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DISCIPLINE	FILE NAME	SHEET ID	DRAWING TITLES
GENERAL	BDF1.111_G-001	G-001	DRAWING INDEX - SHEET
	BDF1.111_G-002	G-002	LOCAL VICINITY MAP
STRUCTURAL	BDF1.111_S-101	S-101	PARTIAL PLANS
	BDF1.111_S-501	S-501	STRUCTURAL ISOMETRIC
	BDF1.111_S-502	S-502	LAMPREY ORIFICE SECTION AND DETAILS
	BDF1.111_S-503	S-503	REFUGE BOX DETAILS
	BDF1.111_S-504	S-504	CAMERA SUPPORT GUIDES PLAN AND SECTIONS
BDF1.111_S-505	S-505	CAMERA SUPPORT GUIDES SECTIONS	
INFORMATIONAL	BDF-0-2_3		GENERAL PLAN
	BDF-0-2_4		DETAIL PLAN
	BDF-2-3_10		SECTION I CONCRETE OUTLINES PLAN ELEVATIONS SECTIONS
	BDF-2-3_11		SECTION I CONCRETE OUTLINES SECTIONS
	BDF-2-3_15		SECTION 2&3 CONCRETE OUTLINES PLANS AND SECTIONS
	BDF-2-3_16		SECTION 2&3 CONCRETE OUTLINES ELEVATION AND SECTION
	BDF-2-3_20		SECTION 4 CONCRETE OUTLINE PLAN ELEVATION AND SECTION
	BDF-2-3_21		SECTION 4 REINFORCEMENT PLANS SECTIONS AND DETAILS
	BDF-2-3_23		SECTION 1,2,3&4 REINFORCEMENT BAFFLES



DATE	APPR.

**BCOES REVIEW**

DESIGNED BY: AZ YAZDANI	CHECKED BY: SZECDWAC	DATE: 08/25/2015
DRAWN BY: SZECDWAC	SUBMITTED BY:	SOLICITATION NO.:
FILE NAME: BDF1.111_G-001000.dgn	PLOT SCALE: ANSI D	CONTRACT NO.:
	SIZE: ANSI D	DRAWING NUMBER:

U.S. ARMY CORPS OF ENGINEERS  
PORTLAND DISTRICT  
PORTLAND, OREGON

BONNEVILLE LOCK AND DAM  
BRADFORD ISLAND  
FISH LADDER  
MINOR LAMPREY MODIFICATIONS

INDEX

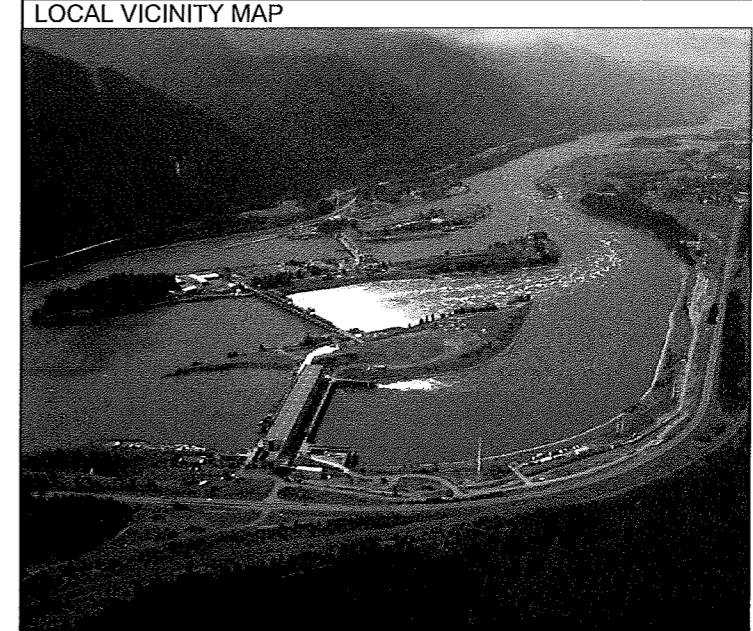
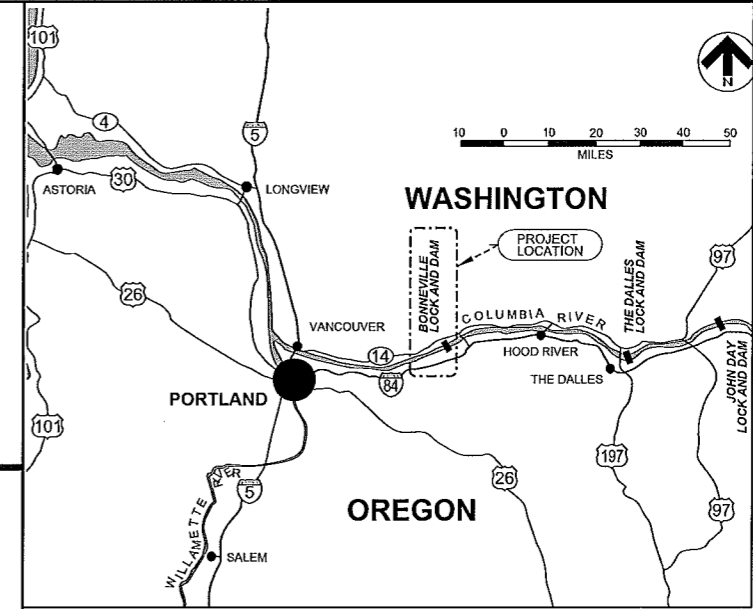
SHEET IDENTIFICATION  
**G-001**



US ARMY CORPS  
OF ENGINEERS

# LAMPREY MINOR MODIFICATION

SOLICITATION NUMBER:  
DATE:



**PROJECT PHOTO**

THIS PROJECT WAS DESIGNED BY THE PORTLAND DISTRICT OF THE U.S. ARMY CORPS OF ENGINEERS. THE INITIALS OR SIGNATURES AND REGISTRATION DESIGNATIONS OF INDIVIDUALS APPEAR ON THESE PROJECT DOCUMENTS WITHIN THE SCOPE OF THEIR EMPLOYMENT AS REQUIRED BY ER 1110-1-8152 AND INDICATE OFFICIAL RECOMMENDATION AND APPROVAL OF ALL THE DRAWINGS IN THIS SET.

SUBMITTED

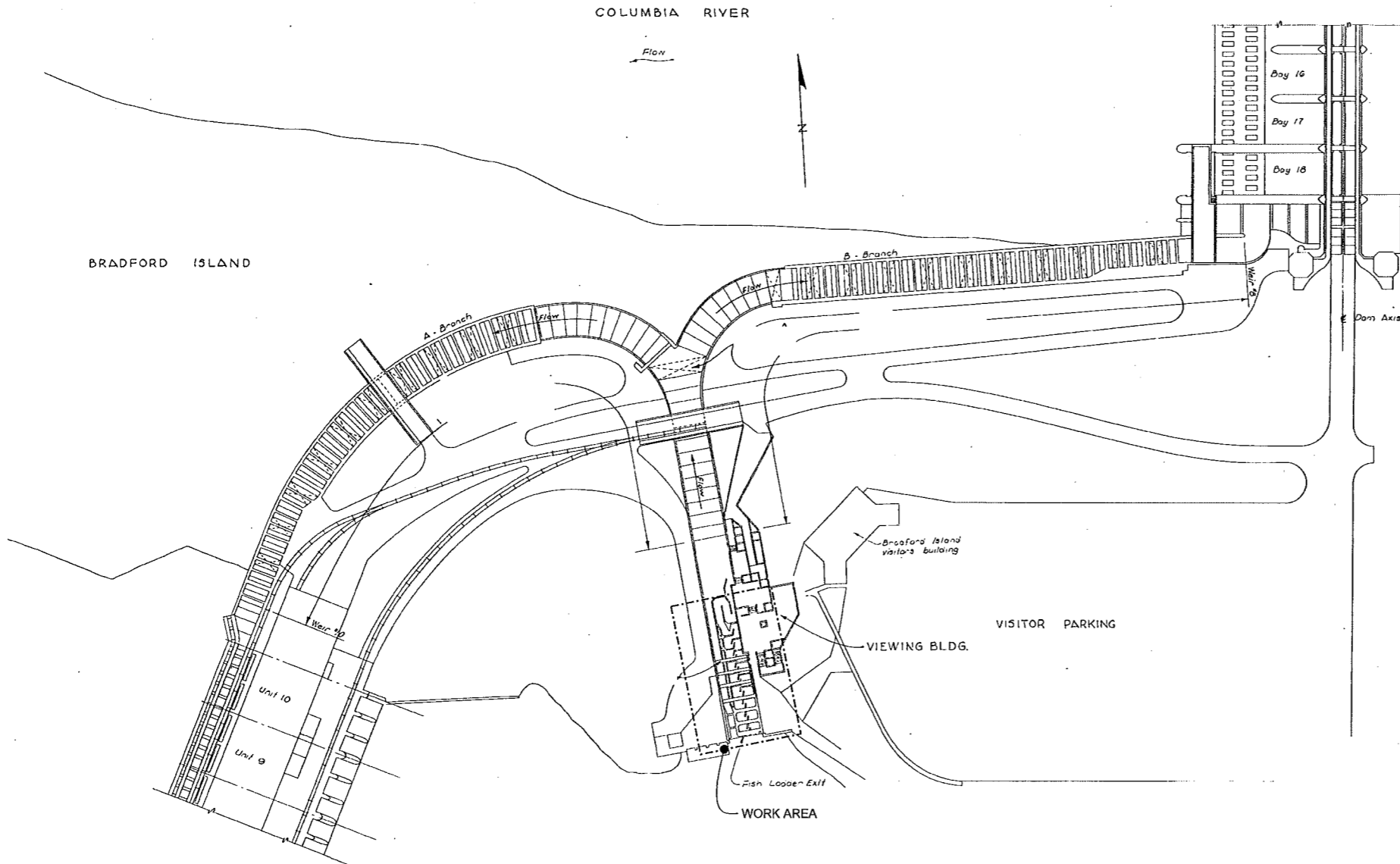
MARK J. SAWKA, P.E.  
CHIEF, DESIGN BRANCH

SUBMITTED

LANCE A. HELWIG, P.E.  
CHIEF, ENGINEERING & CONSTRUCTION DIVISION

APPROVED

JOHN W. EISENHAUER, P.E.  
COLONEL, CORPS OF ENGINEERS  
DISTRICT COMMANDER



PROJECT SITE MAP

DRAWING PLOT SIZE: \$BORDERS

DATE AND TIME PLOTTED: \$\$\$DATE\$\$\$\$ TIME

BY USERNAME: \$USERS

SHEET NAME: \$\$SHEET\$\$



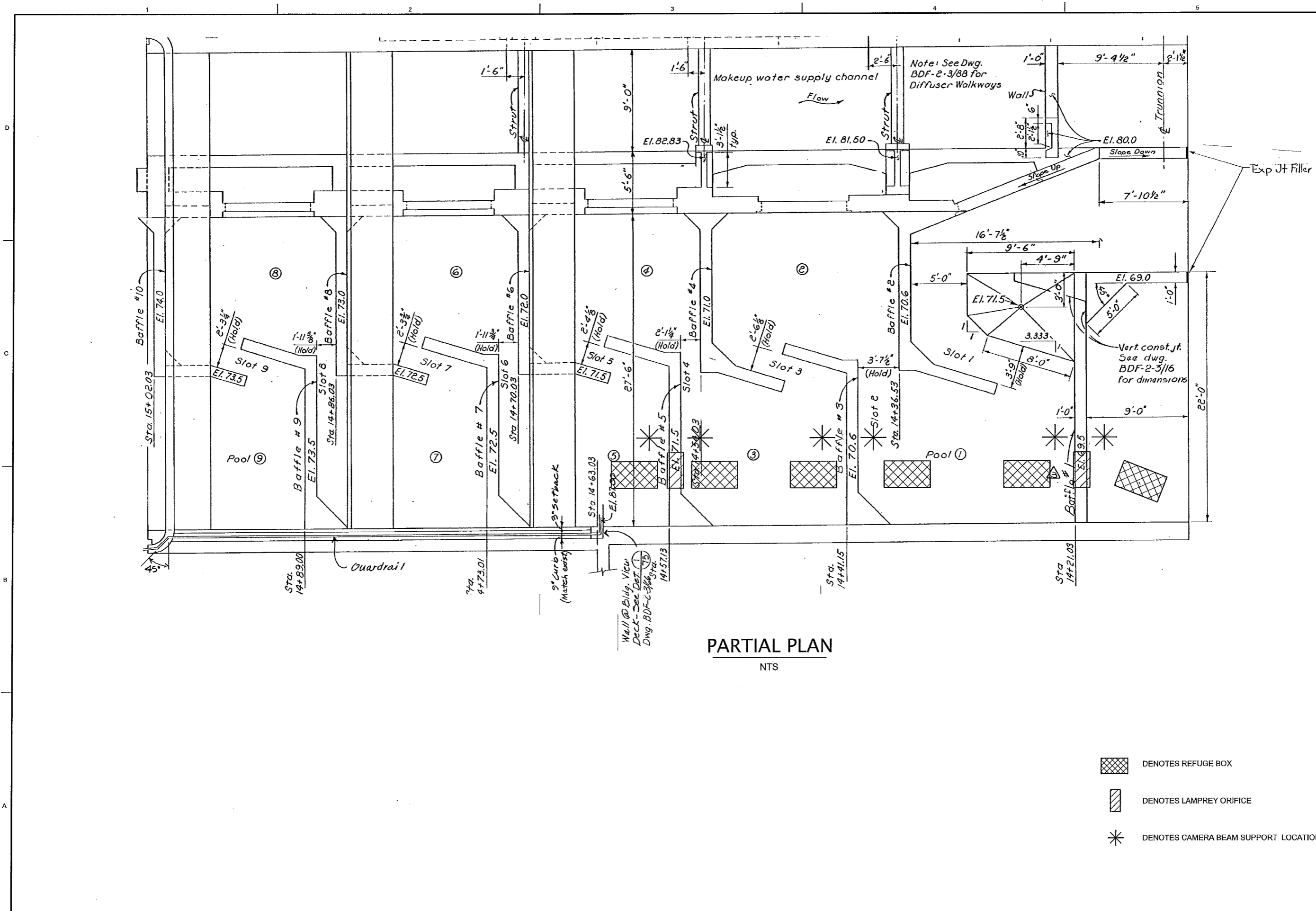
US Army Corps  
of Engineers  
PORTLAND DISTRICT

MARK	DESCRIPTION	DATE	APPR.




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DRAWN BY: GREGORAC	SUBMITTED BY:	PLOT DATE:	DRAWING NUMBER:
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SHEET ID			

BONNEVILLE LOCK AND DAM  
BRADFORD ISLAND  
FISH LADDER  
MINOR LAMPREY MODIFICATIONS  
SDASDASD

SHEET IDENTIFICATION  
G-002



**PARTIAL PLAN**  
NTS

-  DENOTES REFUGE BOX
-  DENOTES LAMPREY ORIFICE
-  DENOTES CAMERA BEAM SUPPORT LOCATION



US Army Corps of Engineers PORTLAND DISTRICT	
MARK	DESCRIPTION
<b>BCOES REVIEW</b>	
DATE	APPR.

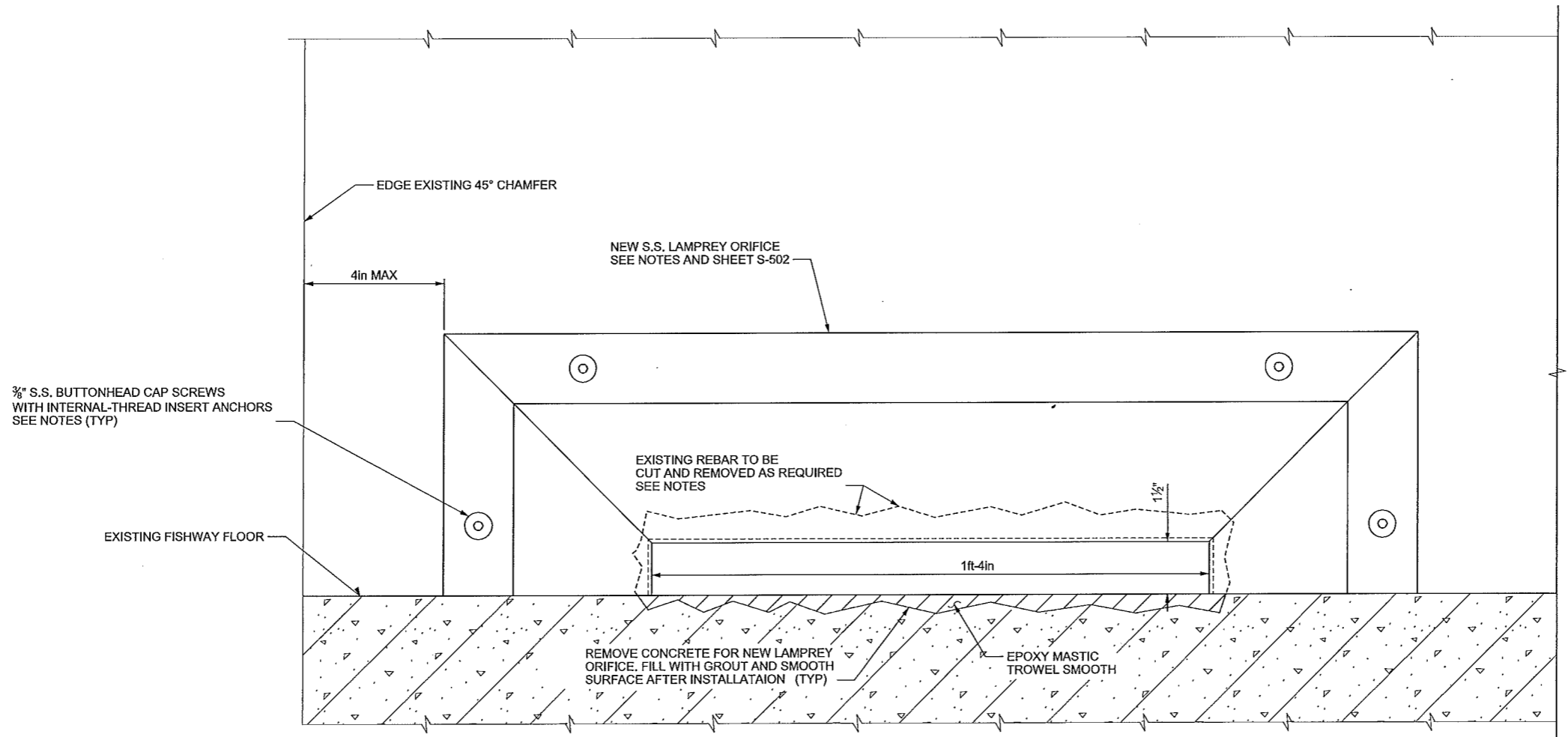
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DRAWN BY: GREGORY GZECMAG	CHECKED BY: GZECMAG	CONTRACT NO.:
SUBMITTED BY:	PLOT SCALE:	DRAWING NUMBER
ANSI D	ANSI D	ANSI D

BONNEVILLE LOCK AND DAM  
BRADFORD ISLAND  
FISH LADDER  
MINOR LAMPREY MODIFICATIONS  
PARTIAL PLANS

SHEET IDENTIFICATION  
**S-101**

**NOTES:**

1. EXISTING WEIR WALL DIMENSIONS MAY VARY.
2. BEFORE REMOVING CONCRETE FOR THE NEW LAMPREY ORIFICES, THE CONTRACTOR SHALL FIELD LOCATE NO. 4 & NO. 6 REBARS USING A NON-DESTRUCTIVE METHOD AND SHIFT THE LOCATION OF THE ORIFICE BETWEEN 10 AND 24 INCHES FROM THE WALL OF THE FISHWAY IN ORDER TO MINIMIZE THE AMOUNT OF REBAR TO BE CUT. THE CONTRACTOR SHALL MAINTAIN A 2" MINIMUM CLEAR DISTANCE BETWEEN EMBEDDED REBAR AND EXPOSED CONCRETE SURFACE AND AT LEAST ONE (1) EXISTING NO. 4 & NO. 6 REBAR MUST BE LOCATED BETWEEN THE LAMPREY ORIFICE AND THE FISHWAY SIDEWALL. NOTIFY THE COR BEFORE PROCEEDING WITH THE INSTALLATION OF THE LAMPREY ORIFICE SHOULD REBAR BE FOUND DEFICIENT BETWEEN THE ORIFICE AND FISHWAY SIDEWALL.
3. CUT NEW HOLE IN EXISTING WEIR WALL WITH A 3/4" OVER-CUT FOR GROUT AND PLACE NEW S.S. LAMPREY ORIFICE INSERT IN THE CUT HOLE, THEN GROUT BEHIND THE NEW S.S. ORIFICE INSERT. TROWEL ALL EXPOSED GROUT SURFACES SMOOTH.
4. EPOXY MASTIC SHALL BE USED TO SMOOTH THE CONCRETE SURFACE AT THE BOTTOM OF ALL NEW S.S. LAMPREY ORIFICES. SEE SPECIFICATIONS FOR DETAILS.
5. S.S. LAMPREY ORIFICE INSERTS SHALL BE ANCHORED TO EXIT WEIRS WITH 3/8" Ø AISI 304 S.S. BUTTONHEAD HEX CAP SCREWS AND INTERNAL-THREAD INSERT ANCHORS. ALL SCREWS SHALL BE TACK WELDED TO PREVENT THE SCREWS FROM LOOSENING.



**TYPICAL LAMPREY ORIFICE ELEVATION**  
NTS



<p style="text-align: center; font-weight: bold; font-size: 24pt;">BCOES REVIEW</p>		DATE	APPR.
		MARK	DATE

DESIGNED BY: AZ YAZDANI	CHECKED BY: SZECDJAC	DATE: 06/25/2015	SOLICITATION NO.:
DRAWN BY: SZECDJAC	SUBMITTED BY:	CONTRACT NO.:	DRAWING NUMBER
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON		PLOT SCALE: AS SHOWN	FILE NAME: BDP1.111_S-501.dgn

**BONNEVILLE LOCK AND DAM  
 BRADFORD ISLAND  
 FISH LADDER  
 MINOR LAMPREY MODIFICATIONS**  
 LAMPREY ORIFICE  
 ELEVATION

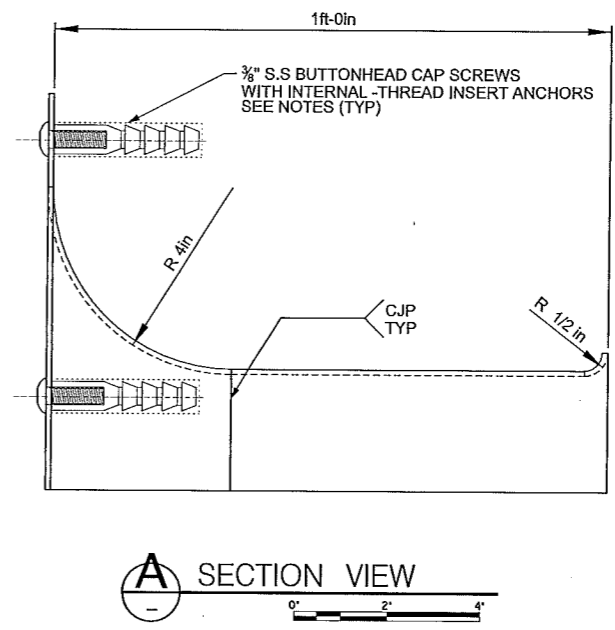
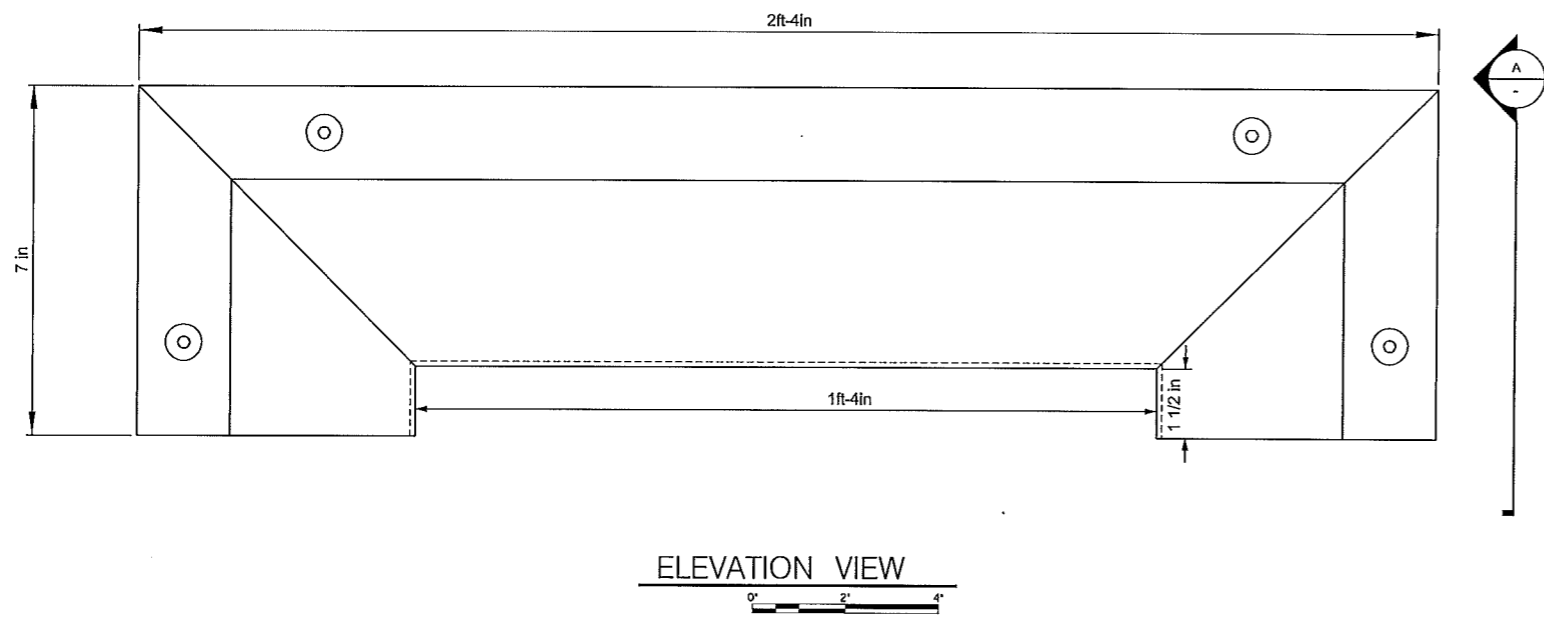
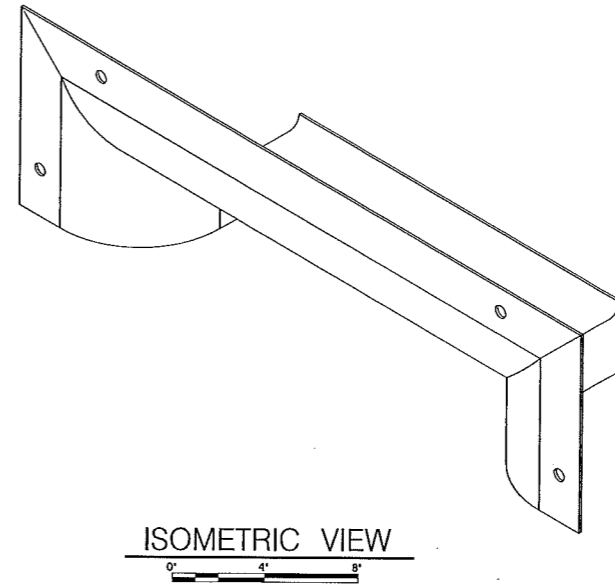
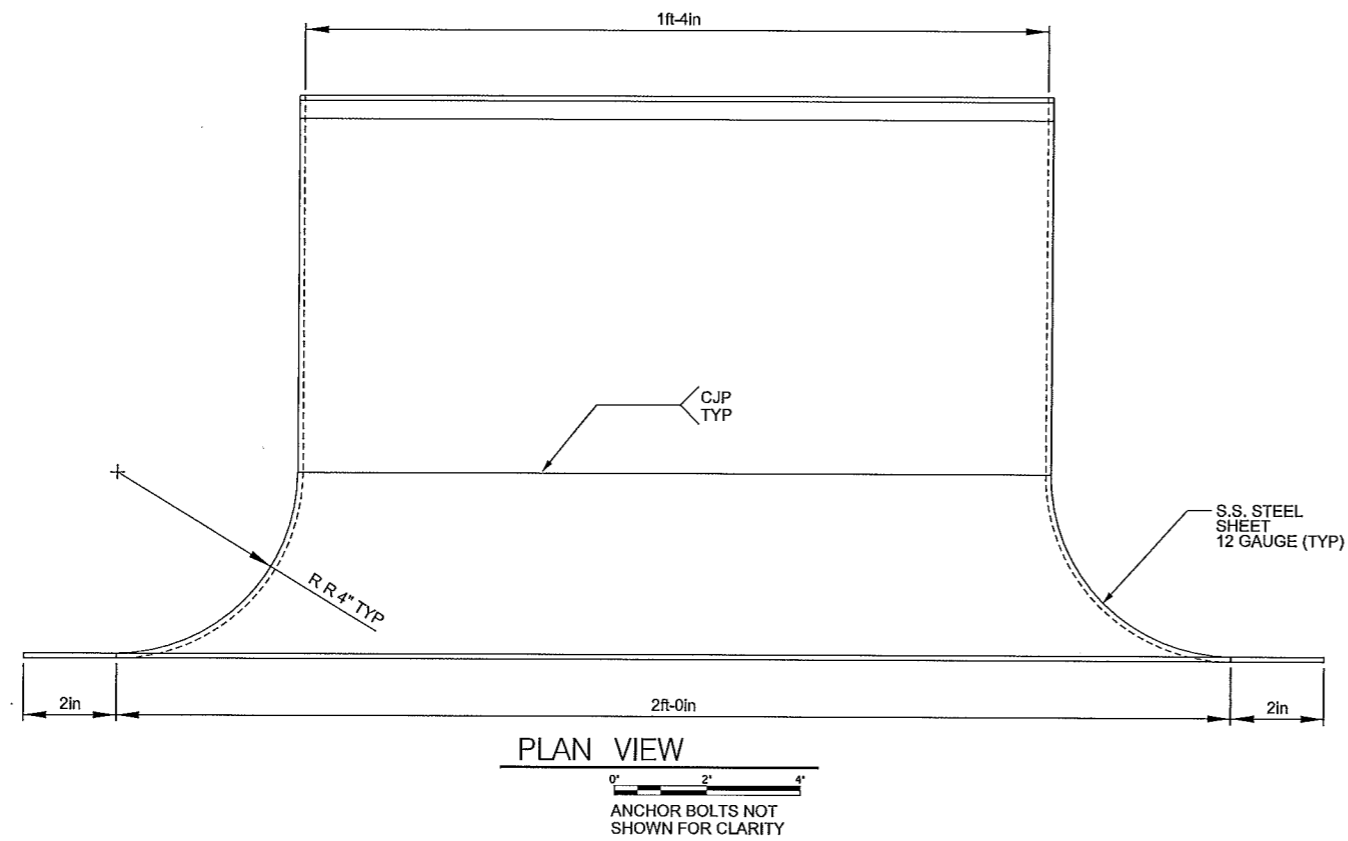
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**S-501**  
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MARK	DESCRIPTION	DATE	APPR.
	BCOES REVIEW		

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DRAWN BY: GREGORAC	SUBMITTED BY:	PROJECT NO.:	DRAWING NUMBER
PLOT SCALE: 1" = 4'-0"		PLOT DATE: 06/25/15	
SHEET: ANSD		JOB: 15-502XXX.dgn	

BONNEVILLE LOCK AND DAM  
BRADFORD ISLAND  
FISH LADDER  
MINOR LAMPREY MODIFICATIONS  
LAMPREY ORIFICE  
SECTION AND DETAILS

SHEET IDENTIFICATION  
**S-502**  
SHEET 0 OF 0



NOTES:

- ALL SHEET STEEL SHALL BE 12 GAUGE AUSTENITIC AISI 316L STAINLESS STEEL.
- ALL WELDS SHALL CONFORM TO AWS D1.6.

1

2

3

4

5

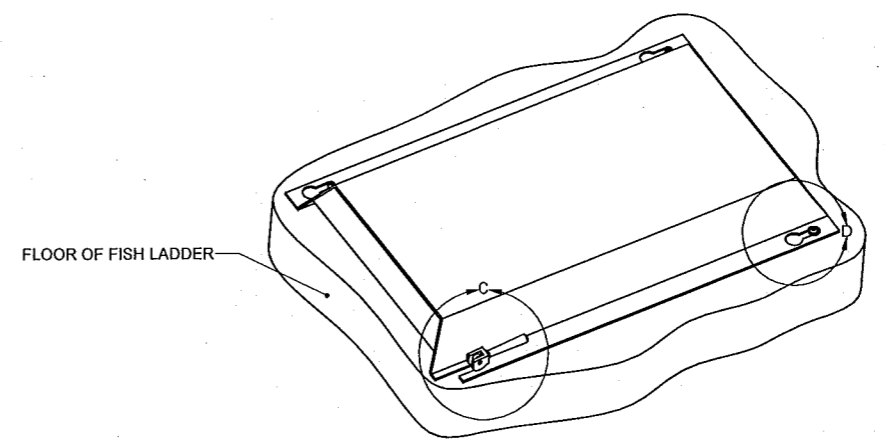
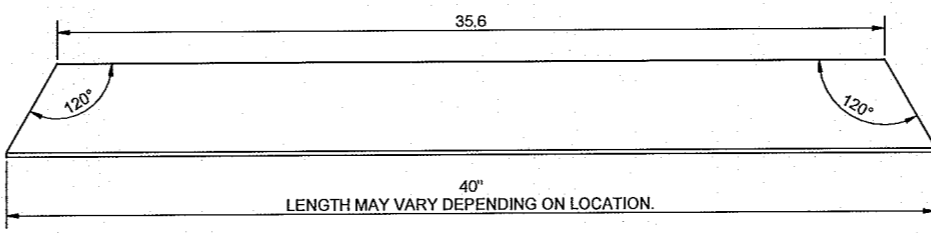
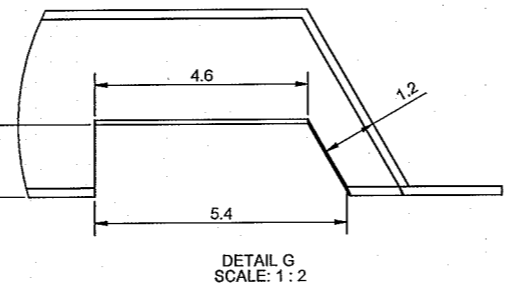
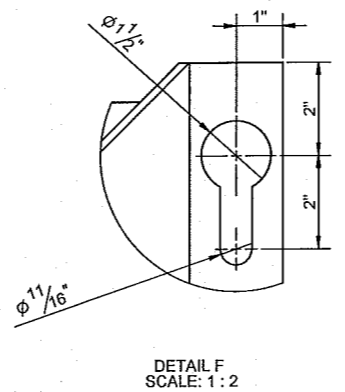
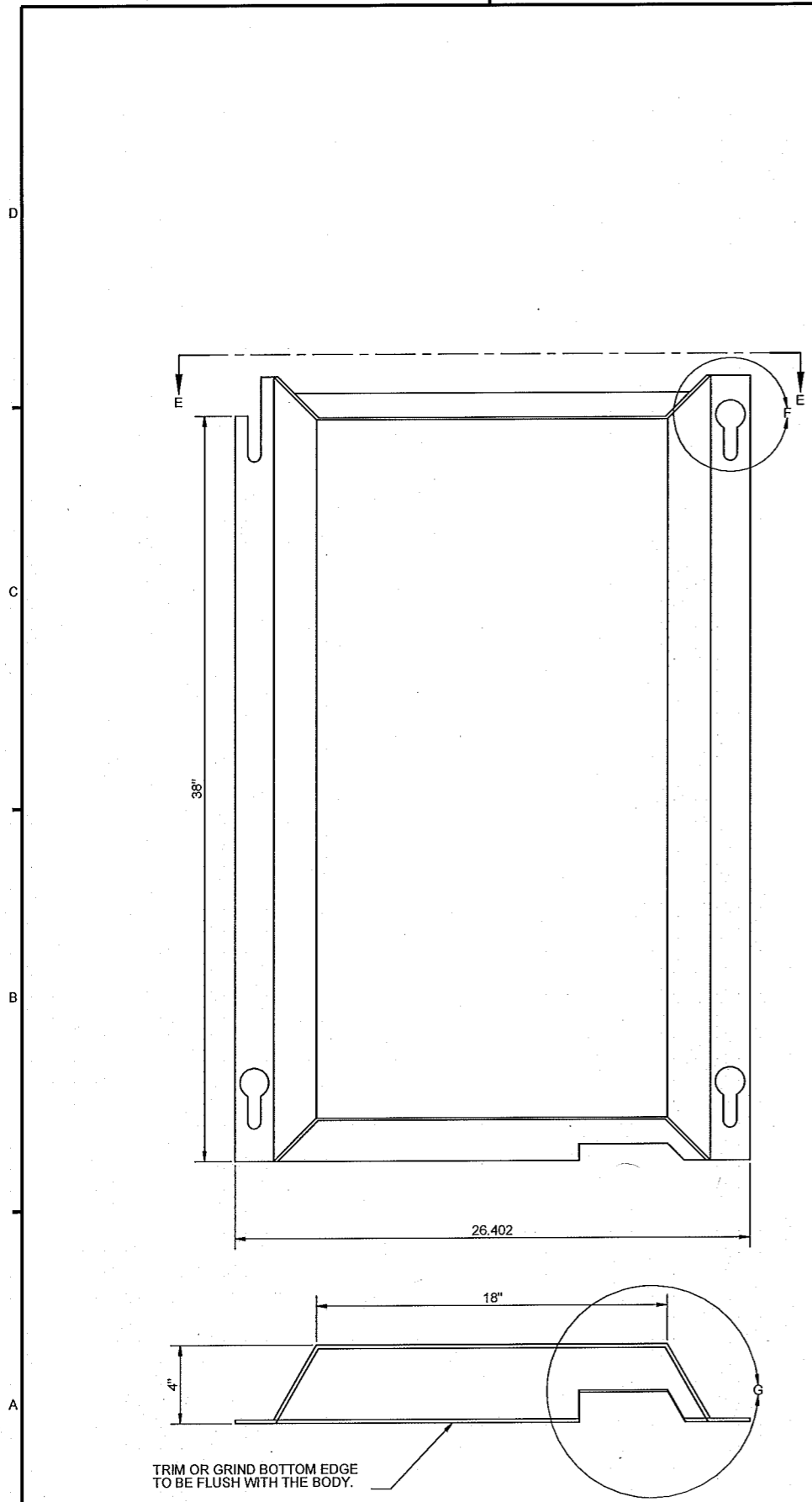


DESIGNED BY:	DATE:	PROJECT NO.:	APP.:
DRAWN BY:	7/24/2015	XXXXXXXXXX	
CHECKED BY:		XXXXXXXXXX	
DATE:		XXXXXXXXXX	
SCALE:		XXXXXXXXXX	
ANSI D	Refuge Box Type 3		

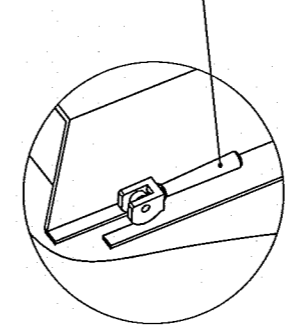
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DRAWN BY:	7/24/2015	XXXXXXXXXX	
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DATE:		XXXXXXXXXX	
SCALE:		XXXXXXXXXX	
ANSI D	Refuge Box Type 3		

BONNEVILLE LOCK AND DAM  
SPILLWAY  
TOTAL DISSOLVED GAS (TDG) SENSOR  
DESIGN AND INSTALLATION  
GENERAL MECHANICAL DRAWINGS

SHEET IDENTIFICATION  
S-503  
SHEET 1 OF 1

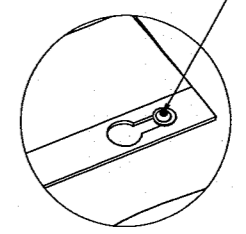


OPTION 1: USE A CAMLEVER WITH A ROD END WHICH THREADS INTO THE 3/8" THREADED INSERT.

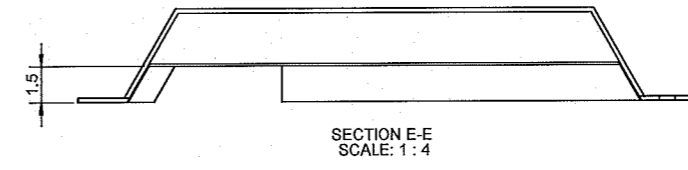


DETAIL C SCALE: 1:4

OPTION 2: USE SOCKET CAP SCREWS TO PROVIDE THE SPRING FORCE TO HOLD THE REFUGE BOX DOWN.

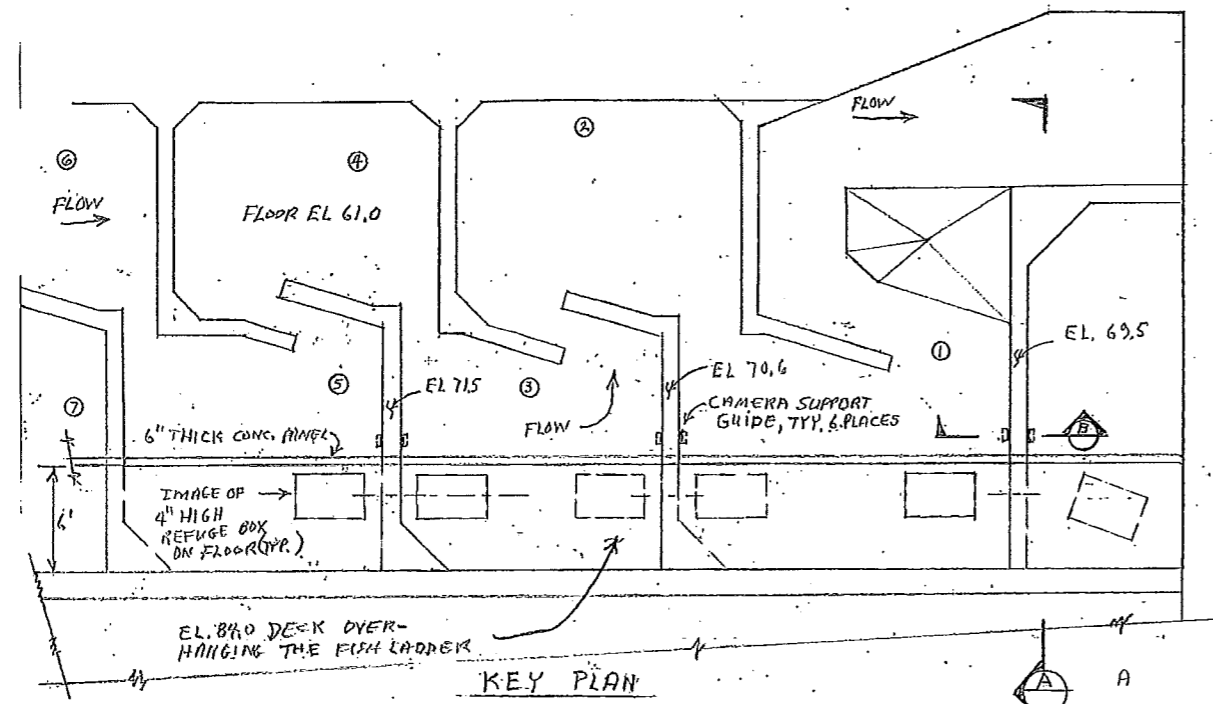


DETAIL D SCALE: 1:4



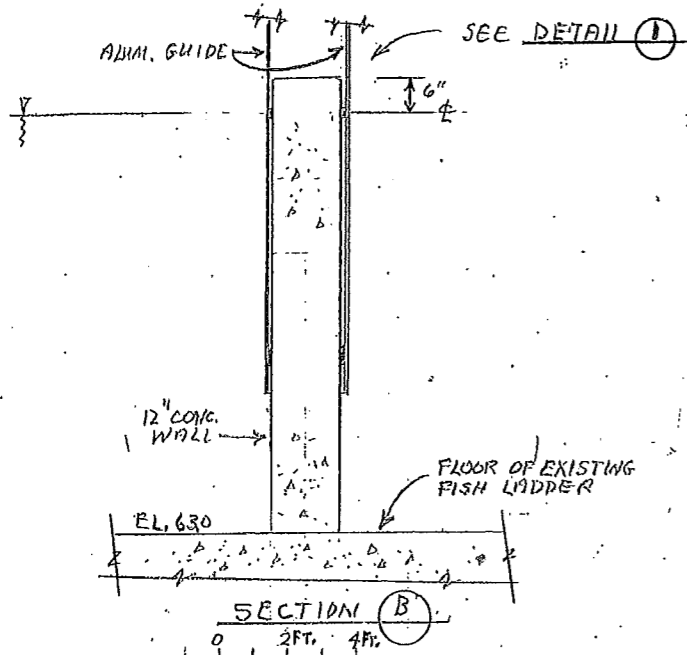
SECTION E-E SCALE: 1:4

- NOTES:
1. BREAK ALL EDGES AND CORNERS.
  2. RESTBOX SHALL SIT FLUSH WITH THE FLOOR.
  3. USE 3/8" THREAD ANCHOR INSERTS.
  - 4.

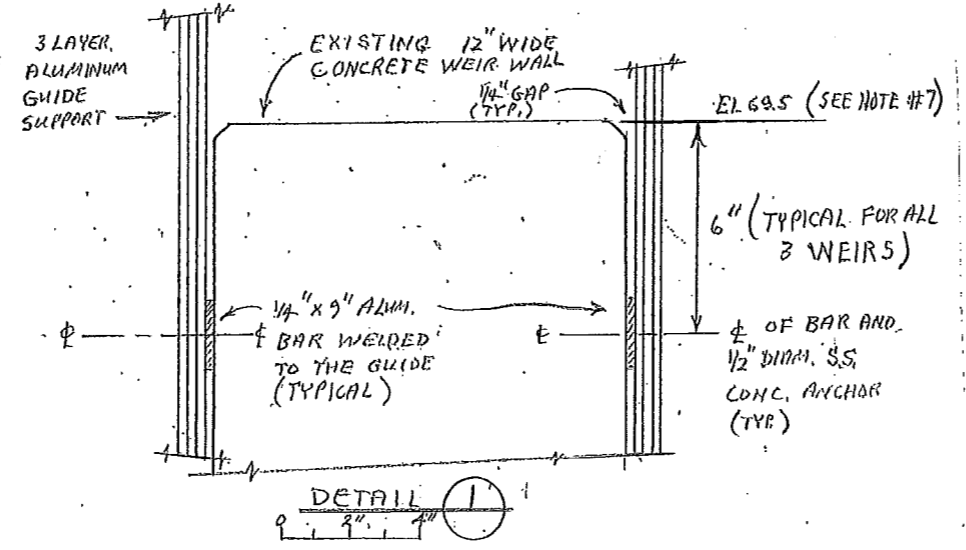


KEY PLAN

NTS



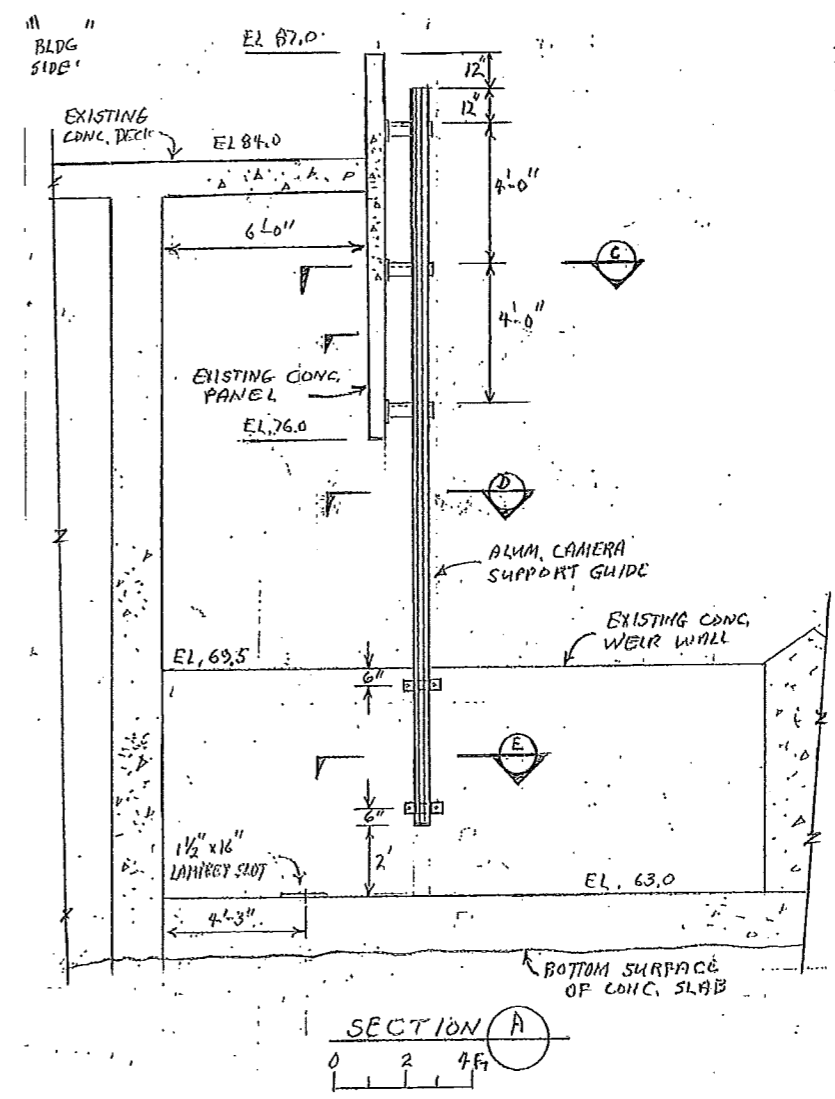
SECTION B



DETAIL 1

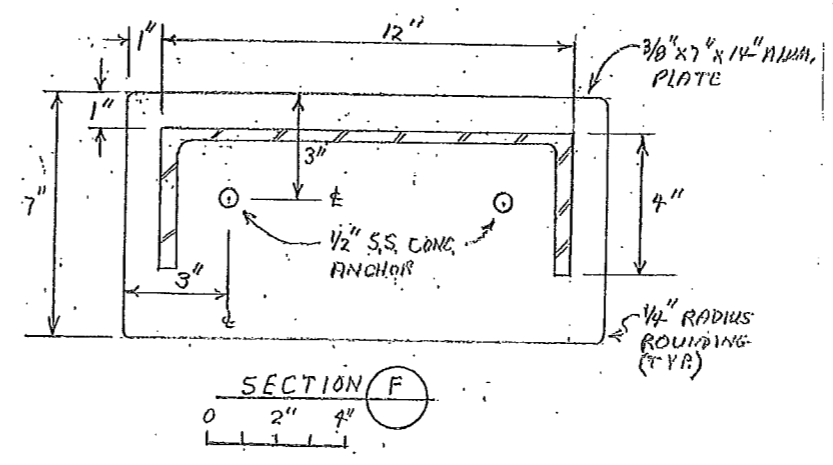
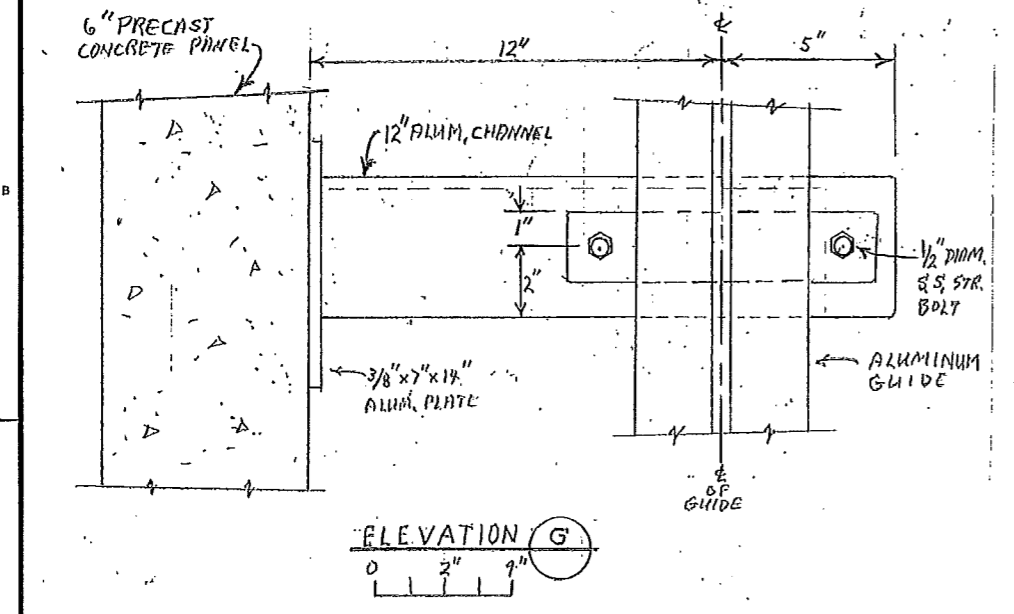
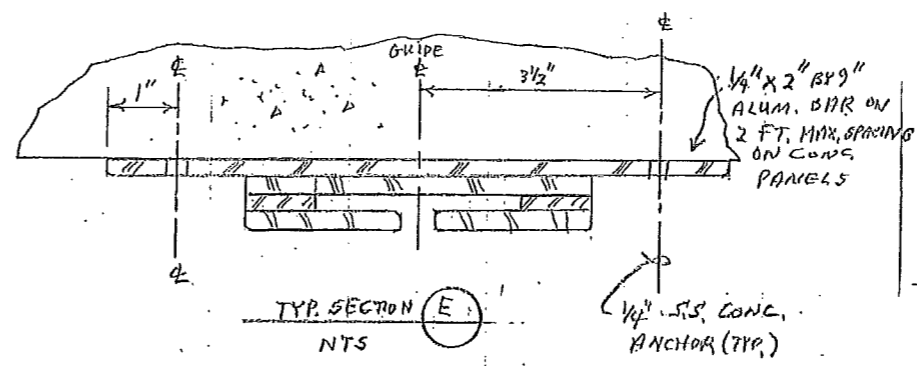
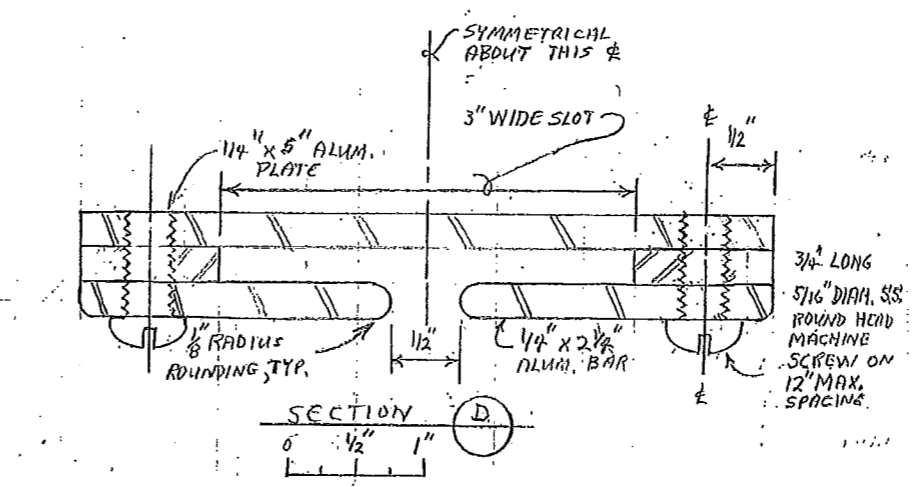
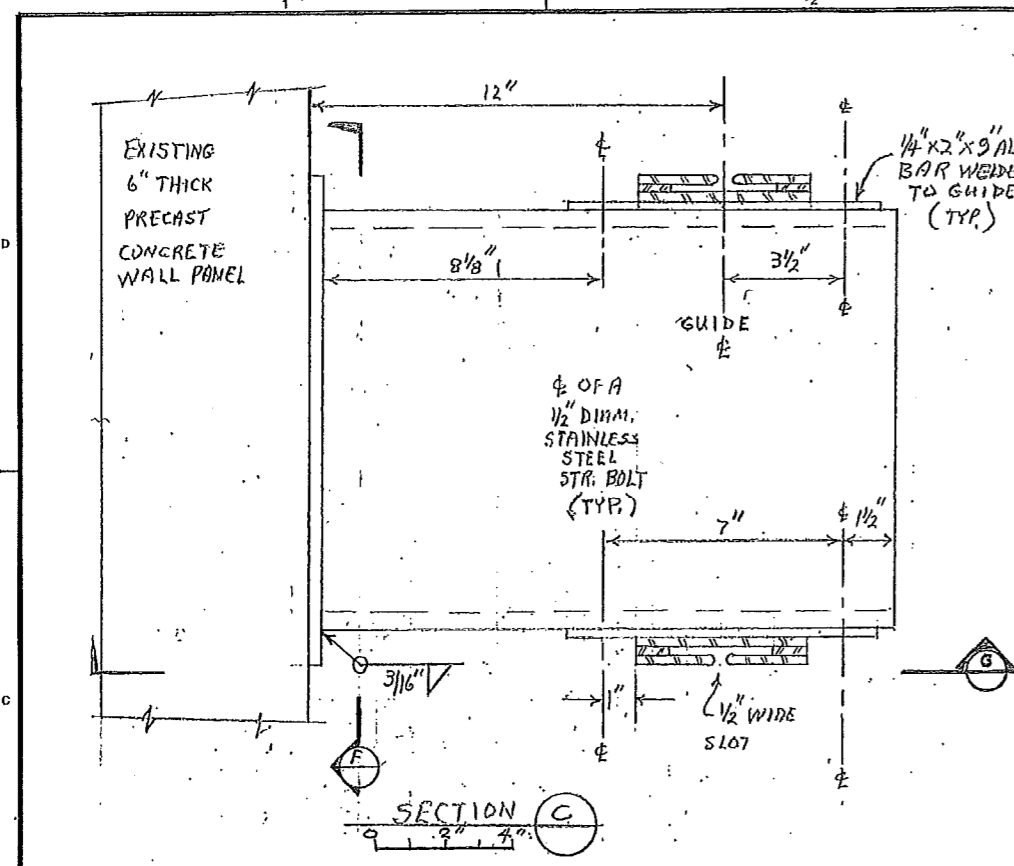
GENERAL NOTES:

1. ALUMINUM SHAPES SHALL MEET STANDARDS FOR ASTM B308, ALLOY 6061-T6.
2. ALUMINUM BARS AND PLATES SHALL MEET STANDARDS FOR ASTM B221, ALLOY 6061-T6.
3. THE CONCRETE ANCHORS INSTALLED ABOVE THE WATER SURFACE IN THE PRECAST CONCRETE PANELS SHALL BE HILTI KB-TZ SS316 1/2" X 3-3/4" OR AN APPROVED EQUAL. EMBEDMENT DEPTH SHALL BE ABOUT 2-3/4".
4. THE CONCRETE ANCHORS INSTALLED IN AND BELOW THE WATER SURFACE SHALL BE HILTI HDI 1/2" SS303 DROP-IN ANCHOR OR APPROVED EQUAL. USE SS ROUND HEAD MACHINE SCREW FASTENER FOR ATTACHMENT OF THE ALUMINUM ITEM TO THE CONCRETE. EMBEDMENT DEPTH AND ANCHOR LENGTH SHALL BE ABOUT 2".
5. DRILL AND INSTALL THE STAINLESS STEEL CONCRETE ANCHORS INTO THE WALLS PER MANUFACTURERS WRITTEN INSTRUCTIONS AS INDICATED ON THE DRAWINGS.
6. THE SURFACE OF THE ALUMINUM PIECES THAT WILL BE INSTALLED AGAINST THE CONCRETE SURFACES SHALL BE COATED WITH ZINC MOLYBDATE IN ACCORDANCE WITH FED SPEC TT-P-645B PRIOR TO INSTALLATION. THE COATING SHALL BE FULLY CURED BEFORE PIECES ARE INSTALLED.
7. THERE ARE 3 WEIR ELEVATIONS BUT ONLY ONE IS SHOWN IN THE DETAILS. ADJUSTMENTS SHALL BE MADE FOR INSTALLING THE GUIDE SUPPORTS IN SIMILAR FASHION FOR ALL 3 WEIRS.



SECTION A

 US Army Corps of Engineers	
DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS DRAWN BY: PORTLAND DISTRICT CHECKED BY: PORTLAND, OREGON SUBMITTED BY:	SOLICITATION NO.: CONTRACT NO.: DRAWING NUMBER: SS DATE: FILE NAME: SIZE:
BONNEVILLE LOCK AND DAM BRADFORD ISLAND FISH LADDER MINOR LAMPREY MODIFICATIONS CAMERA SUPPORT GUIDES PLAN AND SECTIONS	
SHEET IDENTIFICATION <b>S-504</b> <small>OF</small>	



US Army Corps of Engineers

BONNEVILLE LOCK AND DAM  
BRADFORD ISLAND  
FISH LADDER  
MINOR LAMPREY MODIFICATIONS  
CAMERA SUPPORT GUIDES  
SECTIONS

SHEET IDENTIFICATION  
S-505

DESIGNED BY:	DATE:
DRAWN BY:	CHECKED BY:
SUBMITTED BY:	CONTRACT NO.:
PLUT SCALE:	PLUT DATE:
FILE NAME:	DRAWING NUMBER:
SIZE:	SS/DATE/SS/DATE: