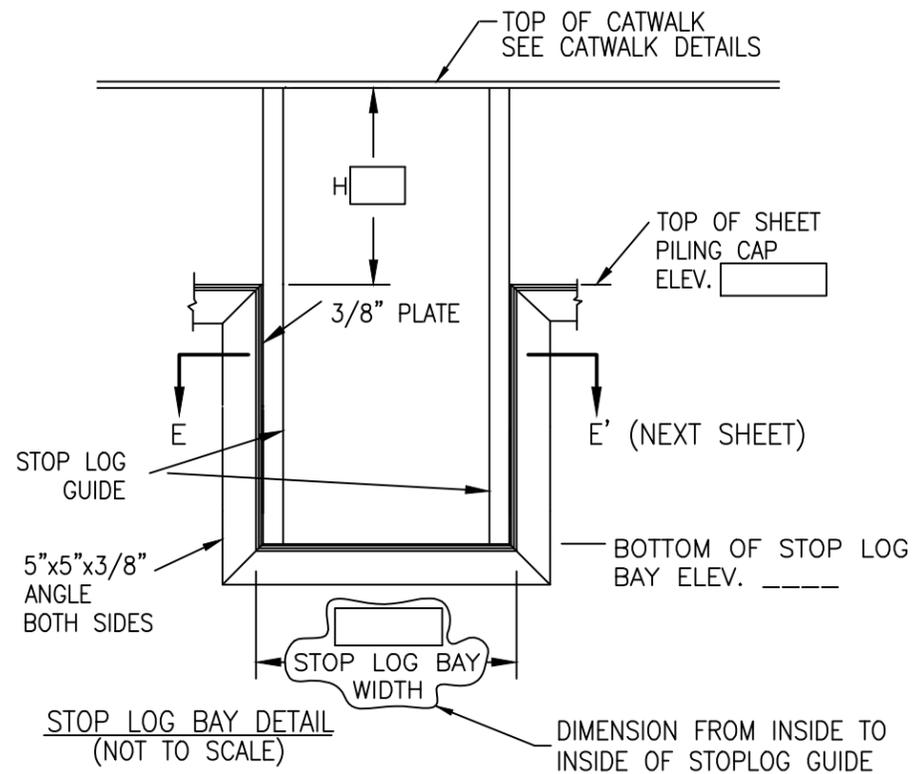
GEOTEXTILE:  
WISCONSIN CONSTRUCTION  
SPECIFICATION 13.  
NONWOVEN CLASS I

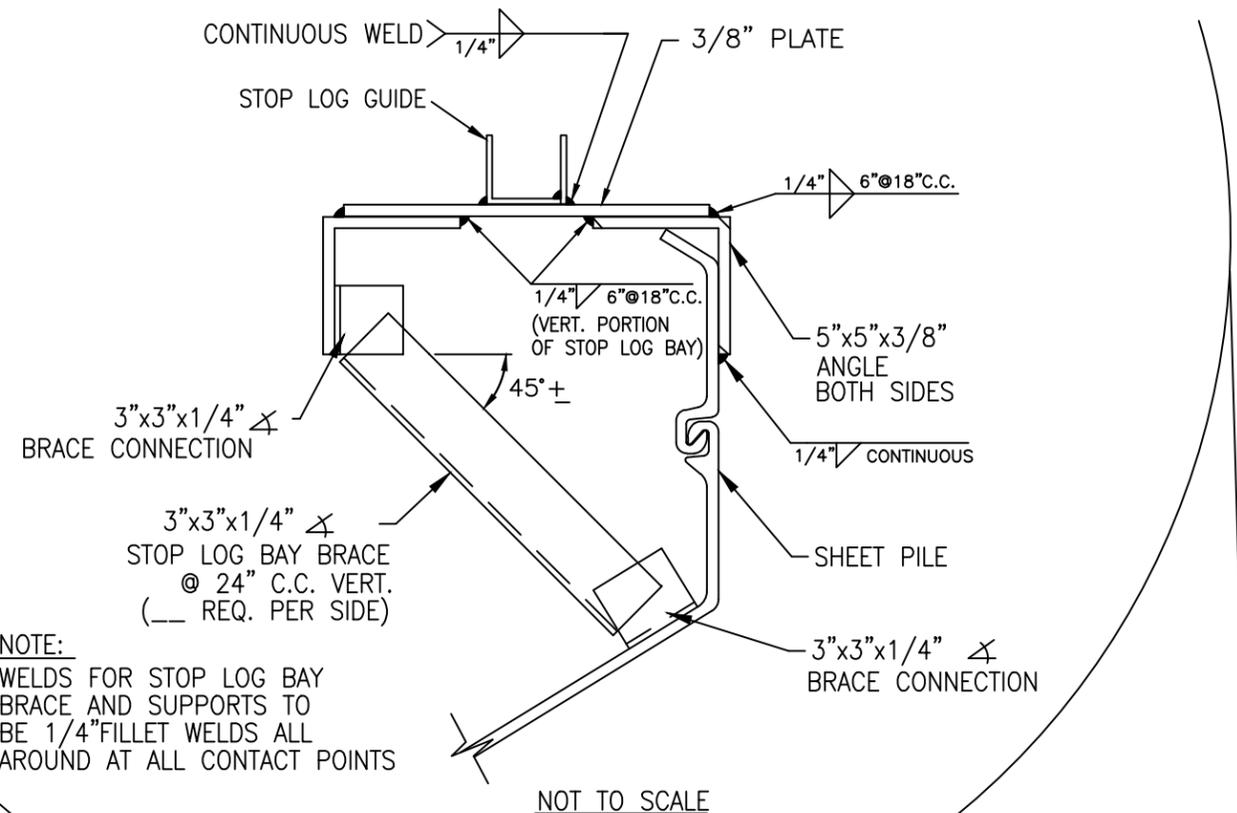


- STRUCTURE COMPONENT DEFINITIONS**
- A - DOWNSTREAM ROCK RIPRAP LENGTH
  - B - UPSTREAM ROCK RIPRAP LENGTH
  - C - RAISED EMBANKMENT LENGTH (LEFT SIDE)
  - C' - RAISED EMBANKMENT LENGTH (RIGHT SIDE)
  - D - SHEET PILING LENGTH FROM TOP OF HEADWALL
  - DP - SHEET PILING DEPTH OF PENETRATION
  - E - HEADWALL LENGTH (LEFT SIDE)
  - E' - HEADWALL LENGTH (RIGHT SIDE)
  - F - TOP OF WEIR TO CHANNEL BOTTOM
  - G - TOP OF WEIR TO BOTTOM OF STOP LOG BAY
  - H - TOP OF HEADWALL TO TOP OF WEIR
  - L - WEIR LENGTH
  - SBW - STOP LOG BAY WIDTH (DIMENSION FROM INSIDE TO INSIDE OF STEEL PLATE)
  - TW - TOTAL WIDTH OF STEEL SHEET PILING
  - SBS - STOP LOG BAY STIFFENER (2 x SBW)

**SECTION A-A'**  
SCALE: 1" = 10'  
**NOTE:** THE INDICATED HORIZONTAL LENGTH DIMENSIONS ARE MINIMUMS. [E] AND [E'] MAY EXCEED MINIMUM DIMENSIONS. [L] SHALL BE WITHIN ±0.5' OF INDICATED DIMENSION.

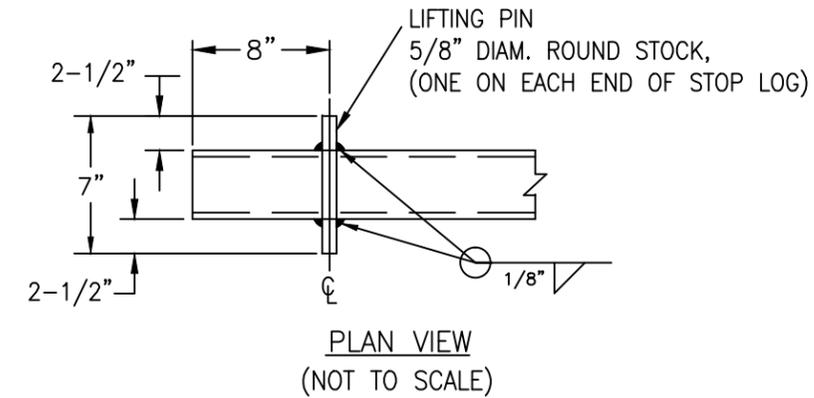
**NOTE:** CATWALK NOT SHOWN IN THIS VIEW FOR CLARITY (SEE CATWALK DETAILS)



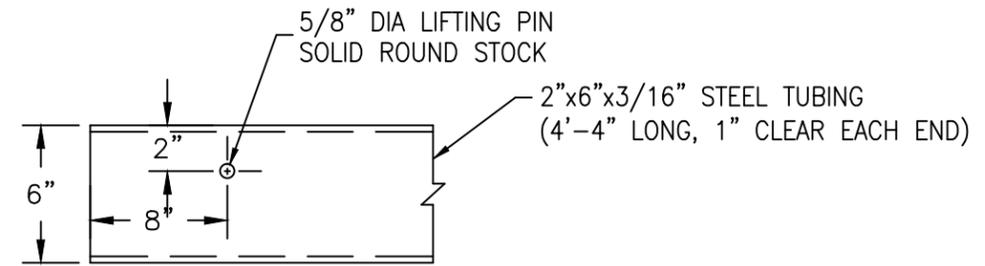


NOTE:  
WELDS FOR STOP LOG BAY BRACE AND SUPPORTS TO BE 1/4" FILLET WELDS ALL AROUND AT ALL CONTACT POINTS

NOT TO SCALE

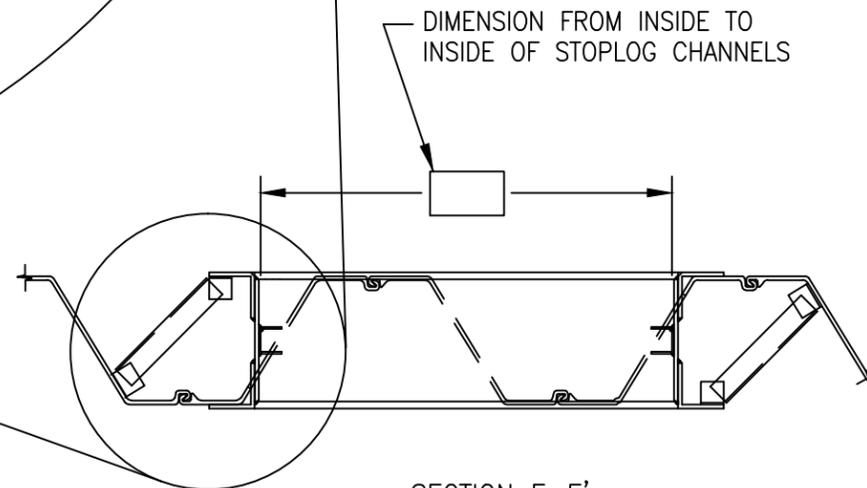


PLAN VIEW  
(NOT TO SCALE)



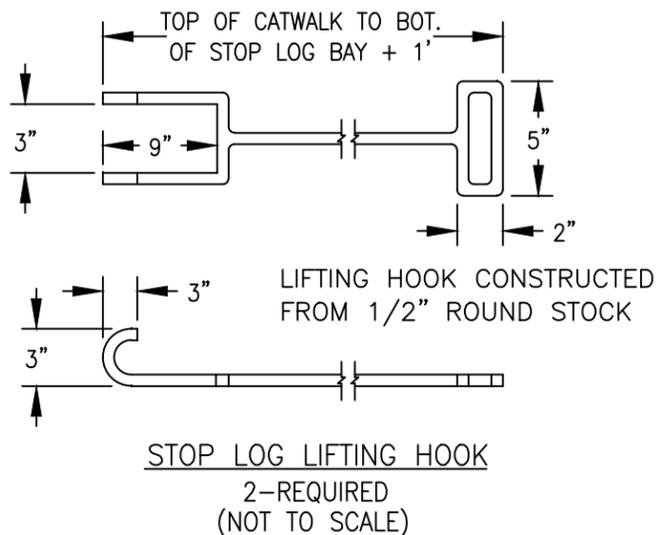
FRONT VIEW  
(NOT TO SCALE)

STOP LOG DETAILS



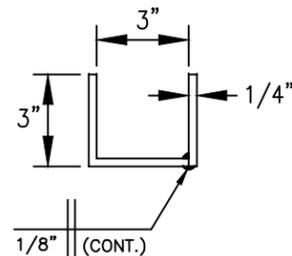
SECTION E-E'  
(NOT TO SCALE)

NOTE: PROVIDE A PIECE OF HEAVY CHAIN AND WELD TO A CONVENIENT LOCATION ALONG THE CATWALK FOR LOCKING THE LIFTING HOOKS TO THE STRUCTURE. CHAIN SHALL BE LARGEST SIZE THAT CAN EASILY PASS THROUGH HANDLE OF LIFTING HOOKS.



STOP LOG LIFTING HOOK  
2-REQUIRED  
(NOT TO SCALE)

STOP LOG GUIDE DETAIL  
(NOT TO SCALE)

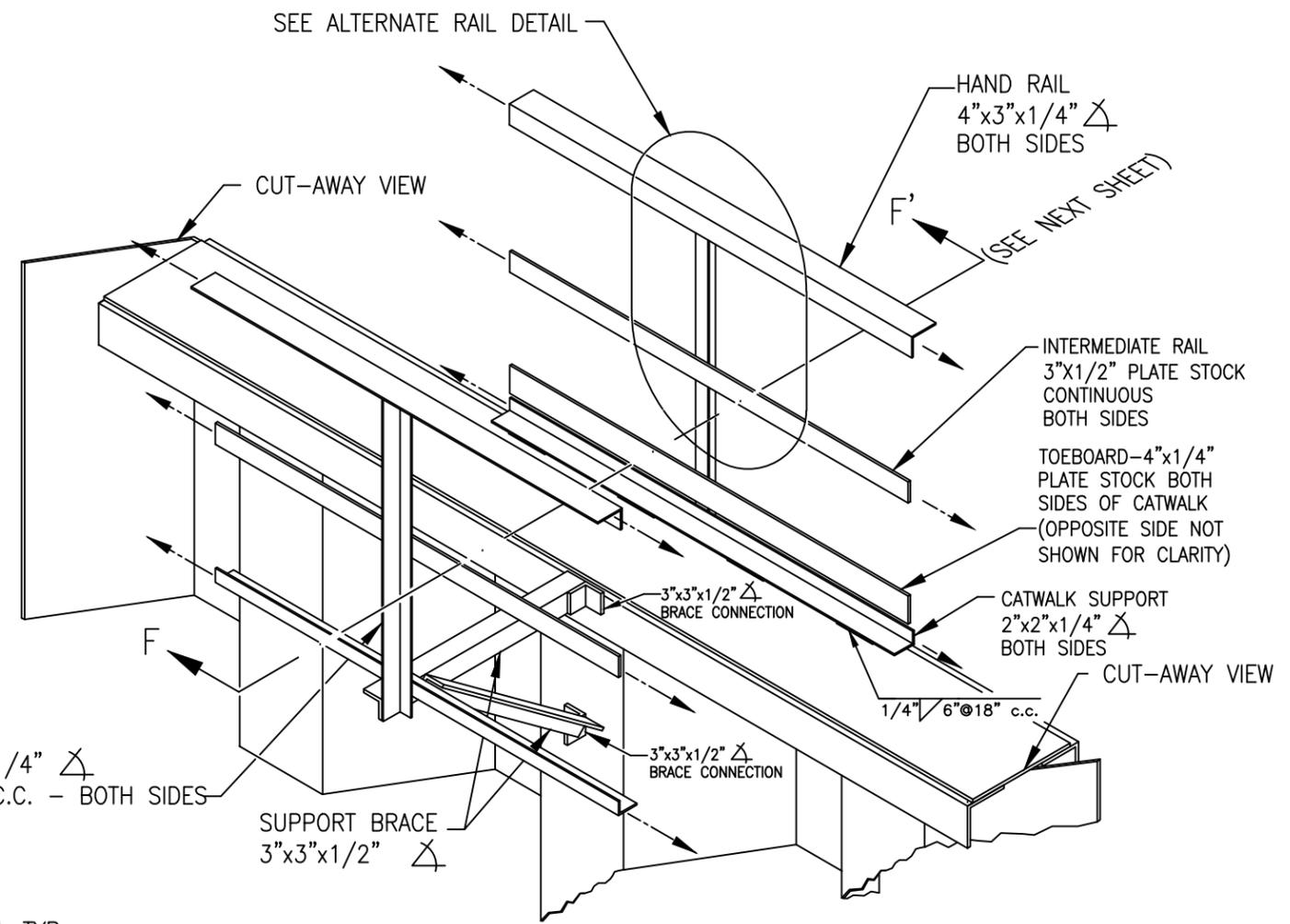


SHEET PILING NOTES:

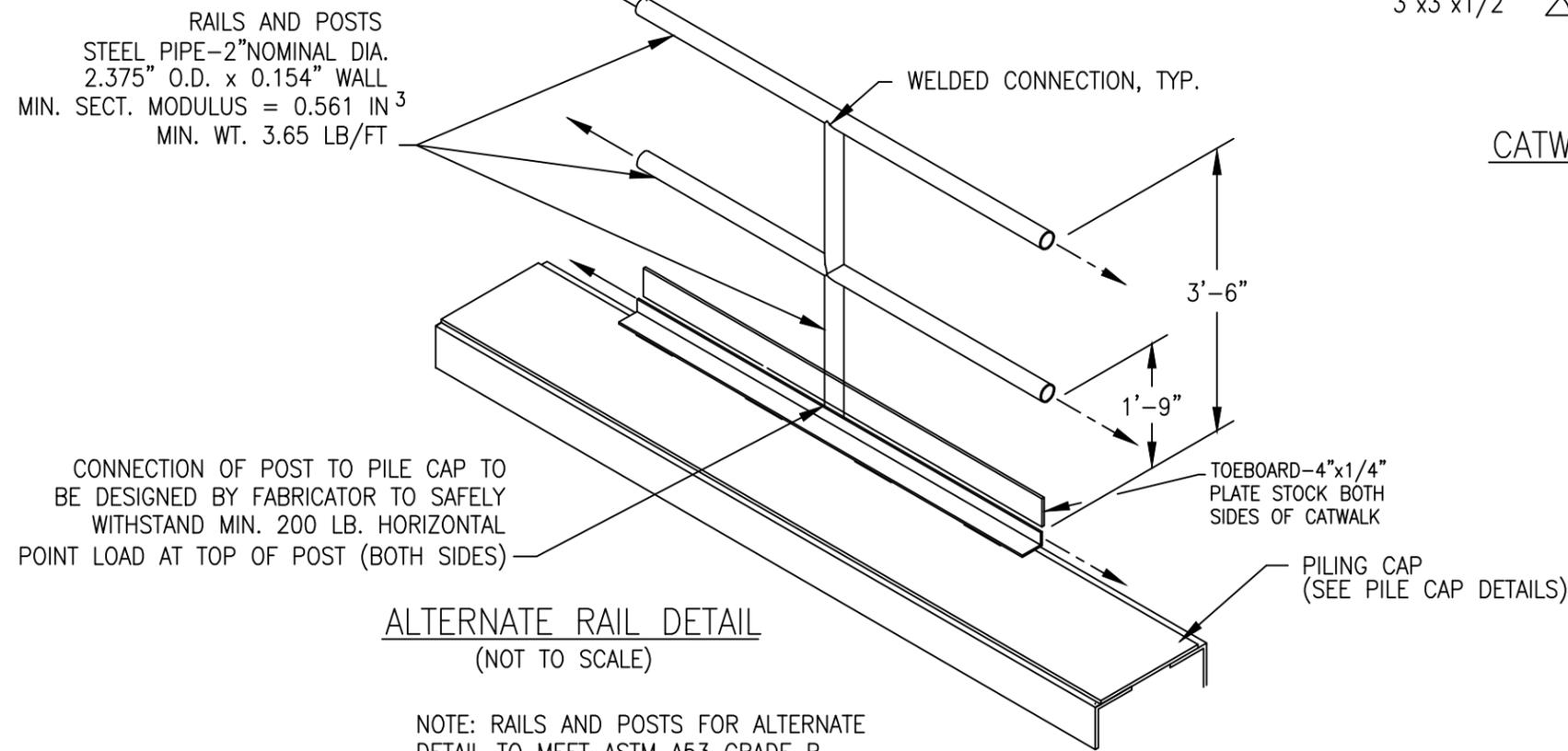
1. ALL WELDS TO BE 1/4" FILLET WELDS UNLESS OTHERWISE NOTED. ALL WELDS ARE FIELD WELDS.
2. TOP OF SHEET PILING SHALL BE TRIMMED AS NEEDED TO OBTAIN ELEVATIONS INDICATED OR TO REMOVE ANY DAMAGE CAUSED BY DRIVING.
3. SHEET PILE: Z-SECTION ASTM A328 OR A572 SHEETPILE WITH MINIMUM SECTION MODULUS OF [ ] IN<sup>3</sup>/FT AND NOMINAL THICKNESS OF 3/8 INCH.
4. APPLY COAL TAR POLYAMIDE EPOXY PAINT COATING AS PER NRCS WISCONSIN CONSTRUCTION SPECIFICATION 201. APPLY TO SHEET PILE, CAP, AND STOP LOG GUIDE. COATING OF SHEETPILE AND APPURTENANCES SHALL EXTEND FROM TOP DOWN TO ELEVATION [ ] OR LOWER. REFER TO CATWALK NOTES FOR APPLICATION OF PROTECTIVE COATINGS TO CATWALK STRUCTURE.
5. PROVIDE WELDER CERTIFICATION INFORMATION FOR EACH WELDER APPLICABLE TO THE WELDING TO BE PERFORMED.

NOTES: CATWALK/RAILS/SUPPORTS

1. ALL WELDS ARE FILLET WELDS UNLESS OTHERWISE NOTED.
2. MINIMUM FILLET WELD SIZE IS THE SMALLER THICKNESS OF THE TWO PIECES BEING JOINED LESS 1/16".
3. WELD A MINIMUM OF 50% OF THE LENGTH OF ALL CONTACT SURFACES. UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
4. THE ALTERNATE HAND RAIL CONSISTING OF STEEL PIPE MAY BE USED. VERIFY WITH NRCS THE HAND RAIL SYSTEM DESIRED PRIOR TO ORDERING MATERIALS.
5. COAT ALL METAL SURFACES AND WELDS WITH A RUST INHIBITIVE PAINT. PREPARE SURFACE AND APPLY IN ACCORDANCE WITH PAINT MANUFACTURER'S RECOMMENDATIONS. A DARK GREEN PAINT IS REQUIRED. PROVIDE COLOR SAMPLES PRIOR TO PURCHASING PAINT MATERIALS. ALL SURFACE PREPARATION AND PAINTING TO BE PERFORMED IN ACCORDANCE WITH ALL PERTINENT LOCAL, STATE, AND FEDERAL SAFETY AND ENVIRONMENTAL REGULATIONS.
6. PROVIDE WELDER CERTIFICATION INFORMATION APPLICABLE TO THE WELDING TO BE PERFORMED FOR EACH WELDER (BOTH SHOP AND FIELD WELDS).
7. BUTT JOINTS IN RAILS AND WALKWAY FRAME TO OCCUR ONLY AT LOCATIONS OF POSTS AND SUPPORTS.
8. CATWALK GRATING TO CONSIST OF PREFABRICATED STEEL BAR GRATING PANELS. BEARING BARS ARE TO BE 1"x1/8" AT 1-3/16" C.C. SERRATED SURFACE. PROVIDE MANUFACTURER'S SUBMITTAL AND SAFE LIVE LOAD INFORMATION PRIOR TO ORDERING GRATING. MIN. SAFE LIVE LOAD IS 40 PSF UNIFORM LOAD WITH LESS THAN 1/4" DEFLECTION AT THE DESIGN SPANS
9. WELD CATWALK GRATING TO SUPPORT FRAME TO PREVENT REMOVAL OF GRATING.
10. GRIND SMOOTH ALL SHARP EDGES.
11. INSTALL TOE BOARD SO THAT IT IS 4 INCHES NOMINAL IN VERTICAL HEIGHT FROM ITS TOP EDGE TO THE LEVEL OF THE CATWALK. WELD IN PLACE AND WITH NOT MORE THAN 1/4-INCH CLEARANCE ABOVE THE LEVEL OF THE CATWALK.
12. PROVIDE RAMP OVER RIPRAP AT EACH END OF CATWALK CONSTRUCTED OF SAME GRATING MATERIAL AS CATWALK.

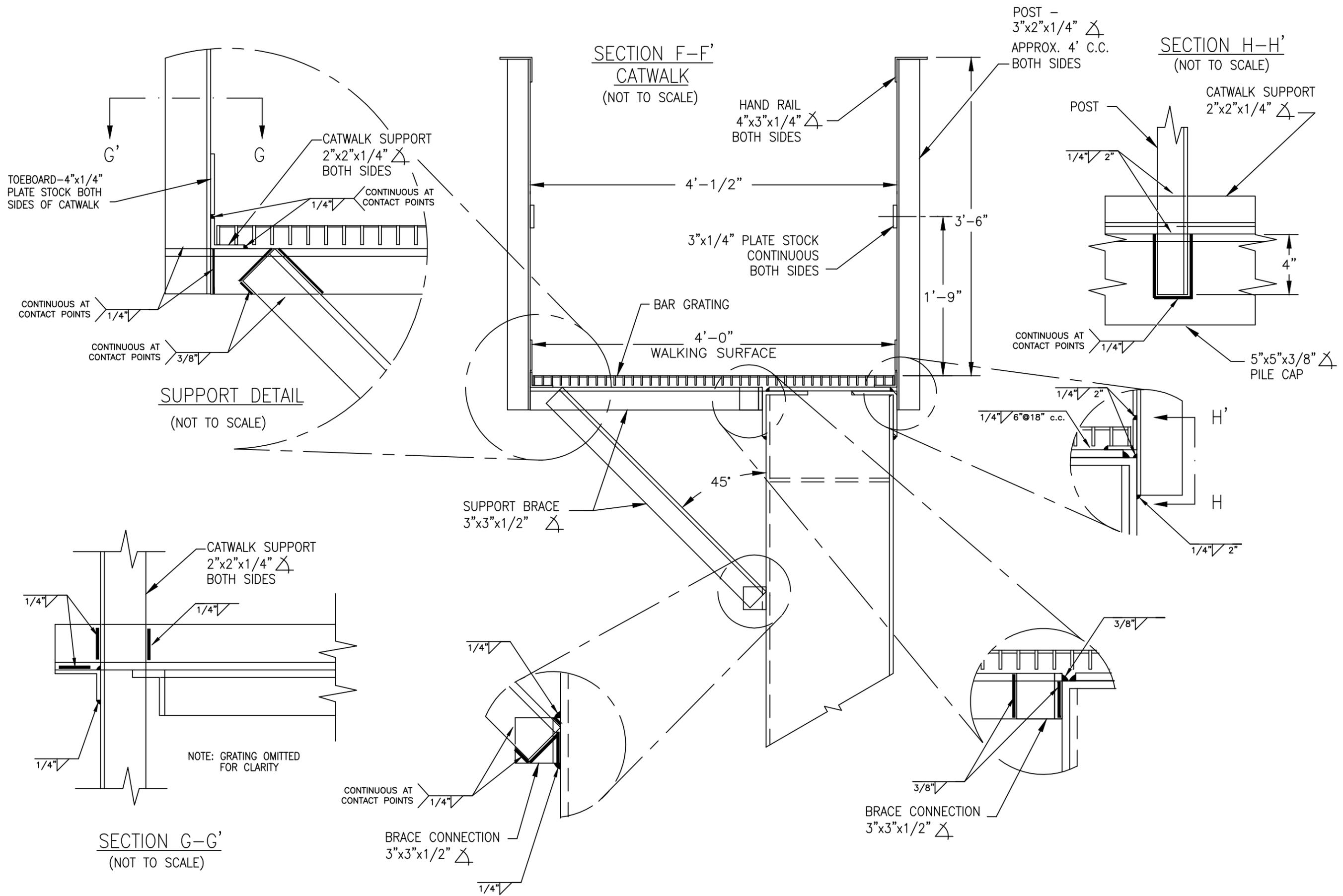


CATWALK SUPPORT AND RAILING FABRICATION DETAIL  
(NOT TO SCALE)



ALTERNATE RAIL DETAIL  
(NOT TO SCALE)

NOTE: RAILS AND POSTS FOR ALTERNATE DETAIL TO MEET ASTM A53 GRADE B OR ASTM A501



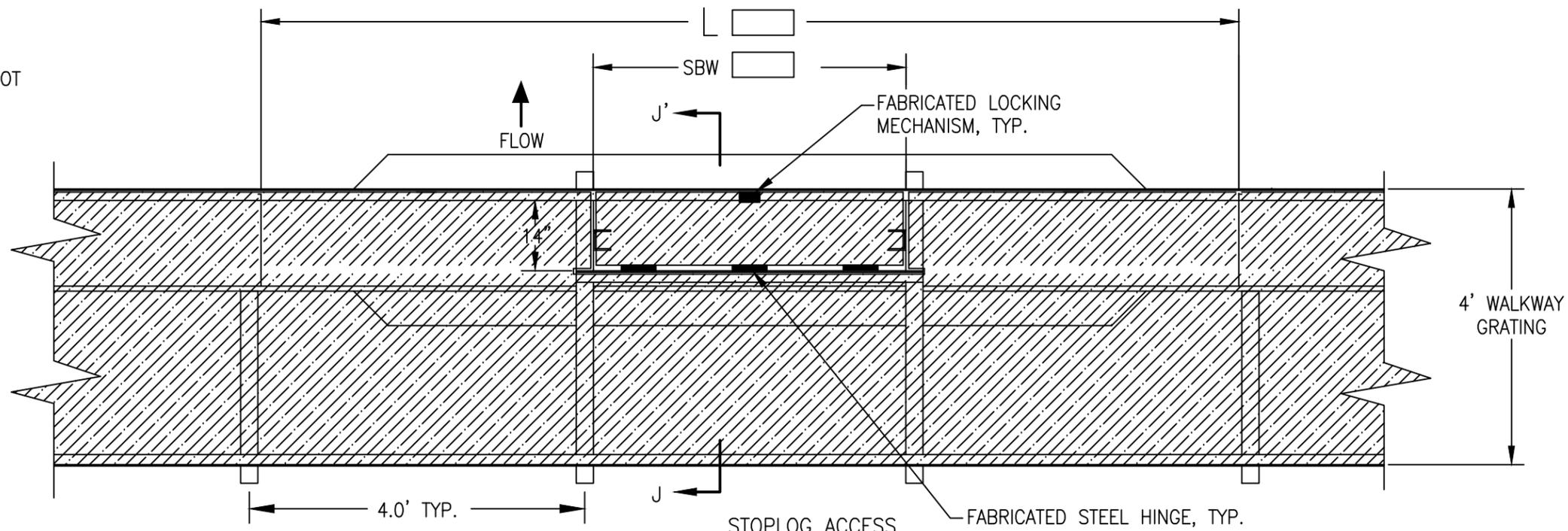
**NOTES**

RAILINGS, POSTS AND TOE BOARDS NOT SHOWN ON THIS SHEET FOR CLARITY.

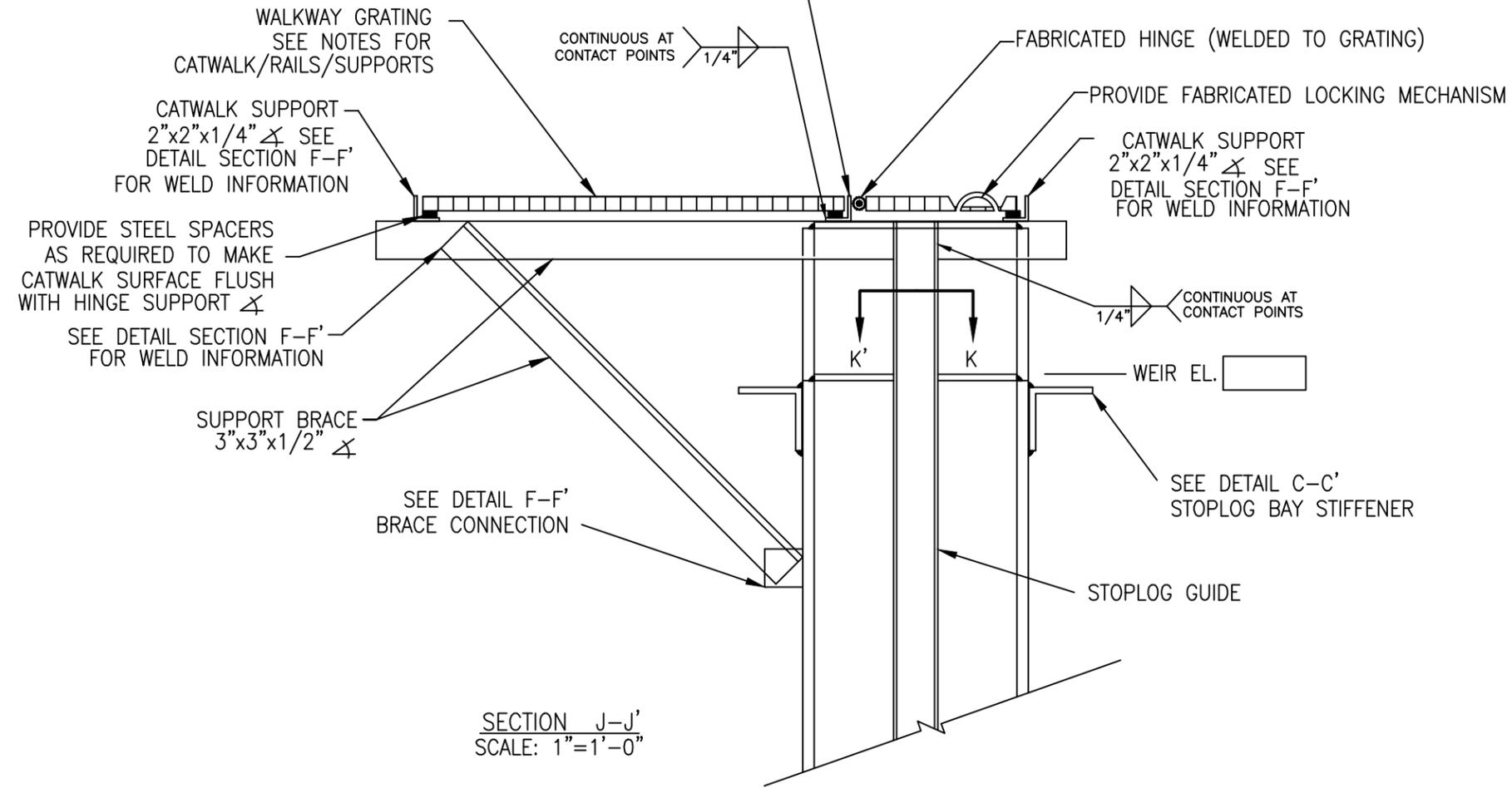
HIDDEN LINES NOT SHOWN IN PLAN VIEW FOR CLARITY.

TOTAL CATWALK LENGTH  FEET  
LC

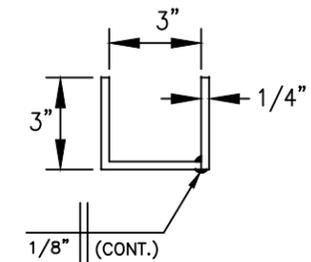
TOTAL GRATING LENGTH  FEET  
GL  
(INCLUDES RAMPS)



HINGE/CATWALK SUPPORT  
2"x2"x1/4"  $\nabla$



SECTION J-J'  
SCALE: 1"=1'-0"



STOP LOG CHANNEL  
SECTION K-K'  
NOT TO SCALE

QUANTITY CALCULATION TABLE

NOTES TO DESIGNER:

- ALL EQUATIONS ASSUME 2:1 ROCK SLOPES AND THE TOP OF EMBANKMENT 1 FOOT ABOVE THE TOP OF THE SHEET PILING HEADWALL.
- DETERMINE THE DESIGN DISCHARGE, Q, TO COMPLY WITH THE APPLICABLE PRACTICE STANDARD. Q= \_\_\_\_\_
- DETERMINE THE WEIR LENGTH "L" FROM THE CAPACITY TABLE BELOW FOR H AND DESIGN Q.
- THE SHEET PILING LENGTH "D" WILL BE BASED ON THE DESIGN DEPTH OF PENETRATION TO BE APPROVED BY THE STATE CONSERVATION ENGINEER. FOR STIFF TO HARD CLAY (CL or CH), OR DENSE SILTS (ML) OR GLACIAL TILL; DESIGN DEPTH=2x(H+F). OTHER SOILS WILL REQUIRE INCREASED DEPTHS OF PILING.
- THE MINIMUM SECTION MODULUS OF SHEET PILE IS TO BE APPROVED BY THE STATE CONSERVATION ENGINEER. FOR  $H + F \leq 5$  AND SOILS STATED IN NOTE 4, THE MINIMUM SECTION MODULUS OF THE SHEET PILE WILL BE 18 in. <sup>3</sup>/ft. AND A MINIMUM STEEL THICKNESS OF 3/8 INCHES.

6. MINIMUM DESIGN VALUES IN FEET FOR:

$E = 2H+6 =$    
 $C = 2E =$    
 $A = 4 + [1.5x(F+H) + (2xH)]/2 =$    
 $B = (2 \text{ MINIMUM}) =$    
 $D = (H+F) + \text{DESIGN DEPTH (SEE NOTE 4)} =$    
 $BW = L =$    
 $SL = 2x(H+F+2) =$    
 $F = \text{TOP OF WEIR ELEV. MINUS CHANNEL BOTTOM ELEV. (F} \leq 3) =$    
 $G = \text{TOP OF WEIR ELEV. MINUS DRAWDOWN ELEV.} =$    
 $H = \text{TOP OF HEADWALL ELEV. MINUS TOP OF WEIR ELEV. (H} \leq 3) =$    
 $LC = \text{LENGTH OF CATWALK (LENGTH WITH RAILINGS)} = L+4(F+H) =$

CAPACITY TABLE

DISCHARGE CAPACITY "Q" (CFS) PER FOOT OF WEIR LENGTH

Hp (HEAD)	0.5	1	1.5	2	2.5	3
Q (CFS/FT)	0.9	2.8	5.7	8.7	12.2	16.0

$L = \frac{\text{TOTAL "Q" IN CFS FOR DESIGN STORM}}{\text{"Q" FROM CAPACITY TABLE ABOVE}}$

	ITEM	UNIT	QUANTITY
SHEETPIILING AND PILE CAP	3/8" PLATE LENGTH = $2 \times \frac{E}{\text{}} + 2 \times \frac{H}{\text{}} + 2 \times \frac{G}{\text{}} + \frac{L}{\text{}} =$	FT.	
	5x5x3/8 ANGLE = $2 \times \frac{TW}{\text{}} + 4 \times \frac{G}{\text{}} + 4 \times \frac{H}{\text{}} =$	FT.	
	STOP LOG CHANNEL = $2 \times \frac{G}{\text{}} =$	FT.	
	SHEET PILING = $\frac{D}{\text{}} \times \frac{TW}{\text{}} - \frac{H \times L}{\text{}} =$	SQ. FT.	
	ROCK RIPRAP = $.075 \times \frac{A+B}{\text{}} \times \frac{BW+2SL}{\text{}} =$	CU. YDS.	
	GEOTEXTILE = $\frac{A+B+8}{\text{}} \times \frac{BW+2SL}{\text{}} \div 9 =$	SQ. YDS.	
	2x6x3/16 STEEL TUBING (STOP LOGS) = $\frac{SBW}{\text{}} \times \frac{G}{\text{}} \div 0.5$	LIN. FT.	
CATWALK	GRATING LENGTH = $\frac{LC}{\text{}} + 2.5 \times 2$ (INCLUDES RAMPS) =	FT.	
	3x3x1/2 ANGLE (SUPPORT BRACE) = $((\frac{LC}{\text{}} \div 4) + 1) \times 7 =$	FT.	
	2x2x1/4 ANGLE (CATWALK SUPPORT) = $2 \times \frac{LC}{\text{}} =$	FT.	
	4x1/4 PLATE (TOEBOARD) = $2 \times \frac{LC}{\text{}} =$	FT.	
RAILING (ANGLE IRON)	4x3x1/4 ANGLE (TOP RAIL) = $2 \times \frac{LC}{\text{}} =$	FT.	
	3x1/2 PLATE (INTERMEDIATE RAILING) = $2 \times \frac{LC}{\text{}} =$	FT.	
	3x2x1/4 ANGLE (POST) = $((\frac{LC}{\text{}} \div 4) + 1) \times 3.75 \times 2 =$	FT.	
RAILING (ALTERNATE PIPE)	2.375 OD x 0.154 PIPE (TOP RAIL) = $2 \times \frac{LC}{\text{}} =$	FT.	
	2.375 OD x 0.154 PIPE (INTERMEDIATE RAILING) = $2 \times \frac{LC}{\text{}} =$	FT.	
	2.375 OD x 0.154 PIPE (POST) = $((\frac{LC}{\text{}} \div 4) + 1) \times 3.75 \times 2 =$	FT.	
	5x5x3/8 ANGLE (STOP LOG BAY STIFFENER) = $2 \times \frac{SBW}{\text{}} =$	FT.	
	MISCELLANEOUS: HINGED STOP LOG ACCESS, LIFTING PINS AND HOOK, STOP LOG BAY BRACE	--	