

**USACE Portland District (NWP) FFDRWG Update Form  
October 5, 2017**

**PROJECT INFORMATION**

Project Title	Lamprey Minor Fishway Modifications
SCT Reference Number	
Project Manager (PM)	Mike Turaski (NWP, 503-808-4704)
Technical Lead (TL) Minor Modifications	Sarah Knowles (NWP, 503-808-4980)
Biologist/Coordination	Ricardo Walker (NWP, 503-808-4709)

**PROJECT DESCRIPTION**

The scope of this project includes relatively small-scale modifications to adult fish ladders to improve lamprey passage conditions at Bonneville (BON), The Dalles (TDA), and John Day Dams (JDA). Examples of such modifications include floor diffuser plating, rounding corners, and modifications to entrance weir crests. This is a multi-year, phased project. Generally, the PDT will focus on modifying a single ladder per year:

*Phase 1: BON WA shore completed*

*Phase 2: BON Bradford Island, JDA S., and TDA E., ladders awarded August 2017*

- BON Bradford Island (BI): Orifice ramps through weirs 54-67 as needed
- BON BI: Lamprey orifices and video monitoring mounts through serpentine weirs
- TDA East Ladder: entrance weir improvements (IWW 17/18)
- JDA South Fish Ladder: ramp/grind a 2.5 inch step near the fish ladder exit

*Phase 3: JDA and BON Adult Fish Facility (AFF) Trapping Improvements*

- Install LPS style trap at the BON AFF (design attached for discussion)
- Install LPS style trap at the TDA east fish ladder (concepts currently being developed)
- Install hoist to move trapped fish from the fish ladder to the roadway deck (concepts currently being developed)

**SCHEDULE, PROGRESS, AND KEY ISSUES (List)**

*Phase 1:*

- The Bonneville Washington shore minor modifications completed IWW 16/17.

*Phase 2:*

- Proposed Bradford Island minor modifications awarded August 2017:
  - Lamprey orifices, orifice ramps, refuge boxes, wetted wall and video mounting infrastructure.
  - Install winter maintenance period 17/18.
- Weir cap modification plan.

Weir Caps	Design	Fabrication	Current Schedule for Installation	Earliest Possible Installation
BON WA Shore	Complete	Complete	2018-19 (FY19)	2018-19 (FY19)
TDA East, west and south entrances (5 weirs)	TBD based on FY17 fund availability. Fabricate in FY17 would enable FY18 install.		2018-19 (FY19, post CRFM)	2017-18 (FY18)
TDA East, east entrance (3 weirs)			2018-19 (FY19, post CRFM)	2018-19 (FY19, post CRFM) Conflict w AWS work in FY18
TDA North (1 weir)			2018-19 (FY19, post CRFM)	2017-18 (FY18)

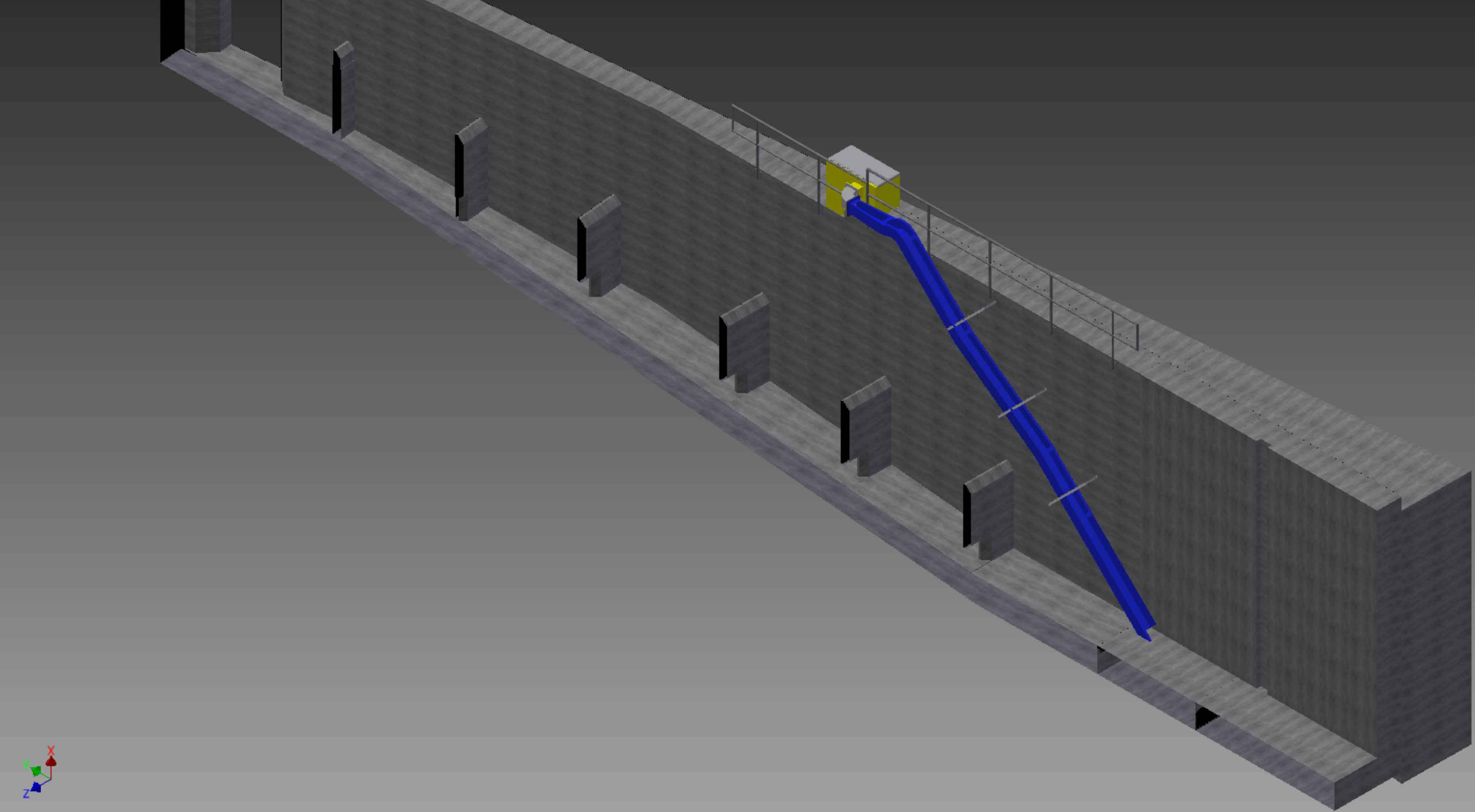
*Phase 3:*

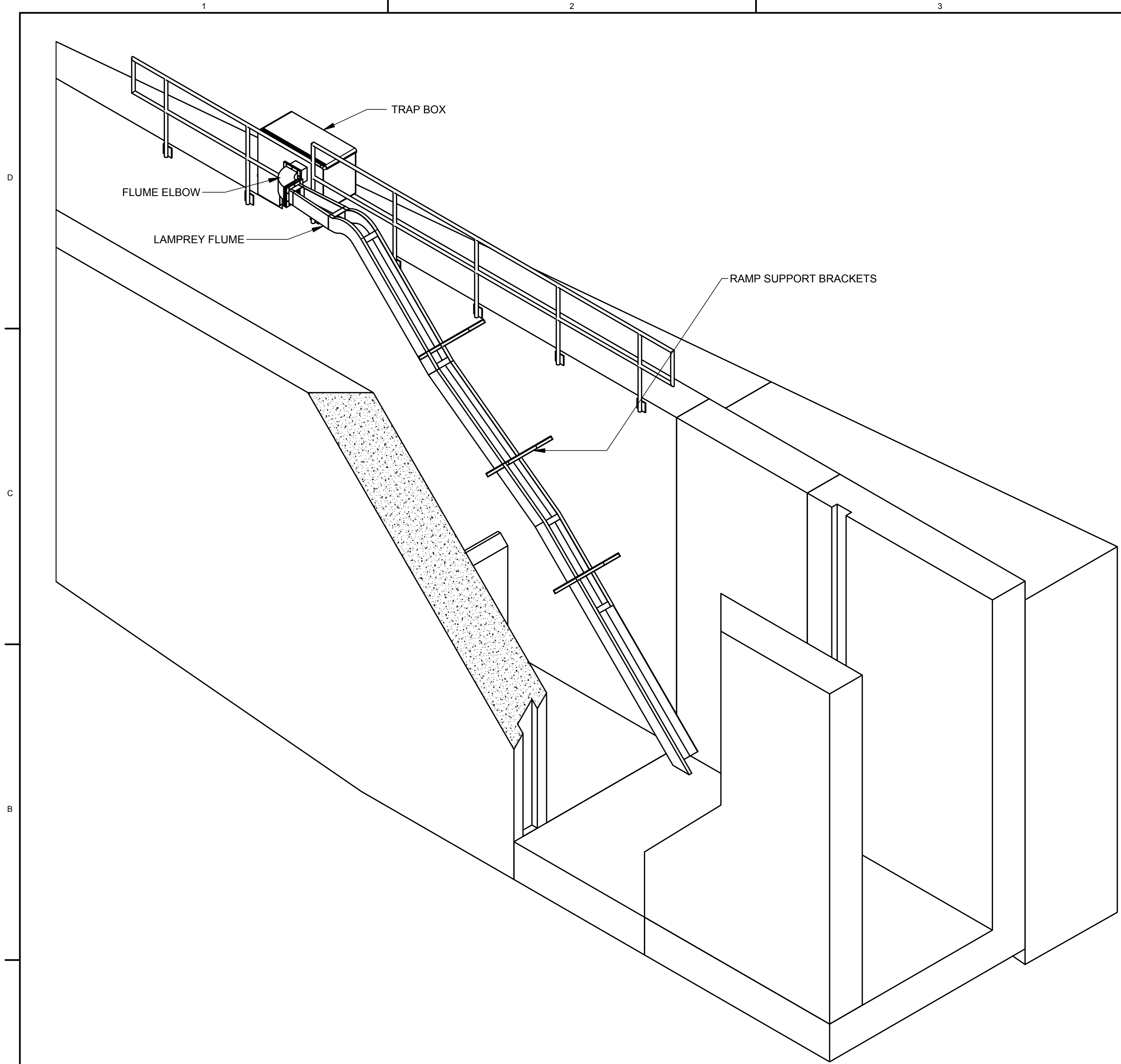
- Install LPS style trap at the BON AFF (March/April 2018)
- Install LPS style trap at the TDA east fish ladder (concepts currently under development, IWW 17/18)
- Install hoist to move trapped fish from the fish ladder to the roadway deck (concepts currently under development, IWW 17/18)

**FFDRWG REVIEW NEEDED AT MEETING? (If YES, list discussion topics below)**

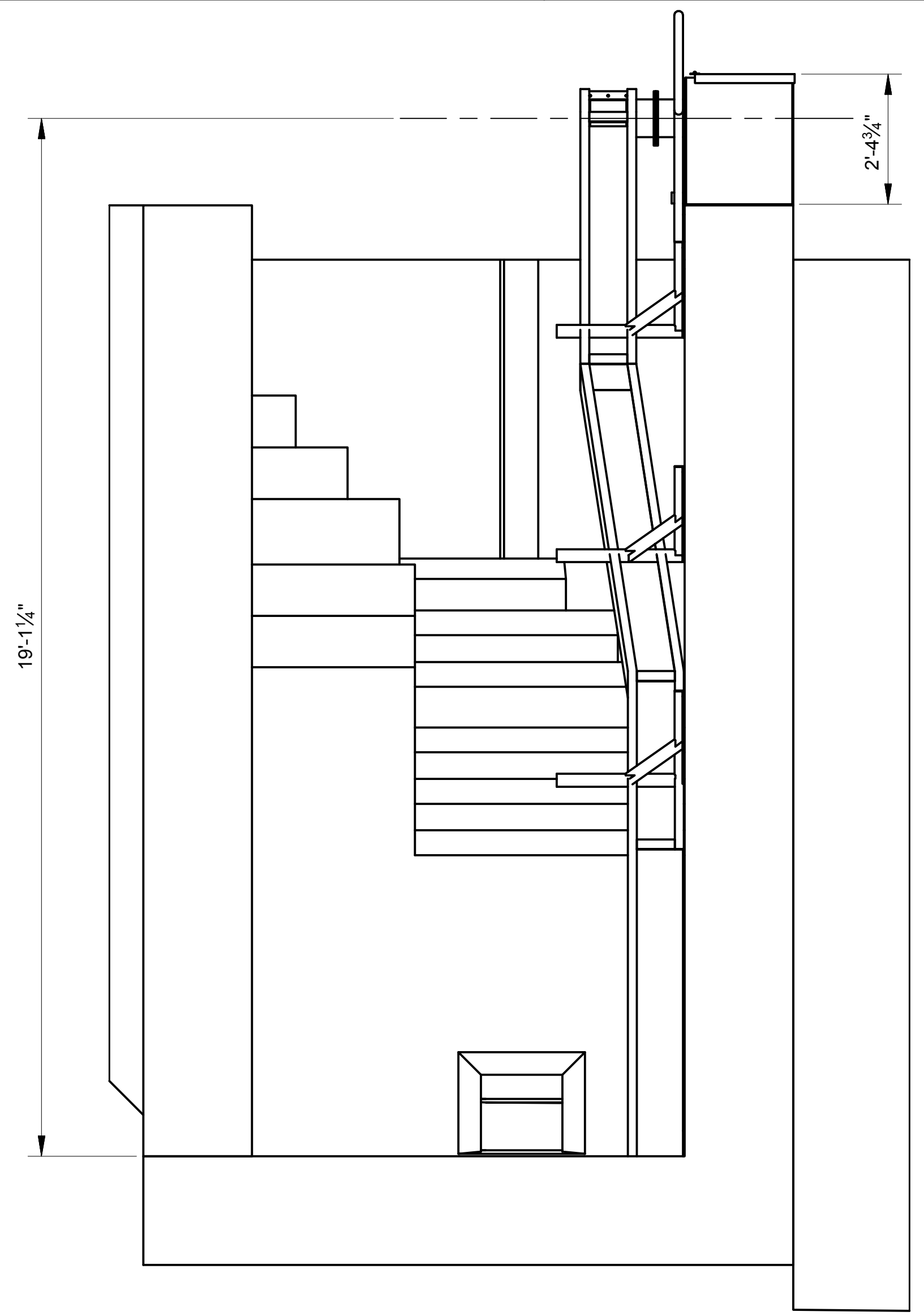
- Preliminary lamprey trap design and location at the BON AFF (see below)
  - Average velocities in affected area:

Average AFF Channel Velocity Condition	(ft/s)	% Velocity increase
Without Ramp	0.78	
with 22" ramp	1.01	30%
With 18" ramp	0.96	23%
With 15" ramp	0.92	19%
With 12" ramp	0.89	14%

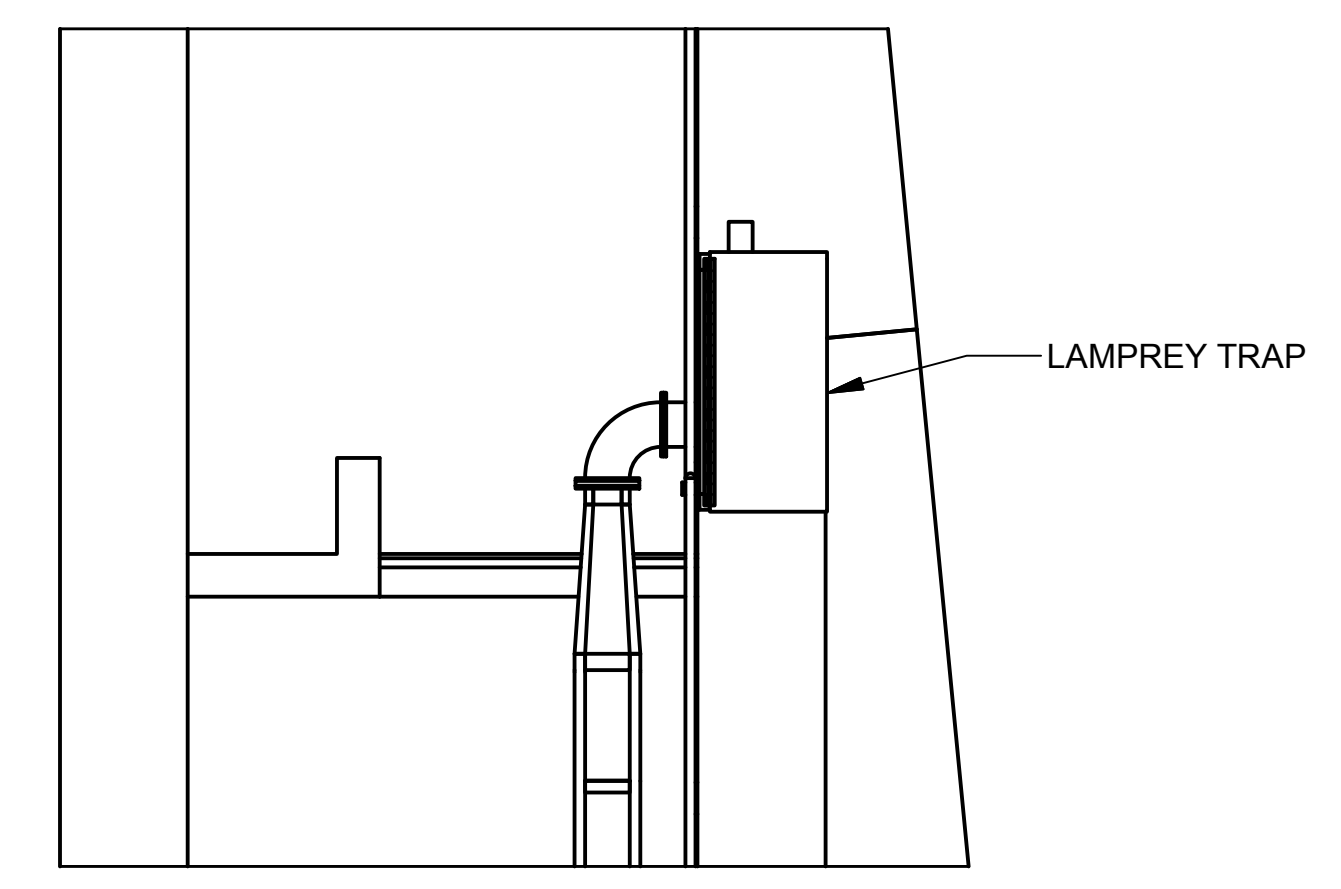




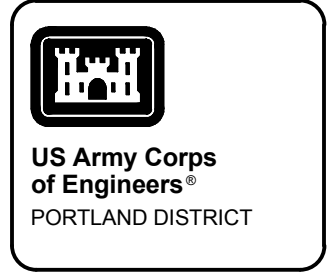
**AFF TRAP - ASSEMBLY  
ISOMETRIC VIEW**  
SCALE: NTS



**AFF TRAP - ASSEMBLY  
FRONT VIEW**  
SCALE: NTS



**AFF TRAP - ASSEMBLY  
TOP VIEW**  
SCALE: NTS



<p style="text-align: center; font-weight: bold;">INFORMATION ONLY</p>		DATE	APPR.
		DATE	APPR.
MARK	DESCRIPTION	DATE	APPR.

DESIGNED BY: BRENT WELTON	CHKD BY: CZEGCMB	DATE: CURRENT DATE
SUBMITTED BY:	FILE NAME: xxxxxx.dwg	SIZE: ANSI D
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON	DATE: CURRENT DATE	CONTRACT NO.:
	SOLICITATION NO.:	CONTRACT NO.:

BONNEVILLE LOCK AND DAM  
ADULT FISH FACILITY  
LAMPREY TRAP  
AFF ISOMETRIC

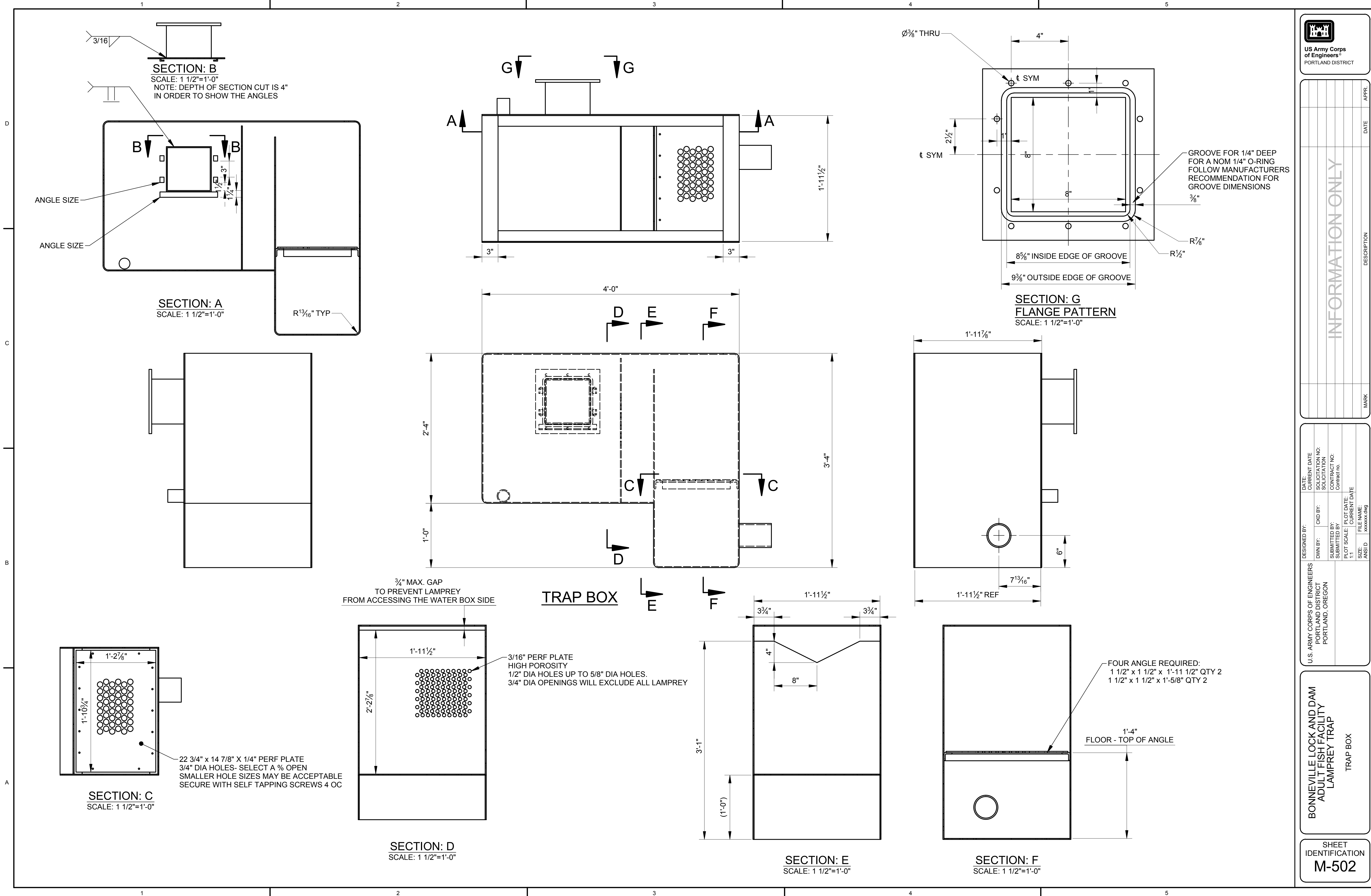
SHEET IDENTIFICATION  
**M-901**



INFORMATION ONLY	DATE	APPR.
	DATE	APPR.
DESCRIPTION	MARK	
	MARK	

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DWN BY:	CHKD BY:	SUBMITTED BY:
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON	DESIGNATION NO:	CONTRACT NO:
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BONNEVILLE LOCK AND DAM  
ADULT FISH FACILITY  
LAMPREY TRAP  
TRAP BOX



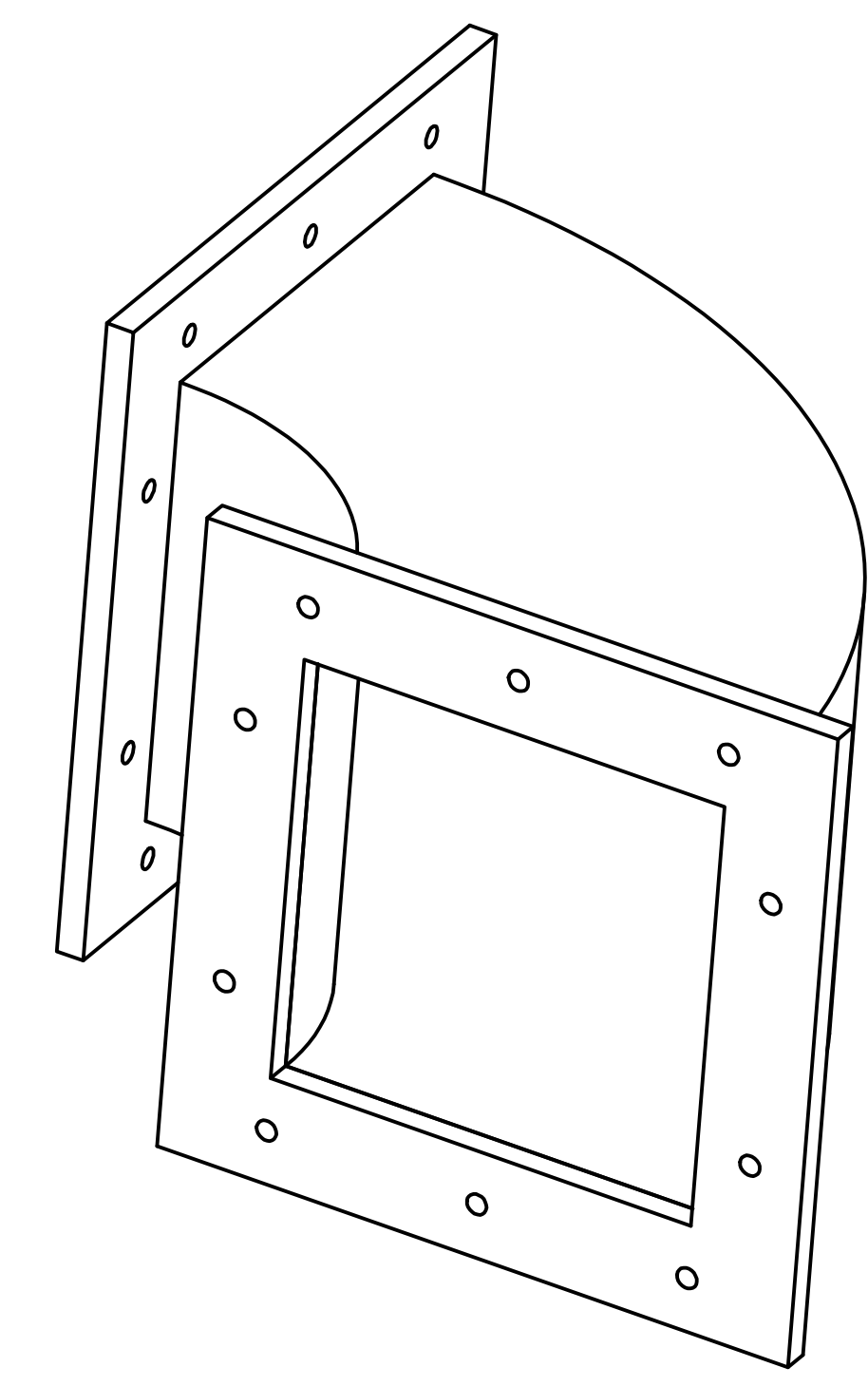




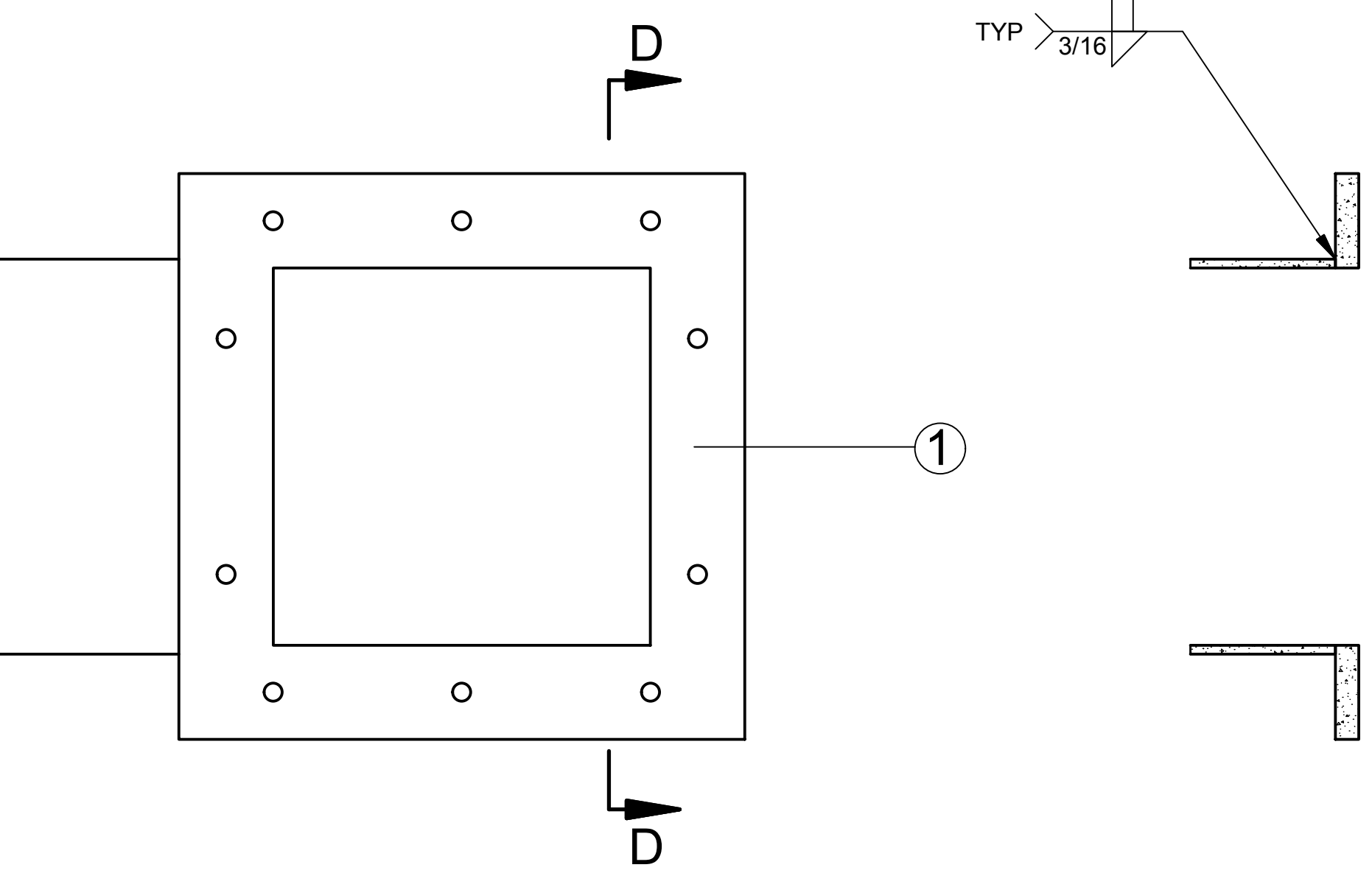
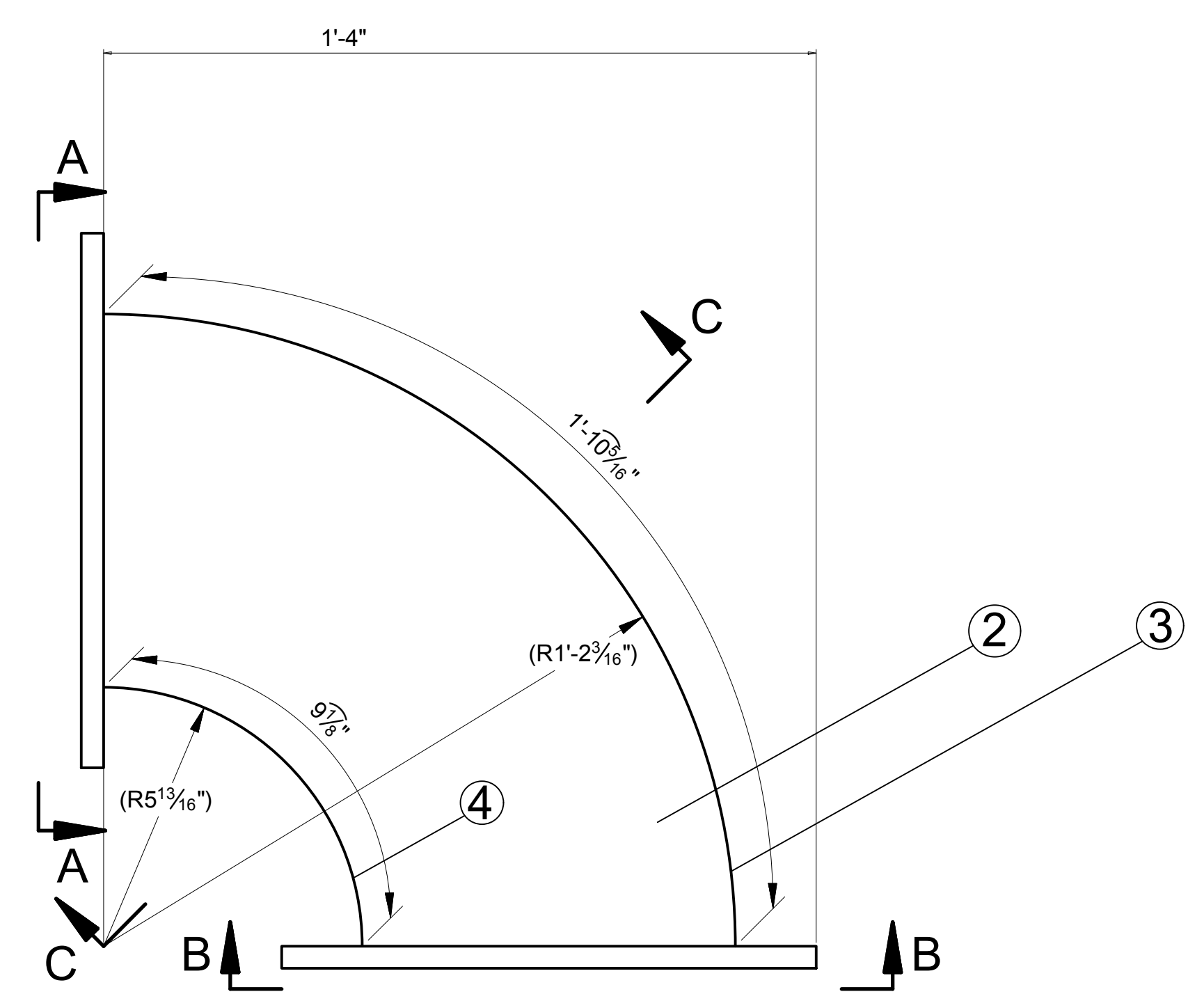
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DESCRIPTION	MARK	

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U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON		DESIGN NO: SOLICITATION NO.	CONTRACT NO: CONTRACT NO.	FILE NAME: xxxxxx.dwg

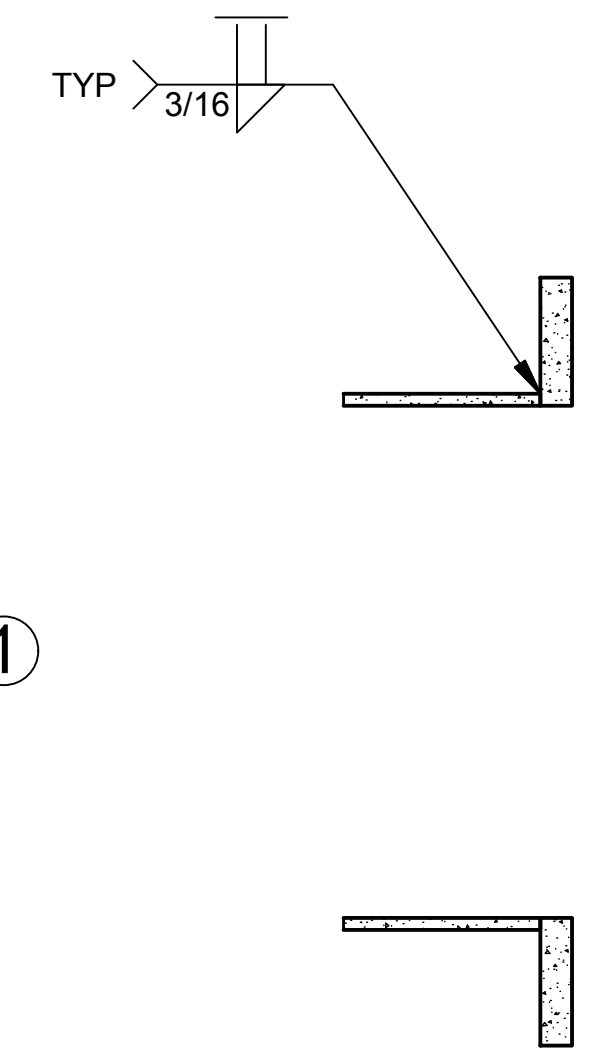
BONNEVILLE LOCK AND DAM  
ADULT FISH FACILITY  
LAMPREY TRAP  
AFF LAMPREY TRAP  
ELBOW



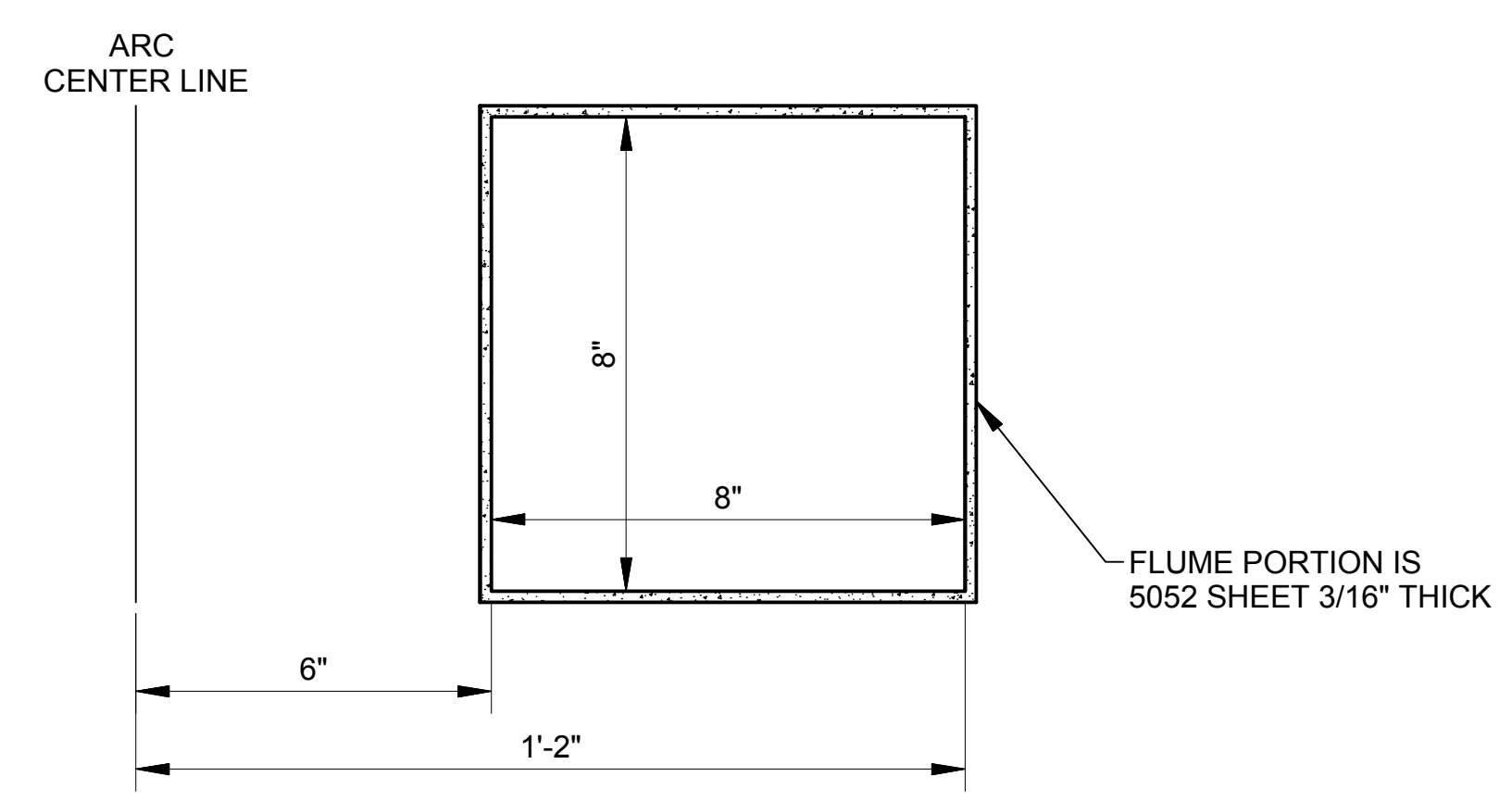
**AFF TRAP - FLUME ELBOW**  
**ISOMETRIC VIEW**  
SCALE: NTS



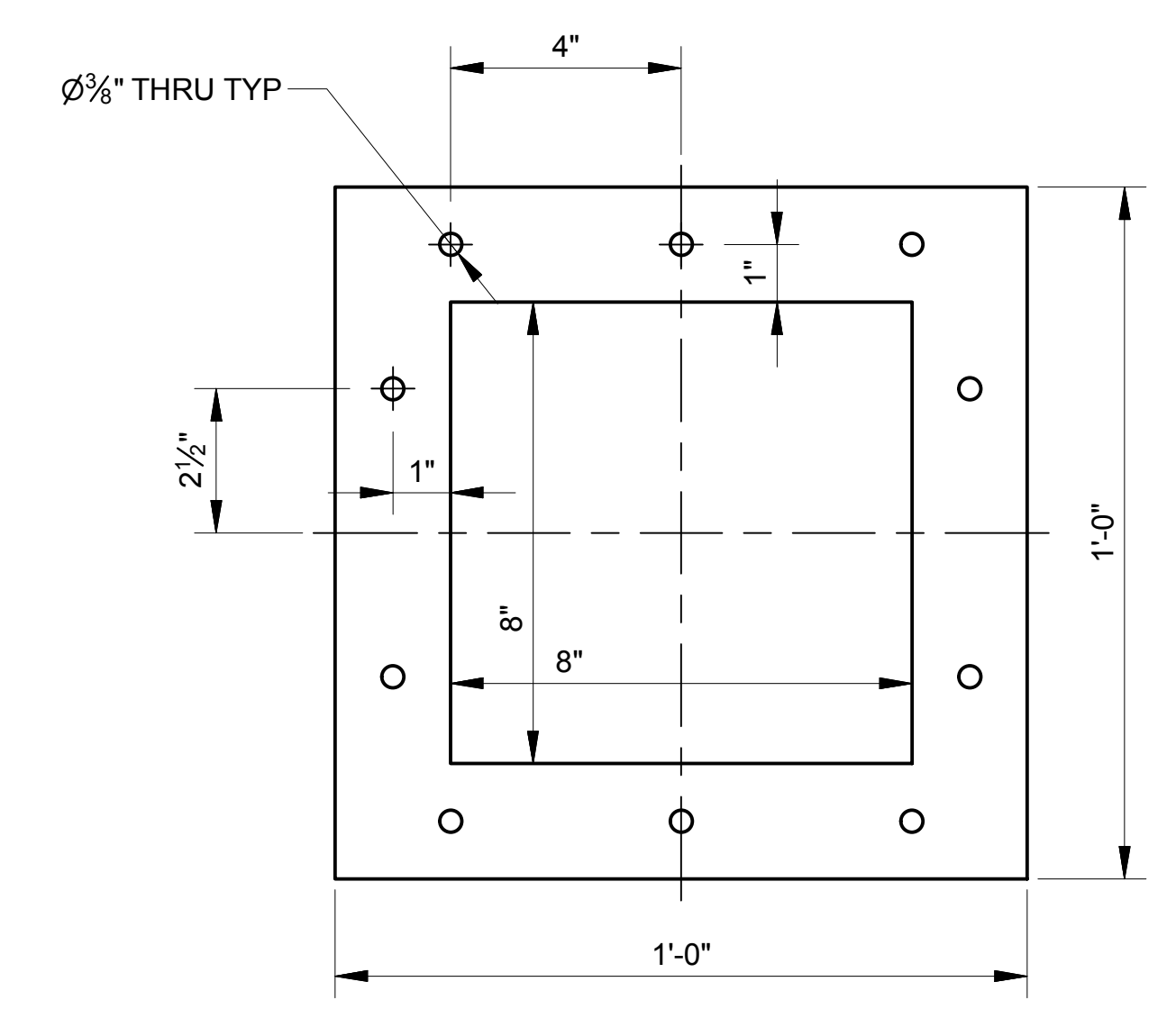
**AFF TRAP - FLUME ELBOW**  
SCALE: 4"=1'-0"  
MATERIAL: 5052 ALUMINUM SHEET / PLATE



**SECTION: D**  
SCALE: 4"=1'-0"



**SECTION: C**  
SCALE: 4"=1'-0"



**SECTION A & B**  
**TYP FLANGE PATTERN**  
FLANGE MATERIAL: 5052 ALUMINUM 1/2" PLATE

MATERIALS LIST				
ITEM	QUANTITY	ITEM DESCRIPTION	MATERIAL	DIMENSIONS
1	2	SHEET METAL	1/2" THICK 5052 ALUMINUM	1'-0" x 1'-0"
2	2	SHEET METAL	3/16 THICK 5052 ALUMINUM	1'-2-3/16" x 1'-2 3/16"
3	1	SHEET METAL	3/16 THICK 5052 ALUMINUM	8-3/8" x 1'-10 3/16"
4	1	SHEET METAL	3/16 THICK 5052 ALUMINUM	8-3/8" x 9 7/16"

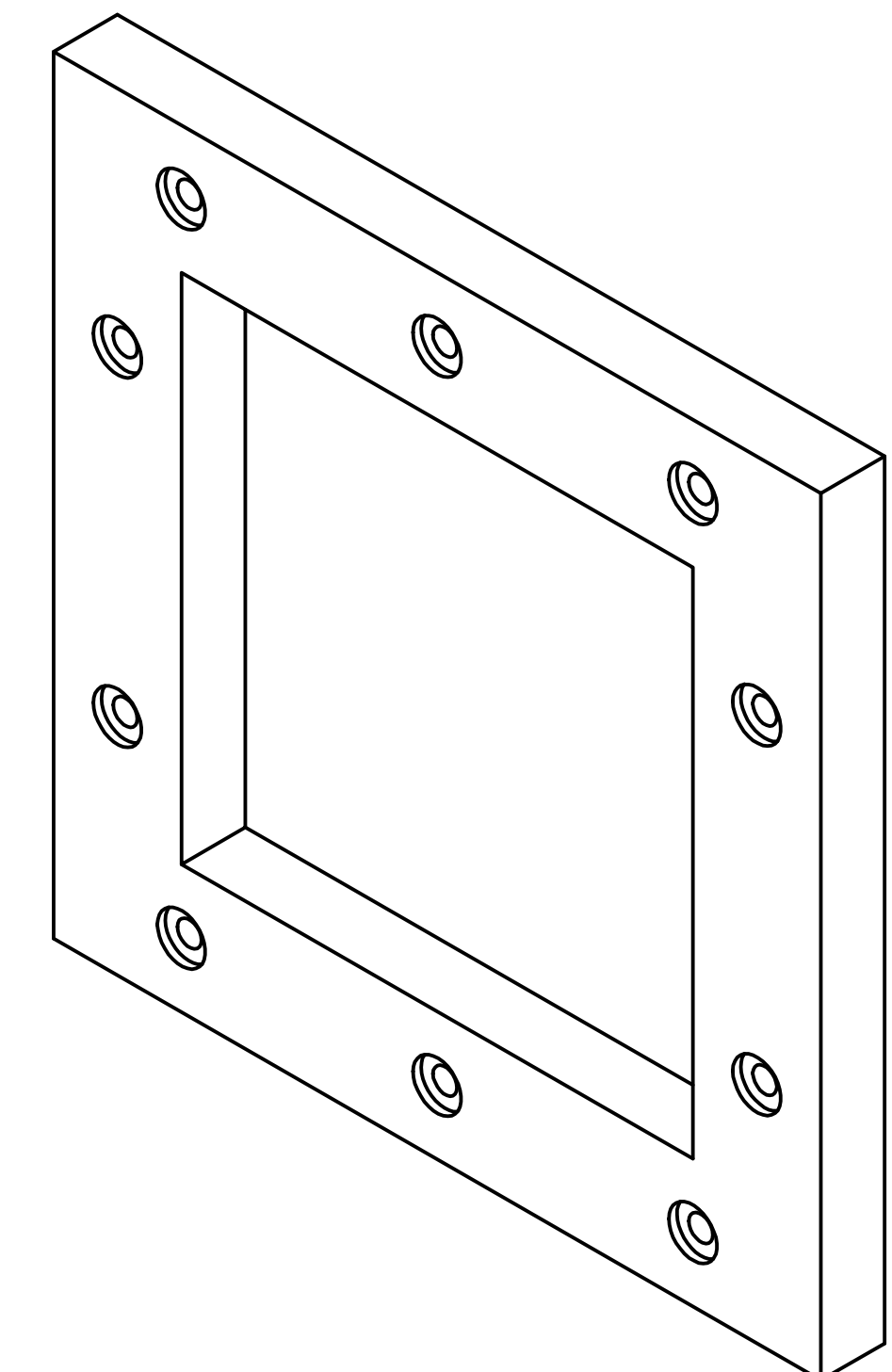
NOTE:  
1. ALL FISH CONTACT SURFACES MUST BE SMOOTH TO THE TOUCH.

INFORMATION ONLY	DATE	APPR.
	DESCRIPTION	MARK

DESIGNED BY: GREGORY GREGORY	DATE: CURRENT DATE	ISSUED BY: XX	DATE: CURRENT DATE
SUBMITTED BY:	SOLUTION NO:	FILE NAME: xxxxxx.dwg	
PLOT SCALE: 1:1	CONTRACT NO:		

BONNEVILLE LOCK AND DAM  
ADULT FISH FACILITY  
LAMPREY TRAP  
GASKET ASSEMBLY  
DETAILS

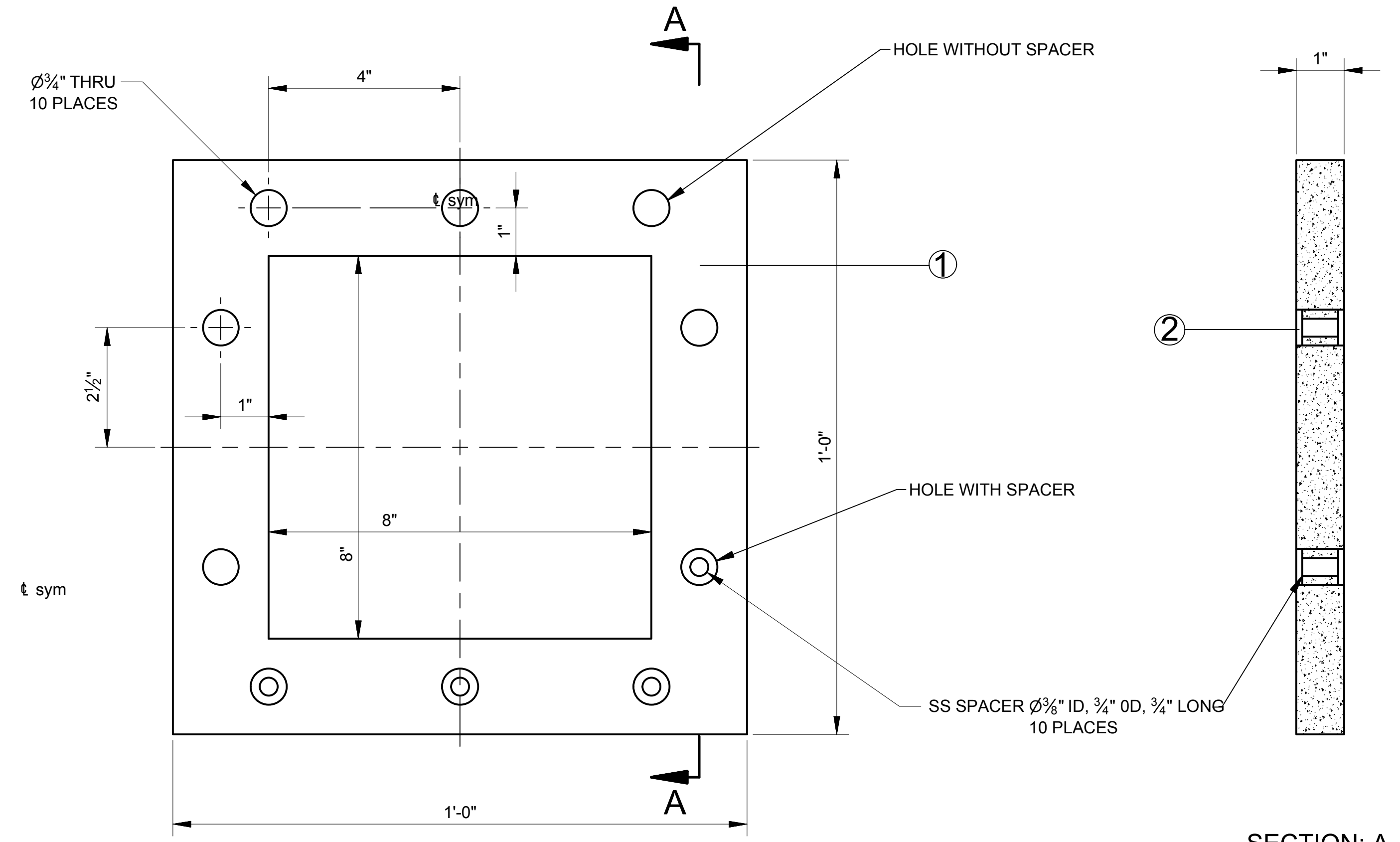
SHEET  
IDENTIFICATION  
**M-505**



**GASKET ASSEMBLY- ISO VIEW**

SCALE: NTS

MATERIALS LIST				
ITEM	QUANTITY	ITEM DESCRIPTION	MATERIAL	DIMENSIONS
1	1	GASKET	1" THICK NEOPRENE RUBBER	1'-0" x 1'-0"
2	10	SPACER	STAINLESS STEEL	3/8" ID, 3/4" OD, 3/4" LONG



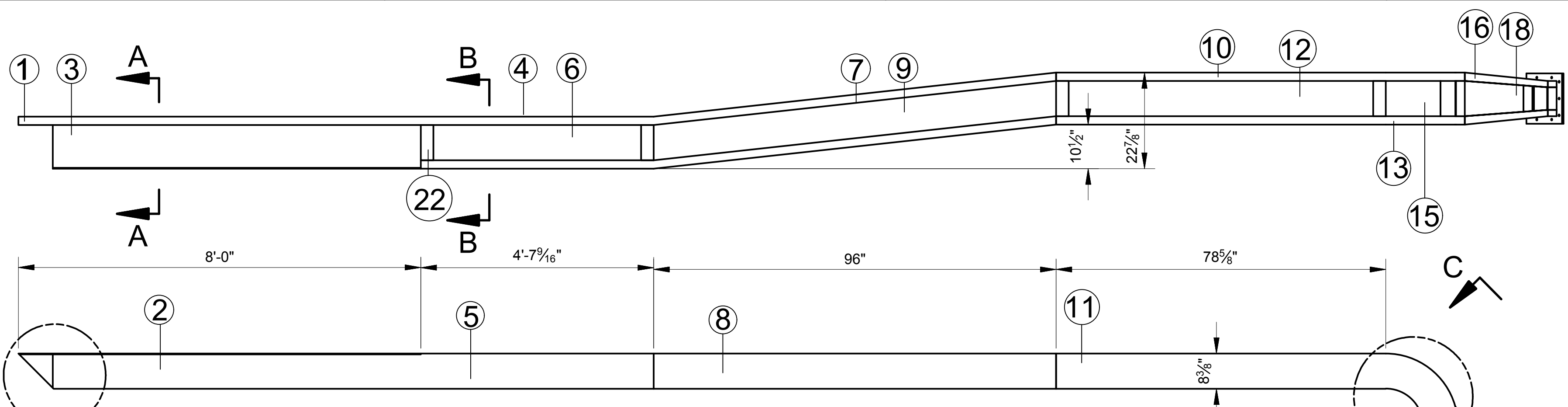
**GASKET ASSEMBLY**

SCALE: 6"=1'-0"  
MATERIAL: NEOPRENE RUBBER, SHORE D 40 DUROMETER

**SECTION: A**  
SCALE: 6"=1'-0"

NOTES:

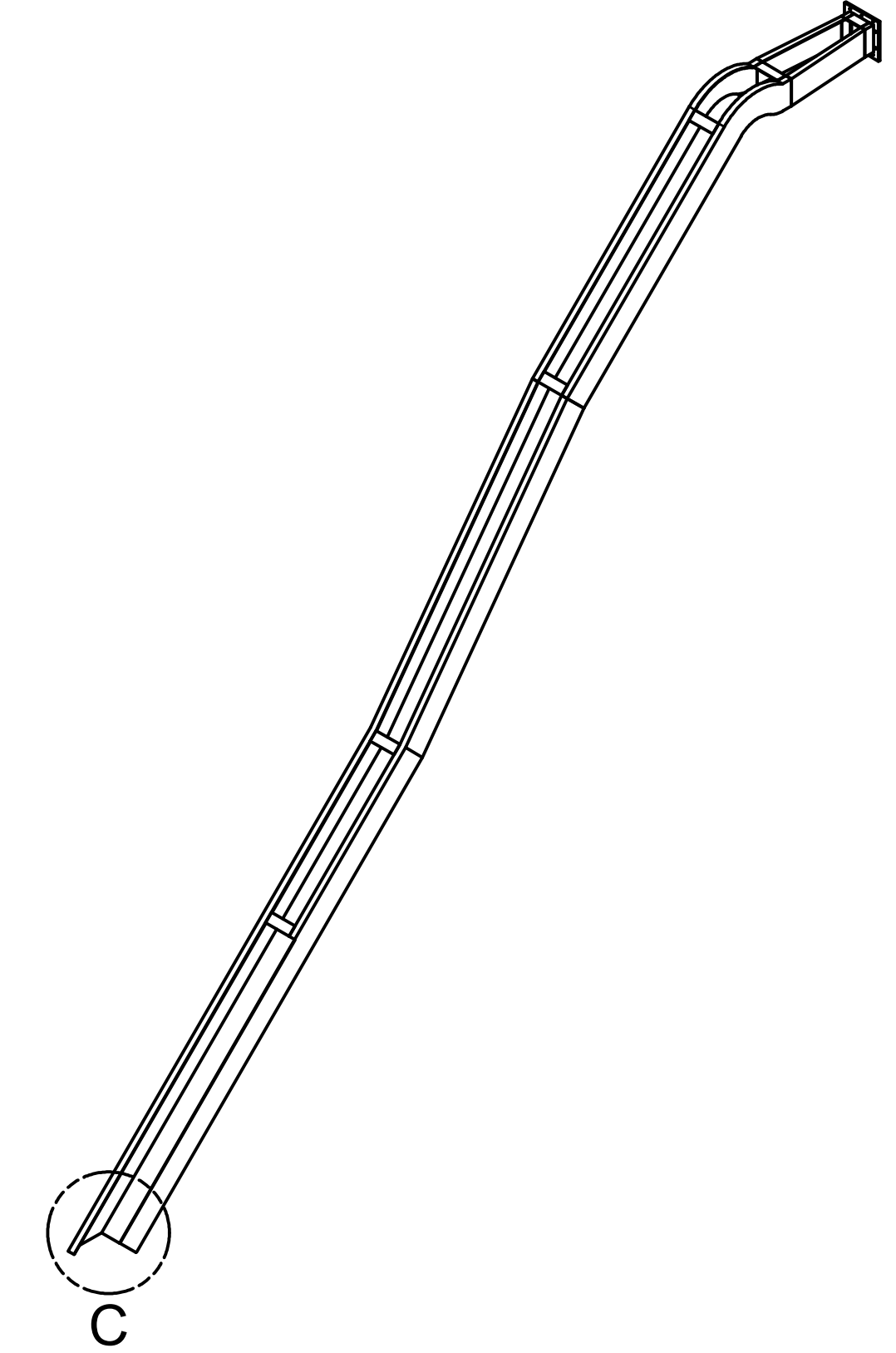
1. INSERT 300 OR 400 SERIES SS SPACERS IN THE GASKET PRIOR TO ASSEMBLING THE JOINT.
2. THE SPACERS ALLOW THE JOINT TO BE FLEXIBLE UP TO 5 DEGREES.
3. TIGHTEN THE BOLT ASSEMBLIES ONLY AS MUCH AS NEEDED TO COMPLETE THE SEAL.



**AFF LAMPREY TRAP - FLUME  
SIDE VIEW**

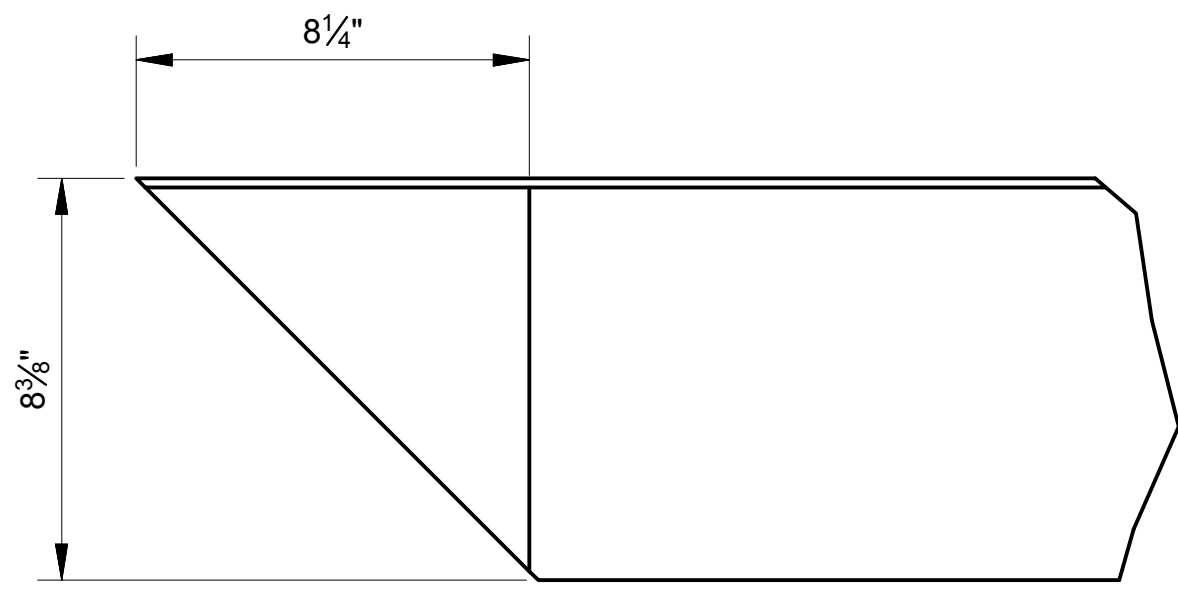
SCALE: 20"=1'-0"  
MATERIAL: 5052 ALUMINUM SHEET / PLATE

ITEM	QUANTITY	ITEM DESCRIPTION	MATERIAL	DIMMENSIONS
1	1	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	8" x 2"
2	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	8" x 8"
3	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	8" x 1'-3/8"
4	2	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	4'-7 11/16" x 2"
5	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	4'-7 11/16" x 8"
6	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	4'-7 11/16" x 1'-3/8"
7	2	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	96"-13/16" x 2"
8	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	97 1/2" x 8"
9	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	97 15/16" x 1' 3/8"
10	2	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	78 5/8" x 2"
11	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	78 5/8" x 8"
12	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	78 5/8" x 1'-3/8"
13	2	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	2'-1" x 2" (OVERSIZED)
14	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	2' x 4" (OVERSIZED)
15	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	2' x 1'-3/8" (OVERSIZED)
16	2	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	29" x 2"
17	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	29" x 8"
18	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	29" x 1'-3/8"
19	2	FLUME FLANGE	3/16" THICK 5052 ALUMINUM	3" x 2"
20	2	FLUME SIDE	3/16" THICK 5052 ALUMINUM	3" x 8"
21	1	FLUME BOTTOM	3/16" THICK 5052 ALUMINUM	3" x 1'-3/8"
22	5	CROSSMEMBERS	3/16" THICK 5052 ALUMINUM	3" x 8 3/8"
23	1	FLUME FLANGE	1/2" THICK 5052 ALUMINUM	1' x 1'

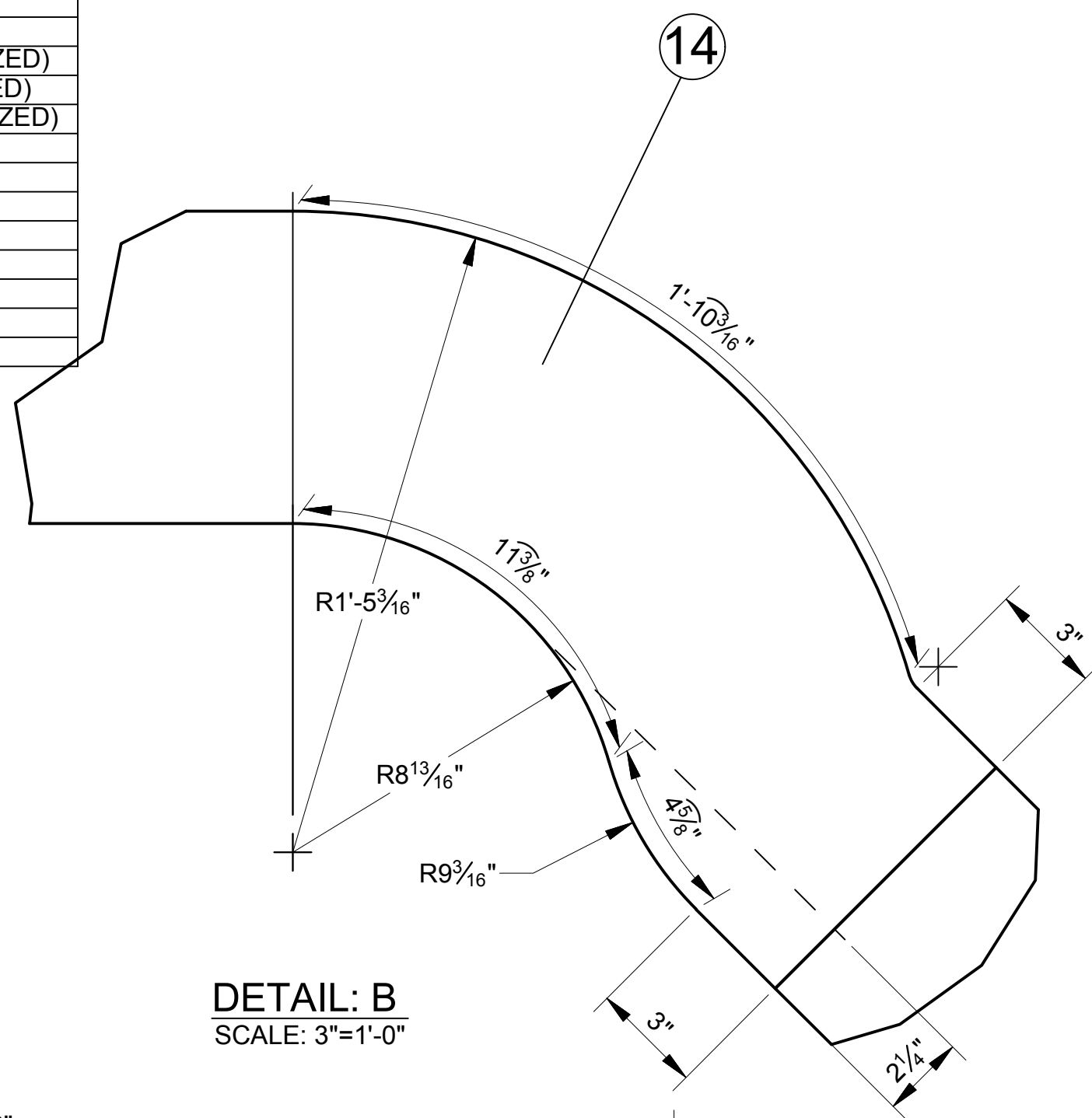


**AFF LAMPREY TRAP- FLUME  
ISOMETRIC VIEW**

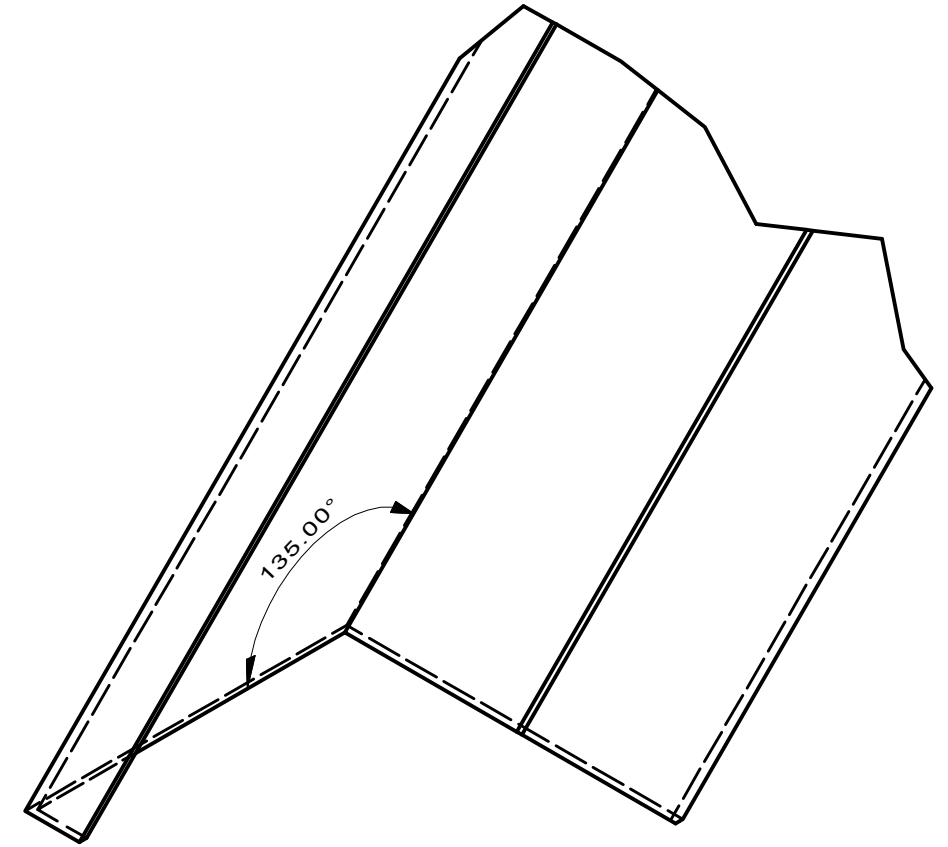
SCALE: NTS



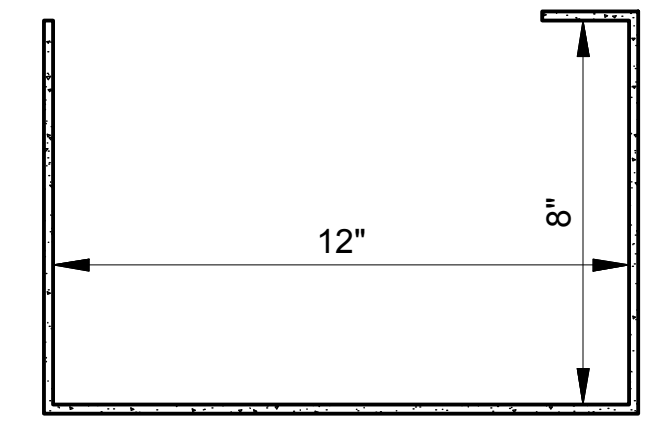
**DETAIL: A**  
SCALE: 3"=1'-0"



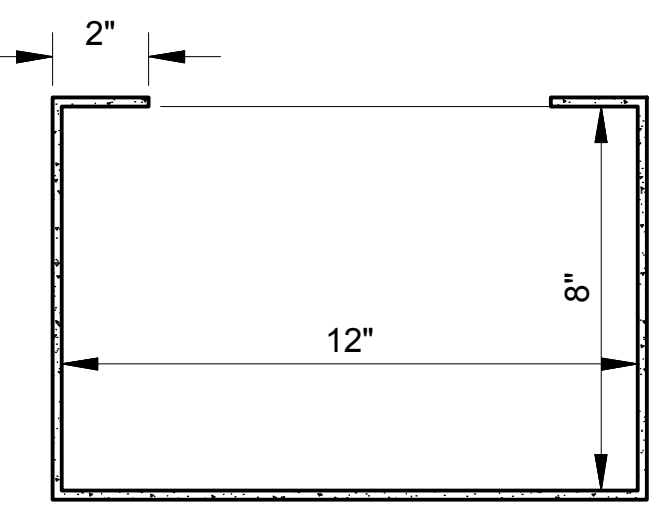
**DETAIL: B**  
SCALE: 3"=1'-0"



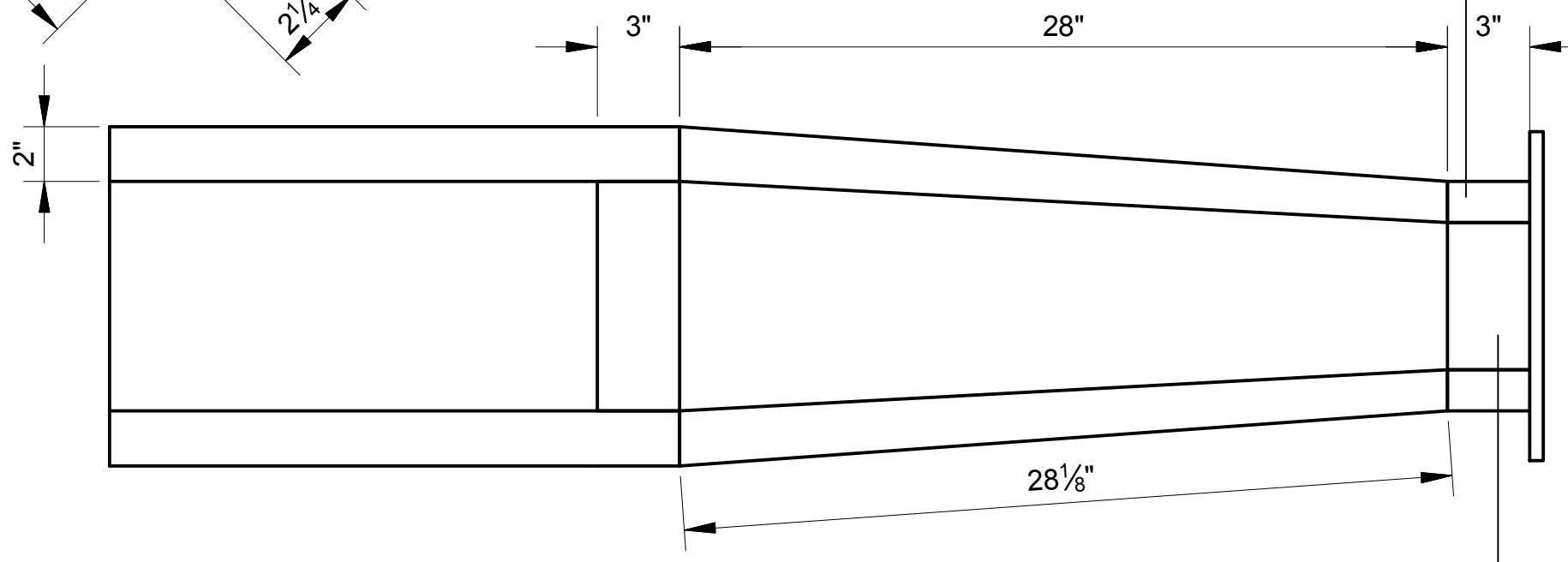
**DETAIL: C**  
SCALE: NTS



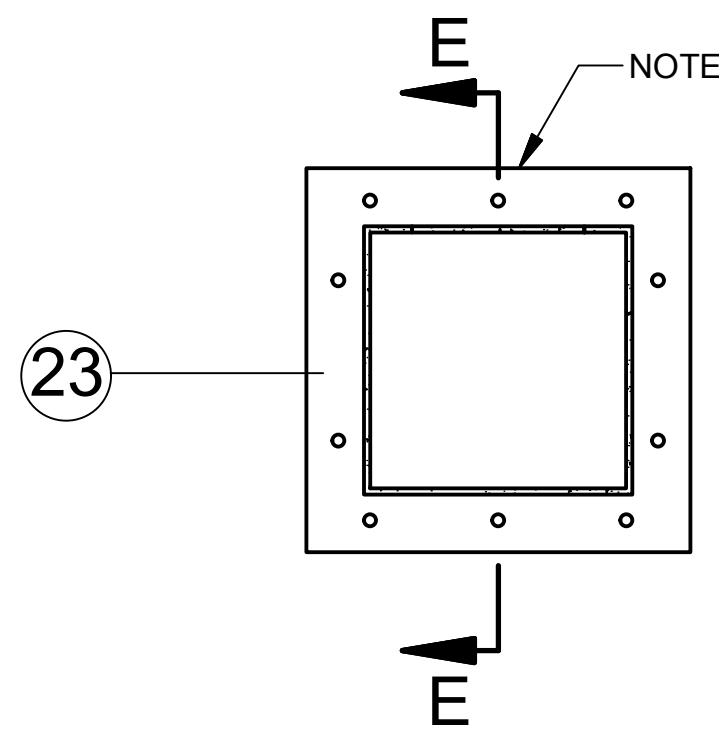
**SECTION: A**  
SCALE: 3"=1'-0"



**SECTION: B**  
SCALE: 3"=1'-0"

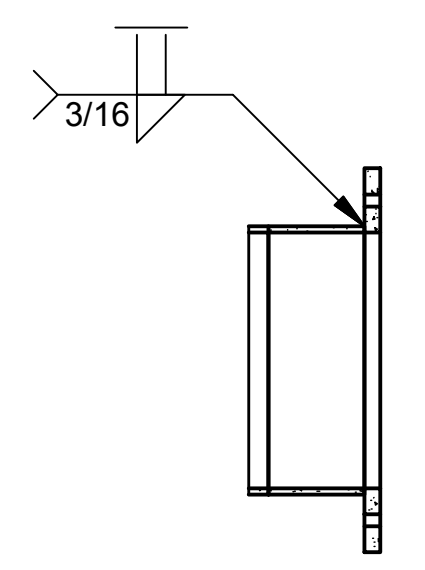


**SECTION: C**  
SCALE: 1/6



**SECTION: D  
TYP FLANGE PATTERN**

SCALE: 2"=1'-0"  
FLANGE MATERIAL: 5052 ALUMINUM 1/2" PLATE



**SECTION: E**  
SCALE: 2"=1'-0"

- NOTES:
1. ALL FISH CONTACT SURFACES MUST BE SMOOTH TO THE TOUCH.
  2. FLUME PORTION IS 5052 SHEET 3/16" THICK
  3. SEE DRAWING M-504:4 FOR PLATE DIMENSION AND HOLE SPACING



