

NON-CONFIDENTIAL

Request IR-1:

With reference to Page 2 of the Application:

(a) Please provide the original engineering drawings (e.g., general arrangement drawings) of the preferred alternative from the earliest design stage available (e.g., on which the 2019 ACE estimate was based).

(b) Please provide both the most recent engineering drawings (e.g., general arrangement drawings) of the preferred alternative, as modified to reflect DFO and other permitting requirements. Please include a high-level overview that describes key design modifications associated with the preferred alternative (Option 4).

Response IR-1:

(a) Please refer to NSUARB IR-7 Attachment 1.

(b) Please refer to Attachments 1 through 3. A high-level overview of the key design modifications is listed below:

Upstream Fishway Improvements:

- Replace the existing lower non-technical fishway weirs with 11 new concrete weirs, including an additional weir immediately below the upper technical (concrete) fish ladder. The weir at the entrance to the fishway will be placed diagonally pointing south-west to provide improved entrance conditions.
- Relocate the louvre bypass outflow pipe to connect into the fishway to provide additional attraction flow through the fishway. The fishway currently provides a

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1 minimum of 6 cfs and the bypass pipe provided a minimum of 29 cfs increasing the
2 minimum total flow through the fishway to 35 cfs.
3

4 **Downstream Louvre System Improvements:**
5

- 6 • Repairs to the existing louvre slats. These repairs will be identified when the water
7 is drawn down and canal dewatered in July 2025. Anticipated repairs include
8 replacing partially broken / damaged slats. Installation of a trap funnel to prevent
9 upstream movement once fish have moved through the entrance of the bypass.
10 Bottom orifices will also be installed in the stoplogs to support downstream
11 migration.
12
- 13 • New ramp to facilitate movement from the bottom of the water column towards the
14 bypass pipe at the top of the water column. This would benefit those bottom
15 dwelling species such as American eel, Brown bullhead, White suckers etc. by
16 guiding the fish from the bottom to the convergence of the slates in order to find
17 the bypass pipe.
18
- 19 • Realignment of the bypass outfall into the top of the non-technical lower fishway
20 section. The plunge pool water depth will be designed to meet or exceed the USFW
21 criteria for drops of all species and age classes at the site.
22

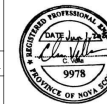
23 **Construction of the Upstream Eel Passage:**
24

- 25 • Metal enclosed box lined with a climbing substrate and equipped with pumped
26 water to facilitate eel movement up the ramp. It will sit on the outside of the upper
27 technical concrete fishway following the general outline of the fishway up to the
28 headpond.

DWG. NO. H 0 9 6 H 1 1 6 3 1 0 0 0 4 0



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DEPARTMENTAL APPROVALS		SCALE	
CIVIL	E & I	UNITS	IMPERIAL
MECH	CONST	DESIGNED	ENG
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APPROVED		CHECKED	--
DATE		CHECKED	--
		DATE	2021-06-0
		W.O.	XXXX

CI 50518 Midgard IR-1 Attachment 1 Page 2 of 24

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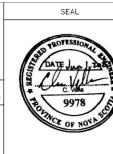
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100-02	GENERAL NOTES	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-042	
200-01	EXISTING CONDITIONS OVERALL SITE PLAN	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-043	
200-02	EXISTING CONDITIONS EAST SPILLWAY PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-044	
200-03	EXISTING CONDITIONS WEST SPILLWAY DAM PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-045	
210-01	TEMPORARY CONDITIONS/DEMO PLAN	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-046	
210-02	TEMPORARY CONDITIONS/DEMO EAST SPILLWAY PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-047	
210-03	TEMPORARY CONDITIONS/DEMO WEST SPILLWAY PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-048	
300-01	NEW CONDITIONS DAM PLAN AND ELEVATION	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-049	
300-02	NEW CONDITIONS EAST SPILLWAY PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-050	
300-03	NEW CONDITIONS WEST SPILLWAY PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-051	
300-04	NEW CONDITIONS SLUICeway PLAN AND DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-052	
300-05	NEW CONDITIONS EAST ABUTMENT PLAN AND SECTIONS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-061	
310-01	NEW CONCRETE SLUICeway HEADWALL AND DECK DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-053	
310-02	NEW CONCRETE SLUICeway HEADWALL DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-054	
310-03	NEW CONCRETE SPILLWAY RESURFACING DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-055	
310-04	NEW CONCRETE RETAINING WALL AND PIER DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-056	
310-05	NEW CONCRETE EAST ABUTMENT PIER & DECK DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-062	
310-06	NEW CONCRETE EAST ABUTMENT PIER & DECK DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-063	
320-01	NEW STEEL WALKWAY PLAN VIEW	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-057	
320-02	NEW STEEL WALKWAY	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-058	
320-03	NEW STEEL WALKWAY HANDRAIL DETAILS	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-059	
330-01	RUBBER DAM PIPING AT SLUICeway	2021-06-01	0	ISSUED FOR CONSTRUCTION	H-096H11-631-00-060	

ISSUED FOR CONSTRUCTION

100-01

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REV	CAD	CIVIL	MECH	E & I	CONS
BY:	DATE:				



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CIVIL	E & I	UNITS	IMPERIAL
MECH	CONST	DESIGNED	ENG
		DRAWN	ZJA
APPROVED		CHECKED	--
DATE		CHECKED	--
		DATE	2021-06-
		W.O.	XXXX

RUTH FALLS
RUTH FALLS REFURBISHMENT PROJECT

DRAWING LIST

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DWG. NO.																

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Kleinschmidt

200-01

RUTH FALLS

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BY:	DATE:				



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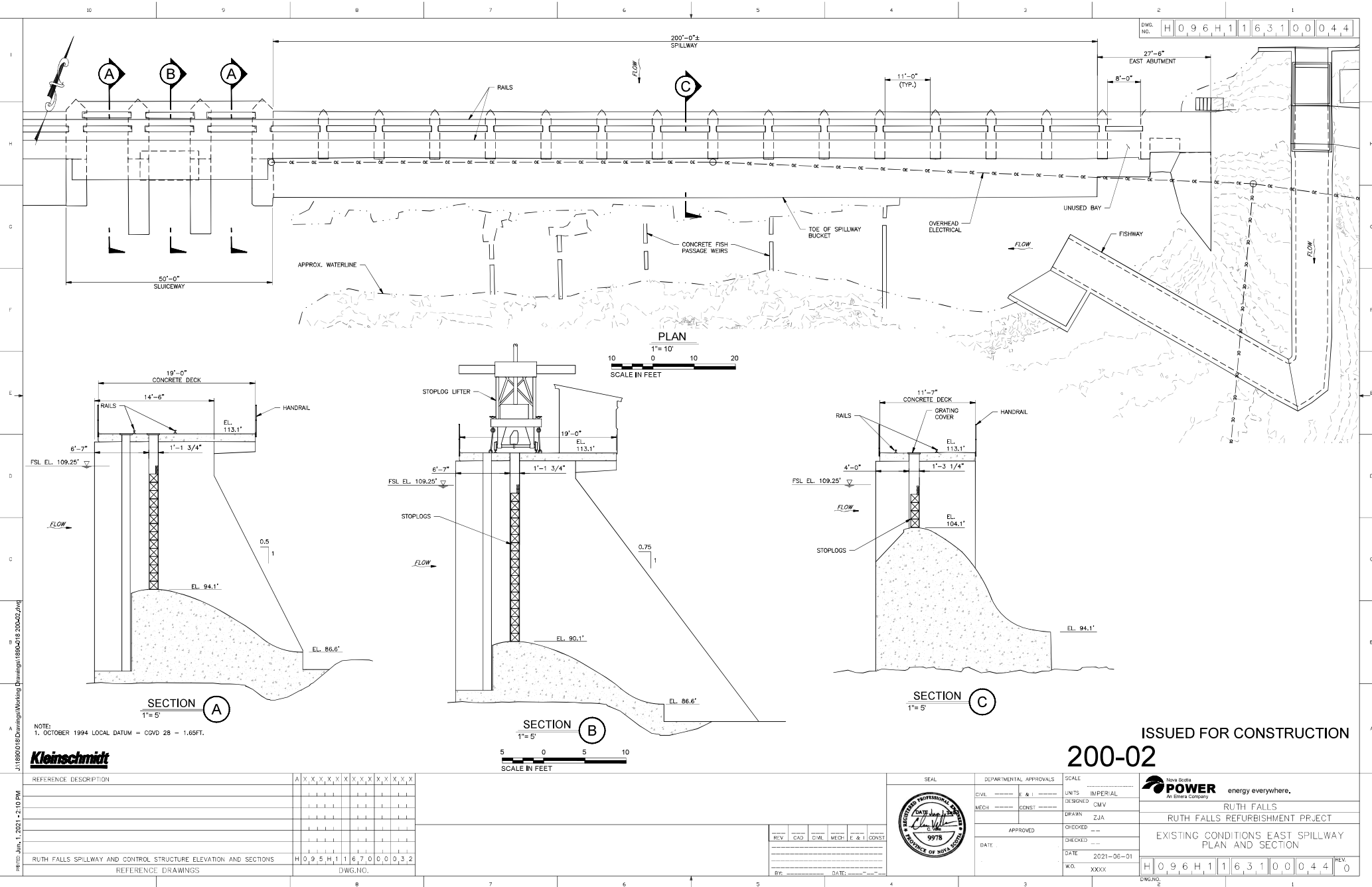


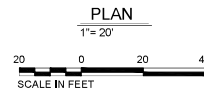
energy everywhere.

RUTH FALLS

EXISTING CONDITIONS
OVERALL SITE PLAN

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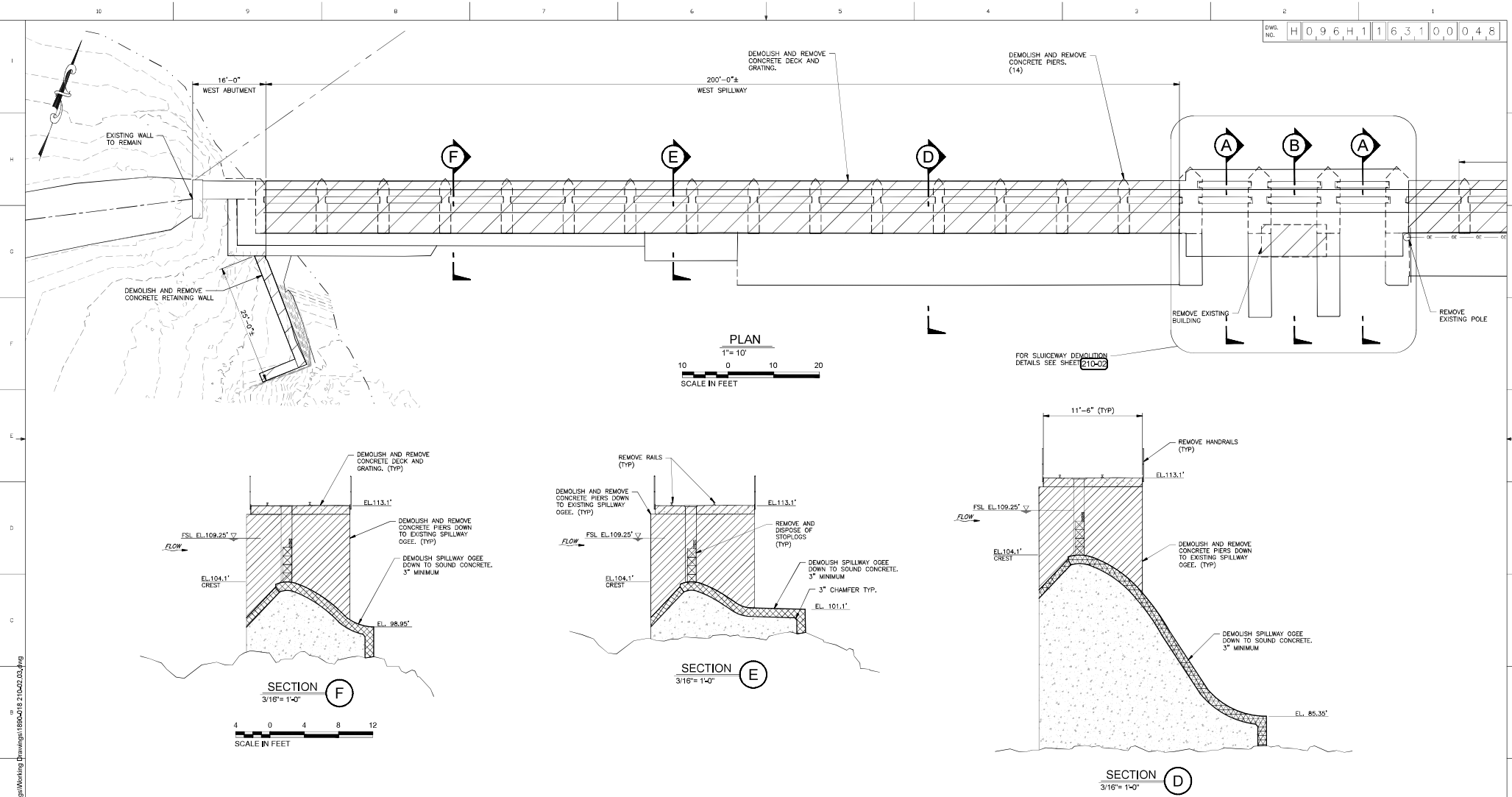
Kleinschmidt

210-01

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RUTH FALLS																			
RUTH FALLS REFURBISHMENT PROJECT																			
TEMPORARY CONDITIONS/DEMO PLAN																			
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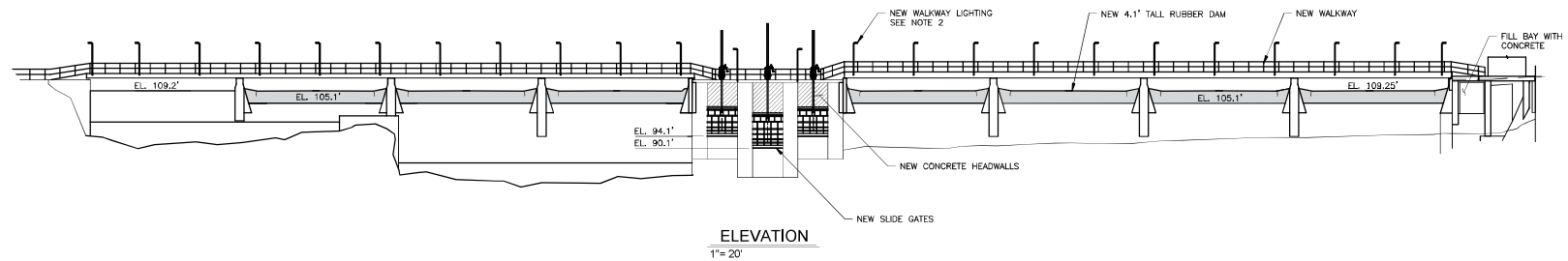




ISSUED FOR CONSTRUCTION

210-03

REFERENCE DESCRIPTION REFERENCE DRAWINGS	DWG. NO.	REV DATE	BY DATE	SEAL DATE	DEPARTMENTAL APPROVALS SCALE UNITS DESIGNED DRAWN CHECKED DATE W.D.	POWER energy everywhere. RUTH FALLS RUTH FALLS REFURBISHMENT PROJECT TEMPORARY CONDITIONS/DEMO WEST SPILLWAY PLAN AND SECTIONS DWG. NO.
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NOTE:
1. OCTOBER 1994 LOCAL DATUM = CGVD 28 - 1.65FT.
2. LED LUMINAIRE MOUNTED TO A SWIVEL POLE- 5,300 LUMENS,
TYPE 1 OPTIC, MULTIVOLT DRIVER, WARM (3000K) COLOR TEMP.
LIGHT TO BE MOUNTED 10' ABOVE WALKWAY AND SPACED AT 20'.
WIRING AND CONDUIT RESPONSIBILITY OF CONTRACTOR.

Kleinschmidt

[illegible][illegible]

DEPARTMENTAL APPROVALS		SCALE	
CIVIL	E & I	UNITS	IMPERIAL
MECH	CONST	DESIGNED	CMV
		DRAWN	ZJA
APPROVED		CHECKED	--
DATE		CHECKED	--
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		W.O.	XXXX


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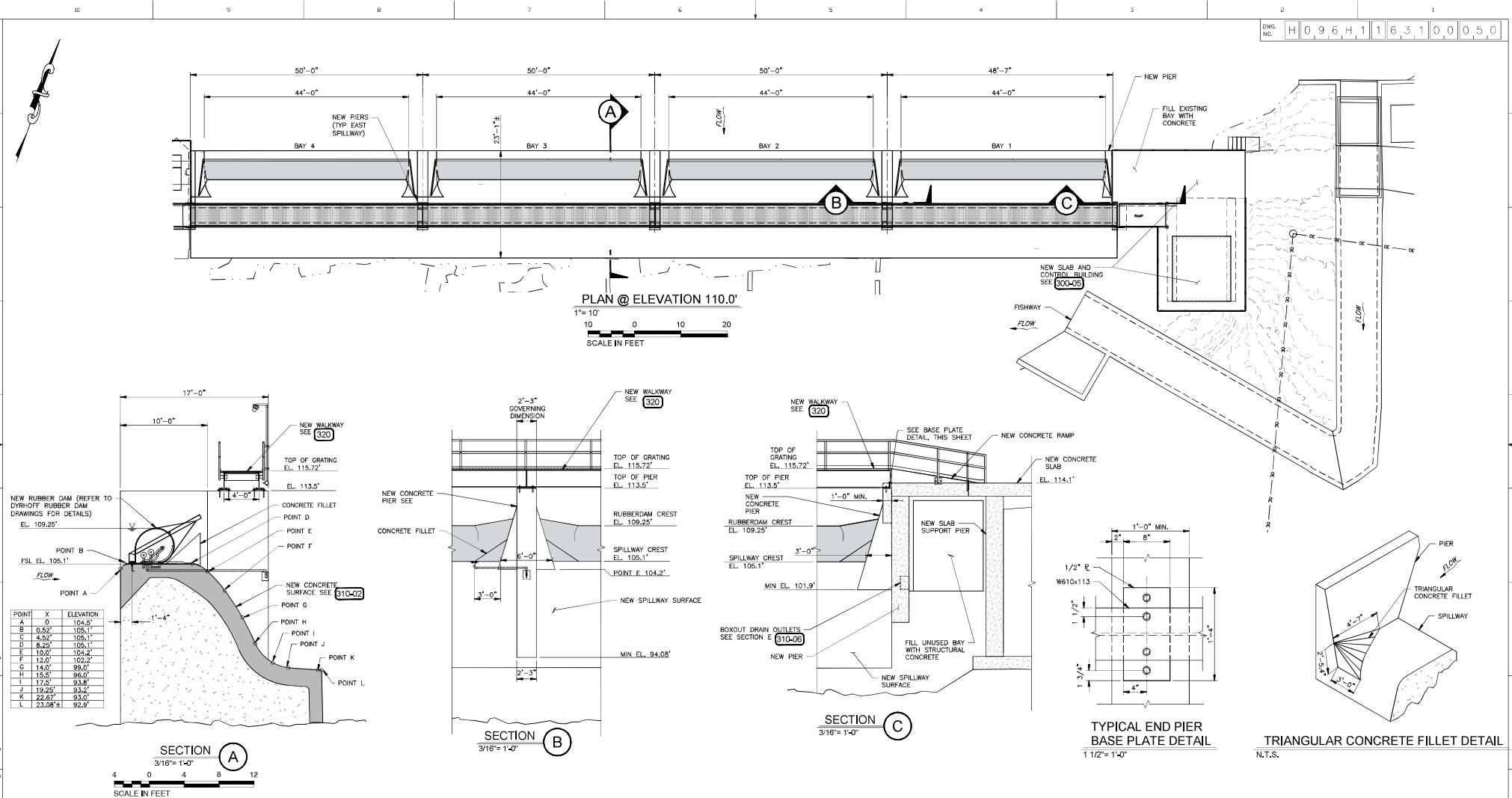
RUTH FALLS
RUTH FALLS REFURBISHMENT PROJECT

NEW CONDITIONS
DAM PLAN AND ELEVATION

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DWG.NO.
2

1



NOTE:
1. OCTOBER 1994 LOCAL DATUM = CGVD 28 - 1.65FT.

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ISSUED FOR CONSTRUCTION

300-02


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RUTH FALLS
RUTH FALLS REFURBISHMENT PROJECT

NEW CONDITIONS
EAST SPILLWAY PLAN AND SECTIONS

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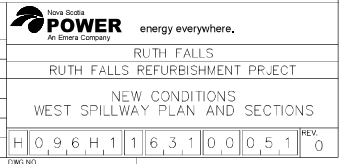
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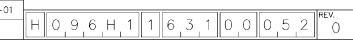


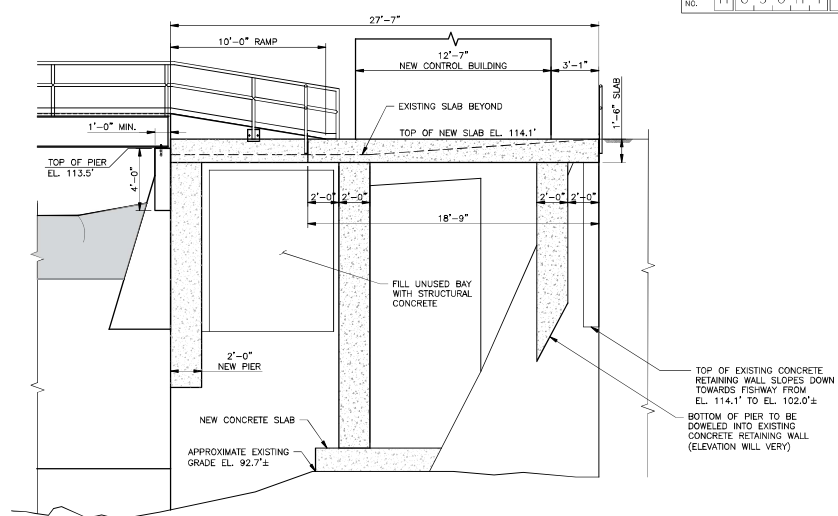
RUTH FALLS
RUTH FALLS REFURBISHMENT PROJECT

NEW CONDITIONS
EAST SPILLWAY PLAN AND SECTIONS

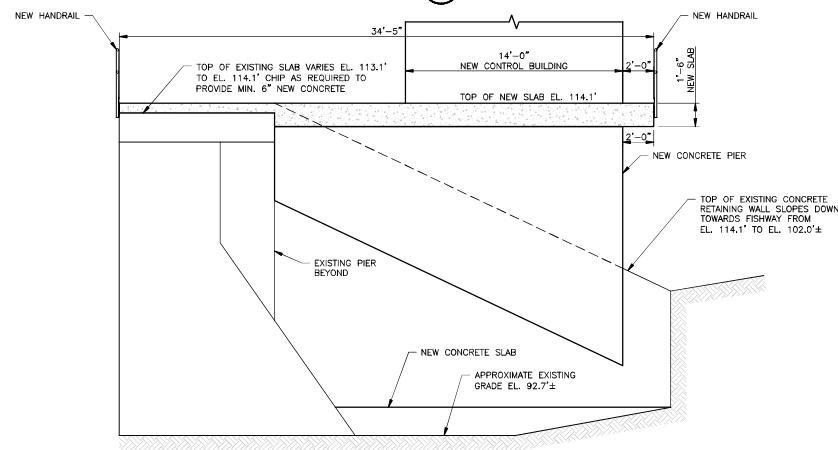
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SECTION (B)
1/4" = 1'-0"

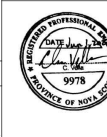


SECTION C
1/4" = 1'-0"

ISSUED FOR CONSTRUCTION

300-05

NOTE:
1. OCTOBER 1994 LOCAL DATUM = CGVD 28 - 1.65FT.

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DEPARTMENTAL APPROVALS		SCALE	
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MECH	CONST	DESIGNED	CMV
		DRAWN	JFB
APPROVED		CHECKED	---
DATE		DATE	2021-06-
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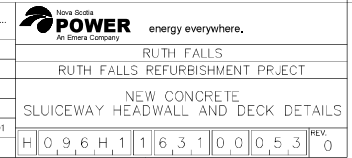


RUTH FALLS
RUTH FALLS REFURBISHMENT PROJECT

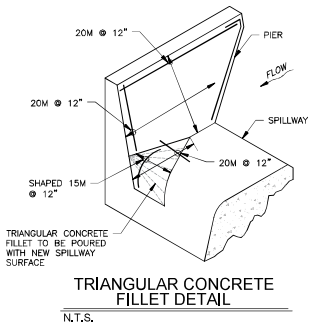
NEW CONDITIONS
EAST ABUTMENT PLAN AND SECTIONS

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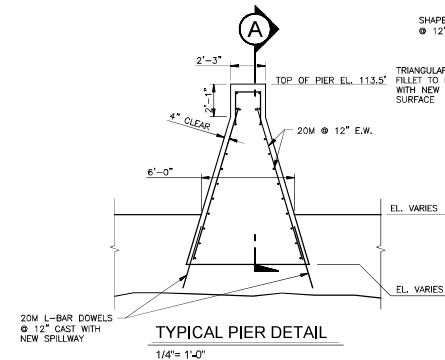
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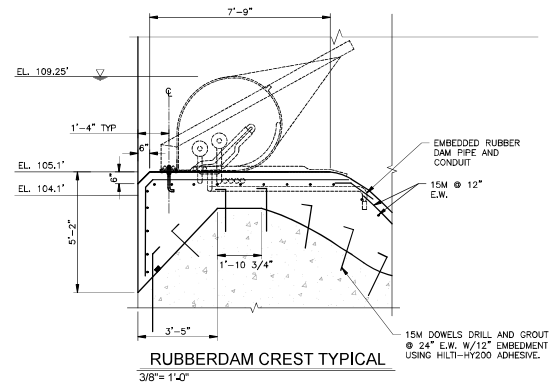
 Nova Scotia POWER An Enbridge Company	energy everywhere.	
	RUTH FALLS	
	RUTH FALLS REBURISHMENT PROJECT	
	NEW CONCRETE	
	SLUICeway HEADWALL AND DECK DETAILS	
H 0 9 6 H 1 1 6 3 1 0 0 0 5 4		REV 0



UNCONTROLLED SPILLWAY DETAIL (BAY 8)

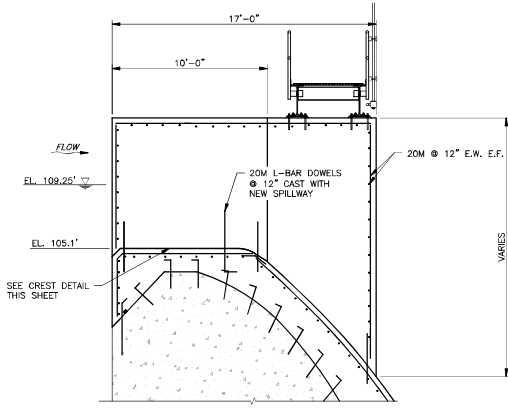


WEST SPILLWAY DETAIL (BAY 7)



WEST SPILLWAY TYPICAL DETAIL (BAYS 6&5)

RUBBERDAM CREST TYPICAL



TYPICAL PIER SECTION (A)

ISSUED FOR CONSTRUCTION

310-03

NOTE:
1. OCTOBER 1994 LOCAL DATUM = CGVD 28 - 1.65FT

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BY: _____ DATE: ____-____-____					



DEPARTMENTAL APPROVALS		SCALE	
CIVIL	E & I	UNITS	IMPERIAL
MECH	CONST	DESIGNED	CMV
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APPROVED		CHECKED	--
DATE		CHECKED	--
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		W.O.	XXXX



RUTH FALLS

RUTH FALLS REFURBISHMENT PROJECT

NEW CONCRETE

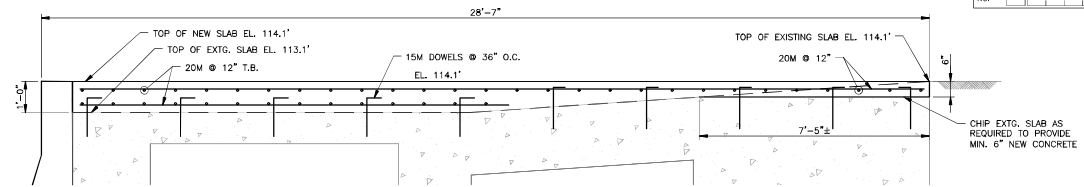
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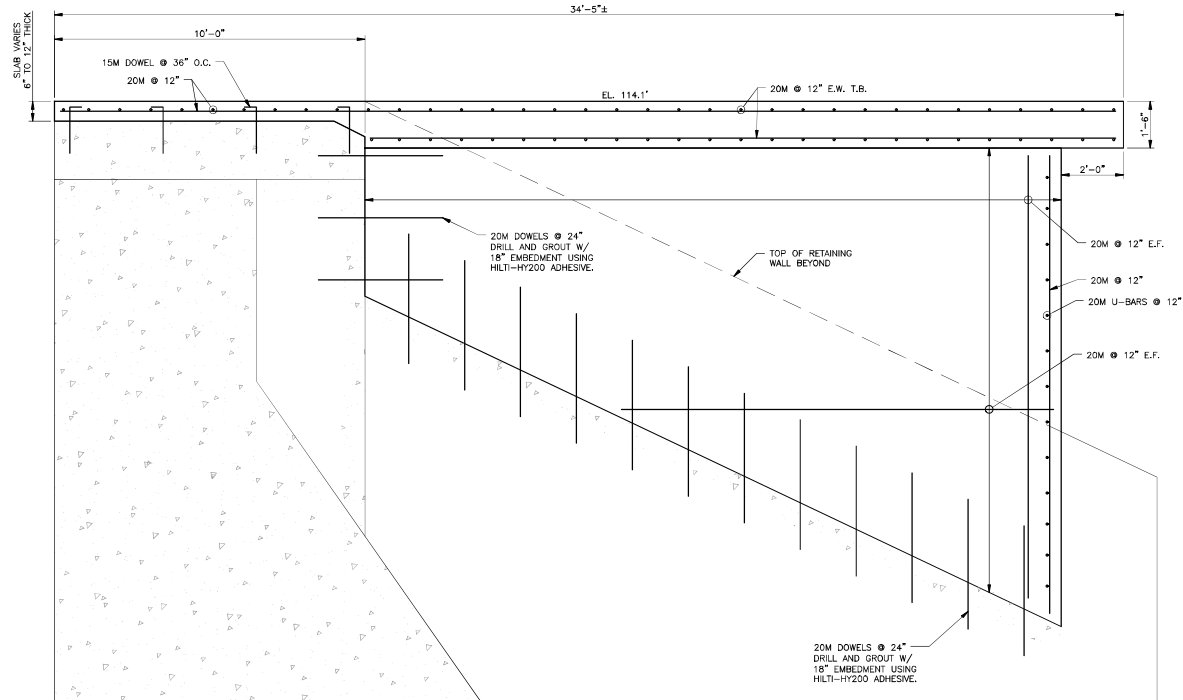
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SECTION A
1/2" = 1'-0"



SECTION B
1/2" = 1'-0"

4 0 4 8 12
SCALE IN FEET

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	RUTH FALLS REFURBISHMENT PROJECT
	NEW CONCRETE
	EAST ABUTMENT PIER & DECK DETAILS

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DEPARTMENTAL APPROVALS		SCALE	
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MECH	CONST	DESIGNED	CMV
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DATE		CHECKED	--
		DATE	2021-06-
		W.O.	XXXX

ISSUED FOR CONSTRUCTION

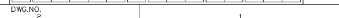
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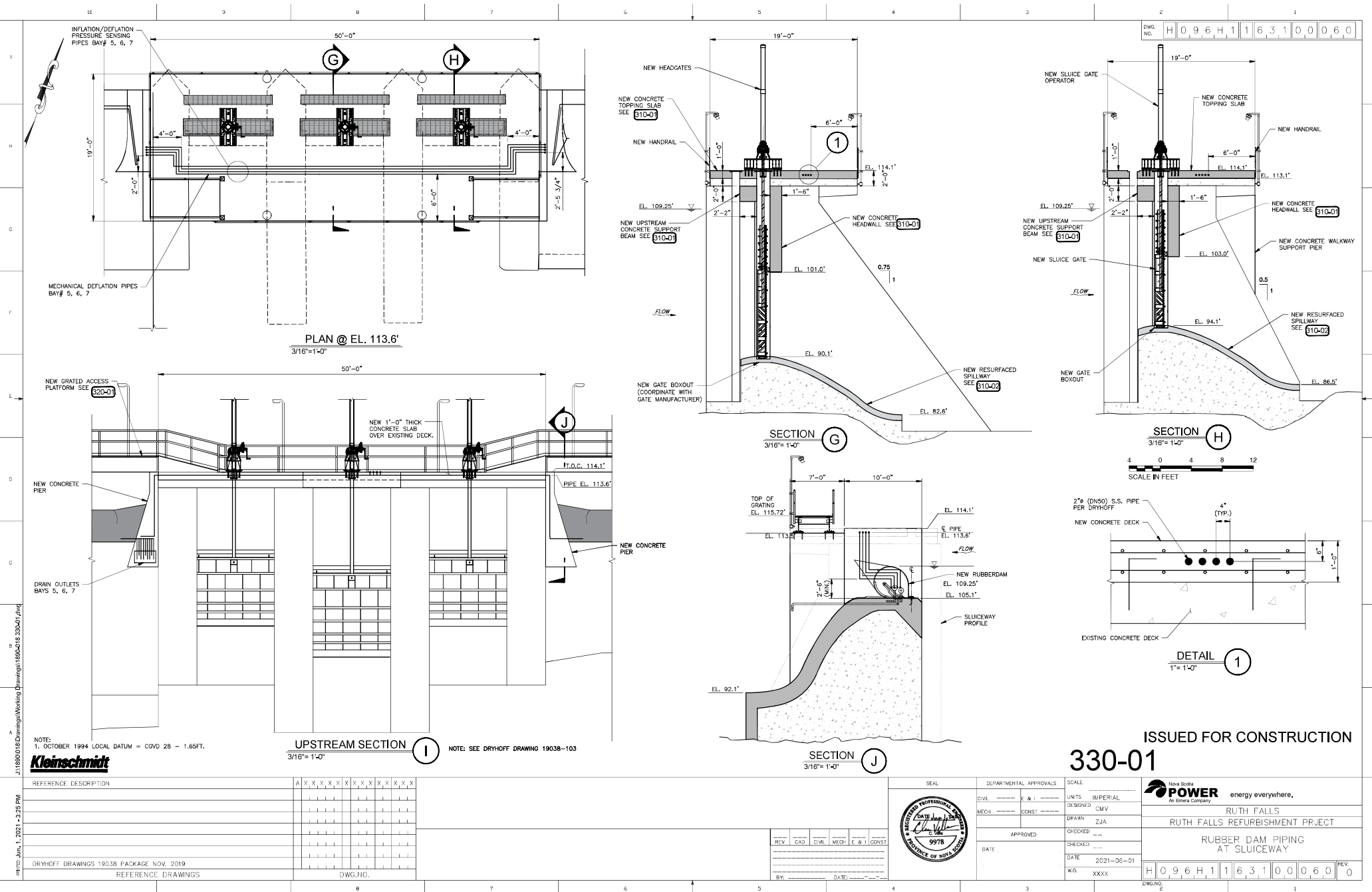




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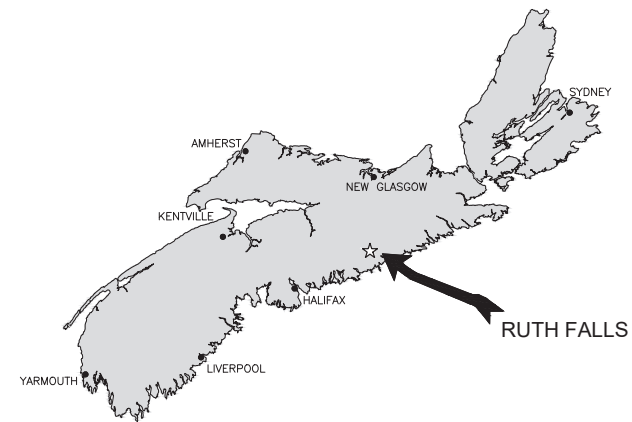


RUTH FALLS

FISHWAY MODIFICATIONS



LIST OF DRAWINGS		
NOVA SCOTIA POWER DWG NO.	DRAWING TITLE	ISSUE / REVISION
H-096H1-1-620-00-011	FISHWAY MODIFICATIONS - COVER SHEET	A
H-096H1-1-620-00-012	FISHWAY MODIFICATIONS - GENERAL NOTES	A
H-096H1-1-620-00-013	FISHWAY MODIFICATIONS - EXISTING CONDITIONS, GENERAL ARRANGEMENT	A
H-096H1-1-620-00-014	FISHWAY MODIFICATIONS - EXISTING CONDITIONS, FISHWAY - PLAN	A
H-096H1-1-620-00-016	FISHWAY MODIFICATIONS - GENERAL ARRANGEMENT PLAN	A
H-096H1-1-620-00-017	FISHWAY MODIFICATIONS - CHANNEL FISHWAY - PLAN AND SECTIONS	A
H-096H1-1-620-00-018	FISHWAY MODIFICATIONS - CHANNEL FISHWAY - CROSS SECTIONS	A
H-096H1-1-620-00-019	FISHWAY MODIFICATIONS - CHANNEL FISHWAY - SECTIONS AND DETAILS	A
H-096H1-1-620-00-020	FISHWAY MODIFICATIONS - FISH BYPASS - PLAN AND SECTIONS	A
H-096H1-1-620-00-021	FISHWAY MODIFICATIONS - FISH BYPASS - SECTIONS AND DETAILS	A
H-096H1-1-620-00-022	FISHWAY MODIFICATIONS - UPSTREAM EEL PASSAGE - PLAN AND SECTIONS	A
H-096H1-1-620-00-023	FISHWAY MODIFICATIONS - UPSTREAM EEL PASSAGE - SECTIONS AND DETAILS	A



PROJECT LOCATION



ISSUED FOR PERMIT
2023-05-05

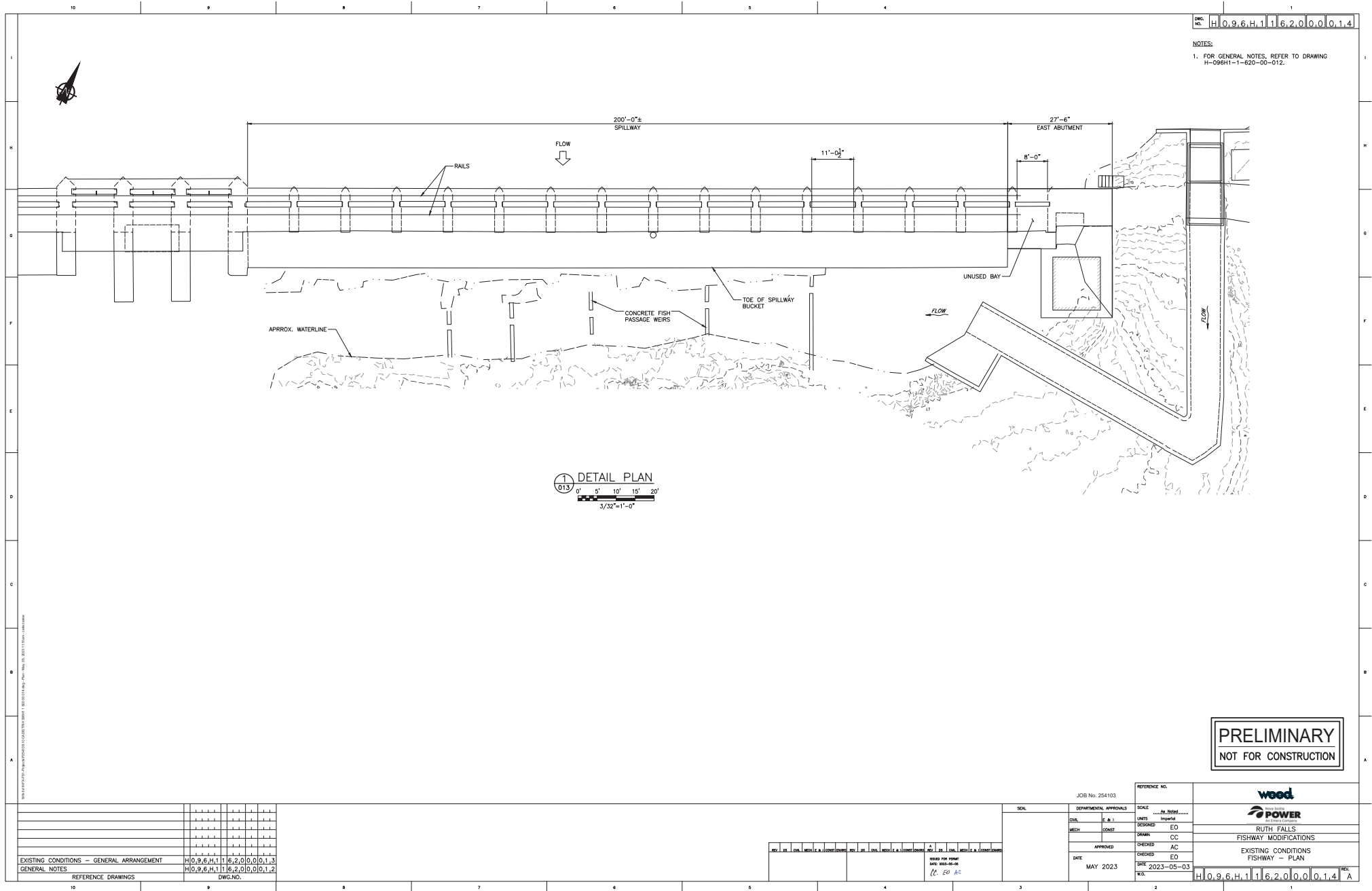
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NOT FOR CONSTRUCTION

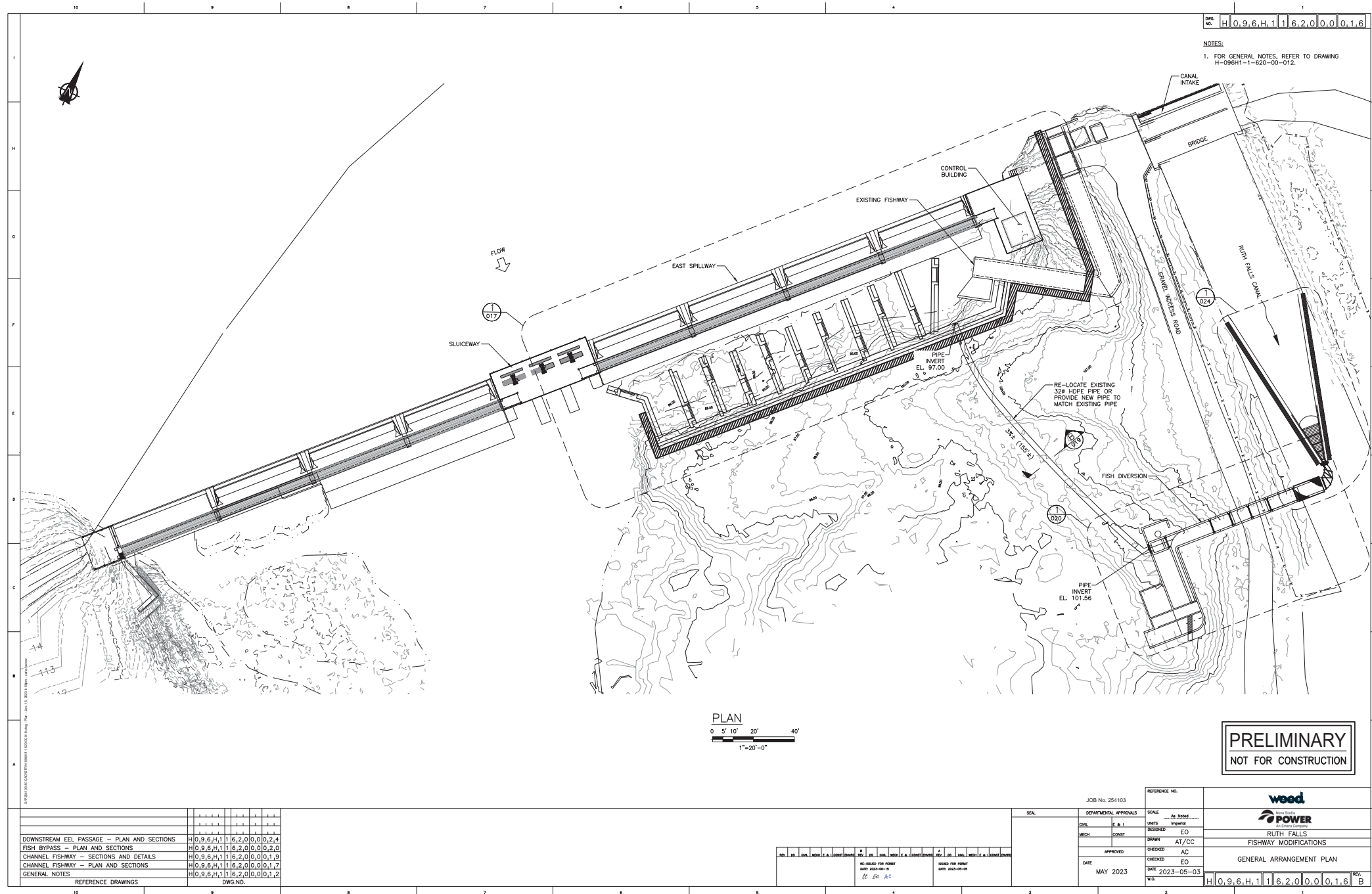
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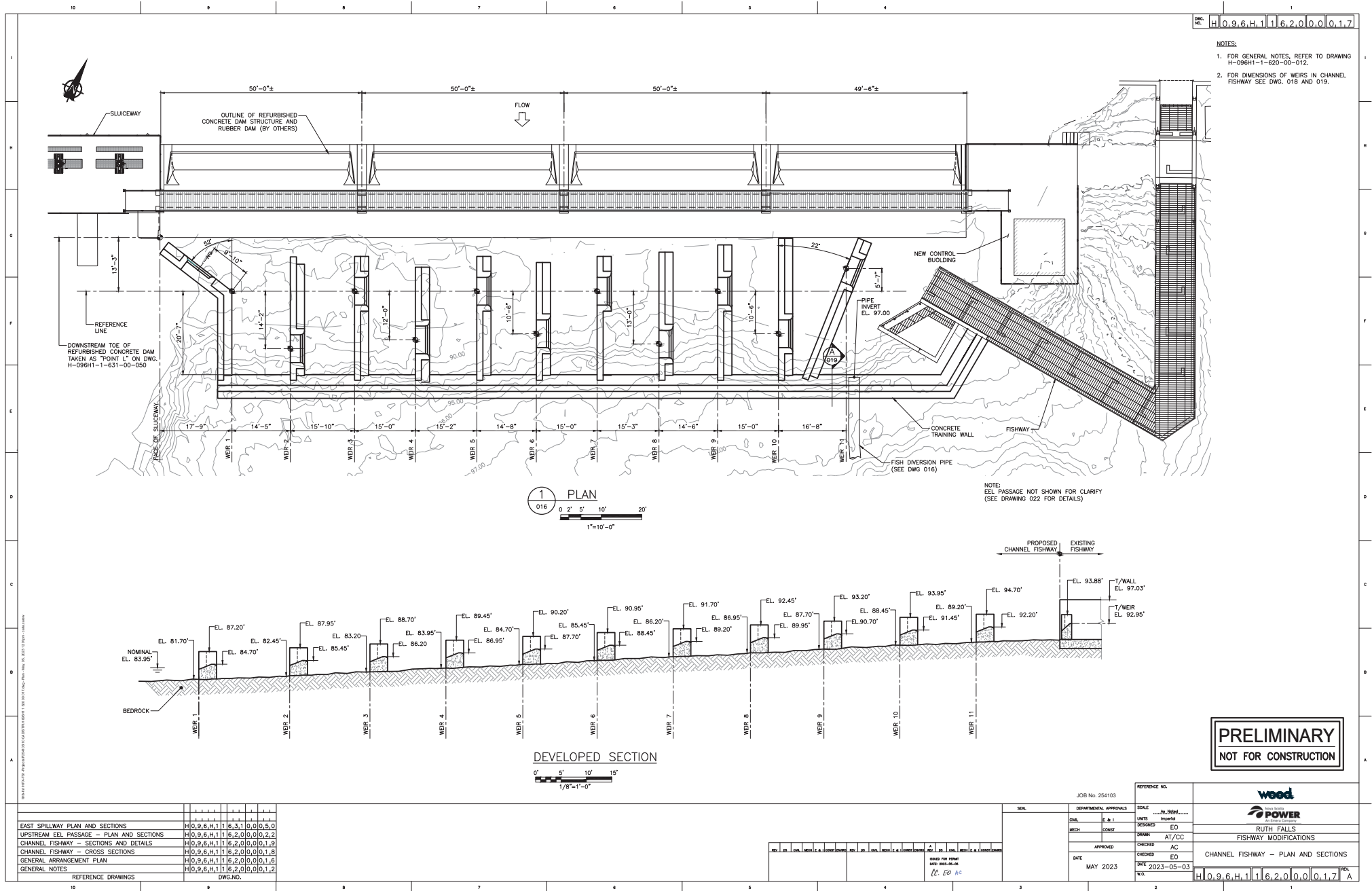
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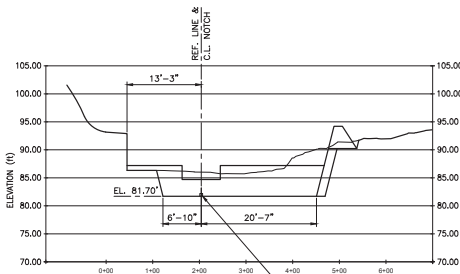


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Mech	CONST	DRAWN	CC	FISHWAY MODIFICATIONS	
	APPROVED	CHECKED	AC	EXISTING CONDITIONS	
DATE		CHECKED	EO	GENERAL ARRANGEMENT	
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		S.A.		H 0.9 6.4 H 1.1 6.2 0.0 0.0 0.1 3 EXP.	



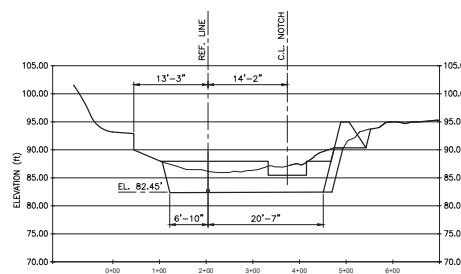




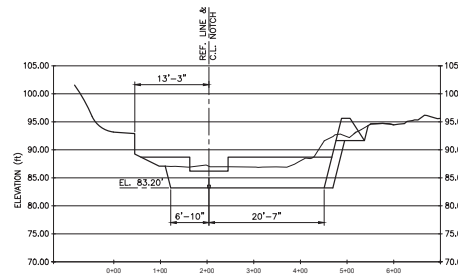


WEIR 1

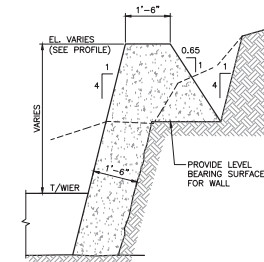
6" x 6" DRAIN HOLE
ON REFERENCE LINE
(TYPICAL ALL WEIRS)



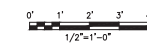
WEIR 2



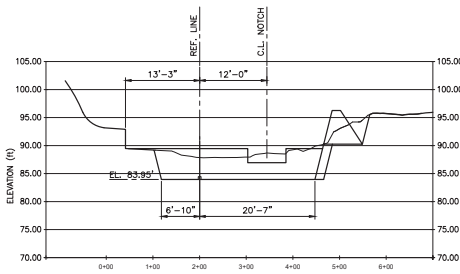
WEIR 3



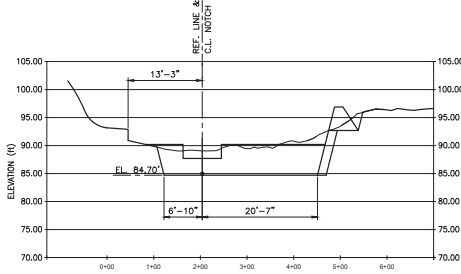
TYP. CONCRETE TRAINING WALL DETAIL



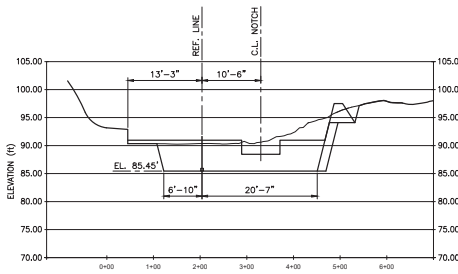
NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING
H-096-H-11-620-00-012.



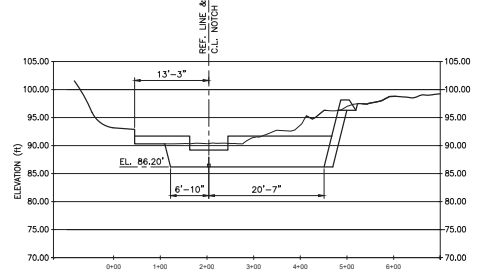
WEIR 4



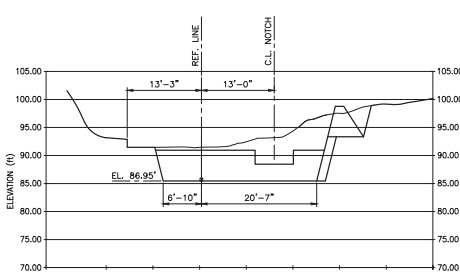
WEIR 5



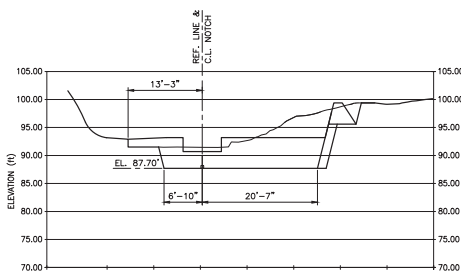
WEIR 6



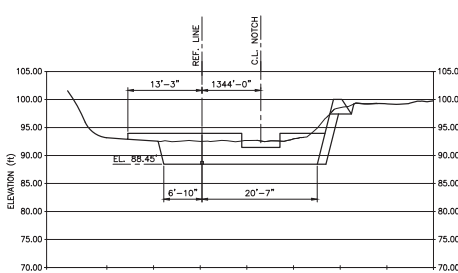
WEIR 7



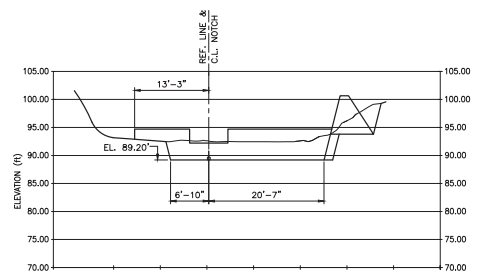
WEIR 8



WEIR 9



WEIR 10



WEIR 11

PRELIMINARY
NOT FOR CONSTRUCTION

GENERAL NOTES	REFERENCE DRAWINGS	DWG. NO.
	H 0,9,6,H,11 6,2,0,0,0,1,2	

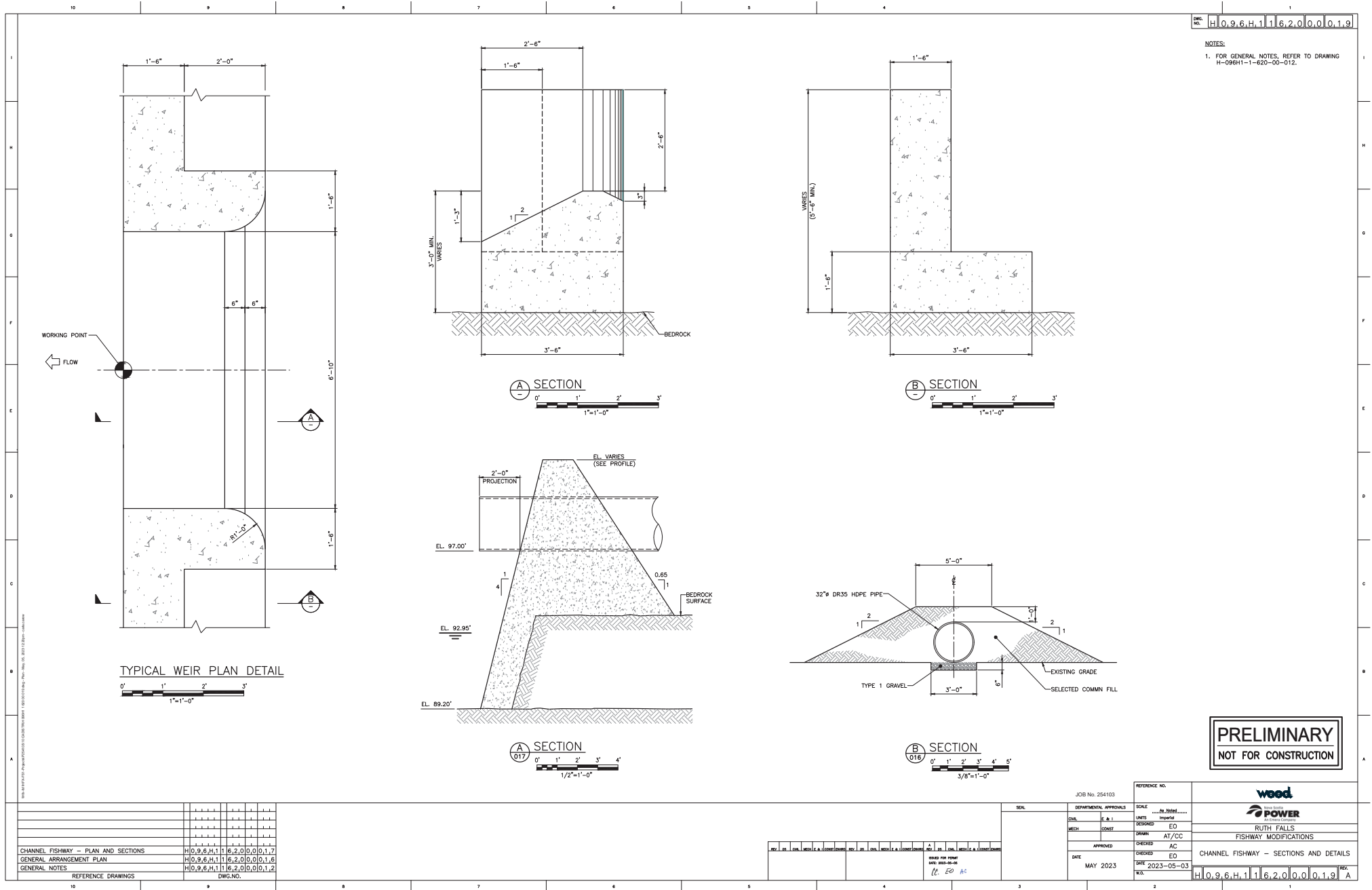
DATE	BY	CHKD	APPD	DATE	BY	CHKD	APPD

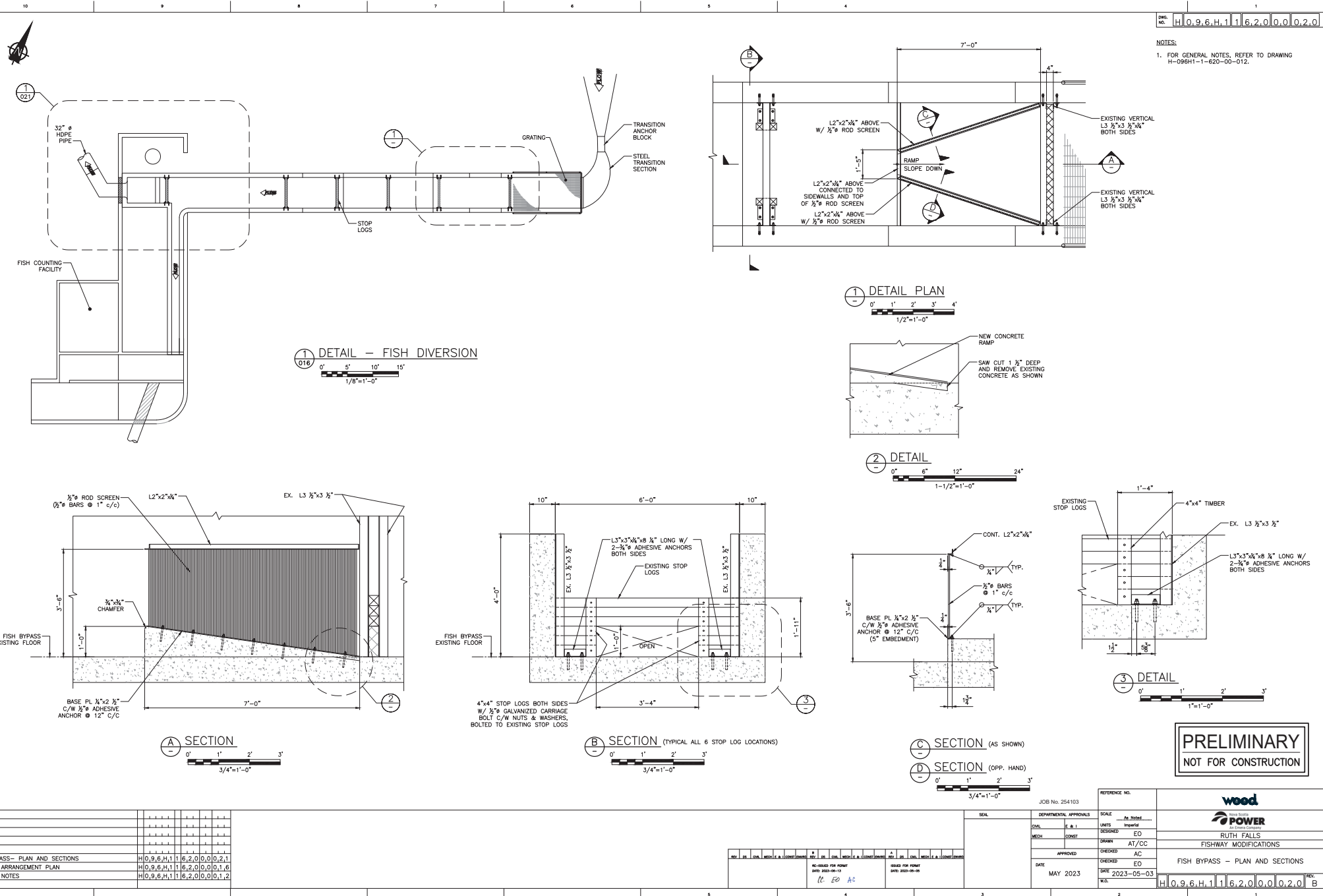
DATE	BY	CHKD	APPD

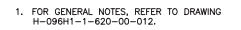
SCALE	UNITS	DEPARTMENTAL APPROVALS
1" = 10'	Feet	

WOOD	POWER

CHANNEL FISHWAY - CROSS SECTIONS

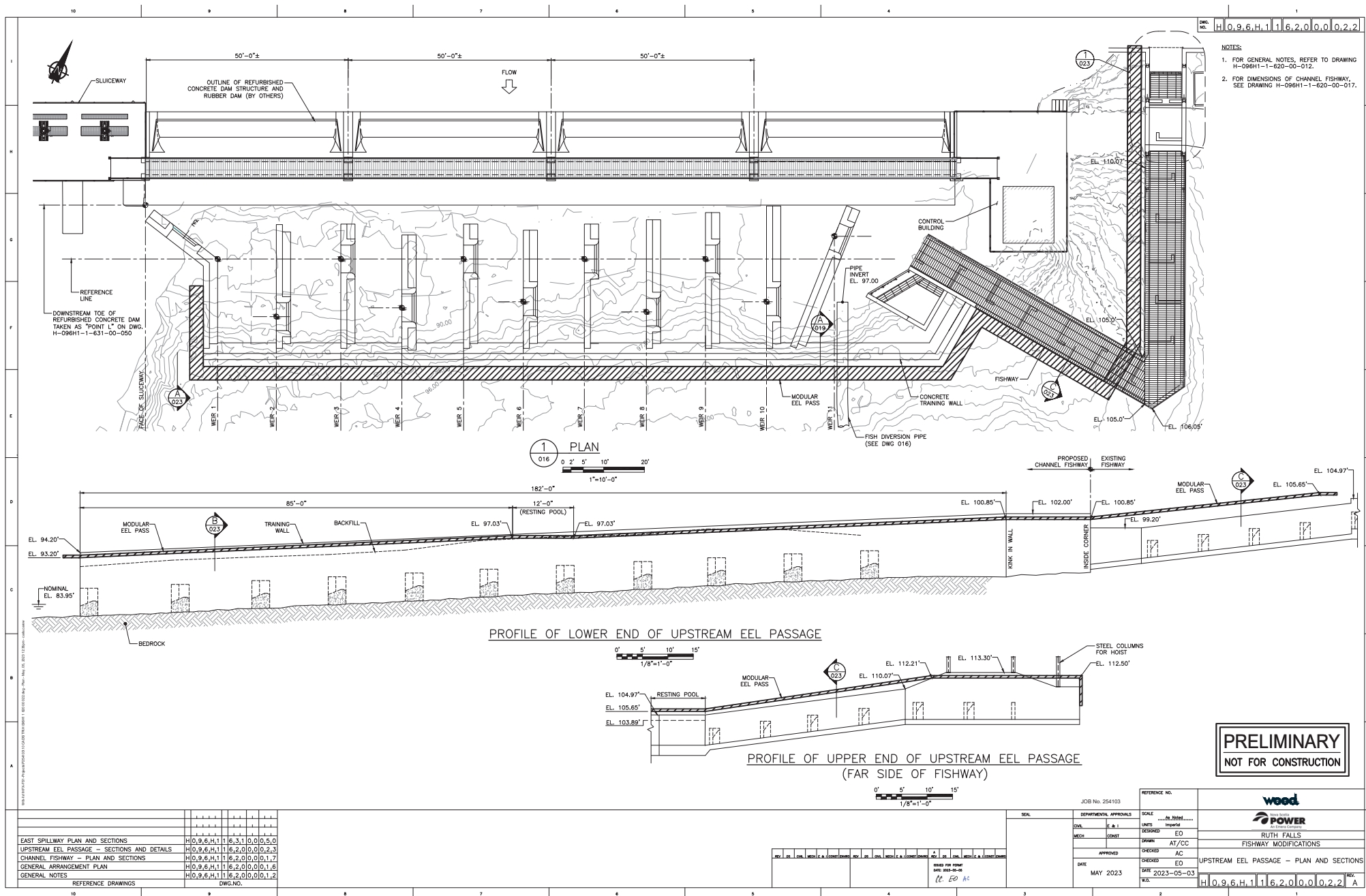




[illegible]

REV	DS	CNL	MECH	E & I	CONST	INVR	REV	DS	CNL	MECH	E & I	CONST	INVR	REV	DS	CNL	MECH	E & I	CONST	INVR
							RE-ISSUED FOR PERMIT DATE: 2023-06-13 <i>ll. ED AC</i>							ISSUED FOR PERMIT DATE: 2023-05-09						

JOB No. 254103				REFERENCE NO.											
SEAL		DEPARTMENTAL APPROVALS		SCALE		RUTH FALLS FISHWALKER FISHWALKER MODIFICATIONS FISH BYPASS - SECTIONS AND DETAILS									
				As noted											
CIVIL		E & I		Imperial											
MECH		COND		EO											
				AT/CC											
		APPROVED		CHECKED											
				EO											
DATE		MAY 2023		CHECKED											
				DATE		2023-05-03									
				S.D.											
						H096H16200021REV									



DWG. H 0,9,6,H,1 1 6,2,0,0,0 0,2,3

- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING H-096H1-1-620-00-012.
 2. MODULAR EEL PASS TO CONSIST OF 6" HIGH ALUMINUM TROUGH WITH HINGED LOCKABLE COVER (SEE FIGURE 1), (EXCEPT NO COVER AT DOWNSTREAM END WHERE EEL PASS IS SUBMERGED) C/W CLIMBING SUBSTRATE. CLIMBING SUBSTRATE TO BE HIGH DENSITY CO-POLYMER MANUFACTURED BY AQUATIC CONTROL ENGINEERING OR BERRY AND ESCOTT ENGINEERING. (SEE FIGURE 2)

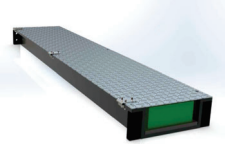
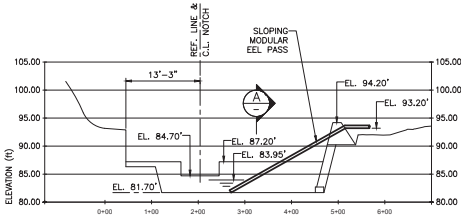


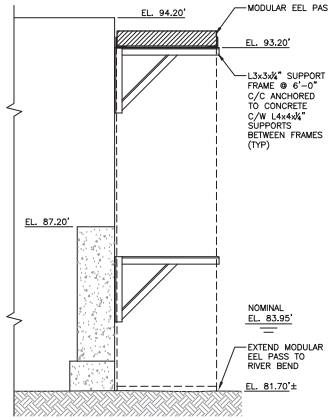
FIGURE 1



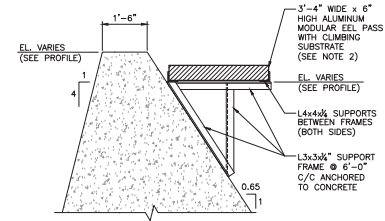
FIGURE 2



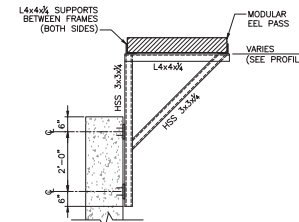
SECTION A
022
0' 5' 10' 15' 20'
3/32"=1'-0"



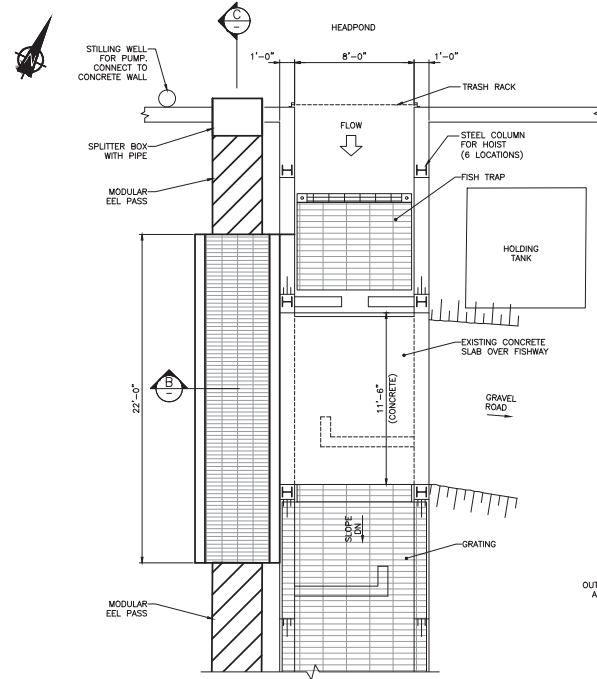
SECTION A
022
0' 1' 2' 3' 4'
1/2"=1'-0"



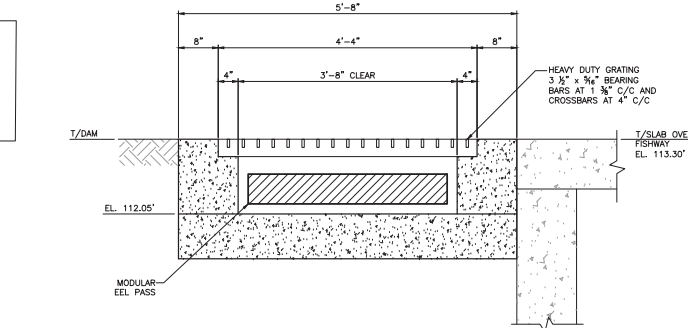
SECTION B
022
0' 1' 2' 3' 4'
1/2"=1'-0"
(TYPICAL ALONG TRAINING WALL)



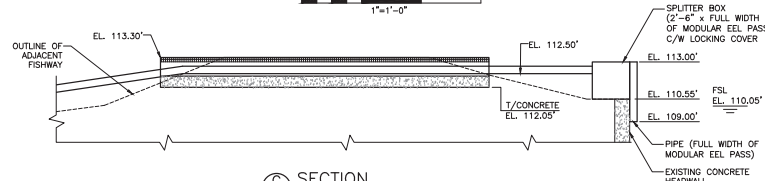
SECTION C
022
0' 1' 2' 3' 4'
1/2"=1'-0"



DETAIL 1
022
0' 1' 5' 10'
1/4"=1'-0"



SECTION B
022
0' 1' 2' 3'
1"=1'-0"



SECTION C
022
0' 1' 5' 10'
1/4"=1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION

JOB No. 254103

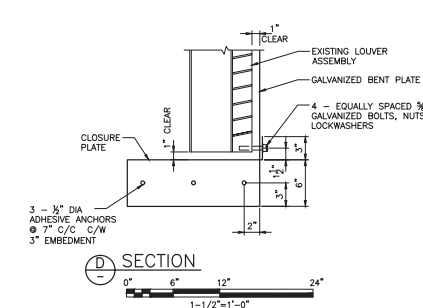
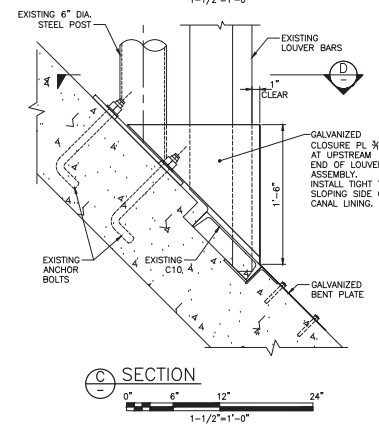
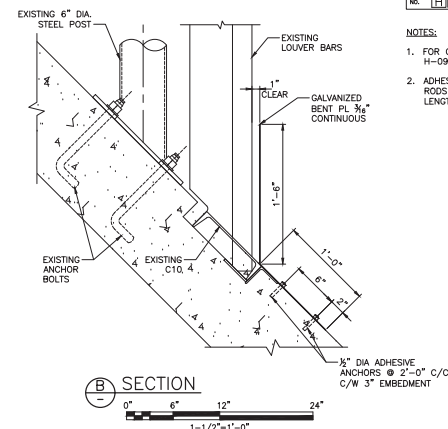
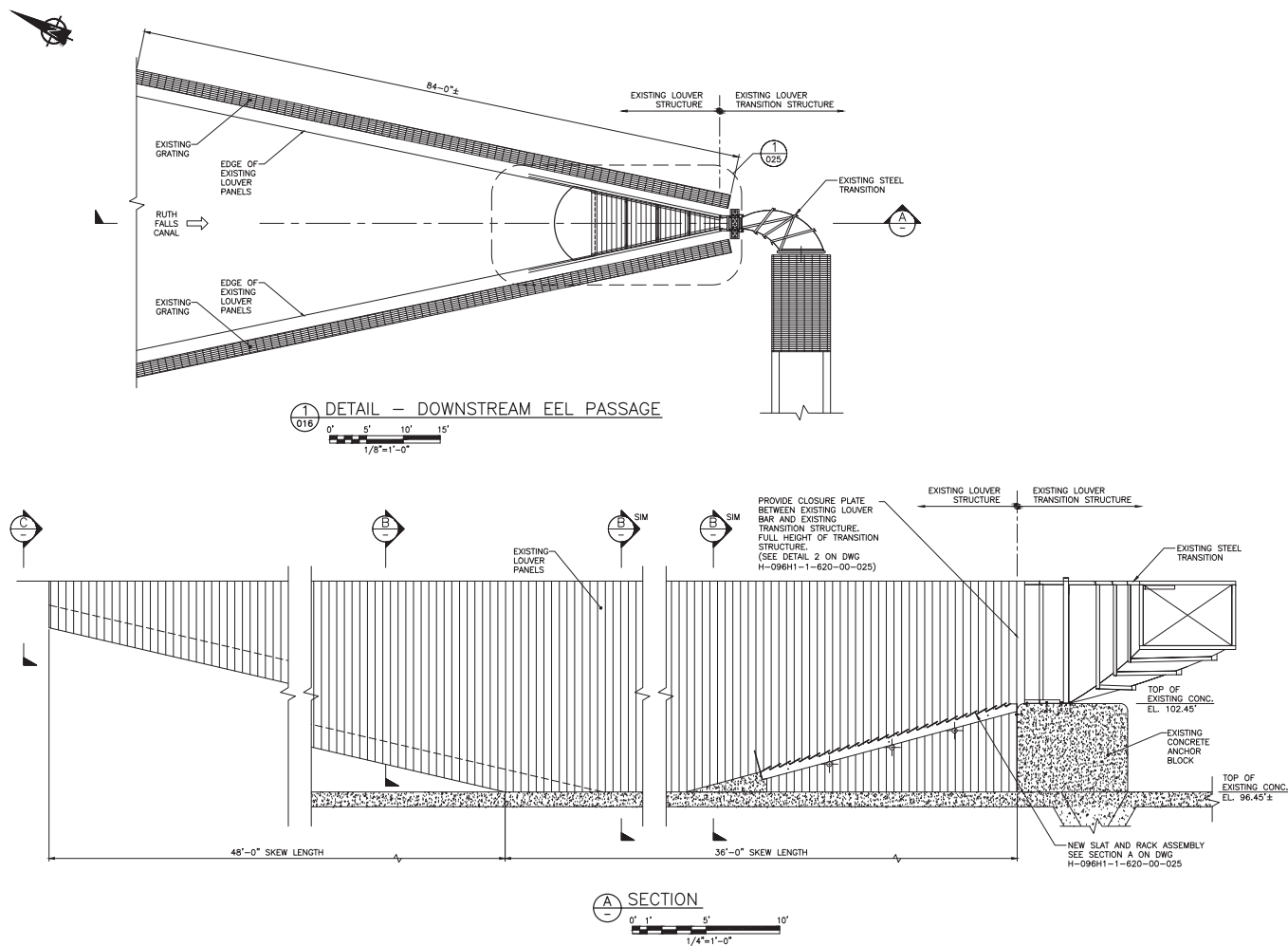
DEPARTMENTAL APPROVALS		SCALE
CIVIL	EO	1"=1'-0"
MECH	EO	1"=1'-0"
APPROVED		DATE
MAY 2023		2023-05-03

wood
POWER

RUTH FALLS
FISHWAY MODIFICATIONS

UPSTREAM EEL PASSAGE - SECTIONS AND DETAILS
H 0,9,6,H,1 1 6,2,0,0,0 0,2,3 A

UPSTREAM EEL PASSAGE - PLAN AND SECTIONS	H 0,9,6,H,1 1 6,2,0,0,0 0,2,2
GENERAL NOTES	H 0,9,6,H,1 1 6,2,0,0,0 0,1,2
REFERENCE DRAWINGS	DWG. NO.



- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING H-096H1-1-620-00-012.
 2. ADHESIVE ANCHORS TO BE HAS-R 316SS ANCHOR RODS C/W HIT-RE 500 V3 EPOXY. SIZE AND LENGTH AS INDICATED.

PRELIMINARY
NOT FOR CONSTRUCTION

EEL PASSAGE — SECTIONS AND DETAILS	H	0	9	6	H	1	1	6	2	0	0	0	2	5
GENERAL ARRANGEMENT PLAN	H	0	9	6	H	1	1	6	2	0	0	0	1	6
GENERAL NOTES	H	0	9	6	H	1	1	6	2	0	0	0	1	2

JOB No. 254103				SCALE		As Noted	
DEPARTMENTAL APPROVALS				UNITS		Imperial	
CIVIL	E & I	DESIGNED	EO	SHEET		CC	
MECH	CONST	CHECKED	AC	APPROVED		EO	
DATE				DATE		DATE	
JUNE 2023				2023-06-13		2023-06-13	
W.A.				W.A.		W.A.	
H 0 9 6 H 1 1 6 2 0 0 0 0 2 4				H 0 9 6 H 1 1 6 2 0 0 0 0 2 4		H 0 9 6 H 1 1 6 2 0 0 0 0 2 4	
A				A		A	



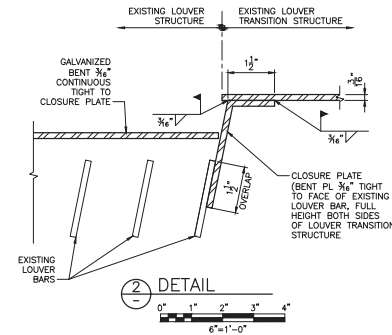
WOODWARD-CLYDE POWER

RUTH FALLS

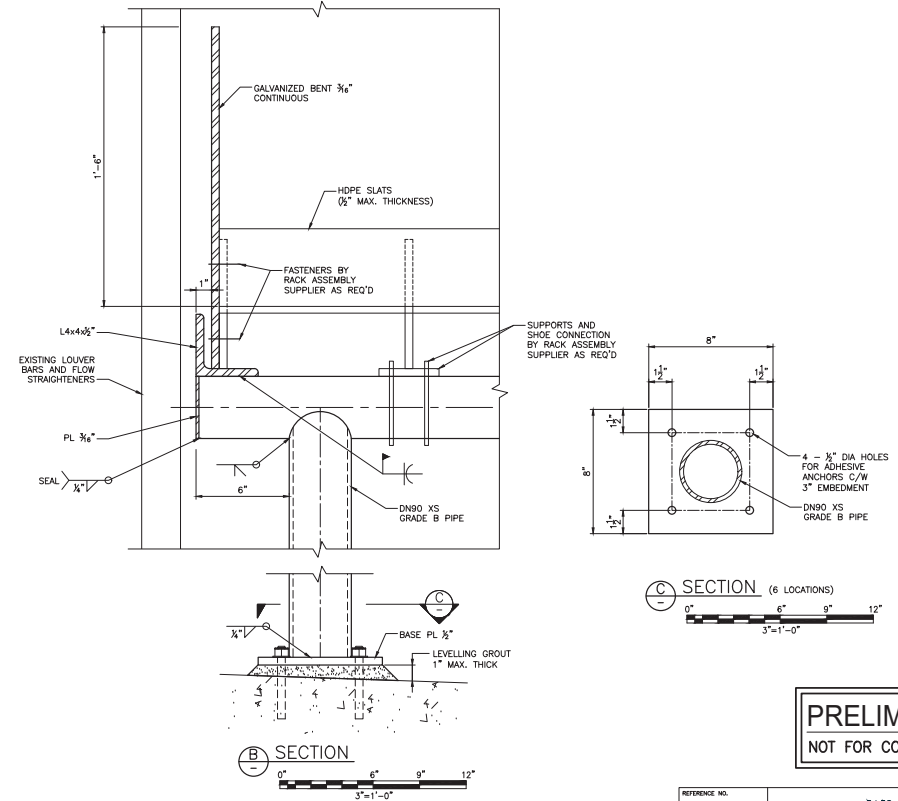
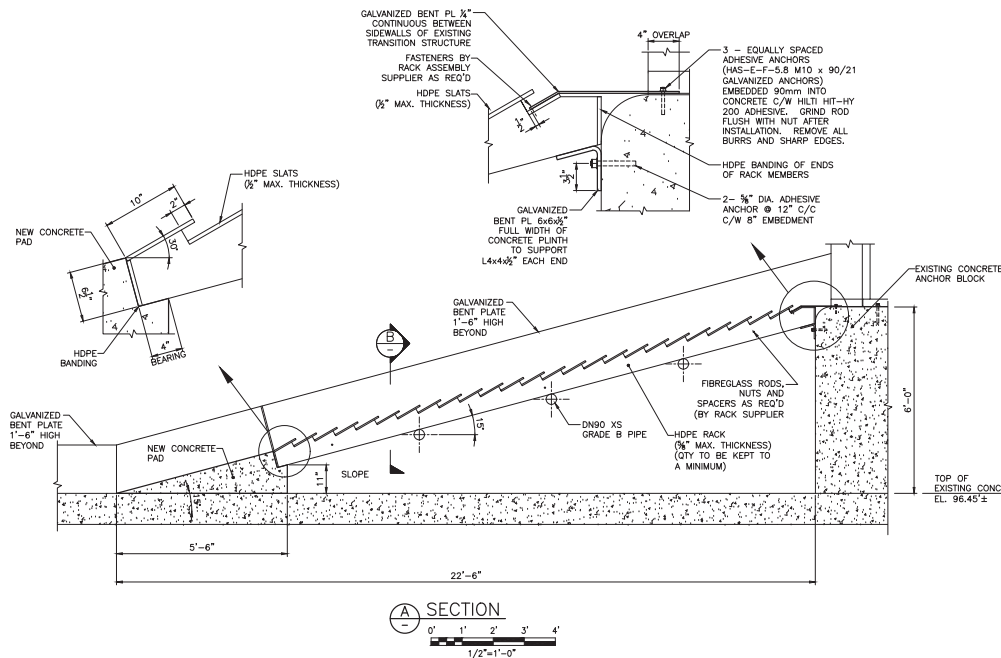
FISHWAY MODIFICATIONS

DOWNSTREAM EEL PASSAGE

PLAN AND SECTIONS



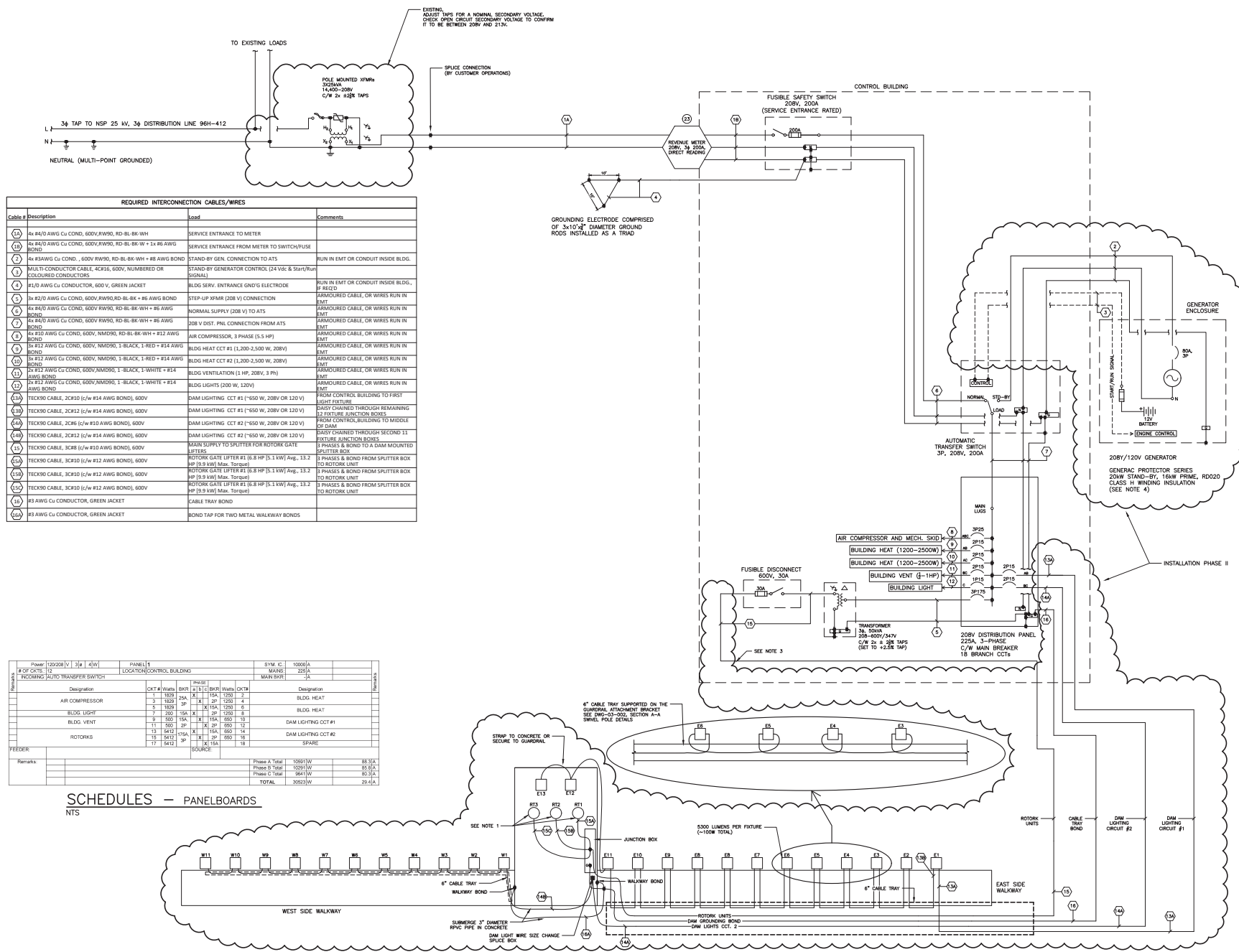
1. FOR GENERAL NOTES, REFER TO DRAWING H-096H1-1-620-00-012.
2. ADHESIVE ANCHORS TO BE HAS-R 316SS ANCHOR RODS C/W HIT-RE 500 V3 EPOXY. SIZE AND LENGTH AS INDICATED.



PRELIMINARY
NOT FOR CONSTRUCTION

[illegible]

 3"=1'-0"		JOB NO. 254103		REFERENCE NO.	
SEAL		DEPARTMENTAL APPROVALS		SCALE ☐ As Noted	
CHAL ☐ & I		UNITS ☐ Inverted		 WOOD & POWER INC.	
MECH ☐ CONST		E.O.			
APPROVED		DRAWN ☐ CC			
DATE		CHECKED ☐ AC		DOWNSTREAM EEL PASSAGE	
JUNE 2023		CHECKED ☐ EO		SECTIONS AND DETAILS	
2023-06-13		DATE		2023-06-13	
W.O.		W.O.		W.O.	



LEGEND	
	GENERATOR
	12V BATTERY
	FUSIBLE SAFETY SWITCH, 3 ϕ
	TRANSFER SWITCH
	MOLDED CASE CIRCUIT BREAKER
	MEDIUM VOLTAGE FUSED CUTOUT
	LOW VOLTAGE FUSE
	POLETOP TRANSFORMER
	DRY-TYPE TRANSFORMER DELTA-WYE
	CABLE SCHEDULE (DWG.001)
	B.O.M. (DWG.003)

NOTES

1. THE CAPACITY OF THE ROTORK SERVICE CONNECTION ALLOWS FOR ONLY ONE ROTORK UNIT TO OPERATE AT A TIME, INTERLOCKING TO PREVENT OPERATION MORE THAN ONE ROTORK UNIT AT THE SAME TIME HAS NOT BEEN PROVIDED AND IS ASSUMED TO BE IN THE CONTROL ARRANGEMENT OR THE ROTORK OPERATING PROCEDURES.
2. REMOTE CONTROL CIRCUITRY FOR THE ROTORK UNITS, IF REQUIRED, IS NOT ILLUSTRATED.
3. THE CIRCUIT SUPPLYING THE ROTORK UNITS IS SUPPLIED VIA A BREAKER AND NOT A MOTOR PROTECTOR DEVICE. MOTOR PROTECTION IS BELIEVED TO BE PROVIDED WITHIN EACH ROTORK UNIT.
4. ROTORK LOADING TO BE MANAGED MANUALLY WHEN FACILITY IS OPERATING ON GENERATOR POWER.

2	RE-ISSUED FOR CONSTRUCTION	JAN. 18/23
1	RE-ISSUED FOR CONSTRUCTION	DEC. 01/22
0	ISSUED FOR CONSTRUCTION	NOV. 22/22
No.	Description	Date

Revision or Issue

NOVA SCOTIA POWER

RUTH FALLS DAM

REFURBISHMENT

RUTH FALLS
ELECTRICAL

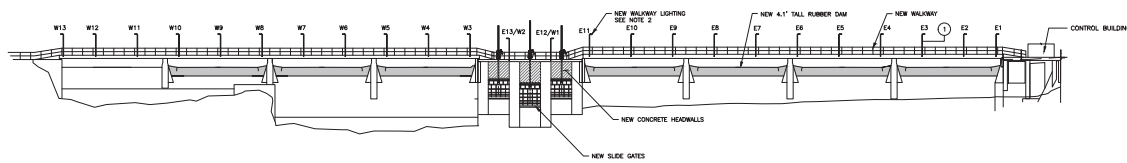
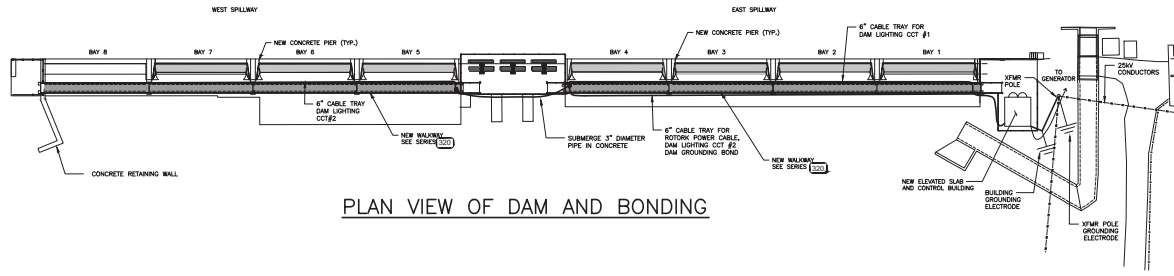
ELECTRICAL

SINGLE LINE DIAGRAM

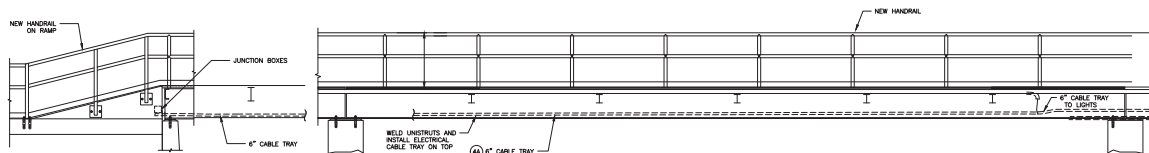


CBCL No 220704.00	Contract No —	Date 26/09/22	Scale NTS
----------------------	------------------	------------------	--------------



ELEVATION OF DAM

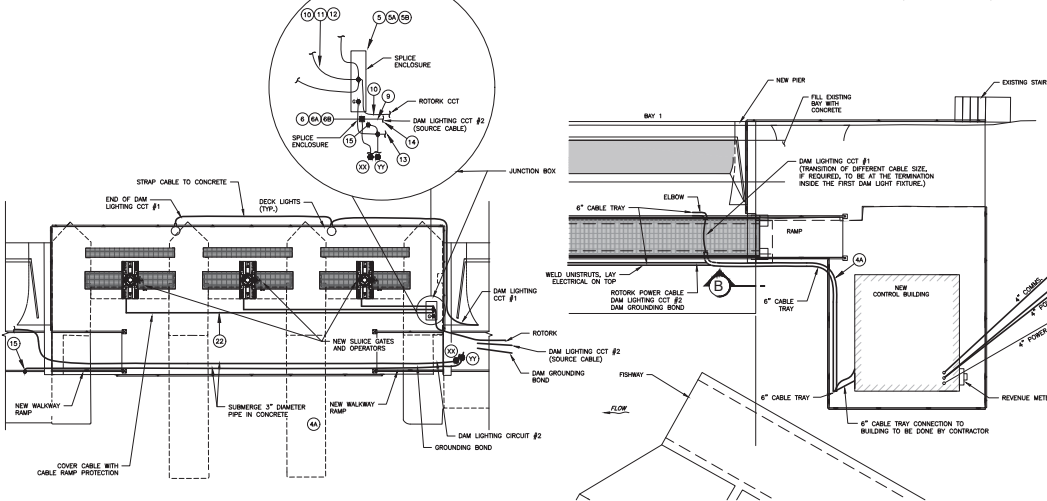
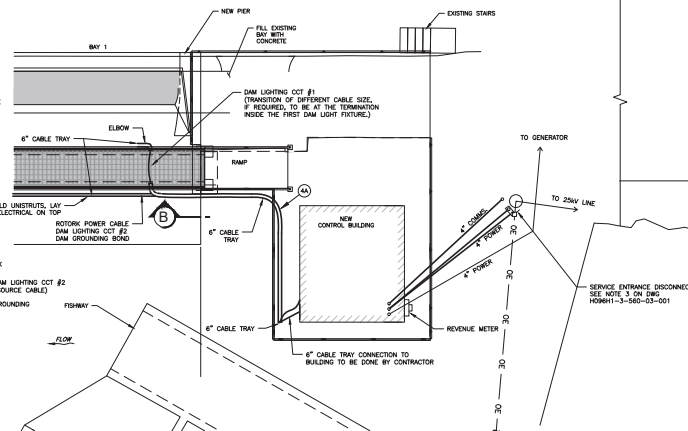
PLAN VIEW OF DAM AND BONDING



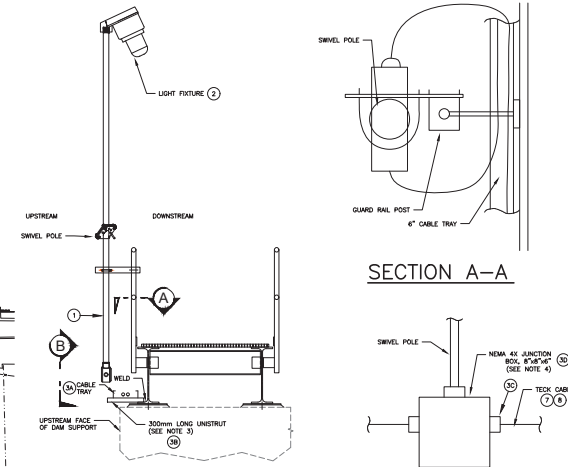
WALKWAY ELEVATION DETAILS



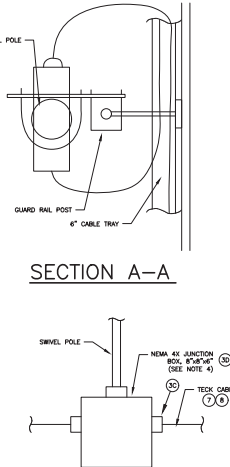
NEW STEEL WALKWAY ELEVATION (320-02)

SLUICEWAY PLAN

DAM AND ELEVATION DETAIL



SWIVEL POLE DETAILS



SECTION B-B

- | | |
|---|-----------------------------------|
|  | GENERATOR |
|  | 12V BATTERY |
|  | FUSIBLE SAFETY SWITCH |
|  | TRANSFER SWITCH |
|  | MOLDED CASE CIRCUIT BREAKER |
|  | MEDIUM VOLTAGE FUSED CUTOUT |
|  | LOW VOLTAGE FUSE |
|  | POLETOP TRANSFORMER |
|  | DRY-TYPE TRANSFORMER
DELTA-WYE |
|  | CABLE SCHEDULE
(DWG.001) |
|  | B.O.M. (DWG.003) |

NOTES

1. THIS DRAWING REFERENCES NSP
DRAWING H096H1-1-631-00-040.
2. BOM LISTING FOR EQUIPMENT ON DAM
IS ON DWG H096H1-3-560-03-003.
3. WELD ONE UNISTRUT EVERY 1 METER
OR TO CABLE TRAY MANUFACTURERS
STANDARDS.
4. RUN 2X1C #12 AWG Cu FROM
JUNCTION BOX UP SWIVEL POLE TO
LIGHT FIXTURE; USE SUITABLE MARRETTE
CONNECTORS FOR CONNECTION INSIDE
JUNCTION BOX.

2	RE-ISSUED FOR CONSTRUCTION	JAN. 18/23	MWC
1	RE-ISSUED FOR CONSTRUCTION	DEC. 01/22	MWC
0	ISSUED FOR CONSTRUCTION	NOV. 22/22	MWC
No.	Description	Date	By

Revision or Issue

NOVA SCOTIA POWER
RUTH FALLS DAM
REFURBISHMENT

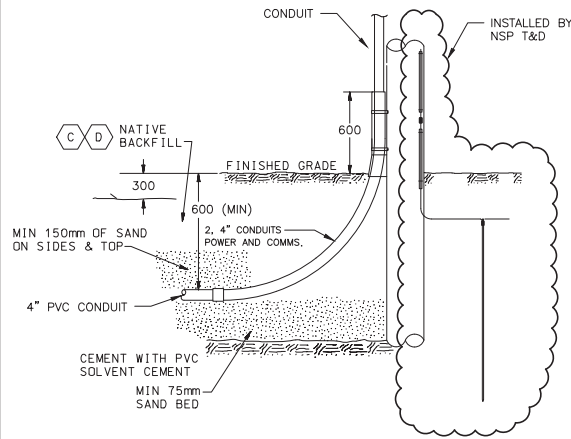
RUTH FALLS
ELECTRICAL
PLAN VIEW AND
ELEVATION OF DAM
INFRASTRUCTURE



CBCL No 220704.00	Contract No —	Date 26/09/22	Scale NTS
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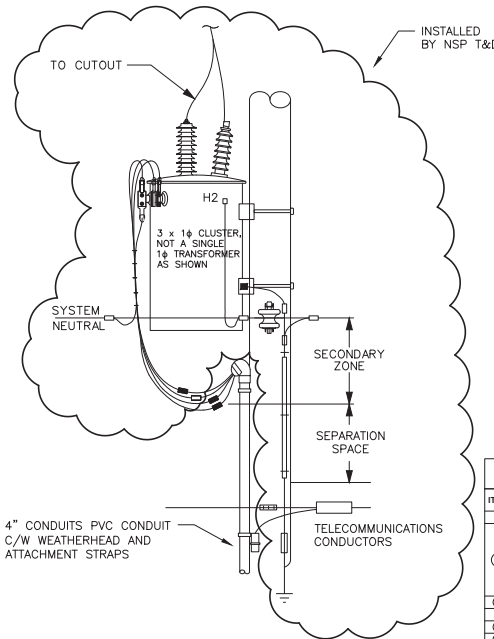


Designed JY	Drawn SI
Checked LO'K	Approved —
Sheet No 2 of 3	
Drawing No H096H1-3-560-03-002	



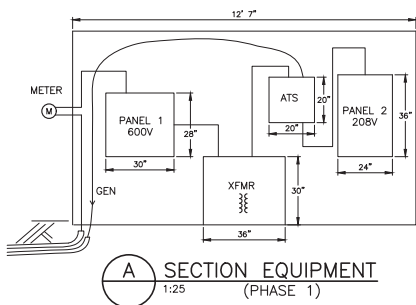
- NOTES:
- DEPTH SHALL BE INCREASED TO 1000mm IN VEHICULAR AREAS.
 - BACKFILL TO BE COMPACTED EVERY 300mm MINIMUM.
 - ALL CONDUIT MUST BE CLEANED AND SWABBED, THEN CAPPED FOR PROTECTION.
 - ALL CONDUIT SHALL HAVE A NYLON FISH LINE INSTALLED PRIOR TO CAPPING.
 - ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

A DETAIL— SERVICE POLE UNDERGROUND
N.T.S.

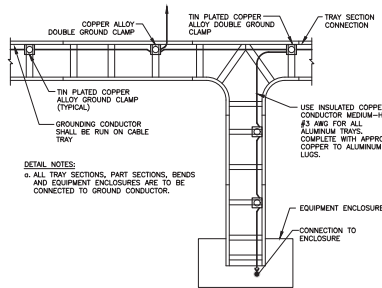


- NOTES:
- ALL CABLE GUARDS SHALL BE CONNECTED TOGETHER AND BONDED TO GROUND WIRE WITH A #2 AWG STRANDED COPPER WIRE.
 - ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.

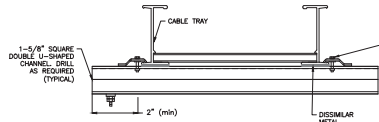
B DETAIL— SERVICE POLE OVERHEAD
N.T.S.



A SECTION EQUIPMENT
1:25 (PHASE 1)



D DETAIL— CABLE TRAY GROUNDING
N.T.S.



C DETAIL— TYPICAL CABLE TRAY SUPPORT INSTALLATION
N.T.S.

MATERIALS LIST FOR ELECTRICAL EQUIPMENT ON DAM					
ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER	COMMENTS
1	24	SWIVEL TYPE LIGHTING POLE, 10 FT MOUNTING HEIGHT: Hot Dipped Galvanized Steel Stanchion Mounting Direct to Ground, Mounting Hardware Inc'd 1.5 inch OD Base Section / Top Section Approx. 4 FT Long Base Section Approx. 6 FT Long Top Section 1 1/2 in NPS on Base and Top Sections (2x Luminaires Mount 30 Long (6' Req'd))	SWIVEL POLES 5-SERIES	S3 M1 STANCHION MOUNTED	HEIGHT FIXTURE MOUNTING
2	24	POLE MOUNTED LIGHT FIXTURE, LED LAMP, 5,300 LUMENS, 208 V OR 120 V			AS INSTRUCTED BY NS POWER
3	AS REQ'D	6" CABLE TRAY, ALUMINUM LADDER-TYPE, 4" DEEP			FOR DAM LIGHTING, DAM GROUNDING, ROTORK UNITS
4	AS REQ'D	800mm LONG UNIMOUNT			FOR CABLE TRAY
5	AS REQ'D	START/TECK CONNECTOR, WATERPROOF, GROUNDING, SIZED ACCORDINGLY	ABB	START/TECK	FOR DAM LIGHTING CCT'S 1 AND 2
6	AS REQ'D	JUNCTION BOX, NEMA 4X, 8"x8"x6"			FOR SWIVEL POLE CONNECTION
7	AS REQ'D	MARRETTE CONNECTORS	MARRETTE		FOR JUNCTION BOX/SWIVEL POLE CONNECTION
8	AS REQ'D	2x1/2" #12 AWG Cu			FROM JUNCTION BOX TO SWIVEL POLE
9	AS REQ'D	EMT, 3 IN DIA, ALUMINUM OR STAINLESS STEEL			FOR 3" ROTORK, DAM LIGHTING CCT 2 & DAM GND'G CONDUIT
10	AS REQ'D	EMT COUPLER, 3 IN DIA, ALUMINUM OR STAINLESS STEEL			
11	AS REQ'D	EMT END BUSHING, 3 IN DIA, ALUMINUM OR STAINLESS STEEL			
12	AS REQ'D	RIGHT ANGLE PIPE/CONDUIT CLAMP, 3 IN PIPE, HOT DIPPED GALVANIZED	EATON	B423-3	TO SECURE 3" CONDUIT, INSTALLED IN PAIRS
13	AS REQ'D	PARALLEL PIPE/CONDUIT CLAMP, 1.5 IN PIPE, HOT DIPPED GALVANIZED	EATON	B423-3	TO SECURE 3" CONDUIT PARALLEL TO 1/2" IN
14	AS REQ'D	EMT FITTINGS, TYPE AS REQ'D, 3 IN, ALUMINUM OR STAINLESS STEEL			FOR CONDUIT RUN BETWEEN DAM WALKWAY AND CNTRL BLDG.
15	1	JUNCTION BOX, NEMA 4X, RUGGED OUTDOOR CONSTRUCTION, SIZE AS REQUIRED			FOR DAM LIGHTING CIRCUIT 2
16	1	POWER DISTRIBUTION BLOCK, COPPER, 86-A, 2 POLE C/W 1 LINE SIDE - #4-#14 AWG WIRE CONNECTION, AND 4 LOAD SIDE #4-#14 AWG WIRE CONNECTION	MERSEN	MP0862102	FOR DAM LIGHTING CCT 2 J-BOX, PH CONNECTIONS BOM ITEM 15
17	1	POWER DISTRIBUTION BLOCK, COPPER, 86-A, 400V POLE C/W 1 LINE SIDE - #4-#14 AWG WIRE CONNECTION, AND 4 LOAD SIDE #4-#14 AWG WIRE CONNECTION	MERSEN	MP0862160	FOR DAM LIGHTING CCT 2 J-BOX, GND CONNECTIONS BOM ITEM 15
18	1	JUNCTION BOX, NEMA 4X, RUGGED OUTDOOR CONSTRUCTION, SIZE AS REQUIRED			FOR ROTORK UNITS CIRCUIT SPLICE
19	1	POWER DISTRIBUTION BLOCK, COPPER, 86-A, 2 POLE C/W 1 LINE SIDE - #4-#14 AWG WIRE CONNECTION, AND 4 LOAD SIDE #4-#14 AWG WIRE CONNECTION	MERSEN	MP0862153	FOR ROTORK UNIT CIRCUIT J-BOX, BOM ITEM 18
20	1	POWER DISTRIBUTION BLOCK, COPPER, 86-A, 400V C/W 1 LINE SIDE #2-0-#14 AWG WIRE CONNECTION, AND 4 LOAD SIDE - #2 #14 AWG WIRE CONNECTION	MERSEN	MP0864651	FOR ROTORK UNIT CIRCUIT J-BOX, BOM ITEM 18
21	AS REQ'D	TECK90 CABLE, 3C/12 (C/W #14 AWG BOND), 400V			DAM LIGHTING
22	AS REQ'D	TECK90 CABLE, 3C/12 (C/W #12 AWG BOND), 400V			DAM LIGHTING CIRCUIT 1
23	AS REQ'D	TECK90 CABLE, 3C/8 (C/W #12 AWG BOND), 400V			DAM LIGHTING CIRCUIT 2
24	AS REQ'D	TECK90 CABLE, 3C/10 (C/W #12 AWG BOND), 400V			ROTORK UNITS
25	AS REQ'D	TECK CONNECTORS, STRAIGHT OR 90°, AS REQUIRED, VARIOUS SIZES AS REQ'D			OR SUITABLE THREAD ADAPTERS, USED ON ROTORK UNITS
26	3	TECK CONNECTOR WITH 1/2"-1.5" METRIC THREAD, FOR 3C/10 TECK			
27	AS REQ'D	3 AWG-G CONDUCTOR, 1000V, GREEN			DAM GROUNDING
28	1	UNIVERSAL CONNECTOR, COPPER #6-42 TO #6-42	BURNDY VERSTAR OR BURNDY SERVIT	CPX2C-TN OR KS23-TN	DAM GROUNDING, SUFFIX "TN" INDICATES OPTIONAL TINNING
29	2	GROUND CLAMP, 2X #6-2/0 TO 1/2" BAR OR PLATE 1/8" TO 5/8" THICK	BURNDY	GC36-TN	DAM GROUNDING, SUFFIX "TN" INDICATES OPTIONAL TINNING
30	AS REQ'D	PIPE STRAPS, 2 HOLE, 1 IN EMT, ALUMINUM OR STAINLESS STEEL			SURFACE ATTACHMENT OF 1-1/2" CONDUIT
31	AS REQ'D	PIPE STRAPS, 2 HOLE, 3/4 IN EMT, ALUMINUM OR STAINLESS STEEL			SURFACE ATTACHMENT OF 1-1/2" CONDUIT
32	AS REQ'D	PIPE STRAPS, 2 HOLE, 3/4 IN EMT, ALUMINUM OR STAINLESS STEEL			SURFACE ATTACHMENT OF 2C/12 TECK AND 3C/10 TECK CABLE
33	AS REQ'D	CONCRETE ANCHORS, SIZE AS REQ'D, ALUMINUM OR STAINLESS STEEL			SURFACE ATTACHMENT OF 2C/12 TECK CABLE
34	AS REQ'D	BAND-IT, SIZE AS REQ'D, STAINLESS STEEL			
35	AS REQ'D	DROP OVER CABLE PROTECTOR RAMP, BRIGHTLY COLOURED, 2-25" HIGH CABLE SLOT, NUMBER OF CABLE SLOTS (1, 2, OR 3) AS REQ'D 2-1/4" WIDE SOCKET, 150A, 100 PHASES 3PH-4W-GSA-APPROVED FOR COPPER OR ALUMINUM, OVERHEAD OR UNDERGROUND	HYDRE (T&B)	SFC700RW	WALL MOUNTED ON CONTROL BUILDING

- LEGEND**
- GENERATOR
 - 12V BATTERY
 - FUSIBLE SAFETY SWITCH, 3/4"
 - TRANSFER SWITCH
 - MOLDED CASE CIRCUIT BREAKER
 - MEDIUM VOLTAGE FUSED CUTOFF
 - LOW VOLTAGE FUSE
 - POLETOP TRANSFORMER
 - DRY-TYPE TRANSFORMER DELTA-WYE
 - CABLE SCHEDULE (DWG.001)
 - B.O.M. (DWG.003)

GENERAL NOTES

- EQUIPMENT MOUNTED ON REAR BUILDING WALL DRAWN TO SCALE AND ESTIMATED BASED ON EQUIPMENT SIZES.

Revision or Issue			
No.	Description	Date	By
2	RE-ISSUED FOR CONSTRUCTION	JAN. 18/23	MWC
1	RE-ISSUED FOR CONSTRUCTION	DEC. 01/22	MWC
0	ISSUED FOR CONSTRUCTION	NOV. 22/22	MWC

NOVA SCOTIA POWER
RUTH FALLS DAM
REFURBISHMENT
ELECTRICAL
MISCELLANEOUS SECTION
AND BILL OF MATERIALS

CBCL			
CRCL No.	Contract No.	Date	Scale
220704.00	—	28/09/22	N.T.S.
Designed	Drawn	Checked	Approved
JY	SI	LO'X	—
Sheet No.	3 of 3		
Drawing No.	H096H1-3-560-03-003		

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Request IR-2:

With reference to Page 3 & 5-6 of the Application:

(a) Please provide the original estimated costs for archaeological investigation and Mi'kmaq engagement prior to the additional \$400,000 noted on Page 3. Please break the original costs down according to the accounts listed in the table on page 5-6 of the Application.

(b) On Page 6, in relation to the an additional \$[REDACTED] for Mi'kmaq engagement, why were there no costs originally allocated to this line item?

(c) Please clarify the allocation of the \$400,000 additional costs for archaeology and Mi'kmaq engagement. Please break the additional costs down according to the accounts listed in the table on page 5-6 of the Application.

(d) How are the additional \$400,000 of costs distributed between archaeological work and Mi'kmaq engagement activities?

Response IR-2:

(a) Archaeological investigation:

Account	UARB approved	ATO Submission	Variance	Reason for variance
Contracts	\$2,256	\$7,966	\$5,710	Additional costs to complete shovel testing based on the results of the archaeological screening and reconnaissance

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				of the Ruth Falls study area in 2017 and 2018
--	--	--	--	--

1

2

Mi'kmaq engagement:

Account	UARB approved	ATO Submission	Variance	Reason for variance
Consulting				Continued Mi'kmaq engagement costs associated with the extended project schedule.

3

4 (b) Please refer to CA IR-13, part (b).

5

6 (c) Please refer to CA IR-13, part (c).

7

8 (d) Please refer to CA IR-13, part (c).

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1 **Request IR-3:**

2
3 **With reference to Page 5 of the Application:**

4
5 **(a) Please provide a detailed breakdown of the approximate \$1.4 million increase in**
6 **materials costs, specifying how much is attributable to the additional scope**
7 **(modifications to fishway, fish passage weirs, upgrades to the diversion louvre, and**
8 **eel ramp installation), how much is due to inflation and market fluctuations affecting**
9 **the cost of the original scope, and how much is due to any other factors.**

10
11 **Response IR-3:**

12
13 **(a) Please refer to NSUARB IR-10 (a)(i).**

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Request IR-4:

With reference to Page 6 of the Application:

(a) Please confirm that the additional \$499,999 contingency is exclusively allocated to address uncertainty around DFO offsetting costs.

(i) If not, please specify which other project factors this added contingency relates to and identify the corresponding portions.

(b) Please provide a detailed breakdown of the AFUDC Interest increase from \$272,553 to \$884,768, including contributions from the following factors: accrued interest since 2019, project scope increases, higher interest rates and any other relevant factors.

Response IR-4:

(a) Confirmed.

(b) Please refer to the table below for a breakdown of AFUDC incurred by year and the corresponding rates used:

Year	AFUDC Incurred During the Year	End of Year AFUDC Balance	Rate Used	Note Reference
2017	\$6,611	\$6,611	Jan 7.01% Feb-Dec 6.96%	
2018	\$10,865	\$17,476	6.89%	
2019	\$21,125	\$38,601	6.84%	
2020	\$61,646	\$100,246	6.62%	
2021	\$117,331	\$217,577	6.47%	
2022	\$199,068	\$416,646	6.33%	
2023	\$0	\$416,646	6.48%	
2024	\$0	\$416,646	Jan-Mar 6.48% Apr-Dec 6.72%	(i)

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2025 <i>(Estimated)</i>	\$315,106	\$731,751	6.72%	(ii)
2026 <i>(Estimated)</i>	\$153,017	\$884,768	6.72%	(iii)

(i) 2024 includes actual costs to August 31, 2024 and forecasted costs for the remainder of the year.

(ii) AFUDC was ceased as of January 2023 in line with policy 6240 – Allowance for Funds Used During Construction due to a forecasted delay in construction greater than one year. Construction forecasted to resume July 2025.

(iii) Project estimated to be placed in-service March 2026.

In addition, the breakdown of the increase in AFUDC of \$612,215 can be broken down into the following segments:

Factor	Total Change Due to Stated Factor
Change in Interest Rates	(\$42,691)
Increase in total scope/project timeline	\$654,906

REDACTED

Request IR-5:

With reference to Page 9 of the Application:

With reference to AACE Recommended Practice No. 69R-12, “Cost Estimate Classification System – As Applied in Engineering, Procurement, and Construction for the Hydropower Industries”, which characterizes a Class 1 estimate as follows:

CLASS 1 ESTIMATE	
Description: Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor’s bid estimate, or to evaluate/dispute claims. Typically, overall engineering is from 65% to 100% complete (some parts or packages may be complete and others not) and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans. Maturity Level of Project Definition Deliverables: Key deliverable and target status: All deliverables in the maturity matrix complete. 65% to 100% of full project definition. End Usage: Generally, owners and EPC contractors use Class 1 estimates to support their change management process. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution. Construction contractors may prepare Class 1 estimates to support their bidding and to act as their final control baseline against which all actual costs and resources will now be monitored for variations to their bid. During construction, Class 1 estimates may be prepared to support change management.	Estimating Methodology: Class 1 estimates generally involve the highest degree of deterministic estimating methods and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities. Expected Accuracy Range: Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and other risks (after inclusion of an appropriate contingency determination). Ranges could exceed those shown if there are unusual risks. Alternate Estimate Names, Terms, Expressions, Synonyms: Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.

At Page 8 of the Application, NS Power states that the project has “maturity matrix (65-100%, Class 1)”. At Page 9 of the Application, NS Power states that “the project cost estimate is at Class 1 maturity level with 95% of deliverables completed/defined towards this class of estimate”.

REDACTED

1 **(a) In addition to the maturity level being of Class 1, please confirm that the cost estimate**
2 **submitted (excluding the noted DFO permitting portion) also aligns with the above**
3 **AACE 69R-12 Class 1 classification criteria with respect to the estimating**
4 **methodology and the expected accuracy range.**

5
6 **(i) If not confirmed, please detail how the cost estimate provided deviates from**
7 **the Class 1 characterization.**
8

9 **(b) Please provide details on whether firm bids or price commitments have been obtained**
10 **from contractors and suppliers to support the cost estimate. Please indicate which**
11 **portions of the estimate are based on firm bid pricing versus projections.**
12

13 Response IR-5:
14

15 (a) Confirmed. The Detailed Cost Estimate submitted with the ATO package aligns with the
16 above AACE 69R-12 Class 1 classification criteria with respect to the estimating
17 methodology and the expected accuracy range, where the expected accuracy range for a
18 Class 1 estimate is between -10% and +15% The estimating methodology used to prepare
19 a Class 1 estimate is typically a detailed unit cost with detailed take-off or better and is to
20 be used to check estimates or commercial pricing proposals. The maturity level of project
21 definition deliverables is expected to be between 65% and 100% complete. Engineering
22 design work has been completed and defining items, such as Dam Refurbishment scope
23 and Fish Passage upgrades (including required deferral escalated costs) have been quoted
24 by the General Contractor. Major components such as the sluice gates and rubber dams
25 have been procured and are stored on site. A recent rubber dam inspection indicated that
26 the rubber bags are in good condition and ready for installation in 2025. This Class 1
27 classification is represented by the reduction in contingency percentage from 13% in the
28 original application to 6% in the current application, indicating a reduction in the project
29 risk profile.
30

REDACTED

1 (b) Please refer to the table below:

Materials – Costs Forecasted		
Description	Cost background	Costs in Thousands
Concrete, Steel, Electrical, Piping, Rebar	Quoted pricing by General Contractor	\$1,386
Fish passage upgrades	Quoted pricing by General Contractor	\$667
Generator for the rubber dams control building	Quoted pricing by Supplier	\$125
Backup generator (winter construction)	Internal estimate based on judgement	\$15
Contracts – Costs Forecasted		
Fish Passage Upgrades	Quoted pricing by General Contractor	\$1,630
Concrete Works	Quoted pricing by General Contractor	\$1,033
Escalation costs for project deferral	Quoted pricing by General Contractor	\$613
Concrete removal & disposal	Quoted pricing by General Contractor	\$360
Rubber Dam Installation	Quoted pricing by General Contractor	\$225
Gate installation & modification to gate guides	Quoted pricing by General Contractor	\$150
Security services during archaeological mitigation	Internal estimate based on judgement	\$134
Contractor costs (mob/demob, etc.)	Quoted pricing by General Contractor	\$125

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Equipment rental costs	Internal estimate based on judgement	\$91
Electrical work	Internal estimate based on judgement	\$62
Dewatering - cofferdam & pumping	Quoted pricing by General Contractor	\$60
Concrete testing	Internal estimate based on judgement	\$45
Environmental controls costs	Quoted pricing by General Contractor	\$25
Embankment dam upgrades (riprap, etc.)	Quoted pricing by General Contractor	\$25
Pre-clearing nesting bird survey	Quoted pricing by External Consultant	\$10
Contracts – Combination of Costs Incurred and Forecasted		
Construction supervision	Combination of firm pricing (costs incurred, \$122,451) and Internal estimate based on judgement (\$252,000)	\$374
Consulting – Costs Forecasted		
Offsetting (West River Project)	Internal estimate based on judgement	\$500
Post-construction monitoring	Internal estimate based on judgement	\$309
Juvenile Gaspereau Entrainment Study	Firm pricing by Consultant	\$120
Archaeological reconnaissance during the drawdown	Firm pricing by Consultant	\$106

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Drawdown monitoring plan	Firm pricing by Consultant	\$55
Updates to the Offsetting Plan	Firm Pricing by Consultant	\$47
Electrical design work for Rubber Dam Controls Building	Internal estimate based on judgement	\$33
Barn Swallow Monitoring Plan and monitoring	Firm pricing by Consultant	\$19
Aerial Imagery Collection for the Juvenile Gaspereau Entrainment Study	Firm pricing by Consultant	

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1 **Request IR-6:**

2
3 **WITH RESPECT TO ATTACHMENT 1 OF THE APPLICATION:**

4
5 **With reference to Pages 1-3 of Attachment 1 of the Application:**

6
7 **(a) Please provide copies each of the seven DFO communications to NS Power listed in**
8 **Attachment 1 of the Application.**

9
10 **(b) Please describe or summarize the alternatives considered when modifying the project**
11 **in response to DFO requirements.**

12
13 **(i) Was a cost-benefit analysis conducted to evaluate these alternatives? If yes,**
14 **please provide the analysis. If no, why not?**

15
16 **(c) Were options considered that would have eliminated the need for the lake level**
17 **decrease once the permitting costs associated with the lake level decrease became ?**

18
19 **(i) If yes, please describe or summarize the options considered.**

20 **(ii) If no, why not?**

21
22 **Response IR-6:**

23
24 **(a) Please refer to NSUARB IR-12, part (a).**

25
26 **(b) Five options were considered as part of the original application, however, once the**
27 **requirements from DFO were understood, the Company evaluated whether the**
28 **work could be completed without a drawdown to decrease the costs associated with**
29 **environmental monitoring and offsetting. NS Power considered the use of a**
30 **cofferdam or bulkhead system to isolate the dam and provide a dry work area, both**

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1 of which were considered infeasible due to the required size of a cofferdam
2 structure to allow a dry work area and concerns around the safety of workers under
3 significant head differential. NS Power also had concerns around the ability to
4 safely manage water during construction as. an ROV survey of the existing
5 sluiceway stop log checks confirmed the presence of several waterlogged and
6 deteriorated stop logs making a dry seal for isolation difficult to achieve. Please
7 refer to NSUARB IR-12(c).
8

9 (i) No additional alternatives for improvements to fish passage were considered. This
10 was because the existing upstream and downstream passage were determined to
11 be effective for some fish species and the existing passage could be modified to
12 satisfy DFO requirements under the modernized Fisheries Act. As such,
13 construction of new passage infrastructure was not considered because it would
14 be more expensive than modifying the existing infrastructure. Dam design
15 alternatives were considered as part of NS Power's original application; additional
16 fish passage requirements would have applied regardless of the design option
17 chosen.
18

19 (c)

20 (i) Yes. NS Power evaluated whether the Project could be completed without the need
21 for a drawdown. Please refer to part (a)
22

23 (ii) Not applicable.