

US Army Corps  
of Engineers  
Portland District

# BONNEVILLE LOCK AND DAM WASHINGTON SHORE FISH LADDER FY2019 FISH ACCORDS - LAMPREY PASSAGE PLANS AND SPECIFICATIONS DRAWING SET - 90% REVIEW

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.

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DISTRICT COMMANDER

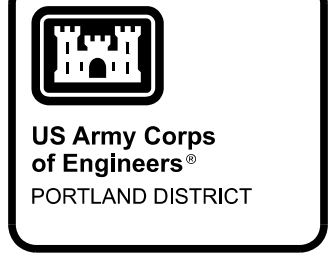
DATE: \_\_\_\_\_

SOLICITATION NUMBER: \_\_\_\_\_

REVISION MARK	FILE NAME	SHEET ID	DRAWING TITLE	SHEET ACTION No.	REVISION MARK	FILE NAME	SHEET ID	DRAWING TITLE	SHEET ACTION No.
<b>GENERAL PLANS</b>					<b>ELECTRICAL PLANS</b>				
90% P&S	BDF1.123_G-001XXX.DGN	G-001	DRAWING INDEX SHEET NO.1	2	90% P&S	BDF1.123_E-001.dgn	E-001	GENERAL NOTES, LEGAND -- AND ABBREVIATIONS	2
90% P&S	BDF1.123_G-002XXX.DGN	G-002	DRAWING INDEX SHEET NO.2	2	90% P&S	BDF1.123_E-101.dgn	E-101	KEY PLAN	2
	BDF1.123_G-003XXX.DGN	G-003	RESERVED	2	90% P&S	BDF1.123_E-103.dgn	E-102	SITE PLAN	2
90% P&S	BDF1.123_G-004XXX.DGN	G-004	GENERAL NOTES AND SYMBOLS	2	90% P&S	BDF1.123_E-401.dgn	E-401	ADULT FISH FACILITY -- FIBER OPTICS ROUTING MODIFICATIONS	2
90% P&S	BDF1.123_G-005XXX.DGN	G-005	DISTRICT BOUNDARY, LOCAL VICINITY, PROJECT SITE MAPS AND PROJECT PHOTO	2	90% P&S	BDF1.123_E-402.dgn	E-402	ADULT FISH LADDER CONTROL SECTION -- DEMOLITION PLAN	2
90% P&S	BDF1.123_G-006XXX.DGN	G-006	FISH LADDER EXIT CONTROL MODIFICATIONS ISOMETRIC LOOKING NORTHEASTERLY	2	90% P&S	BDF1.123_E-403.dgn	E-403	ADULT FISH LADDER CONTROL SECTION -- DEMOLITION SECTION VIEW	2
	BDF1.123_G-007XXX.DGN	G-007	FISH LADDER EXIT CONTROL MODIFICATIONS PLAN	2	90% P&S	BDF1.123_E-404.dgn	E-404	ADULT FISH LADDER CONTROL SECTION -- PLAN - NEW BAFFLES AND ANTENNAS	2
	BDF1.123_G-008XXX.DGN	G-008	RESERVED	2	90% P&S	BDF1.123_E-405.dgn	E-405	ADULT FISH LADDER CONTROL SECTION -- MODIFIED SECTION VIEW	2
<b>STRUCTURAL PLANS</b>									
GENERAL STRUCTURAL ARRANGEMENTS AND NOTES									
90% P&S	BDF1.123_S-001XXX.DGN	S-001	GENERAL STRUCTURAL NOTES AND SPECIFICATIONS	2	90% P&S	BDF1.123_E-501.dgn	E-501	NEW TRANSCIEVER PANELS -- LAYOUT AND DETAILS	2
90% P&S	BDF1.123_S-002XXX.DGN	S-002	CONTROL SECTION MODIFICATIONS-ISOMETRIC LOOKING NORTHEAST	2	90% P&S	BDF1.123_E-502.dgn	E-502	NEW UPS PANEL -- LAYOUT	2
90% P&S	BDF1.123_S-003XXX.DGN	S-003	CONTROL SECTION MODIFICATIONS-ISOMETRIC LOOKING SOUTHEAST	2	90% P&S	BDF1.123_E-503.dgn	E-503	NEW UPS PANEL -- TERMINAL BLOCKS AND SCHEMATIC	2
	BDF1.123_S-004XXX.DGN	S-004	RESERVED	2	90% P&S	BDF1.123_E-504.dgn	E-504	TYPICAL DETAILS	2
DEMOLITION SHEETS, FEATURE "D", (3) SHEETS									
90% P&S	BDF1.123_SD101XXX.DGN	SD101	CONTROL SECTION DEMOLITION KEY PLAN	2	90% P&S	BDF1.123_E-505.dgn	E-505	EXISTING TRANSCIEVER POWER DIST. PANEL -- MODIFICATIONS	2
90% P&S	BDF1.123_SD102XXX.DGN	SD102	CONTROL SECTION DEMOLITION PLAN AT APPROACH POOL	2	90% P&S	BDF1.123_E-506.dgn	E-506	MISCELLANEOUS DETAILS	2
90% P&S	BDF1.123_SD103XXX.DGN	SD103	CONTROL SECTION DEMOLITION PLAN AT BAFFLES No.2 THRU No.13	2	90% P&S	BDF1.123_E-601.dgn	E-601	TRANSCIEVER SYSTEM -- EXISTING BLOCK DIAGRAM	2
90% P&S	BDF1.123_SD104XXX.DGN	SD104	CONTROL SECTION DEMOLITION PLAN AT BAFFLES No.14 THRU EXIT GATE	2	90% P&S	BDF1.123_E-602.dgn	E-602	TRANSCIEVER SYSTEM -- DEMOLITION BLOCK DIAGRAM	2
CONTROL SECTION DEMOLITION SECTIONS - SHEET No.1									
90% P&S	BDF1.123_SD301XXX.DGN	SD301	CONTROL SECTION DEMOLITION SECTIONS - SHEET No.1	2	90% P&S	BDF1.123_E-603.dgn	E-603	TRANSCIEVER SYSTEM -- WIRING DIAGRAM - MODIFICATIONS	2
90% P&S	BDF1.123_SD302XXX.DGN	SD302	CONTROL SECTION DEMOLITION SECTIONS - SHEET No.2	2	90% P&S	BDF1.123_E-604.dgn	E-604	TRANSCIEVER DISTRIBUTION PANEL -- WIRING DIAGRAM - MODIFICATIONS	2
	BDF1.123_SD###XXX.DGN	SD###	RESERVED	2	90% P&S	BDF1.123_E-605.dgn	E-605	NEW TRANSCIEVER PANELS -- WIRING DIAGRAM	2
CONTROL SECTION MODIFICATIONS, FEATURE "G"									
90% P&S	BDF1.123_SG101XXX.DGN	SG101	GENERAL ARRANGEMENT - PLAN	2	90% P&S	BDF1.123_E-606.dgn	E-606	NEW UPS PANEL -- WIRING DIAGRAM	2
90% P&S	BDF1.123_SG102XXX.DGN	SG102	ENLARGED PLAN AT COUNTING STATION TO BAFFLE 1B	2	90% P&S	BDF1.123_E-701.dgn	E-701	CONDUIT AND CABLE SCHEDULE -- POWER	2
90% P&S	BDF1.123_SG103XXX.DGN	SG103	ENLARGED PLAN AT COUNTING STATION TO BAFFLES No.2A TO No.6B	2	90% P&S	BDF1.123_E-702.dgn	E-702	CONDUIT AND CABLE SCHEDULE -- CONTROL/COMMUNICATION	2
90% P&S	BDF1.123_SG104XXX.DGN	SG104	ENLARGED PLAN AT COUNTING STATION TO BAFFLES No.7A TO EXIT GATE1B	2	90% P&S	BDF1.123_E-703.dgn	E-703	MATERIAL LIST	2
90% P&S	BDF1.123_SG301XXX.DGN	SG301	RESERVED	2					
90% P&S	BDF1.123_SG302XXX.DGN	SG302	GENERAL ARRANGEMENT - SECTIONS SHEET No.1	2					
90% P&S	BDF1.123_SG501XXX.DGN	SG501	RESERVED	2					
90% P&S	BDF1.123_SG502XXX.DGN	SG502	BAFFLE PAIR NO.1 AND No.2 PLAN, ELEVATIONS, AND DETAILS	2					
90% P&S	BDF1.123_SG503XXX.DGN	SG503	ELECTRICAL SERVICE SUPPORT PLAN, ELEVATIONS, SECTIONS AND DETAILS	2					
90% P&S	BDF1.123_SG504XXX.DGN	SG504	BAFFLE PAIRS No.4, No.5, AND No.6 PLAN, ELEVATION, AND DETAILS	2					
90% P&S	BDF1.123_SG505XXX.DGN	SG505	BAFFLE PAIRS No.7, No.8, AND No.9 PLAN, ELEVATION, AND DETAILS	2					
90% P&S	BDF1.123_SG509XXX.DGN	SG509	BAFFLE DETAILS	2					
90% P&S	BDF1.123_SG515XXX.DGN	SG515	PIT ANTENNA ACCESS WALKWAY - PLAN	2					
90% P&S	BDF1.123_SG516XXX.DGN	SG516	PIT ANTENNA ACCESS WALKWAY SECTIONS - SHEET No.1	2					
90% P&S	BDF1.123_SG517XXX.DGN	SG517	PIT ANTENNA ACCESS WALKWAY SECTIONS - SHEET No.2	2					
90% P&S	BDF1.123_SG520XXX.DGN	SG520	FLOW VANES PLAN, SECTIONS, AND DETAILS	2					
90% P&S	BDF1.123_SG521XXX.DGN	SG521	LAMPREY REFUGE BOX PLAN, ELEVATIONS, AND DETAILS	2					
90% P&S	BDF1.123_SG522XXX.DGN	SG522	TANSCIEVER PANEL SUNSHADE-TYPE 1 SECTIONS AND DETAILS	2					
90% P&S	BDF1.123_SG523XXX.DGN	SG523	TANSCIEVER PANEL SUNSHADE-TYPE 2 SECTIONS AND DETAILS	2					

**NOTES:**

- SHEET ACTION NUMBER IDENTIFICATION KEY SHALL BE AS SHOWN BELOW:
  - DENOTES FIO DRAWING IS OBSOLETE AT THE COMPLETION OF THIS CONTRACT
  - DENOTES DRAWING SHALL BE UPDATED AT THE COMPLETION OF THIS CONTRACT BY THE CONTRACTOR.
  - DENOTES FIO DRAWING WILL BE SUPERCEDED BY THE FOLLOWING DRAWINGS AT THE COMPLETION OF THIS CONTRACT
  - DENOTES FIO DRAWING WAS REFERENCED BY THE FOLLOWING CONTRACT DRAWINGS
  - DENOTES FIO DRAWING IS FOR REFERENCE ONLY
- FIO DENOTES "FOR INFORMATION ONLY"
- ALL SHEETS IN THE PLANS AND SPECIFICATION DRAWING SET ARE INTENDED TO BE PRINTED IN COLOR.



DATE 07	DATE 08	DATE 09	DATE 04	DATE 03	DATE 02	DATE 01	DATE	APPR.
<b>P&amp;S REVIEW 90%</b>								MARK

DESIGNED BY:	DATE:	CHECKED BY:	SOLICITATION NO.:
FORN BY:	01/12/2023	JACKSON	SDUNLP
SUBMITTED BY:	CONTRACT NO.:	MATHEW D. HANSON, P.E.	
PLOT SCALE:	PLOT DATE:	1:1	
FILE NAME:	DRAWING NUMBER:	BDF1.123G-001XXX.dgn	
ANSI D			

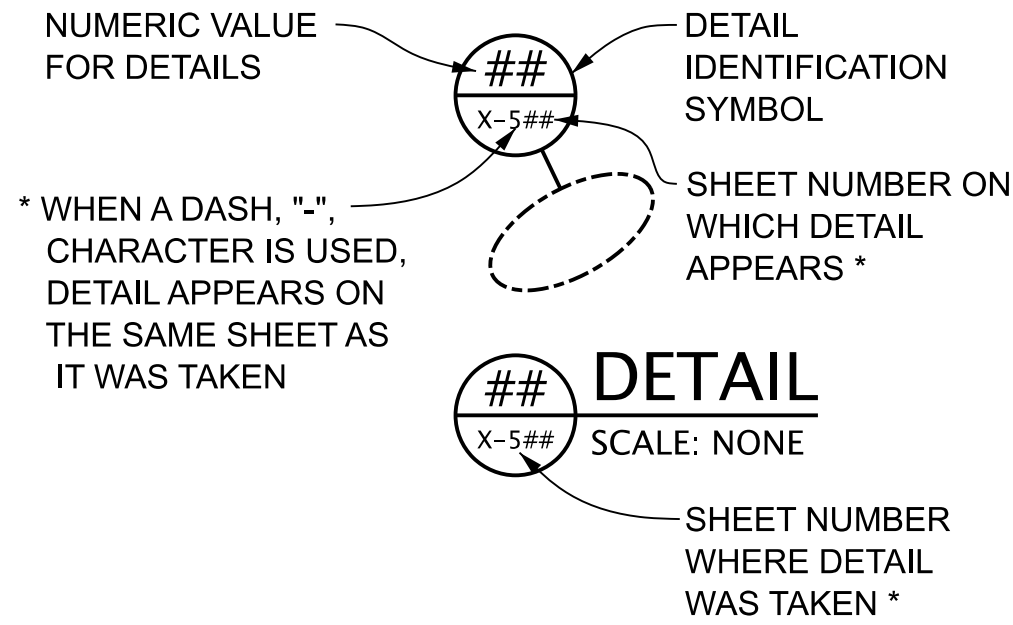
BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE  
 LADDER CONTROL SECTION MODIFICATIONS  
 DRAWING INDEX SHEET NO.1

SHEET IDENTIFICATION  
**G-001**

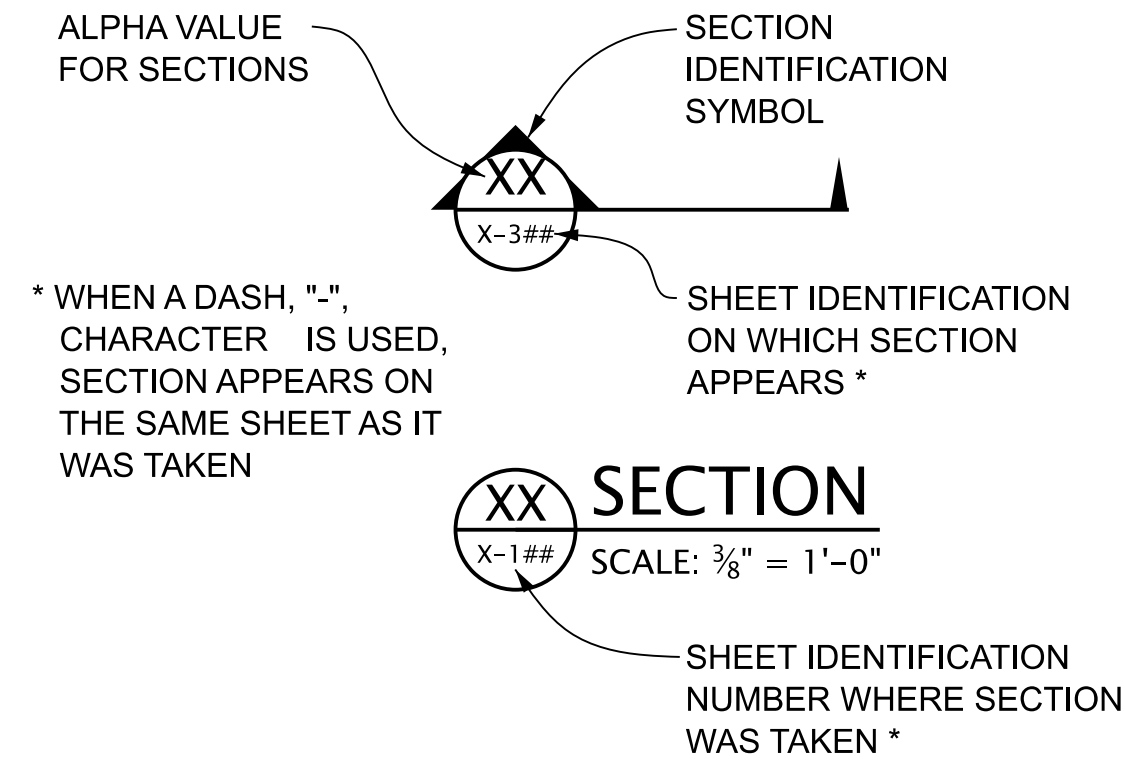


**LEGEND:**

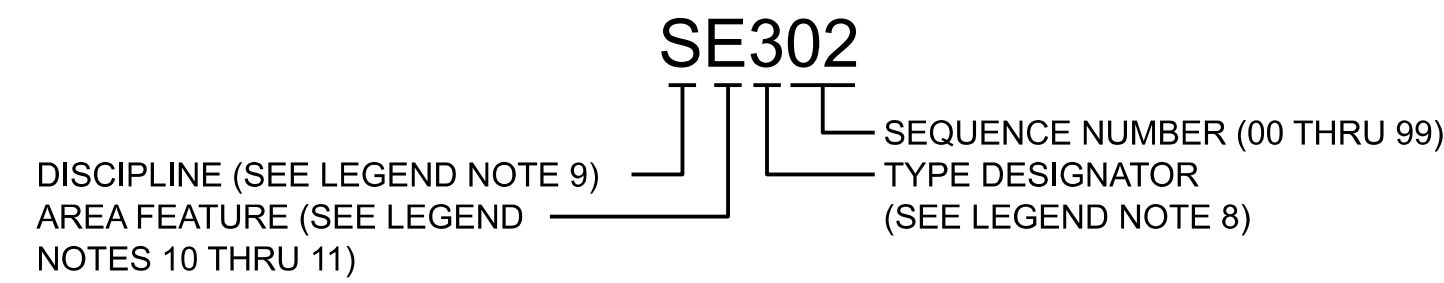
1. DETAILING CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW:



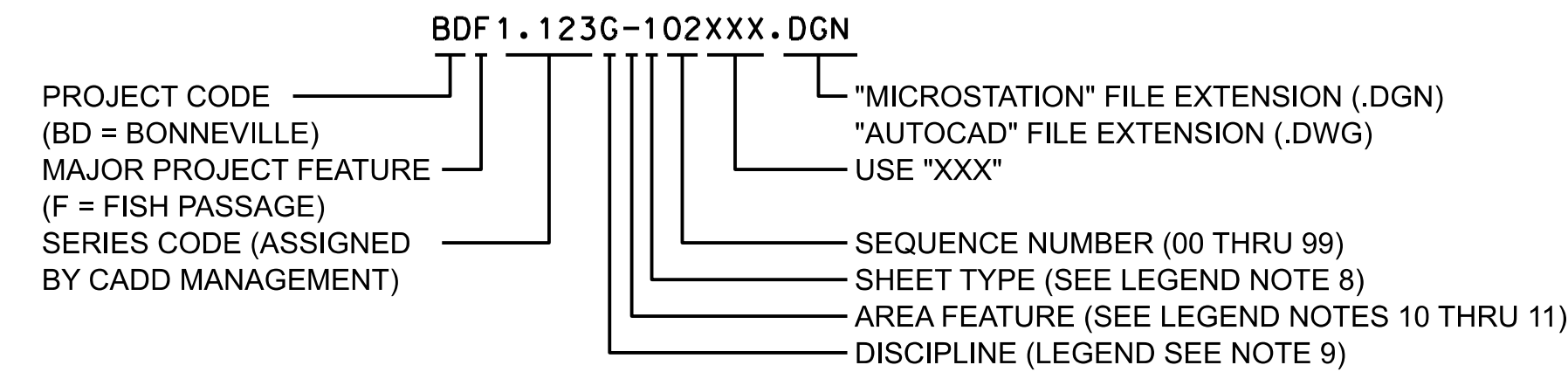
2. SECTIONING CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW:



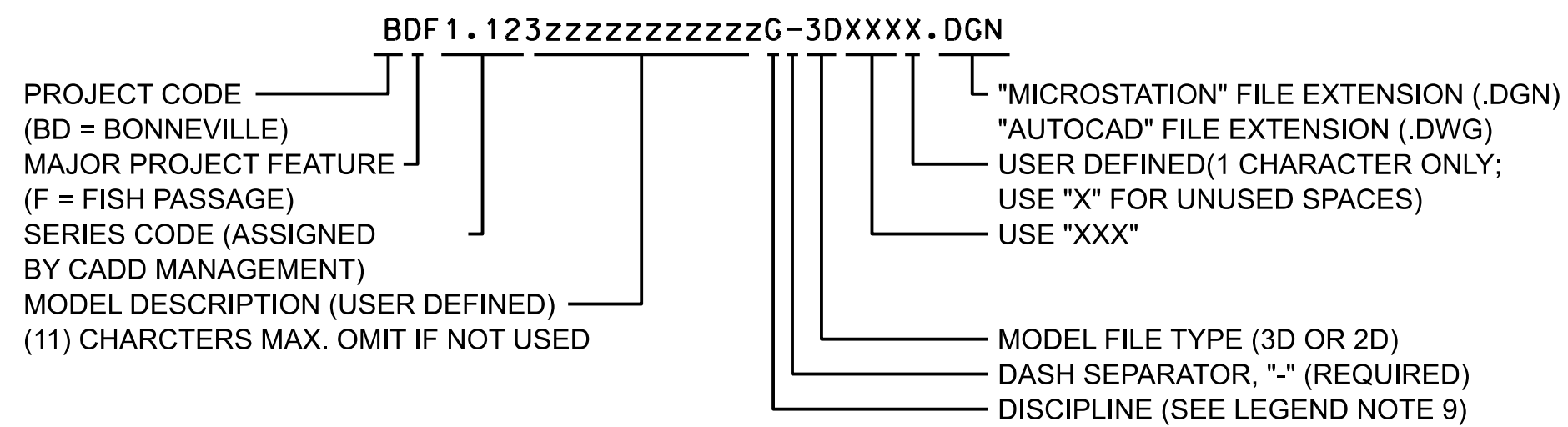
3. SHEET IDENTIFICATION CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW, EXCEPT AS NOTED IN LEGEND NOTE 4 ON THIS SHEET:



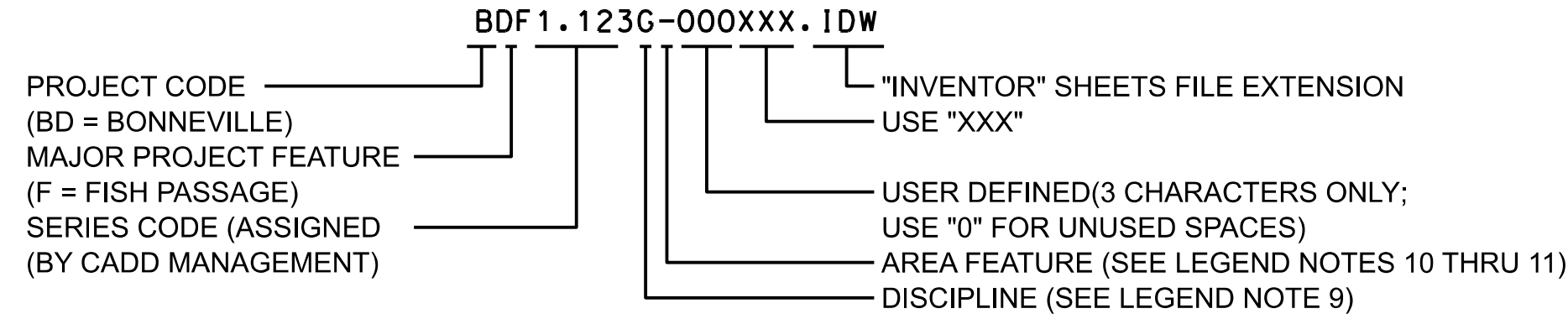
4. "MICROSTATION" / "AUTOCAD" SHEET FILE NAME CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW:



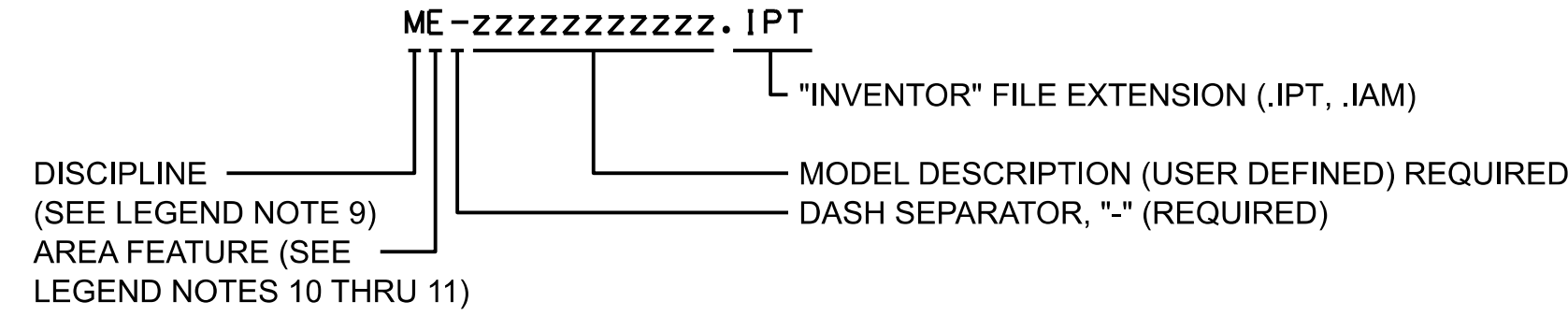
5. "MICROSTATION" / "AUTOCAD" MODEL FILE NAME CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW:



6. "INVENTOR" SHEETS FILE NAME CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW:



7. "INVENTOR" MODEL FILE NAME CONVENTION SHALL BE INTERPRETED AS SHOWN BELOW:



8. TYPE DESIGNATOR FOR SHEET IDENTIFICATION SHALL BE AS SHOWN BELOW:

- 0 DENOTES GENERAL
- 1 DENOTES PLANS
- 2 DENOTES ELEVATIONS
- 3 DENOTES SECTIONS
- 4 DENOTES ENLARGED VIEWS
- 5 DENOTES DETAILS
- 6 DENOTES SCHEDULES AND SCHEMATICS
- 7 DENOTES REINFORCEMENT (USER DEFINED)
- 8 DENOTES USER DEFINED

9. ENGINEERING DISCIPLINE DESIGNATOR FOR SHEET IDENTIFICATION SHALL BE AS SHOWN BELOW:

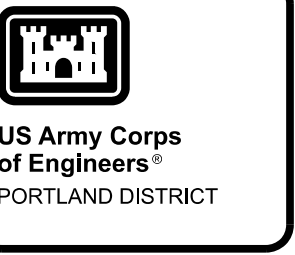
- G DENOTES GENERAL
- S DENOTES STRUCTURAL
- E DENOTES ELECTRICAL

10. STRUCTURAL AREA FEATURE DESIGNATOR FOR "S" SHEETS IDENTIFICATION SHALL BE AS SHOWN BELOW:

- DENOTES STRUCTURAL GENERAL FEATURES (OR "ALL SHEETS ARE STRUCTURAL")
- D DENOTES LADDER CONTROL SECTION DEMOLITION
- G DENOTES LADDER CONTROL SECTION MODIFICATIONS

11. ELECTRICAL AREA FEATURE DESIGNATOR FOR "E" SHEETS IDENTIFICATION SHALL BE AS SHOWN BELOW:

- DENOTES GENERAL FEATURES (OR "ALL SHEETS ARE ELECTRICAL")

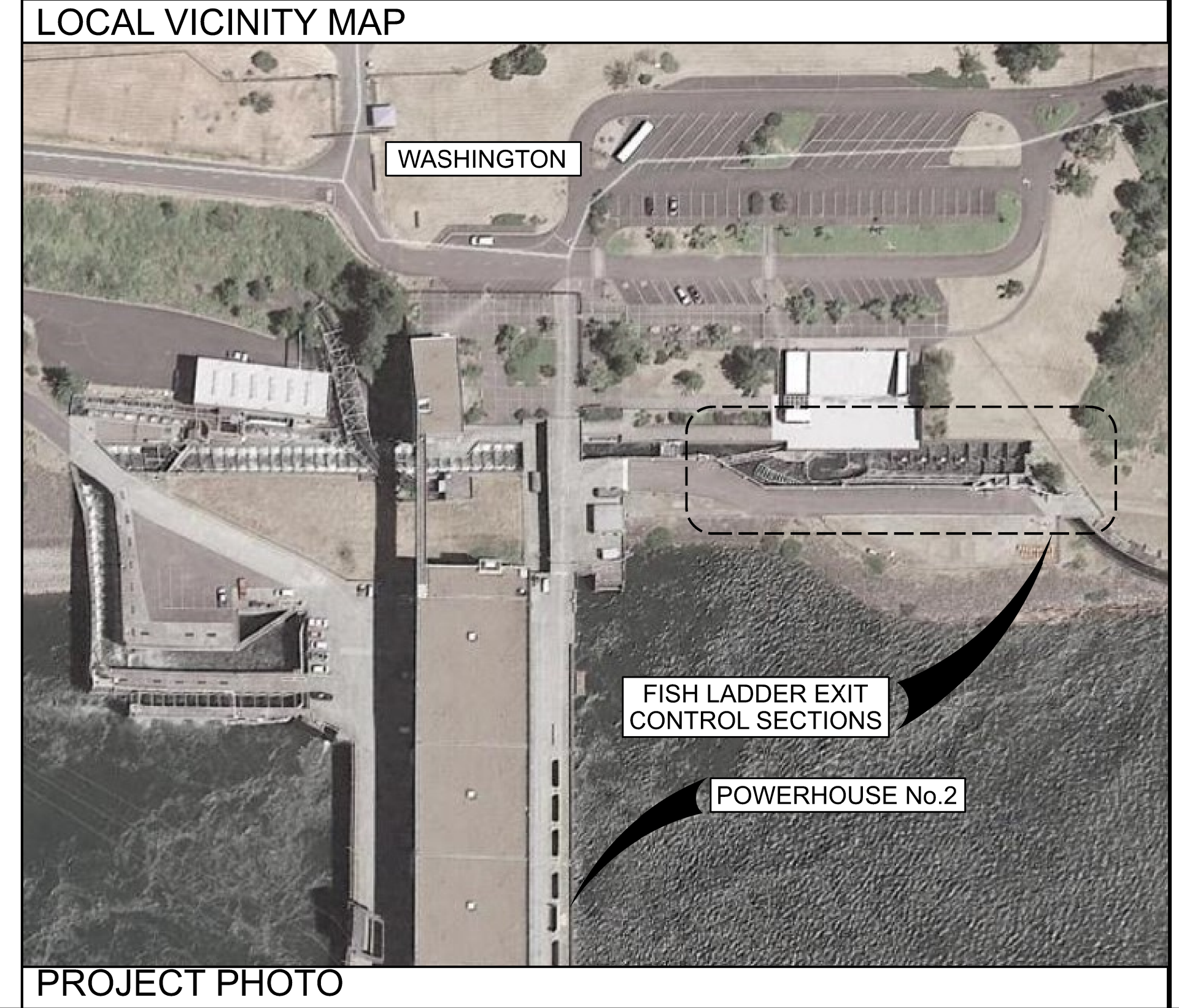
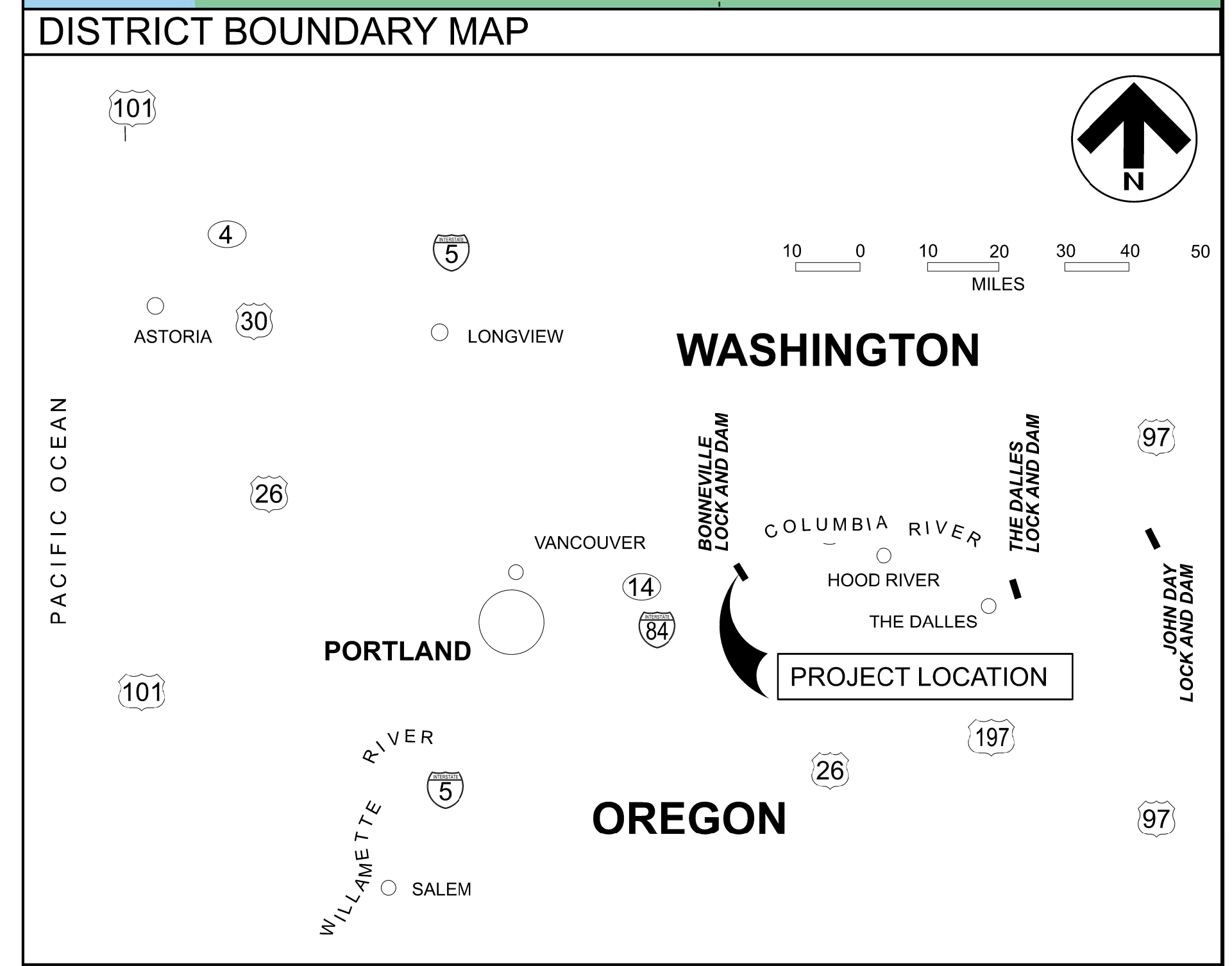
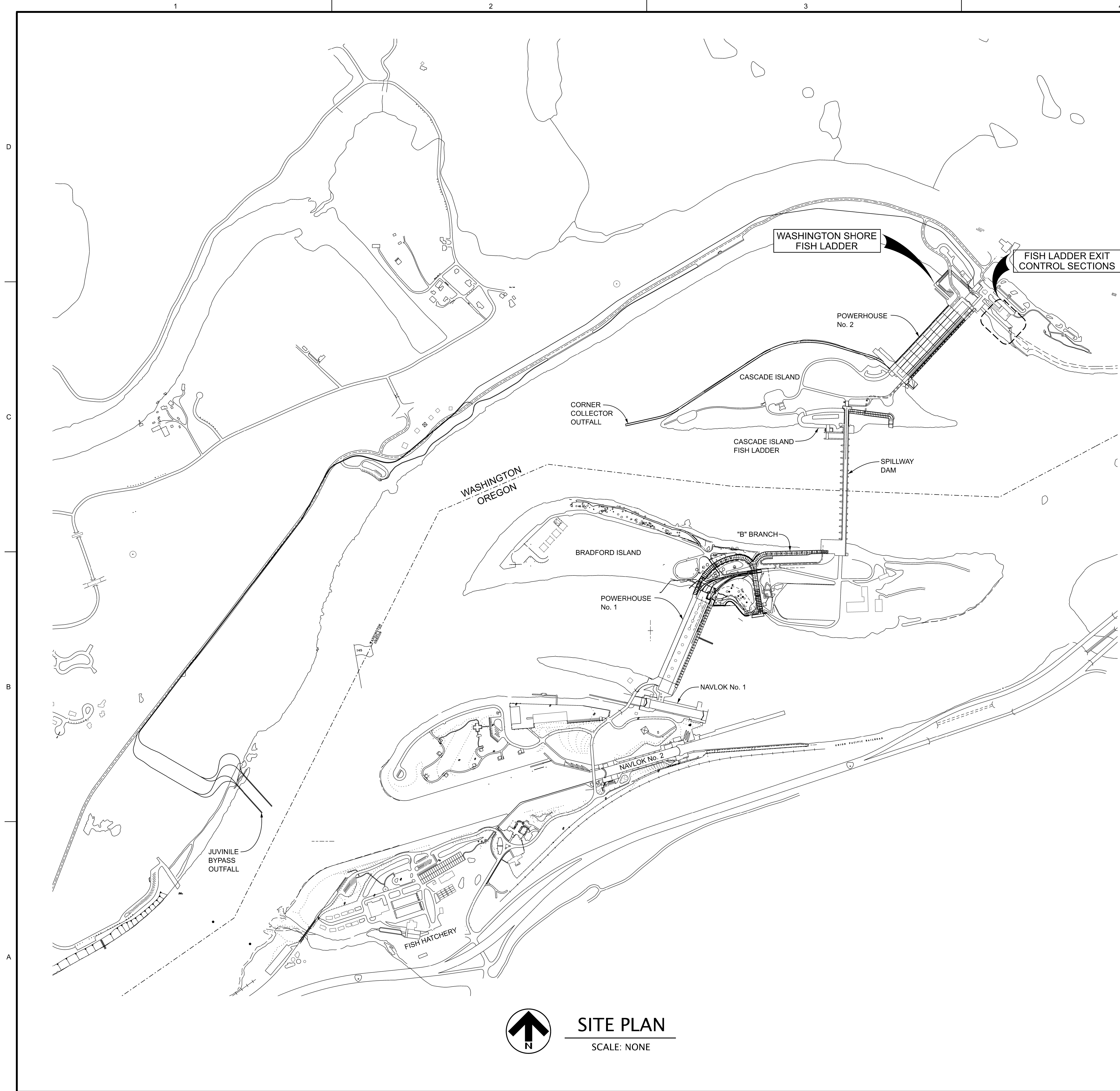


DATE 07	DATE 06	DATE 05	DATE 04	DATE 03	DATE 02	DATE 01	DATE	APPR.
<b>P&amp;S REVIEW 90%</b>								
								MARK

DESIGNED BY:	DATE:	CHECKED BY:	SOLICITATION NO.:
U.S. ARMY CORPS OF ENGINEERS	01/12/2023	JACOBSON	S. DUNLOP
PORTLAND DISTRICT			
PORTLAND, OREGON		SUBMITTED BY:	CONTRACT NO.:
		MATTHEW D. HANSON, P.E.	
		PLOT SCALE:	PLOT DATE:
		1:1	
		FILE NAME:	DRAWING NUMBER:
		BDT1.123G-04XXX.dgn	

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
GENERAL NOTES AND SYMBOLS

SHEET IDENTIFICATION  
**G-004**



**US Army Corps of Engineers**  
PORTLAND DISTRICT

DATE 07	DATE 06	DATE 05	DATE 04	DATE 03	DATE 02	DATE 01	APPR.

**P&S REVIEW 90%**

DESIGNED BY:	CHECKED BY:	SOLICITATION NO.:	CONTRACT NO.:
DRAWN BY:	DRAWN BY:	CONTRACT NO.:	CONTRACT NO.:
SUBMITTED BY:	SUBMITTED BY:	CONTRACT NO.:	CONTRACT NO.:
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U.S. ARMY CORPS OF ENGINEERS  
PORTLAND DISTRICT  
PORTLAND, OREGON

**BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
PROJECT SITE MAPS**

SHEET IDENTIFICATION  
**G-005**



**NOTES:**

- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
- 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS.
- 3.) ALL FEATURES SHOWN ARE NEW UNLESS INDICATED OTHERWISE.



US Army Corps  
of Engineers  
PORTLAND DISTRICT

DATE 07	DATE 06
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DATE	APPR.

P&S REVIEW 90%

DESCRIPTION

MARK

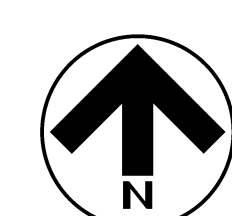
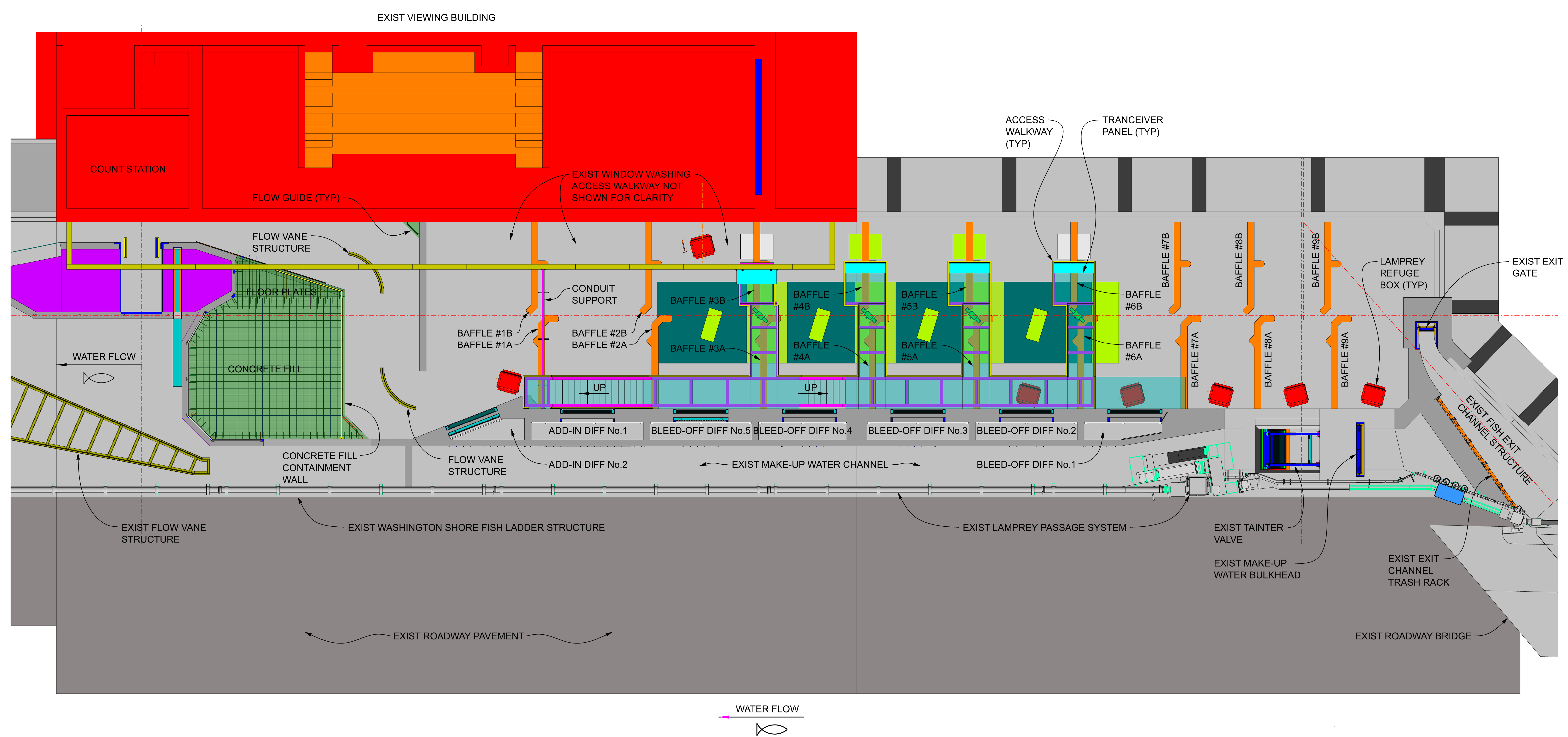
DATE: 10/11/2023	SOLICITATION NO.:
DESIGNED BY: JACOBSON	CONTRACT NO.:
CHECKED BY: S. DUNLOP	PROJECT ID:
SUBMITTED BY: WATKINS	DRAWING NUMBER:
DATE: 10/11/2023	DATE: 10/11/2023
SCALE: 1" = 10'	FILE NAME: BDF-1235-07XXX.dgn
SIZE: ANSIE	

DESIGNED BY: JACOBSON	CHECKED BY: S. DUNLOP
SUBMITTED BY: WATKINS	DATE: 10/11/2023
DATE: 10/11/2023	SCALE: 1" = 10'
SIZE: ANSIE	FILE NAME: BDF-1235-07XXX.dgn

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

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
GENERAL ARRANGEMENT  
PLAN

SHEET IDENTIFICATION  
**G-007**



**PLAN - FISH LADDER CONTROL SECTION MODIFICATIONS**

SCALE: 1/8" = 1'-0"





# GENERAL STRUCTURAL NOTES:

## 1. SCOPE

1.1 THESE GENERAL STRUCTURAL NOTES COVER STRUCTURAL FEATURES OF THE BONNEVILLE WASHINGTON SHORE FISH LADDER MODIFICATIONS FOUND ON THE "S" SERIES DRAWINGS FOR THE FY2019 FISH ACCORDS LAMPREY PASSAGE PRODUCT.

1.2 THESE NOTES ARE TYPICAL UNLESS NOTED OR DETAILED OTHERWISE ON DRAWINGS.

## 2. CONCRETE

2.1 THERE IS ONE CONCRETE MIX REQUIRED FOR THIS CONTRACT. THE CONTRACTOR SHALL DEVELOP AND SUBMIT THE MIX ACCORDING TO SECTION 03 IN THE SPECIFICATIONS. THE MIX DESIGN IS:

MIX 1 - CAST-IN-PLACE CONCRETE. THE 28 DAY COMPRESSIVE STRENGTH FOR THIS CAST-IN-PLACE CONCRETE (f<sub>c</sub>) SHALL BE 5000 PSI (STANDARD FOR FRP).

2.2 ALL EXPOSED EDGES AND CORNERS OF CONCRETE SHALL HAVE 3/4" CHAMFERS U.N.O.

2.3 ALL NEW AND EXISTING CONCRETE SURFACES THAT WILL HAVE NEW CONCRETE PLACED AGAINST IT WILL BE PREPARED AS PER THE SPECIFICATIONS.

## 3. CONCRETE FINISHING

3.1 ALL WET SURFACES INSIDE THE FISH LADDER, SHALL RECEIVE A CLASS A FINISH. ALL OTHER SURFACES SHALL RECEIVE A CLASS C FINISH.

3.2 ANY DAMAGE TO THE CONCRETE FINISH DURING CONSTRUCTION SHALL BE REPAIRED.

3.3 AGGREGATE MUST MEET THE QUALITY AND GRADE REQUIREMENT OF ASTM C33. CLASS DESIGNATIONS 4M OR BETTER

3.4 CONCRETE FORMWORK REMOVAL. SEE SPECIFICATION SECTION 03 11 13.00 25 PARAGRAPH 3.4 FOR LIMITATIONS AND CONCRETE FORM REMOVAL.

## 4. CONCRETE COVER

4.1 CONCRETE COVER SHALL BE A MINIMUM OF 2" IN ACCORDANCE WITH ACI 318-19. (FOR STEEL REBAR) AND ACI 440 (FOR FRP REBAR) SEE PLANS FOR SPECIFIC COVER DIMENSIONS.

## 5. STEEL REINFORCEMENT

5.1 PREPARATION FOR PLACING DRAWINGS AND BAR BENDING SCHEDULES SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF ACI 315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES". REINFORCEMENT PLACEMENT DRAWING SHOWING LENGTH AND LOCATIONS OF ALL SPLICES AND BAR BENDING SCHEDULES NEED TO BE SUBMITTED TO THE GOVERNMENT FOR APPROVAL.

5.2 ALL REINFORCEMENT STEEL SHALL CONFORM TO ASTM A 615, GRADE 60 REQUIREMENTS.

5.3 UNLESS NOTED OTHERWISE, ALL HOOKS SHALL BE STANDARD HOOKS AS DEFINED BY ACI 318-19. BAR SPLICE LOCATIONS WILL BE DESIGNED BY THE CONTRACTOR AND SHOWN ON SUBMITTALS.

5.4 BAR SPACING DIMENSIONS ARE MEASURED TO THE CENTERS OF BARS.

5.5 A SYMBOL SUCH AS  $\overline{\text{STAG}}$   $\overline{\text{SPL}}$  INDICATES REINFORCING BARS TO BE STAGGER LAP SPLICED (CLASS B) BY ALTERNATING LAP LOCATIONS AS SHOWN, AND PROVIDING THE INDICATED LAP LENGTH.

5.6 ANY EMBEDDED STAINLESS STEEL BOLTS ARE OTHER HARDWARE SHALL NOT BE ALLOWED TO CONTACT THE REINFORCING STEEL IN THE CONCRETE.

5.6 A NOTATION SUCH AS  $\overline{7'-6"} \overline{1'-6"} \overline{1'-6"}$  FOLLOWING THE BAR SIZE AND SPACING INDICATES A BENT BAR WITH AN OUTSIDE-TO-OUTSIDE DIMENSION (NOT BAR LENGTH) OF 7'-6". A LETTER OR DIMENSION ON THE SHORT LEG INDICATES THE FOLLOWING:

L: EXTEND BAR LAP SPLICE LENGTH BEYOND BEND

E: EXTEND BAR EMBEDMENT LENGTH BEYOND CROSSING BAR

DIMENSION: OUTSIDE-TO-OUTSIDE LENGTH OF SHORT LEG

WHEN NO LETTER OR DIMENSION IS GIVEN, PROVIDE A STANDARD 90° HOOK

5.7 ALL BARS SHALL BE SPACED AS SHOWN ON DRAWINGS.

5.8 REINFORCING BARS SHALL NOT CONTINUE ACROSS AN EXPANSION OR CONTRACTION JOINT UNLESS SHOWN IN THE DRAWINGS. REBAR SHALL CONTINUE ACROSS CONSTRUCTION JOINTS AS DETAILED IN THE DRAWINGS.

5.9 VERTICAL REINFORCEMENT PROJECTING ABOVE THE FORMS SHALL BE SUPPORTED TO PREVENT THE BREAKING OF BOND BETWEEN THE REINFORCING BARS AND FRESHLY PLACED CONCRETE.

5.10 DEVELOPMENT AND SPLICE LENGTHS FOR REINFORCING BARS USED IN THIS CONTRACT SHALL BE AS DESCRIBED IN A.C.I. 318-19 U.N.O., AND ARE SHOWN IN THE TABLES.

5.11 TOP BARS ARE HORIZONTAL REINFORCEMENT SO PLACED THAT MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE DEVELOPMENT LENGTH OR SPLICE.

## 6 GLASS FIBER-REINFORCED POLYMER (GFRP) REINFORCEMENT

6.1 ALL PIT TAG BAFFLES MUST USE GFRP REBAR AND MUST CONFORM TO ACI 440.

6.2 DEVELOPMENT AND SPLICE LENGTH FOR REINFORCING BARS USED IN THIS CONTRACT WILL BE AS DESCRIBED IN ACI 440.11-22 UNO.

6.3 THE TABLE PROVIDED BELOW IS ONLY FOR FIELD INSPECTION REFERENCE. ANY OMISSIONS OR VARIANCE FROM ACI SHALL NOT BE CONSTRUED AS CHANGES IN ACI REQUIREMENTS - known missing table

6.4 TOP BARS ARE HORIZONTAL REINFORCEMENT BARS WHICH HAVE BEEN PAVED WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BARS.

## 7. STRUCTURAL STEEL

7.1 ALL STRUCTURAL STEEL PLATES AND SHAPES WILL CONFORM TO ASTM A572 GRADE 50 UNLESS OTHERWISE NOTED IN THE DRAWINGS.

7.2 STRUCTURAL STEEL TUBING WILL CONFORM TO ASTM A500, GRADE C, 50 ksi.

7.3 STRUCTURAL STEEL BEAMS WILL CONFORM TO ASTM A992, GRADE 50.

7.4 GALVANIZING OF STEEL WILL CONFORM TO ASTM A123, UNLESS OTHERWISE NOTED.

7.5 ALL CARBON STEEL BOLTS, NUTS, AND WASHERS USED FOR STRUCTURAL STEEL CONNECTIONS SHALL BE OF THE MATERIAL, GRADE, TYPE, CLASS, STYLE AND FINISH INDICATED BELOW UNLESS NOTED OTHERWISE:

a. BOLTS - ASTM F3125 GRADE A325, TYPE 1, GALVANIZED

b. NUTS - ASTM A563, GRADE DH, TYPE 1, GALVANIZED

c. PLAIN WASHERS - ASTM F844, TYPE 1, GALVANIZED

7.6 PERFORM ALL WELDING AND CERTIFY ALL WELDERS IN ACCORDANCE WITH AWS D1.1.

7.7 ALL WELDS SHALL USE E70XX ELECTRODES UNO.

7.8 FIELD WELDING WILL NOT BE PERMITTED UNLESS SHOWN ON THE DRAWINGS OR AUTHORIZED BY THE CONTRACTING OFFICER.

7.9 REPAIR GALVANIZING AFTER WELDING WHERE APPLICABLE PER SPECIFICATIONS.

7.10 ALL WELDS SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED. EVERY ACCESSIBLE JOINT NOT HAVING A DESIGNATED TYPE AND SIZE OF WELD SHALL BE SEAL WELDED PER AISC MINIMUM WELD SIZE.

7.11 ALL SHARP EDGES SHALL BE GROUND TO A 1#16" RADIUS MIN. UNO.

7.12 GRIND ALL GROOVE WELDS SMOOTH SUCH THAT THERE ARE NO BURRS, OFFSETS OR ROUGH AREAS. GRIND ALL WELDS ON HANDRAILS SMOOTH SUCH THAT THERE ARE NO BURRS, OFFSETS OR ROUGH AREAS.

7.13 ALL HANDRAIL IS 1½" SCH 40 PIPE. ALL HANDRAIL POSTS SHALL BE 1½" SCH 80 PIPE. ALL HANDRAIL MATERIAL SHALL BE ASTM A53, TYPE S, GRADE B (GALVANIZED), EXCEPT IN THE EXCLUSION ZONE NEAR THE PIT ANTENNAS PER 9.5 BELOW.

## 8. EMBEDDED METALS

8.1 PROVIDE CONCRETE ANCHORS OF THE SIZE AND TYPE INDICATED IN THE DRAWINGS.

8.2 INSTALL CONCRETE ANCHORS PER MANUFACTURERS PUBLISHED WRITTEN RECOMMENDATIONS.

8.3 ALL EMBEDDED (CAST-IN-PLACE) STEEL THREADED ANCHOR RODS (CONCRETE ANCHORS) MUST MEET ASTM F1554, GRADE 36 REQUIREMENTS AND MUST BE GALVANIZED. ANCHOR NUTS MUST MEET ASTM A563, GRADE DH, HEX STYLE (GALVANIZED). WASHERS MUST MEET ASTM F436 (GALVANIZED).

## 9. MISCELLANEOUS

9.1 GROUT SHALL BE NON SHRINK, NON METALLIC TYPE WITH COMPRESSIVE STRENGTH OF 5000 PSI.

9.2 ALL GROUT USED FOR BASE PLATES SHALL HAVE 100% BEARING AFTER PLACEMENT.

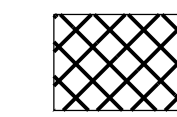
9.3 PLACE GROUT IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. DO NOT USE GROUT WHICH HAS BEGUN TO SET OR IF MORE THAN ONE HOUR HAS ELAPSED AFTER INITIAL MIXING. FILL BLIND CAVITIES BY PRESSURE INJECTION UNDER CONTROLLED VENTING.

9.4 PROTECT FRESHLY PLACED GROUT FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. COMPLY WITH MANUFACTURER'S REQUIREMENTS FOR COLD-WEATHER AND HOT-WEATHER PROTECTION DURING CURING.

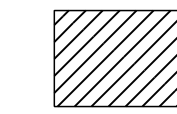
9.5 ALL METALS WITHIN THE REGION SHOWN AS "2007 INVERT MODIFICATIONS AND WATER STOP" ON SD103 MUST BE OF A NON-MAGNETIC ALLOY.

# STRUCTURAL LEGEND:

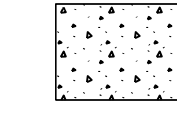
1. MATERIAL PATTERNS SHALL BE AS SHOWN BELOW:



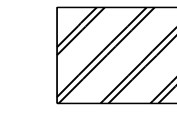
DEMOLITION OF CONCRETE



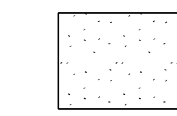
DENOTES EXISTING CONCRETE



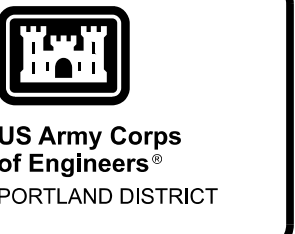
DENOTES NEW CONCRETE



DENOTES STEEL AND OTHER METALS



DENOTES GROUT



US Army Corps of Engineers  
PORTLAND DISTRICT

DATE: 02/25/2023	DESIGNED BY: JACOB WILSON	CHECKED BY: JACOB WILSON	SOLICITATION NO.:	CONTRACT NO.:
DESIGNED BY: JACOB WILSON	DATE: 02/25/2023	FILE NAME: BDF11235-001XXX.dgn	MARK	DESCRIPTION
<b>P&amp;S REVIEW 90%</b>				

U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON	DESIGNED BY: JACOB WILSON DATE: 02/25/2023 FILE NAME: BDF11235-001XXX.dgn
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BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
GENERAL STRUCTURAL NOTES AND  
SPECIFICATIONS

SHEET IDENTIFICATION  
**S-001**







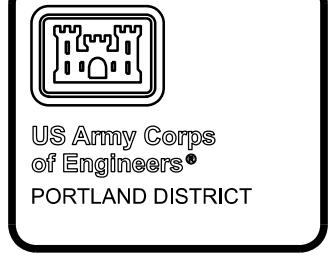






**NOTES:**

- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
- 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS.
- 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.



DATE 07	DATE 06	DATE 05	DATE 04	DATE 03	DATE 02	DATE 01	DATE

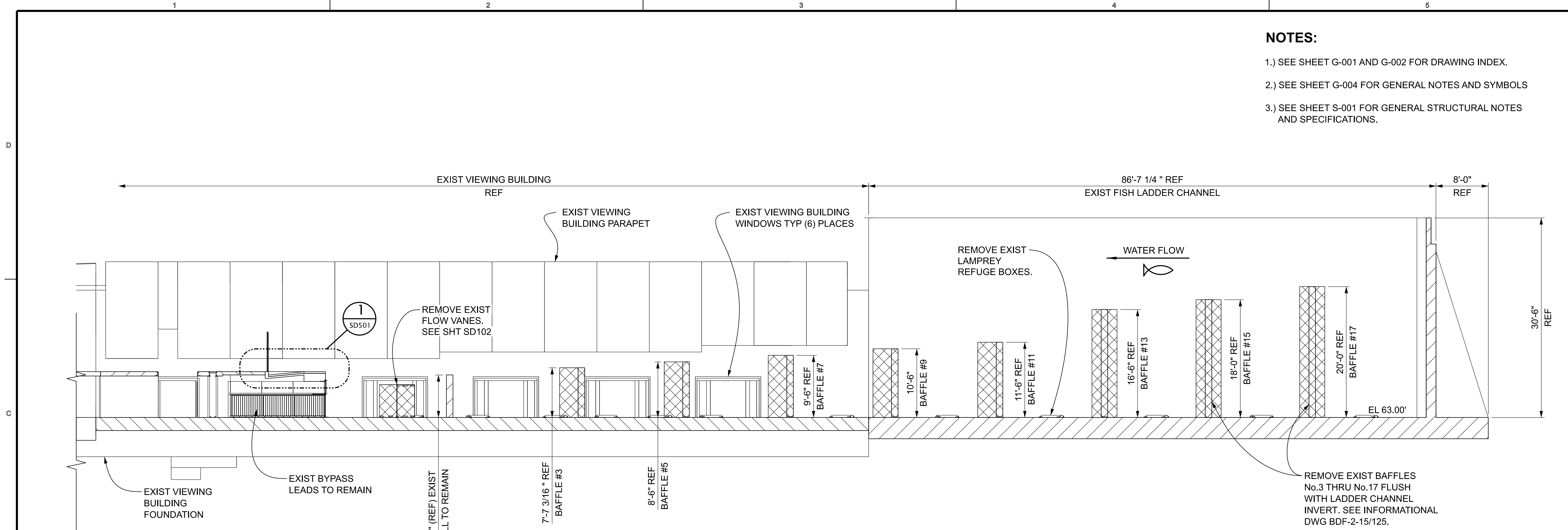
P&S REVIEW 90%

DESIGNED BY:	DATE:	CONTRACT NO.:
CHECKED BY:	01/16/2023	FYUEROY1D
DESIGNER:		
PROJECT:		
SUBMITTED BY:	FILE NAME:	DRAWING NUMBER:
MATTHEW D. HANSON, P.E.	BDP1.123SD01XXX.dgn	
PROJECT SCALE:	DATE:	
1:1		

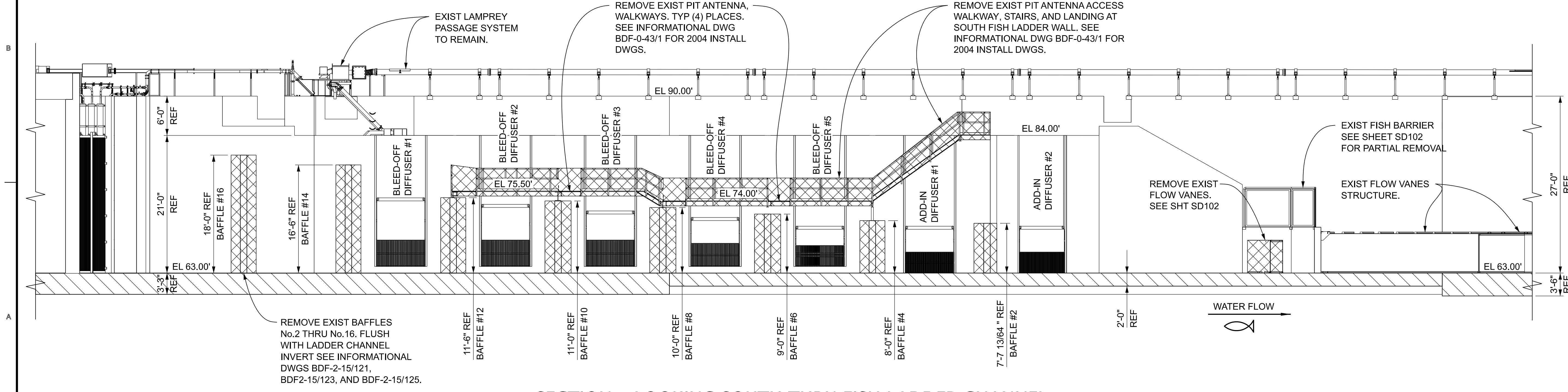
U.S. ARMY CORPS OF ENGINEERS  
 PORTLAND DISTRICT  
 PORTLAND, OREGON

BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE  
 LADDER CONTROL SECTION MODIFICATIONS  
 CONTROL SECTION DEMOLITION  
 SECTIONS - SHEET NO.1

SHEET IDENTIFICATION  
**SD301**



**A** SECTION - LOOKING NORTH THRU FISH LADDER CHANNEL  
 SD101 SCALE: 1/8" = 1'-0"

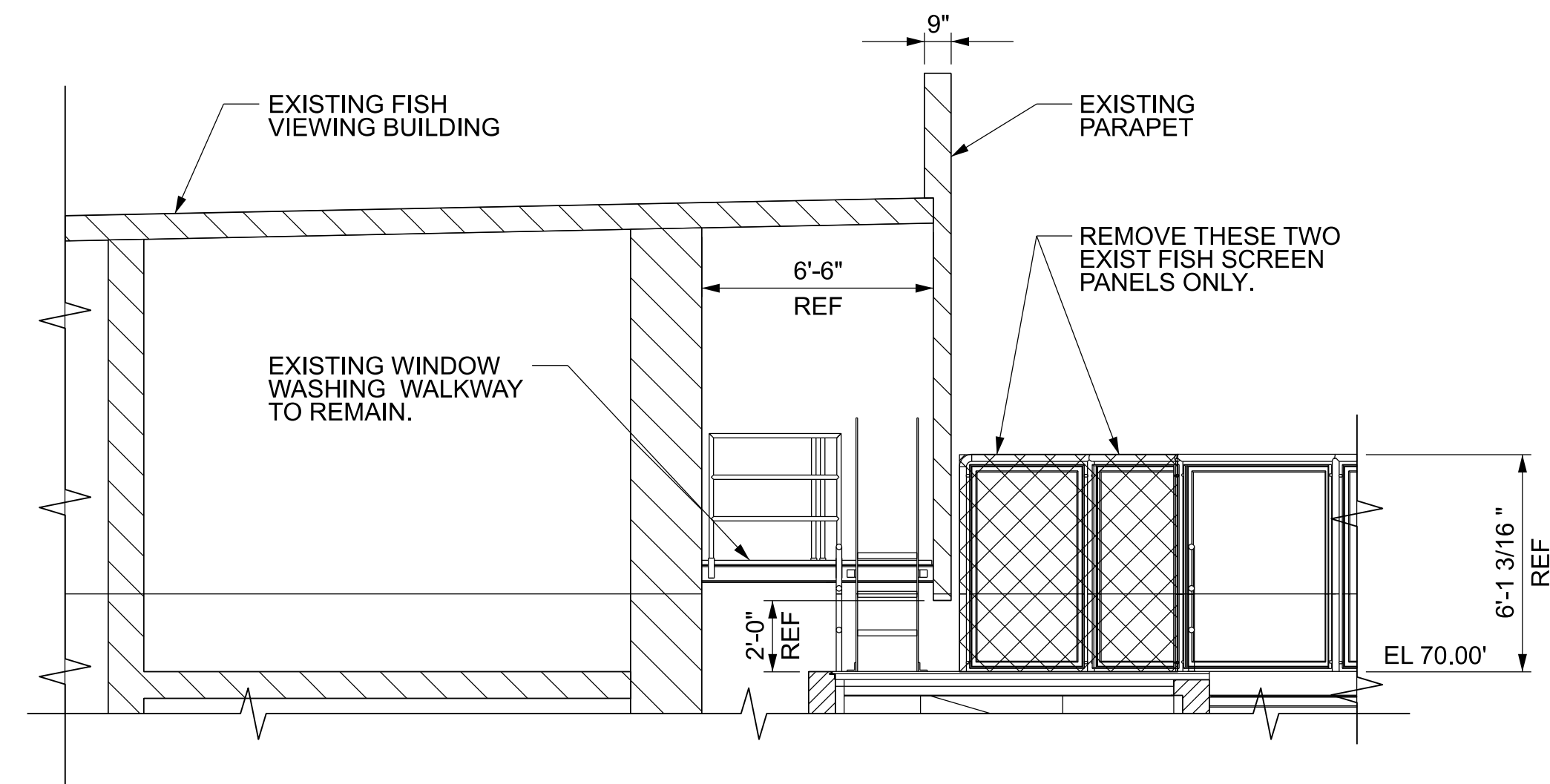


**B** SECTION - LOOKING SOUTH THRU FISH LADDER CHANNEL  
 SD101 SCALE: 1/8" = 1'-0"

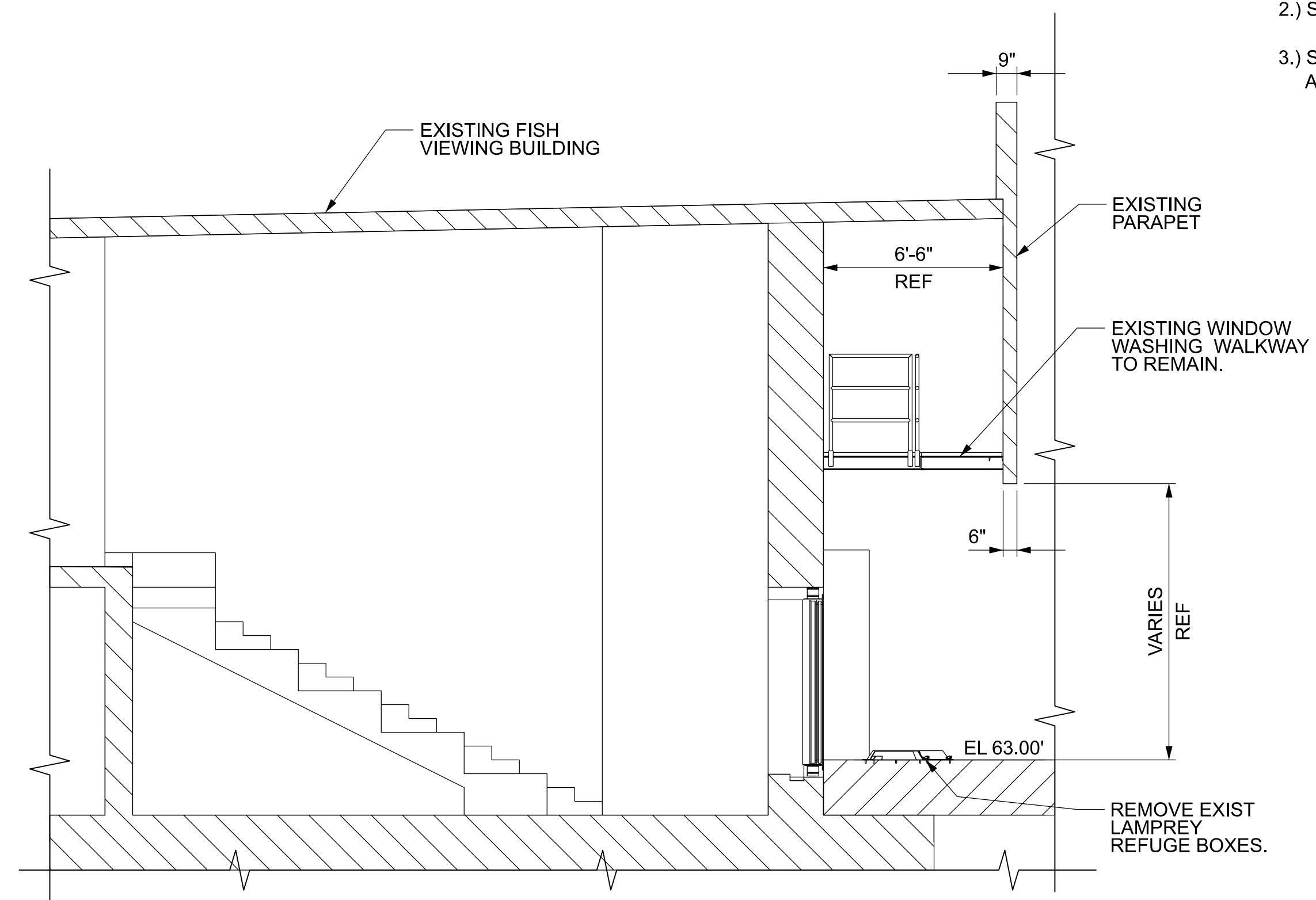


**NOTES:**

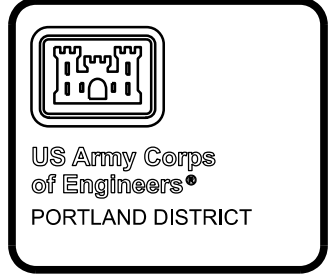
- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
- 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
- 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.



**C SECTION - LOOKING EAST COUNTING STATION**  
 SD101 SCALE: 1/4" = 1'-0"



**D SECTION - LOOKING EAST THRU VIEWING WINDOW**  
 SD101 SCALE: 1/4" = 1'-0"



DATE	DESCRIPTION	MARK
DATE 07		APPR.
DATE 08		
DATE 09		
DATE 04		
DATE 03		
DATE 02		
DATE 01		

DESIGNED BY: S. J. HANSEN	CHECKED BY: L. W. HANSON	DATE: 01/12/2023
SUBMITTED BY: MATTHEW D. HANSON, P.E.	CONTRACT NO.:	
PLLOT SCALE: 1:1	PLLOT DATE:	DRAWING NUMBER:
FILE NAME: BDT1.123SD302XXX.dgn		

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

BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE  
 LADDER CONTROL SECTION MODIFICATIONS  
 CONTROL SECTION DEMOLITION  
 SECTIONS - SHEET NO.2

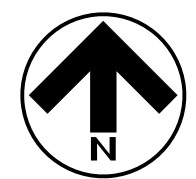
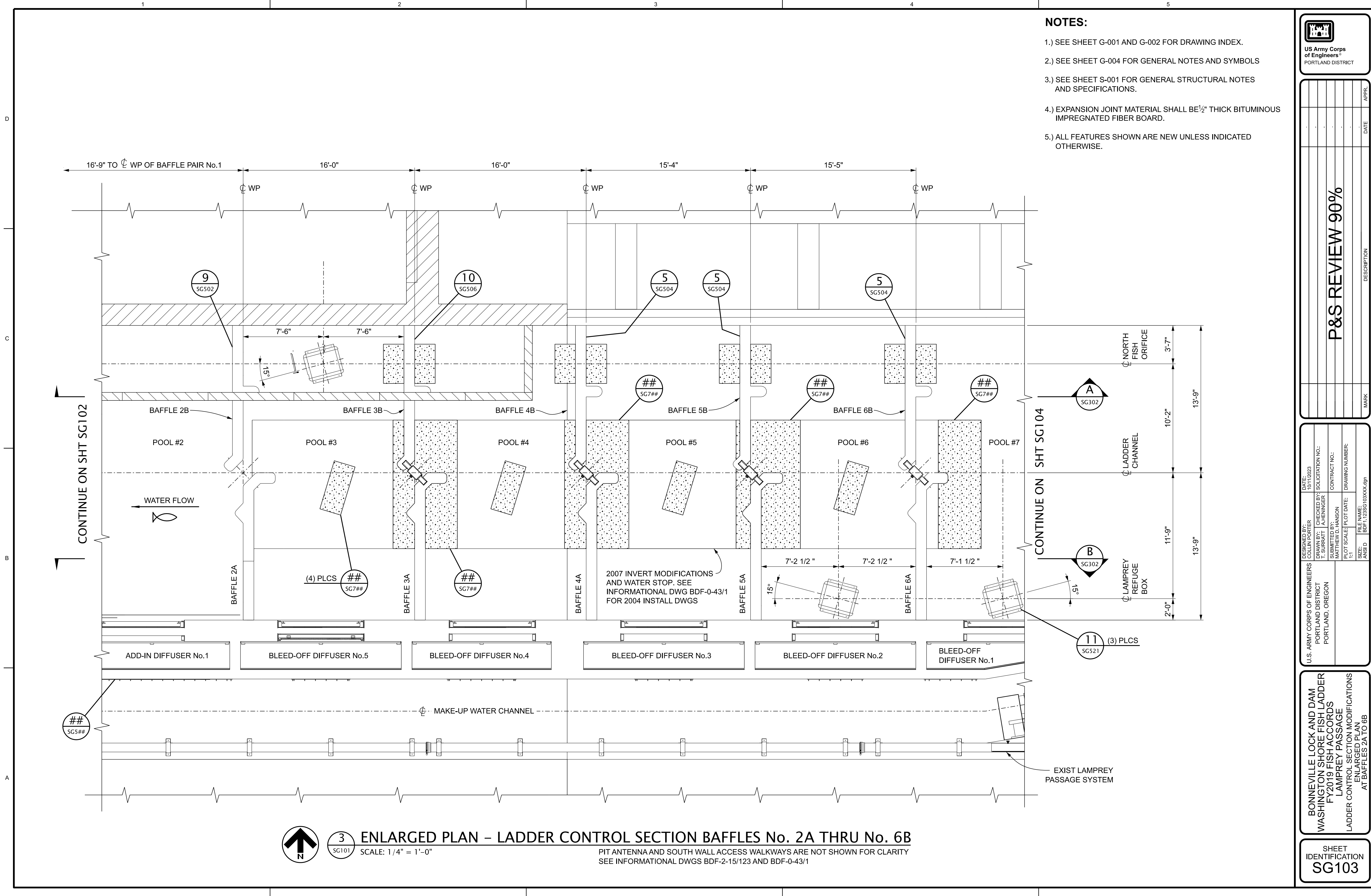
SHEET IDENTIFICATION  
**SD302**





**NOTES:**

- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
- 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
- 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.
- 4.) EXPANSION JOINT MATERIAL SHALL BE 1/2" THICK BITUMINOUS IMPREGNATED FIBER BOARD.
- 5.) ALL FEATURES SHOWN ARE NEW UNLESS INDICATED OTHERWISE.

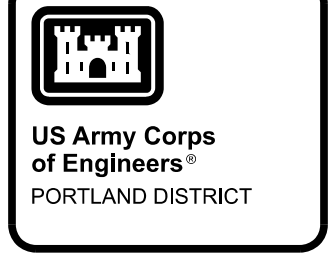


3  
SG101

**ENLARGED PLAN - LADDER CONTROL SECTION BAFFLES No. 2A THRU No. 6B**

SCALE: 1/4" = 1'-0"

PIT ANTENNA AND SOUTH WALL ACCESS WALKWAYS ARE NOT SHOWN FOR CLARITY  
SEE INFORMATIONAL DWGS BDF-2-15/123 AND BDF-0-43/1

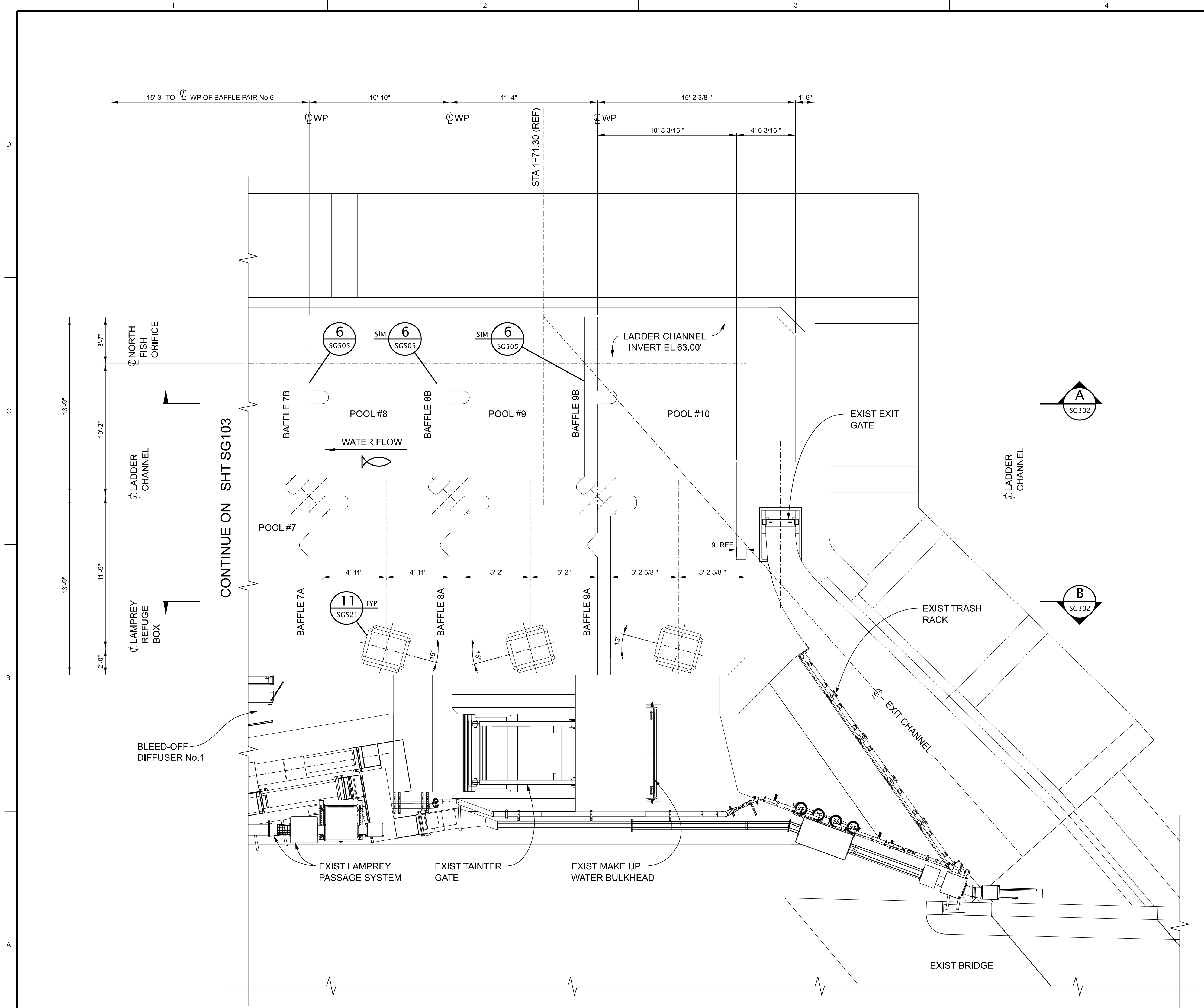


DESIGNED BY:	DATE:
DRAWN BY:	DATE:
CHECKED BY:	DATE:
APPROVED BY:	DATE:
<b>P&amp;S REVIEW 90%</b>	
MARK	DESCRIPTION

U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON	DESIGNED BY: T. SURRATT	DATE: 01/11/2023
	CHECKED BY: A. HENNINGER	DESIGNED BY: SOLICITATION NO.:
	SUBMITTED BY: MATTHEW D. HANSON	CONTRACT NO.:
	FILE NAME: BDF1.1235G103XXX.dgn	DRAWING NUMBER:
	ANSI D	SIZE: 1:1

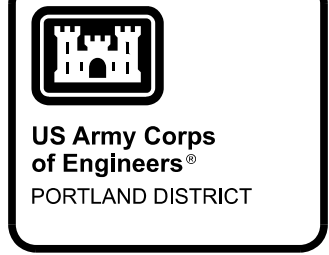
BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LADDER CONTROL SECTION MODIFICATIONS  
ENLARGED PLAN  
AT BAFFLES 2A TO 6B

SHEET IDENTIFICATION  
**SG103**



- NOTES:**
- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
  - 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
  - 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.
  - 4.) EXPANSION JOINT MATERIAL SHALL BE 1/2" THICK BITUMINOUS IMPREGNATED FIBER BOARD.
  - 5.) ALL FEATURES SHOWN ARE NEW UNLESS INDICATED OTHERWISE.

**4** ENLARGED PLAN - LADDER CONTROL SECTION BAFFLE No. 7A THRU 9B  
 SCALE: 1/4" = 1'-0"



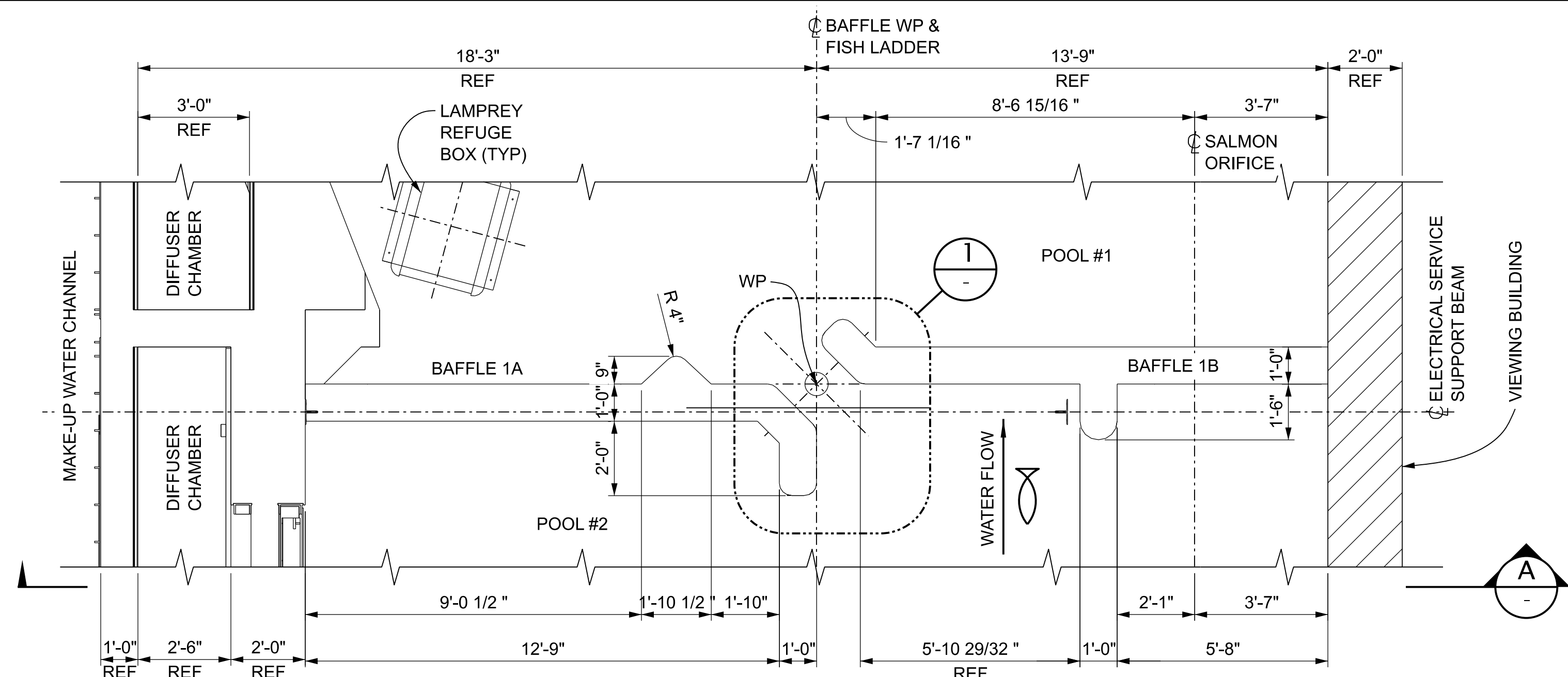
DESIGNED BY: T. SURRATT	CHECKED BY: A. HENNINGER	DATE: 01/16/2023
SUBMITTED BY: MATTHEW D. HANSON	CONTRACT NO.:	MARK
PLOT SCALE: 1" = 100'	PILOT DATE:	DESCRIPTION
FILE NAME: BDT1123SG10XXXX.dgn	DRAWING NUMBER: SG302	DATE
ANSI D	APPR.	

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 PORTLAND DISTRICT  
 PORTLAND, OREGON

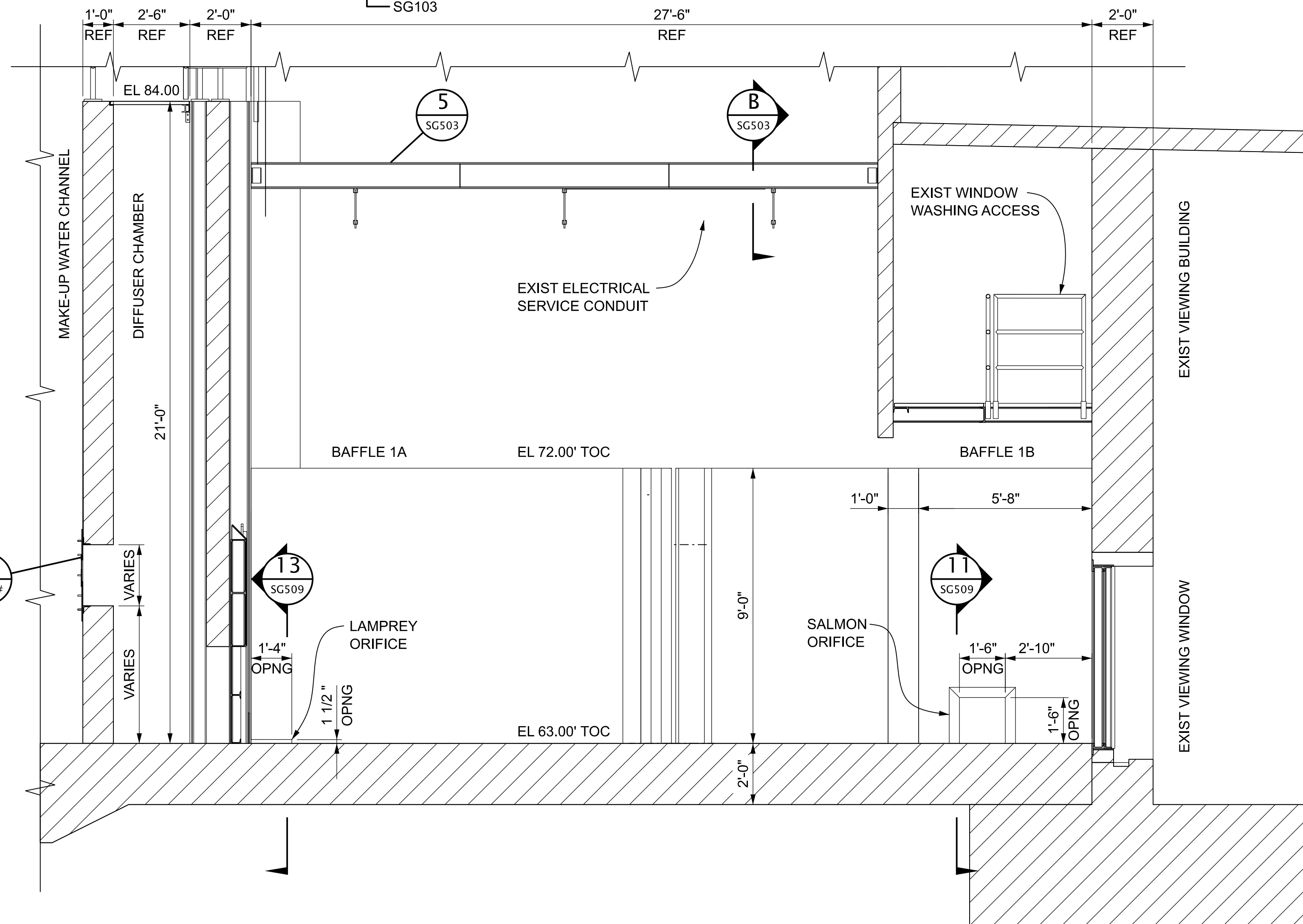
BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LADDER CONTROL SECTION MODIFICATIONS  
 ENLARGED PLAN  
 AT BAFFLES 7A TO EXIT GATE

SHEET IDENTIFICATION  
**SG104**

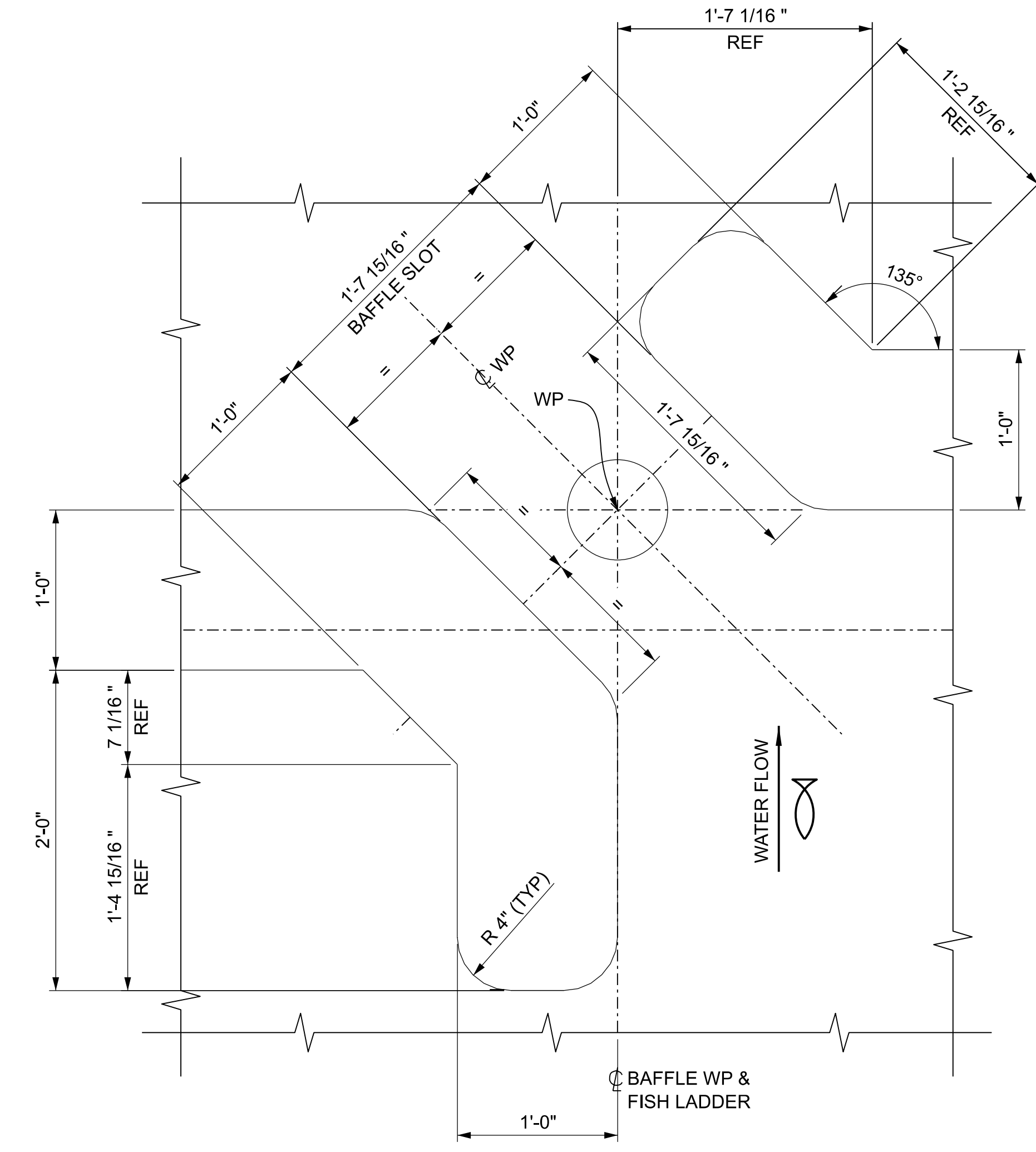




**9 ENLARGED PLAN - FISH LADDER BAFFLE No.1**  
 SCALE: 3/8" = 1'-0" STAIRS TO SOUTH WALKWAY NOT SHOWN FOR CLARITY  
 ELECTRICAL SERVICE SUPPORT BEAM NOT SHOWN FOR CLARITY  
 SG102  
 SG103

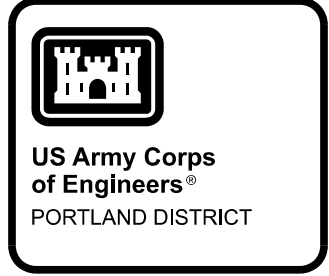


**A ELEVATION LOOKING DOWNSTREAM AT BAFFLE No.1**  
 SCALE: 3/8" = 1'-0" STAIRS TO SOUTH WALKWAY NOT SHOWN FOR CLARITY



**1 DETAIL - BAFFLE No.1 SLOT**  
 SCALE: 1 1/2" = 1'-0"

- NOTES:**
- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
  - 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
  - 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.

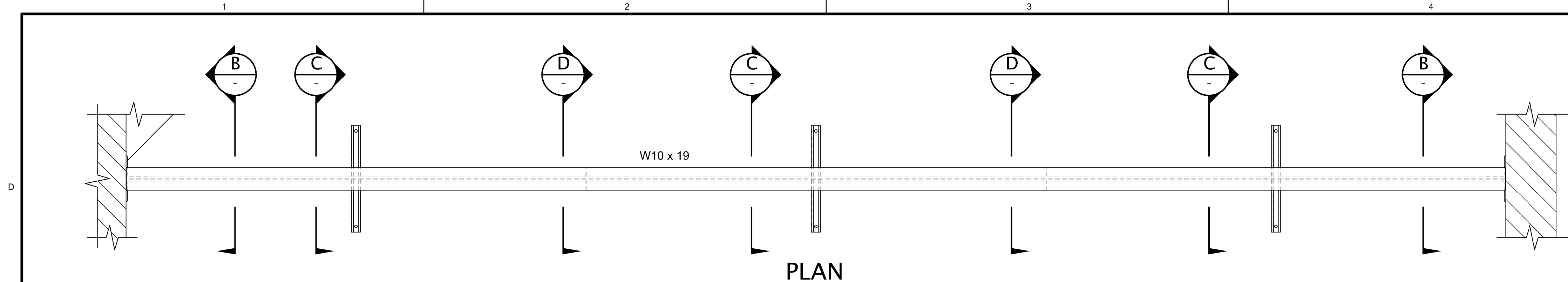


DESIGNED BY:	DATE:
DRAWN BY:	CHECKED BY:
SUBMITTED BY:	APPROVED BY:
PLANT SCALE:	DATE:
FILE NAME:	MARK:
ANSI D	DESCRIPTION:
<b>P&amp;S REVIEW 90%</b>	

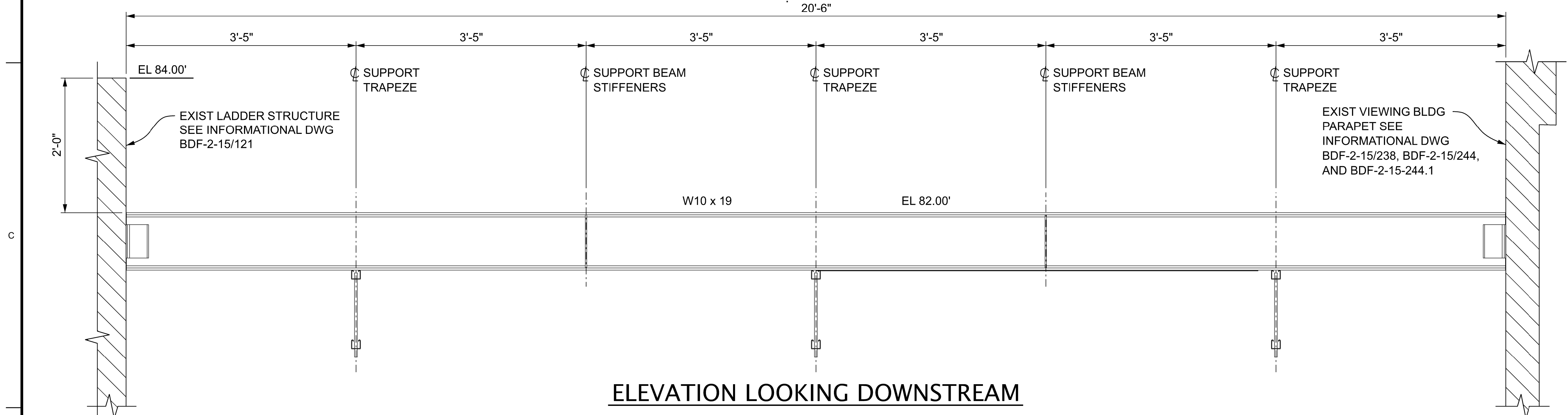
DESIGNED BY:	DATE:
DRAWN BY:	CHECKED BY:
SUBMITTED BY:	APPROVED BY:
PLANT SCALE:	DATE:
FILE NAME:	MARK:
ANSI D	DESCRIPTION:

BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE  
 LADDER CONTROL SECTION MODIFICATIONS  
 BAFFLE PAIR NO. 1  
 PLAN, ELEVATION, AND DETAILS

SHEET IDENTIFICATION  
**SG502**



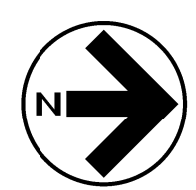
**PLAN**



**ELEVATION LOOKING DOWNSTREAM**

**NOTES:**

- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
- 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
- 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.

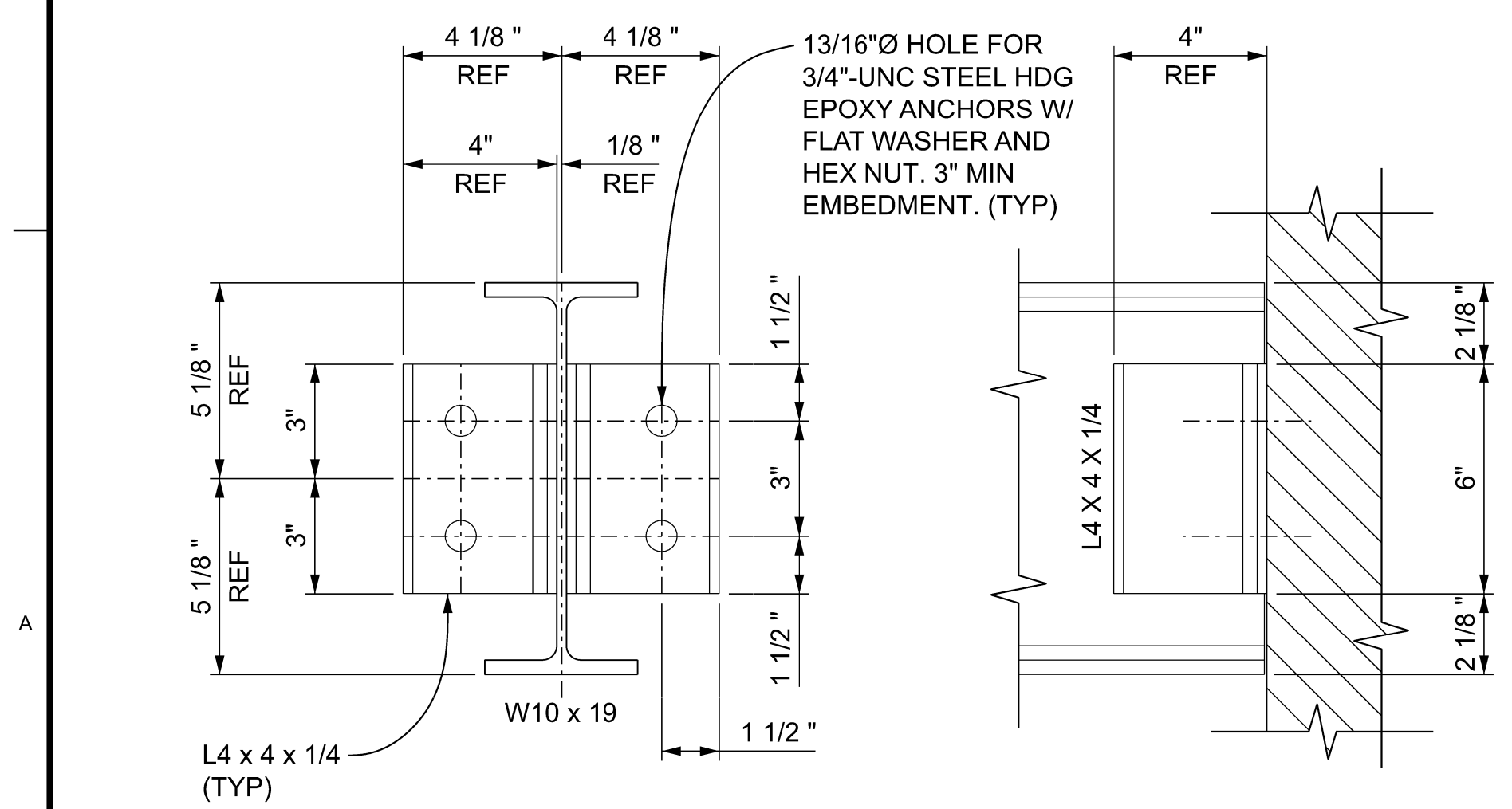


5

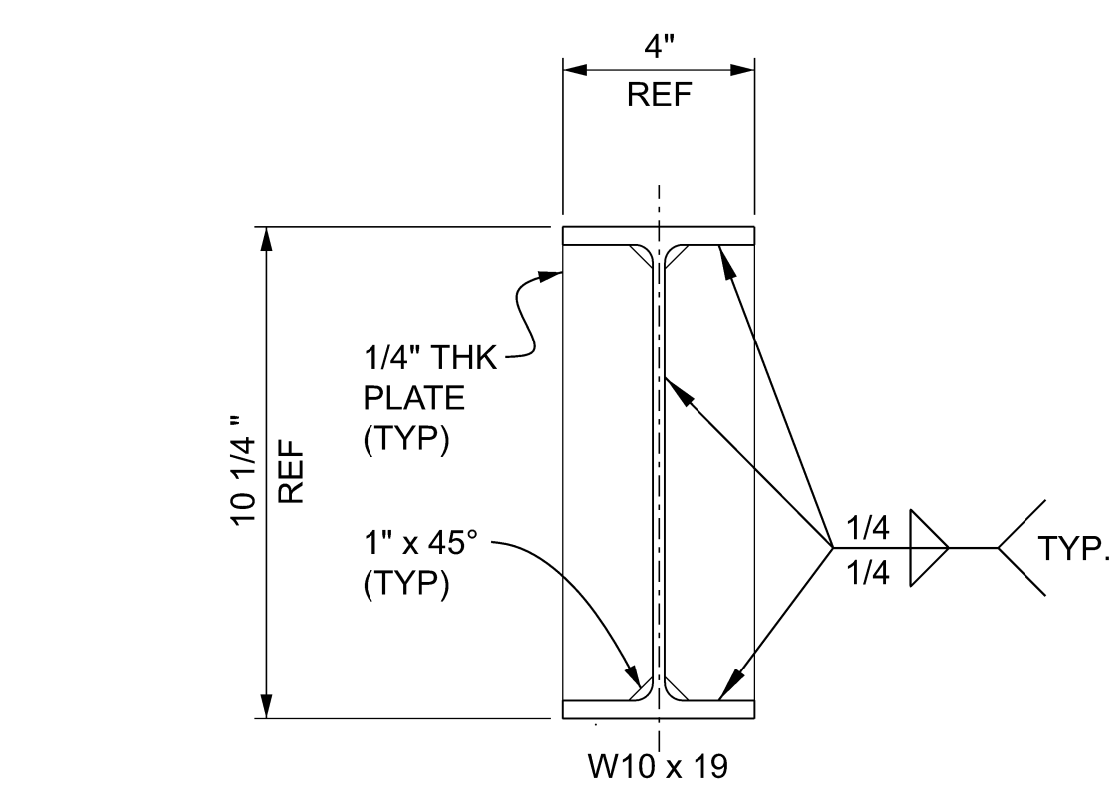
**DETAIL - ELECTRICAL SERVICE SUPPORT**

SCALE: 1" = 1'-0"

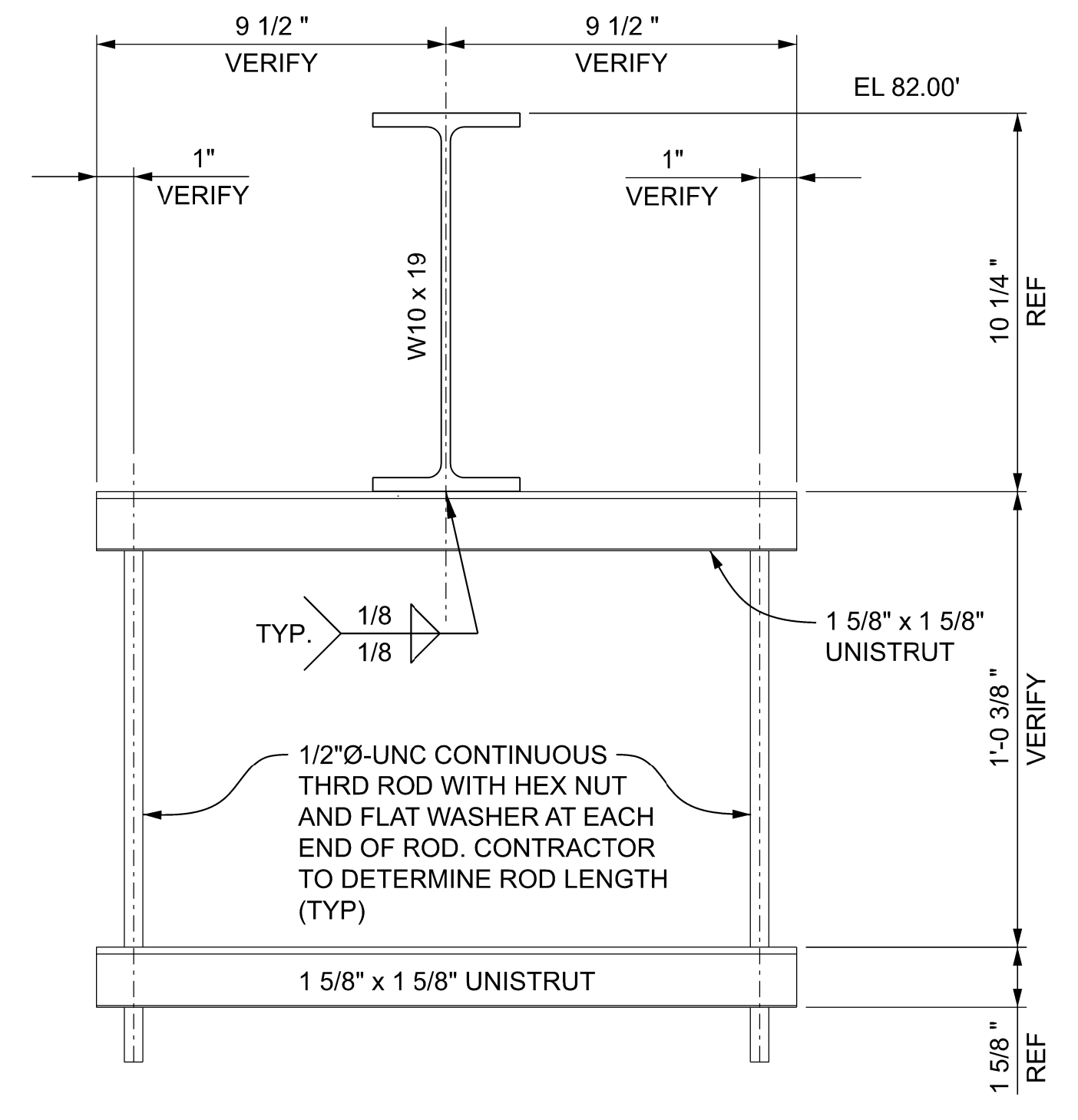
- SG102
- SG502



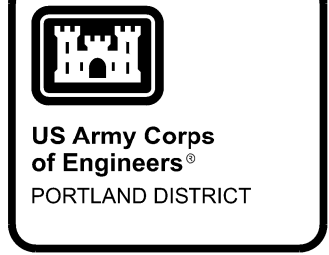
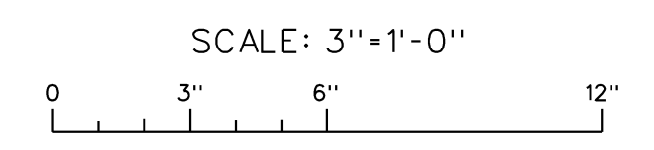
**B SECTION-SUPPORT BEAM ANCHOR**  
SCALE: 3" = 1'-0"



**D SECTION-SUPPORT BEAM SIFFENERS**  
SCALE: 3" = 1'-0"



**C SECTION-CONDUIT SUPPORT TRAPEZE**  
SCALE: 3" = 1'-0"



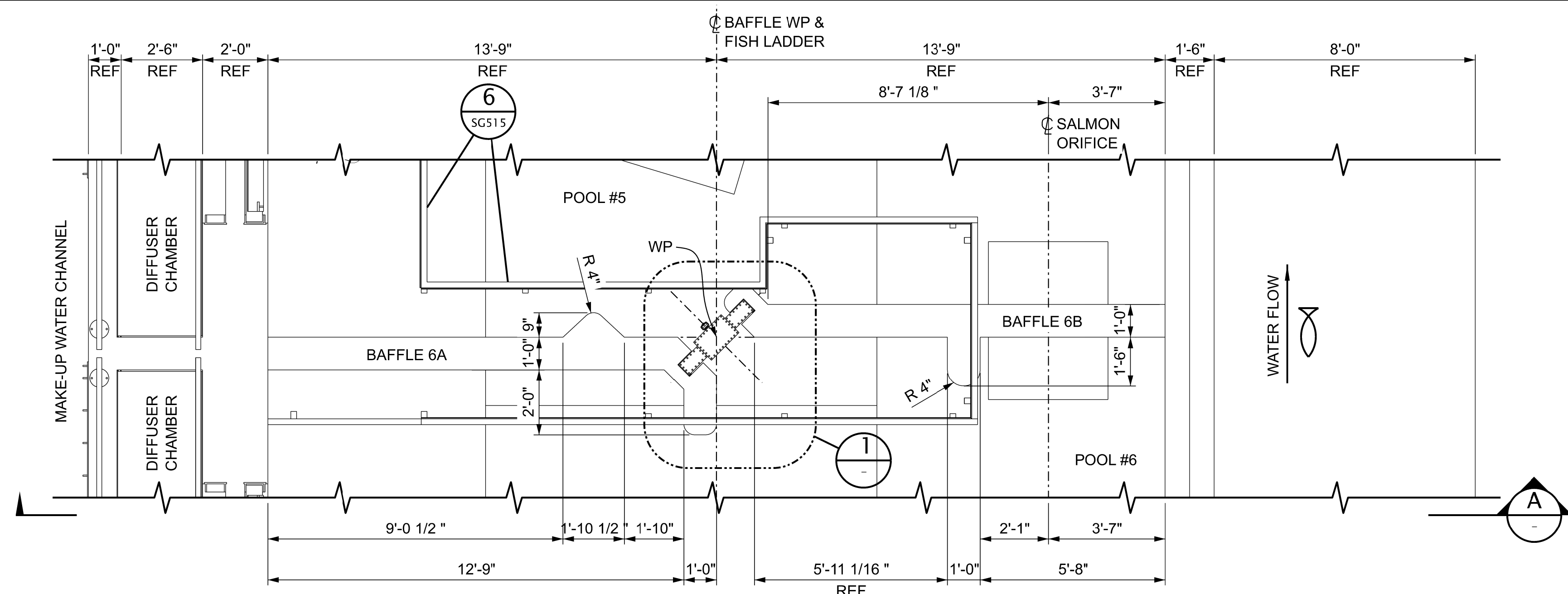
DESIGNED BY:	DATE:
DRAWN BY:	CHECKED BY:
SUBMITTED BY:	CONTRACT NO.:
PLOT SCALE:	PLOT DATE:
SIZE:	FILE NAME:
ANSI D	BDP1.1235G03XXX.dgn
DESCRIPTION	MARK
DATE	APPR.

**P&S REVIEW 90%**

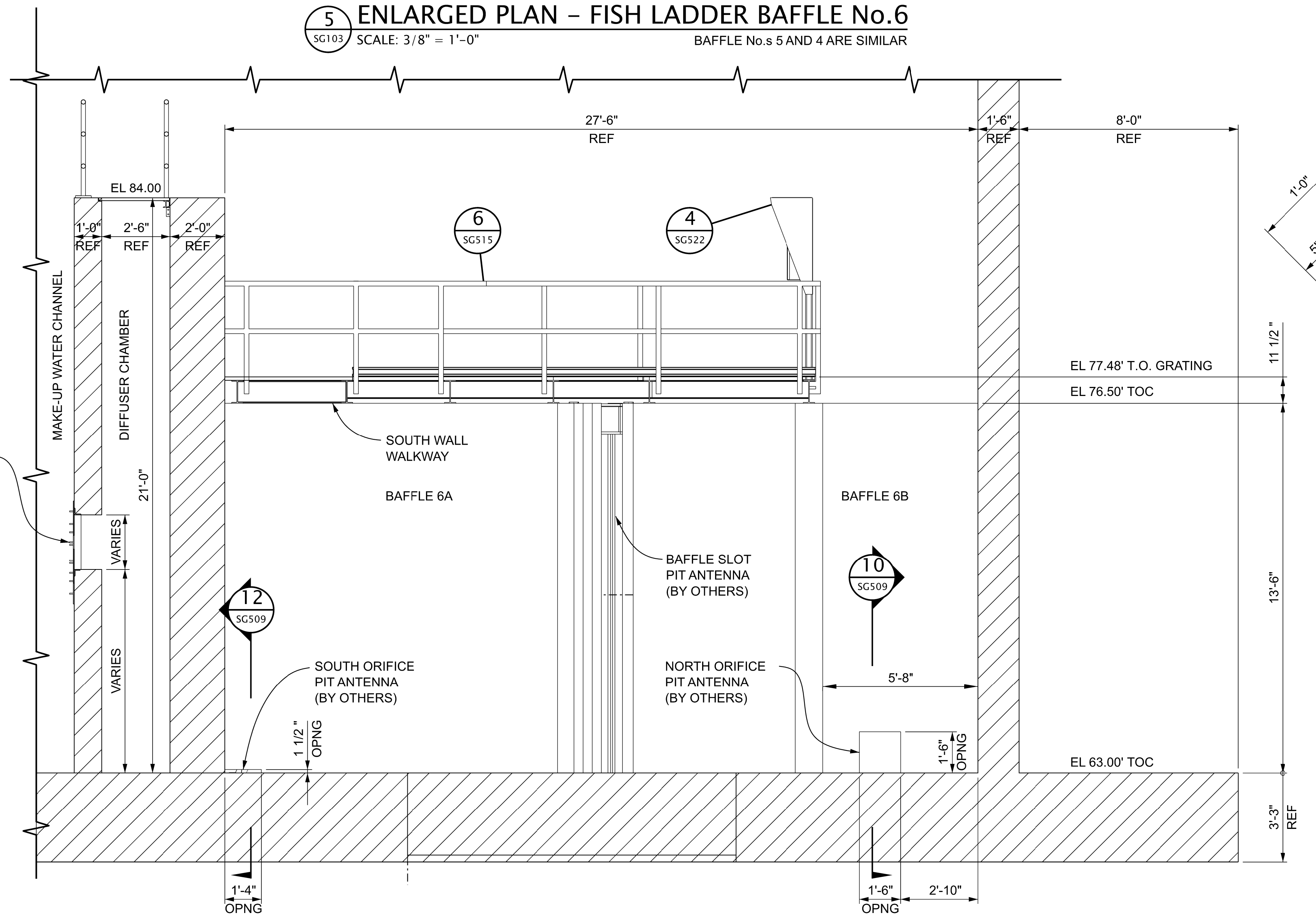
BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
ELECTRICAL SERVICE SUPPORT  
PLAN, ELEVATIONS, SECTIONS, AND DETAILS

SHEET IDENTIFICATION  
**SG503**

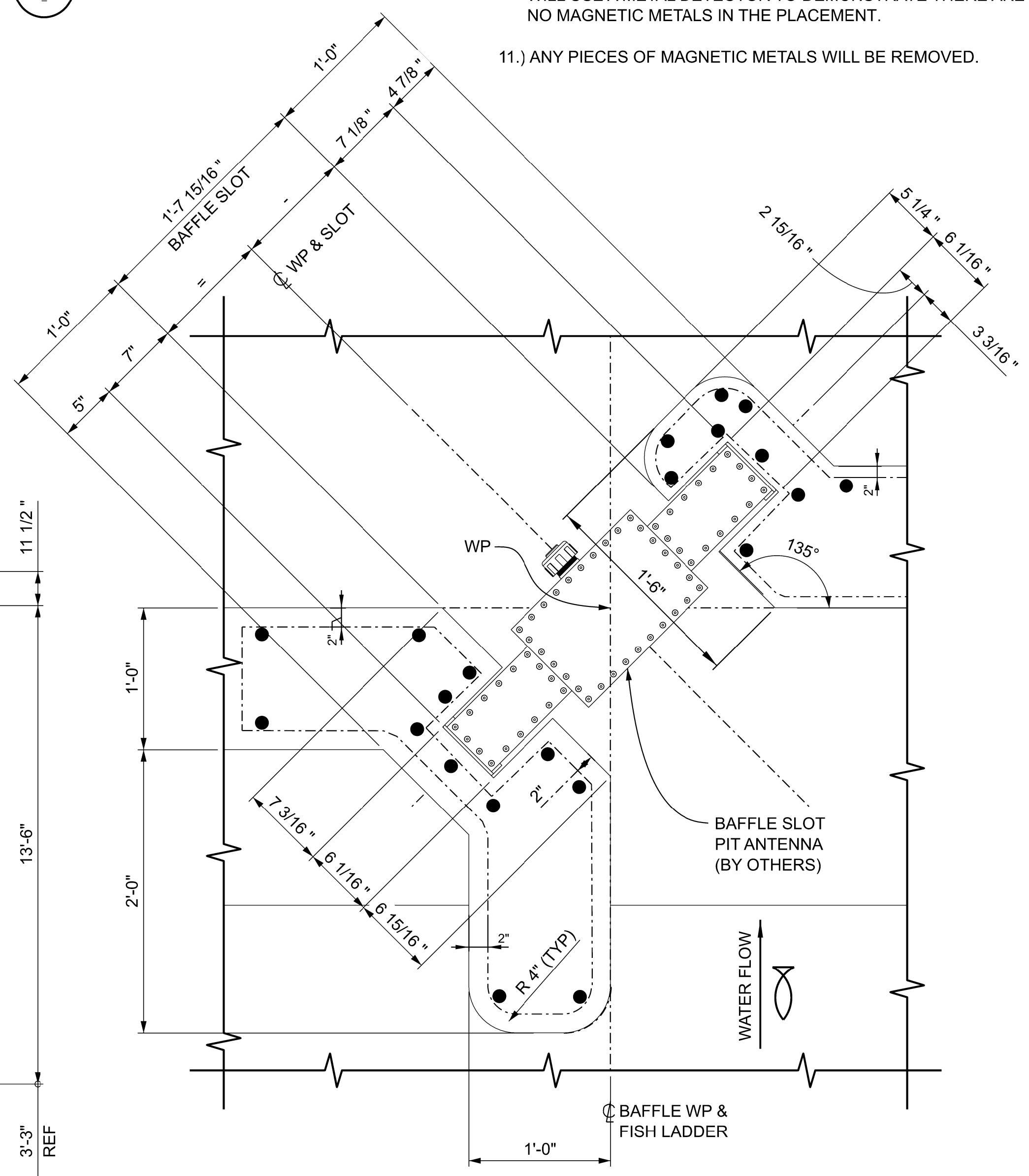




**5 ENLARGED PLAN - FISH LADDER BAFFLE No.6**  
 SCALE: 3/8" = 1'-0"  
 BAFFLE No.s 5 AND 4 ARE SIMILAR



**A ELEVATION LOOKING DOWNSTREAM AT BAFFLE No.6**  
 SCALE: 3/8" = 1'-0"  
 BAFFLE No.s 5, AND 4, ARE SIMILAR



**1 DETAIL - PIT ANTENNA GUIDE SLOT**  
 SCALE: 1 1/2" = 1'-0"

- NOTES:**
- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
  - 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
  - 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.
  - 4.) ALL BARS ARE GFRP UNO.
  - 5.) ALL BARS WILL BE TIED TO PREVENT MOVEMENT DURING CONCRETE VIBRATION. THIS WILL BE NON-MAGNETIC.
  - 6.) ALL TIES WILL BE NON MAGNETIC.
  - 7.) CONTRACTOR WILL SUBMITS ANY NECESSARY EMBEDMENTS TO SUPPORT CONTRACTOR DESIGN WALKWAY.
  - 8.) LAPS WILL BE ELECTRICALLY ISOLATED WITH A NONMAGNETIC SPACERS. THE CONTRACTOR WILL DEMONSTRATE ELECTRICAL NON CONDUCTIVITY OF LAPPED BARS WITH AN OHMMETER.
  - 9.) ALL MAGNETIC METALS WILL BE KEPT OUT OF FINAL PLACEMENT OF BAFFLE CONCRETE, UNO.
  - 10.) AFTER FLOOR AND BAFFLES ARE PLACED THE CONTRACTOR WILL USE A METAL DETECTOR TO DEMONSTRATE THERE ARE NO MAGNETIC METALS IN THE PLACEMENT.
  - 11.) ANY PIECES OF MAGNETIC METALS WILL BE REMOVED.

<p><b>P&amp;S REVIEW 90%</b></p>	
DESIGNED BY: PORTLAND DISTRICT PORTLAND, OREGON	DATE: 01/12/2023 CHECKED BY: JACOBSON, A. HENNINGER CONTRACT NO.: MATTHEW D. HANSON, P.E. DRAWING NUMBER: PLOT SCALE: 1:1 FILE NAME: ANSI D BDP11235G004XXX.dgn
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON BONNEVILLE LOCK AND DAM WASHINGTON SHORE FISH LADDER FY2019 FISH ACCORDS LAMPREY PASSAGE LADDER CONTROL SECTION MODIFICATIONS BAFFLE PAIRS NO.4, NO.5, AND NO.6 PLAN, ELEVATION, AND DETAILS	
SHEET IDENTIFICATION <b>SG504</b>	











**NOTES:**

1.) SEE SHEET SG515 FOR PIT ANTENNA ACCESS WALKWAYS  
GENERAL NOTES.



US Army Corps  
of Engineers  
PORTLAND DISTRICT

DATE	APPR.

DESCRIPTION	MARK

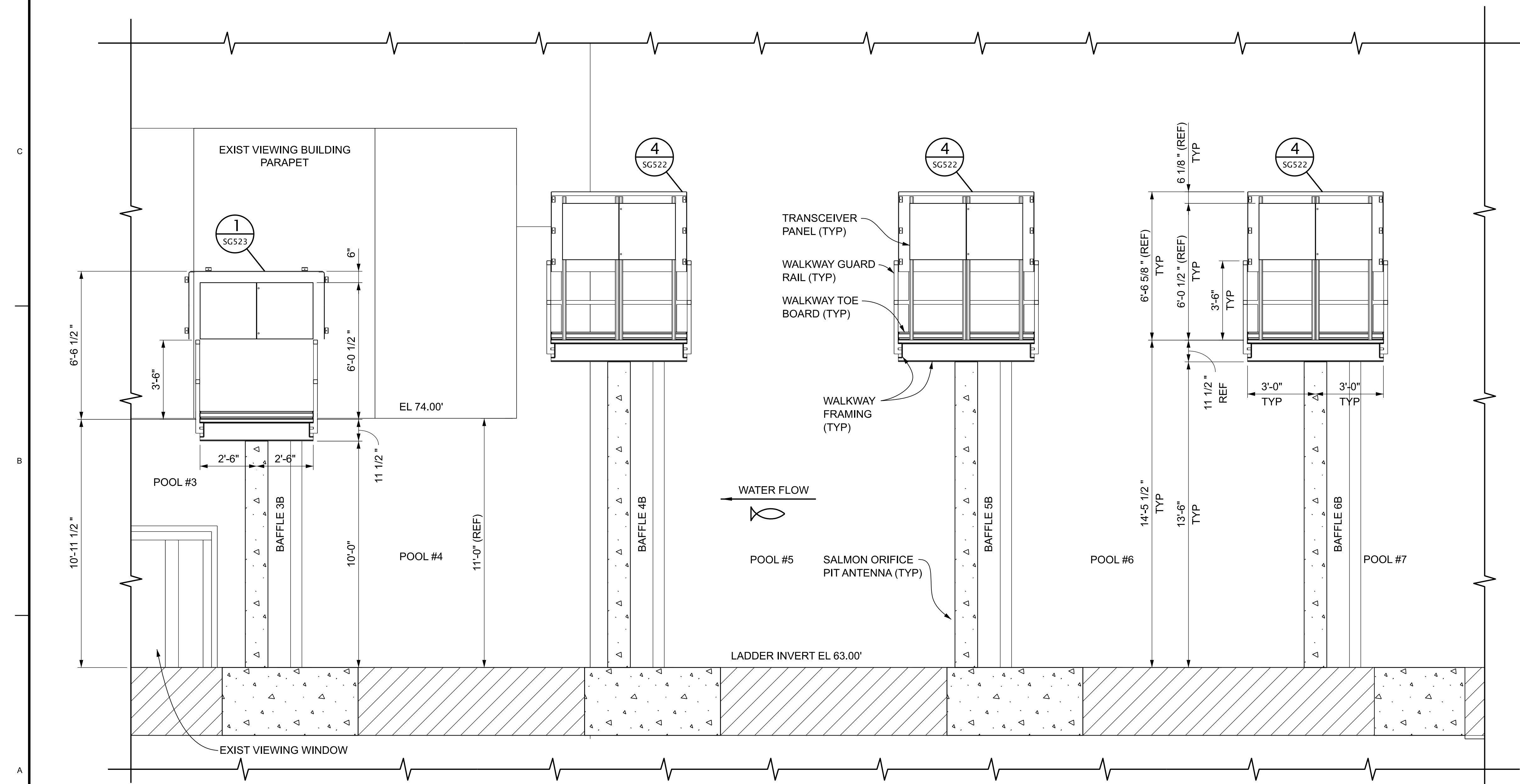
**P&S REVIEW 90%**

DESIGNED BY: LAWSON A. HENNINGER	CHECKED BY: LAWSON A. HENNINGER	DATE: 01/12/2023	SOLICITATION NO.:
SUBMITTED BY: MATTHEW D. HANSON, P.E.	CONTRACT NO.:	FILE NAME: BDP1123SG516XXX.dgn	DRAWING NUMBER:
PLOT SCALE:	PLOT DATE:	ANSI D	1:1

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

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
PIT ANTENNA ACCESS WALKWAYS  
SECTIONS SHEET NO.1

SHEET  
IDENTIFICATION  
**SG516**

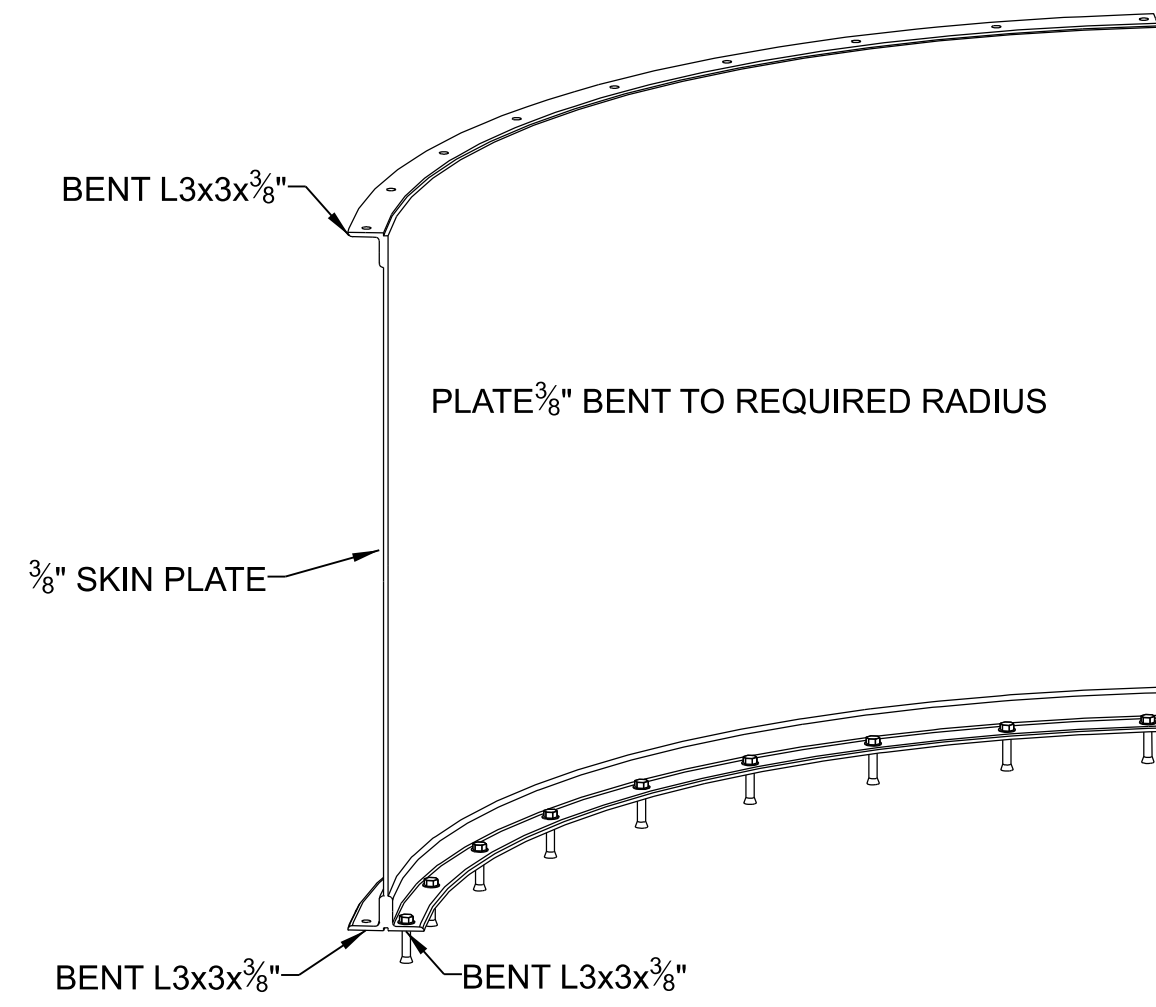


**D SECTION - LOOKING NORTH THRU PIT ANTENNA ACCESS WALKWAYS**  
SCALE: 3/8" = 1'-0"

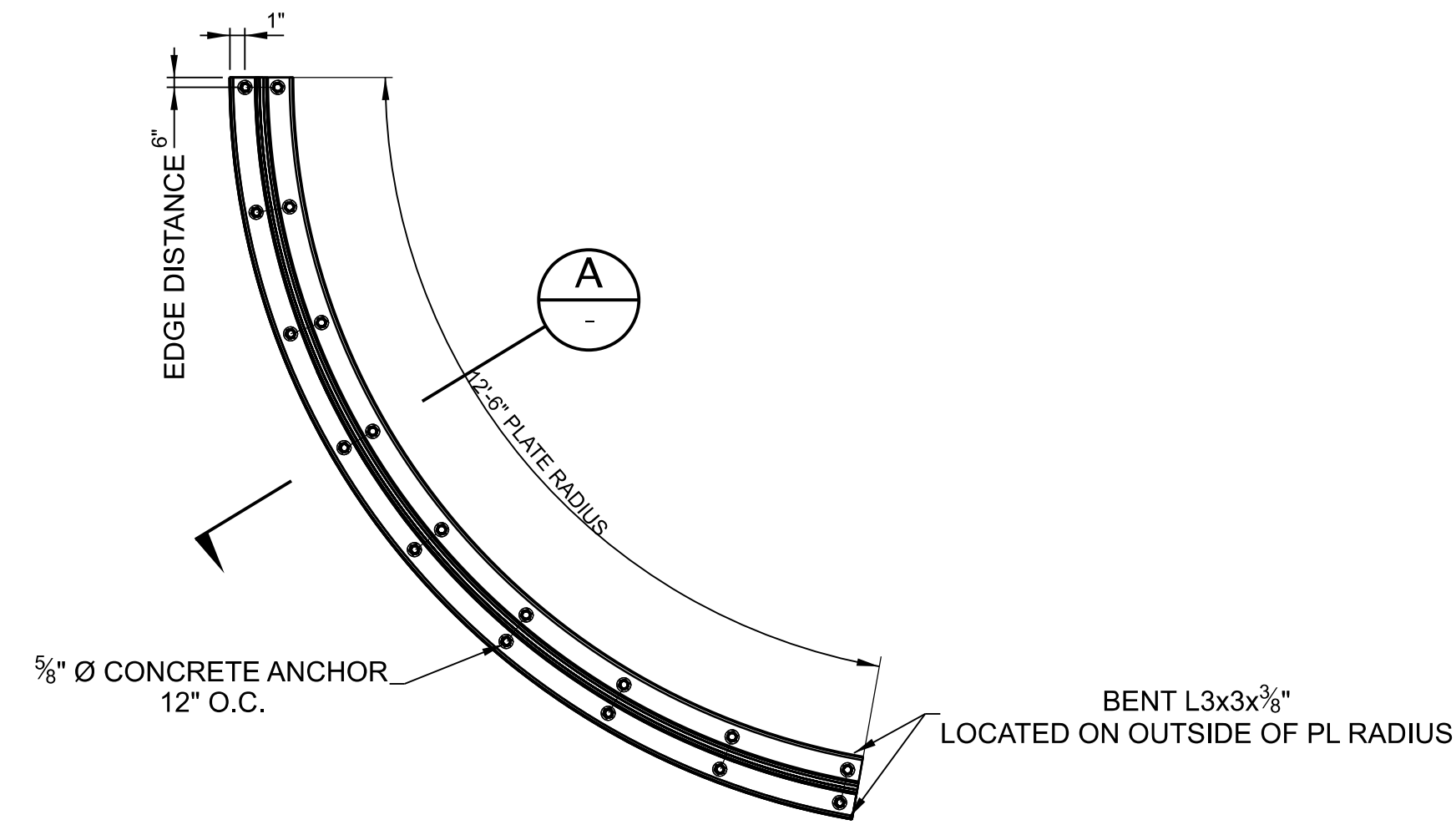




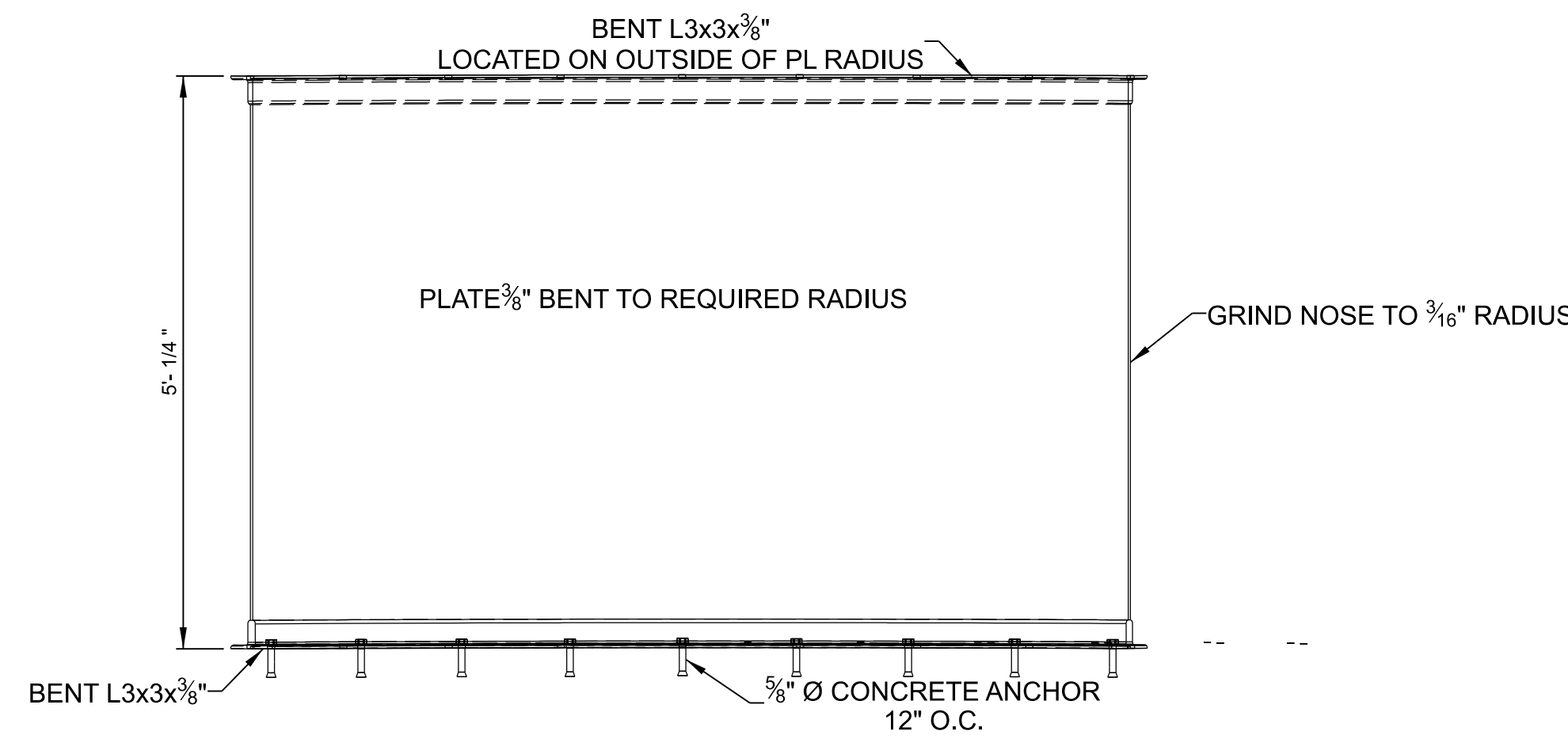




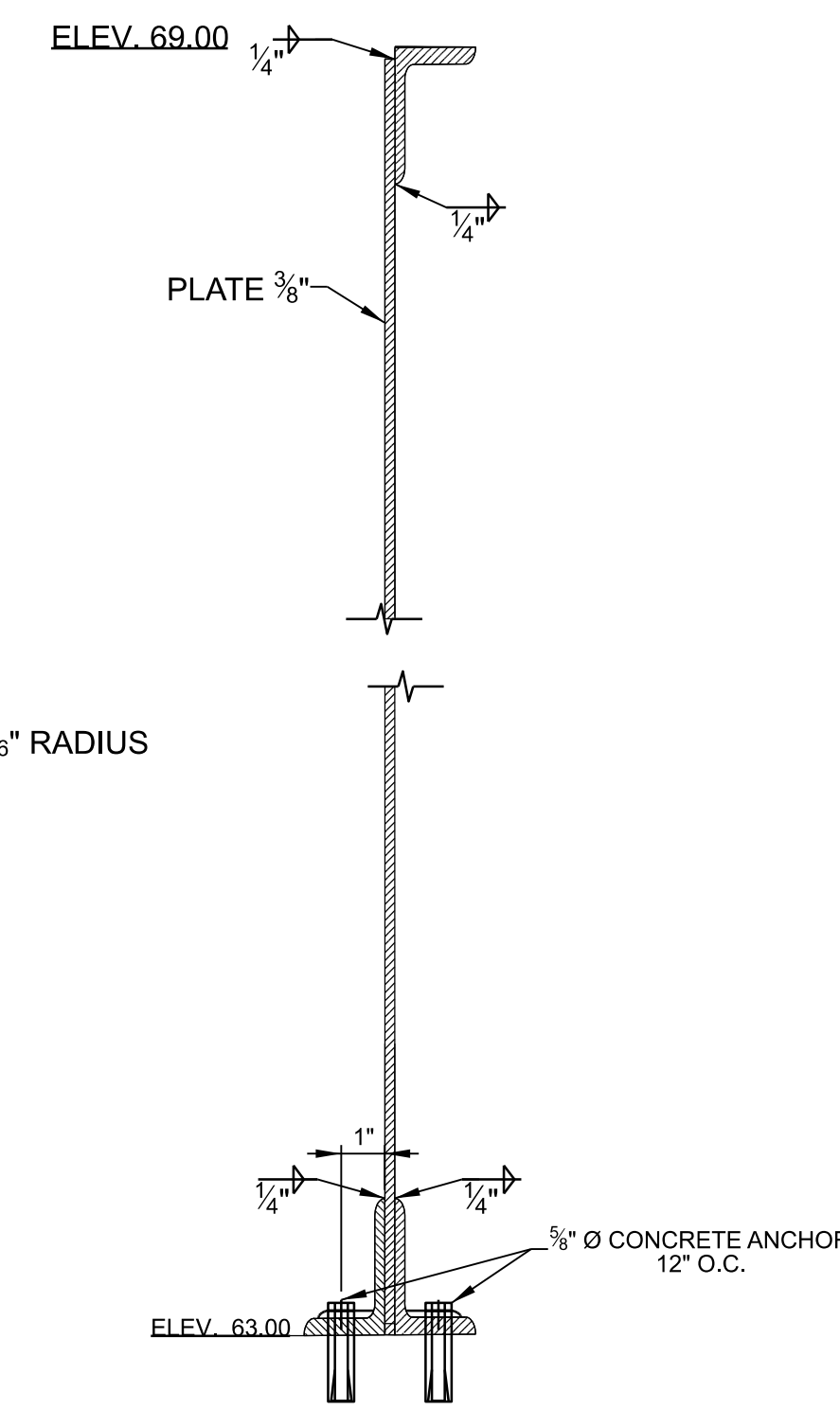
**FLOW VANE ISOMETRIC**  
SCALE: NONE



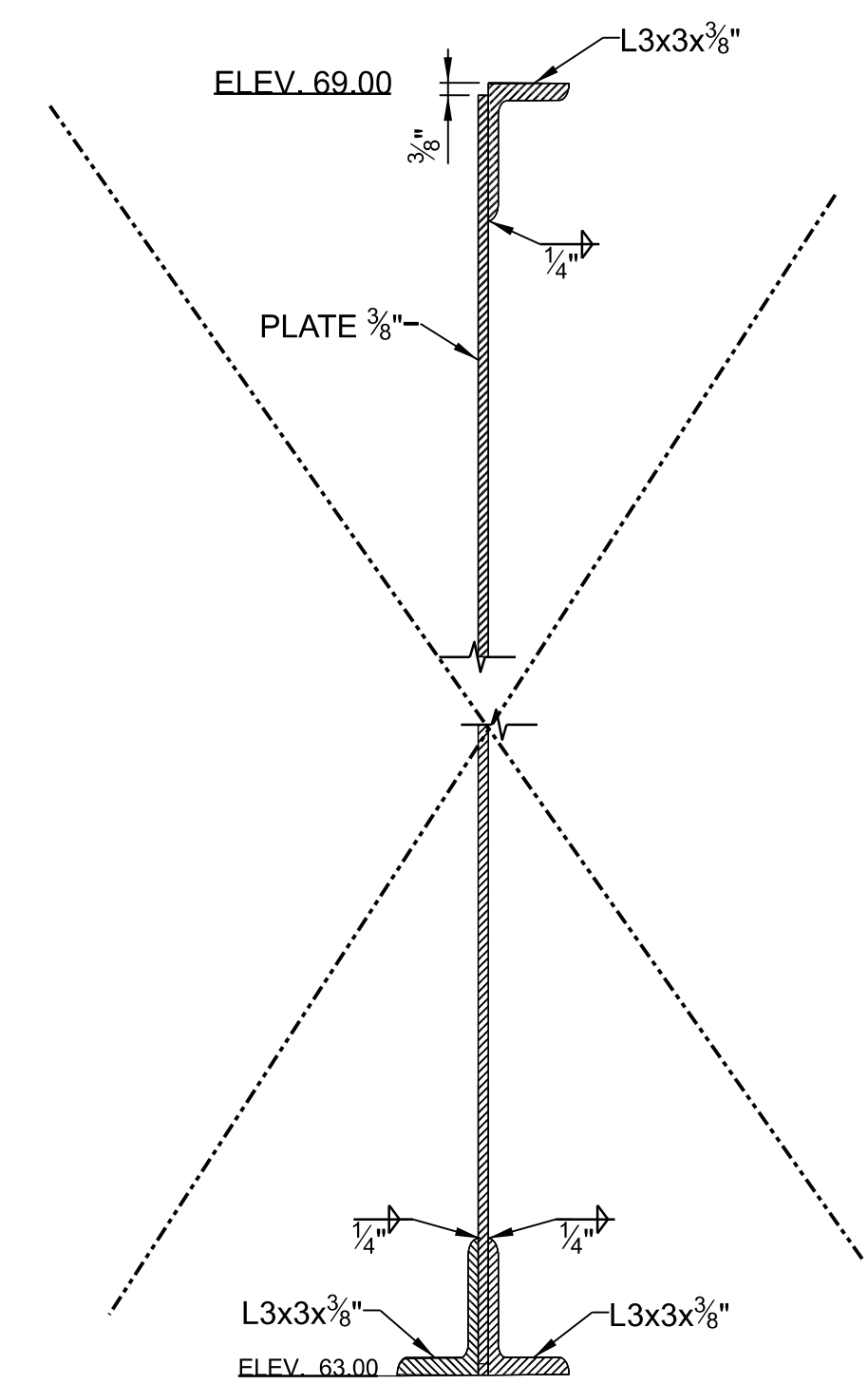
**12 DETAIL - FLOW VANE PLAN**  
SCALE: 3/4" = 1'-0" (2) REQ'D



**FLOW VANE PROFILE ON RADIUS**  
SCALE: 3/4" = 1'-0"



**A TYPICAL SECTION THRU FLOW VANE**  
SCALE: 3" = 1'-0"



**FLOW VANE SECTION**  
SCALE: 3" = 1'-0"

**NOTES:**

- 1.) SEE SHEET G-001 AND G-002 FOR DRAWING INDEX.
- 2.) SEE SHEET G-004 FOR GENERAL NOTES AND SYMBOLS
- 3.) SEE SHEET S-001 FOR GENERAL STRUCTURAL NOTES AND SPECIFICATIONS.



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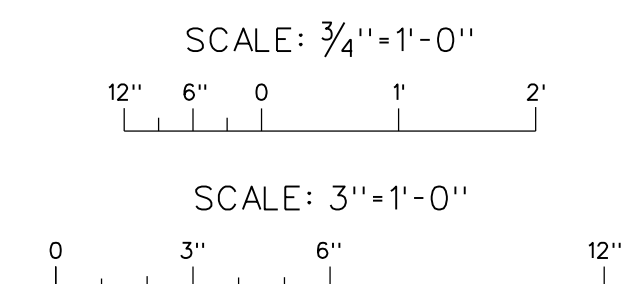
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DATE 08		
DATE 09		
DATE 04		
DATE 03		
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DATE 01		
DATE		

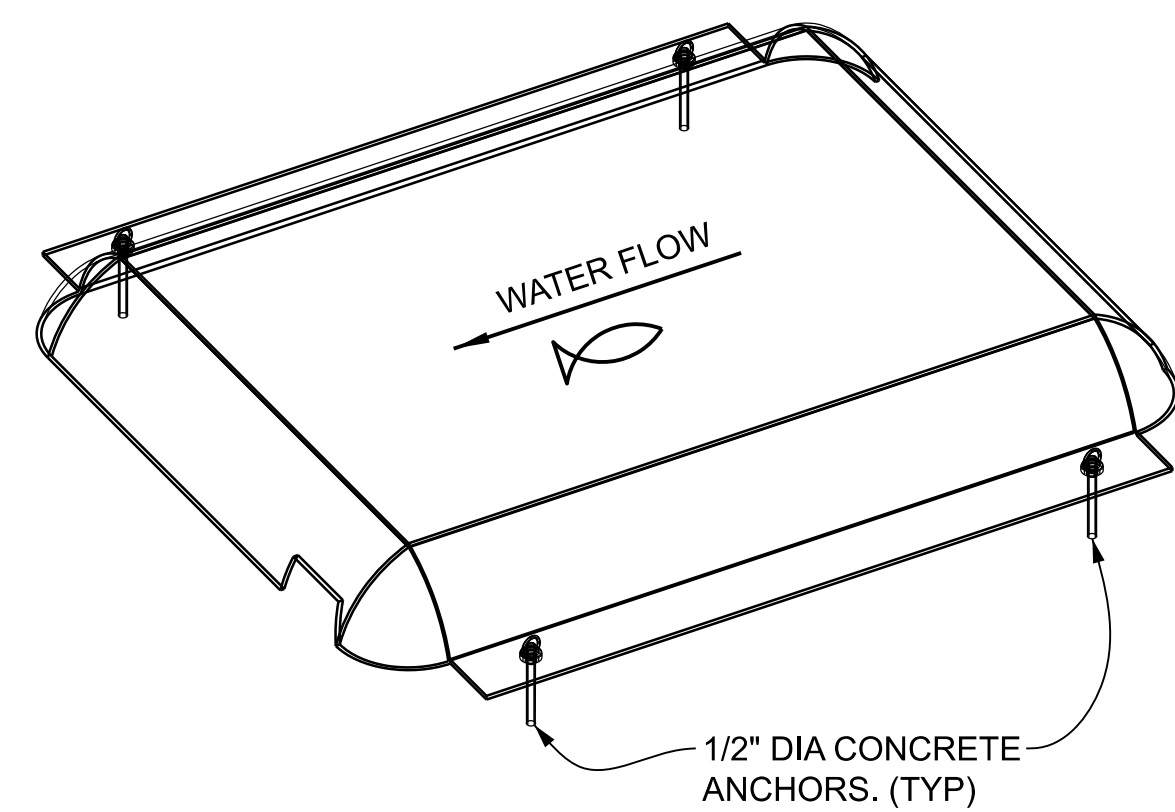
**P&S REVIEW 90%**

DESIGNED BY: T. SURRATT	CHECKED BY: A. HENGER	DATE: 01/11/2023
SUBMITTED BY: MATTHEW D. HANSON, P.E.	CONTRACT NO.:	
PLOT SCALE: 1:1	PLANT DATE:	
FILE NAME: BDT1123G520XXX.dgn	DRAWING NUMBER:	
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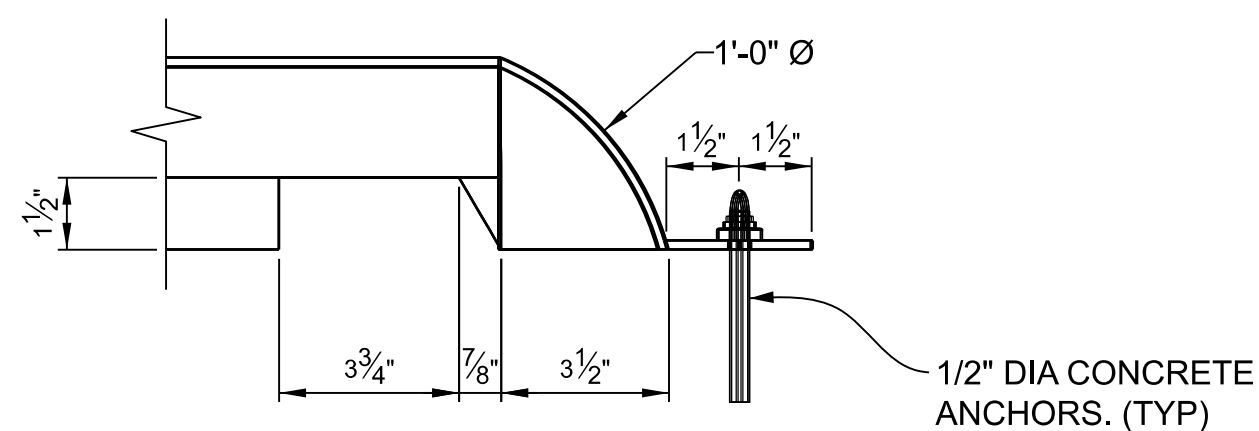
BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
FLOW VANES  
PLAN, SECTIONS AND DETAILS

SHEET IDENTIFICATION  
**SG520**

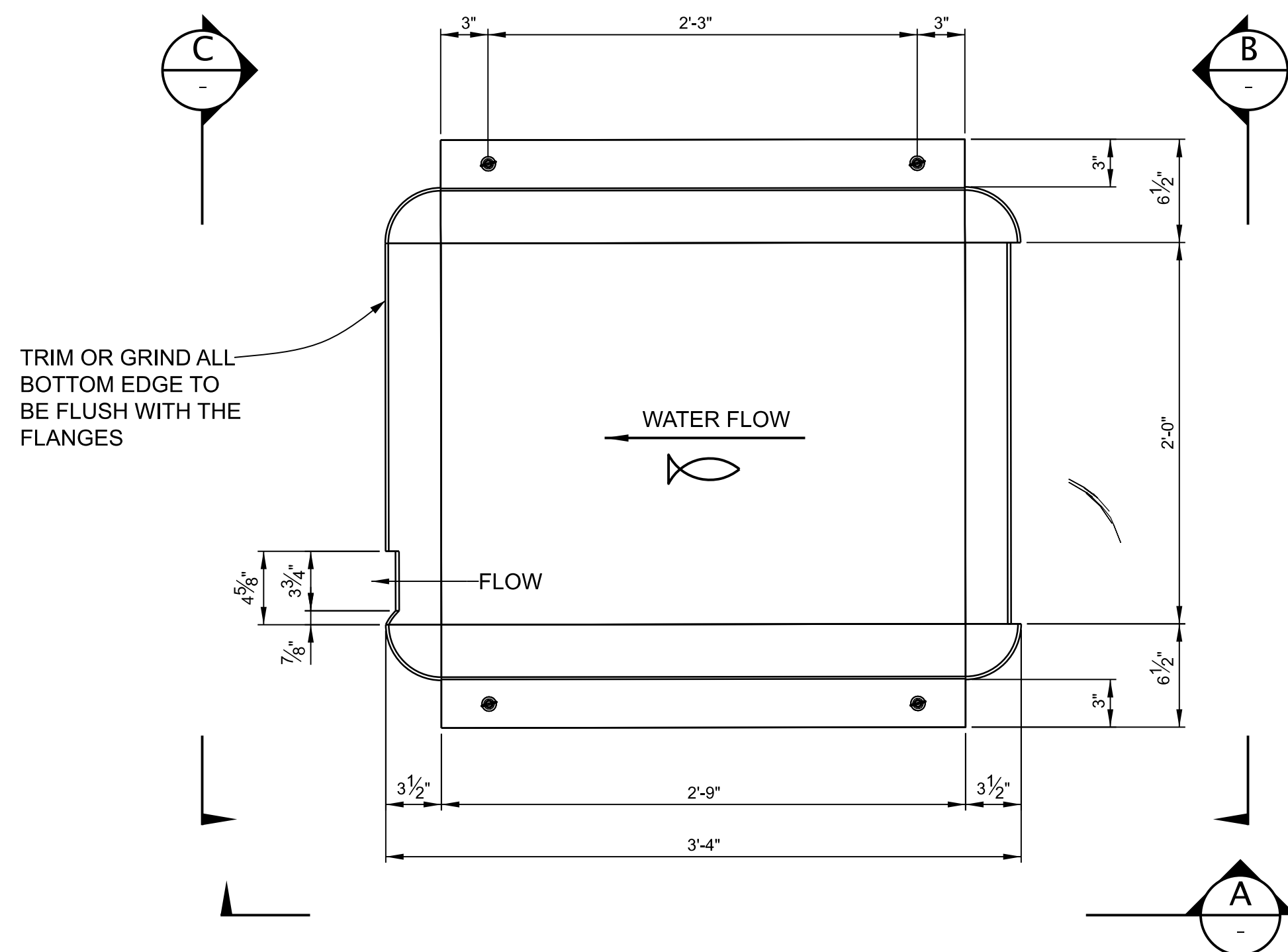




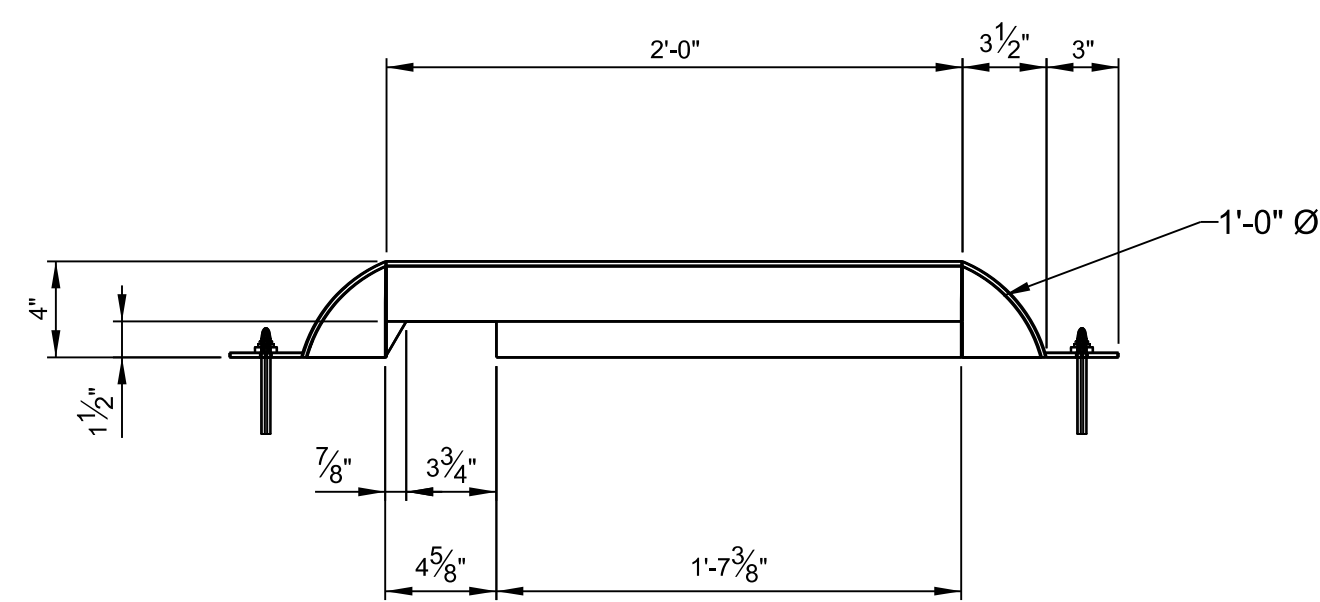
**REFUGE BOX ISOMETRIC**  
SCALE: NONE



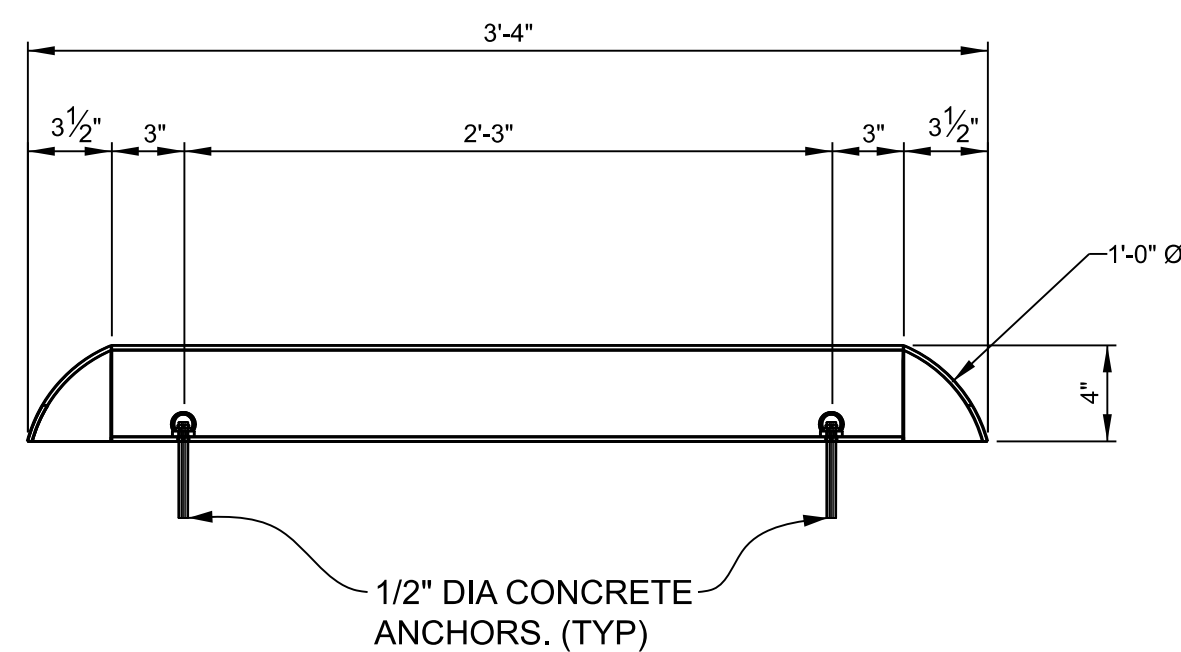
**1** **DETAIL - REFUGE BOX DOWNSTREAM OPENING**  
SCALE: 3" = 1'-0"



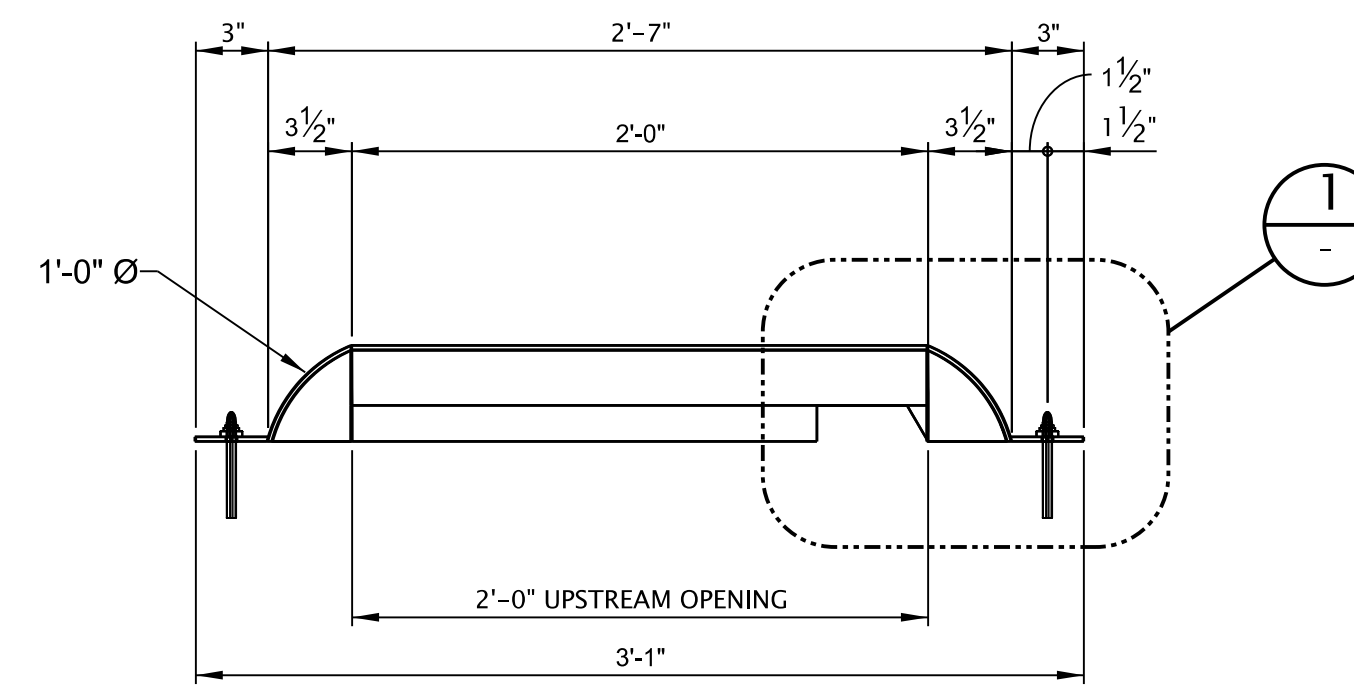
**11** **DETAIL - LAMPREY REFUGE BOX PLAN**  
SCALE: 1 1/2" = 1'-0" (7) REQ'D  
— SG102  
— SG103  
— SG104



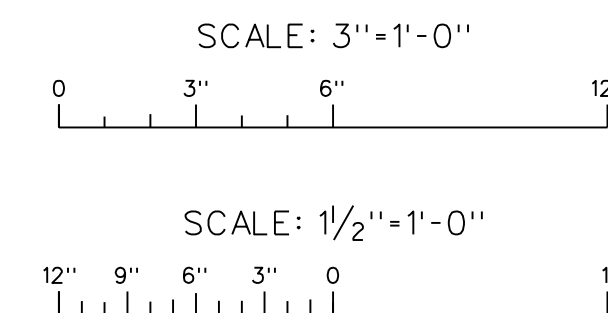
**B** **ELEVATION - REFUGE BOX UPSTREAM FACE**  
SCALE: 1 1/2" = 1'-0"



**A** **ELEVATION - REFUGE BOX SIDE**  
SCALE: 1 1/2" = 1'-0"

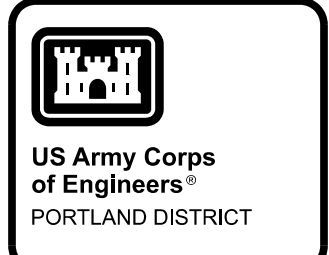


**C** **ELEVATION - REFUGE BOX DOWNSTREAM FACE**  
SCALE: 1 1/2" = 1'-0"



**NOTES:**

1. MATERIAL 5052 ALUMINUM 3/4" PLATE EXCEPT AS NOTED.
2. BREAK ALL EDGES AND CORNERS TO 3/4" RADIUS MINIMUM.
3. REFUGE BOX SHALL SIT FLUSH WITH THE FLOOR.
4. CONCRETE ANCHOR SHALL BE HILTI HDI 1/2" S.S. DROP-IN ANCHOR OR APPROVED EQUAL.
5. MINIMUM BEND RADIUS IS TWICE THE PLATE THICKNESS.
6. EXISTING CONCRETE FLOOR NOT SHOWN.
7. PROVIDE 3/4", THICK FOOD- GRADE POLYCHLOROPRENE PADS WITH ADHESIVE BACKING AT ENTIRE BOTTOM SURFACE OF FLANGES TO PREVENT ALUMINUM CONTACT WITH CONCRETE.
8. SEE SHEETS SG101 THRU SG104 FOR LOCATIONS OF REFUGE BOXES.

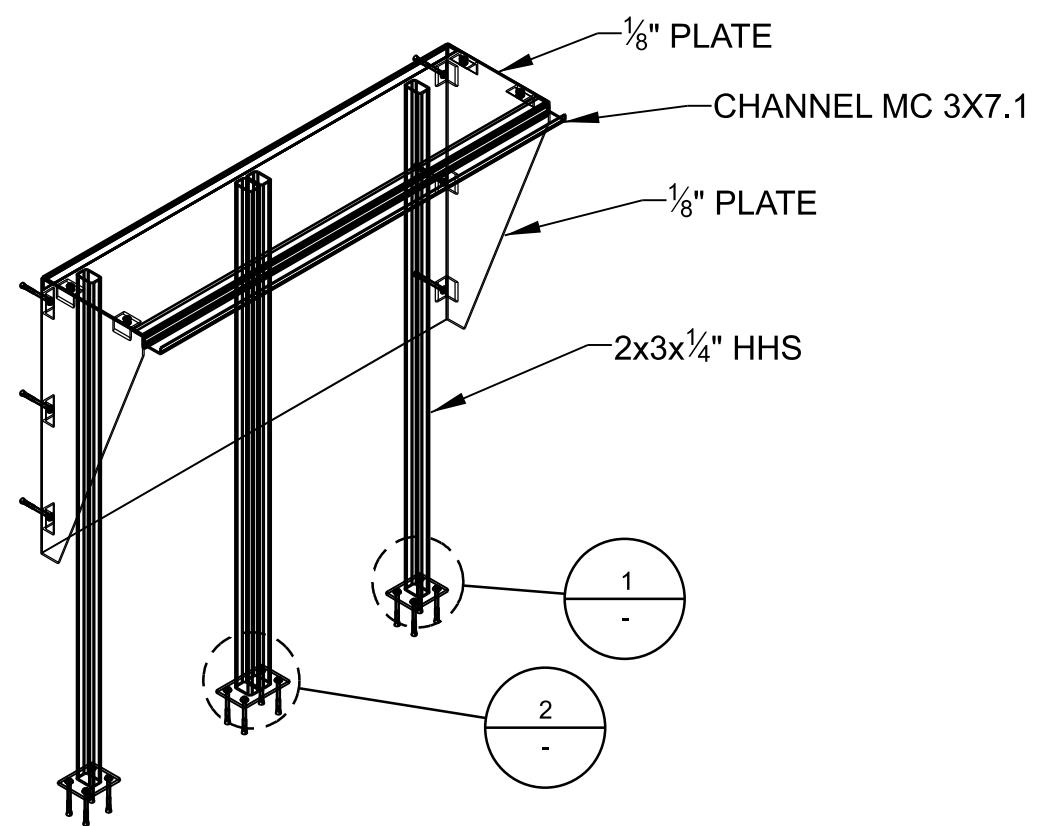


DATE 07	DATE 08	DATE 09	DATE 04	DATE 03	DATE 02	DATE 01	DATE	APPR.
<b>P&amp;S REVIEW 90%</b>								MARK
								DESCRIPTION

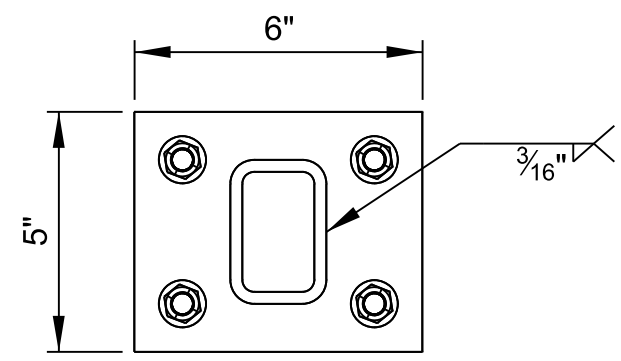
DESIGNED BY: T. SURRATT	CHECKED BY: A. HENGER	DATE: 01/16/2023	SOLICITATION NO.:	CONTRACT NO.:
SUBMITTED BY: MATTHEW D. HANSON, P.E.	PLOT SCALE: 1:1	FILE NAME: BDPT123SG521XXX.dgn	PLANT NUMBER:	DRAWING NUMBER:
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT				

**BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
LAMPREY REFUGE BOX  
PLAN, ELEVATIONS AND DETAILS**

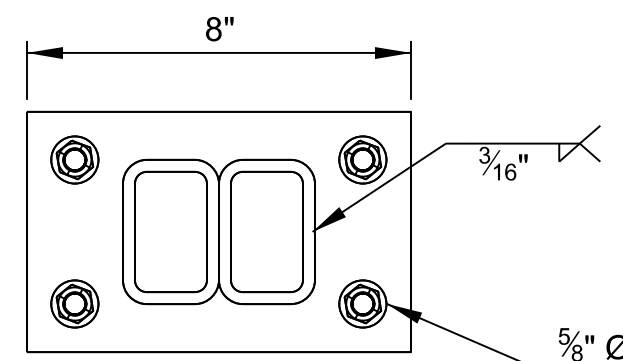
**SHEET IDENTIFICATION  
SG521**



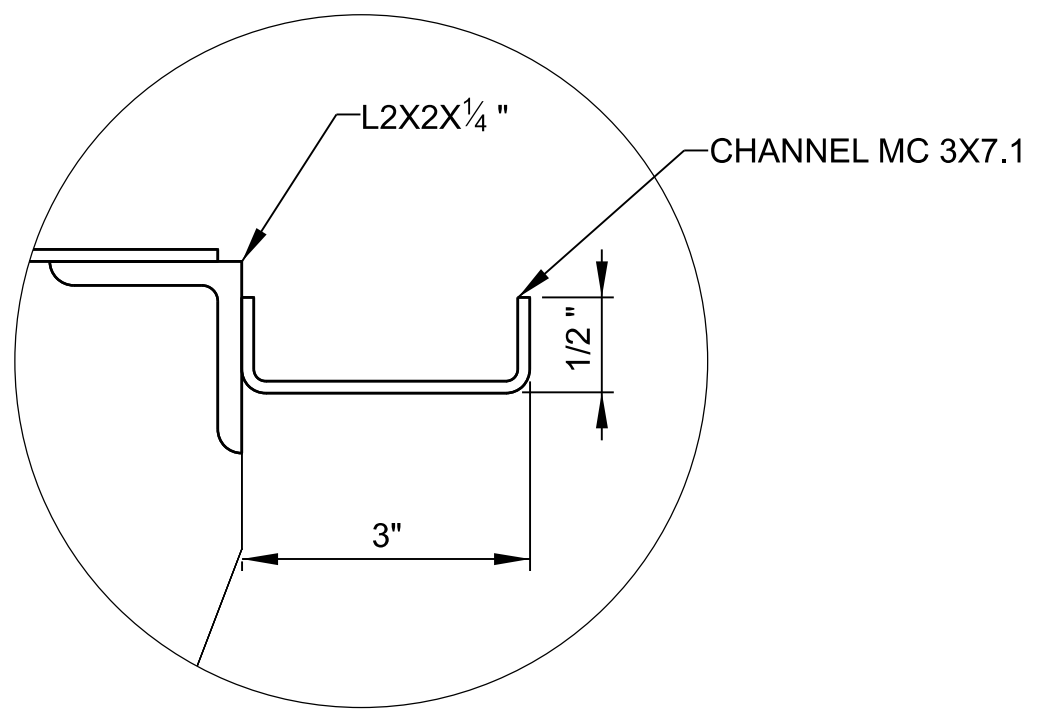
**SUNSHIELD COVER PROFILE**  
NO SCALE



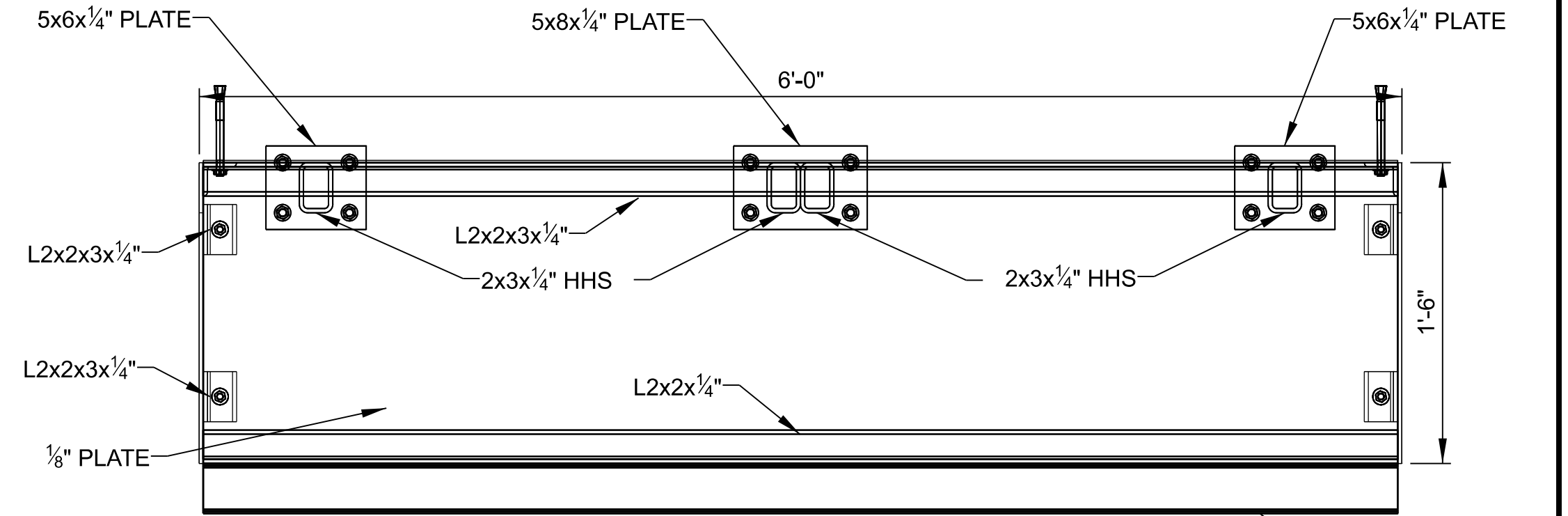
**1 DETAIL**  
SCALE: 3"=1"



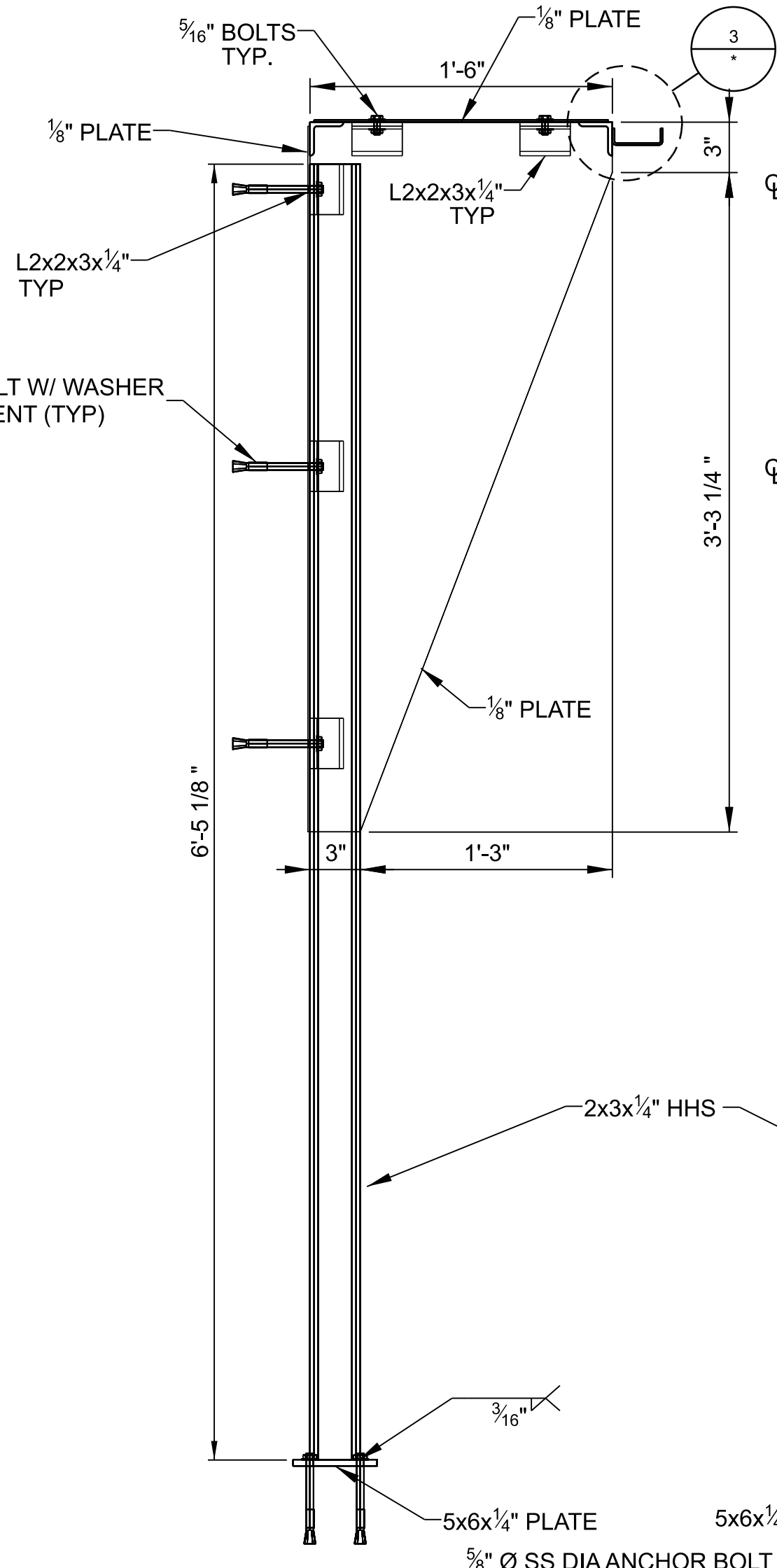
**2 DETAIL**  
SCALE: 3"=1"



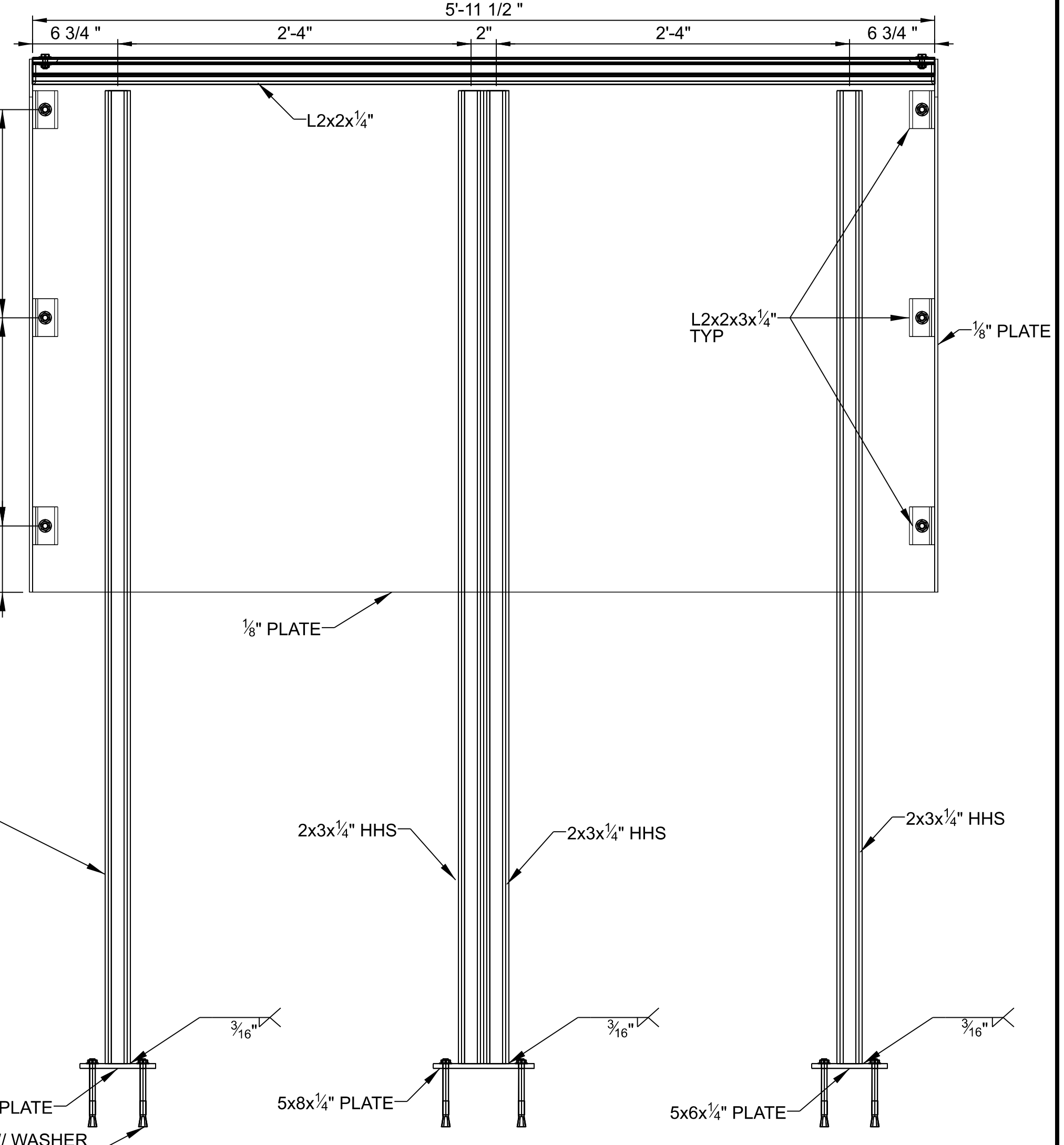
**3 DETAIL**  
SCALE: 3"=1"



**ELECTRICAL BOX WEATHER COVER PLAN**  
SCALE: 1/2"=1'-0"

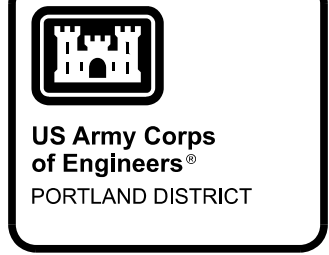
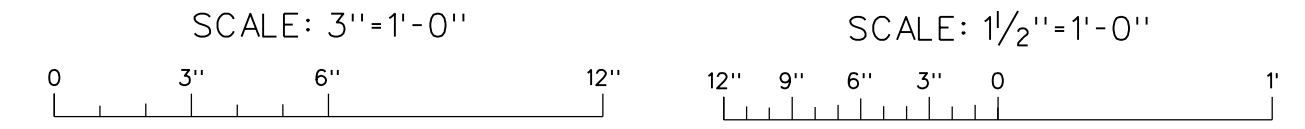


**SUN SHIELD COVER PROFILE**  
SCALE: 1/2"=1'-0"



**SUN SHIELD COVER FRONT**  
SCALE: 1/2"=1'-0"

- NOTES:**
1. DRILL AND INSTALL STAINLESS CONCRETE ANCHORS FOR SUNSHIELD IN ACCORDANCE WITH STANDARD RECOMMENDATIONS OF THE ANCHOR MANUFACTURER.
  2. PROVIDE ISOLATING WASHERS AT ALL TRANSCIEVER PANEL - POST CONNECTIONS ON EACH SIDE TO PROTECT AGAINST GALVANIC CORROSION SEE DETAIL 4.
  3. ALL PLATES, SHAPES AND BARS DENOTED ALUM. ARE ALUMINUM TYPE 6061 ALLOY T6 TEMPER.



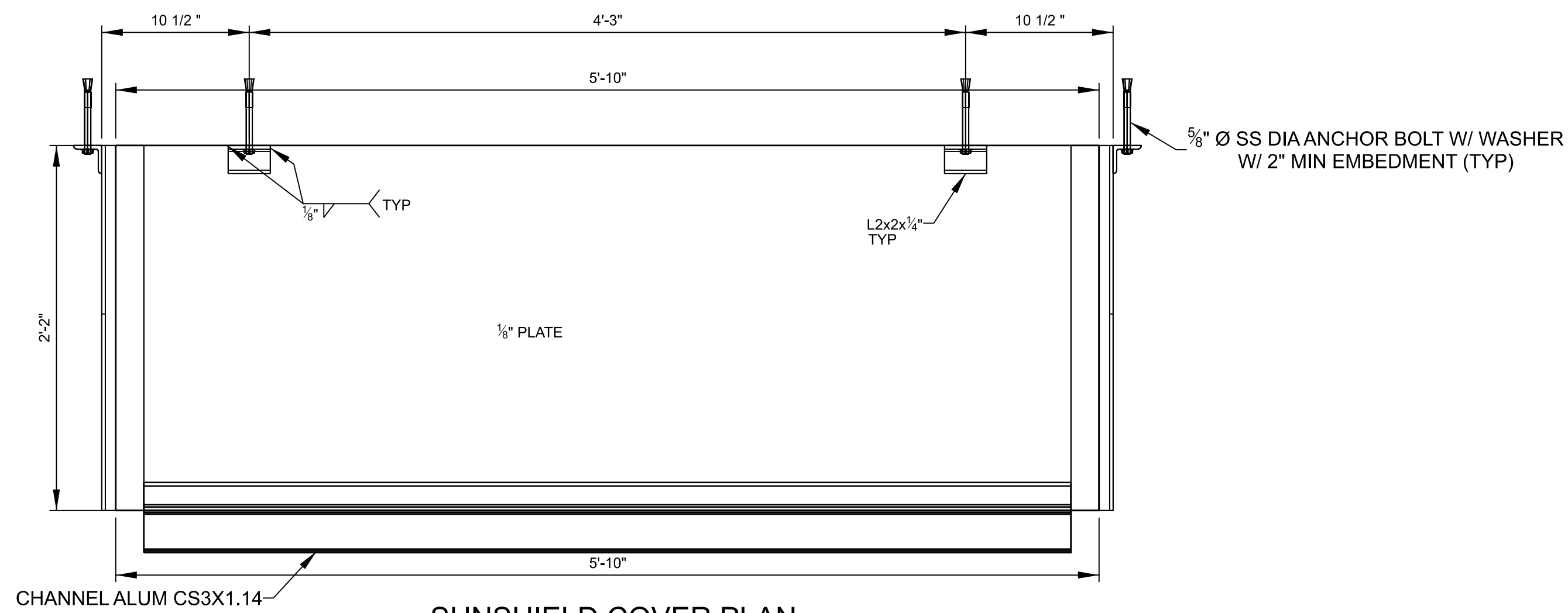
DATE 07	DATE 08	DATE 09	DATE 04	DATE 03	DATE 02	DATE 01	DATE	APPR.

P&S REVIEW 90%		DESCRIPTION	MARK

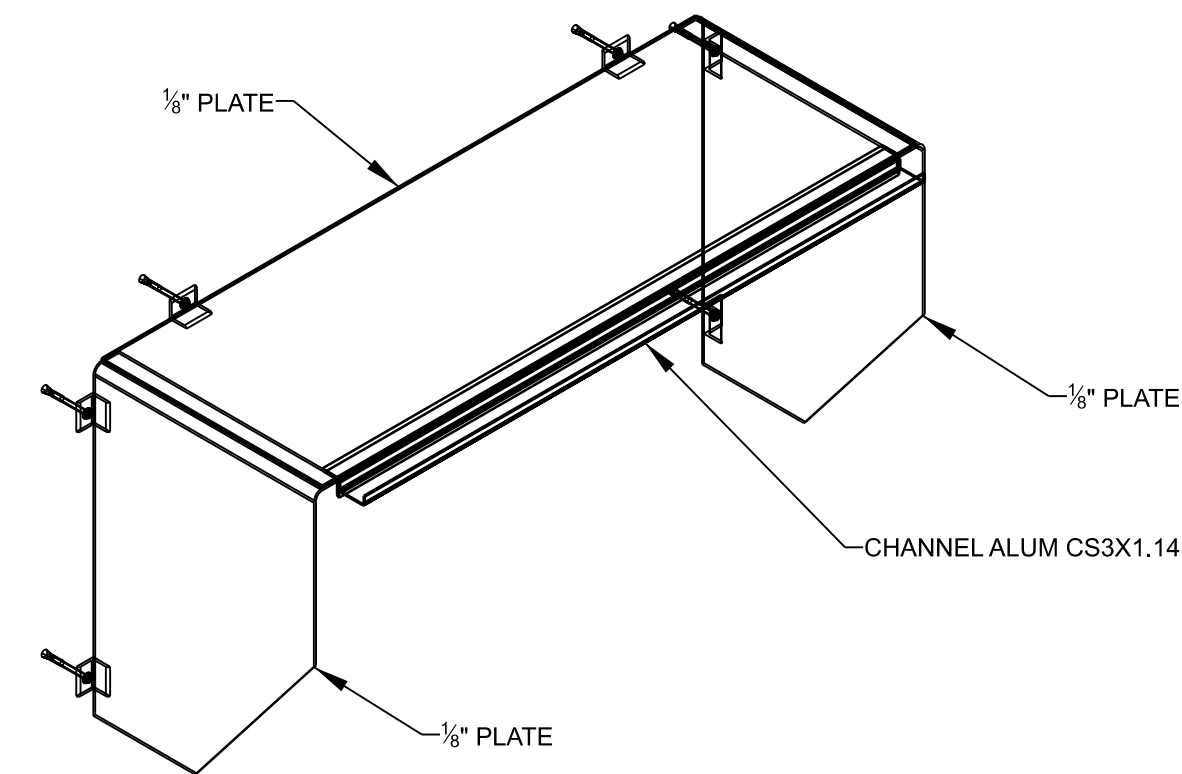
DESIGNED BY: T. SURRATT	CHECKED BY: A. HENGER	DATE: 01/12/2023	SOLICITATION NO.:	CONTRACT NO.:
SUBMITTED BY: MATTHEW D. HANSON, P.E.		FILE NAME: BDP1_1235G522XXX.dgn	PLANT SCALE:	PLOT DATE:
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON		ANSI D	1:1	

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
TRANSCIEVER PANEL SUNSHADE-TYPE 1  
SECTIONS AND DETAILS

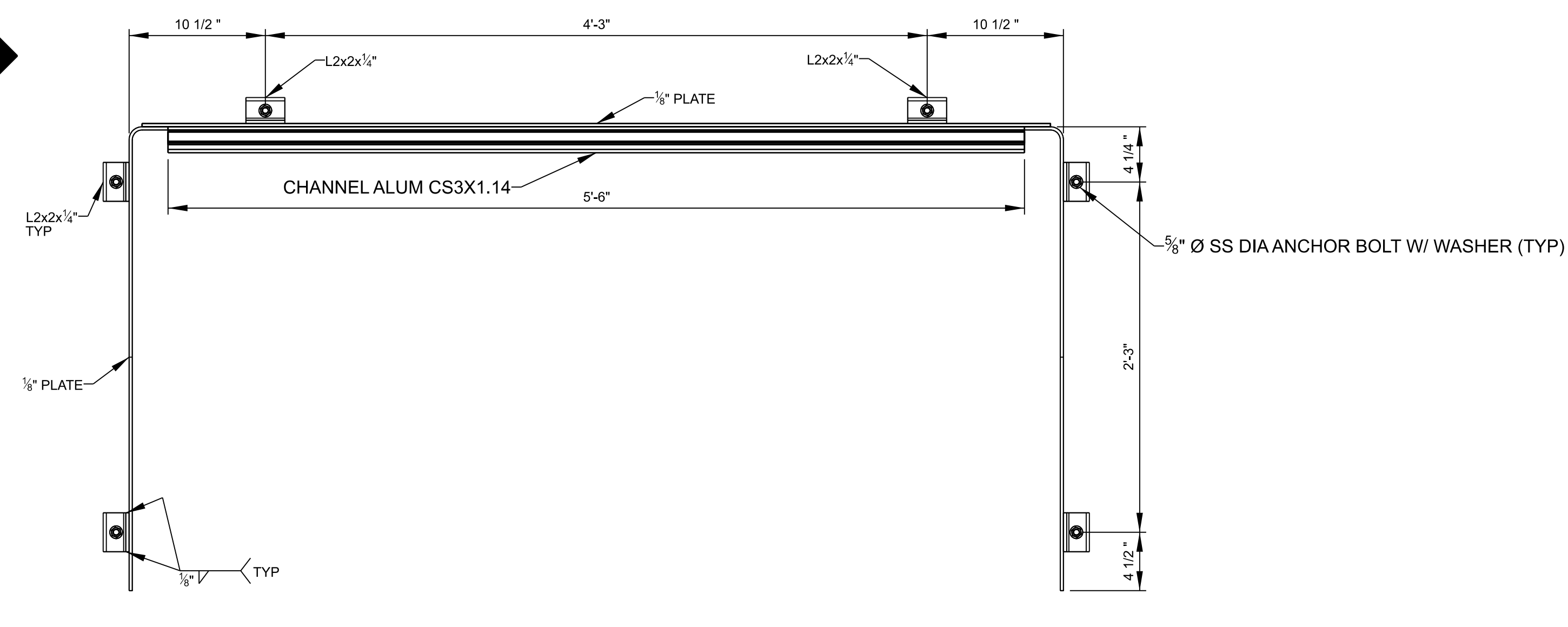
SHEET IDENTIFICATION  
**SG522**



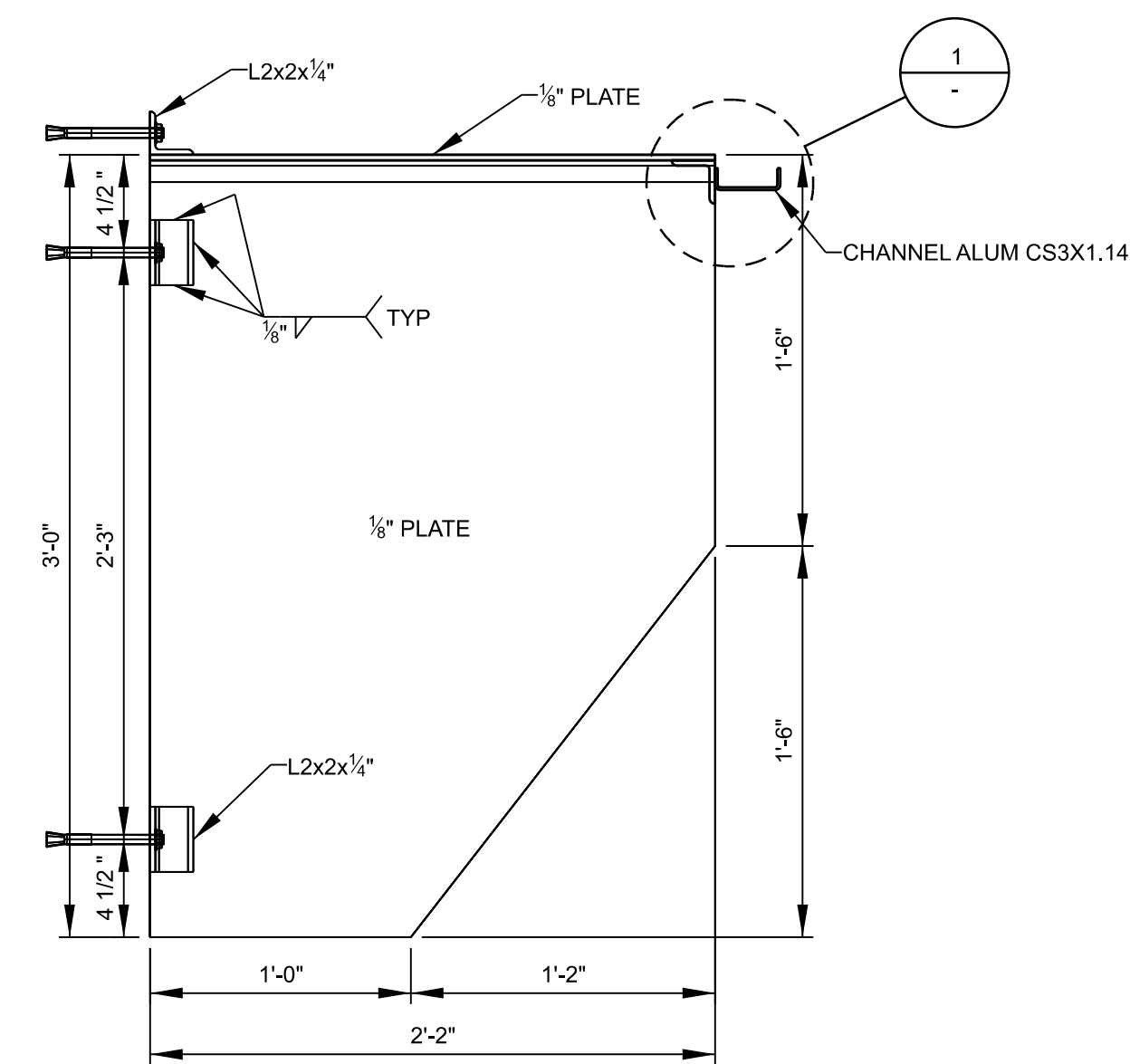
**SUNSHIELD COVER PLAN**  
SCALE: 1 1/2" = 1'-0"



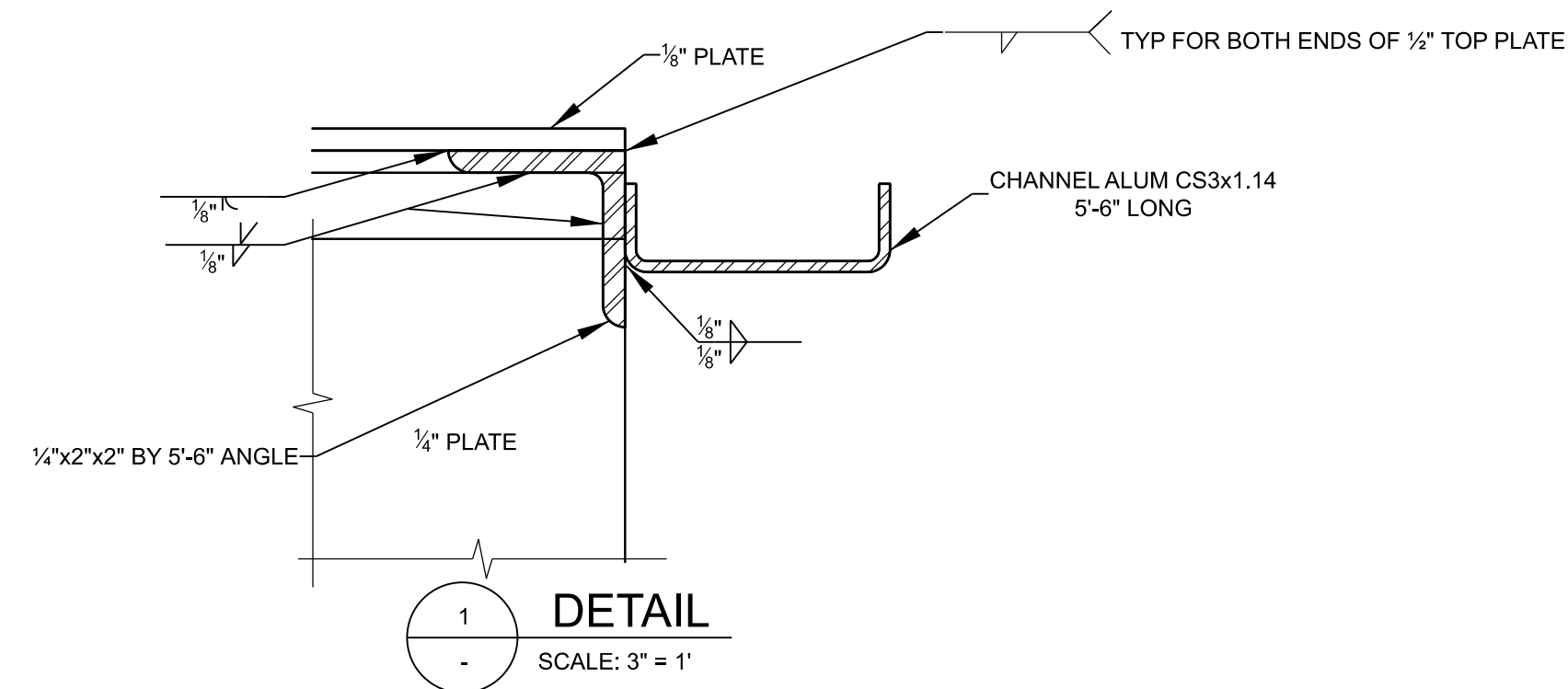
**SUNSHIELD COVER ISOMETRIC**  
NO SCALE



**SUNSHIELD COVER FRONT**  
SCALE: 1 1/2" = 1'-0"



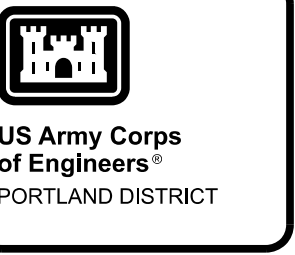
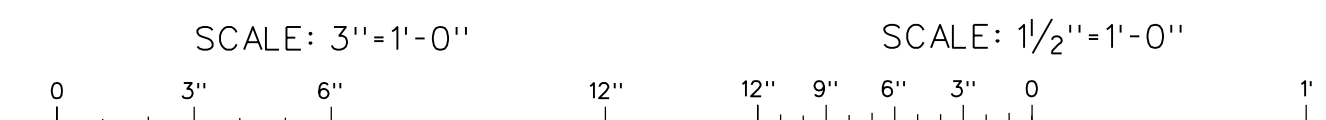
**SUNSHIELD COVER PROFILE**  
SCALE: 1 1/2" = 1'



**DETAIL**  
SCALE: 3" = 1'

**NOTES:**

1. DRILL AND INSTALL STAINLESS CONCRETE ANCHORS FOR SUNSHIELD IN ACCORDANCE WITH STANDARD RECOMMENDATIONS OF THE ANCHOR MANUFACTURER.
2. PROVIDE ISOLATING WASHERS AT ALL TRANSCIEVER PANEL - POST CONNECTIONS ON EACH SIDE TO PROTECT AGAINST GALVANIC CORROSION SEE DETAIL 4.
3. ALL PLATES, SHAPES AND BARS DENOTED ALUM. ARE ALUMINUM TYPE 6061 ALLOY T6 TEMPER.



US Army Corps of Engineers  
PORTLAND DISTRICT

DATE	DATE	DATE	DATE	DATE	DATE	DATE
DATE 07	DATE 06	DATE 05	DATE 04	DATE 03	DATE 02	DATE 01

**P&S REVIEW 90%**

DESIGNED BY: T. SURRATT	CHECKED BY: A. HENGER	DATE: 01/16/2023	SOLICITATION NO.:	CONTRACT NO.:
SUBMITTED BY: MATTHEW D. HANSON, P.E.	FILE NAME: BDT1.1235G523XXX.dgn	ANSI D	ANSI D	ANSI D

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

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
LADDER CONTROL SECTION MODIFICATIONS  
TRANSCIEVER PANEL SUNSHADE-TYPE 2  
SECTIONS AND DETAILS

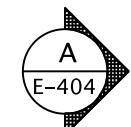
SHEET IDENTIFICATION  
**SG523**



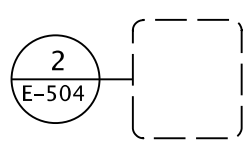


GRAPHIC SYMBOLS

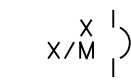
ELEVATION/SECTION REFERENCE  
TOP LETTER INDICATES ELEVATION/SECTION  
BOTTOM NO. INDICATES SHEET REFERENCED



DETAIL REFERENCE  
TOP NO. INDICATES DETAIL  
BOTTOM NO. INDICATES SHEET REFERENCED

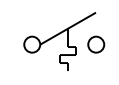


CIRCUIT BREAKER  
XXXX CURRENT RATING NOTED  
OR MOTOR CIRCUIT PROTECTOR  
XX/M MAG ONLY RATING SHOWN



LSI ELECTRONIC TRIP BREAKER  
(L-LONG TIME, S- SHORT TIME, I-INST)

TEMPERATURE SWITCH  
(N.O., CLOSURES ON DROPPING TEMPERATURE)



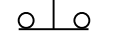
LIMIT SWITCH (N.C.)



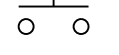
LIMIT SWITCH (N.O.)



N.C. PUSH BUTTON



N.O. PUSH BUTTON



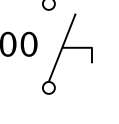
DATA COMM WALL RECEPTACLE



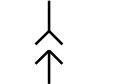
TELEPHONE DATA FLOOR RECEPTACLE



3-POLE DISCONNECT SWITCH,  
EXTERNALLY OPERATED  
(NUMBER INDICATES AMP RATING)



DISCONNECTING DEVICE  
(BUS STAB, PLUG/RECEPT, ETC.)

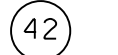


SAMPLE DEVICE FUNCTIONS

CONTROL RELAY

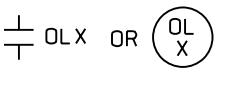


AC CONTACTOR

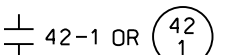


EXAMPLES

SUFFIX X INDICATES ASSOCIATED  
AUXILIARY RELAY.

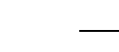


SUFFIX USED FOR IDENTIFICATION.

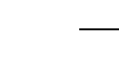


CONDUIT AND GROUNDING

CONDUIT EXPOSED



CONDUIT EMBEDDED IN FLOOR OR WALL



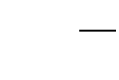
CONDUIT TURNING TOWARD OBSERVER.



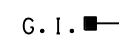
CONDUIT TURNING AWAY FROM OBSERVER.



EMBEDDED GROUND CONDUCTOR  
(SIZE AS INDICATED).



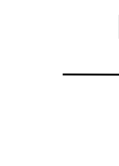
GROUND INSERT IN FLOOR



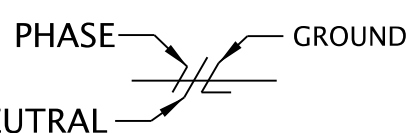
CONDUIT CAPPED OFF



HOME RUN TO PANELBOARD. ARROWS  
INDICATE NUMBER OF CKTS, LETTERS  
IDENTIFY PANEL, NUMBER(S) AT ARROW  
IDENTIFIES CKTS.



CONDUIT TICK MARKS DESIGNATION



PANEL WIRING

INTERNAL WIRING  
WIRE NUMBER  
ORIGIN (COMPONENT)



EXTERNAL WIRING  
WIRE NUMBER  
DESTINATION TERMINATION  
DESTINATION



CONTROL WIRING NOMENCLATURE

REMOTE I/O  
CHASSIS  
MODULE SLOT



TERMINAL NUMBER, IF  
DIFFERENT THAN I/O CHANNEL  
INPUT OR OUTPUT  
CHANNEL  
INPUT (I) OR OUTPUT (O)



PLC I/O WIRING NOMENCLATURE



NOMENCLATURE

A. TERMINAL EQUIPMENT

- L - LOCK
F - FISH RELATED
D - NON-OVERFLOW DAM
1. SWITCHBOARDS AND SWITCHGEAR
LCQ - 480V SWITCHGEAR (NAV LOCK)
SU - 480V SWITCHBOARD (MAIN UNITS)
SUA - 480V SWITCHBOARD (FISHWATER UNITS)
SJ - 13.8kV SWITCHGEAR (STATION SERVICE)
2. LOAD CENTERS
CQ - 480V (POWERHOUSE)
DCR1 - 480V (DAM LIGHTING)
DQ - 480V (NON-OVERFLOW DAM)
FCQ - 480V (FISH RELATED)
SQ - 480V SUBSTATION (POWERHOUSE)
3. APPARATUS
B - BATTERY
CT - CURRENT TRANSFORMER
IOR - REMOTE PLC INPUT/OUTPUT RACK
L - LIGHTING
M - MOTOR
MCC - MOTOR CONTROL CENTER
T - TRANSFORMER (POWER)
TR - TRANSFORMER (LIGHTING)
X - BREAKER (ADD VOLTAGE LETTER)
Z - DISC. SWITCH (ADD VOLTAGE LETTER)

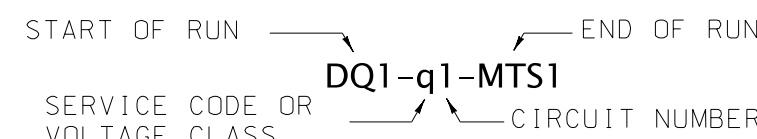
B. MODIFYING TERMS FOR TERMINAL EQUIPMENT

- 1. AS AN AID TO FURTHER IDENTIFICATION OF VOLTAGE CLASS AND LOCATION OF THE EQUIPMENT, THE FOLLOWING ARE APPLIED TO SEPARATELY MOUNTED BREAKERS, DISCONNECTING MOUNTED BREAKERS, DISCONNECTING SWITCHES, CURRENT TRANSFORMER AND VOLTAGE TRANSFORMERS.
J - 13.8kV
P - 5kV
Q - 480V
R - 120/240 (120/208)
N - NEUTRAL (i.e. GN1, TN1)
2. SERVICE CODE OR VOLTAGE CLASS
c - CONTROL CIRCUITS
d - 0-48V AC/DC
f - FIBER OPTIC CIRCUITS
j - POWER CIRCUIT, 13.8kVAC
p - POWER CIRCUIT, 4160VAC
q - POWER CIRCUIT, 480VAC
r - POWER CIRCUIT (120/240 OR 120/208 VAC)
s - SPARE CONDUIT
tn - LOCAL AREA NETWORK (LAN) CIRCUITS
tt - TELEPHONE/PBX CIRCUITS, COMM CIRCUITS
T1 - DEDICATED T1 CIRCUITS
u - ALARM CIRCUITS, ANNUNCIATOR CIRCUITS, AND OTHER LOW-LEVEL SIGNAL CIRCUITS.

C. CIRCUIT AND ROUTING IDENTIFICATION

1. ELECTRICAL CIRCUITS AND CONDUITS ARE IDENTIFIED AS FOLLOWS:

A. BETWEEN MAJOR ITEMS OF EQUIPMENT, A THREE PART NUMBER IS USED.



B. A TWO-PART NUMBER IS USED FOR MOST LIGHTING AND SOME POWER DISTRIBUTION CIRCUITS; I.E., THE END OF RUN IS OMITTED.

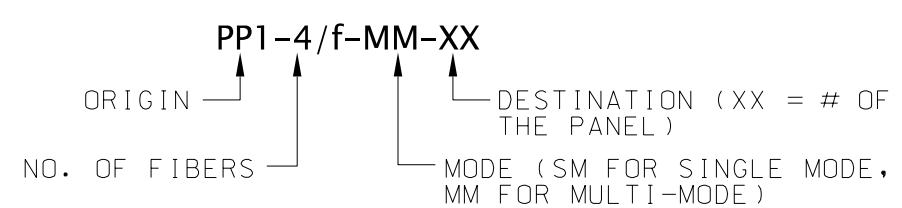
C. CONTROL CIRCUIT NUMBERS CORRESPOND TO THE NUMBER OF THE CONTROLLED POWER CIRCUIT; e.g. CQA3-c1 WOULD CONTROL CQA3-q1.

D. CONDUIT NUMBERS ARE GENERALLY IDENTICAL TO THE CIRCUIT CONTAINED WITHIN THE CONDUIT.

E. CIRCUITS TO DEVICES FORMING AN INTEGRAL PART OF TERMINAL EQUIPMENT RECEIVE THE TERMINAL EQUIPMENT DESIGNATION (e.g. THE CIRCUIT TO CT'S IN CIRCUIT BREAKER X11 COULD BE DESIGNATED SU1-q1-X11). CIRCUITS TO SEPARATELY MOUNTED DEVICES RECEIVE THE DESIGNATION ASSIGNED TO THE DEVICE (i.e. CQ24-q1-4C1 IS A CIRCUIT GOING TO TRANS. OIL PUMP 4C1).

2. MULTI-CONDUCTOR CABLES ARE IDENTIFIED BY SUFFIX "C"; i.e., 3/C INDICATES A THREE-CONDUCTOR CABLE WHILE A NUMERAL 3 INDICATES THREE CONDUCTORS.

D. FIBER OPTIC CABLE IDENTIFICATION



ELECTRICAL ABBREVIATIONS

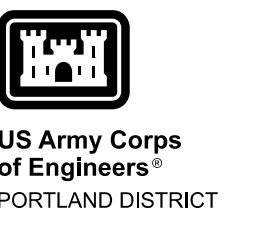
- A - AMMETER, AMPERE
AF - AMP FUSE; AMP FRAME
AFF - ABOVE FINISHED FLOOR
AFG - ABOVE FINISHED GRADE
AIC - AMPERE INTERRUPTING CAPACITY
AIR - AMPERE INTERRUPTING RATING
AL - ALUMINUM
AT - AMPERE TRIP
ATS - AUTOMATIC TRANSFER SWITCH
AWG - AMERICAN WIRE GAUGE
BCG - BARE COPPER GROUND
BK - BREAKER
CB - CONDUIT, CLOSE
CB - CIRCUIT BREAKER
CKT - CIRCUIT
CGB - CABLE GLAND BUSHING
CL - CURRENT LIMITING
CPT - CONTROL POWER XFMR
CPU - CENTRAL PROCESSING UNIT
CS - COUNTING STATION
CT - CABLE TRAY / CURRENT TRANSFORMER
CV - CABLE VAULT
DIV - DIVISION
D/S - DOWNSTREAM
EG,EGC - EQUIPMENT GROUNDING CONDUCTOR
EF - EXHAUST FAN
EL - ELEVATION
EM - EMERGENCY
EXST - EXISTING
F,FU - FUSE
FCB - FEEDER CIRCUIT BREAKER
FDR - FEEDER
FDX - FULL-DUPLEX
FLR - FLOOR
FLUOR - FLUORESCENT LIGHTING
F/O - FIBER OPTIC
FVNR - FULL VOLTAGE NON-REVERSING
FVR - FULL VOLTAGE REVERSING
G - GROUND
G/ND - GALVANIZED
GFCI - GROUND FAULT CIRCUIT INTERRUPTER
GFCIP - GFCI PROTECTED
GFE - GOV'T FURNISHED EQUIPMENT
GI - GROUND INSERT
HDX - HALF-DUPLEX
HH - HAND HOLE
HID - HIGH INTENSITY DISCHARGE
HTR - HEATER
IG - ISOLATED GROUND
INCAND - INCANDESCENT
INST - INSTANTANEOUS
J/JB - JUNCTION BOX
L - LOWER
LC - LIGHT CONTACTOR
LT-FLEX - LIQUID TIGHT FLEX CONDUIT
LTG - LIGHTING
LR - LATCHING RELAY
L/R - LOCAL/REMOTE
LSI - LONG-TIME, SHORT-TIME, INSTANTANEOUS
M/MTR - MOTOR
MCB - MAIN CIRCUIT BREAKER
MCC - MOTOR CONTROL CENTER
MCP - MOTOR CIRCUIT PROTECTOR
MD - MOTION DETECTOR
MH - MANHOLE / METAL HALIDE
MLO - MAIN LUGS ONLY
MM - MULTIMODE (FIBER)
MS - MOTOR STARTER
MPC - MINI-POWER CENTER (XFMR AND PNL)
MTS - MANUAL TRANSFER SWITCH
N - NEUTRAL
NA - NON-AUTOMATIC, NON-APPLICABLE
NC - NORMALLY CLOSED
NM - NON-METALLIC
NO - NORMALLY OPEN
NP - NAMEPLATE
O - OPEN
OL - OVERLOAD RELAY
PART - PARTIAL
PB - PULL BOX
PC - PHOTOCCELL
PDB - POWER DISTRIBUTION BLOCK
PH - PHASE
PIT - PASSIVE INTEGRATED TRANSPONDER
PNL - PANEL
PR - PAIR
PS - PRESSURE SWITCH
PTT - PUSH TO TEST
PVC - POLYVINYL CHLORIDE CONDUIT
Q - QUARTZ LIGHTING
R - RAISE
RCPT - RECEPTACLE
REF - REFERENCE INFORMATION
RGS - RIGID GALVANIZED STEEL CONDUIT
RN - RUN
SA - SURGE ARRESTOR
SF - SUPPLY FAN
SM - SINGLE MODE (FIBER)
S/N - SOLID NEUTRAL
SPD - SURGE PROTECTION DEVICE
SPDT - SINGLE-POLE DOUBLE-THROW
SPST - SINGLE-POLE SINGLE-THROW
SS - STAINLESS STEEL / SOFT STARTER
TB - TERMINAL BLOCK
TC - TERMINAL CABINET
TR - TRIAD
TYP - TYPICAL
UG - UNDERGROUND
UH - UNIT HEATER
U/S - UPSTREAM
UPS - UNINTERRUPTIBLE POWER SUPPLY
V - VOLTS
VFD - VARIABLE FREQUENCY DRIVE
VM - VOLTMETER
VS - VOLTMETER SWITCH
W - WATT
WP - WEATHERPROOF
WT - WATERTIGHT
W/ - WITH
XCVR - TRANSCEIVER
XFMR - TRANSFORMER

CONTROL ABBREVIATIONS

- AI - ANALOG INPUT
AIR - AMPERE INTERRUPT RATING
ALM/AH - ALARM/ANNUNCIATOR HORN
AO - ANALOG OUTPUT
AUX - AUXILIARY
AWS - AUXILIARY WATER SUPPLY
CP - CONTROL PANEL
CR - CONTROL RELAY
CS - CONTROL SWITCH
CU - COPPER
CV - CONTROL VALVE
BYPASS (CONTACTOR)
DI - DISCREET INPUT
DNET - DEVICENET
DTAP - DEVICENET TAP
DO - DISCREET OUTPUT
DPLX - DUPLEX
DPM - DIGITAL POWER METER
DS - DISCONNECT SWITCH
DSA - DEVICENET STARTER ASSEMBLY
DT - DEVICENET TAP
ENET - ETHERNET
ETM - ELAPSED TIME METER
FC - FLOW CONTROLLER
FM - FLOW METER
FU - FUSE
FWS - FACILITY WATER SUPPLY
FZ - VALVE POSITION (FLOW)
HOA - HAND-OFF-AUTO
HMI - HUMAN MACHINE INTERFACE
HSI - HIGH SPEED INTERFACE
HV - HAND VALVE
I/O - INPUT/OUTPUT
I/P - CURRENT TO PRESSURE TRANSDUCER
IC - CURRENT CONVERTER
IR - INDUCTION RELAY
LC - LEVEL CONTROLLER
LE - LEVEL ELEMENT
LS - LEVEL SWITCH
LT - LEVEL TRANSMITTER
MCR - MASTER CONTROL RELAY
ME - RELATIVE HUMIDITY/MOISTURE ELEMENT
MIT - RELATIVE HUMIDITY INDICATING XMTR
PA - PLANT AIR
PB - PUSH BUTTON
PBL - PUSH BUTTON, LIGHTED
PC - PERSONAL COMPUTER
PDT - DIFFERENTIAL PRESSURE TRANSMITTER
PI - PRESSURE INDICATOR
PL - PILOT LIGHT
PLC - PROGRAMMABLE LOGIC CONTROLLER
PRV - PRESSURE REGULATING VALVE
PRX - PROXIMITY SWITCH
PS - PRESSURE SWITCH
PT - PRESSURE TRANSMITTER
PTT - PRESS TO TEST
PWR - POWER
PY - PRESSURE CONVERTER
REG - PRESSURE REGULATOR
RIO - REMOTE I/O
RLS - ROTARY LIMIT SWITCH
RVSS - REDUCED VOLTAGE SOFT STARTER
S/N - SOLID NEUTRAL
SCADA - SUPERVISORY CTRL & DATA ACQUISITION
SCR - SAFETY CONTROL RELAY
SOL/SV - SOLENOID/SOLENOID VALVE
SS - SELECTOR SWITCH
STA - STATION (OPERATOR CNTRL)
STP - SHIELDED TWISTED PAIR
T/XFMR - TRANSFORMER
TDR - TIME DELAY RELAY
TE - TEMPERATURE ELEMENT
TI - TEMPERATURE INDICATOR
TT - TEMPERATURE TRANSMITTER
TVSS - TRANSIENT VOLTAGE SURGE SUPPRESSOR
UTP - UNSHIELDED TWISTED PAIR
VIB - VIBRATION SWITCH
VT - VIBRATION TRANSMITTER
WS - WEIGHT/TENSION SWITCH
XCVR - TRANSCEIVER
XMTR - TRANSMITTER
YS - AUX ATS SWITCH
ZS - LIMIT SWITCH
ZT - POSITION TRANSMITTER
ZV - PNEUMATIC PISTON ACTUATOR
ZZ - POSITIONING LINEAR ACTUATOR (ELECT)

GENERAL NOTES

- 1. THIS IS A TYPICAL SYMBOLS AND ABBREVIATIONS SHEET, THEREFORE, SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE USED WITHIN THIS DRAWING SET.
2. SHEETS IN THIS DRAWING SET ARE INTENDED TO BE PRINTED IN COLOR.



US Army Corps of Engineers
PORTLAND DISTRICT

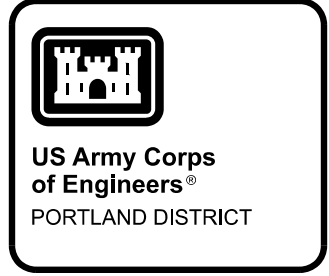
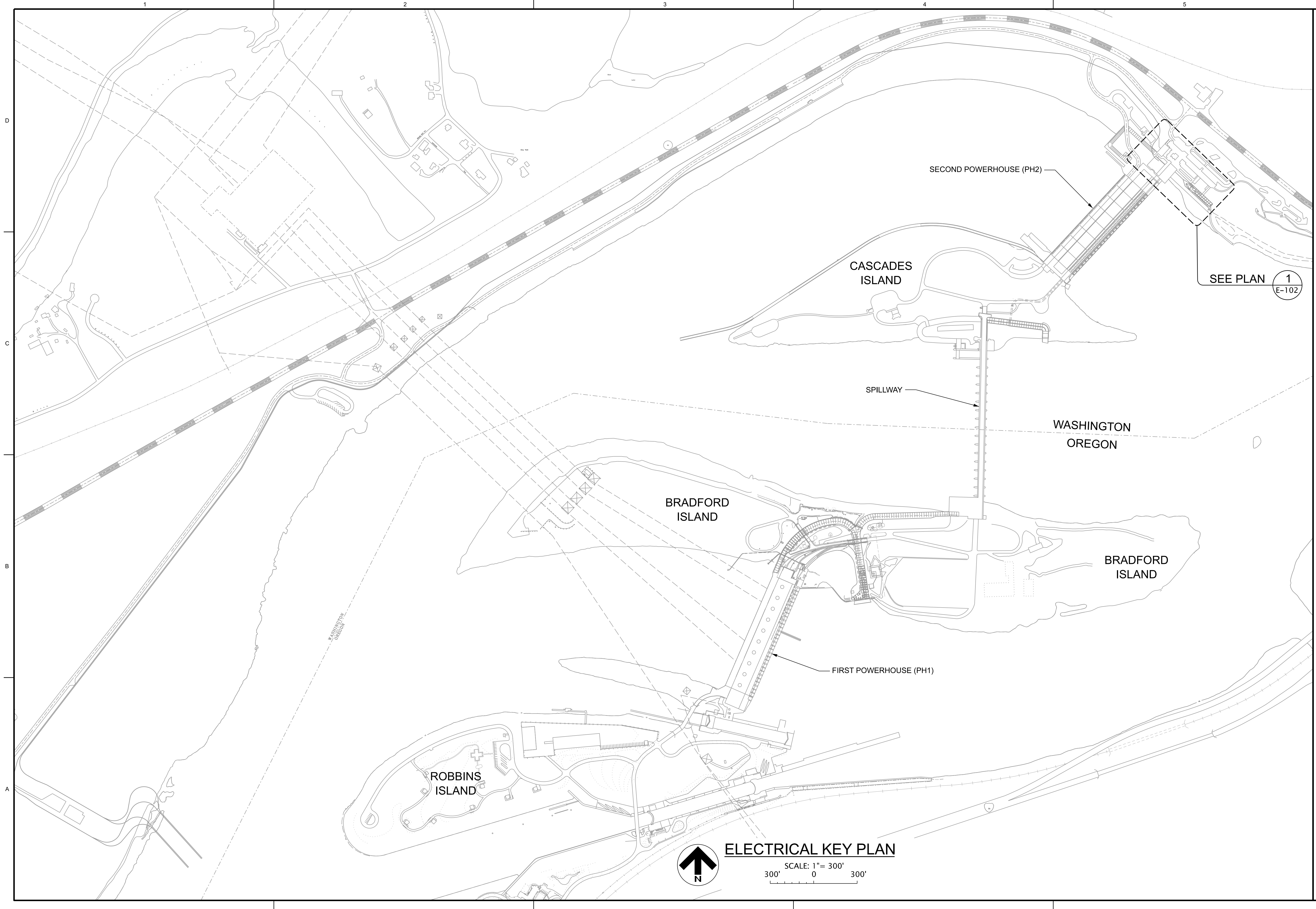
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PLOT SCALE: PLOT DATE:
FILE NAME:
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BONNEVILLE LOCK AND DAM
WASHINGTON SHORE FISH LADDER
FY2019 FISH ACCORDS
LAMPREY PASSAGE
ELECTRICAL IDENTIFICATION AND ABBREVIATIONS

SHEET IDENTIFICATION
E-001





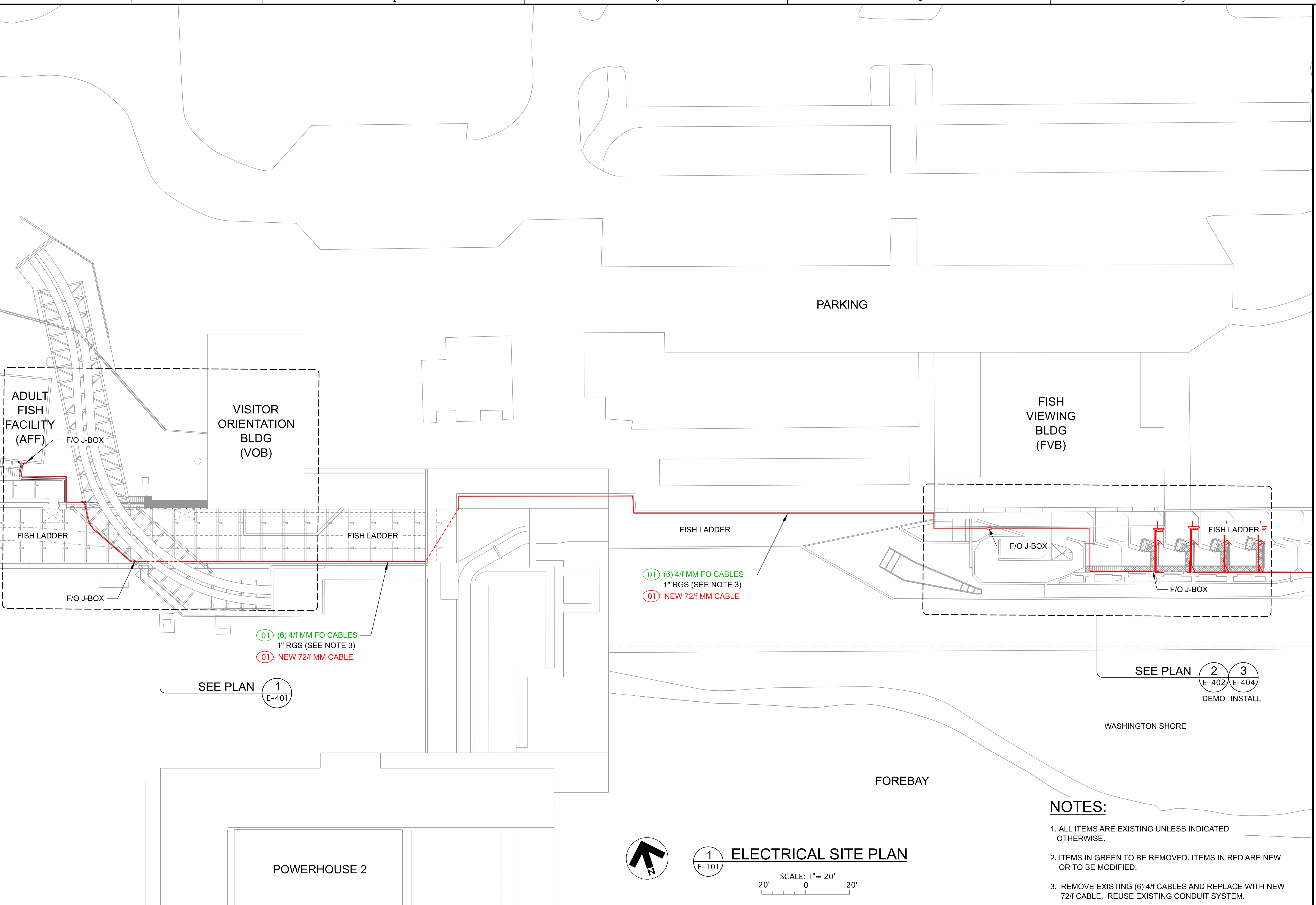
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CHECKED BY	MARK
ENGINEER	
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SEE PLAN 1 E-102	

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CONTRACT NO.	DRAWING NUMBER
DRAWING NUMBER	FILE NAME
FILE NAME	SIZE
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BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
KEY PLAN

SHEET IDENTIFICATION  
**E-101**

**ELECTRICAL KEY PLAN**  
SCALE: 1" = 300'  
300' 0 300'



SEE PLAN **1**  
E-401

(01) (6) 4/f MM FO CABLES  
1" RGS (SEE NOTE 3)  
(01) NEW 72/f MM CABLE

(01) (6) 4/f MM FO CABLES  
1" RGS (SEE NOTE 3)  
(01) NEW 72/f MM CABLE

SEE PLAN **2** **3**  
E-402 E-404  
DEMO INSTALL



**1**  
E-101

**ELECTRICAL SITE PLAN**

SCALE: 1" = 20'  
20' 0 20'

**NOTES:**

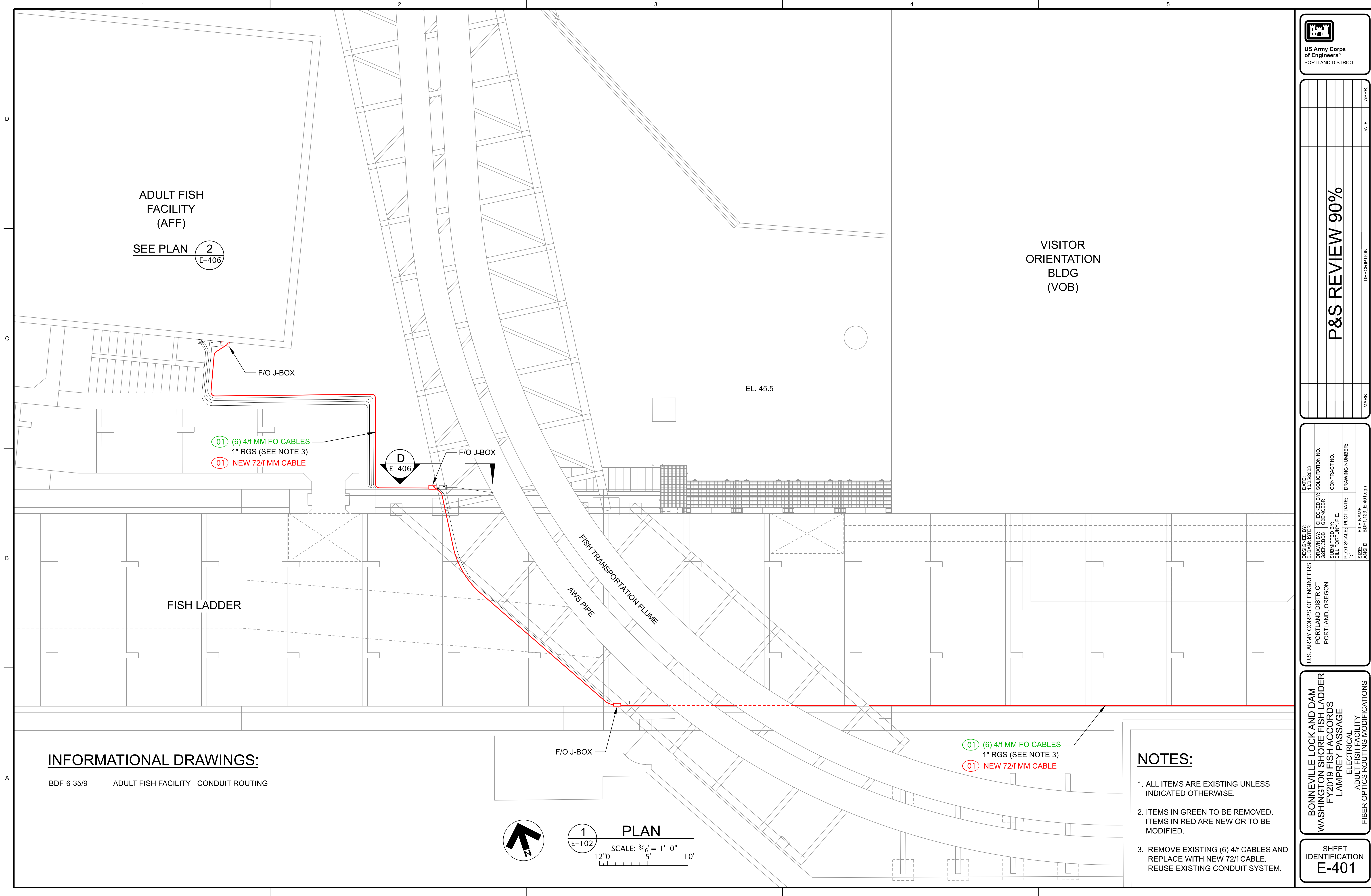
1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
2. ITEMS IN GREEN TO BE REMOVED. ITEMS IN RED ARE NEW OR TO BE MODIFIED.
3. REMOVE EXISTING (6) 4/f CABLES AND REPLACE WITH NEW 72/f CABLE. REUSE EXISTING CONDUIT SYSTEM.

**P&S REVIEW 90%**

DESIGNED BY: PORTLAND DISTRICT U.S. ARMY CORPS OF ENGINEERS	CHECKED BY: GRENGBB ENGINEER	DATE: 02/26/2023	SOLICITATION NO.:
PROJECT: PORTLAND, OREGON	CONTRACT NO.:	DATE:	CONTRACT NO.:
DESIGNED BY:	ENGINEER:	DATE:	CONTRACT NO.:
PROJECT:	CONTRACT NO.:	DATE:	CONTRACT NO.:
DESIGNED BY:	ENGINEER:	DATE:	CONTRACT NO.:
PROJECT:	CONTRACT NO.:	DATE:	CONTRACT NO.:

**BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE**  
ELECTRICAL  
ADULT FISH FACILITY  
FIBER OPTICS ROUTING MODIFICATIONS

SHEET IDENTIFICATION  
**E-401**



ADULT FISH FACILITY (AFF)  
SEE PLAN **2**  
E-406

VISITOR ORIENTATION BLDG (VOB)

EL. 45.5

**01** (6) 4/f MM FO CABLES  
1" RGS (SEE NOTE 3)  
**01** NEW 72/f MM CABLE

**D**  
E-406

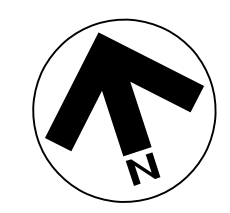
FISH LADDER

FISH TRANSPORTATION FLUME  
AWS PIPE

**01** (6) 4/f MM FO CABLES  
1" RGS (SEE NOTE 3)  
**01** NEW 72/f MM CABLE

**INFORMATIONAL DRAWINGS:**

BDF-6-35/9 ADULT FISH FACILITY - CONDUIT ROUTING



**1**  
E-102

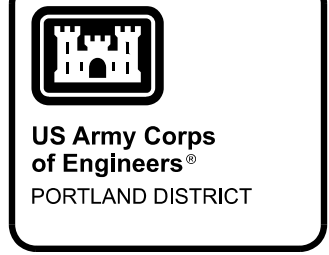
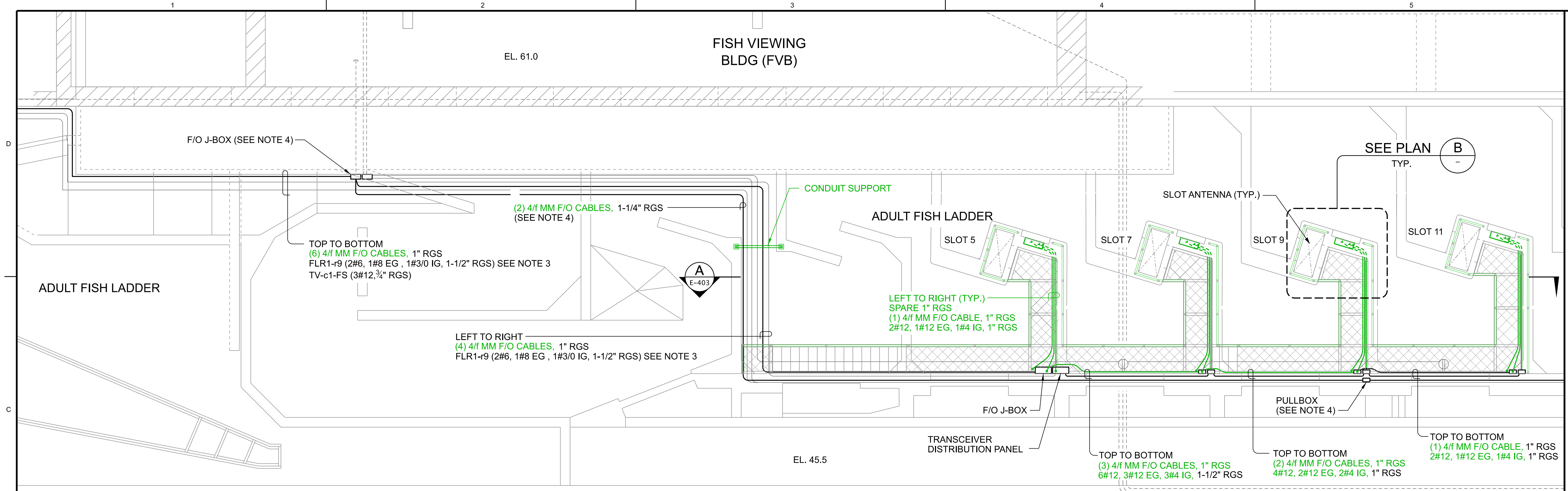
**PLAN**

SCALE:  $\frac{3}{16}'' = 1'-0''$   
12" 0 5 10'

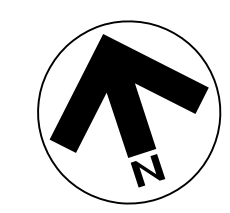
**NOTES:**

1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
2. ITEMS IN GREEN TO BE REMOVED. ITEMS IN RED ARE NEW OR TO BE MODIFIED.
3. REMOVE EXISTING (6) 4/f CABLES AND REPLACE WITH NEW 72/f CABLE. REUSE EXISTING CONDUIT SYSTEM.

FISH VIEWING BLDG (FVB)  
EL. 61.0



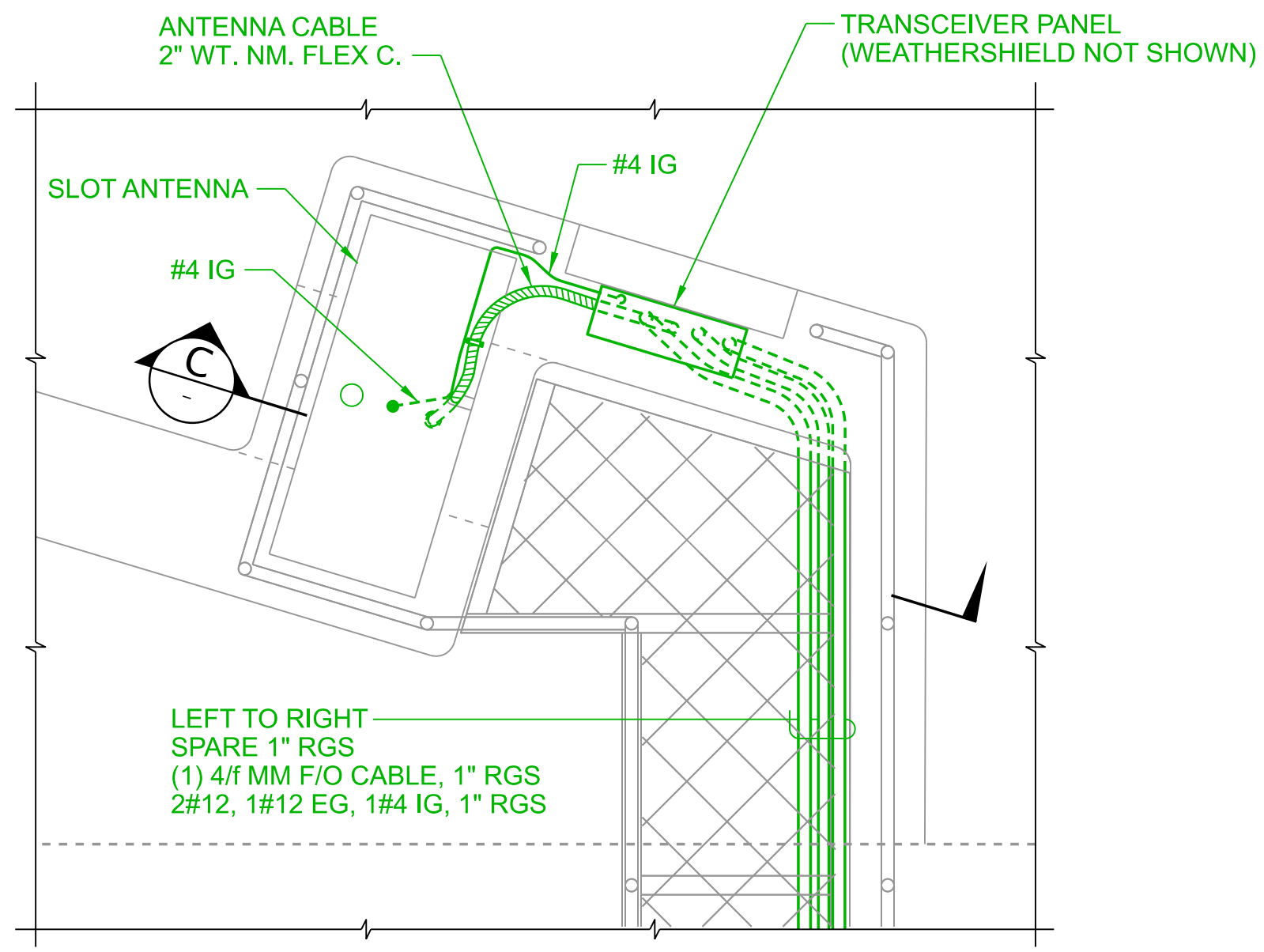
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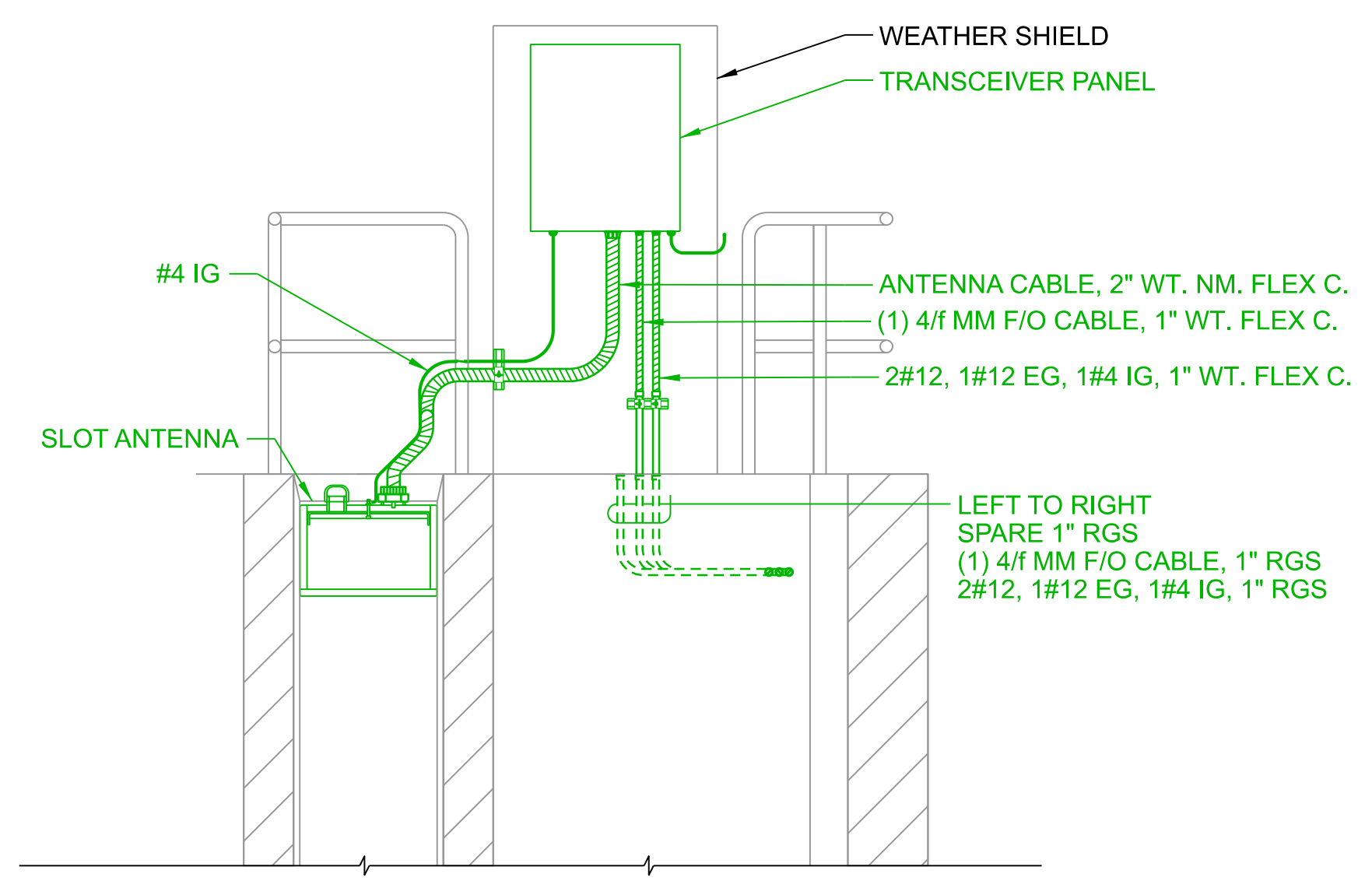
2  
E-102

**ADULT FISH LADDER DEMOLITION PLAN**

SCALE: 3/16" = 1'-0"  
12' 0" 5' 10"



**B PLAN**  
SCALE: 1/2" = 1'-0"



**C SECTION**  
SCALE: 1/2" = 1'-0"

SCALE: 1/2" = 1'-0"  
12" 0' 1' 2' 3' 4'

**INFORMATIONAL DRAWINGS:**

- BDF-6-35/10 PLAN - ADULT FISH LADDER & FISH VIEWING BLDG
- BDF-6-35/12 TYP. PLAN, SECTION & DETAIL - NEW BAFFLE AND ANTENNA
- E-407 PIT TAG SYSTEM - SECTIONS AND ELEVATIONS, SHEET 1

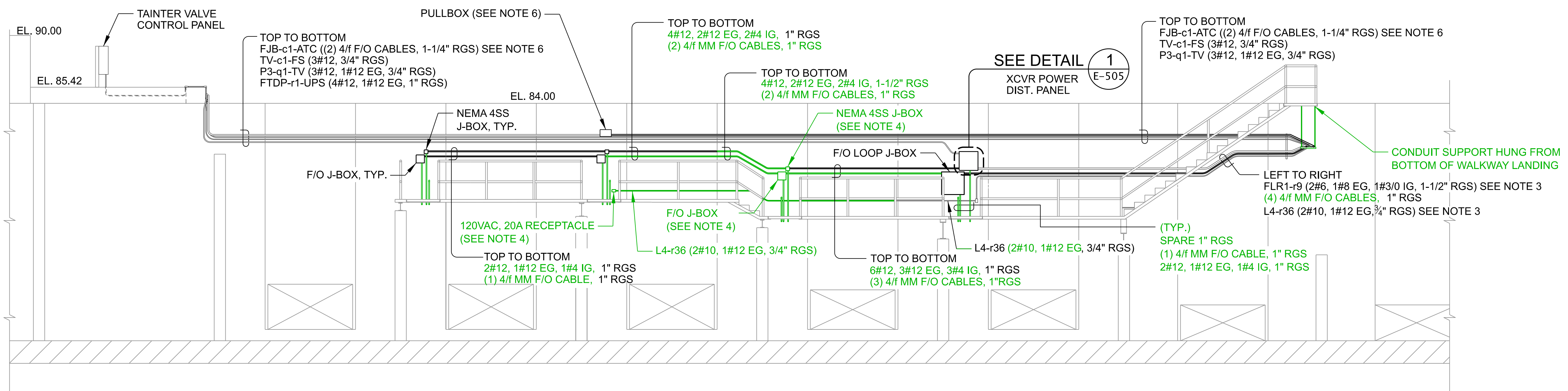
**NOTES:**

- ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
- ITEMS IN GREEN TO BE REMOVED.
- POWER CIRCUIT TO BE REUSED.
- CUT EXISTING F/O CABLES AT EXISTING F/O J-BOX AND PULL BACK TO NEXT PULL BOX. THESE CABLES TO BE REUSED. SEE SHEET E-405 FOR RE-INSTALLATION. REMOVE REMAINING F/O CABLE BACK TO THE AFF FIBER PATCH PANEL.

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APPROVED BY:	DATE:
<b>P&amp;S REVIEW 90%</b>	
DESCRIPTION:	MARK:

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
ADULT FISH LADDER CONTROL SECTION  
DEMOLITION PLAN

SHEET IDENTIFICATION  
**E-402**



ADULT FISH LADDER DEMOLITION

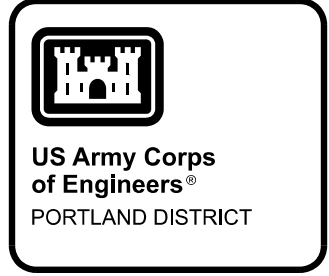
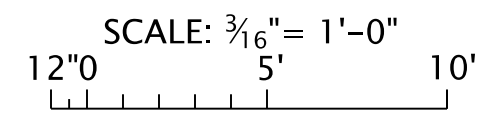
**A** SECTION  
E-402 SCALE: 3/16" = 1'-0"

**INFORMATIONAL DRAWINGS:**

- BDF-6-35/11 ADULT FISH LADDER - SECTION VIEWS
- E-407 PIT TAG SYSTEM - SECTIONS AND ELEVATIONS, SHEET 1

**NOTES:**

1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
2. ITEMS IN GREEN TO BE REMOVED UNLESS NOTED OTHERWISE.
3. POWER CIRCUIT TO BE REUSED.
4. REMOVE AND RELOCATE BOXES AND RECEPTACLES AS INDICATED ON SHEET E-405.
5. PORTIONS OF CONDUITS ARE TO BE REMOVED AND NEW PORTIONS TO BE PROVIDED AS SHOWN ON SHEET E-405.
6. CUT EXISTING F/O CABLES AT EXISTING F/O J-BOX ON VISITOR CENTER WALL AND PULL BACK TO PULL BOX. THESE CABLES TO BE REUSED. SEE SHEET E-405 FOR RE-INSTALLATION. REMOVE REMAINING F/O CABLE BACK TO THE AFF FIBER PATCH PANEL.



<b>P&amp;S REVIEW 90%</b>	APPR. DATE
	MARK DESCRIPTION

DESIGNED BY: GRENGB	DATE: 01/25/2023	DRAWING NUMBER: E-402
DESIGNED BY: GRENGB	DESIGNED BY: GRENGB	CONTRACT NO.:
DESIGNED BY: GRENGB	DESIGNED BY: GRENGB	DRAWING NUMBER:
DESIGNED BY: GRENGB	DESIGNED BY: GRENGB	FILE NAME: BDF1.123_E-402.dgn
DESIGNED BY: GRENGB	DESIGNED BY: GRENGB	ANSI D

BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE  
 ELECTRICAL  
 ADULT FISH LADDER CONTROL SECTION  
 DEMOLITION SECTION VIEW

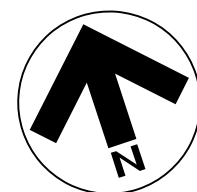
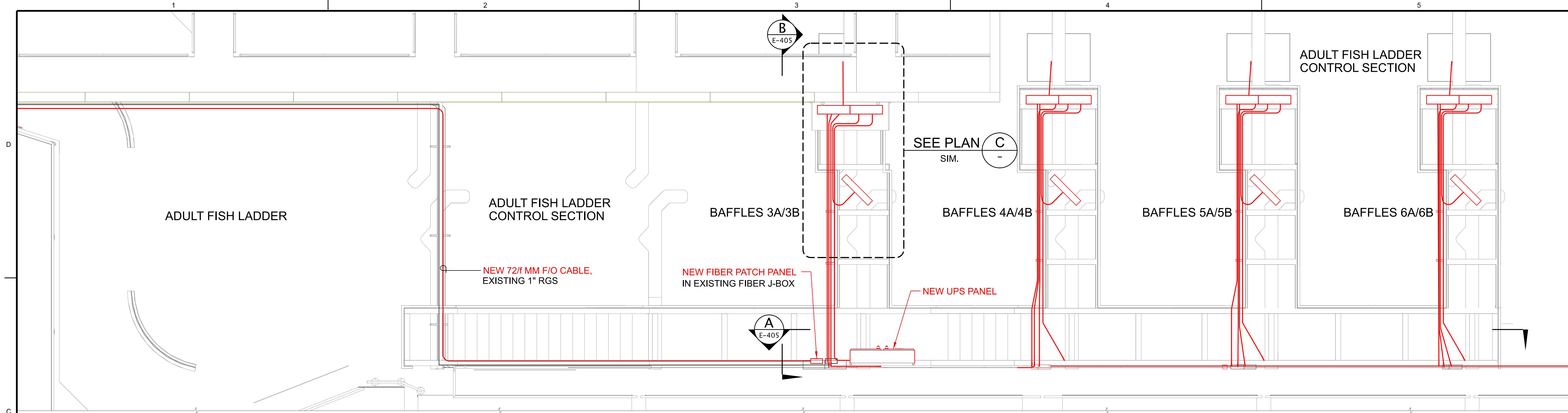
SHEET  
IDENTIFICATION  
**E-403**

DATE: 07/25/2023	DESIGNED BY: GRENGB	PROJECT NO.: E-404	CONTRACT NO.:	APPR.:
DESIGNED BY: GRENGB	PROJECT NO.: E-404	CONTRACT NO.:	MARK	DATE:
<b>P&amp;S REVIEW 90%</b>				DESCRIPTION:
				MARK

DESIGNED BY: GRENGB	PROJECT NO.: E-404	CONTRACT NO.:	DRAWING NUMBER:
PROJECT NO.: E-404	CONTRACT NO.:	DRAWING NUMBER:	FILE NAME: BDF1.123_E-404.dgn
PROJECT NO.: E-404	CONTRACT NO.:	DRAWING NUMBER:	ANSI D

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
ADULT FISH LADDER CONTROL SECTION  
PLAN - NEW BAFFLES AND ANTENNAS

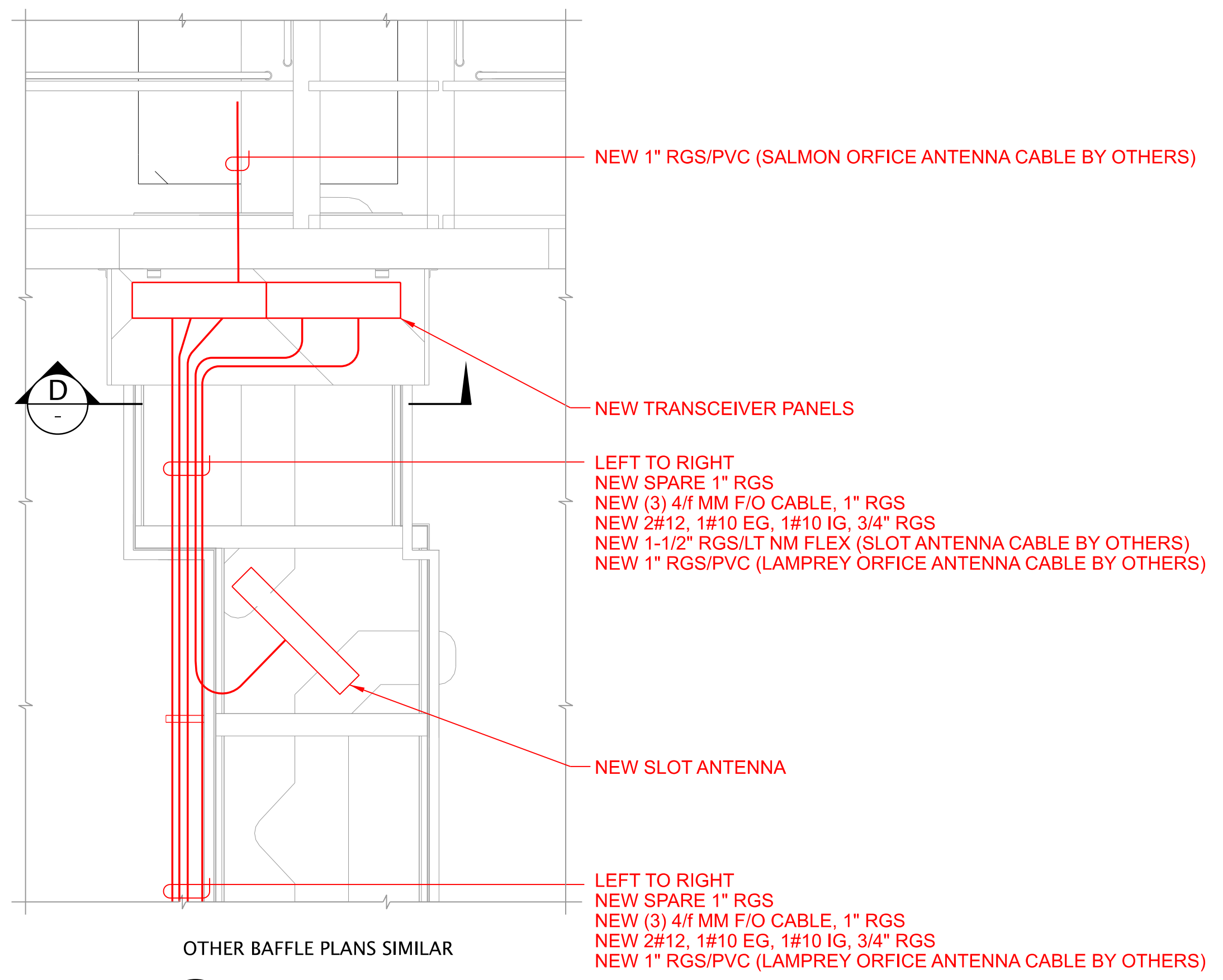
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**E-404**



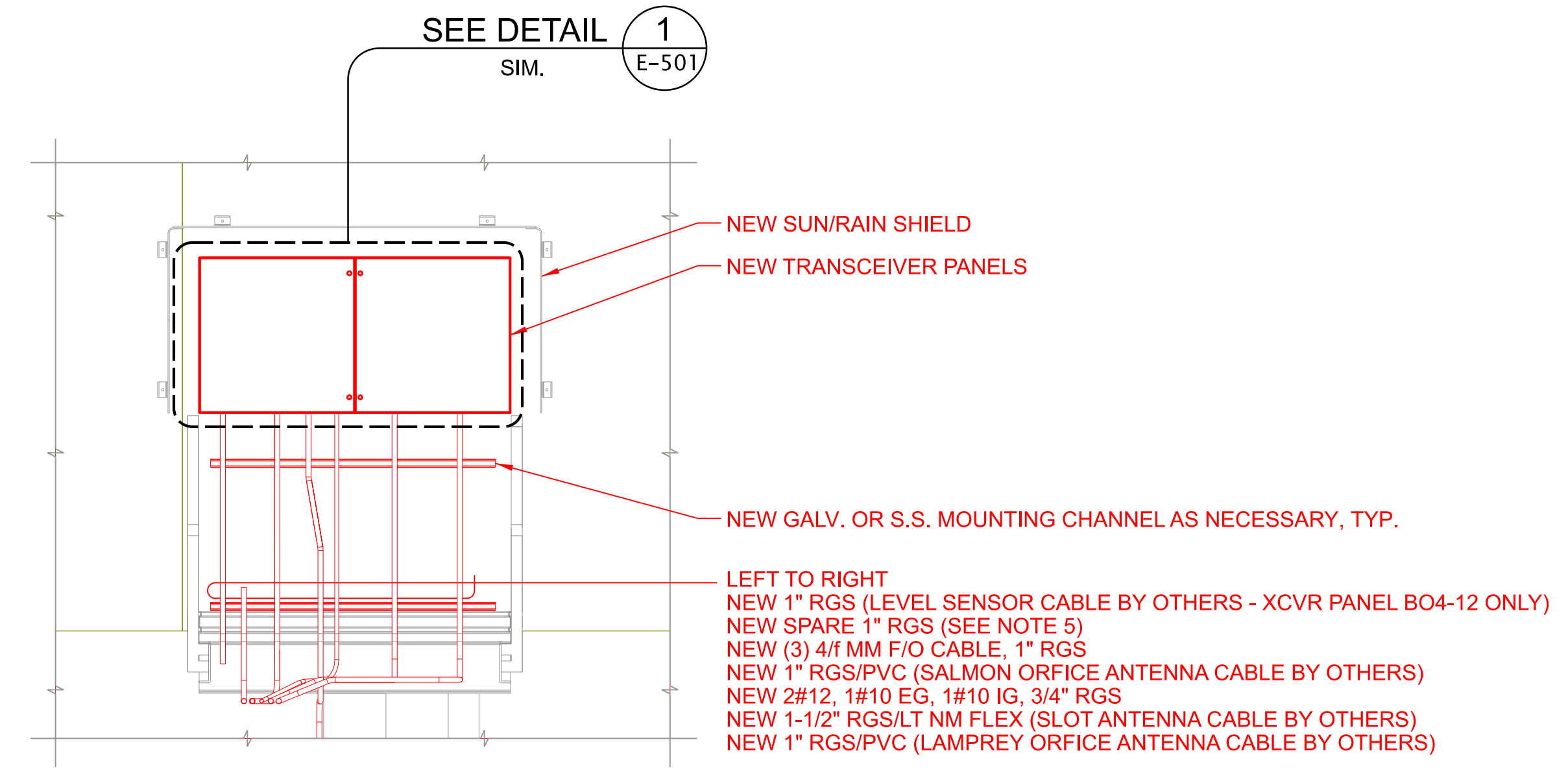
3  
E-102

**LADDER CONTROL SECTION PLAN**

SCALE: 1/4" = 1'-0"



C  
SCALE: 1/2" = 1'-0"



D  
SCALE: 1/2" = 1'-0"

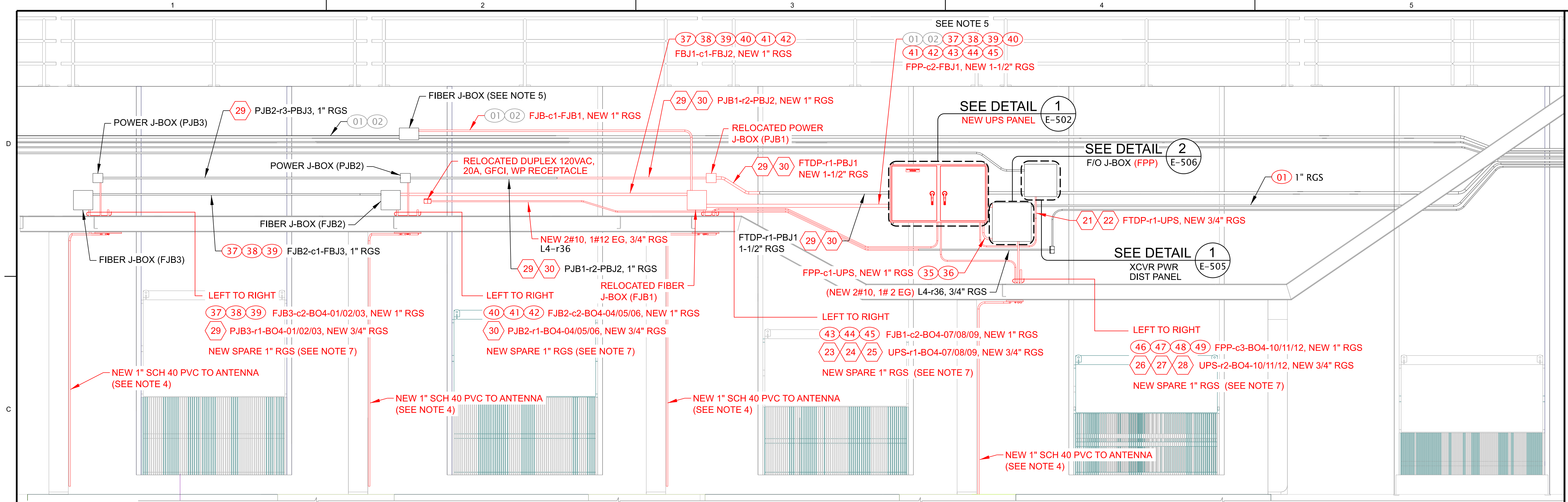
**NOTES:**

- ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
- ITEMS IN RED ARE NEW.
- POWER CIRCUIT TO TRANSCEIVER POWER DISTRIBUTION PANEL TO BE REUSED.
- CONDUITS TO NEW TRANSCEIVER PANELS AND ANTENNAS TO BE ROUTED UNDER NEW WALKWAYS. ENSURE EXPOSED MOUNTING HARDWARE FOR NEW CONDUITS ARE COVERED BY SOME MEANS TO ELIMINATE HARM TO FISH IF CONTACTED.
- STUB SPARE CONDUITS UP MIN. OF 12" ABOVE WALKWAYS AND CAP WITH RGS COUPLING AND THREADED PLUG.

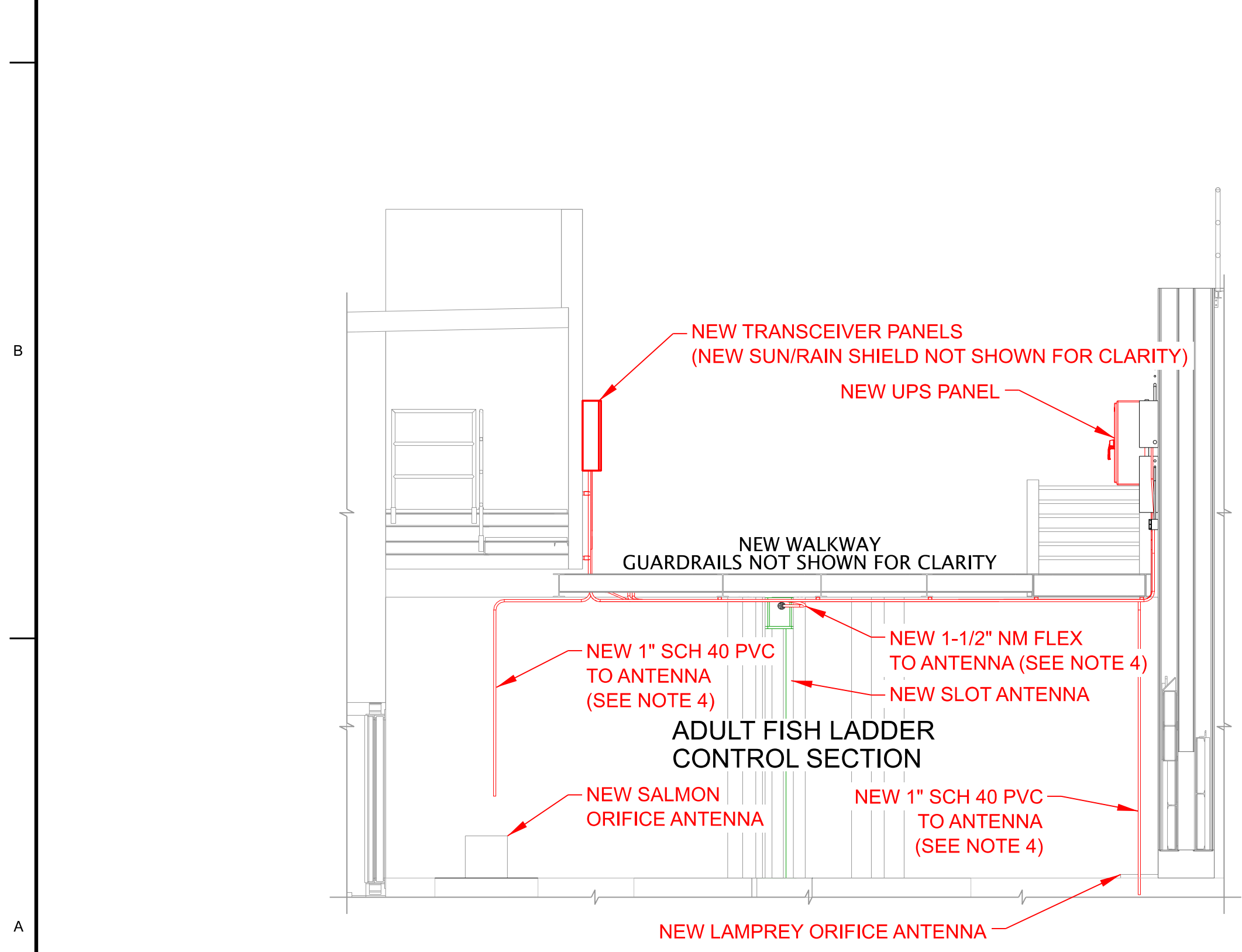
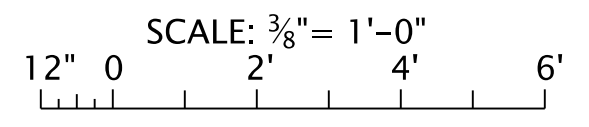
SCALE: 1/4" = 1'-0"  
12" 0 5'

SCALE: 1/2" = 1'-0"  
12" 0 1' 2' 3' 4'

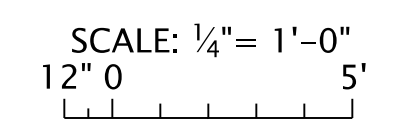
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DESCRIPTION	DATE
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MARK	DESCRIPTION



**A LADDER CONTROL SECTION - SECTION VIEW**  
E-404



**B BAFFLES 3A/3B - SECTION VIEW**  
E-404



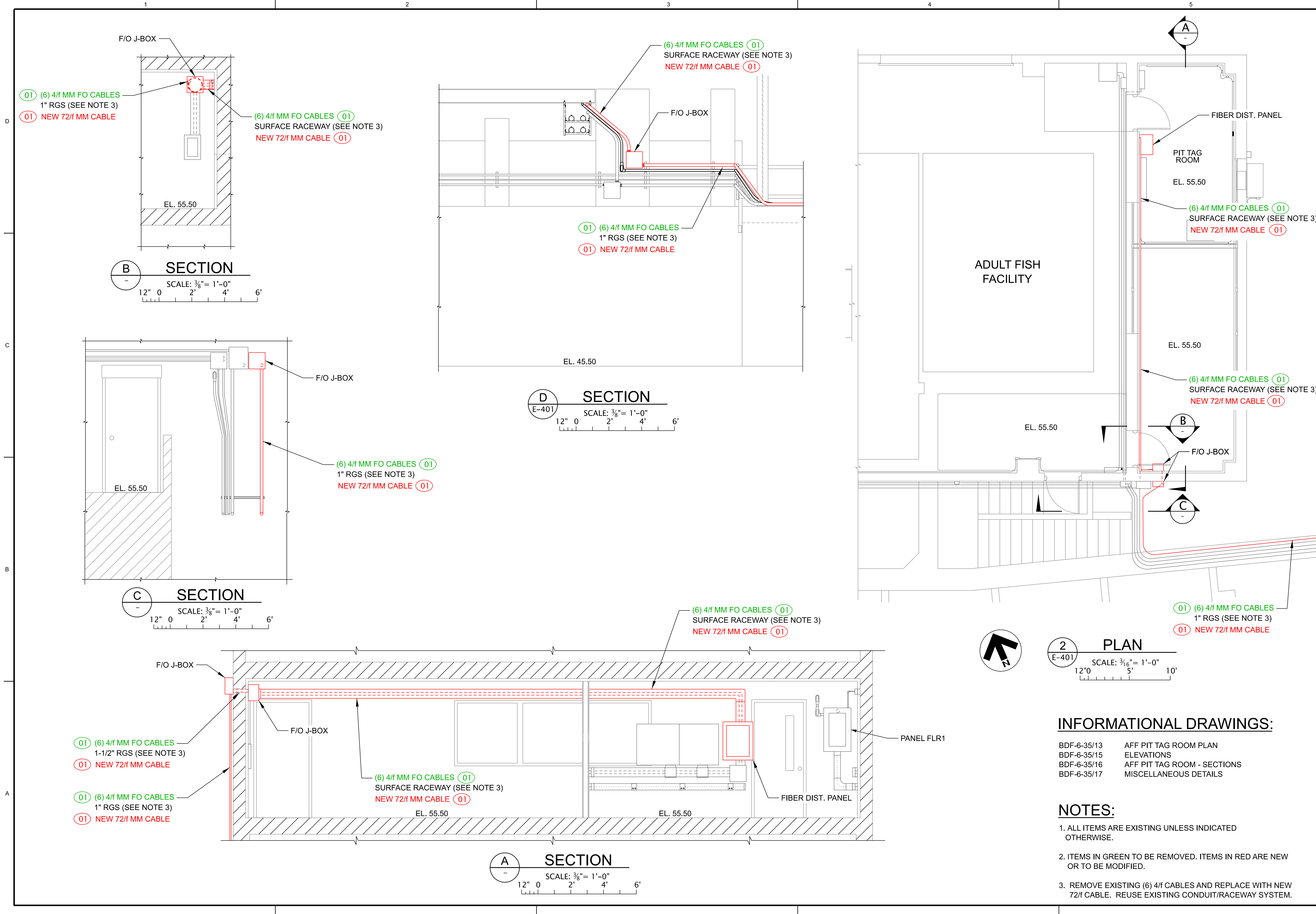
**NOTE TO REVIEWER: NEW ANTENNAS HAVE YET TO BE ADDED TO THE STRUCTURAL MODEL. CONDUIT RUNS TO NEW ANTENNAS WILL NEED TO BE ADJUSTED ONCE THIS IS DONE. ANTENNA CONNECTION DETAILS TO BE ADDED AT BCOES**

**NOTES:**

- ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
- ITEMS IN RED ARE EITHER NEW OR MODIFIED.
- POWER CIRCUIT TO EXISTING TRANSCEIVER POWER DIST. PANEL TO BE REUSED.
- CONDUITS ON FACE OF BAFFLES SUBJECT TO WATER CONTACT MUST BE SCHEDULE 40 PVC. REMAINING PORTIONS OF CONDUIT TO TRANSCEIVER PANELS MUST BE RGS.
- PULL EXISTING F/O CABLES FROM FIBER J-BOX THROUGH NEW CONDUIT TO FIBER J-BOX (FJB1) ON INTO FIBER PATCH PANEL. SEE SHEETS E-403 AND E-404.
- CONDUITS TO NEW TRANSCEIVER PANELS AND ANTENNAS TO BE ROUTED UNDER NEW WALKWAYS. ENSURE EXPOSED MOUNTING HARDWARE FOR NEW CONDUITS ARE COVERED BY SOME MEANS TO ELIMINATE HARM TO FISH IF CONTACTED.
- STUB SPARE CONDUITS UP MIN. OF 12" ABOVE WALKWAYS AND CAP WITH RGS COUPLING AND THREADED PLUG.

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CHECKED BY: GREGORY B. GRENCHER	SUBMITTED BY: BILL FORTUAY, P.E.
CONTRACT NO.:	FILE NAME: BDP1.123_E-405.dgn
DRAWING NUMBER:	ANSI D

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
ADULT FISH LADDER CONTROL SECTION  
SECTION VIEWS

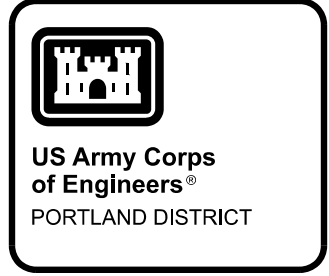
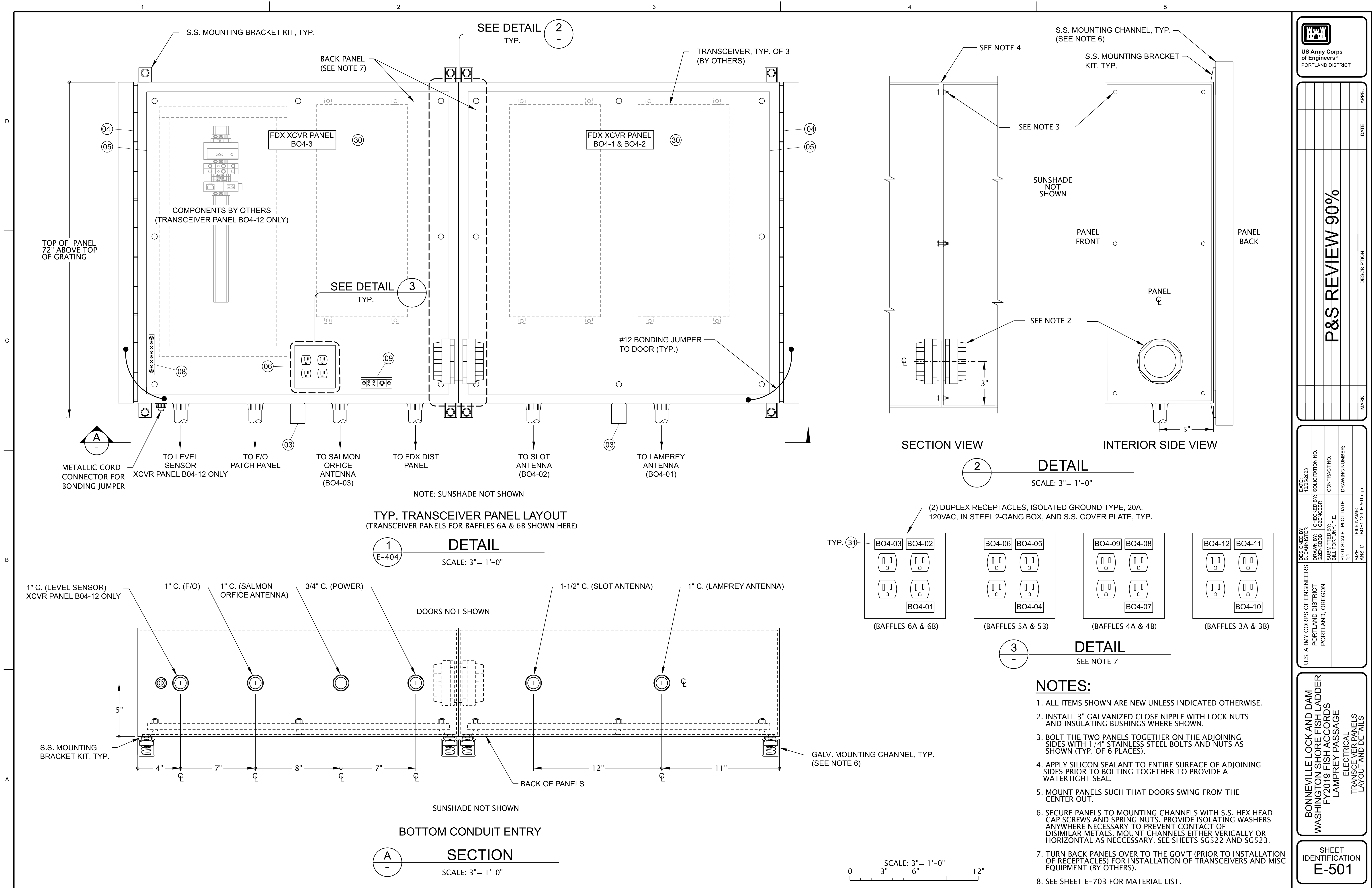


**2 PLAN**  
 E-401 SCALE: 3/16" = 1'-0"  
 12" 0 5' 10"

**INFORMATIONAL DRAWINGS:**  
 BDF-6-35/13 AFF PIT TAG ROOM PLAN  
 BDF-6-35/15 ELEVATIONS  
 BDF-6-35/16 AFF PIT TAG ROOM - SECTIONS  
 BDF-6-35/17 MISCELLANEOUS DETAILS

**NOTES:**  
 1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.  
 2. ITEMS IN GREEN TO BE REMOVED. ITEMS IN RED ARE NEW OR TO BE MODIFIED.  
 3. REMOVE EXISTING (6) 4/f CABLES AND REPLACE WITH NEW 72/f CABLE. REUSE EXISTING CONDUIT/RACEWAY SYSTEM.





DATE: 04/25/2023	CONTRACT NO.:	APPR.:
DESIGNED BY: GRENGBB	DRAWING NUMBER:	DATE:
CHECKED BY: GRENGBB	MARK:	DESCRIPTION:
<b>P&amp;S REVIEW 90%</b>		

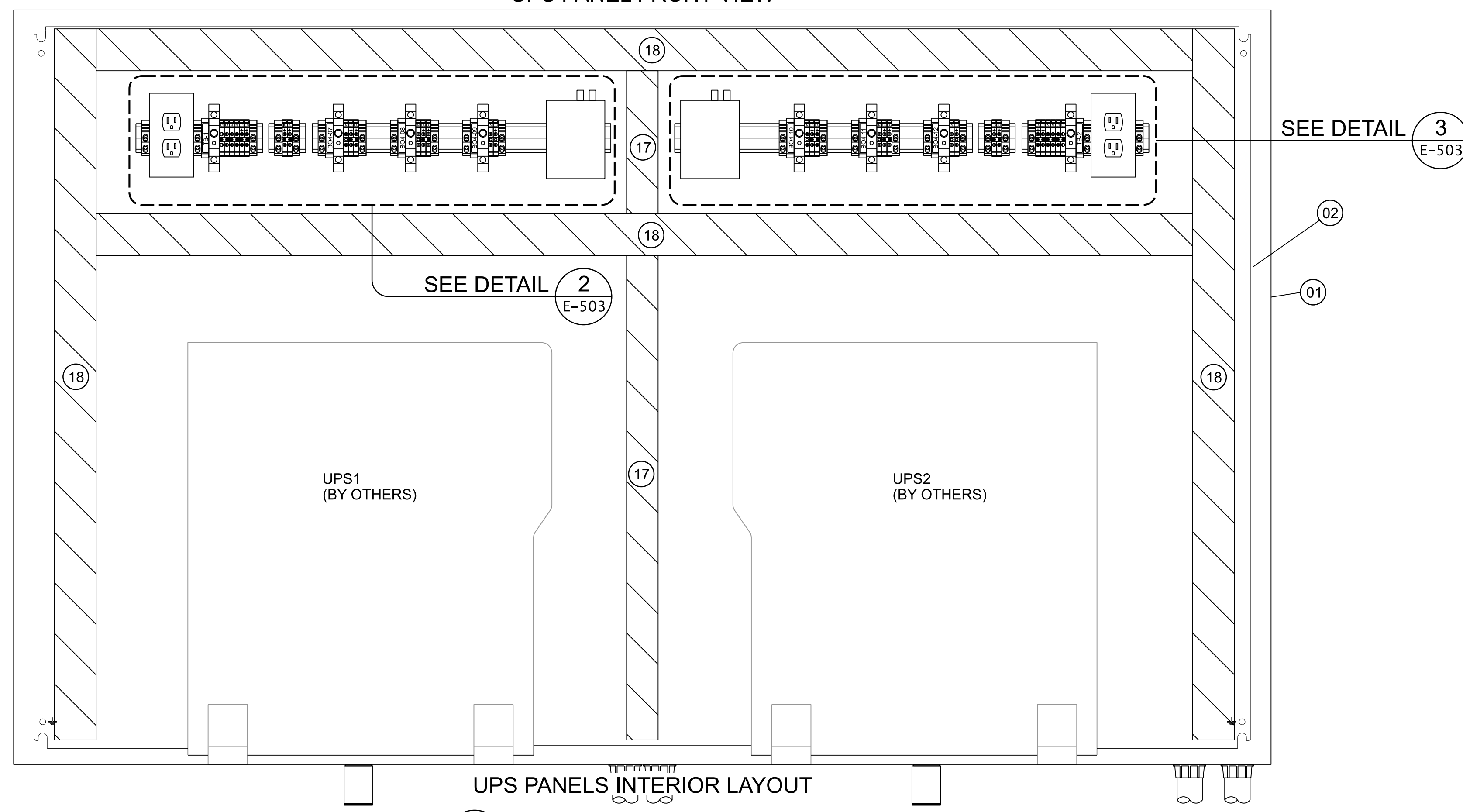
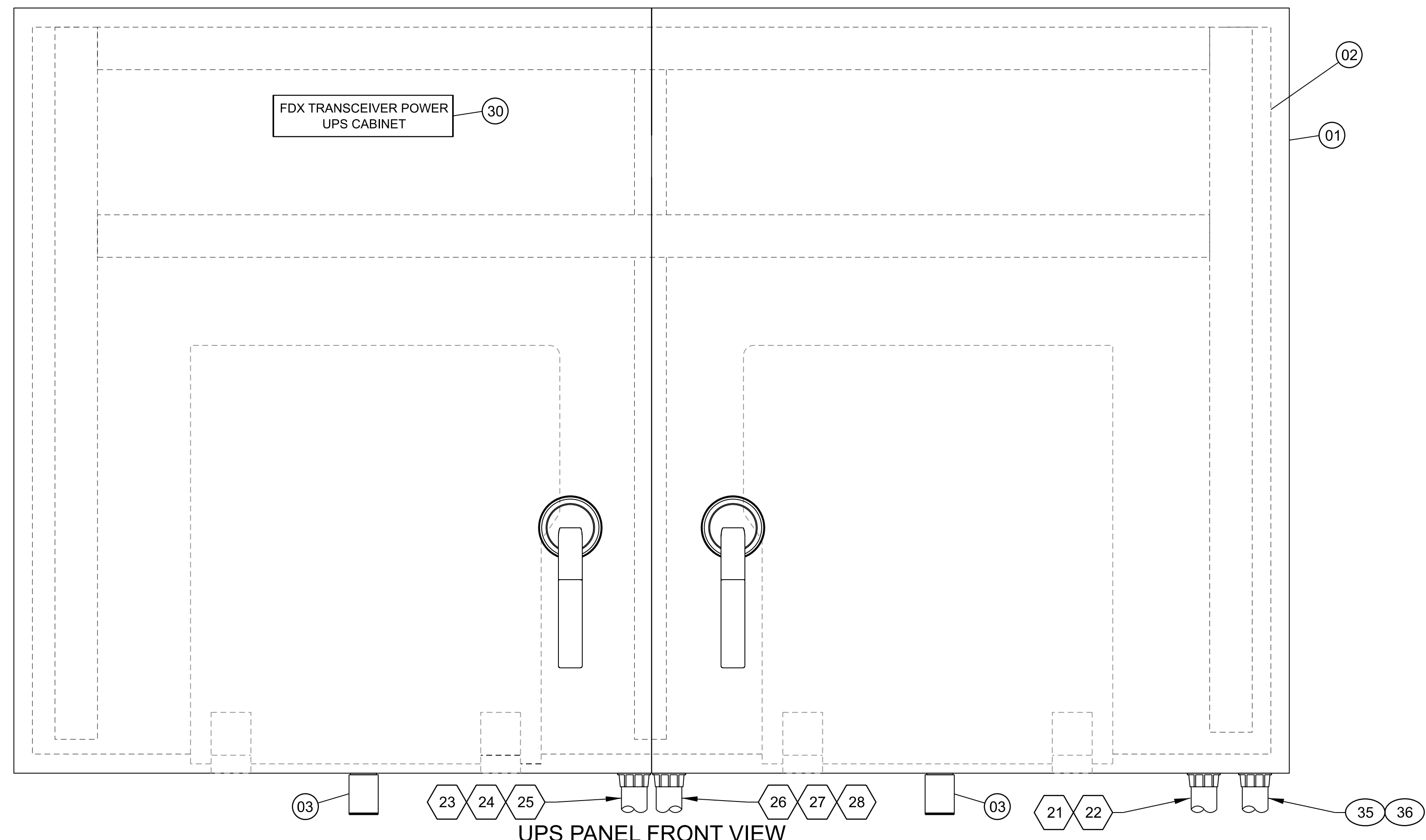
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SUBMITTED BY: BILL FORTUAY, P.E.	DRAWING NUMBER:
FILE NAME: EBDT1123_E-501.dgn	MARK:
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**BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE**

ELECTRICAL  
 TRANSCEIVER PANELS  
 LAYOUT AND DETAILS

SHEET IDENTIFICATION  
**E-501**

1 2 3 4 5

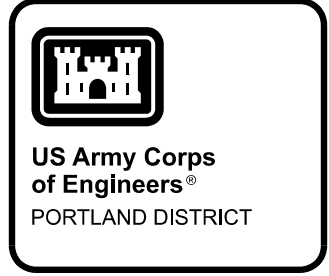
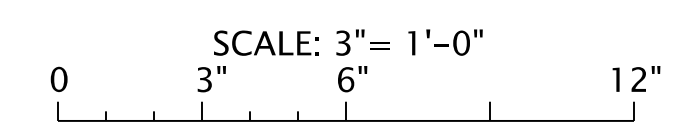


**1**  
E-405

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

**NOTES:**

1. ALL ITEMS SHOWN ARE NEW UNLESS INDICATED OTHERWISE.
2. SEE SHEETS E-606 FOR WIRING DIAGRAM.
3. SEE SHEET E-701 FOR CONDUIT AND CABLE SCHEDULE.
4. SEE SHEET E-703 FOR MATERIAL LIST.



<b>P&amp;S REVIEW 90%</b>	MARK
	DESCRIPTION
	DATE
APPR.	DATE

DESIGNED BY: BILL FORTUAY, P.E.	DATE: 07/26/2023
DRAWN BY: CECILIA B. GREENBERG	REVIEWED BY: SOLICITATION NO.:
CONTRACT NO.:	DRAWING NUMBER:
FILE NAME: BDT_1123_E-502.dgn	SIZE: 1:1
ANSI D	

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
UPS PANEL  
LAYOUT

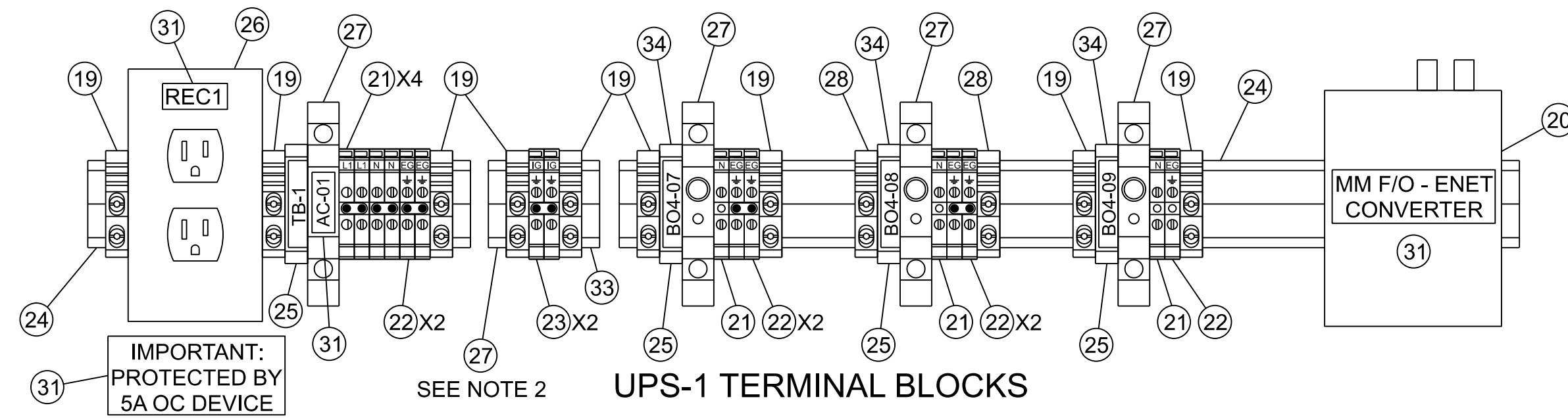
PLATE  
IDENTIFICATION  
**E-502**

D

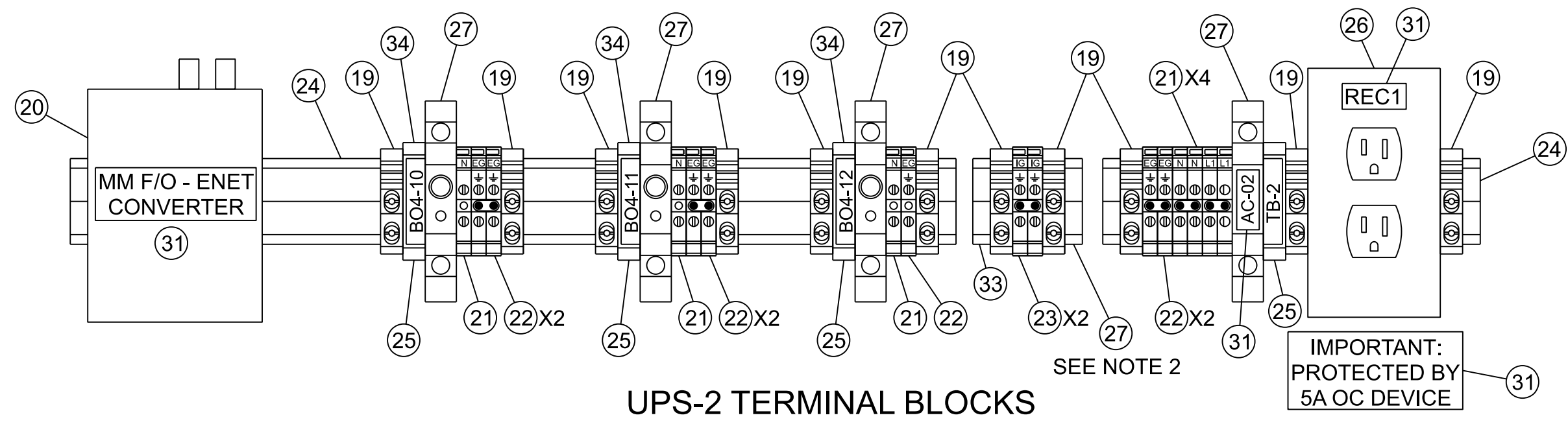
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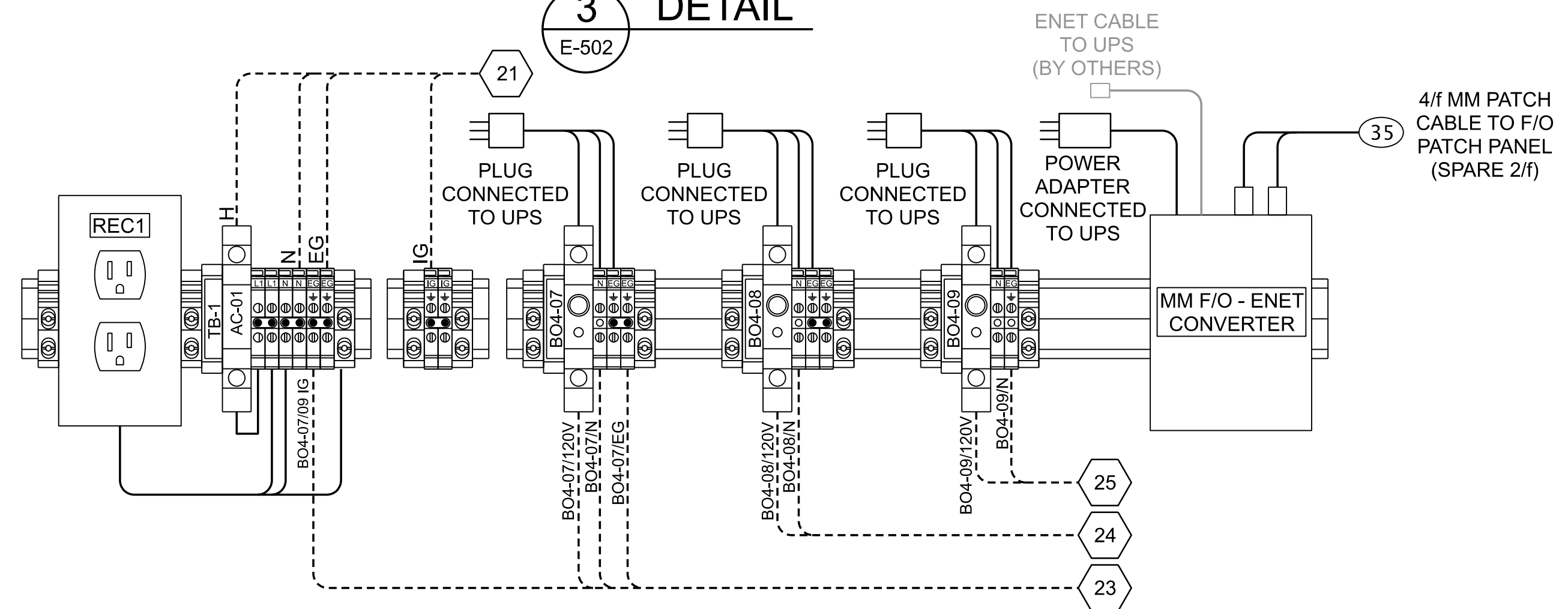
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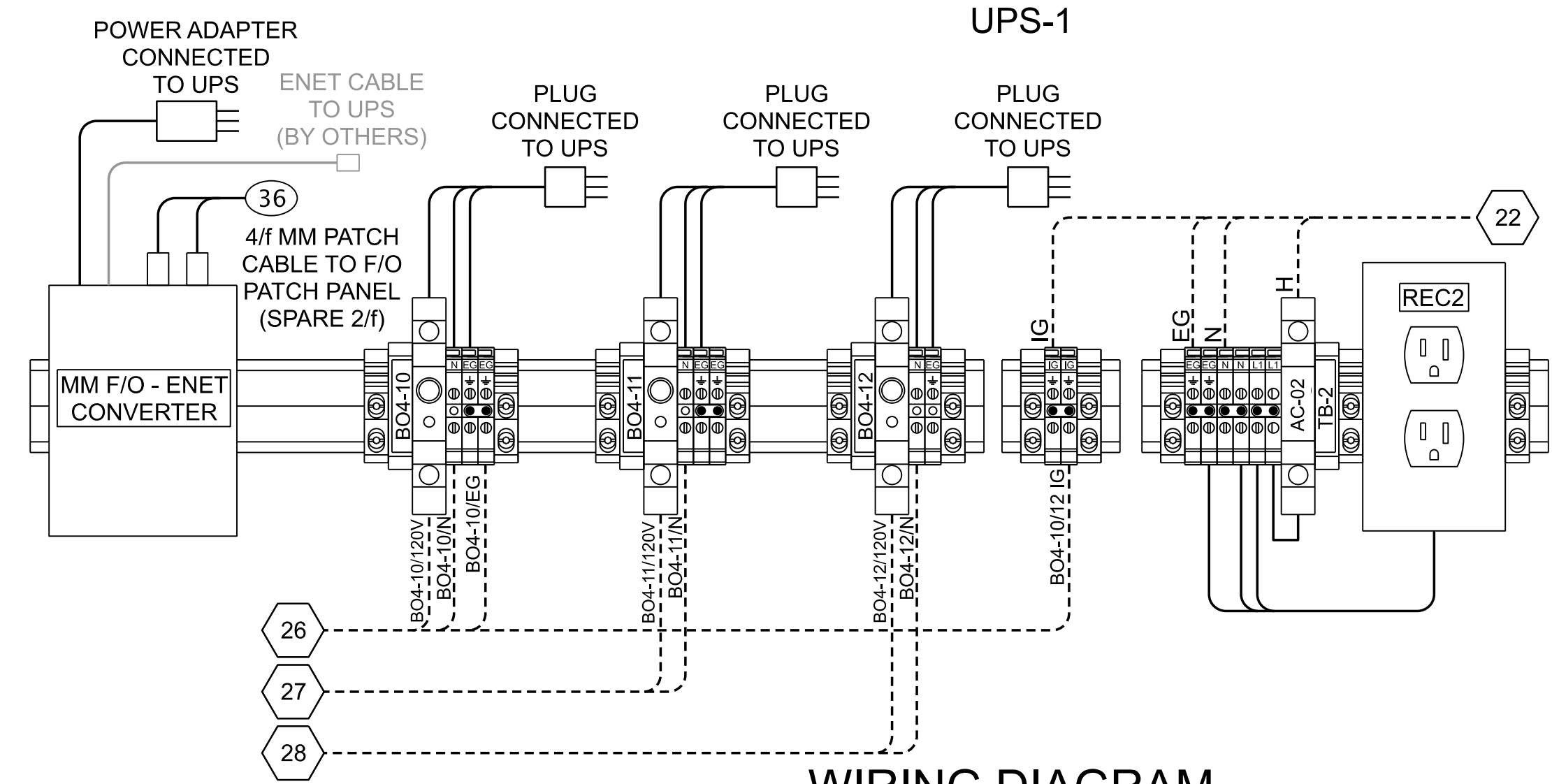
**2** **DETAIL**  
E-502



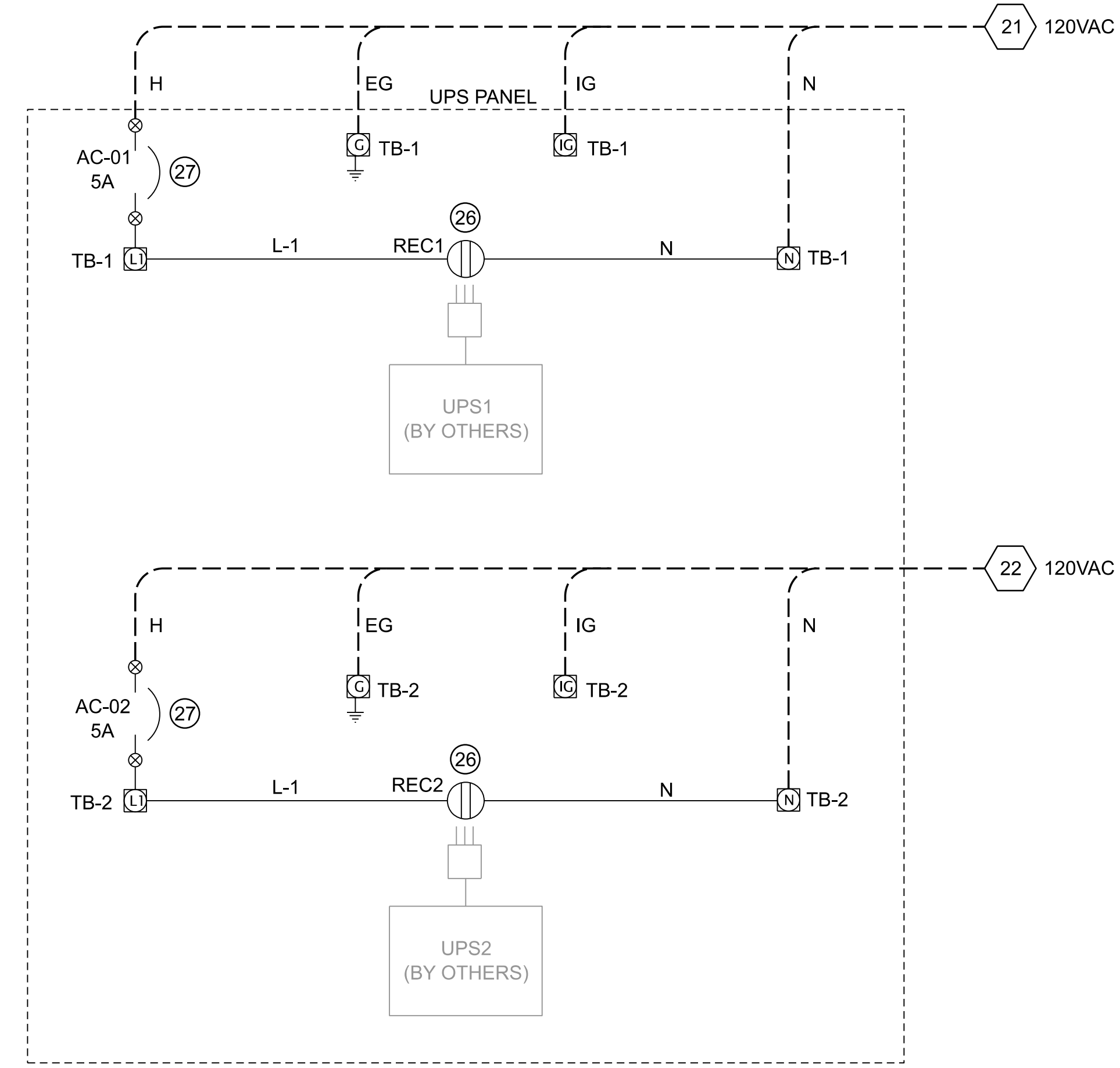
**3** **DETAIL**  
E-502



**WIRING DIAGRAM**  
UPS-1

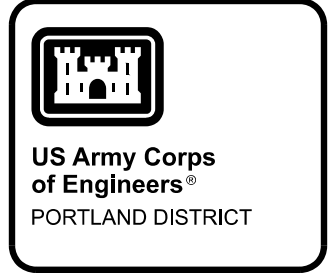


**WIRING DIAGRAM**  
UPS-2



**SCHEMATIC**

- NOTES:**
1. ALL ITEMS SHOWN ARE NEW UNLESS INDICATED OTHERWISE.
  2. MOUNT SECTION OF DIN RAIL ON ISOLATION BARRIERS TO KEEP ISOLATED GROUND SEPARATE FROM EQUIPMENT GROUND.
  3. SEE SHEETS E-701 AND E-702 FOR CONDUIT AND CABLE SCHEDULES.
  4. SEE SHEET E-703 FOR MATERIAL LIST.

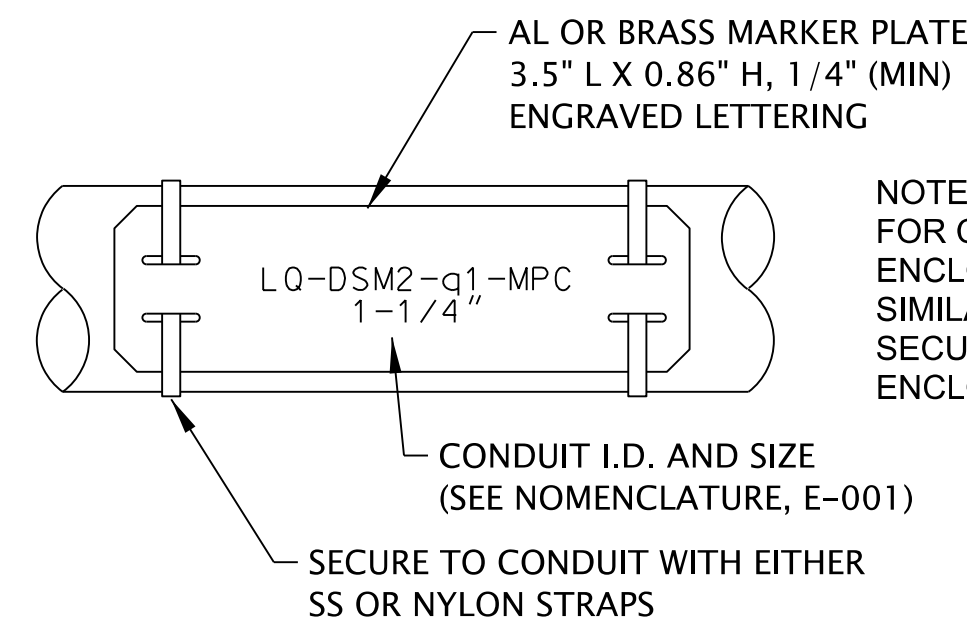


DESIGNED BY:	DATE:
DRAWN BY:	DATE:
CHECKED BY:	DATE:
APPROVED BY:	DATE:
<b>P&amp;S REVIEW 90%</b>	
MARK	DESCRIPTION

DESIGNED BY:	DATE:
DRAWN BY:	DATE:
CHECKED BY:	DATE:
APPROVED BY:	DATE:
PROJECT NO.:	CONTRACT NO.:
SUBMITTED BY:	CONTRACT NO.:
BILL FOR/DATE:	CONTRACT NO.:
PLOT SCALE:	PLOT DATE:
SIZE:	FILE NAME:
ANSI D	BDT1.123_E-502.dgn

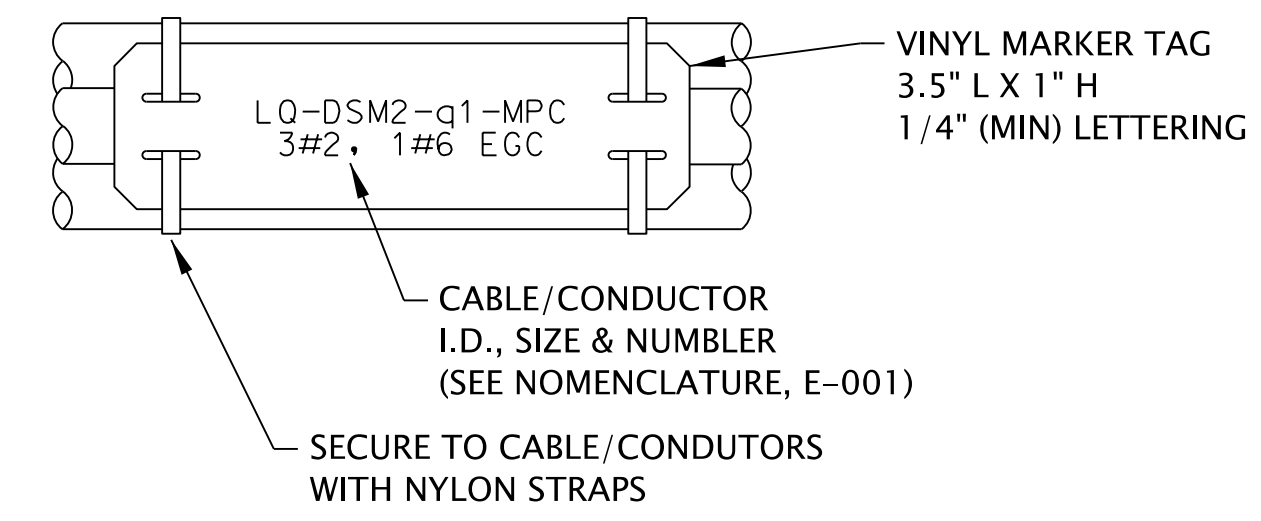
BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
UPS PANEL  
TERMINAL BLOCKS AND SCHEMATIC

SHEET IDENTIFICATION  
**E-503**



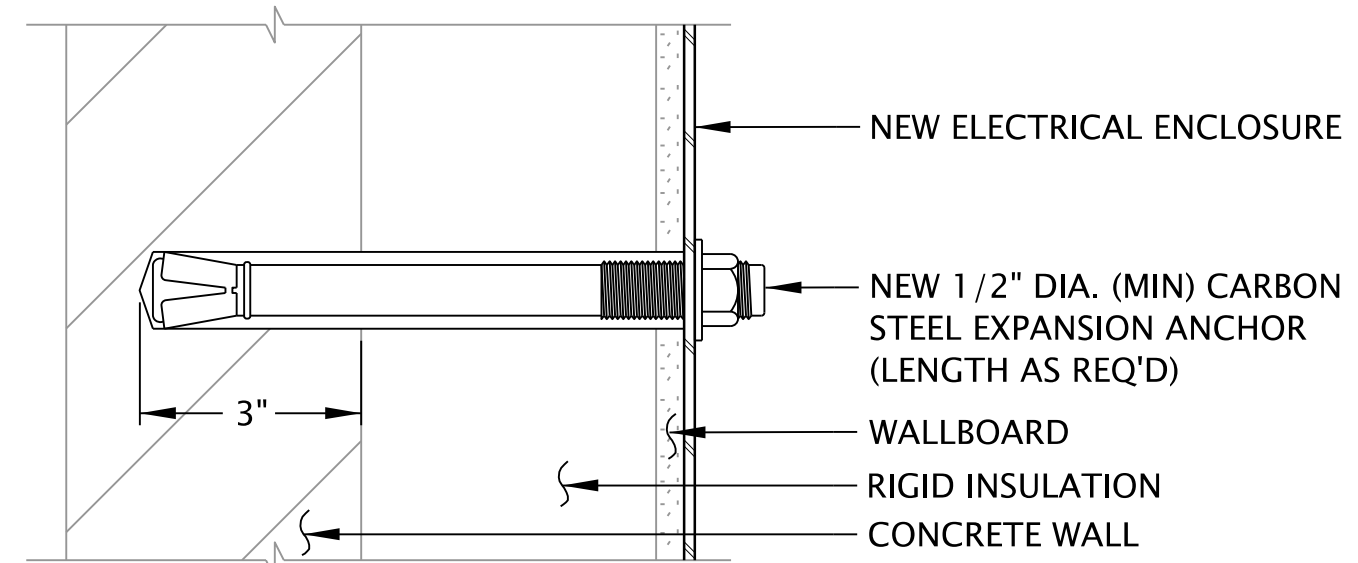
NOTE:  
FOR CONDUITS TERMINATING IN PANELS,  
ENCLOSURES, OR HANDHOLES PROVIDE  
SIMILAR ROUND OR OVAL MARKERS AND  
SECURE THEM TO CONDUITS WITHIN THE  
ENCLOSURE WITH SIMILAR STRAPS

**CONDUITS**

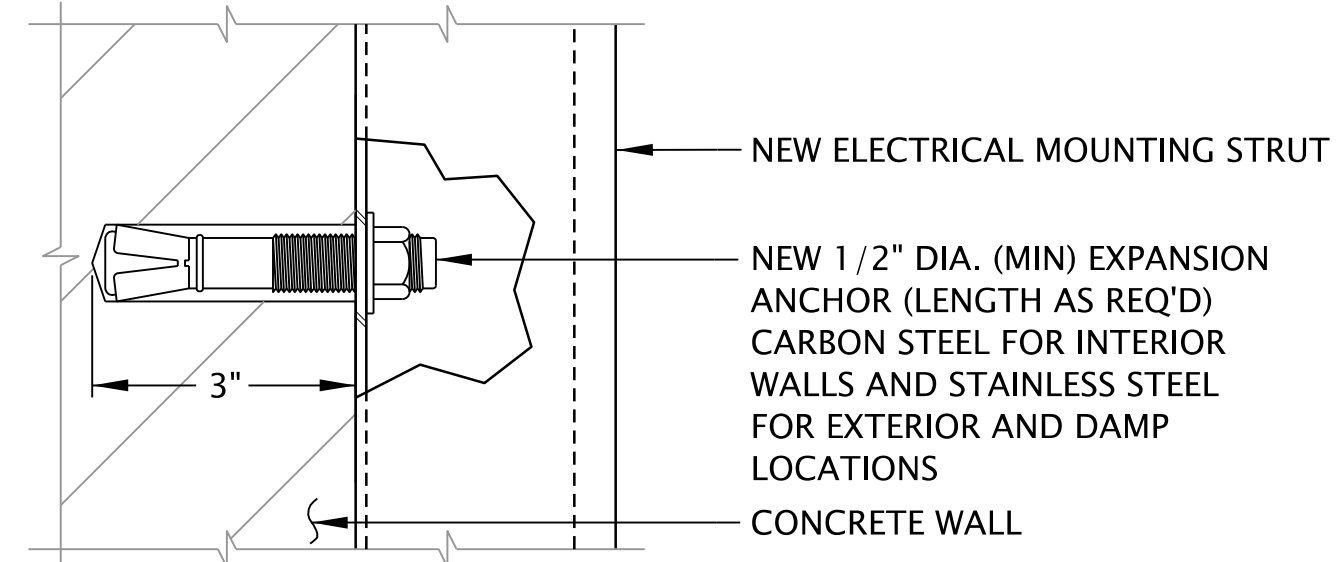


**CABLES/CONDUCTORS**

**TYPICAL CONDUIT/CABLE MARKING DETAIL**  
REQUIRED FOR ALL NEW CIRCUITS AND EXISTING CIRCUITS WHERE INDICATED

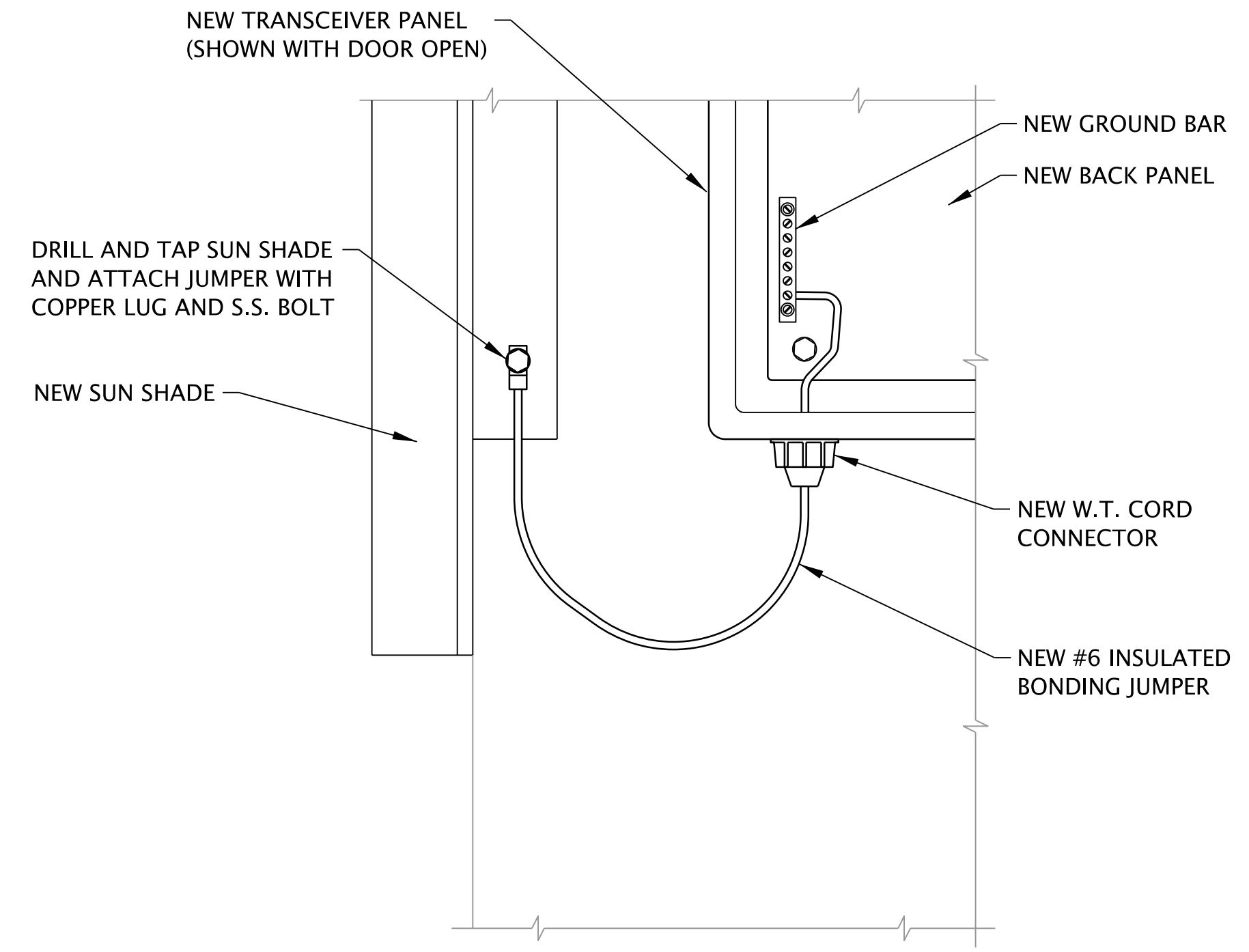


**FINISHED WALLS**

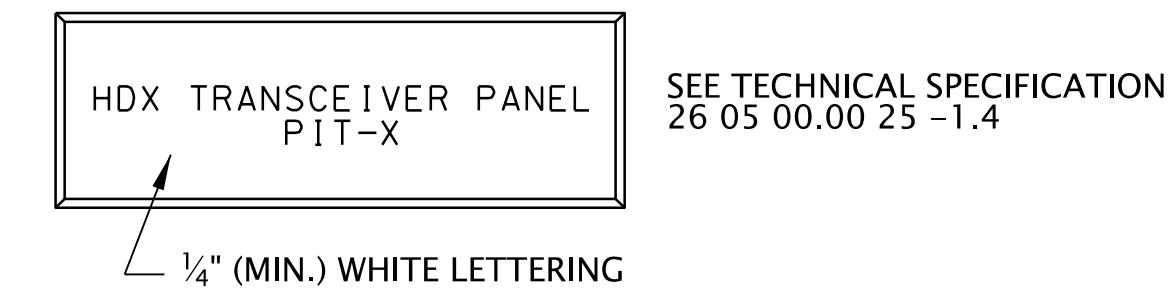


**CONCRETE WALLS**

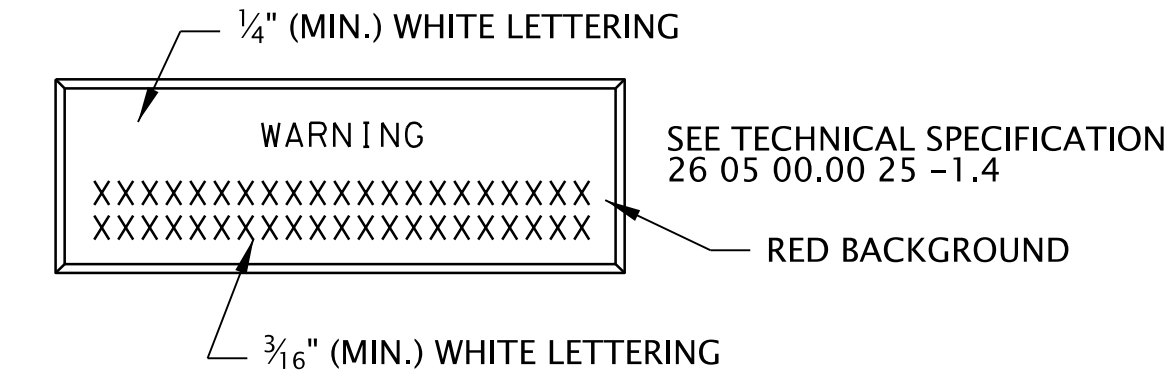
**TYPICAL EQUIPMENT MOUNTING DETAIL**  
NO SCALE



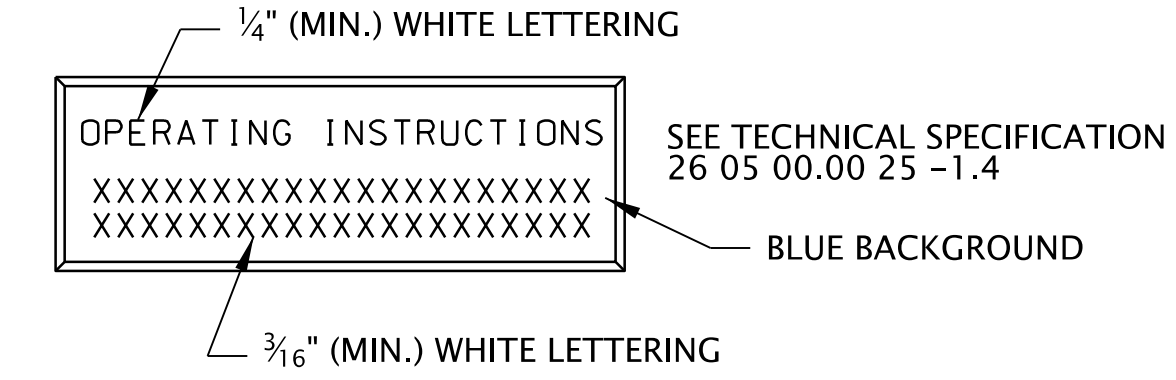
**TYPICAL SUN SHADE BONDING DETAIL**  
NO SCALE



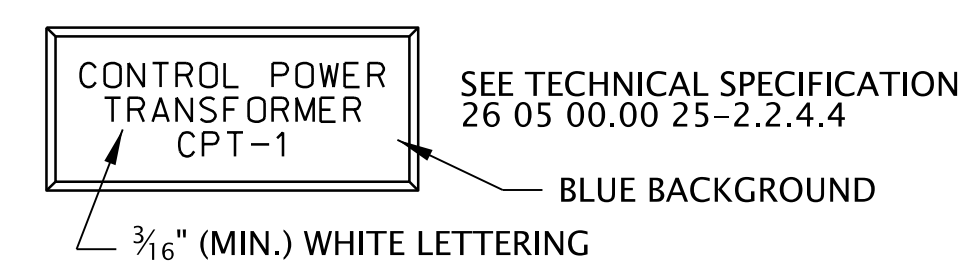
**EQUIPMENT NAMEPLATES**



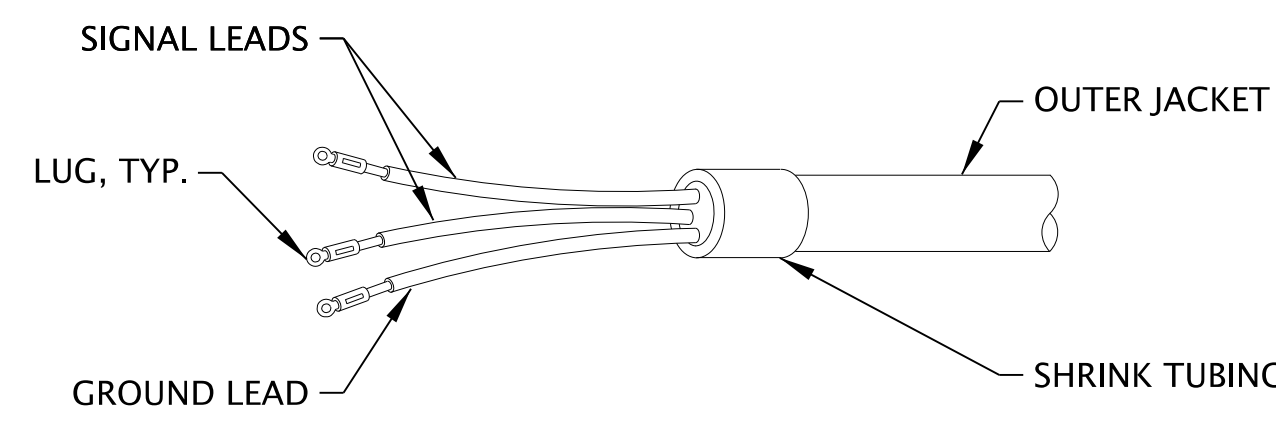
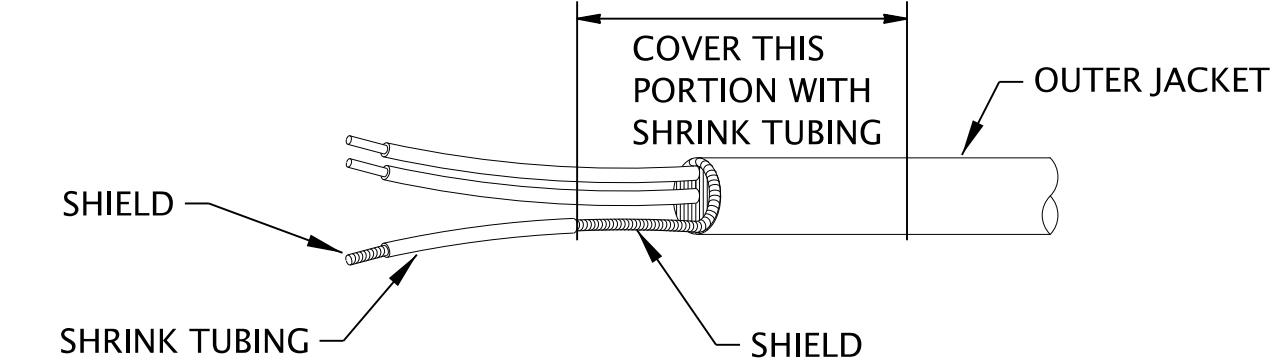
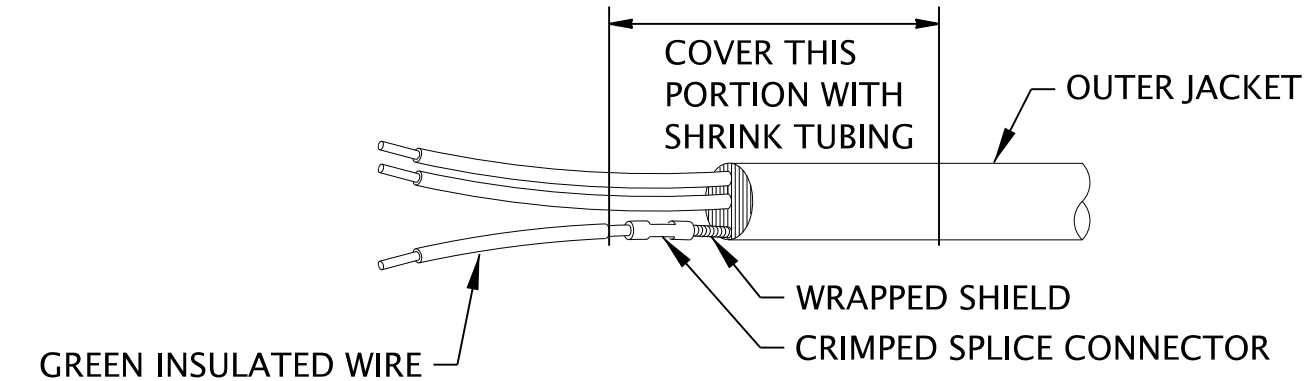
**WARNING NAMEPLATES**



**OPERATING INSTRUCTIONS NAMEPLATES**



**COMPONENT (CONTROL DEVICE) NAMEPLATES**  
**TYPICAL PANEL/COMPONENT LABEL DETAIL**  
REQUIRED FOR ALL NEW EQUIPMENT AND EXISTING EQUIPMENT WHERE INDICATED

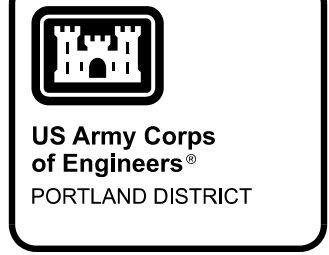


NOTE: ALL SHIELDED INSTRUMENTATION CABLE SHALL BE TERMINATED IN ACCORDANCE WITH ONE OF THESE DETAILS WHERE GROUNDING IS REQUIRED.

**TYPICAL TERMINATION OF SHIELDED INSTRUMENTATION CABLE**

**NOTES:**

1. ALL ITEMS SHOWN ARE EXISTING UNLESS INDICATED OTHERWISE.
2. SEE SHEETS E-701 AND E-702 FOR CONDUIT & CABLE SCHEDULES.

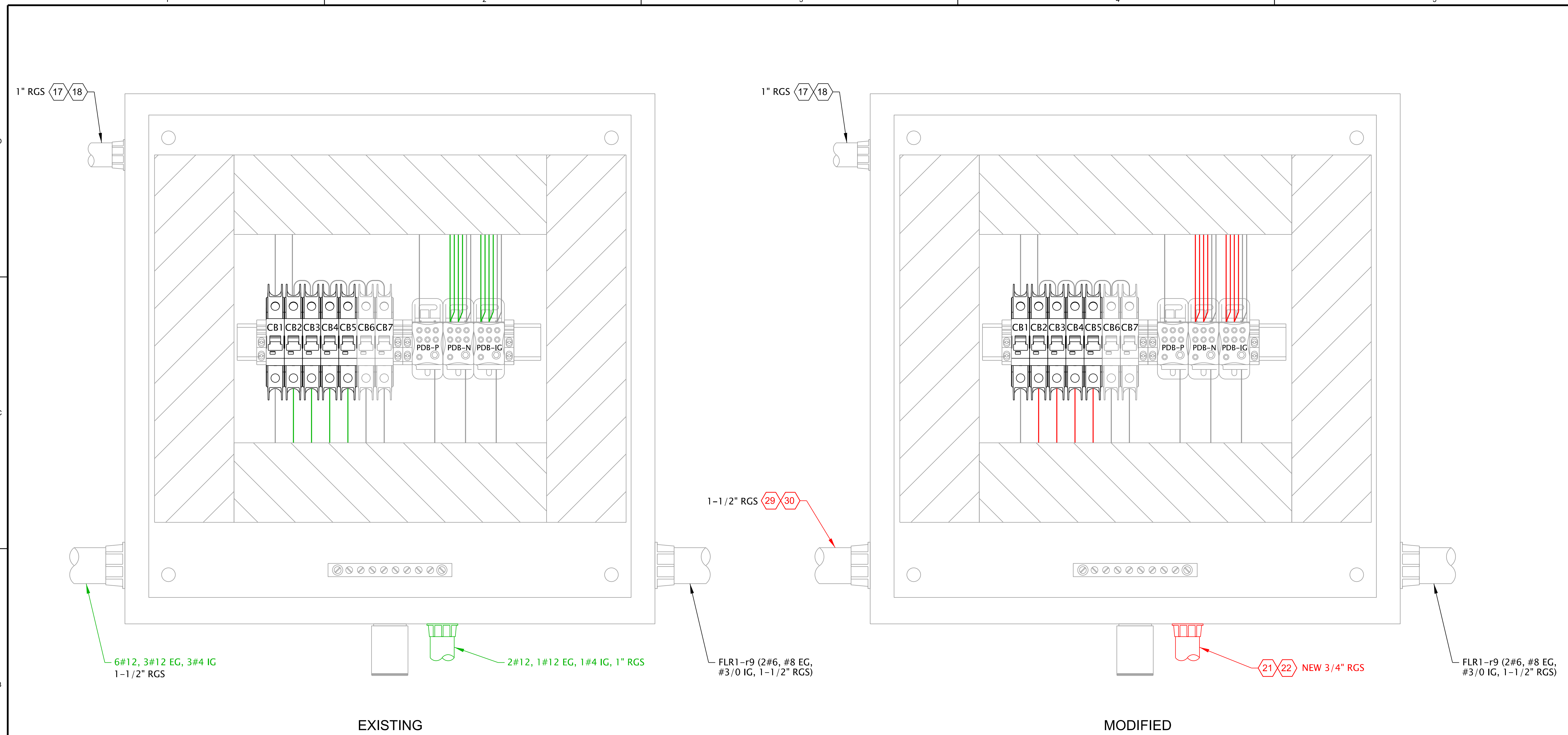


DESIGNED BY:	DATE:
DRAWN BY:	DATE:
CHECKED BY:	DATE:
APPROVED BY:	DATE:
<b>P&amp;S REVIEW 90%</b>	
DESCRIPTION:	MARK:

DESIGNED BY:	DATE:
DRAWN BY:	DATE:
CHECKED BY:	DATE:
APPROVED BY:	DATE:
<b>P&amp;S REVIEW 90%</b>	
DESCRIPTION:	MARK:

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
TYPICAL DETAILS

SHEET IDENTIFICATION  
**E-504**



**1**  
**E-403**  
**E-405**

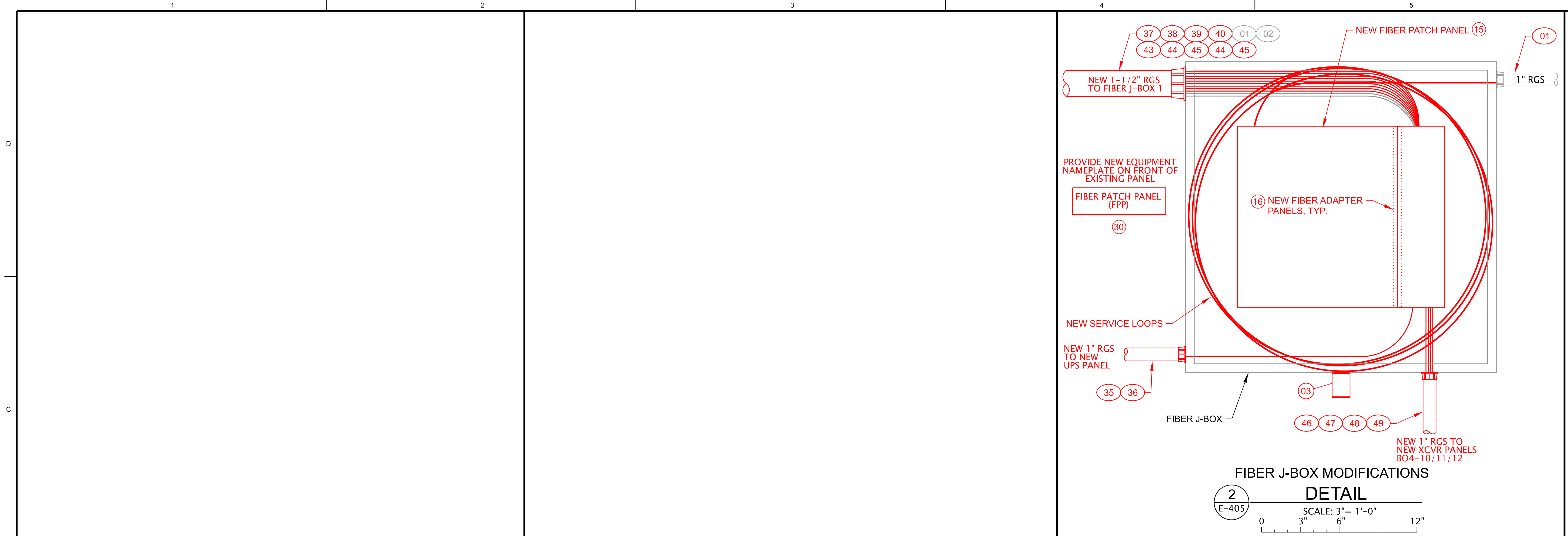
**DETAIL**  
 SCALE: 6" = 1'-0"

**INFORMATIONAL DRAWINGS:**

USACE-FDX DIST SHT 1 FDX TRANSCIEVER DISTRIBUTION PANEL - LAYOUT DRAWING  
 USACE-FDX DIST SHT 2 FDX TRANSCIEVER DISTRIBUTION PANEL - SCHEMATIC & BOM

**NOTES:**

1. ALL ITEMS SHOWN ARE EXISTING UNLESS INDICATED OTHERWISE.
2. ITEMS IN GREEN ARE TO BE REMOVED. ITEMS IN RED ARE NEW OR ARE TO BE MODIFIED.
3. SEE SHEET E-604 FOR WIRING DIAGRAM MODIFICATIONS.
4. SEE SHEETS E-701 AND E-702 FOR CONDUIT & CABLE SCHEDULES.



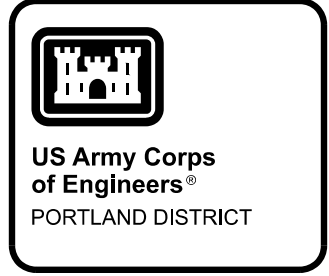
**2**  
E-405

**FIBER J-BOX MODIFICATIONS  
DETAIL**

SCALE: 3" = 1'-0"

0 3" 6" 12"

- NOTES:**
1. ALL ITEMS SHOWN ARE EXISTING UNLESS INDICATED OTHERWISE.
  2. SEE SHEETS E-701 AND E-702 FOR CONDUIT & CABLE SCHEDULES.
  3. SEE SHEET E-703 FOR MATERIAL LIST.

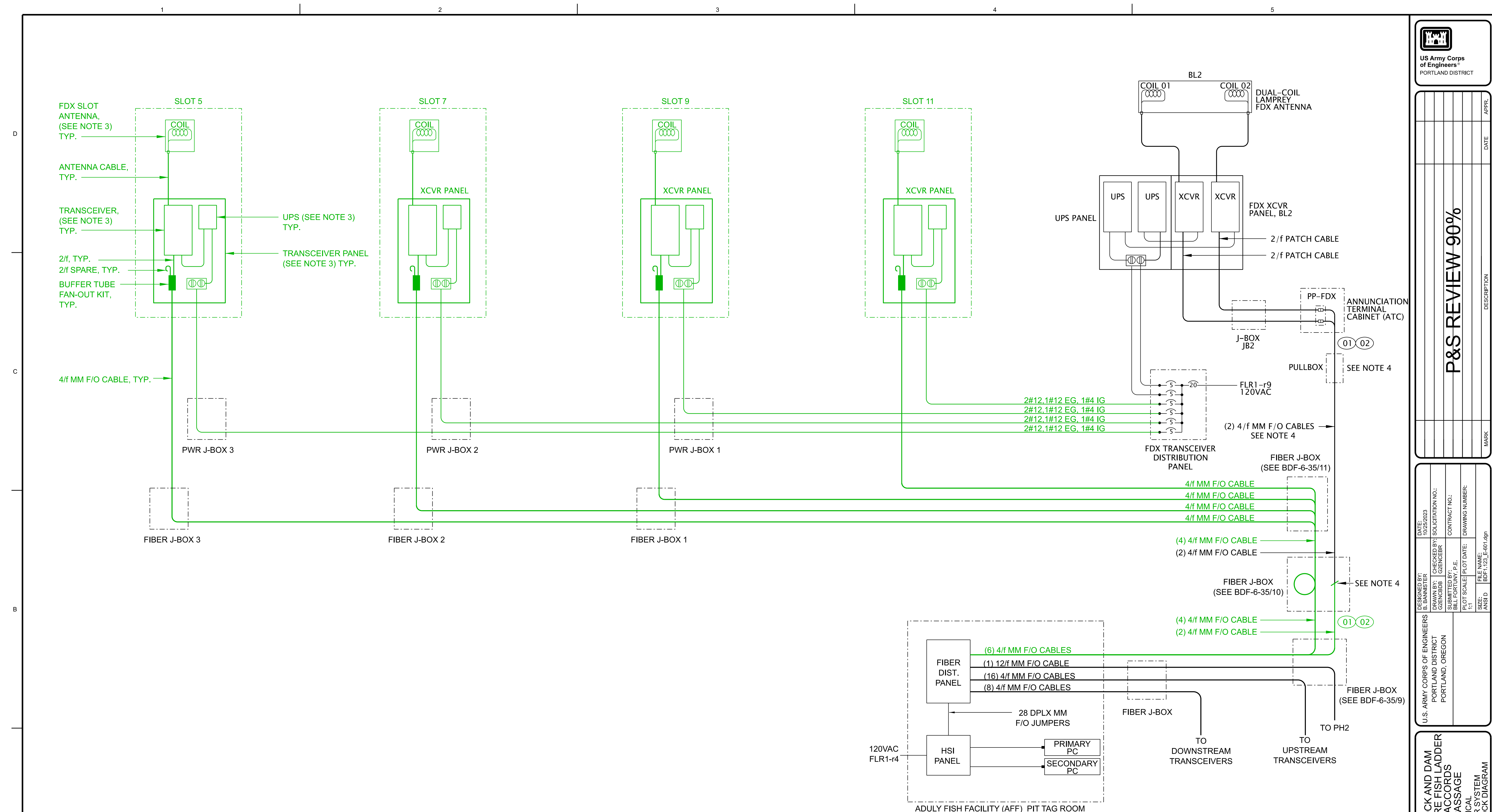


<b>P&amp;S REVIEW 90%</b>	DATE APPR.
MARK	DESCRIPTION

DESIGNED BY: J. W. CROFT	DATE: 07/25/2023	CHECKED BY: C. GENCER	SOLICITATION NO.:
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON	DESIGNED BY: C. GENCER	CONTRACT NO.:	
SUBMITTED BY: BILL FORTUAY, P.E.	FILE NAME: BDFT1123_E-506.dgn	PLOT SCALE: 1:1	DRAWING NUMBER:

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
MISCELLANEOUS DETAILS

SHEET  
IDENTIFICATION  
**E-506**



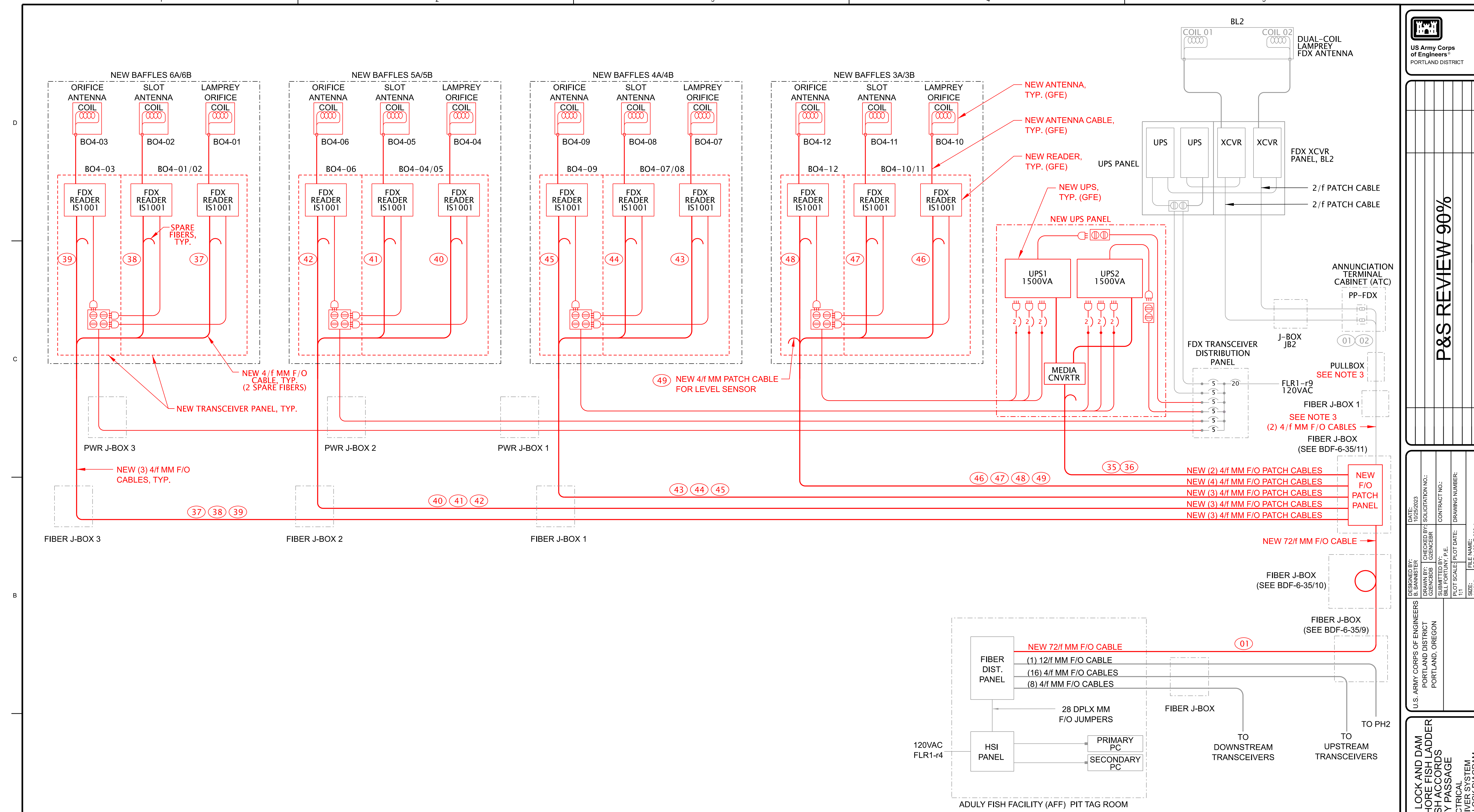
**TRANSCIEVER SYSTEM BLOCK DIAGRAM - DEMO**

- NOTES:**
1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
  2. EQUIPMENT SHOWN IN GREEN TO BE REMOVED.
  3. EQUIPMENT TO BE TURNED OVER TO PSMFC.
  4. CUT EXISTING F/O CABLES AT EXISTING FIBER J-BOX AND PULL BACK TO NEXT PULL BOX. THESE CABLES TO BE REUSED. SEE SHEET E-602 FOR RE-INSTALLATION. REMOVE REMAINING F/O CABLE BACK TO THE AFF FIBER PATCH PANEL.

D  
C  
B  
A

1 2 3 4 5

DATE  
APPR.  
DESCRIPTION  
MARK

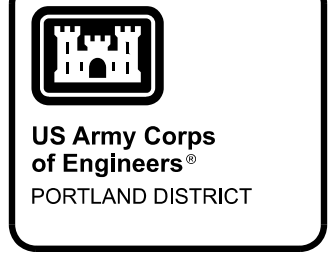
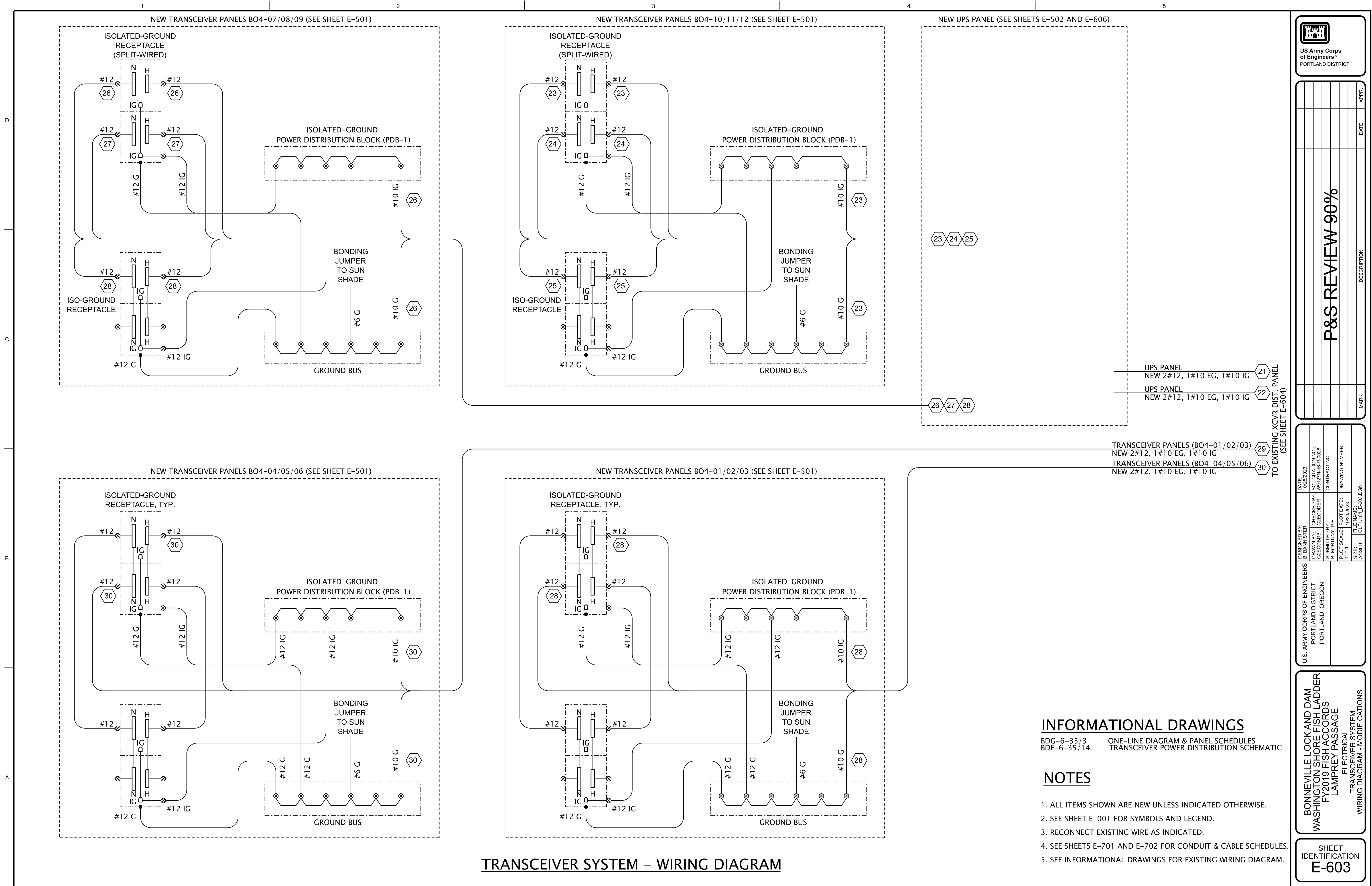


**TRANSCEIVER SYSTEM BLOCK DIAGRAM - MODIFIED**

**NOTES:**

1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
2. NEW WORK AND EQUIPMENT SHOWN IN RED.
3. PULL EXISTING F/O CABLES FROM EXISTING PULLBOX TO NEW F/O PATCH PANEL IN EXISTING FIBER J-BOX.





<b>P&amp;S REVIEW 90%</b>	DATE: _____ APPR: _____ MARK: _____
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DESIGNED BY: PORTLAND DISTRICT	CHECKED BY: GREGORIS	DATE: 10/23/2023
SUBMITTED BY: B. FORTUYN, P.E.	CONTRACT NO.:	DRAWING NUMBER:
PLOT SCALE: 1" = 1'	PLOT DATE: 10/23/2023	FILE NAME: CLF1:101_E-603.DGN

**BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE**

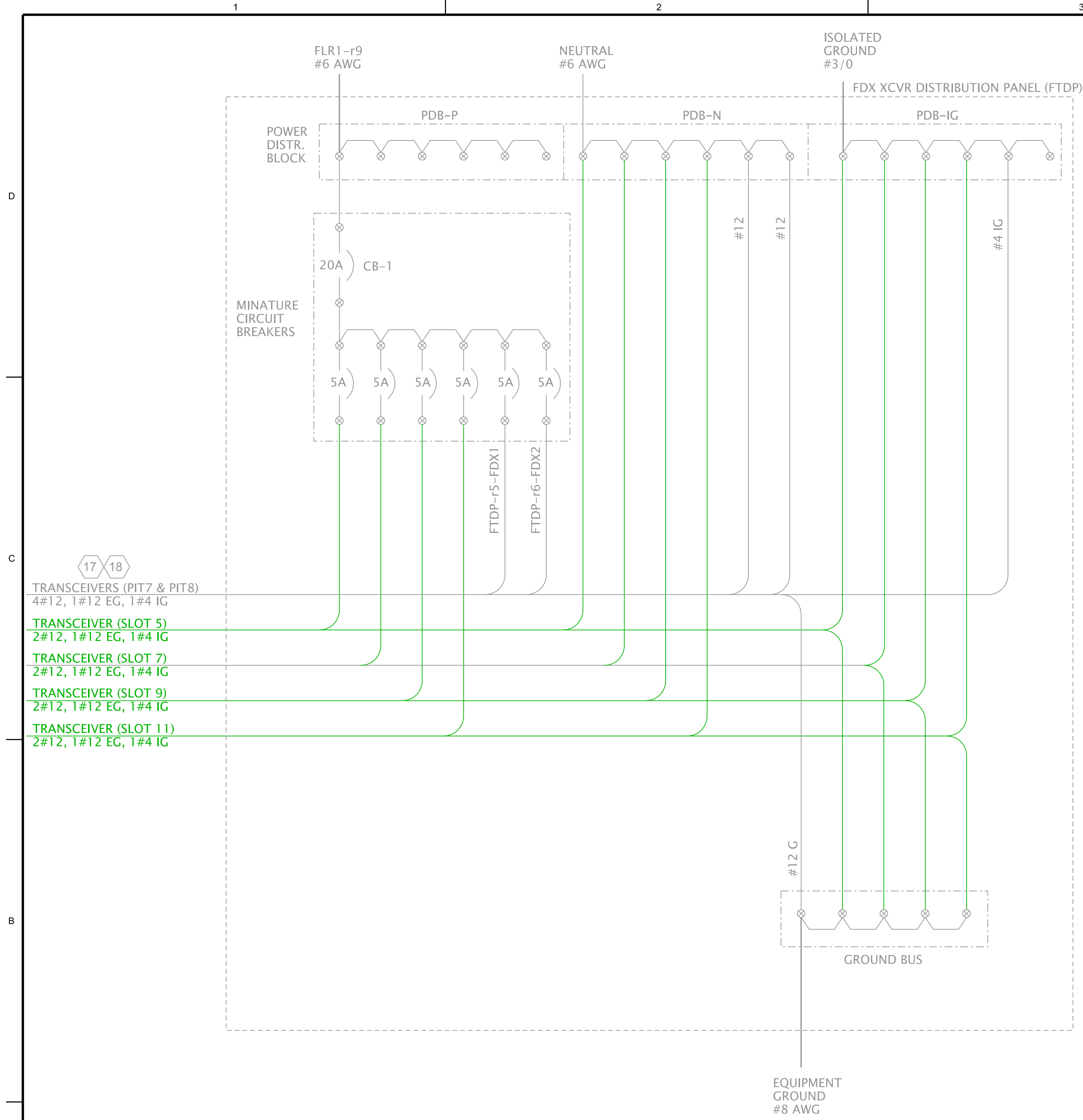
ELECTRICAL  
TRANSCEIVER SYSTEM  
WIRING DIAGRAM - MODIFICATIONS

**SHEET  
IDENTIFICATION  
E-603**

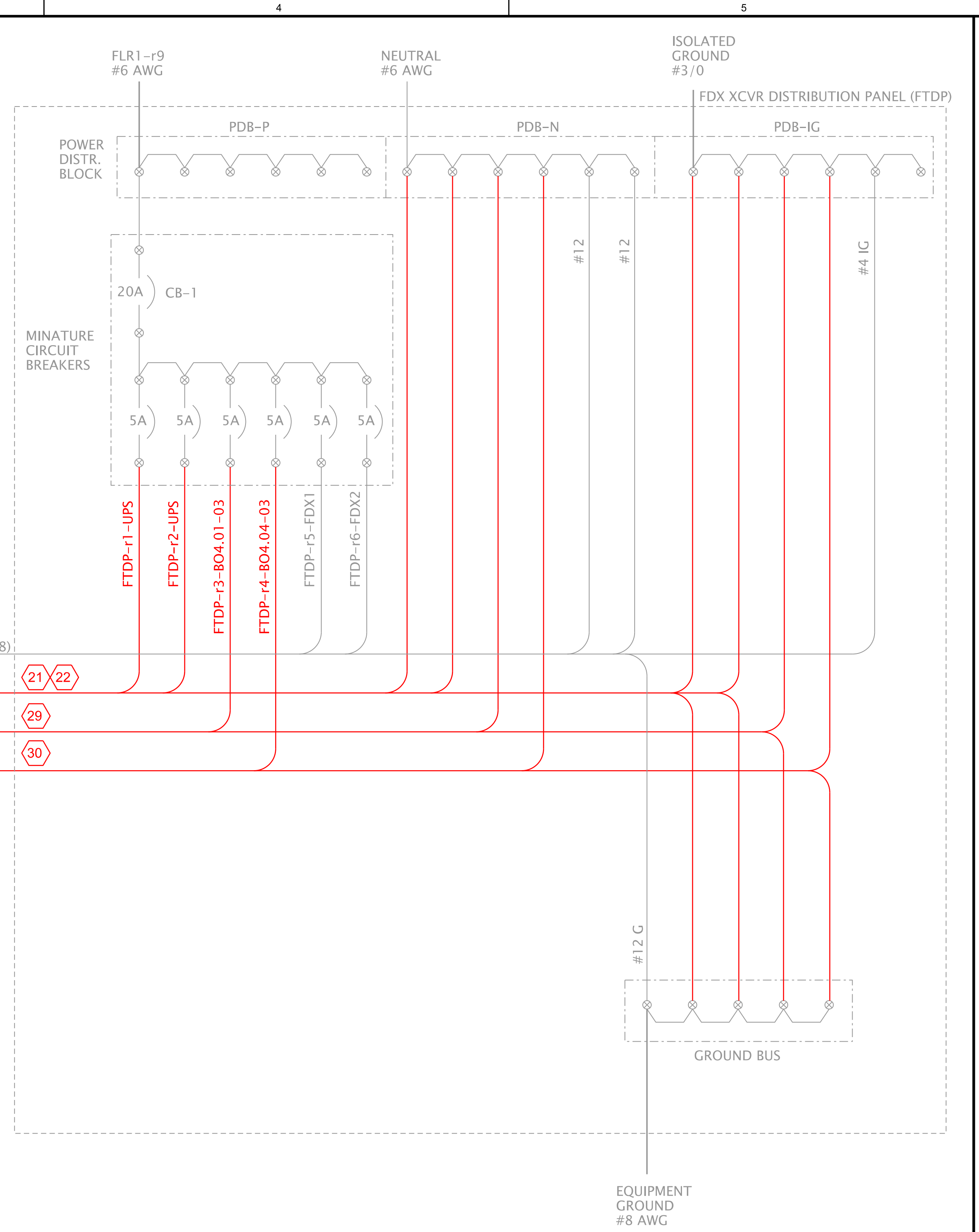
- UPS PANEL  
NEW 2#12, 1#10 EG, 1#10 IG (21)
  - UPS PANEL  
NEW 2#12, 1#10 EG, 1#10 IG (22)
  - TRANSCEIVER PANELS (BO4-01/02/03)  
NEW 2#12, 1#10 EG, 1#10 IG (29)
  - TRANSCEIVER PANELS (BO4-04/05/06)  
NEW 2#12, 1#10 EG, 1#10 IG (30)
- TO EXISTING XCVR DIST. PANEL  
(SEE SHEET E-604)

**INFORMATIONAL DRAWINGS**  
BDG-6-35/3 ONE-LINE DIAGRAM & PANEL SCHEDULES  
BDF-6-35/14 TRANSCEIVER POWER DISTRIBUTION SCHEMATIC

- NOTES**
1. ALL ITEMS SHOWN ARE NEW UNLESS INDICATED OTHERWISE.
  2. SEE SHEET E-001 FOR SYMBOLS AND LEGEND.
  3. RECONNECT EXISTING WIRE AS INDICATED.
  4. SEE SHEETS E-701 AND E-702 FOR CONDUIT & CABLE SCHEDULES.
  5. SEE INFORMATIONAL DRAWINGS FOR EXISTING WIRING DIAGRAM.



**EXISTING TRANSCEIVER POWER DISTRIBUTION SCHEMATIC**



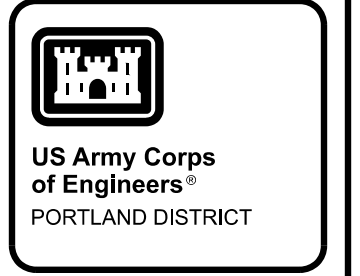
**MODIFIED TRANSCEIVER POWER DISTRIBUTION SCHEMATIC**

**INFORMATIONAL DRAWINGS:**

USACE-FDX DIST SHT 1 FDX TRANSCEIVER DISTRIBUTION PANEL - LAYOUT DRAWING  
 USACE-FDX DIST SHT 2 FDX TRANSCEIVER DISTRIBUTION PANEL - SCHEMATIC & BOM

**NOTES:**

1. ALL ITEMS ARE EXISTING UNLESS INDICATED OTHERWISE.
2. ITEMS TO BE REMOVED SHOWN IN GREEN. NEW ITEMS SHOWN IN RED.



US Army Corps of Engineers PORTLAND DISTRICT	
DATE	APPR.
<b>P&amp;S REVIEW 90%</b>	
DESCRIPTION	MARK

DESIGNED BY: PORTLAND DISTRICT	DATE: 01/25/2023
DESIGNED BY: CEENCB	DESIGNED BY SOLICITATION NO.:
DESIGNED BY: BILL FORTUAY, P.E.	CONTRACT NO.:
DESIGNED BY: PLOT SCALE: 1/1"	DRAWING NUMBER:
DESIGNED BY: ANSI D	FILE NAME: BDP1.123_E-604.dgn

BONNEVILLE LOCK AND DAM  
 WASHINGTON SHORE FISH LADDER  
 FY2019 FISH ACCORDS  
 LAMPREY PASSAGE  
 ELECTRICAL  
 TRANSCEIVER DISTRIBUTION PANEL  
 WIRING DIAGRAM - MODIFICATIONS

SHEET IDENTIFICATION  
**F-604**



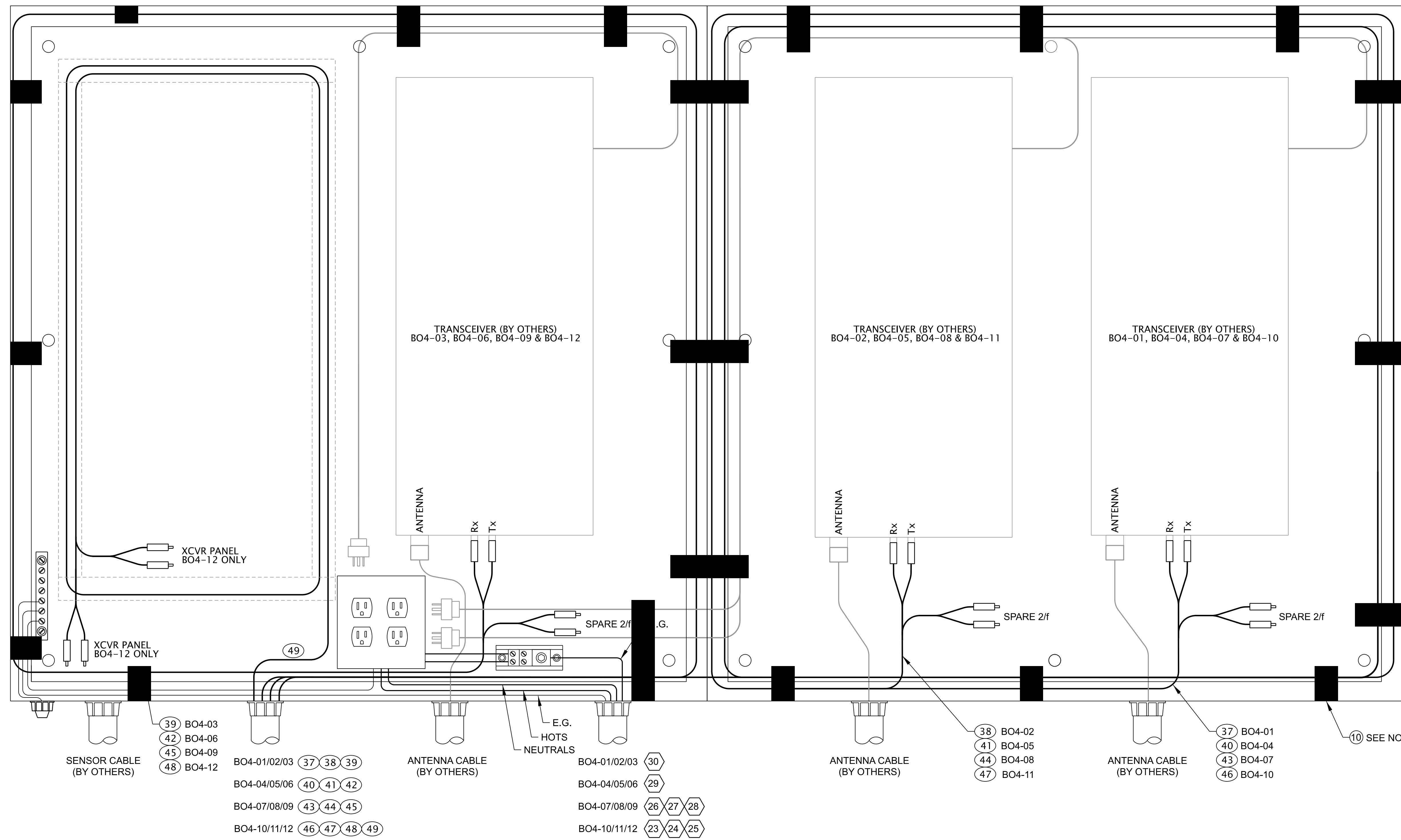
US Army Corps  
of Engineers®  
PORTLAND DISTRICT

DATE: 10/29/2023	DESIGNED BY: G2ecdbdb	CONTRACT NO.:
DESIGNED BY: G2ecdbdb	CHECKED BY: G2ecdbdb	DRAWING NUMBER:
DESIGNED BY: G2ecdbdb	APP.:	MARK:
DATE:	DESCRIPTION:	DATE:
<b>P&amp;S REVIEW 90%</b>		

U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON	DATE: 10/29/2023 DESIGNED BY: G2ecdbdb CHECKED BY: G2ecdbdb SUBMITTED BY: B. FORTJUNY, P.E. PLOT SCALE: 10/29/2023 FILE NAME: CLF1.101_E-605.DGN SIZE: 1" = 1"	CONTRACT NO.:	DRAWING NUMBER:
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BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
NEW TRANSCIEVER PANELS  
WIRING DIAGRAM

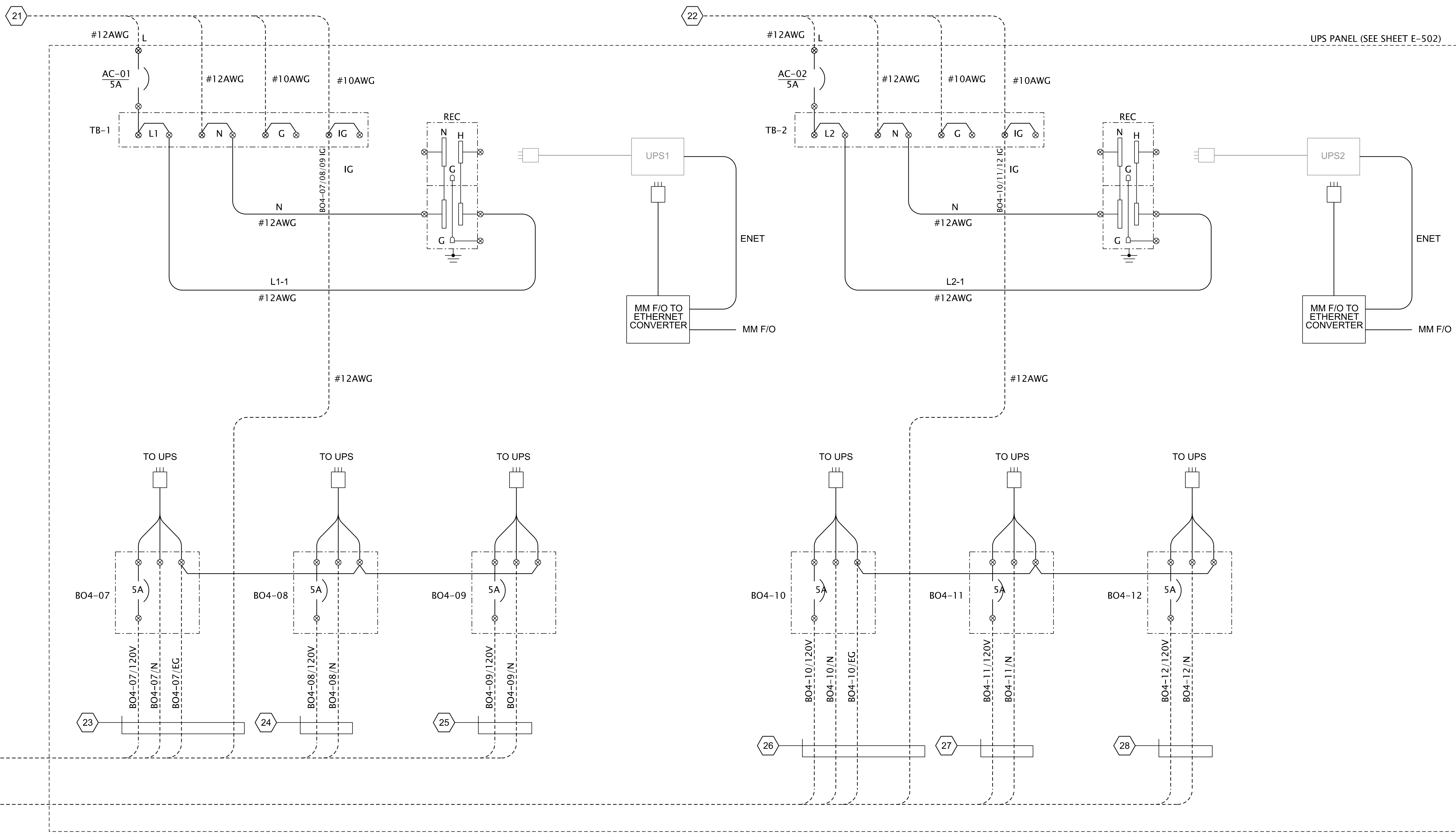
SHEET IDENTIFICATION  
**E-605**



**TYP. TRANSCIEVER PANEL – WIRING DIAGRAM**

**NOTES**

1. ALL ITEMS SHOWN ARE NEW UNLESS INDICATED OTHERWISE.
2. VELCO STRAPS AROUND PANEL INTERIOR PERIMETER TO SECURE WIRE/CABLES (INSTALLED BY OTHERS).
3. ALL FIBER CABLES TO BE TERMINATED WITH ST CONNECTORS.
4. SEE SHEET E-001 FOR SYMBOLS AND LEGEND.
5. SEE SHEETS E-701 AND E-702 FOR CONDUIT & CABLE SCHEDULES.
6. SEE SHEET E-703 FOR MATERIAL LIST.



**WIRING DIAGRAM**

**NOTES:**

1. ALL ITEMS SHOWN ARE NEW UNLESS INDICATED OTHERWISE.
2. SEE SHEETS E-701 AND E-702 FOR CONDUIT AND CABLE SCHEDULES.
3. SEE SHEET E-703 FOR MATERIAL LIST.

MARK	DESCRIPTION	DATE	APPR.

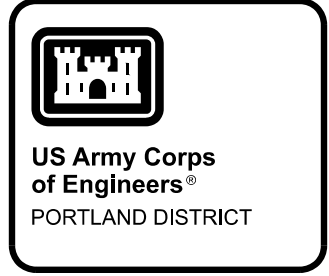
DESIGNED BY: PORTLAND DISTRICT PORTLAND, OREGON	CHECKED BY: GCE/CBB	DATE: 01/25/2013	SUBMITTED BY: BILL FORTUAY, P.E.	CONTRACT NO.:
U.S. ARMY CORPS OF ENGINEERS PORTLAND DISTRICT PORTLAND, OREGON		FILE NAME: BDF1.123_E-606.dgn	PLANT SCALE: PLOT DATE:	DRAWING NUMBER:
P&S REVIEW 90%		SIZE: 1:1	ANSI D	

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
NEW UPS PANELS  
WIRING DIAGRAM

SHEET IDENTIFICATION  
**F-606**



Table with columns: CONDUIT (CKT, NUMBER, SIZE, TYPE), CABLE (NUMBER, NO. COND., SIZE), RATED (VOLTAGE, FUNCTION), FROM, TO, ROUTE, and DESCRIPTION (REMARKS). Rows include various cable types like AFF-c1-FJB, FJB-c1-ATC, ATC-c1-JB1, etc.



US Army Corps of Engineers  
PORTLAND DISTRICT

P&S REVIEW 90%  
DATE: \_\_\_\_\_ APPR: \_\_\_\_\_  
MARK

DESIGNED BY: \_\_\_\_\_ DATE: 10/26/2023  
DRAWN BY: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ SOLICITATION NO:  
BILL PORTUARY, P.E. CONTRACT NO:  
PLOT SCALE: PLOT DATE: DRAWING NUMBER:  
FILE NAME: BDP1.123.E-702.dgn

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

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL AND CABLE SCHEDULE  
CONDUIT AND CABLE SCHEDULE  
CONTROL/COMMUNICATION

SHEET IDENTIFICATION  
E-702

- NOTES:
1. ALL ITEMS SHOWN ARE EXISTING UNLESS INDICATED OTHERWISE.
  2. ITEMS SHOWN IN GREEN ARE TO BE REMOVED OR MODIFIED.
  3. ITEMS SHOWN IN RED ARE NEW.



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of Engineers®  
PORTLAND DISTRICT

DATE	APPR.

DESCRIPTION	MARK

P&S REVIEW 90%

DESIGNED BY: PLANNING ENGINEER	DATE: 02/25/2023
SUBMITTED BY: BILL FORTUAY, P.E.	PROJECT NUMBER: SOLICITATION NO.:
PLOT SCALE: 1:1	CONTRACT NO.:
FILE NAME: BDP1_123_E-703.dgn	DRAWING NUMBER:

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

BONNEVILLE LOCK AND DAM  
WASHINGTON SHORE FISH LADDER  
FY2019 FISH ACCORDS  
LAMPREY PASSAGE  
ELECTRICAL  
MATERIAL LIST

SHEET  
IDENTIFICATION  
**E-703**

**MATERIALS LIST**

ITEM	QUANTITY	UNIT	DEVICE I.D.	DESCRIPTION	REMARKS
01	1	EA	UPS PANEL	60"X36"X12" 2-DOOR ENCLOSURE , 3-POINT LATCH, NEMA 4XSS	
02	1	EA	UPS PANEL	60"X36" PAINTED STEEL BACK PANEL	
03	10	EA	XCVR/UPS PANELS	SS PANEL VENT/DRAIN	
04	8	EA	XCVR PANELS	30"X30"X8" HINGED ENCLOSURE, QTR-TURN LATCHES, STAINLESS STEEL, NEMA 4X	
05	8	EA	XCVR PANELS	30 x 30 CONCEPT PAINTED STEEL BACK PANEL	
06	4	EA	XCVR PANELS	TWO ISOLATED-GROUND RECEPTACLES, 20A, 125VAC, SPEC-GRADE, STEEL 2-GANG BOX, S.S. COVER PLATE	
07				NOT USED	
08	AS REQ'D	EA	XCVR/UPS PANELS	COPPER GROUND BUS BAR, 9 PORTS, CONDUCTOR RANGE #4-#14	
09	4	EA	XCVR PANELS (ISO-GND)	COMPACT DISTRIBUTION BLOCK, 1-POLE, TINNED COPPER BLOCK, 600V	
10	2	EA	XCVR PANELS	1" X 4" BLACK ADHESIVE-BACK VELCRO STRAPS, 50-COUNT	PROVIDE TO GOVT FOR INSTALLATION BY OTHERS
11	AS REQ'D	EA	UPS PANEL	DIN RAIL ISOLATION BARRIER (STANDOFF)	SEE NOTE 2, SHEET E-503
12	12	EA	F/O PATCH PANELS	AFL FUSECONNECT KIT, 12-FIBER PRE-TERMINATED PIGTAIL, ST CONNECTORS	FOR TERMINATION OF NEW 72 FIBER CABLE
13	30	EA	XCVR/PATCH PANELS	FIBER OPTIC BUFFER TUBE FAN-OUT KIT, 12-FIBER, 25-INCH	
14				NOT USED	
15	1	EA	F/O PATCH PANEL	LOCKABLE MODULAR F/O WALL CABINET, 12 ADAPTER PLATE COMPATIBLE, 72-PORT	PROVIDE BACK PANEL FOR PATCH PANEL ENCLOSURE IF NECESSARY
16	24	EA	F/O PATCH PANEL	FIBER ADAPTER PANELS, 3 DUPLEX ST STYLE	
17	AS REQ'D	LF	UPS PANEL	1.5X3 NARROW SLOT NON-METALLIC WIRE DUCT AND COVER	
18	AS REQ'D	LF	UPS PANEL	2X3 NARROW SLOT NON-METALLIC WIRE DUCT AND COVER	
19	22	EA	UPS PANEL	TERMINAL BLOCK END ANCHOR	
20	2	EA	UPS PANEL	MEDIA CONVERTER, 120VAC, MM FIBER TO ETHERNET, FIBER ST PORTS	
21	14	EA	UPS PANEL	FEED-THROUGH, SCREW-TYPE TERMINAL BLOCK	
22	14	EA	UPS PANEL	FEED-THROUGH, SCREW-TYPE GROUNDING TERMINAL BLOCK, GREEN	
23	4	EA	UPS PANEL	FEED-THROUGH, SCREW-TYPE GROUNDING TERMINAL BLOCK, GREEN/YELLOW	
24	AS REQ'D	LF	UPS PANEL	STEEL DIN RAIL	
25	8	EA	UPS PANEL	TERMINAL BLOCK GROUP MARKING CARRIER	
26	2	EA	UPS PANEL	MAINTENANCE RECEPTACLE, ISOLATED-GROUND TYPE, 120VAC, 15A, DIN RAIL MOUNTED	
27	8	EA	UPS PANEL	SUPPLEMENTARY PROTECTORS, 120VAC, 5A	
28				NOT USED	
29				NOT USED	
30	AS REQ'D	EA		EQUIPMENT LABEL	SEE TYP. DETAIL, SHEET E-504
31	AS REQ'D	EA		COMPONENT/DEVICE LABEL	SEE TYP. DETAIL, SHEET E-504
32	AS REQ'D	EA		WARNING LABEL	SEE TYP. DETAIL, SHEET E-504
33					
34					
35					
36					
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**NOTES:**

1. ALL ITEMS SHOWN ARE NEW UNLESS INDICATED OTHERWISE.