

# WATER TREATMENT FACILITY AND RAW WATER STORAGE ARVIAT, NU

exp Services Inc. t: +1.506.452.9000 | f: +1.506.459.3954 1133 Regent Street, Suite 300 Fredericton, NB, E3B 3Z2



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# **GRID NORTH**

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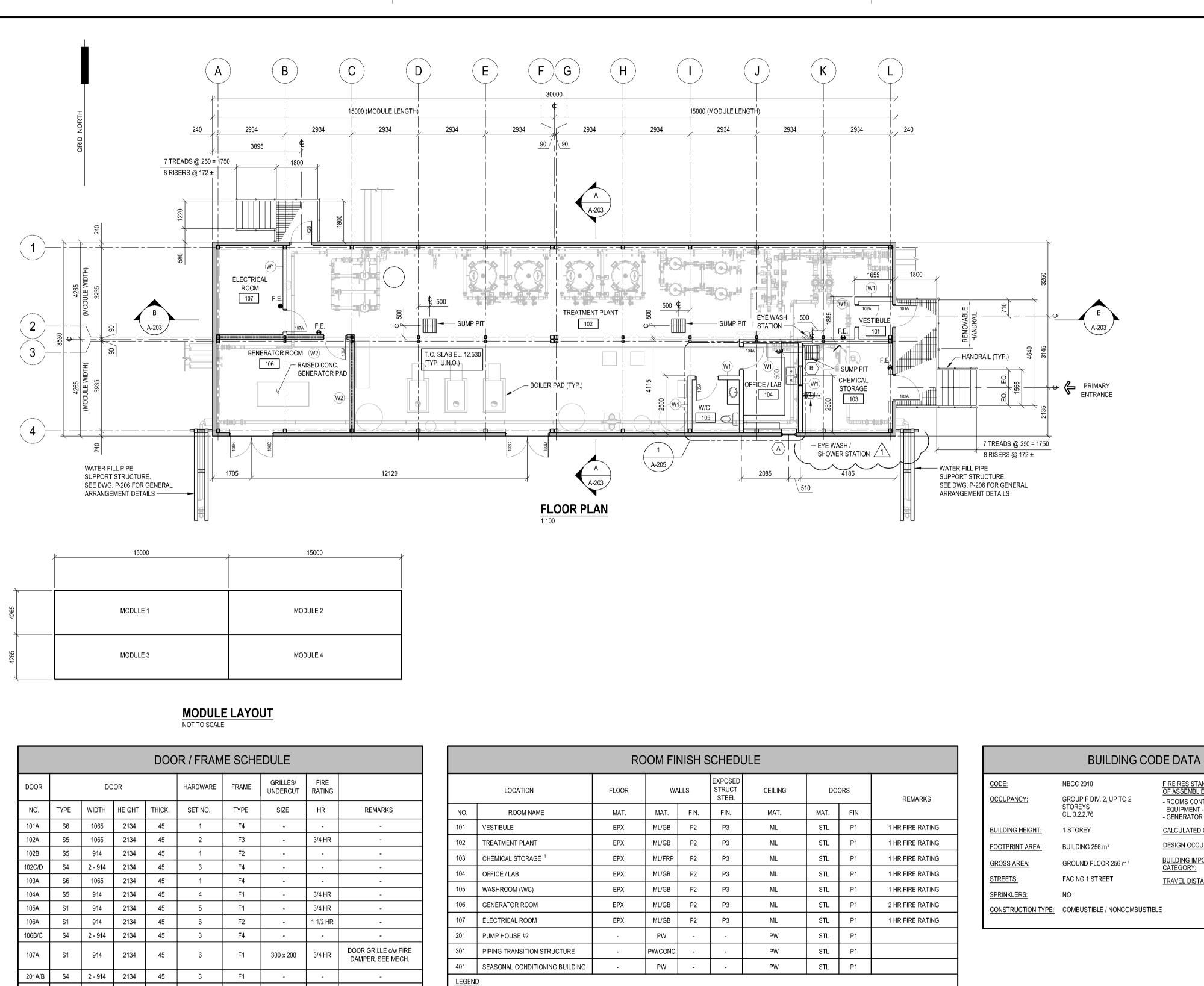
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8.8 8.8 8.8 8.6 EL 7,9¢ EL 7,9¢ S.5 8.1 0.000	

LOCATION PLAN



EPX = EPOXY STL = STEEL
ML = METAL LINER (PREFINISHED INTERIOR GB = GYPSU

FACE OF INSULATED PANEL)

GYPSUM BOARD

CONC.= CONCRETE

1. ROOM 103 CHEMICAL STORAGE TO HAVE FIBRE REINFORCED PANEL (FRP) ON INTERIOR WALLS ONLY AT FULL HEIGHT.

S2 760

S2 760

S1 914

301B

401A

1400

1400

2134

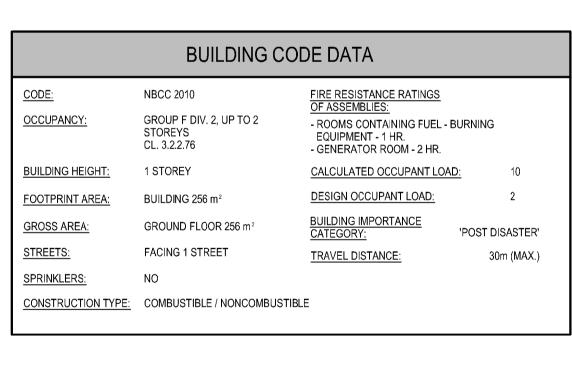
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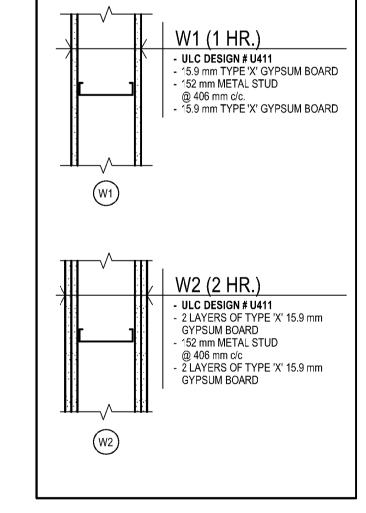
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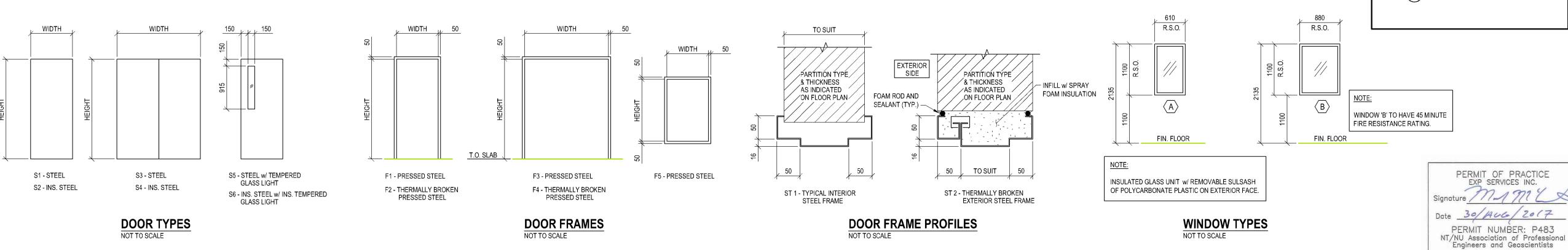
F5

F5

F1







EPOXY ACRYLIC PAINT

EPOXY COATING

P2 =

P3 =

POLYURETHANE COATING FRP = FIBRE REINFORCED PANEL

PW = PLYWOOD (ONE COAT

OF FIRE RETARDANT PAINT)

**GENERAL NOTES** 

- 1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH SPECIFICATIONS.
- 2. ALL DIMENSIONS AND CONDITIONS SHALL BE VERIFIED ON SITE AND ALL DISCREPANCIES REPORTED TO THE ENGINEER BEFORE PROCEEDING. DO NOT SCALE THESE DRAWINGS FOR CONSTRUCTION PURPOSES. USE FIGURED DIMENSIONS AS NOTED.
- 3. PROVIDE 100mm (MIN.) HIGH CONCRETE HOUSEKEEPING PADS FOR ALL MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT (U.N.O.). SIZE AND LOCATIONS TO BE SET BY MECHANICAL, ELECTRICAL AND PROCESS EQUIPMENT REVIEWED EQUIPMENT
- 4. COORDINATE MECHANICAL AND ELECTRICAL WALL AND ROOF PENETRATIONS WITH STRUCTURAL FRAMING.

TYPICAL ABBREVIATIONS

MAX MCP

MECH

- REFER TO P-SERIES DRAWINGS FOR EQUIPMENT LAYOUT.
- 6. REFER TO DRAWING S-201 FOR STRUCTURAL DESIGN CRITERIA.

### LEGEND:

A WINDOW TYPE

DOOR & DOOR NUMBER

WALL TYPE ROOM NUMBER

MOUNTED ON WALL BRACKET

METAL DECK SPAN DIRECTION

HOUR HOLLOW STEEL SECTION

INSULATED GLASS

LONG LONG LEG VERTICAL

MASONRY OPENING

NOT IN CONTRACT

PLASTIC LAMINATE

PRESSURE TREATED

ROUGH SIZE OPENING

SPRUCE PINE FUR

STAINLESS STEEL

TOP AND BOTTOM

UNLESS NOTED OTHERWISE

TOP OF TOP OF STEEL

NOT TO SCALE

ON CENTRE DUTSIDE DIAMETER

ROOF DRAIN

SIMII AR

STANDARD

TYPICAL

WIDE

INTERIOR WALL TYPE

UNDER SIDE

WORK POINT

REINFORCING

MELAMINE COMPONENT

PANEL CONSTRUCTION

MEDIUM DENSITY FIBREBOARD

INSULATED

KITCHEN

LAMINATE

MAXIMUM

MECHANICAL

MICROWAVE

MILLIMETRE

MINIMUM

ABC TYPE FIRE EXTINGUISHER MOUNTED ON WALL BRACKET CO2 TYPE FIRE EXTINGUISHER

ABOVE FINISH FLOOR

ALUMINUM

BOARD

BLOCK

BOTTOM

BETWEEN

CORNER ANGLE

CENTRE TO CENTRE

CORNER GUARD

COMMUNICATIONS

CONCRETE BLOCK

COMPLETE WITH

EXPANSION JOINT

ELECTRICAL

ELEVATION

EACH WAY FINISH

FLOOR PLAN

GALVANIZED

GRATING

HOSE BIB HEAVY DUTY

REFRIGERATOR

GYPSUM BOARD

EQUAL

FLOOR

DRINKING FOUNTAIN

CONTROL JOINT

CENTRE LINE

CONTINUOUS

CONCRETE

DIAMETER

DIVISION

DRAWING

DOWN

CATCH BASIN

BLK BOTT. BTW

CONC

CONT.

DWG

ELEC./ELECT

ELEV./ EL.

FL. PL

FRIDGE

GRTG.

CONC. BLK

2 HOUR FIRE RATING (GENERATOR ROOM)

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ECM Drawn By: aut Dwg Standards Ckd By: MJM/CET Designed By: M. M. Design Checked By:

AS SHOWN

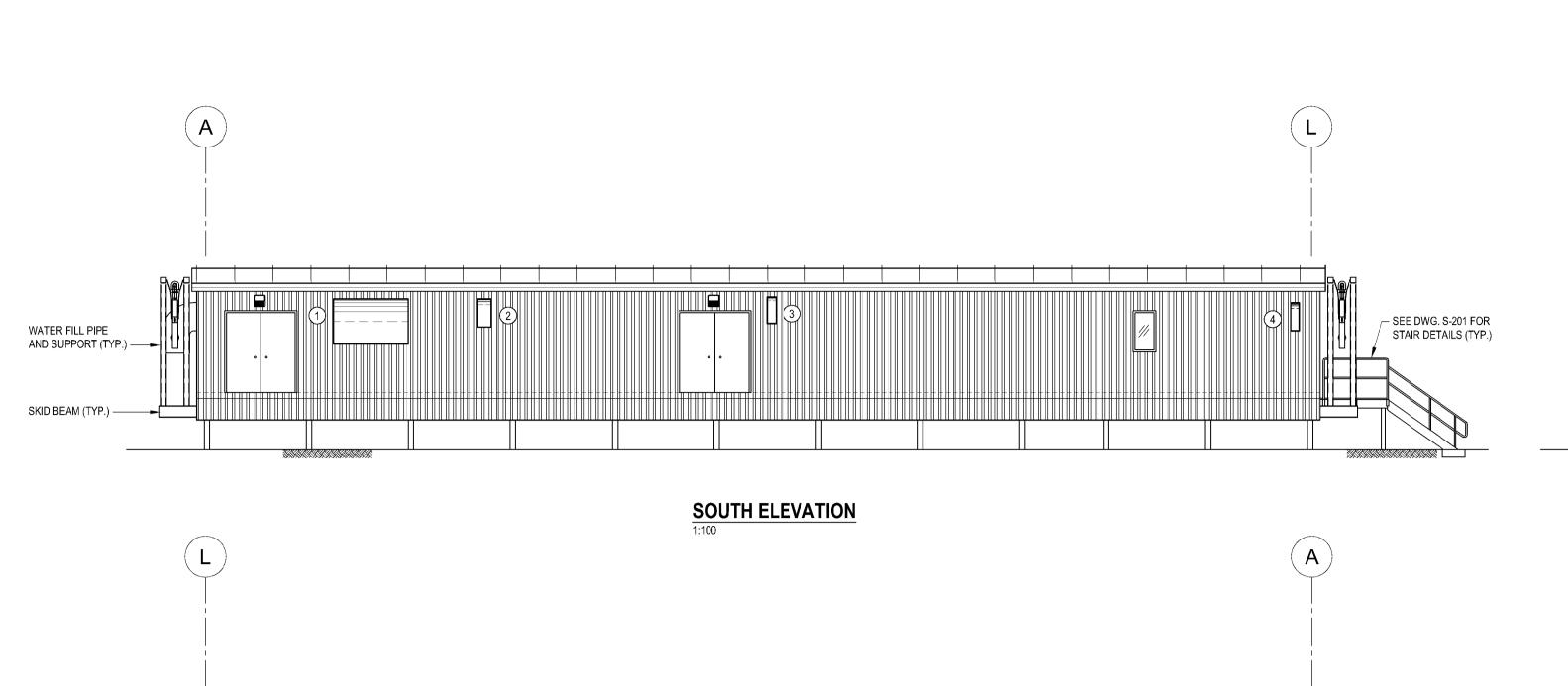
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**FLOOR PLAN AND SCHEDULES** 

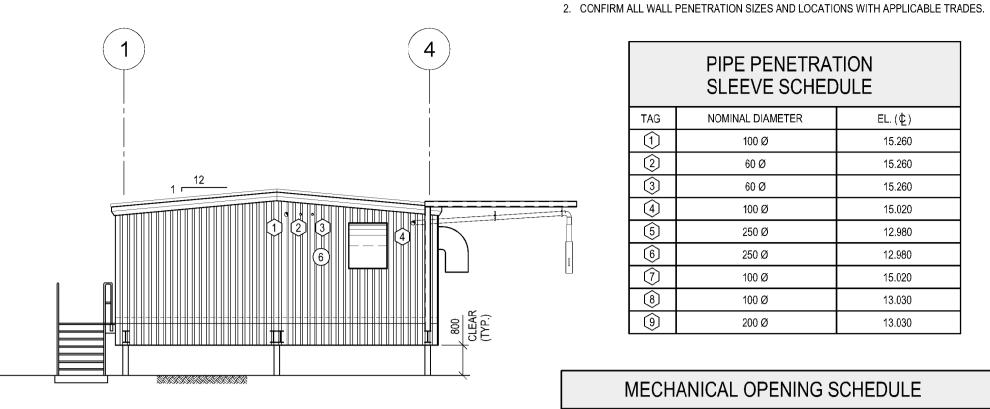
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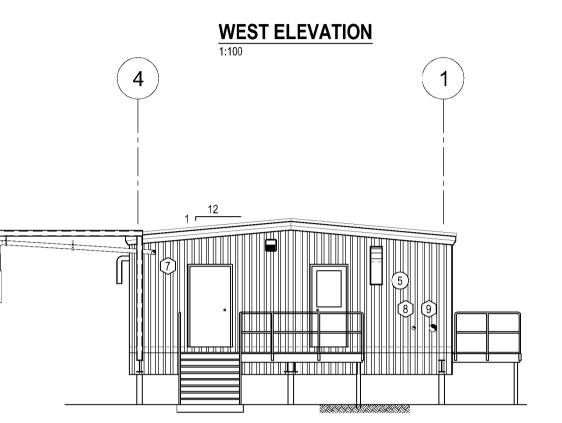
A-201

Rev. No.



**NORTH ELEVATION** 





	MECHANICAL OPENING SCHEDULE			
TAG	SIZE (W x H)	EL. (TOP)	REMARK	
1	2000 x 600	15.030	INTAKE	
2	350 x 150	15.030	INTAKE	
3	250 x 100	15.080	EXHAUST	
4	225 x 150	15.030	INTAKE	
5	300 x 400	15.180	EXHAUST	
6	1000 x 600	15.030	EXHAUST	
7	400 x 200	15.030	INTAKE	
8	400 x 200	15.030	INTAKE	

PIPE PENETRATION SLEEVE SCHEDULE

EL. (℄)

15.260

15.260

15.260

15.020

12.980

12.980

15.020

13.030

13.030

NOMINAL DIAMETER

100 Ø

60 Ø

60 Ø

100 Ø

250 Ø

250 Ø

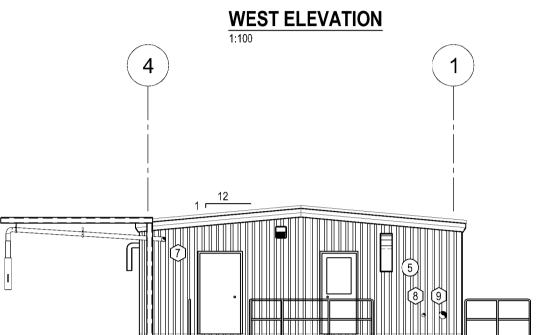
100 Ø

100 Ø

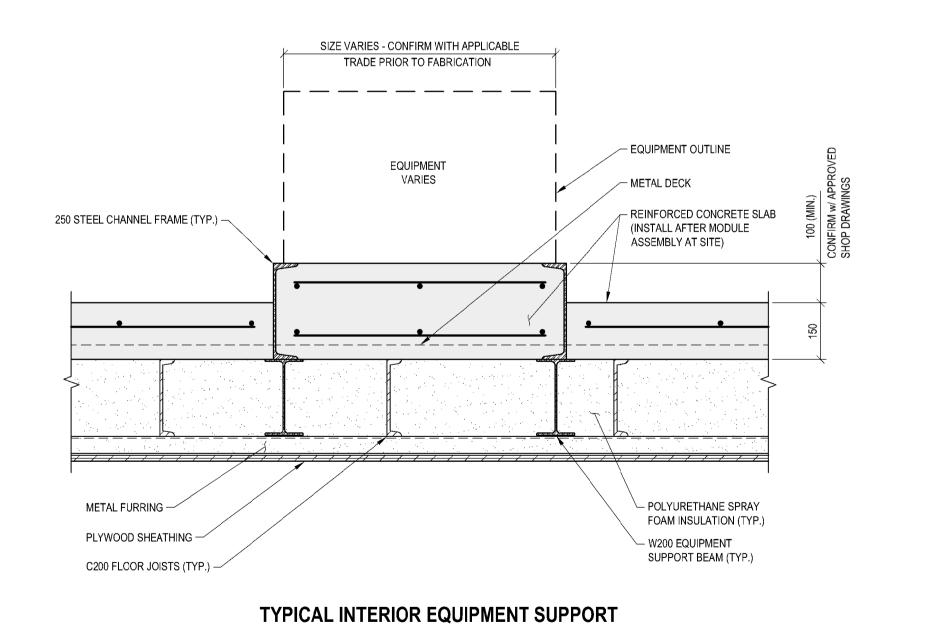
200 Ø

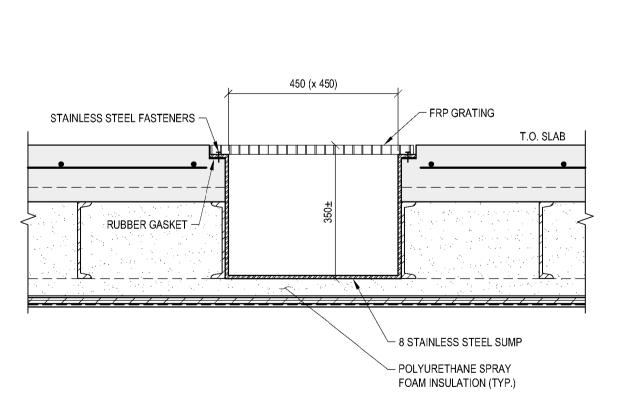
NOTES:

1. SEE DRAWING A-201 FOR GENERAL NOTES AND LEGEND.



**EAST ELEVATION** 

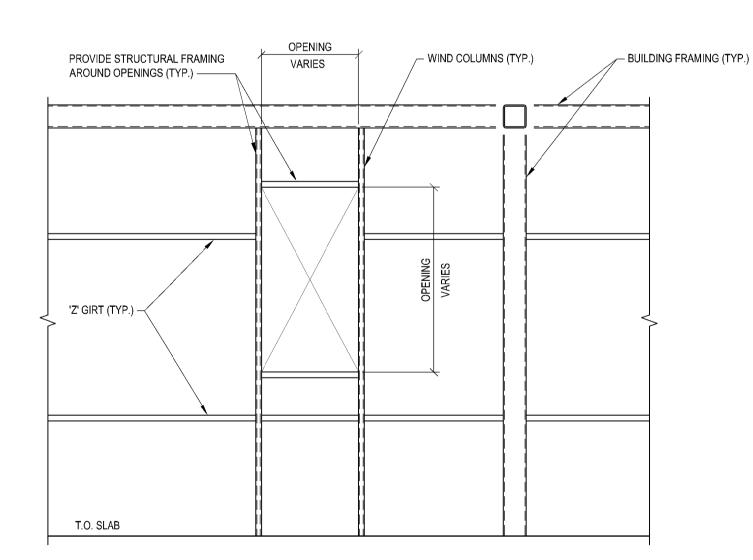




SEE DWG. S-201 FOR STAIR DETAILS (TYP.) — T.O. SLAB EL. 12.530 (TYP.)

T.O. GRADE EL. 11.000 (TYP.)

TYPICAL SUMP PIT SECTION



TYPICAL WALL STRUCTURAL OPENING DETAIL

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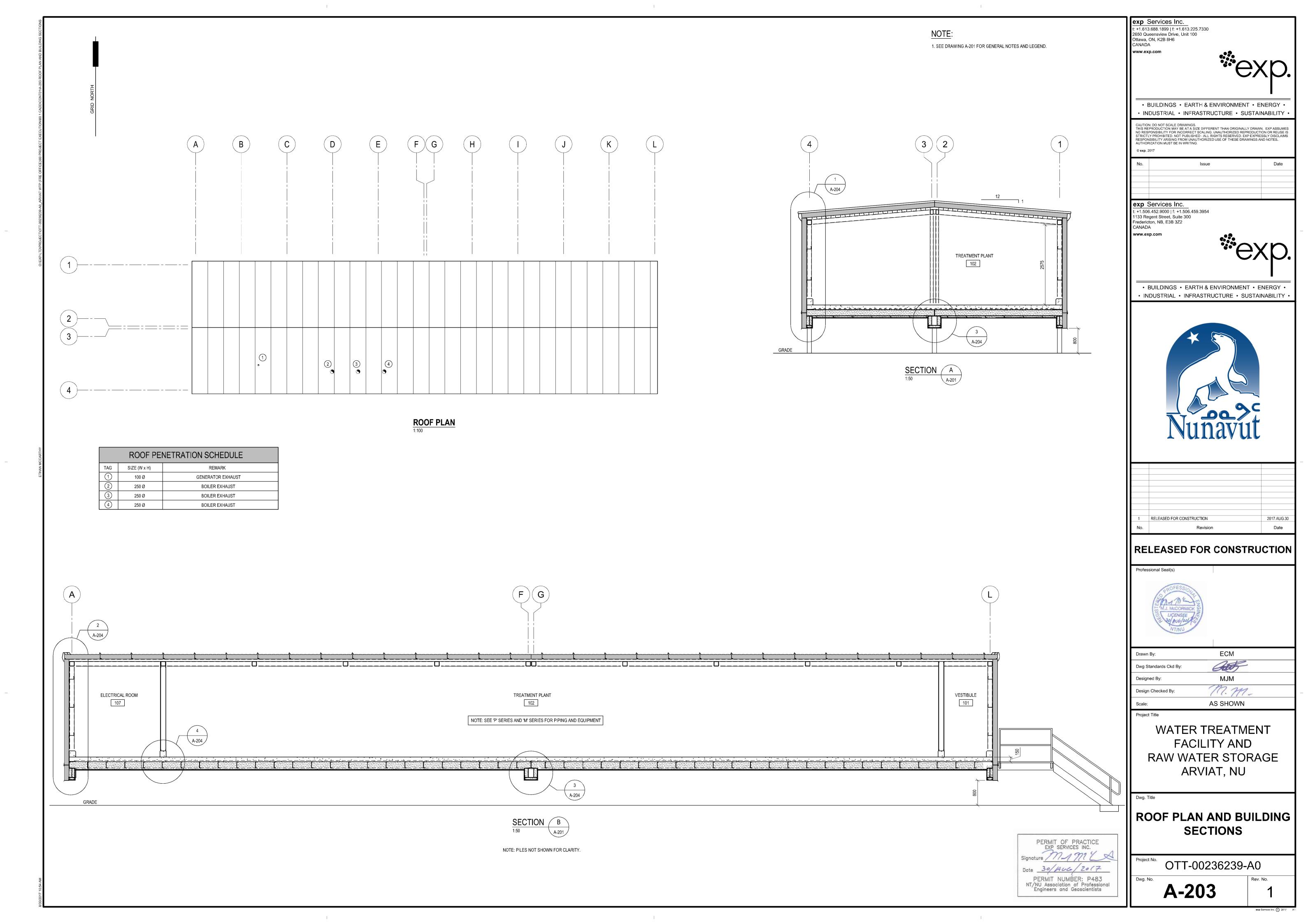
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Dwg Standards Ckd By:	att	
Designed By:	MJM	
Design Checked By:	M. M.	
Scale:	AS SHOWN	

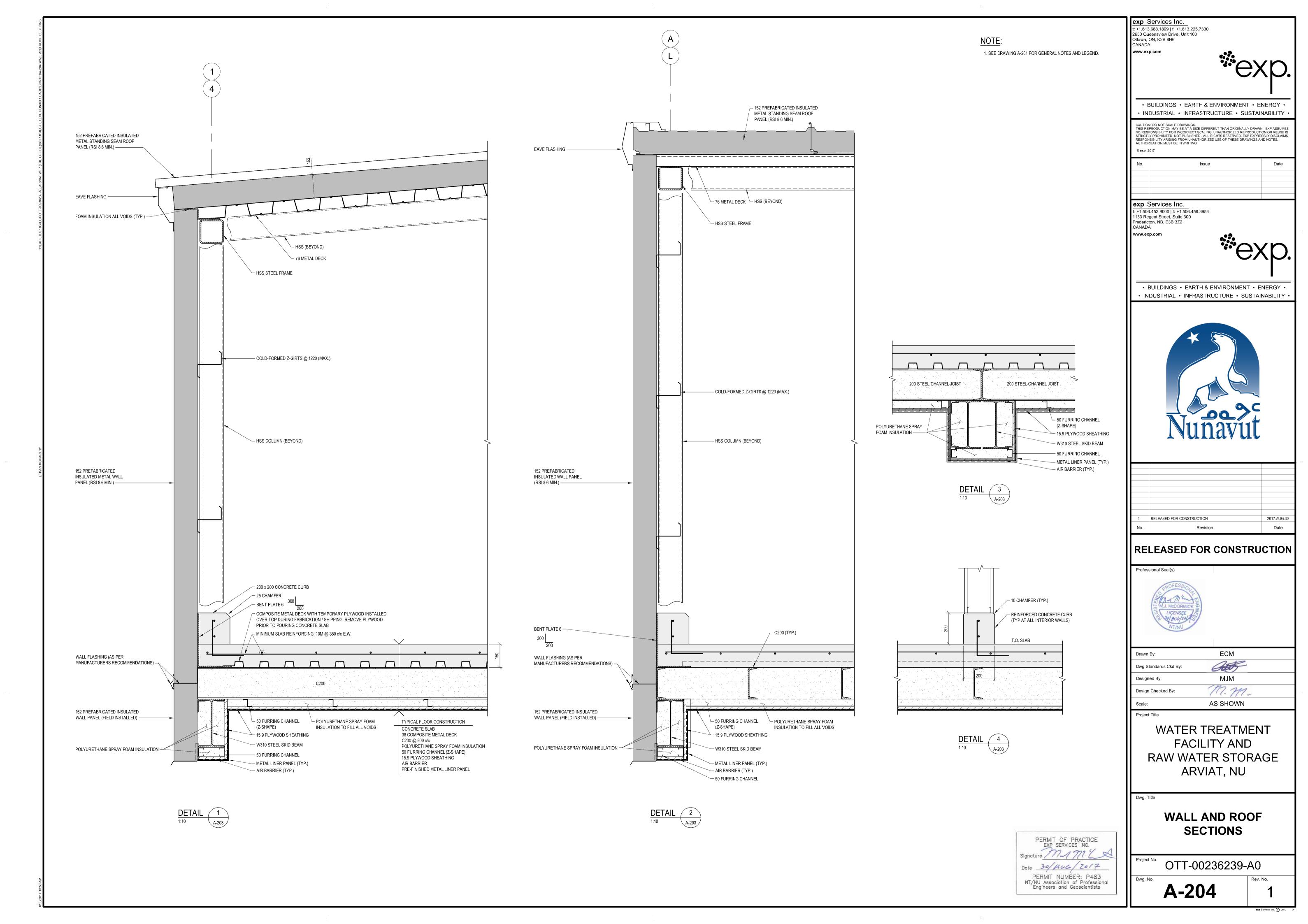
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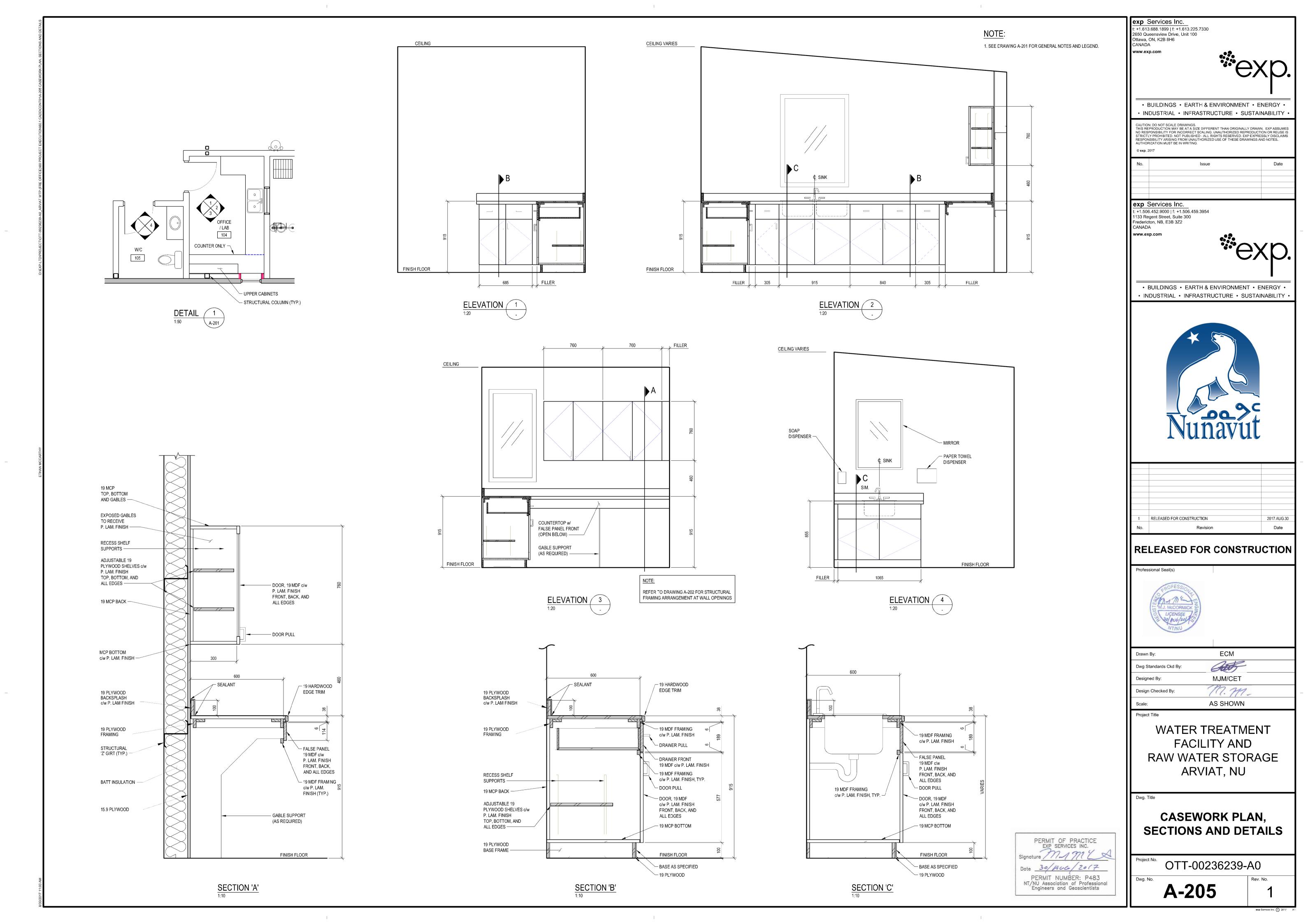
**BUILDING ELEVATIONS** 

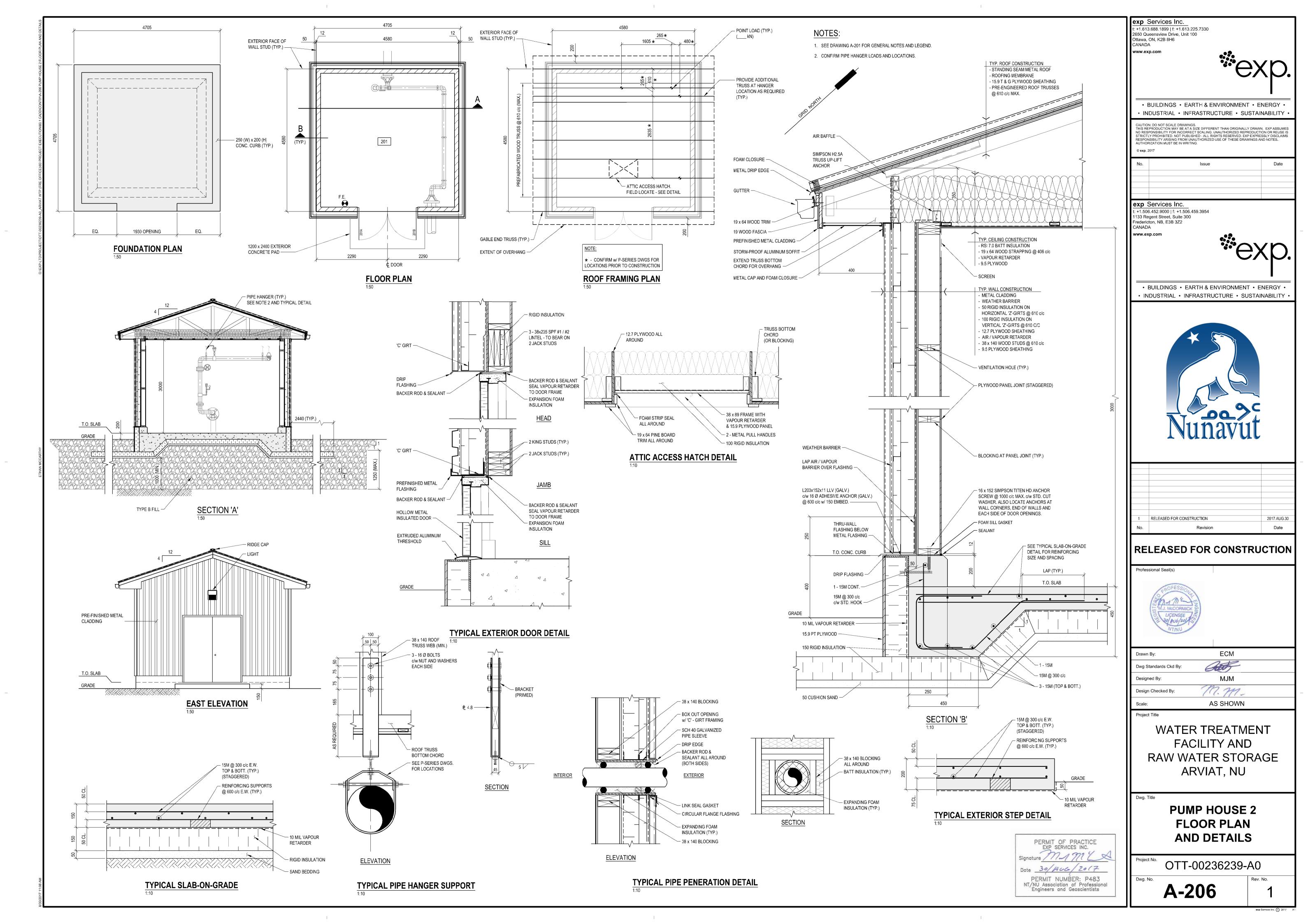
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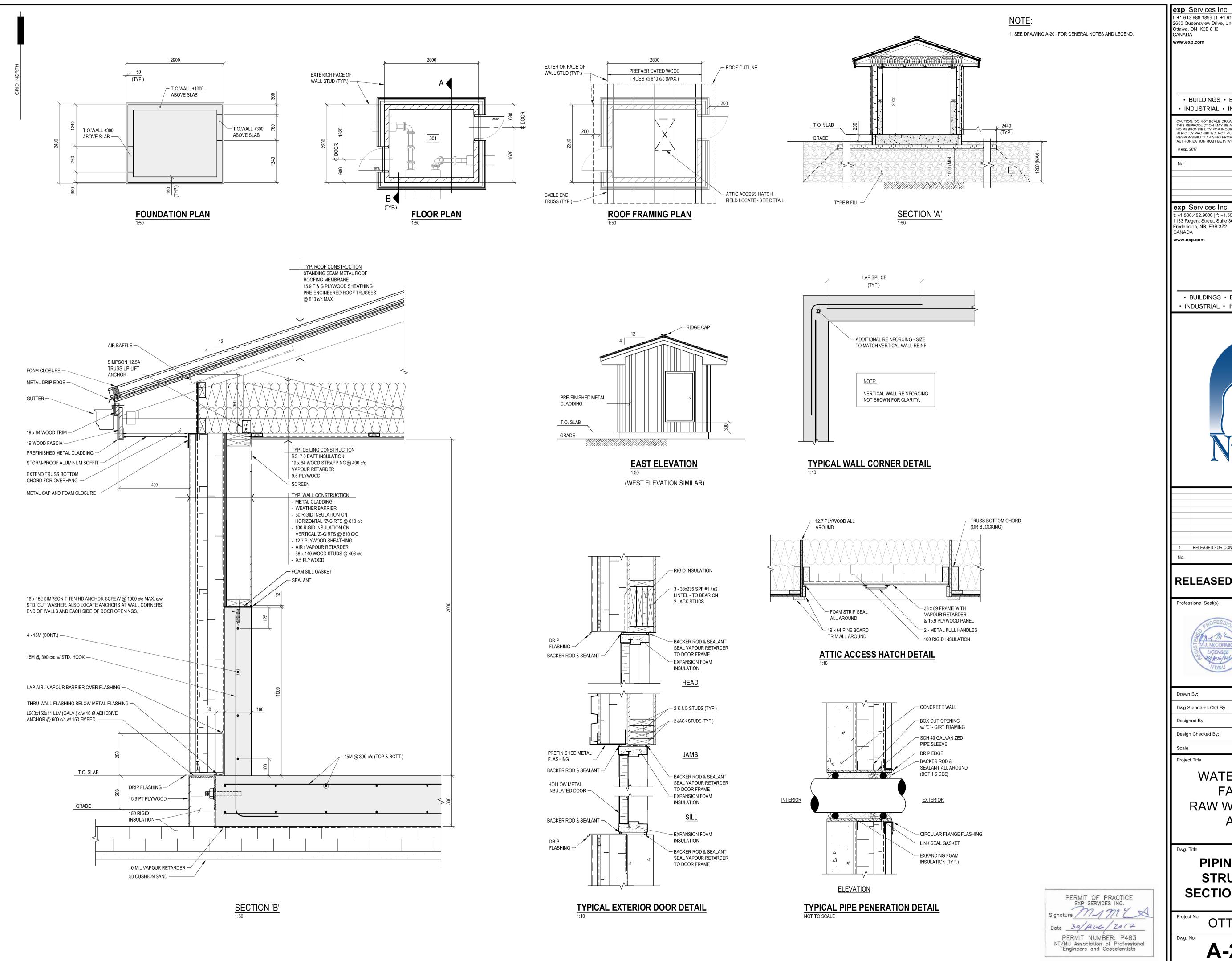
A-202











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ECM att Dwg Standards Ckd By: MJM M. M.

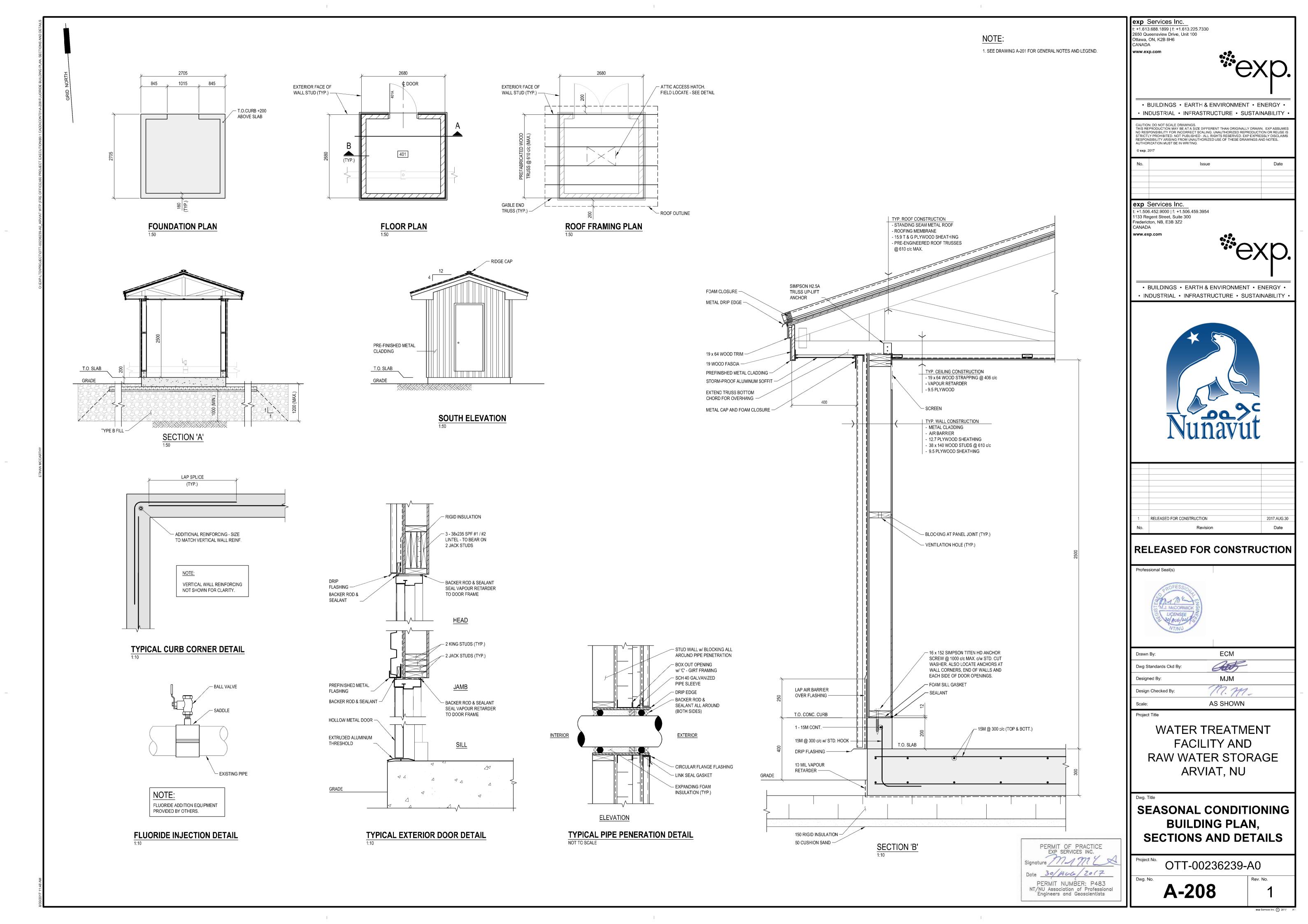
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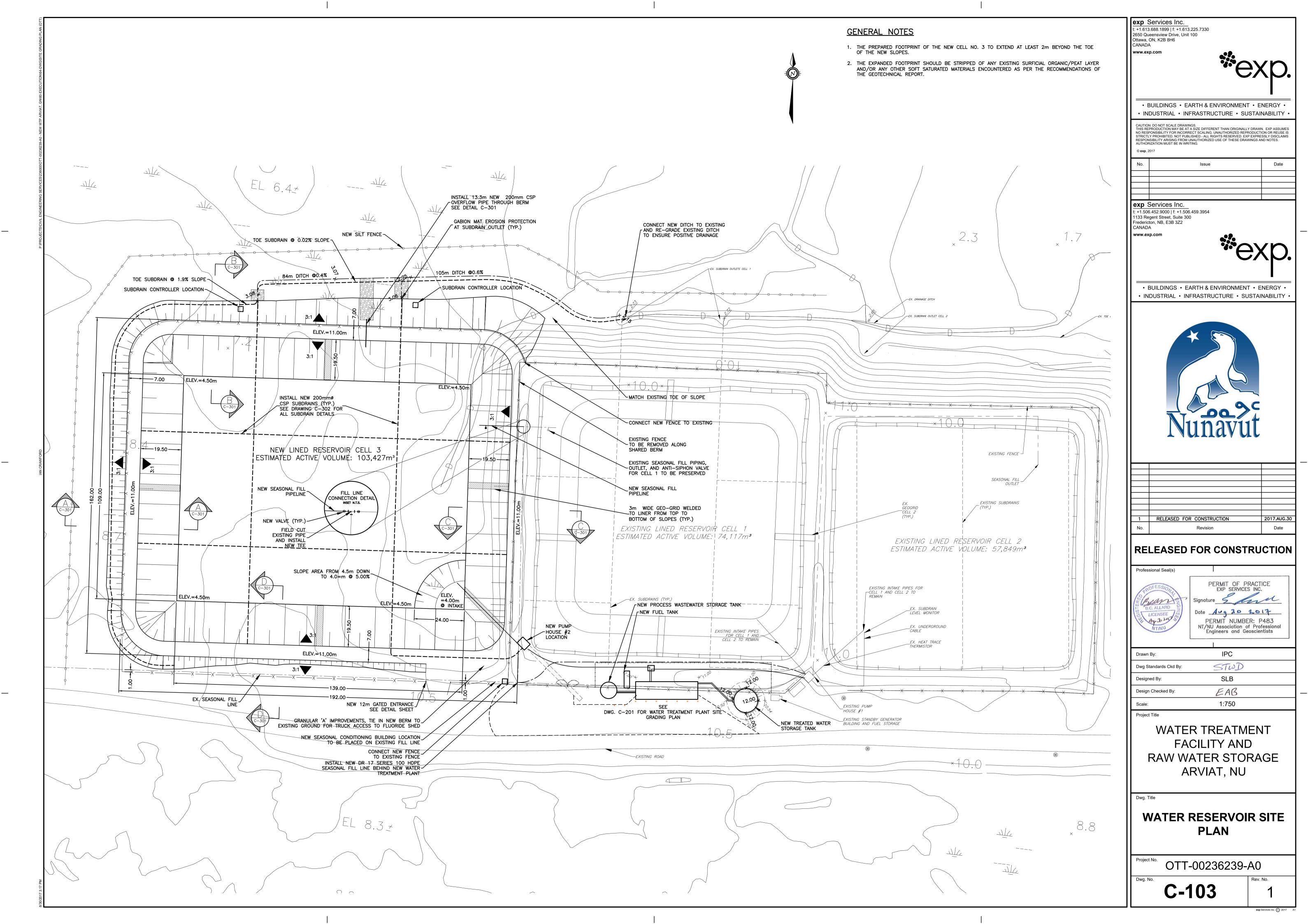
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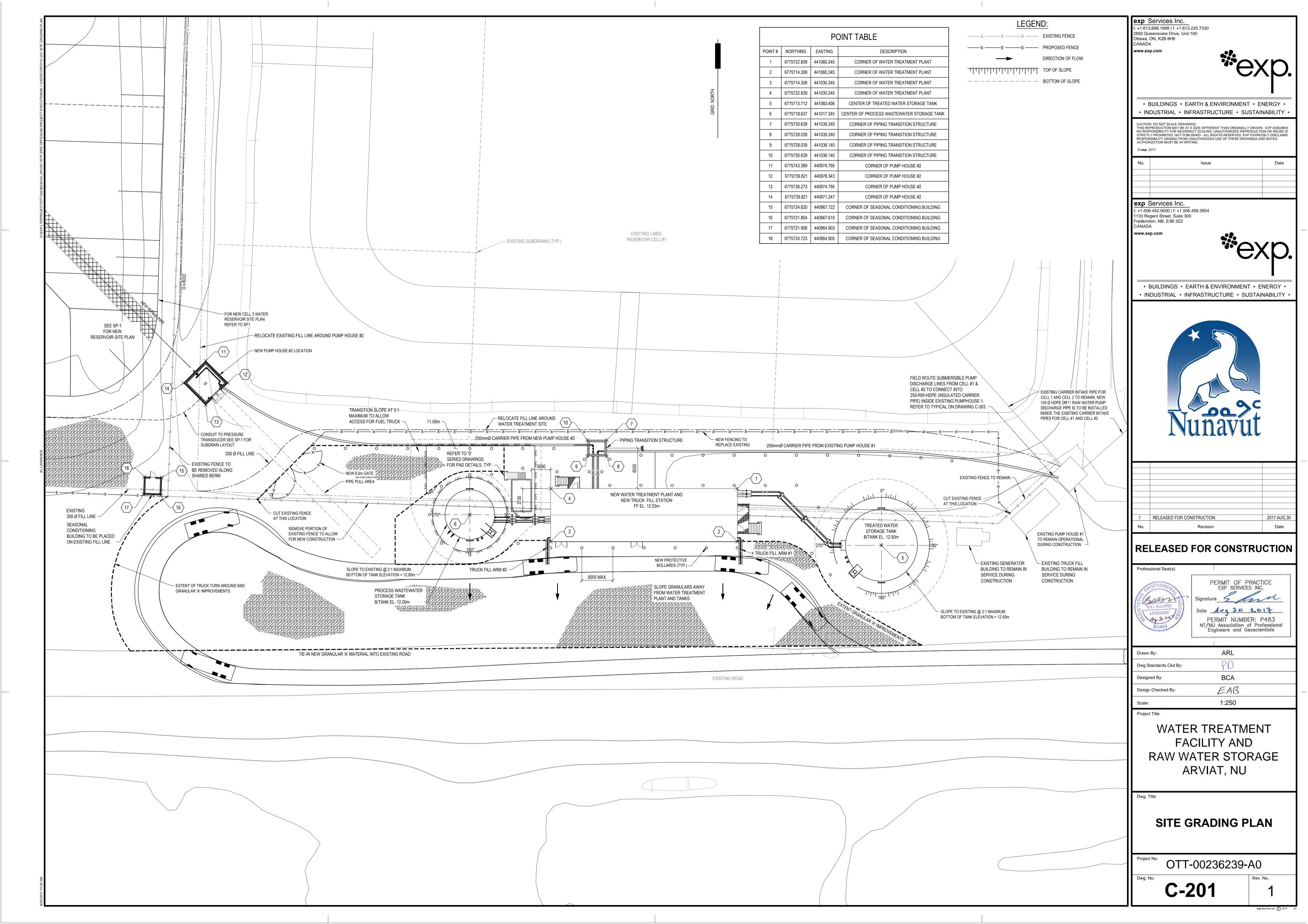
**PIPING TRANSITION** STRUCTURE PLAN, **SECTIONS AND DETAILS** 

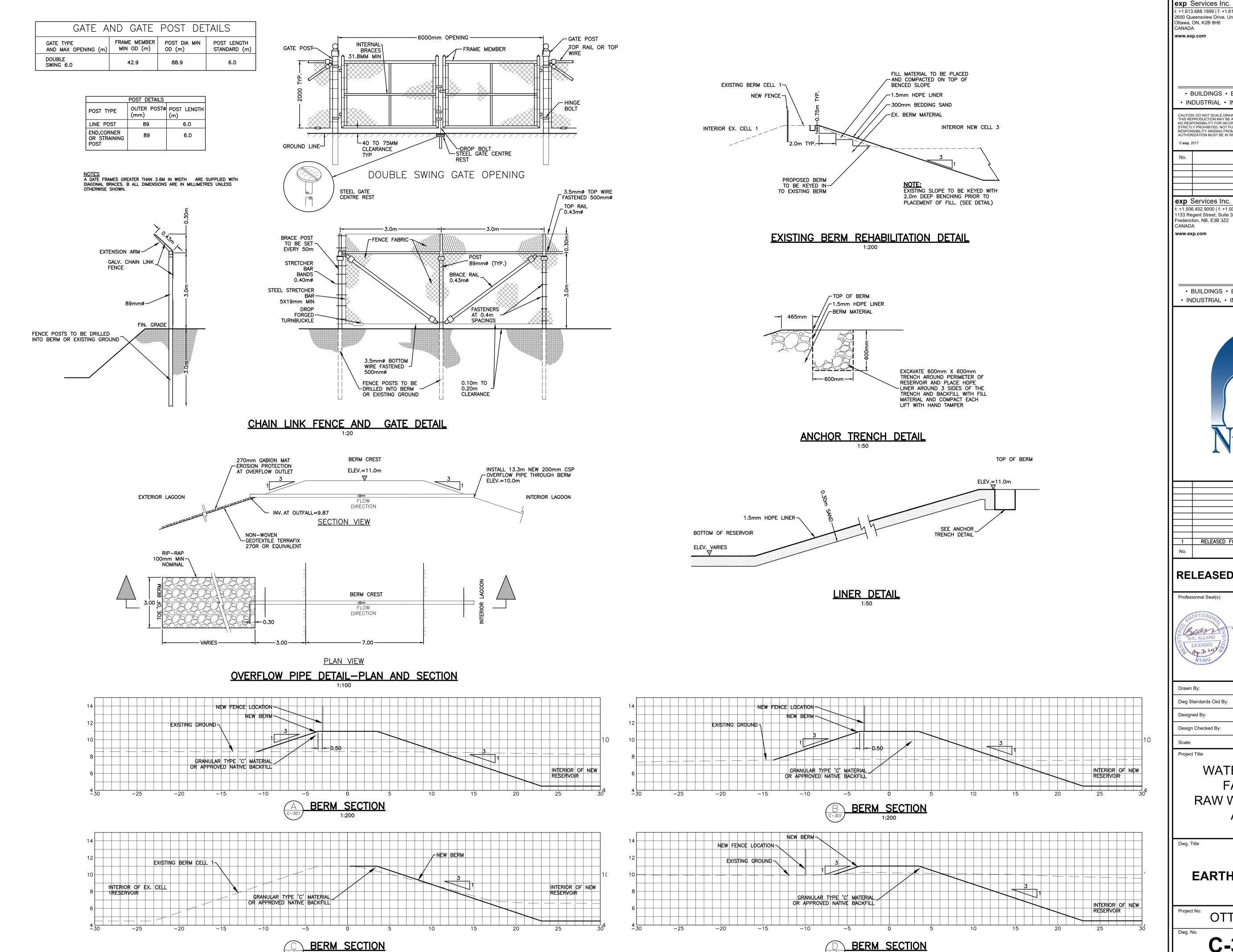
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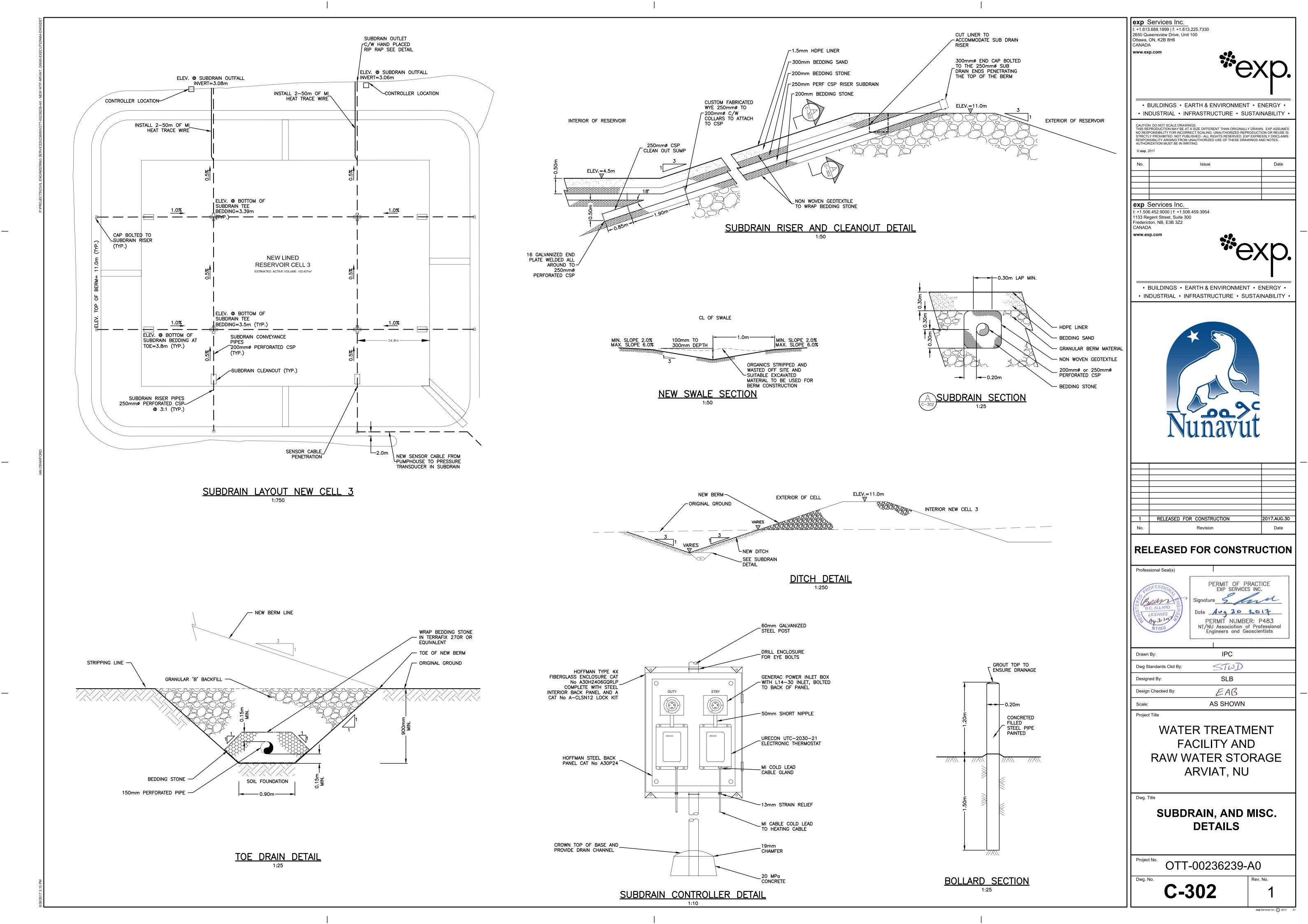
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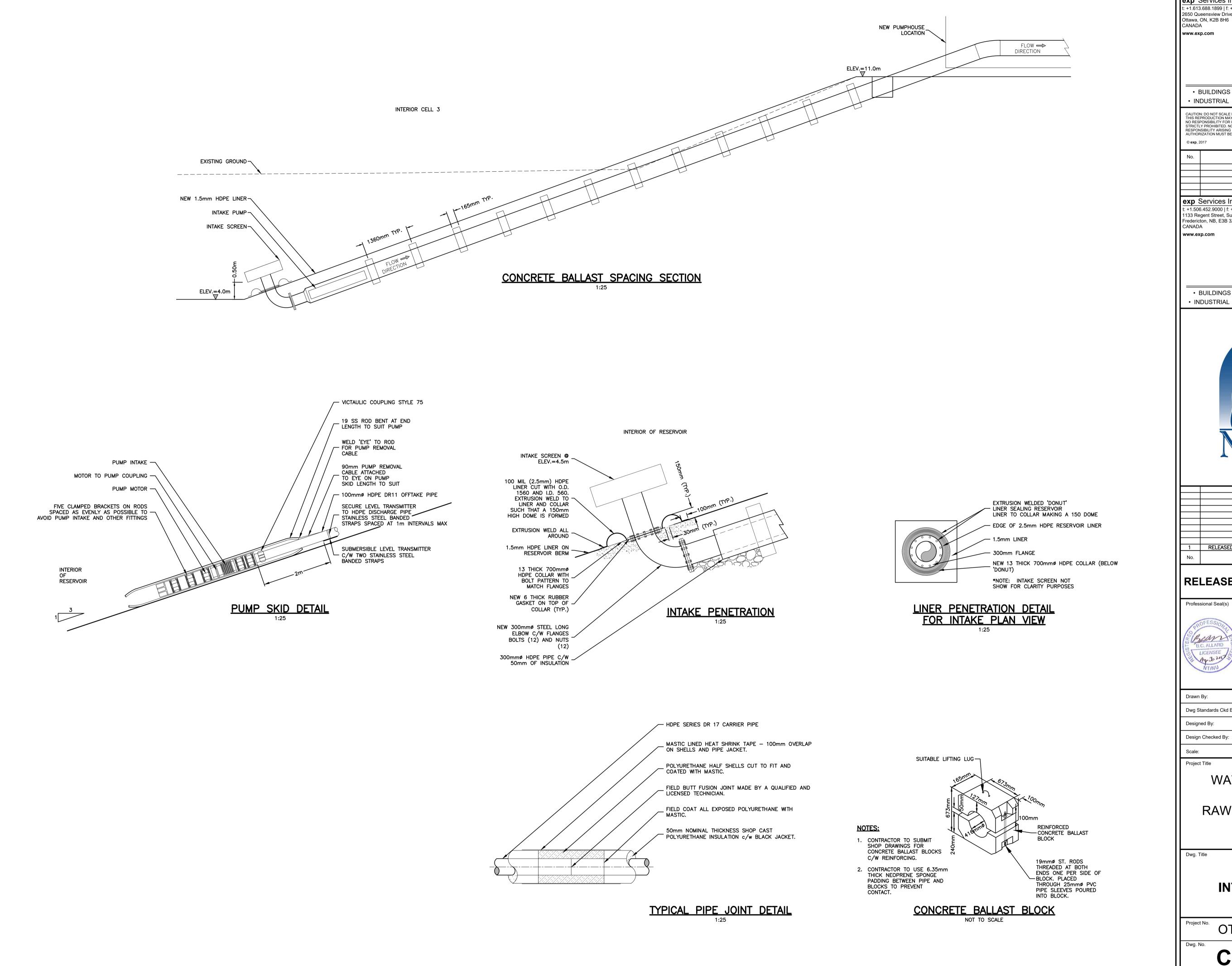
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**EARTH BERM DETAILS** 

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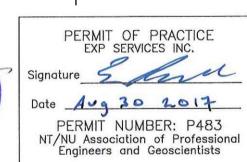


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Designed By:	SLB	
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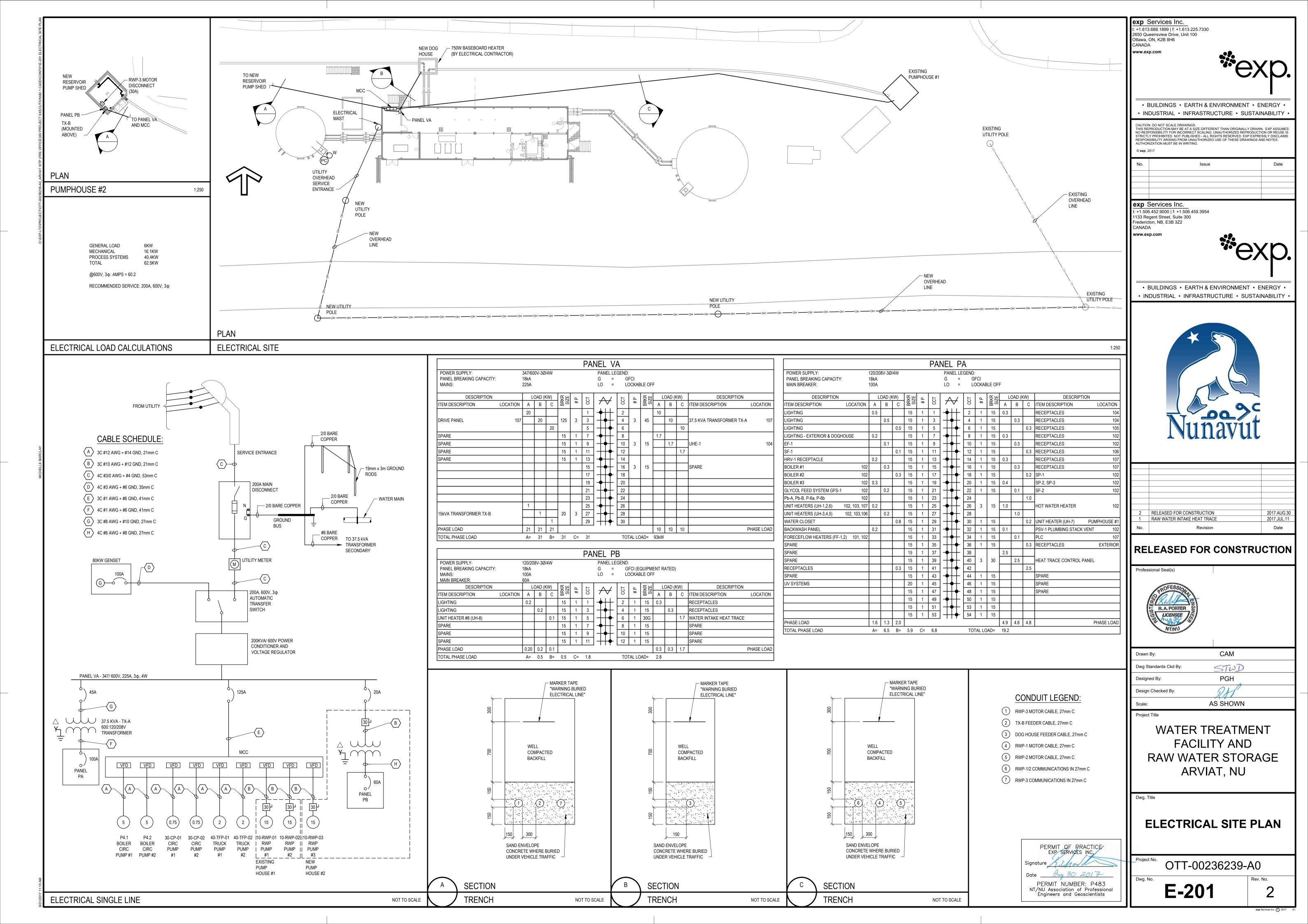
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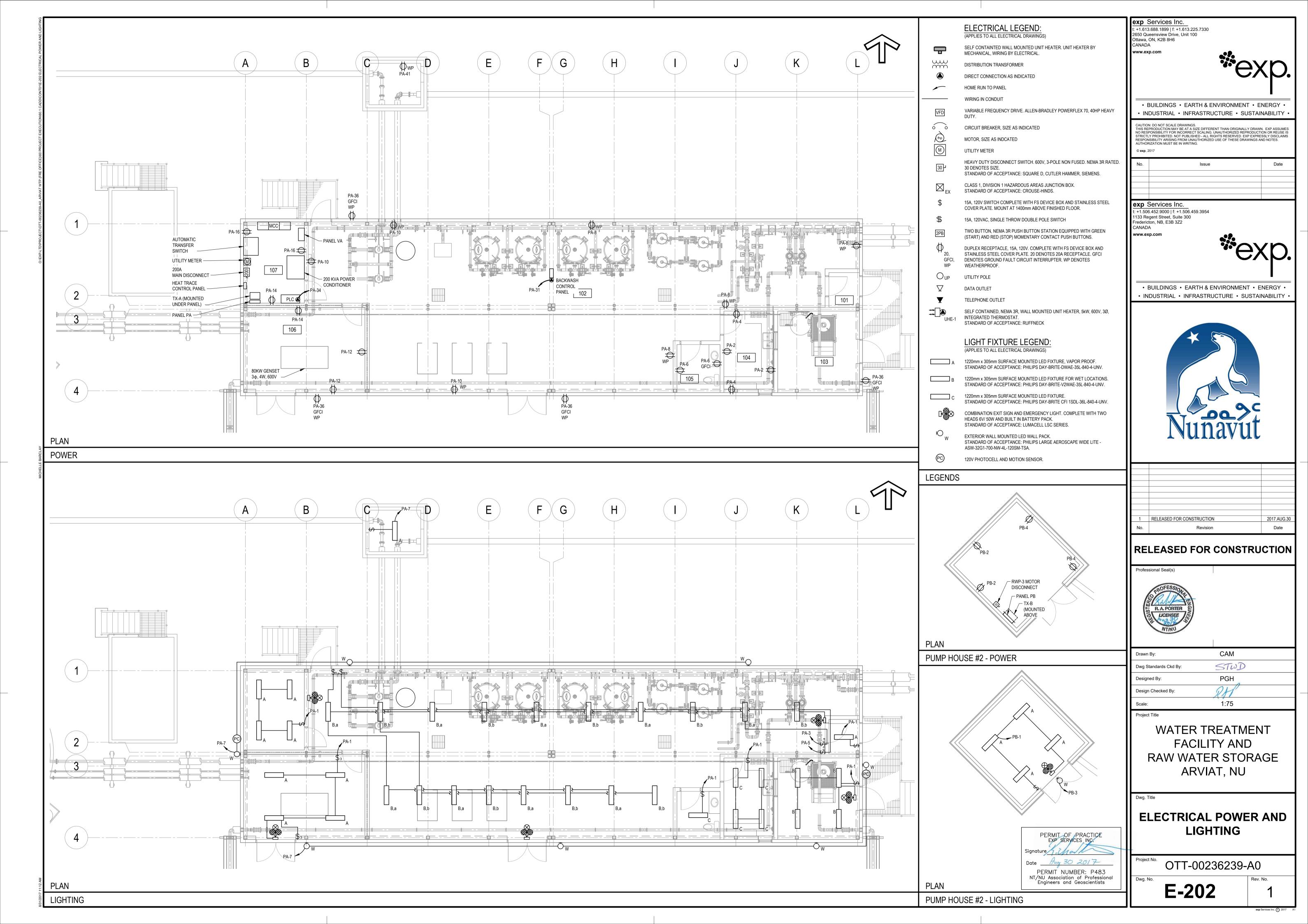
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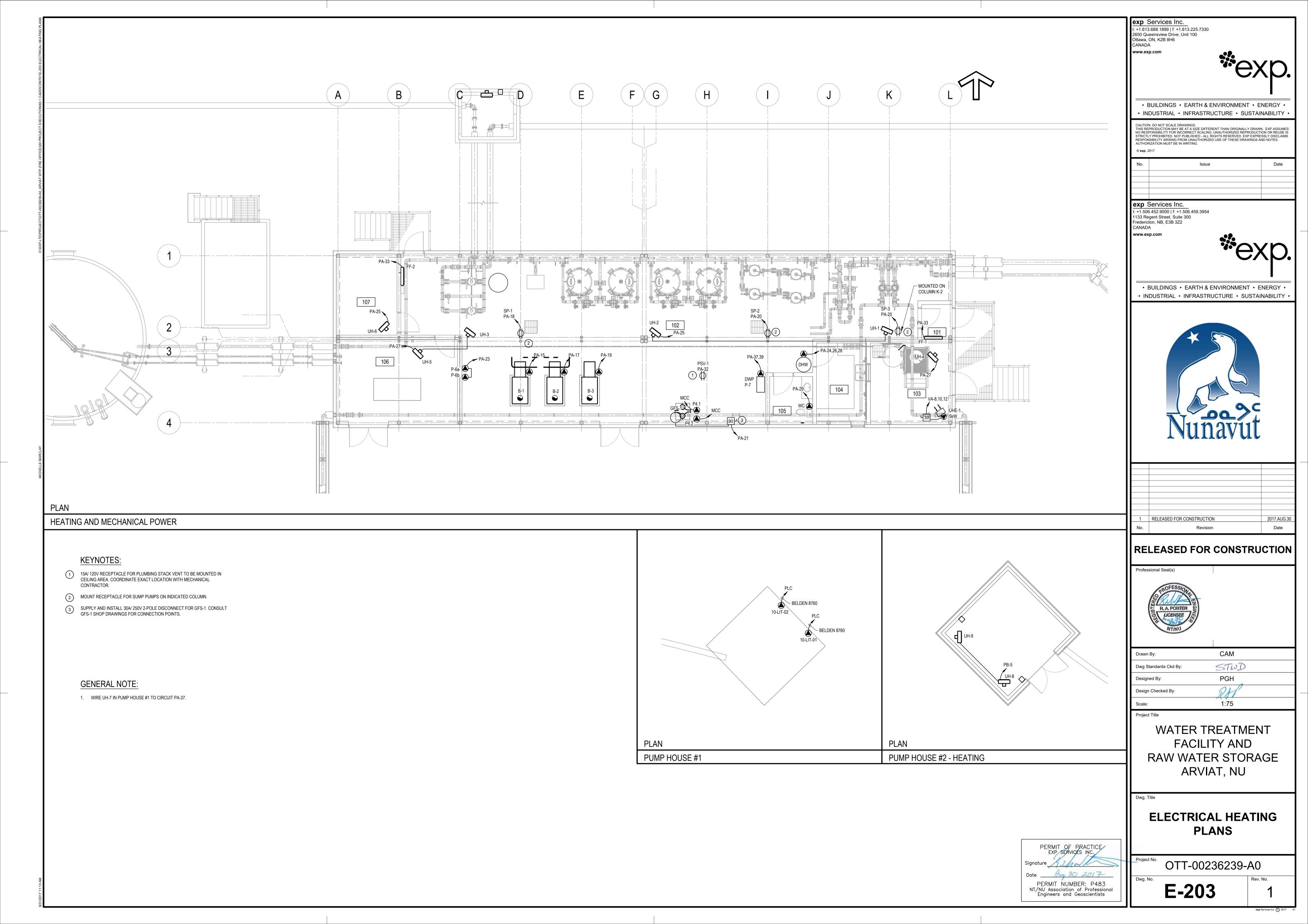
**INTAKE DETAILS** 

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C-303

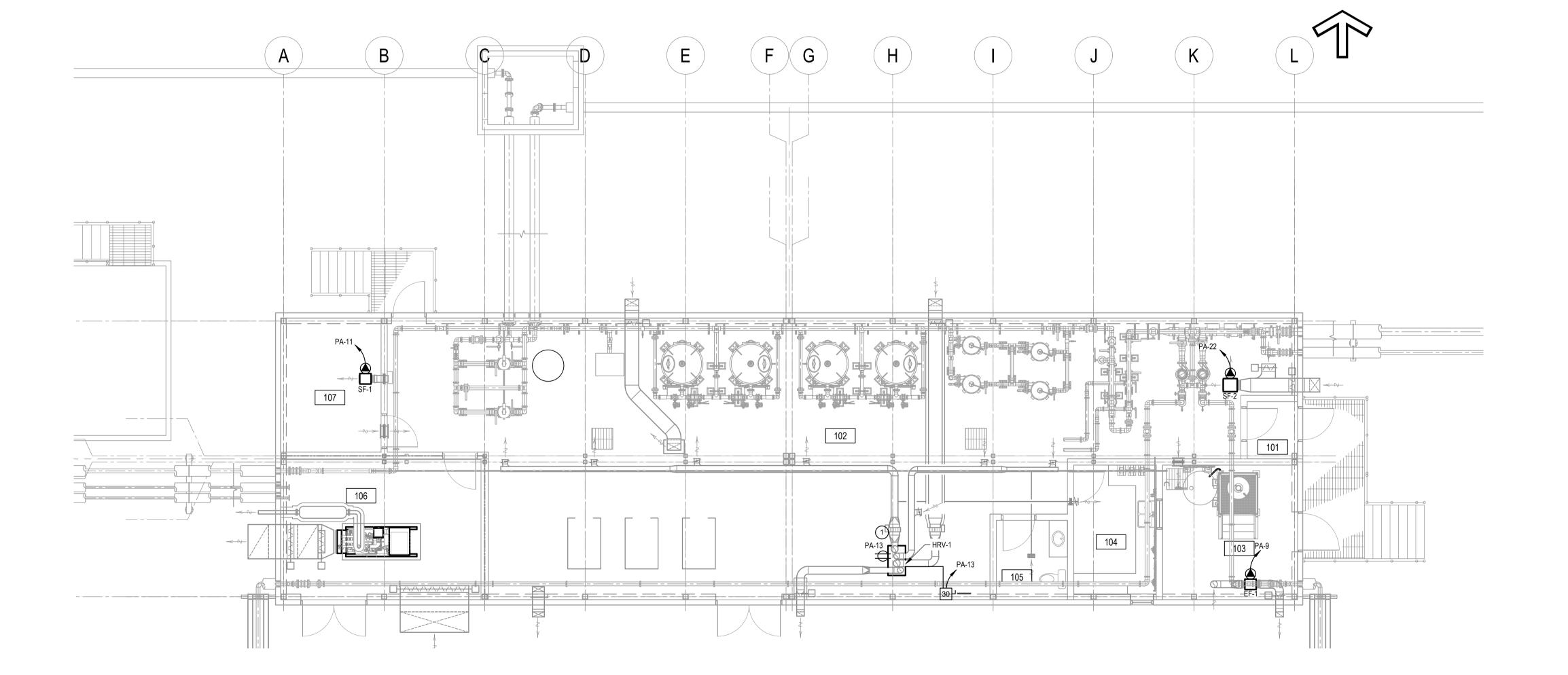






KEYNOTE:

DEDICATED RECEPTACLE FOR HRV-1. COORDINATE EXACT LOCATION WITH VENTILATION CONTRACTOR.



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CAM STWD PGH 1:75

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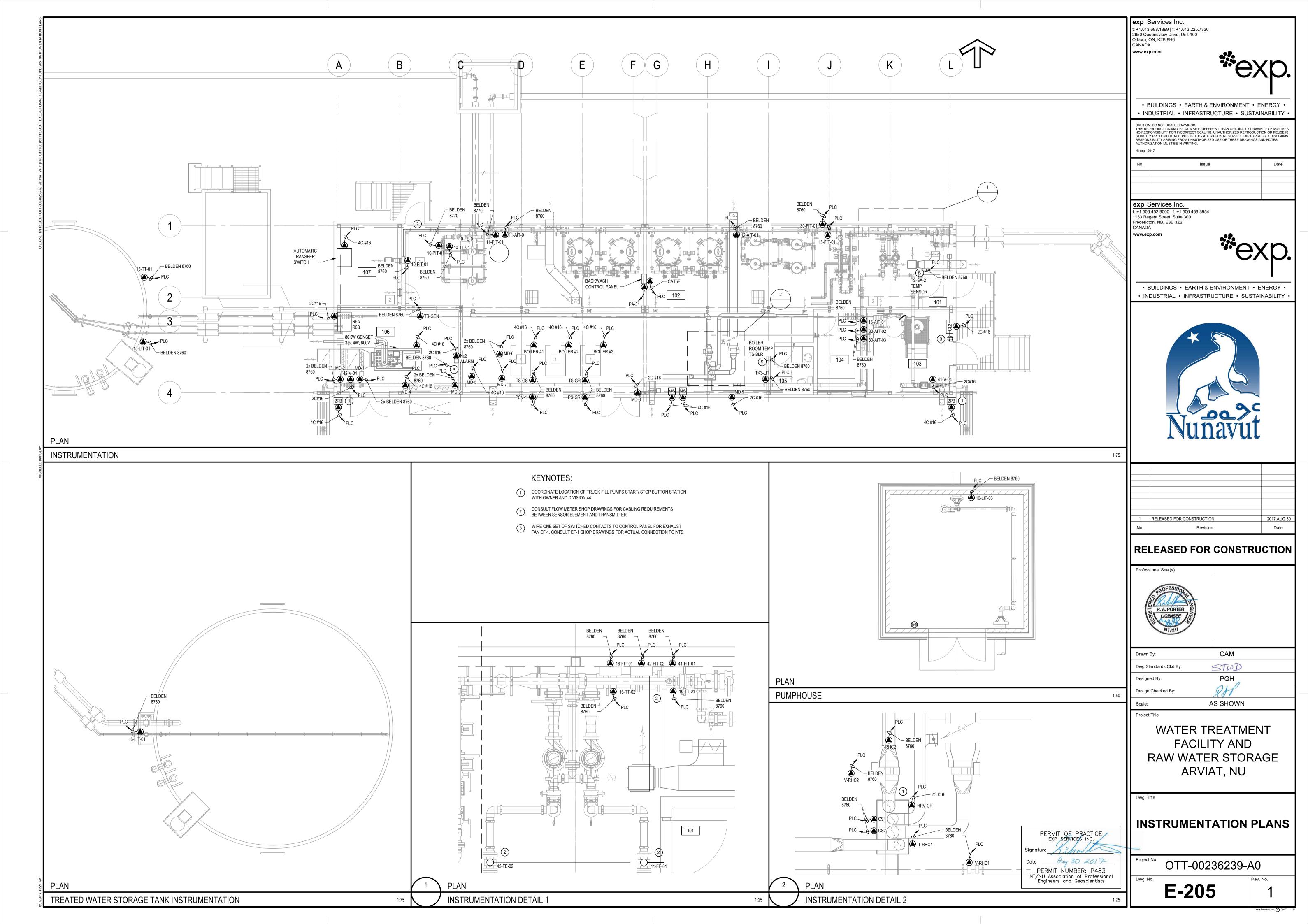
# **ELECTRICAL VENTILATION POWER PLAN**

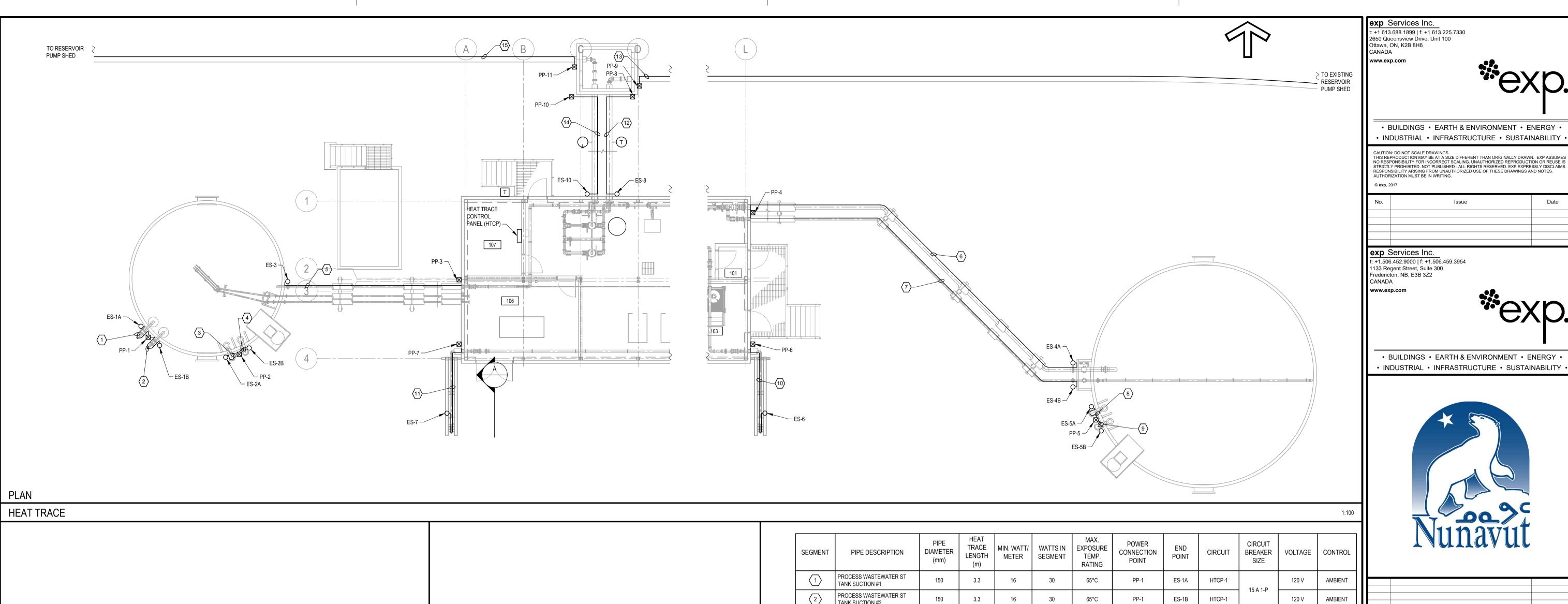
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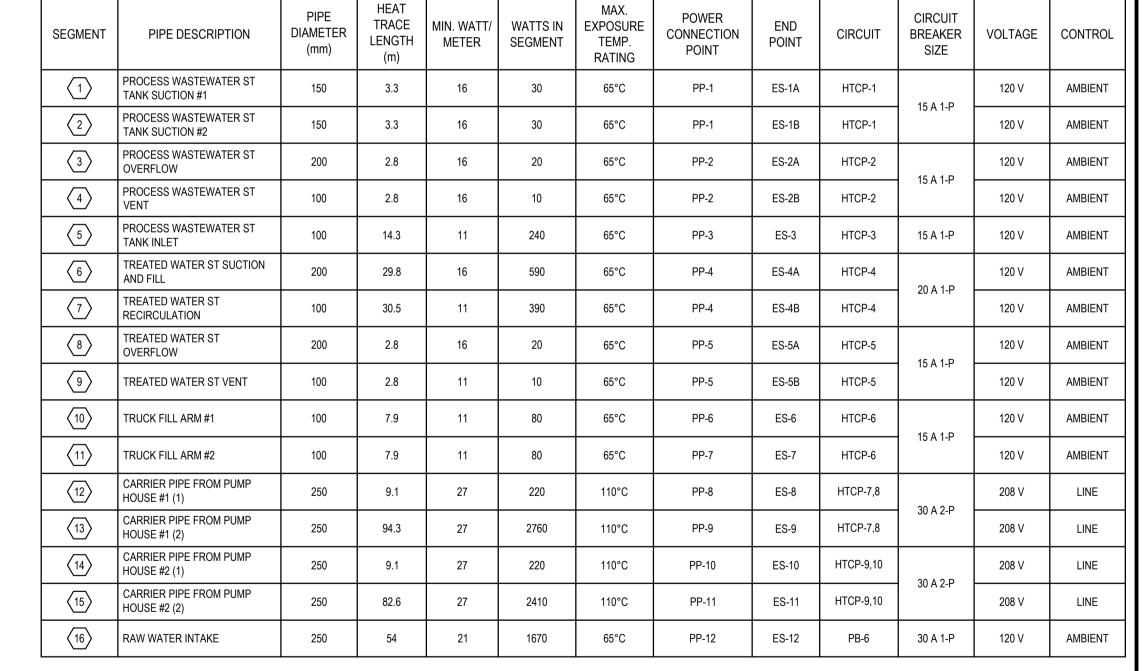
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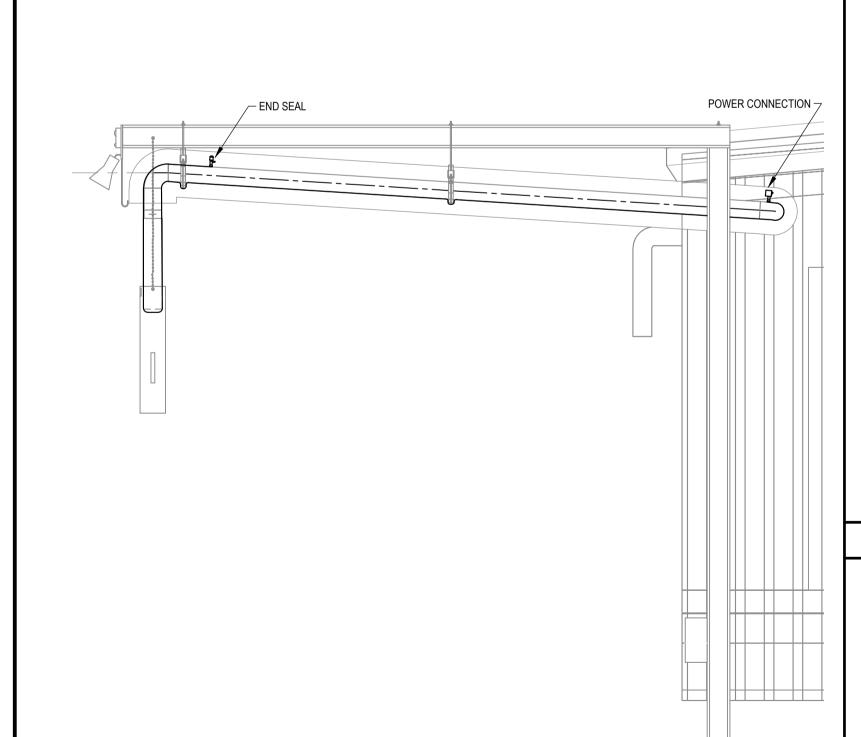
PLAN

**VENTILATION POWER** 







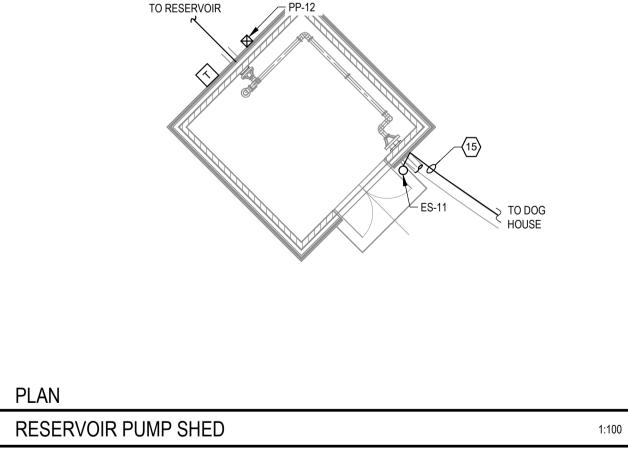


TRUCK FILL #1 (TRUCK FILL #2 SIMILAR)

**EXISTING GRADE 11.00m** 

PLAN

EXISTING RESERVOIR PUMP SHED



TO DOG

1:100

LEGEND:

☑ POWER CONNECTION

O END SEAL

T AMBIENT SENSING THERMOSTAT

T) LINE SENSING THERMOSTAT

**GENERAL NOTES:** 

INSTALL HEAT TRACING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

2. COORDINATE INSTALLATION OF HEAT TRACING WITH MECHANICAL AND THERMAL INSULATION CONTRACTORS.

**ELECTRICAL HEAT TRACE PLAN AND SECTIONS** 

CAM

STWD

CC

**AS SHOWN** 

WATER TREATMENT

FACILITY AND

RAW WATER STORAGE

ARVIAT, NU

2017.AUG.30 2017.JUL.11

OTT-00236239-A0

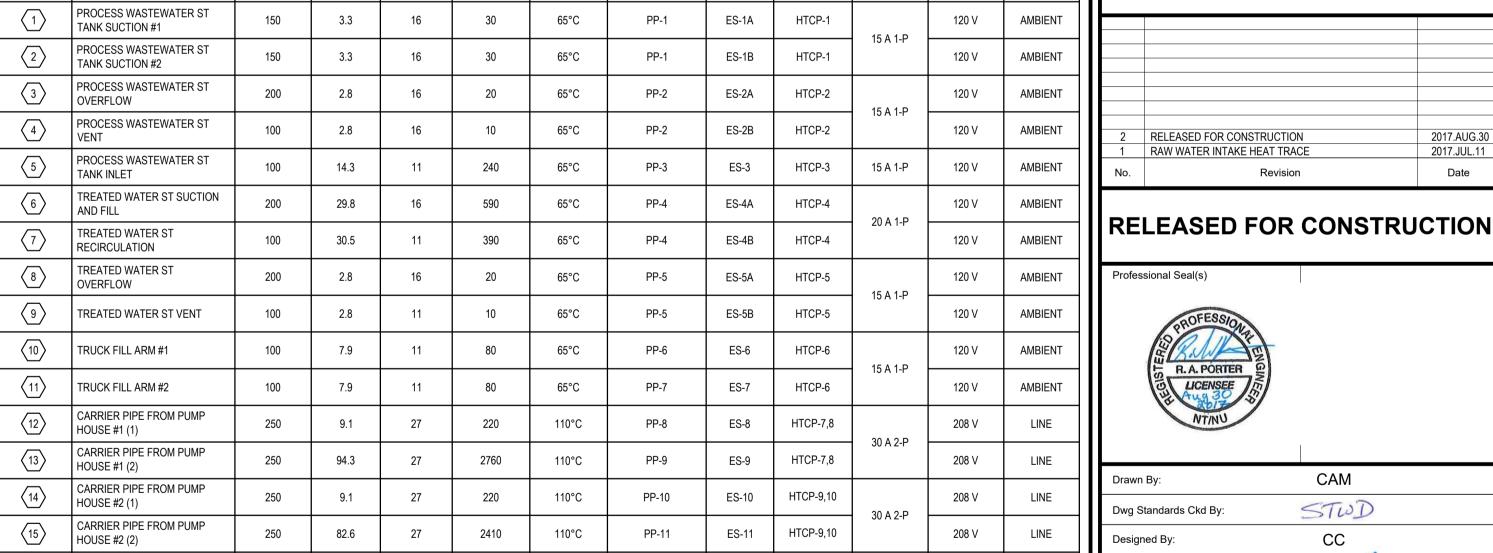
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RAW WATER INTAKE HEAT TRACE

Professional Seal(s)

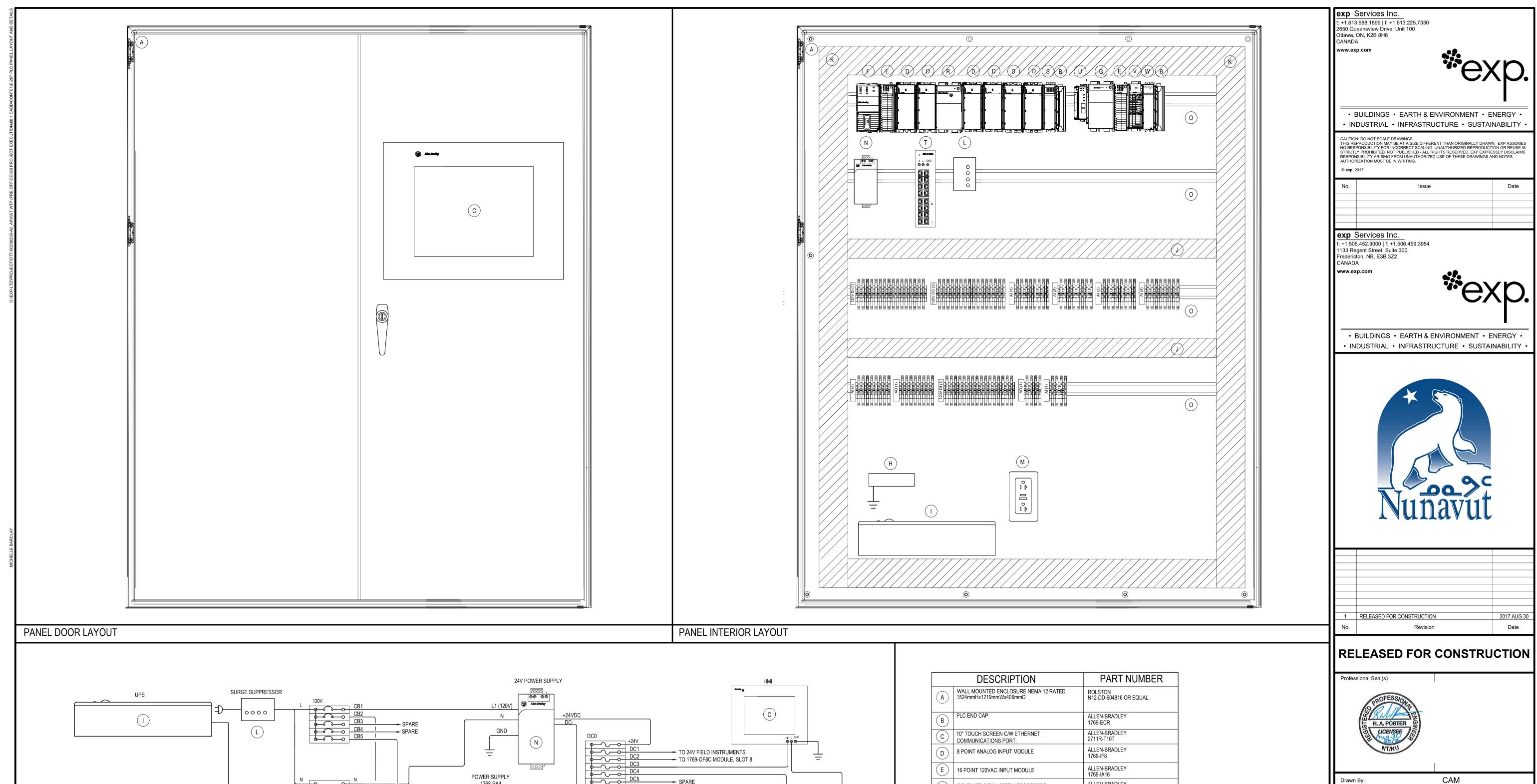
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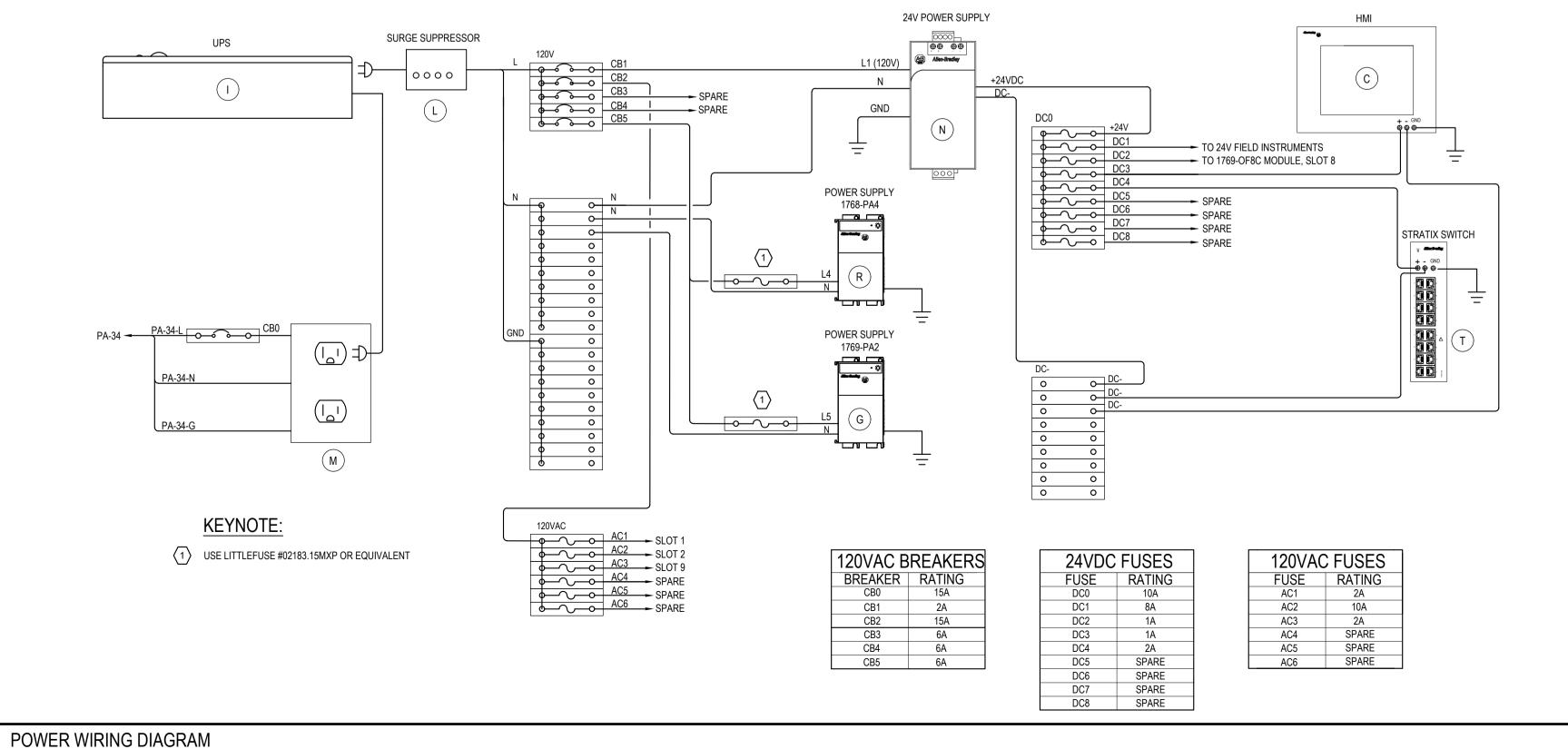
Design Checked By:

E-206



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	DESCRIPTION	PART NUMBER
	WALL MOUNTED ENCLOSURE NEMA 12 RATED 1524mmHx1219mmWx406mmD	ROLSTON N12-DD-604816 OR EQUAL
B	PLC END CAP	ALLEN-BRADLEY 1769-ECR
( ( , )	10" TOUCH SCREEN C/W ETHERNET COMMUNICATIONS PORT.	ALLEN-BRADLEY 2711R-T10T
D {	B POINT ANALOG INPUT MODULE	ALLEN-BRADLEY 1769-IF8
E	16 POINT 120VAC INPUT MODULE	ALLEN-BRADLEY 1769-IA16
F	COMPACTLOGIX L33ERM PROCESSOR	ALLEN-BRADLEY 1768-L33ERM
G	1769-PA2 POWER SUPPLY	ALLEN-BRADLEY 1769-PA2
H	GROUND BAR	
( 1 )	BACK-UP UPS I500VA, 120VAC	EATON 5P 1500VA OR EQUAL
$\overline{}$	2" x 2" WIRING DUCT.	THOMAS&BETTS TY2X2NPG6 OR EQUAL
<u>К</u> 3	" x 2" WIRING DUCT.	THOMAS&BETTS TY3X2NPG6 OR EQUAL
L S	SURGE SUPPRESSOR	LEVITON S-1020-DIN
M 1	20V AC 20A SURGE SUPPRESION RECEPTACLE	HUBBELL HBL526OIS OR EQUAL
N 2	240W 24VDC POWER SUPPLY	ALLEN-BRADLEY 1606-XLS240E OR EQUAL
0	35mm x 7.5mm DIN RAIL	
	FUSIBLE TERMINAL BLOCKS C/W BLOWN FUSE NDICATING LED	PHOENIX CONTACT UK5-HESI OR EQUAL
Q   1	UNIVERSAL TERMINAL BLOCKS	PHOENIX CONTACT UK-3N OR EQUAL
R	COMPACTLOGIX POWER SUPPLY	ALLEN BRADLEY 1768-PA4
(S) {	3 POINT ANALOG OUTPUT MODULE	ALLEN BRADLEY 1769-OF8C
	16-PORT UNMANAGED ETHERNET SWITCH DIN RAIL MOUNTED	ALLEN-BRADLEY STRATIX 2000
U	ETHERNET I/O MODULE	ALLEN-BRADLEY 1769-AENT
V	SOLATED ANALOG OUTPUT MODULE	ALLEN-BRADLEY 1769-OF4CI
(W) I	SOLATED ANALOG INPUT MODULE	ALLEN-BRADLEY 1769-IF4I

	Dwg. Title
	PLC PANEL DE
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ature Killault	Project No.

Drawn By:

Dwg Standards Ckd By:

Design Checked By:

L LAYOUT AND **ETAILS** 

STWD

PGH

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WATER TREATMENT

**FACILITY AND** 

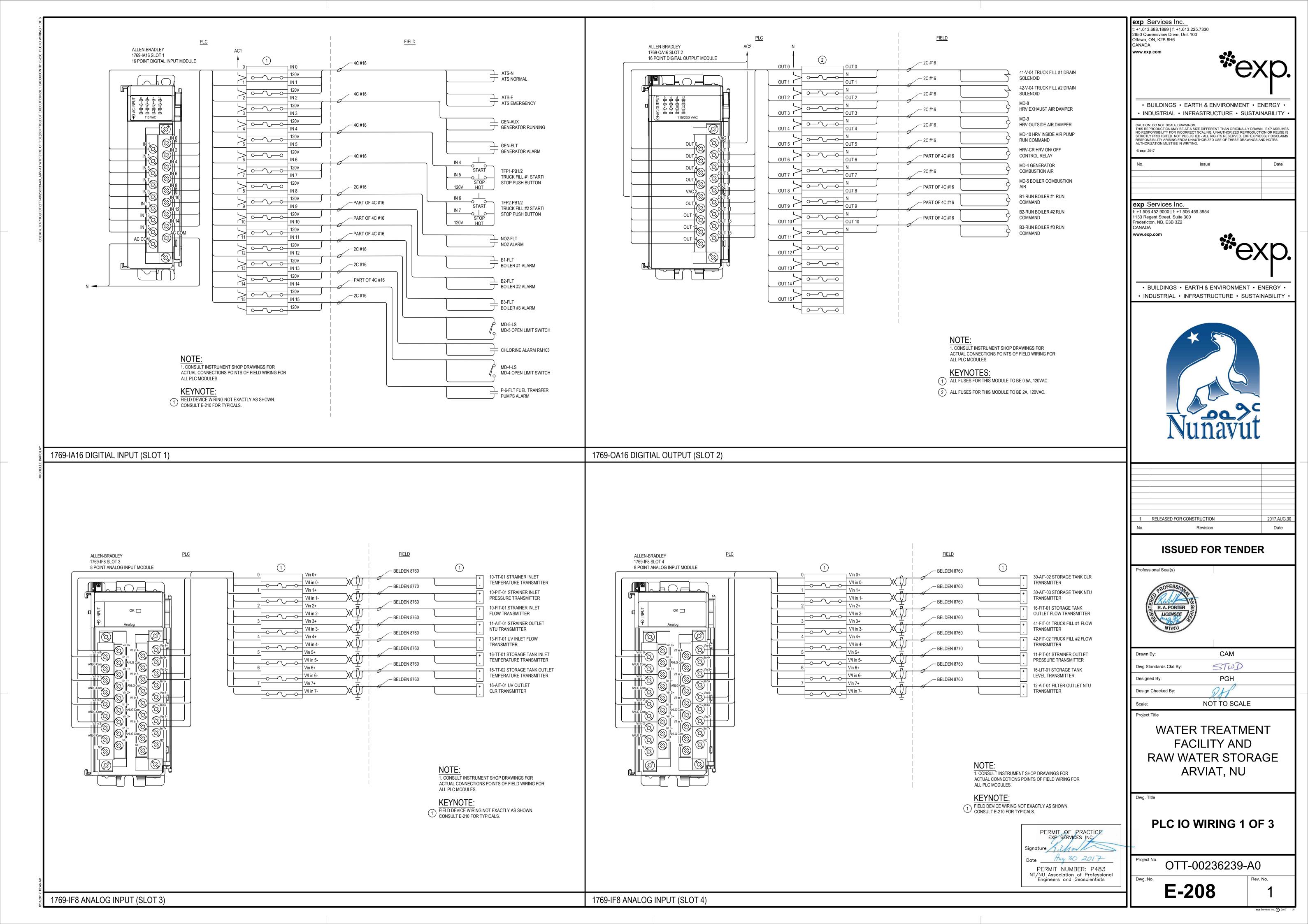
RAW WATER STORAGE

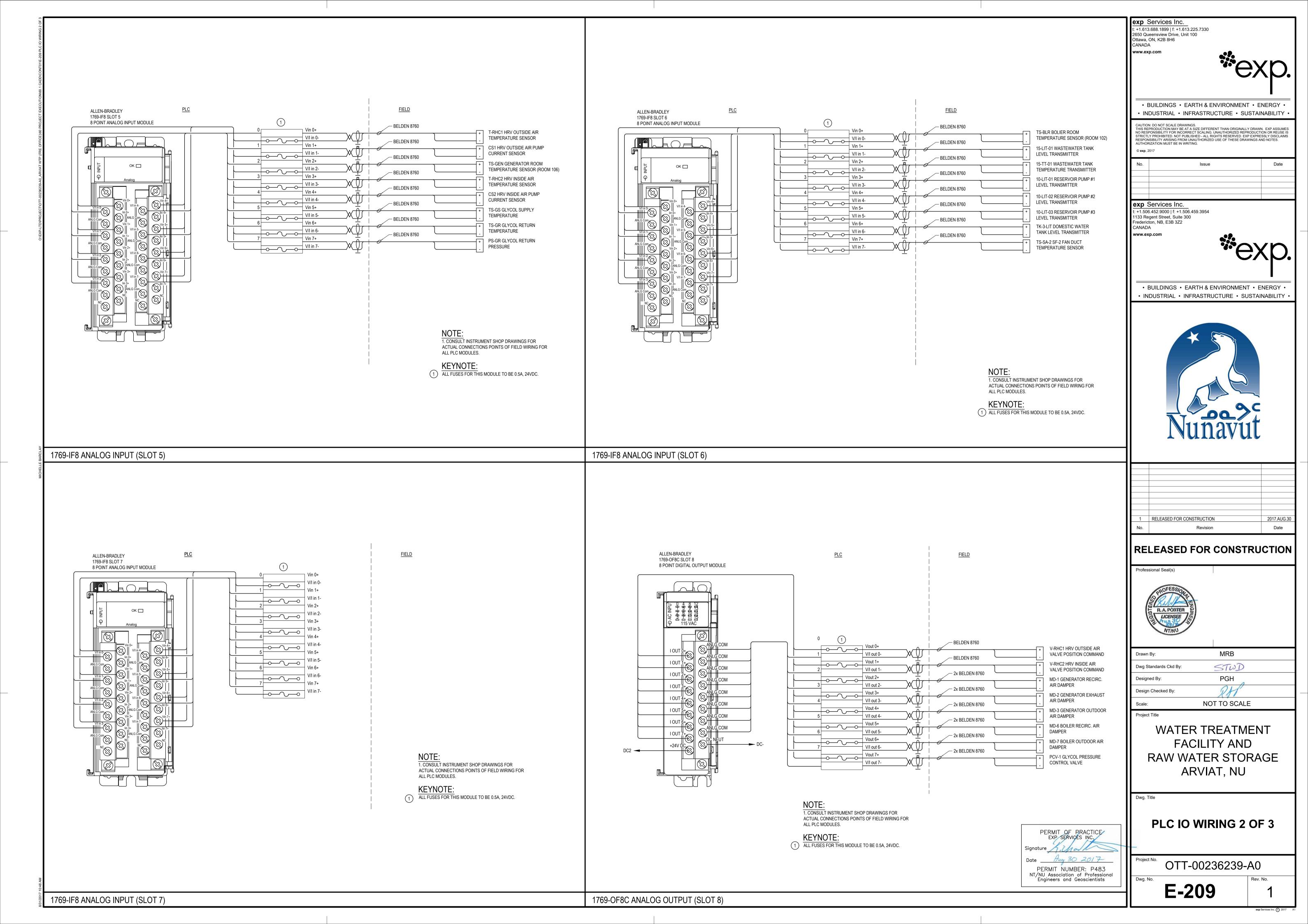
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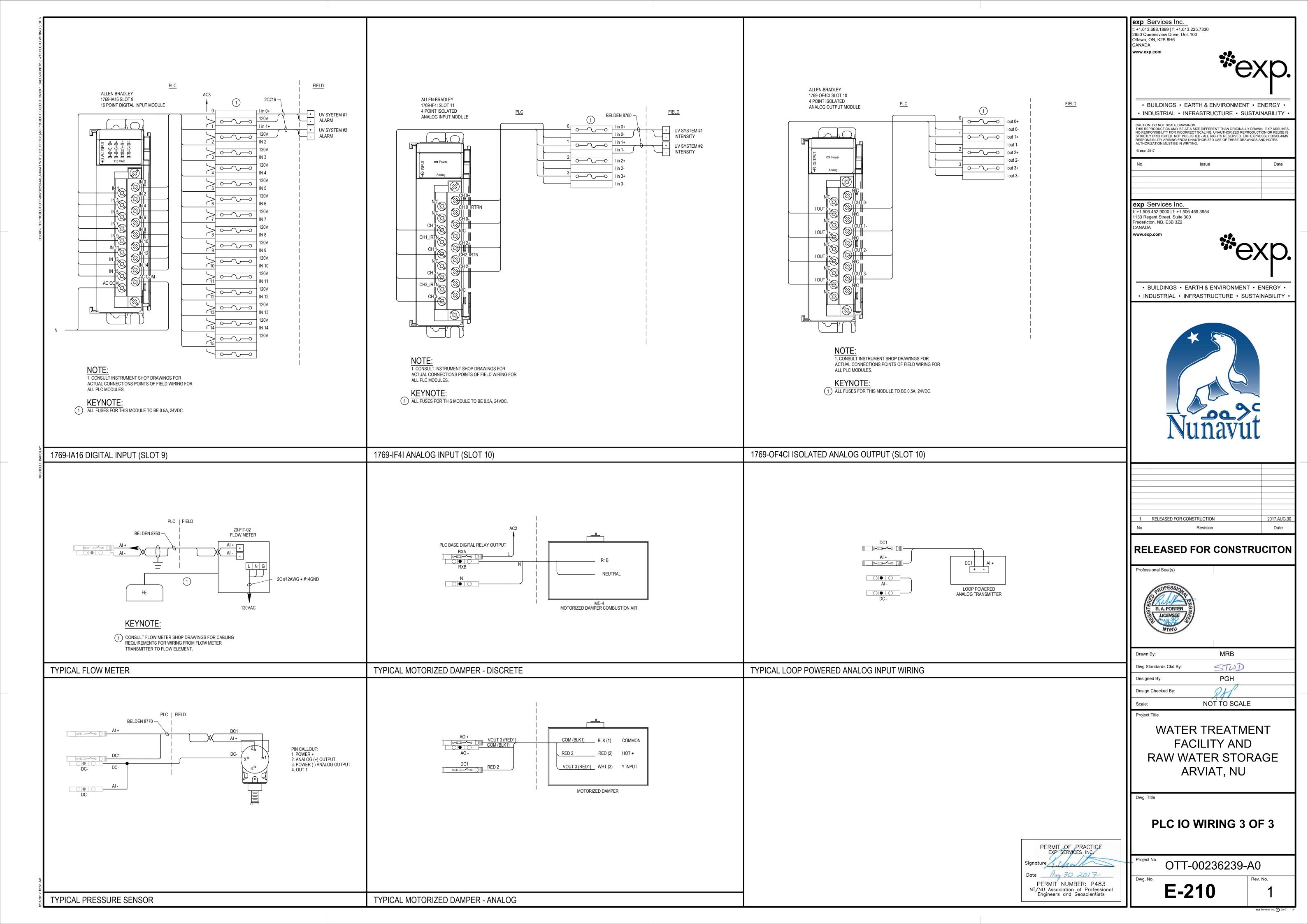
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E-207

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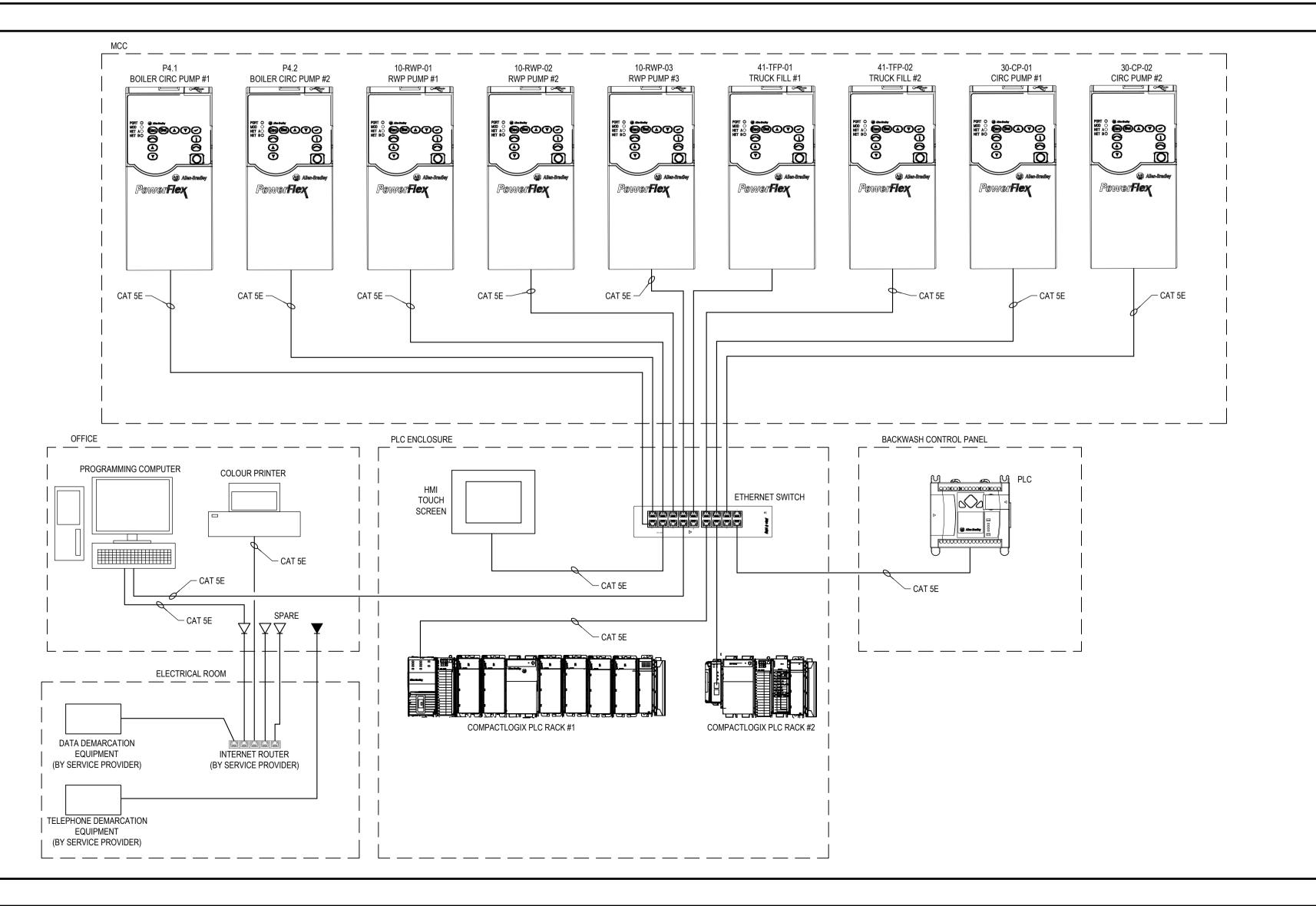
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I:1/0	ATS-N-AUX	DI	ATS STATUS NORMAL	
l:1/1	ATS-E-AUX	DI	ATS STATUS EMERGENCY	
I:1/2	GEN-AUX	DI	GENERATOR STATUS RUNNING	
I:1/3	GEN-FLT	DI	GENERATOR STATUS FAULT	
I:1/4	TFP1-PB1	DI	TRUCK FILL #1 START PUSH BUTTON	
I:1/5	TFP1-PB2	DI	TRUCK FILL #1 STOP PUSH BUTTON	
I:1/6	TFP2-PB1	DI	TRUCK FILL #2 START PUSH BUTTON	
l:1/7	TFP2-PB2	DI	TRUCK FILL #2 STOP PUSH BUTTON	
I:1/8	NO2-FLT	DI	NO2 ALARM (ROOM 106)	
I:1/9	B1-FLT	DI	BOILER #1 ALARM	
I:1/10	B2-FLT	DI	BOILER #2 ALARM	
l:1/11	B3-FLT	DI	BOILER #3 ALARM	
l:1/12	MD-5-L5	DI	MD-5 OPEN LIMIT SWITCH	
I:1/13	CL2-FLT	DI	CHLORINE ALARM (ROOM 103)	
l:1/14	MD-4-LS	DI	MD-4 OPEN LIMIT SWITCH	
l:1/15	P-6-FLT	DI	FUEL TRANSFER PUMPS ALARM	
O:2/0	41-V-04	DO	TRUCK FILL #1 DRAIN SOLENOID VALVE	
O:2/1	42-V-04	DO	TRUCK FILL #2 DRAIN SOLENOID VALVE	
O:2/2	MD-8	DO	HRV EXHAUST AIR DAMPER	
O:2/3	MD-9	DO	HRV OUTSIDE AIR DAMPER	
O:2/4	HRV-P1-RUN	DO	HRV INSIDE AIR PUMP RUN COMMAND	
O:2/5	HRV-CR	DO	HRV ON/ OFF CONTROL RELAY	
O:2/6	MD-4	DO	GENERATOR COMBUSTION AIR	
O:2/7	MD-5	DO	BOILER COMBUSTION AIR	
O:2/8	B1-RUN	DO	BOILER #1 RUN COMMAND	
O:2/9	B2-RUN	DO	BOILER #2 RUN COMMAND	
O:2/10	B3-RUN	DO	BOILER #3 RUN COMMAND	
O:2/11	HRV-P2-RUN	DO	HRV OUTSIDE AIR PUMP RUN COMMAND	
O:2/12		DO		
O:2/13		DO		
O:2/14		DO		
O:2/15		DO		
1:3.0	10-TT-01	Al	STRAINER INLET TEMPERATURE TRANSMITTER	
I:3.1	10-PIT-01	Al	STRAINER INLET PRESSURE TRANSMITTER	
1:3.2	10-FIT-01	Al	STRAINER INLET FLOW TRANSMITTER	
1:3.3	11-AIT-01	Al	STRAINER OUTLET / FILTER INLET NTU TRANSMITTER	
1:3.4	13-FIT-01	Al	UV INLET FLOW TRANSMITTER	
1:3.5	16-TT-01	Al	STORAGE TANK INLET TEMPERATURE TRANSMITTER	
1:3.6	16-TT-02	Al	STORAGE TANK OUTLET TEMPERATURE TRANSMITTER	
1:3.7	16-AIT-01	Al	UV OUTLET CLR TRANSMITTER	

PLC ADDRESS	TAG	IO TYPE	DESCRIPTION
1:4.0	30-AIT-02	Al	STORAGE TANK OUTLET CLR TRANSMITTER
1:4.1	30-AIT-03	Al	STORAGE TANK OUTLET NTU TRANSMITTER
1:4.2	16-FIT-01	Al	STORAGE TANK OUTLET FLOW TRANSMITTER
1:4.3	41-FIT-01	Al	TRUCK FILL #1 FLOW TRANSMITTER
1:4.4	42-FIT-02	Al	TRUCK FILL #2 FLOW TRANSMITTER
1:4.5	11-PIT-01	Al	STRAINER OUTLET PRESSURE TRANSMITTER
1:4.6	16-LIT-01	Al	STORAGE TANK LEVEL TRANSMITTER
1:4.7	12-AIT-01	Al	FILTER OUTLET NTU TRANSMITTER
1:5.0	TS-RHC1	Al	HRV OUTSIDE AIR TEMPERATURE SENSOR
I:5.1	CS1	Al	HRV OUTSIDE AIR PUMP CURRENT SENSOR
1:5.2	TS-GEN	Al	GENERATOR ROOM TEMPERATURE SENSOR (ROOM 10
1:5.3	TS-RHC2	Al	HRV INSIDE AIR TEMPERATURE SENSOR
1:5.4	CS2	Al	HRV INSIDE AIR PUMP CURRENT SENSOR
1:5.5	TS-GS	Al	GLYCOL SUPPLY TEMP
1:5.6	TS-GR	Al	GLYCOL RETURN TEMP
1:5.7	PS-GR	Al	GLYCOL RETURN PRESSURE
1:6.0	TS-BLR	Al	BOILER ROOM TEMPERATURE SENSOR (ROOM 102)
1:6.1	15-LIT-01	Al	WASTEWATER TANK LEVEL TRANSMITTER
1:6.2	15-TT-01	Al	WASTEWATER TANK TEMPERATURE TRANSMITTER
1:6.3	10-LIT-01	Al	RESERVOIR PUMP #1 LEVEL TRANSMITTER
1:6.4	10-LIT-02	Al	RESERVOIR PUMP #2 LEVEL TRANSMITTER
1:6.5	10-LIT-03	Al	RESERVOIR PUMP #3 LEVEL TRANSMITTER
1:6.6	TK-3-LIT	Al	DOMESTIC WATER TANK LEVEL TRANSMITTER
1:6.7	TS-SF-2	Al	SF-2 FAN DUCT TEMPERATURE SENSOR
1:7.0		Al	
l:7.1		Al	
1:7.2		Al	
1:7.3		Al	
1:7.4		Al	
I:7.5		Al	
I:7.6		Al	
1:7.7		Al	
O:8.0	V-RHC1	AO	HRV OUTSIDE AIR VALVE POSITION COMMAND
O:8.1	V-RHC2	AO	HRV INSIDE AIR VALVE POSITION COMMAND
O:8.2	MD-1	AO	GENERATOR RECIRC. AIR DAMPER
O:8.3	MD-2	AO	GENERATOR EXHAUST AIR DAMPER
O:8.4	MD-3	AO	GENERATOR OUTDOOR AIR DAMPER
O:8.5	MD-6	AO	BOILER RECIRC. AIR DAMPER
O:8.6	MD-7	AO	BOILER OUTDOOR AIR DAMPER
O:8.7	PCV-1	AO	GLYCOL PRESSURE CONTROL VALVE

PLC ADDRESS	TAG	IO TYPE	DESCRIPTION
1:9/0		DI	
I:9/1		DI	
1:9/2		DI	
1:9/3		DI	
1:9/4		DI	
1:9/5		DI	
1:9/6		DI	
1:9/7		DI	
1:9/8		DI	
1:9/9		DI	
I:9/10		DI	
I:9/11		DI	
1:9/12		DI	
1:9/13		DI	
1:9/14		DI	
1:9/15		DI	
I:10.0		Al	
I:10.1		Al	
I:10.2		Al	
I:10.3		Al	
O:11.0		AO	
O:11.1		AO	
O:11.2		AO	
O:11.3		AO	

PLC I/O LIST

SYSTEM BLOCK DIAGRAM



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Drawn By:	MRB	
Dwg Standards Ckd By:	STWD	
Designed By:	PGH	
Design Checked By:	RAT	
Scale:	NOT TO SCALE	

Project Title

WATER TREATMENT
FACILITY AND
RAW WATER STORAGE
ARVIAT, NU

Dwg. Tit

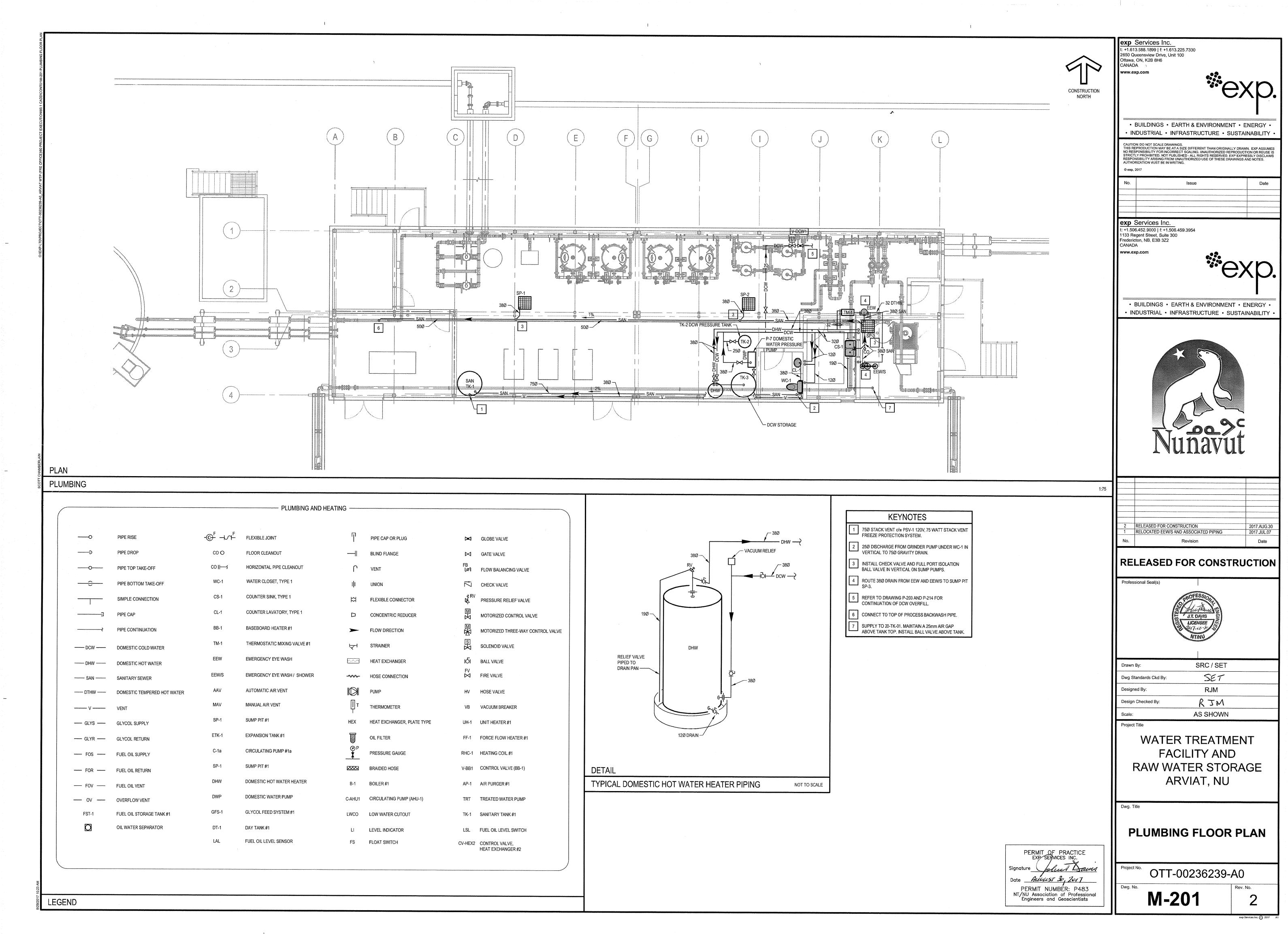
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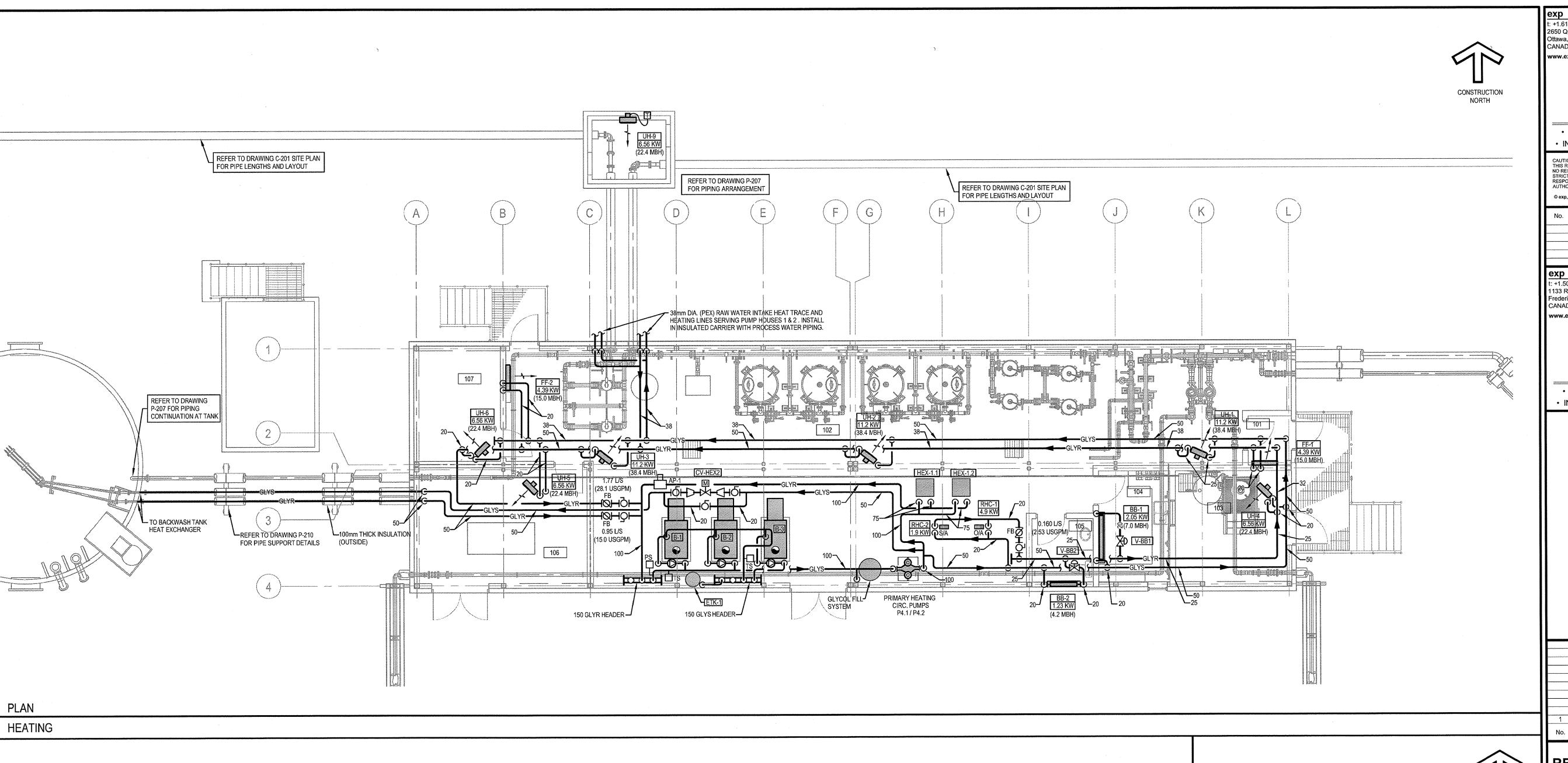
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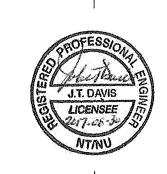
CONSTRUCTION NORTH

PUMP HOUSE #2

NOTE: SIMILAR ARRANGEMENT FOR EXISTING PUMPHOUSE #1 (UH-7A, 7B: 6.56 KW - 22.4 MBH)

PUMP HOUSE #2 - HEATING

PLAN



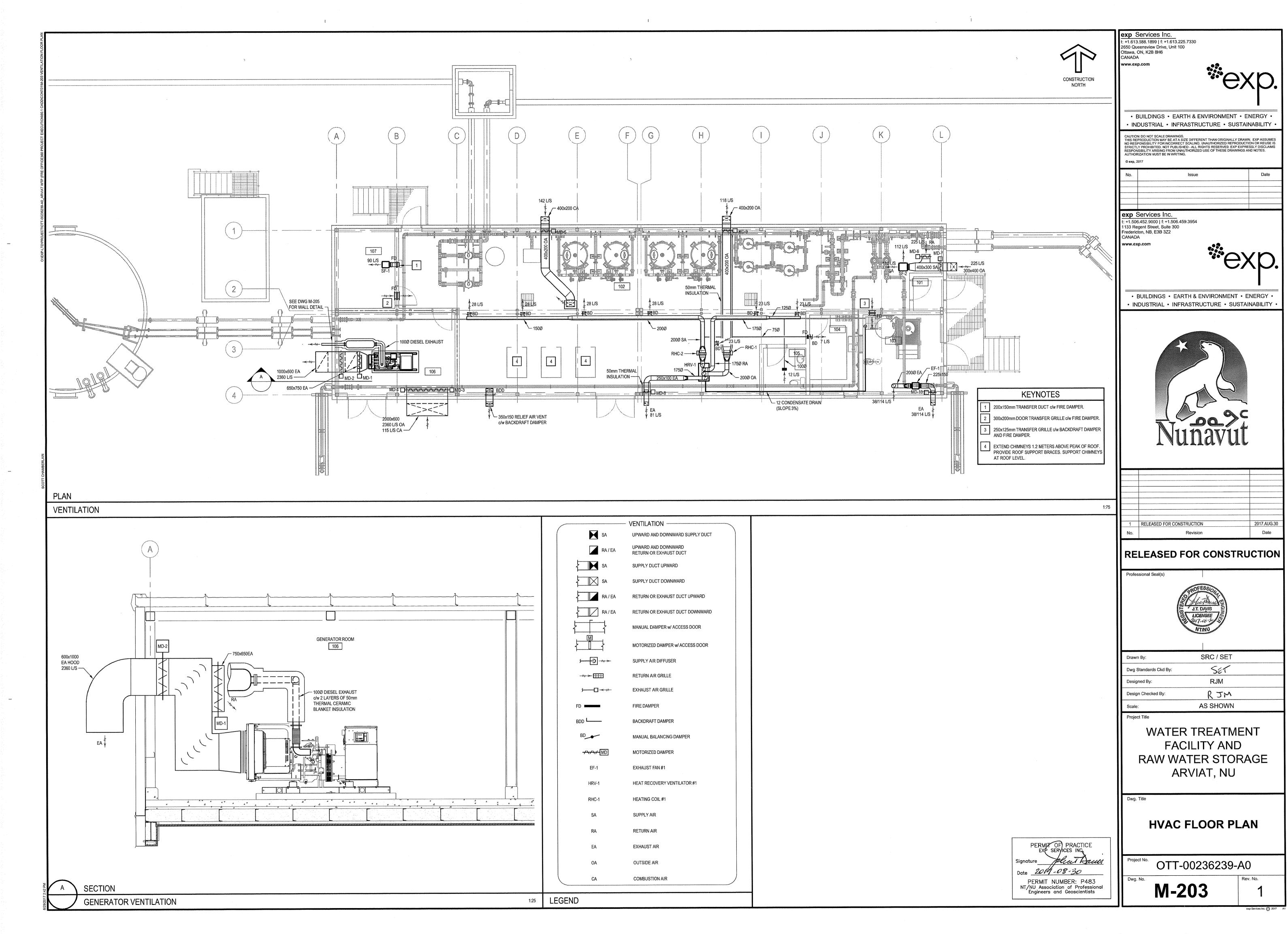
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Dwg Standards Ckd By:	SÉT	
Designed By:	RJM	
Design Checked By:	RJM	
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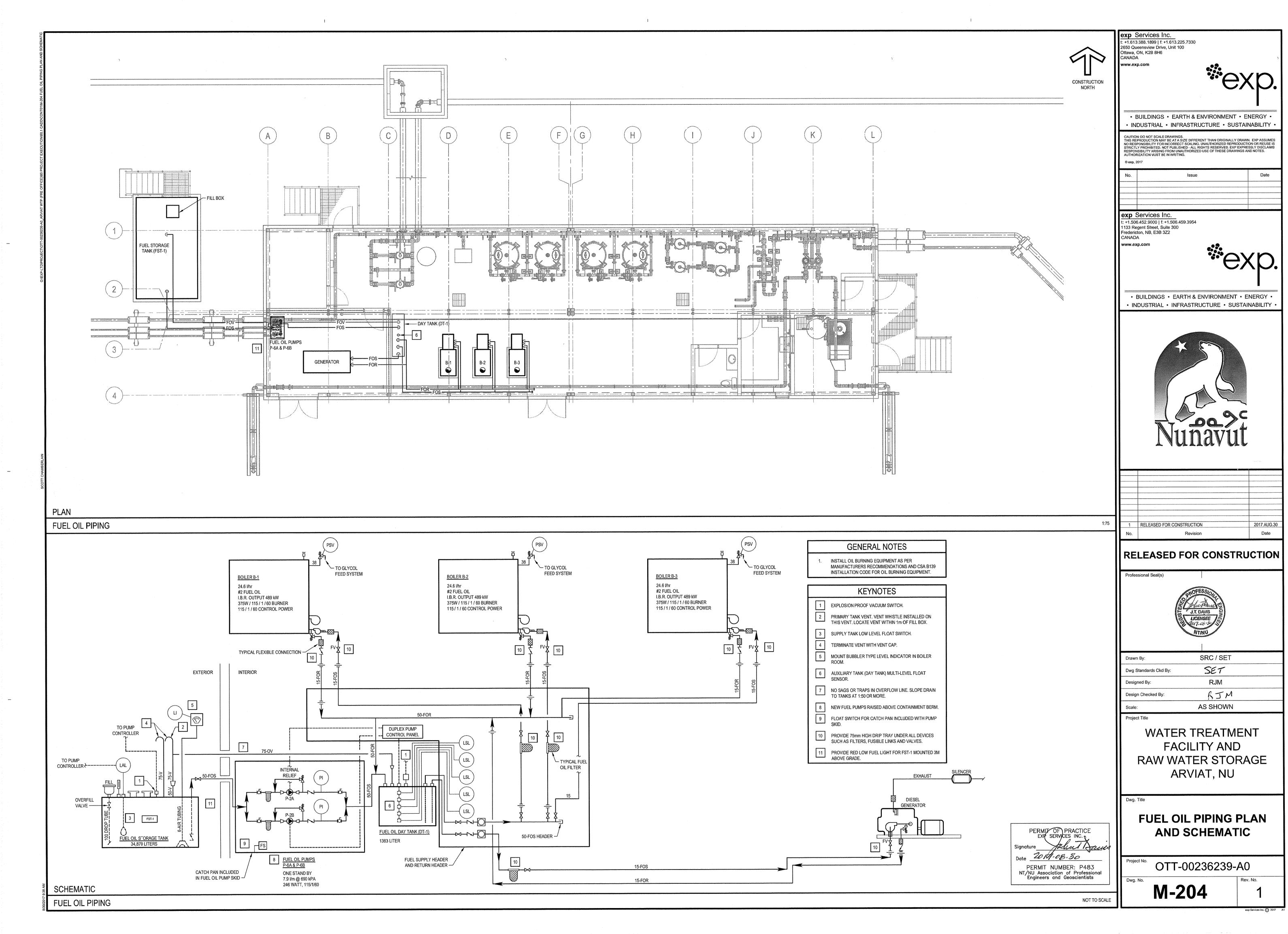
WATER TREATMENT FACILITY AND RAW WATER STORAGE ARVIAT, NU

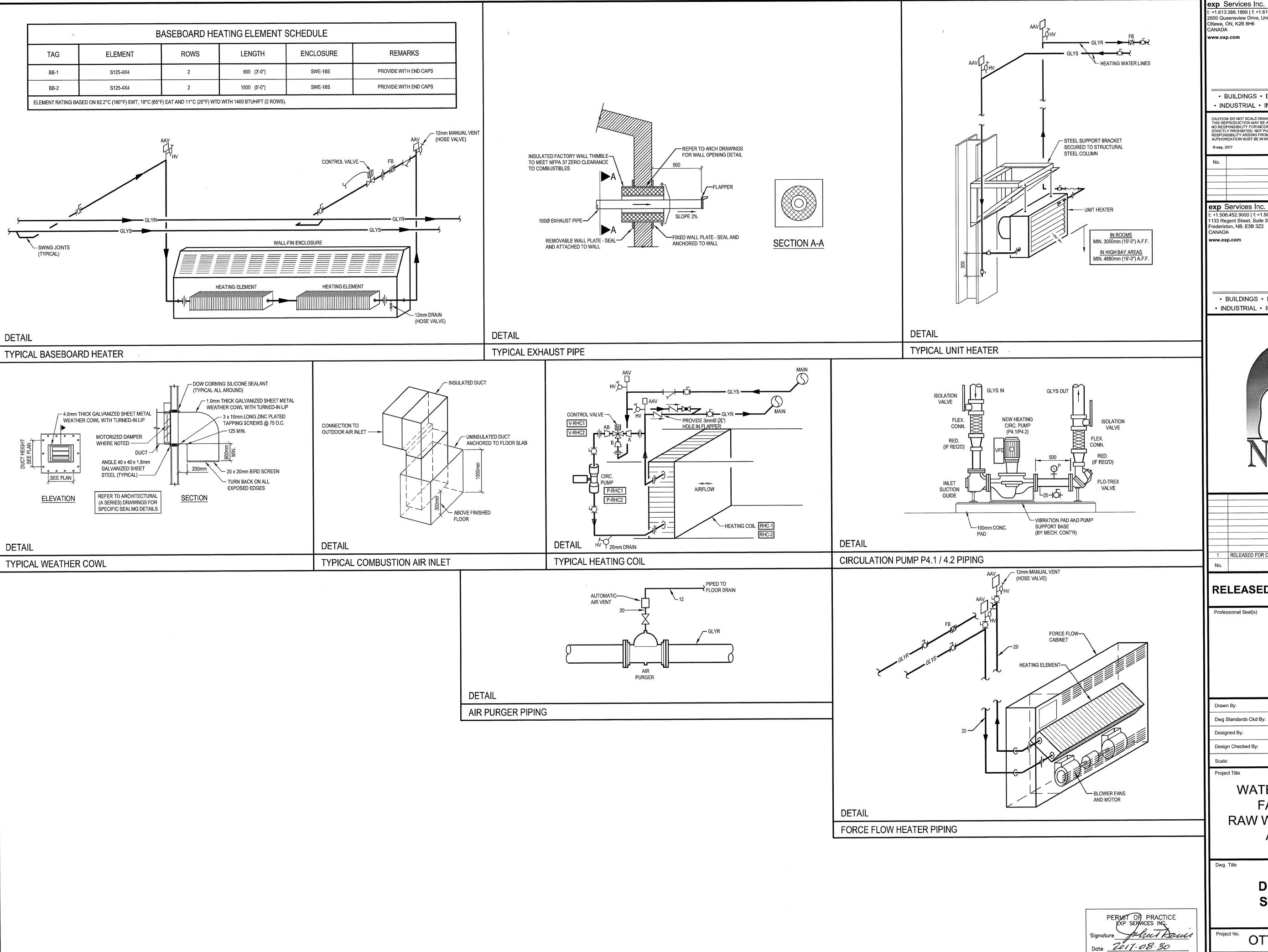
**HEATING FLOOR PLAN** 

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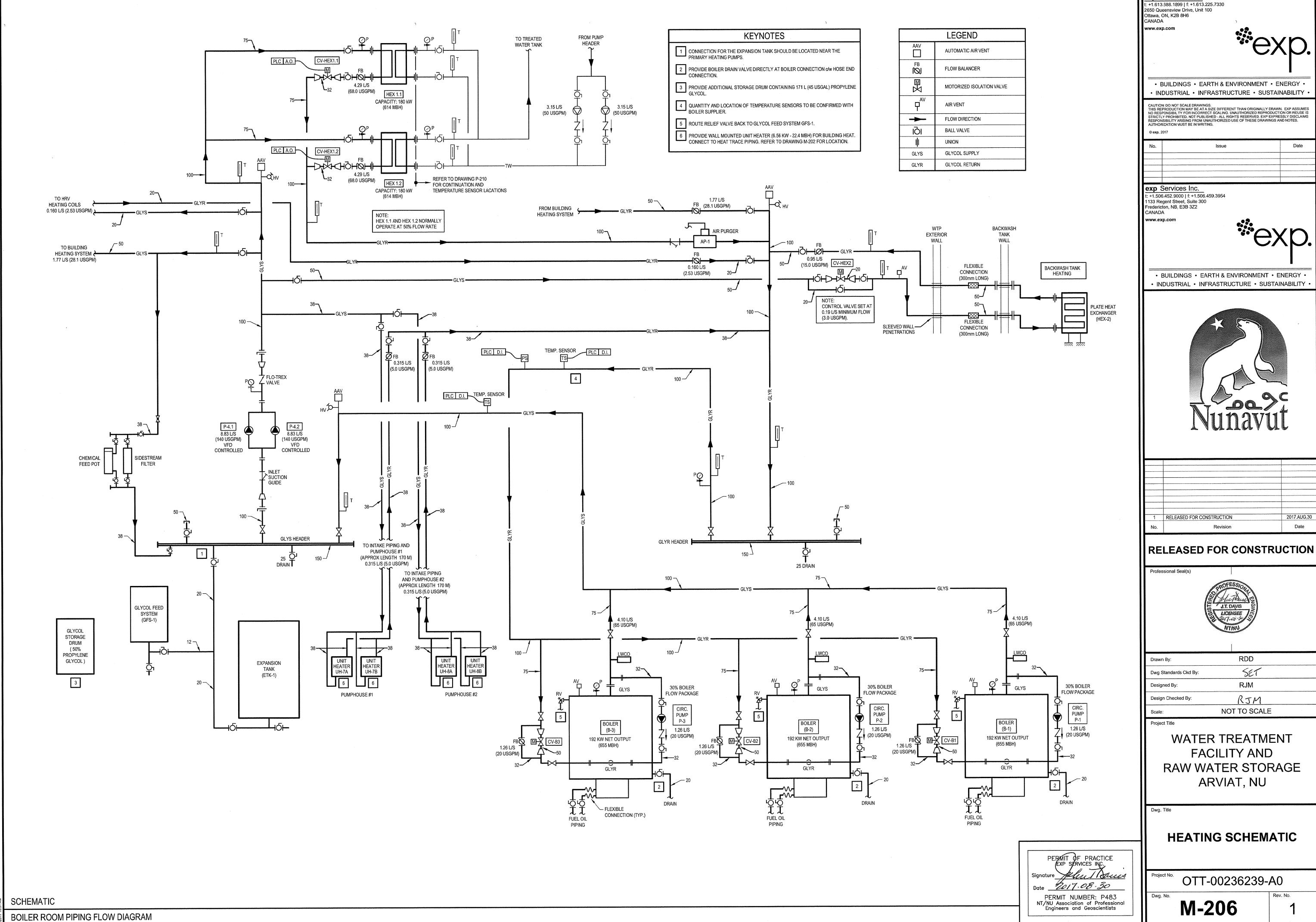
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Dwg Standards Ckd By:	SET	
Designed By:	RJM	
Design Checked By:	RJM	
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WATER TREATMENT FACILITY AND RAW WATER STORAGE ARVIAT, NU

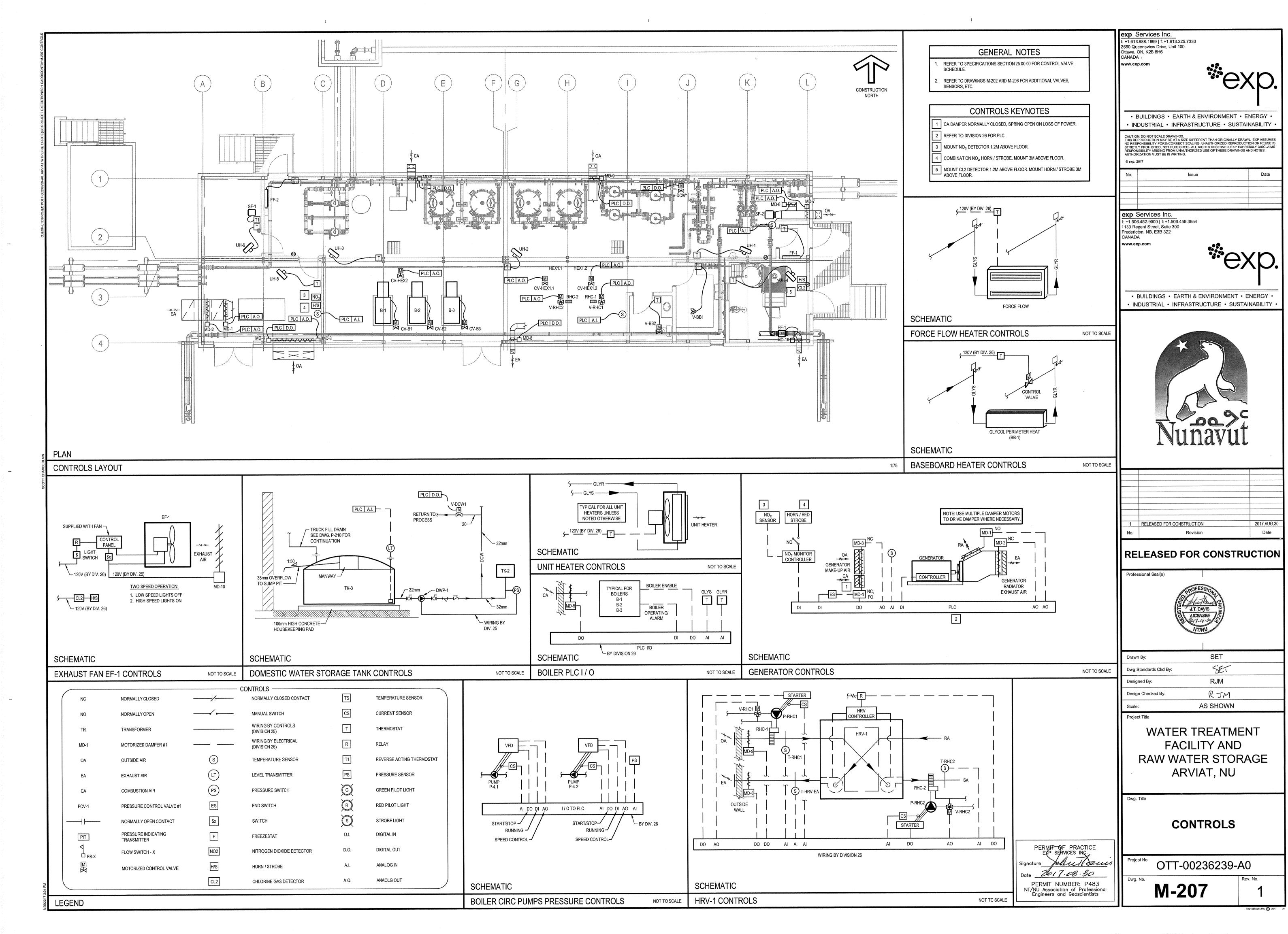
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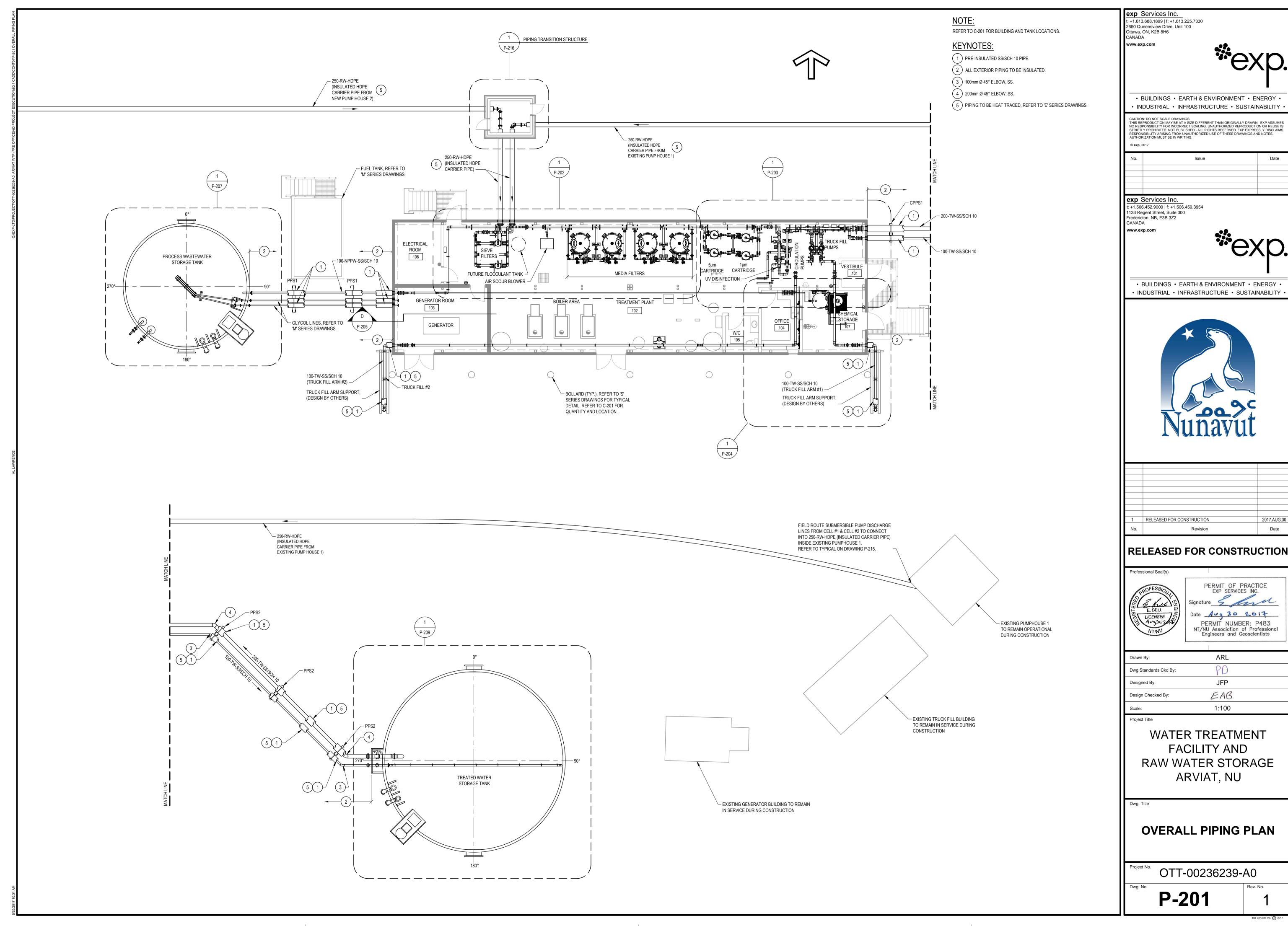
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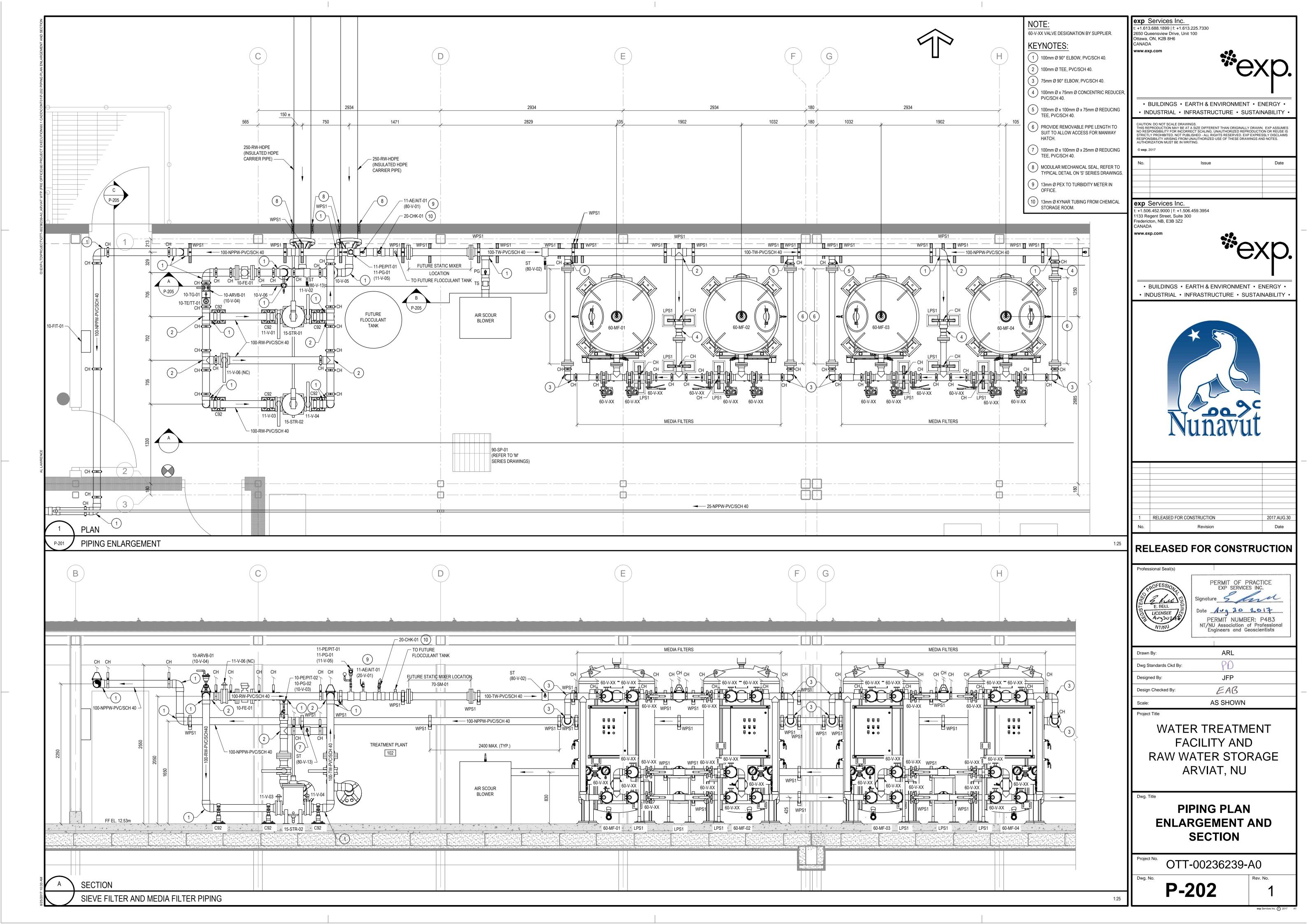
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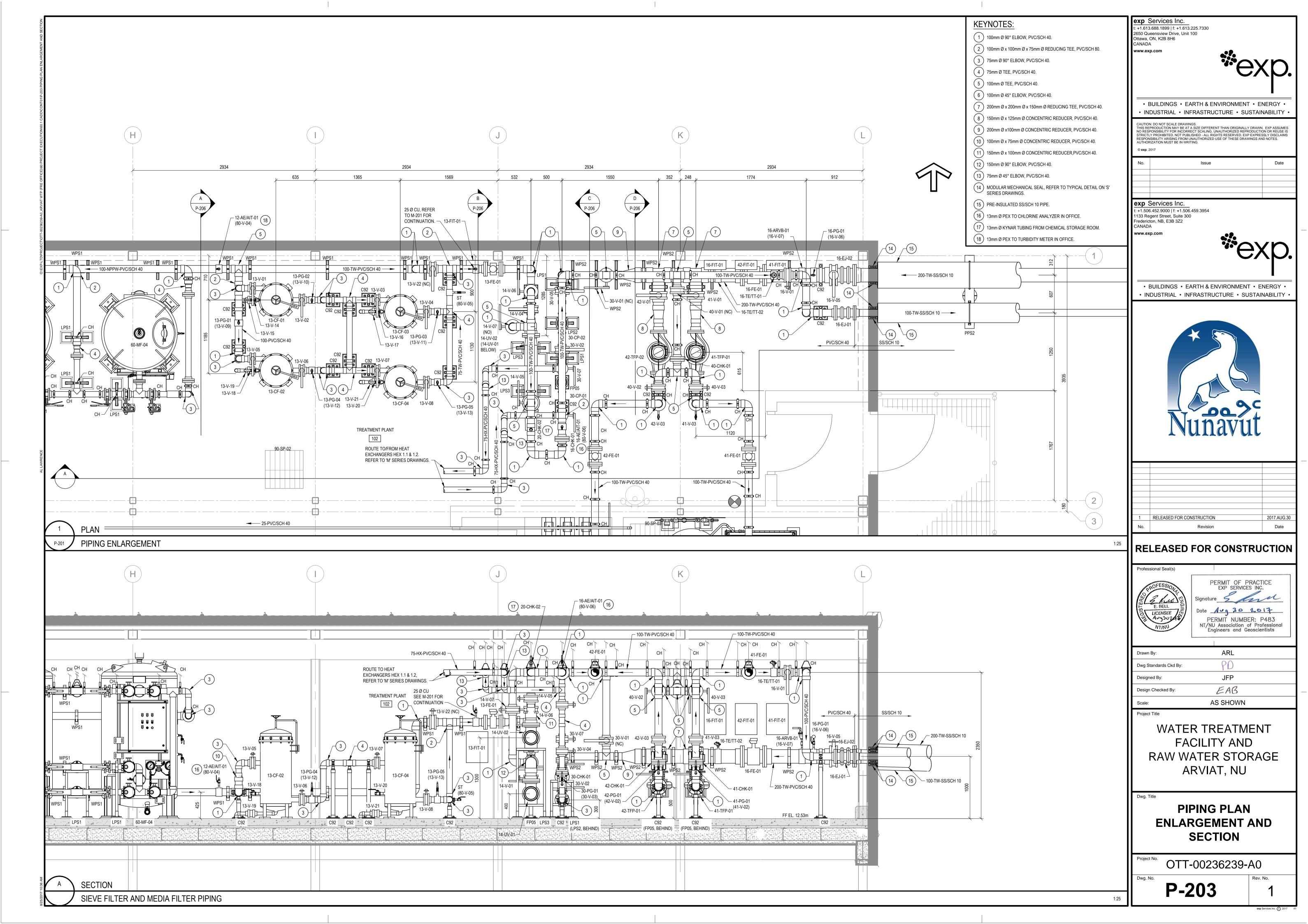


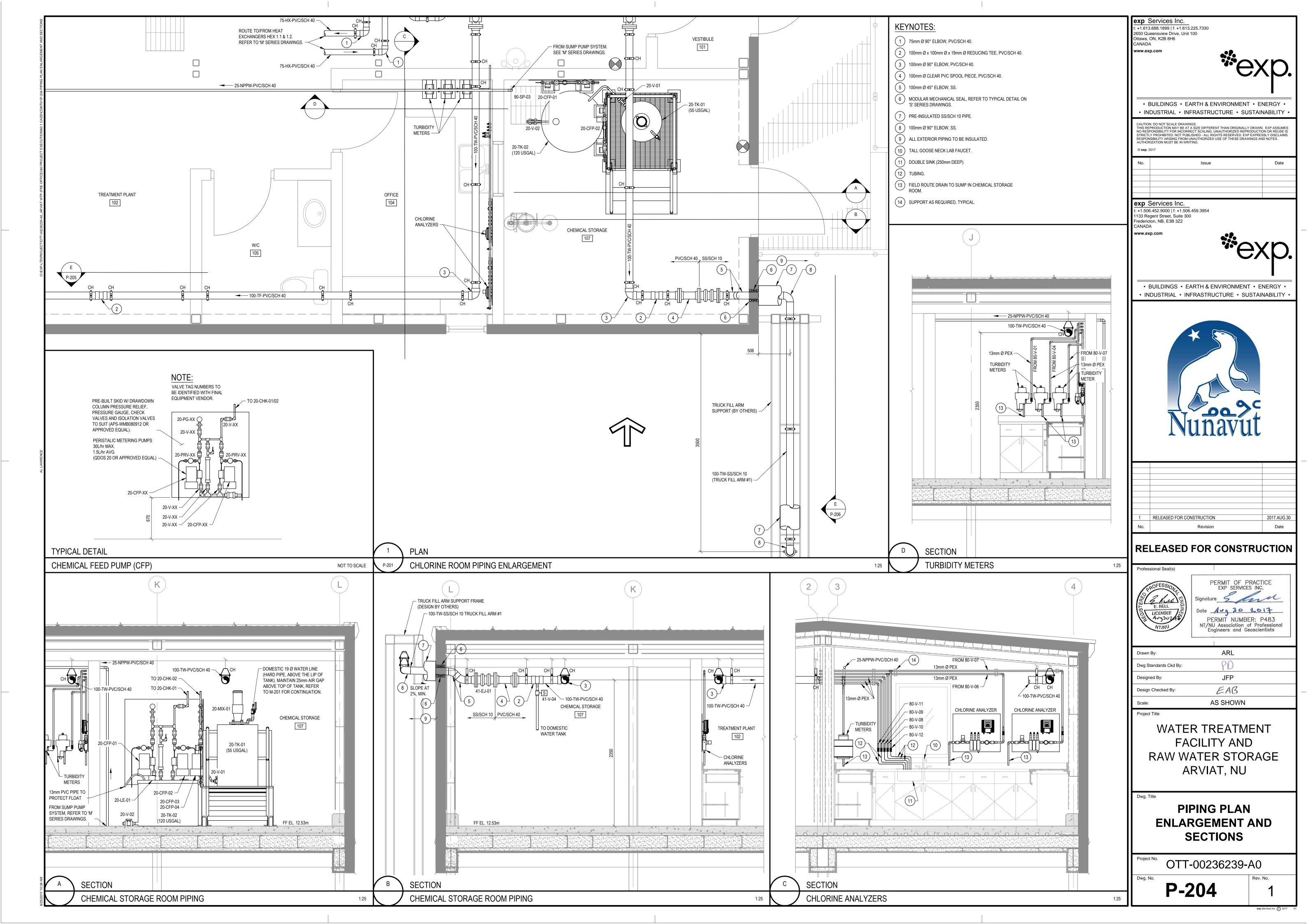


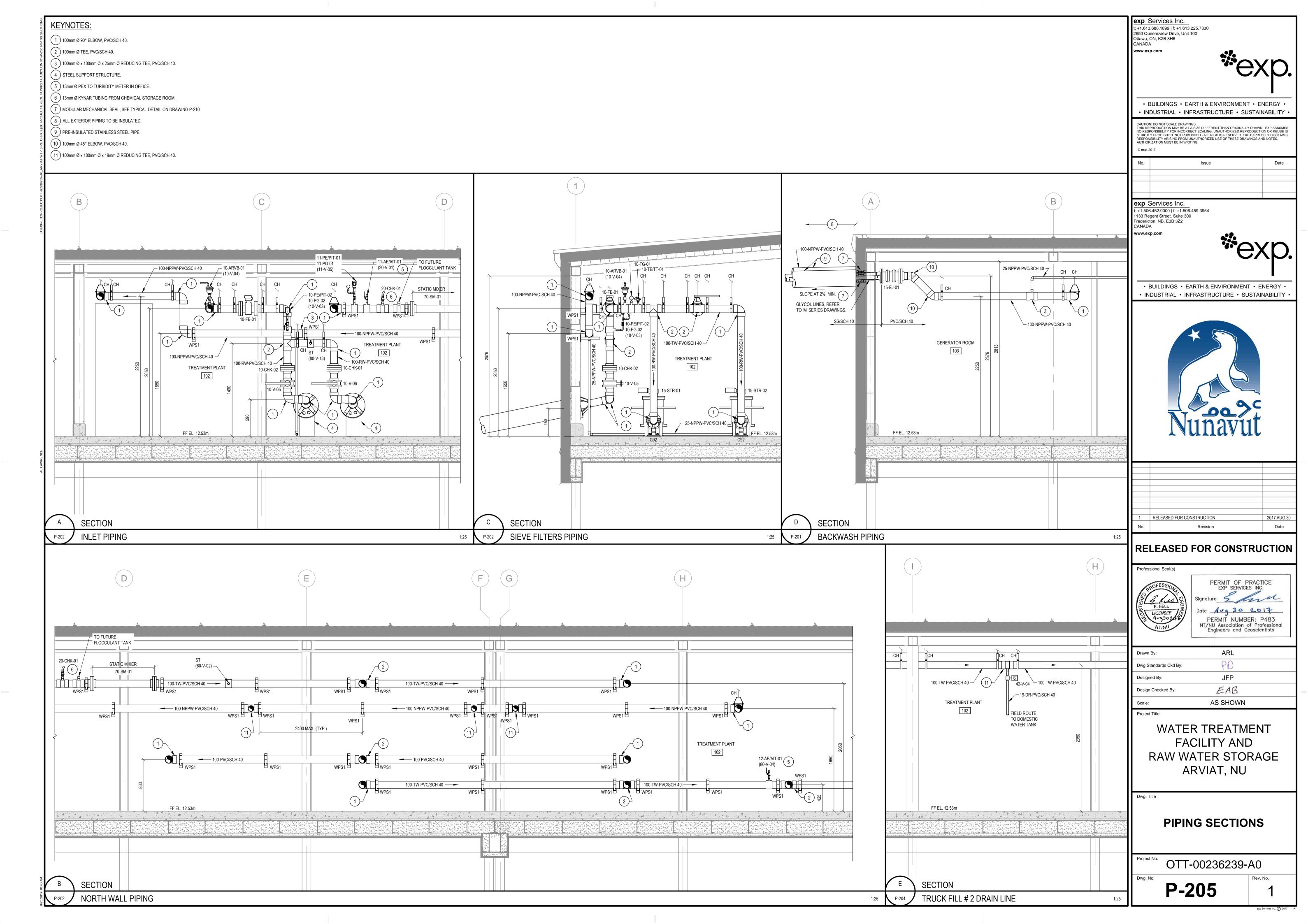


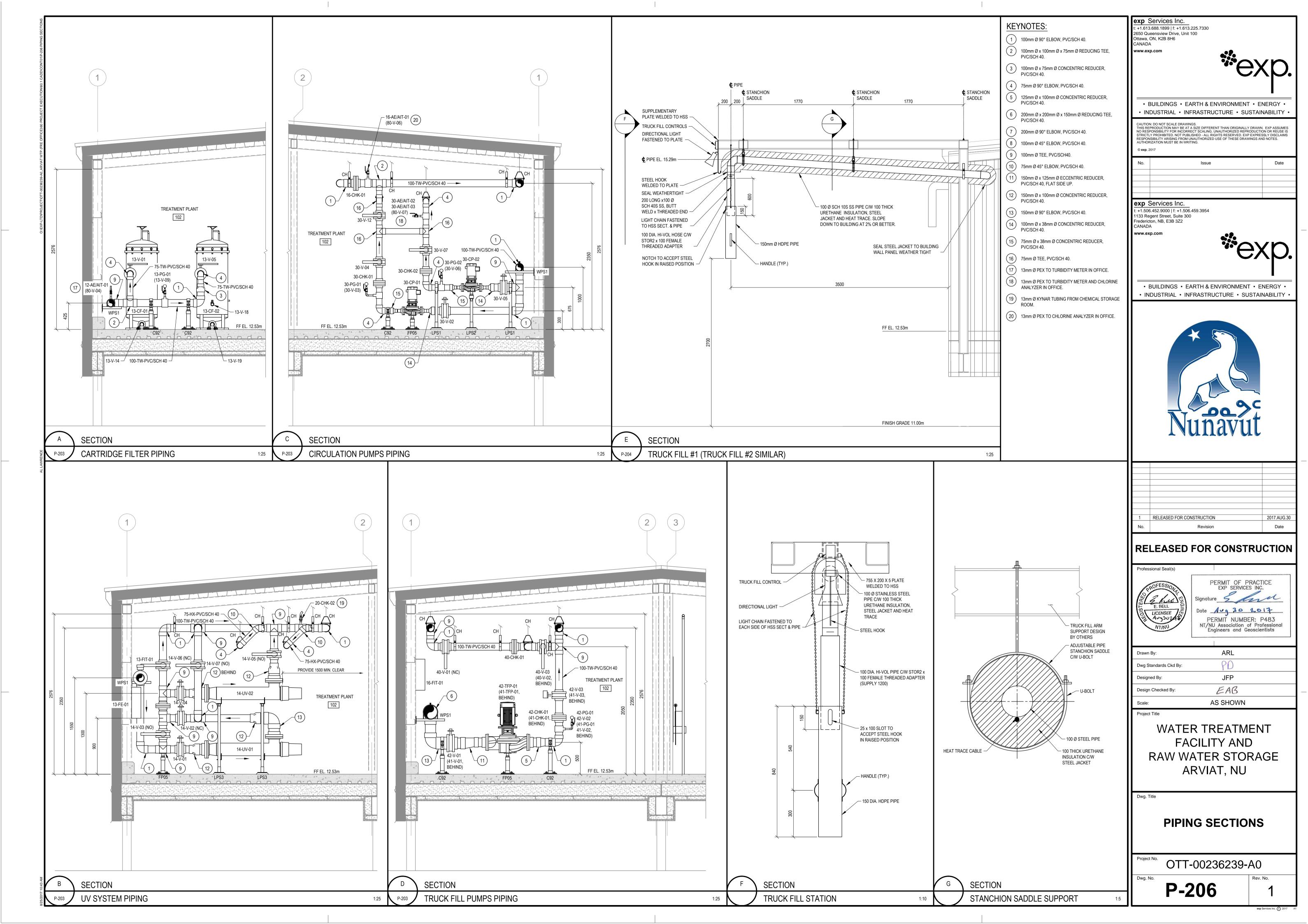


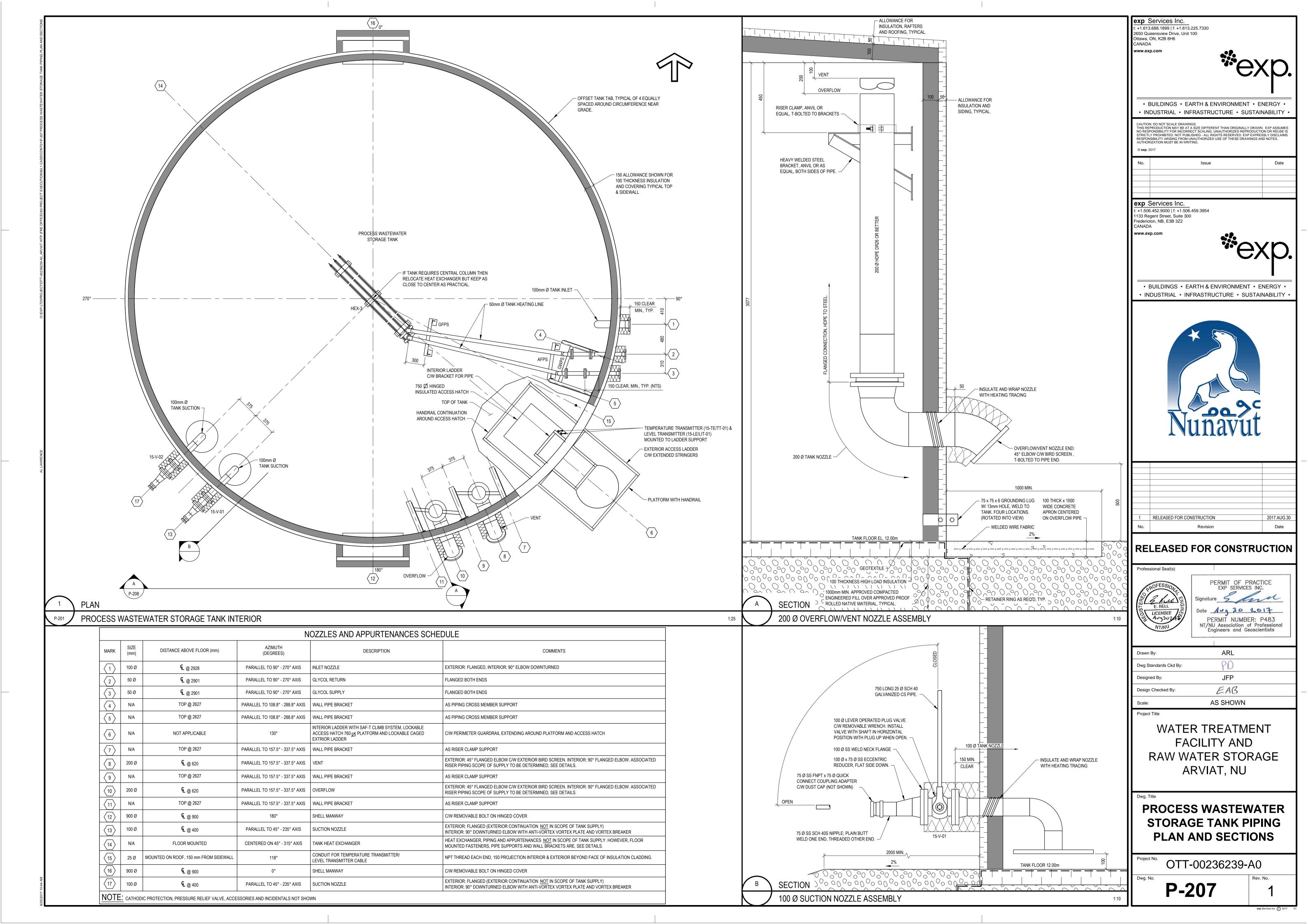


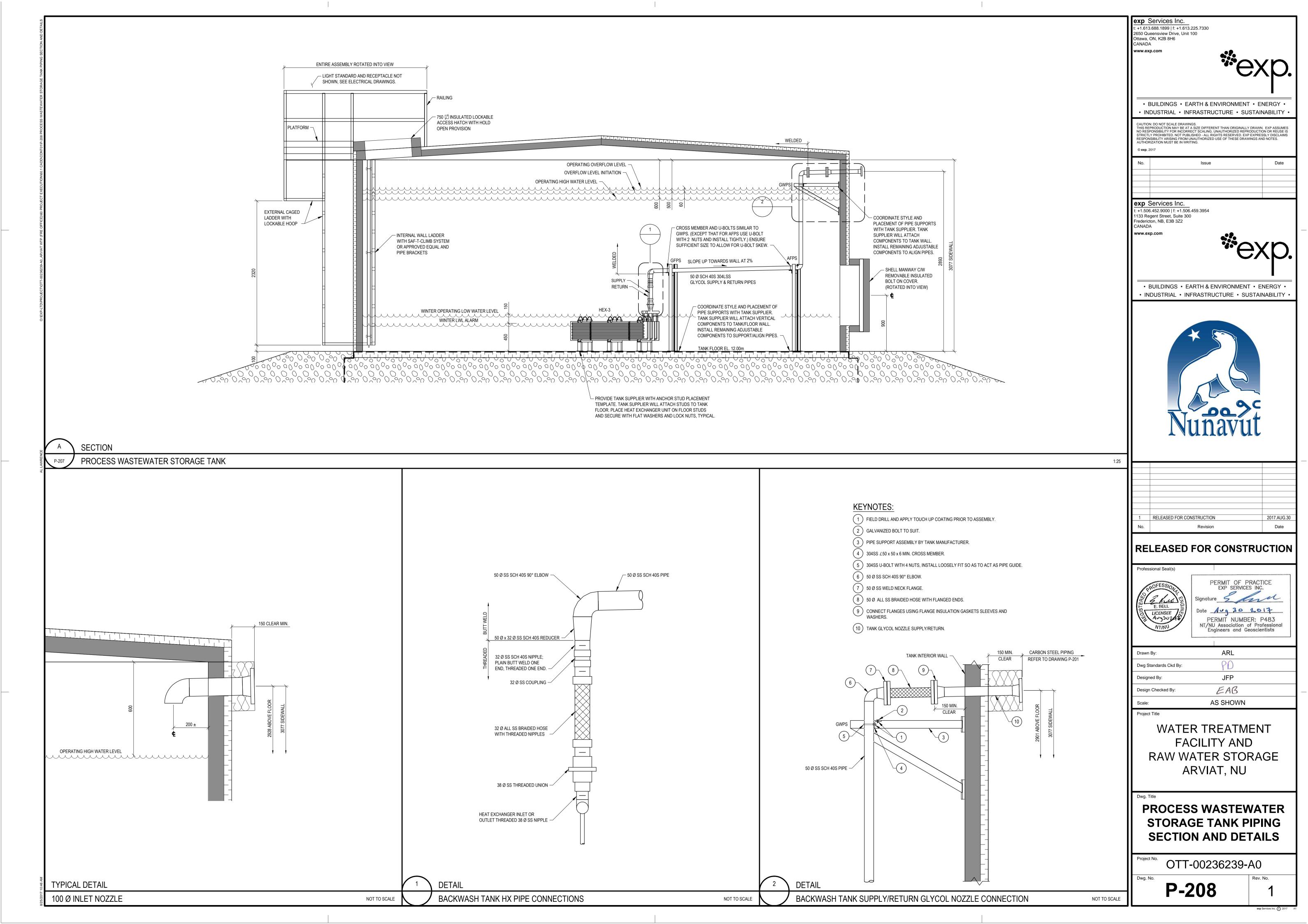


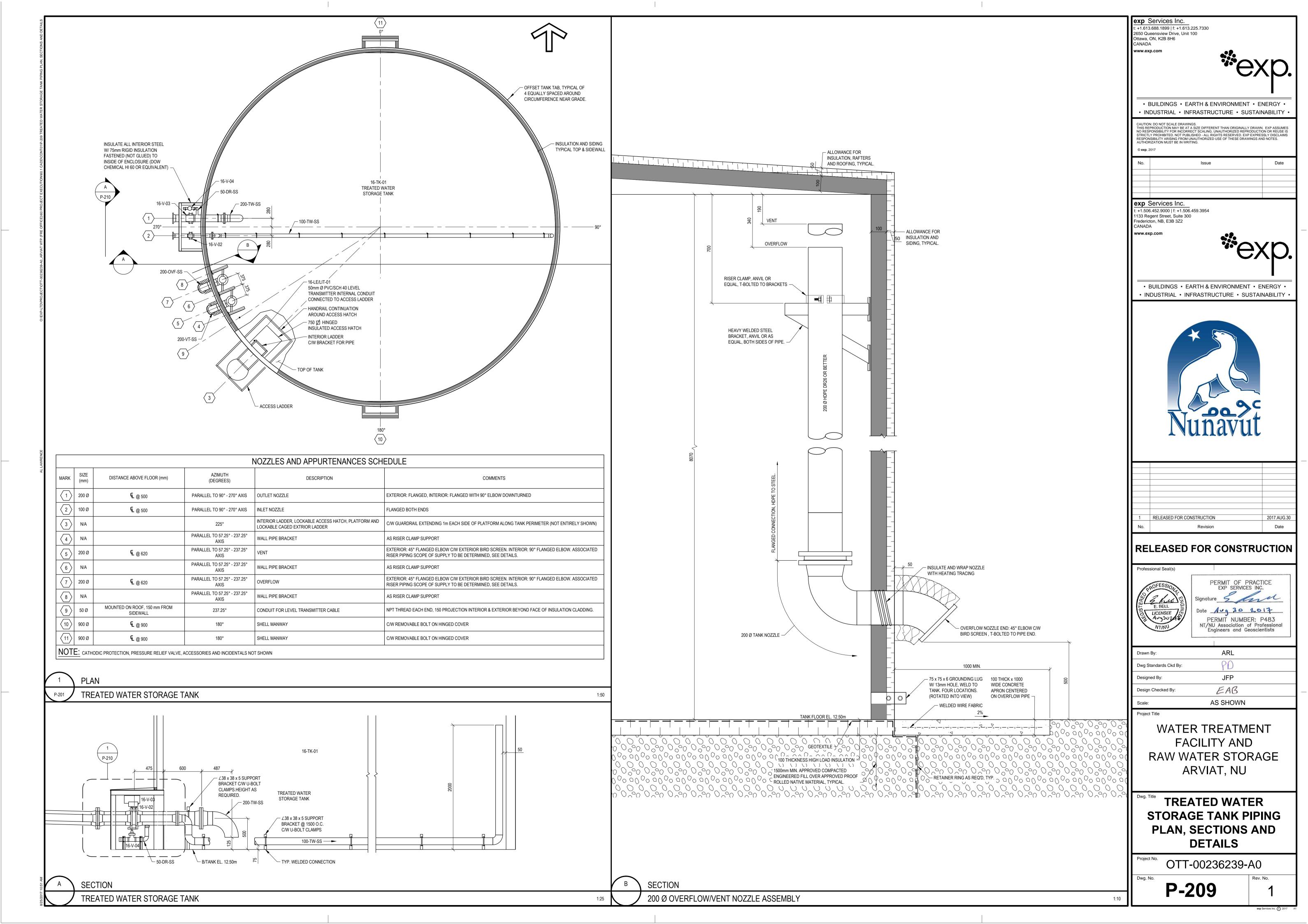


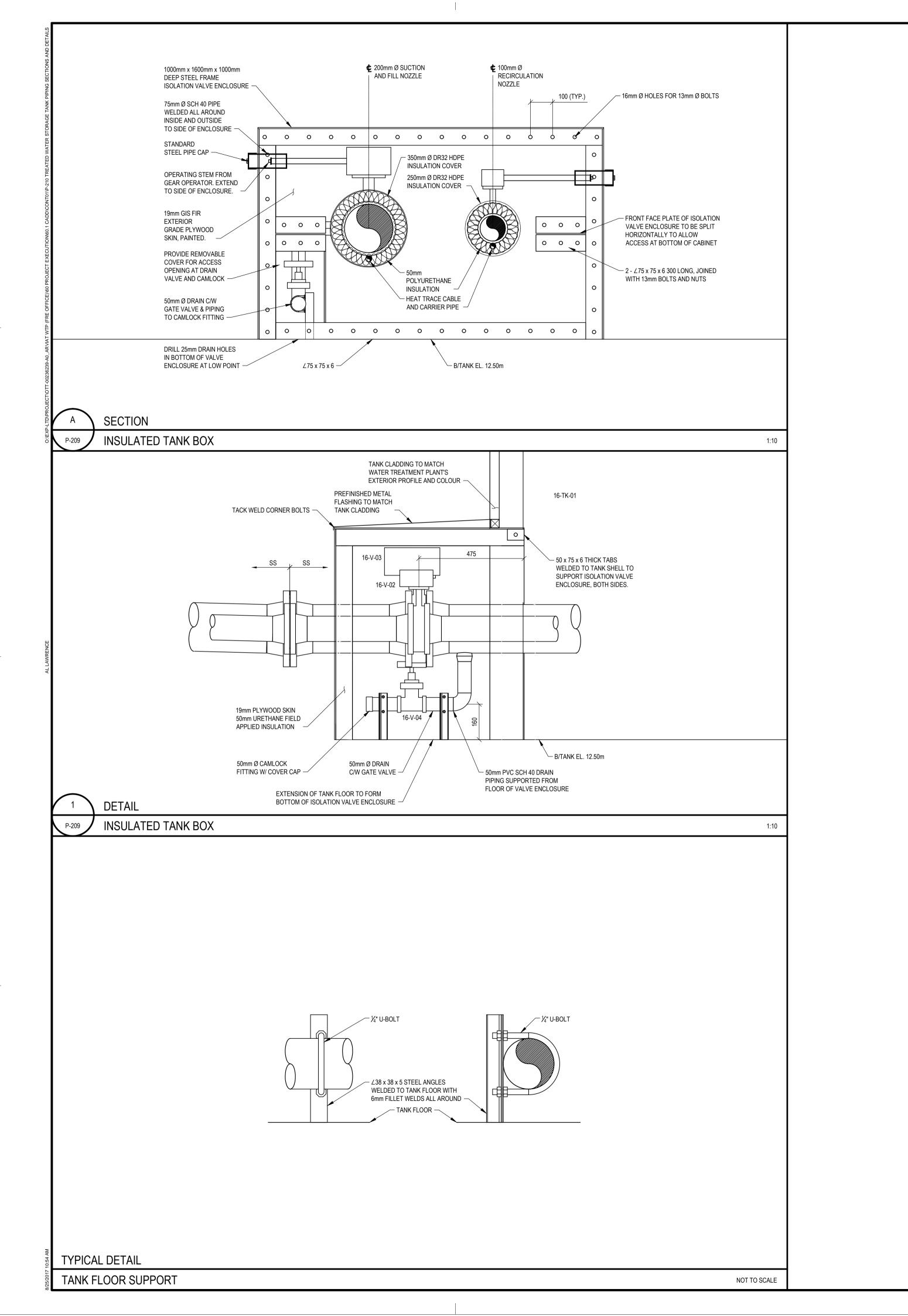












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No.	Revision	Date	

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PERMIT OF PRACTICE EXP SERVICES INC. PERMIT NUMBER: P483 NT/NU Association of Professional Engineers and Geoscientists

Dwg Standards Ckd By: JFP EAB Design Checked By:

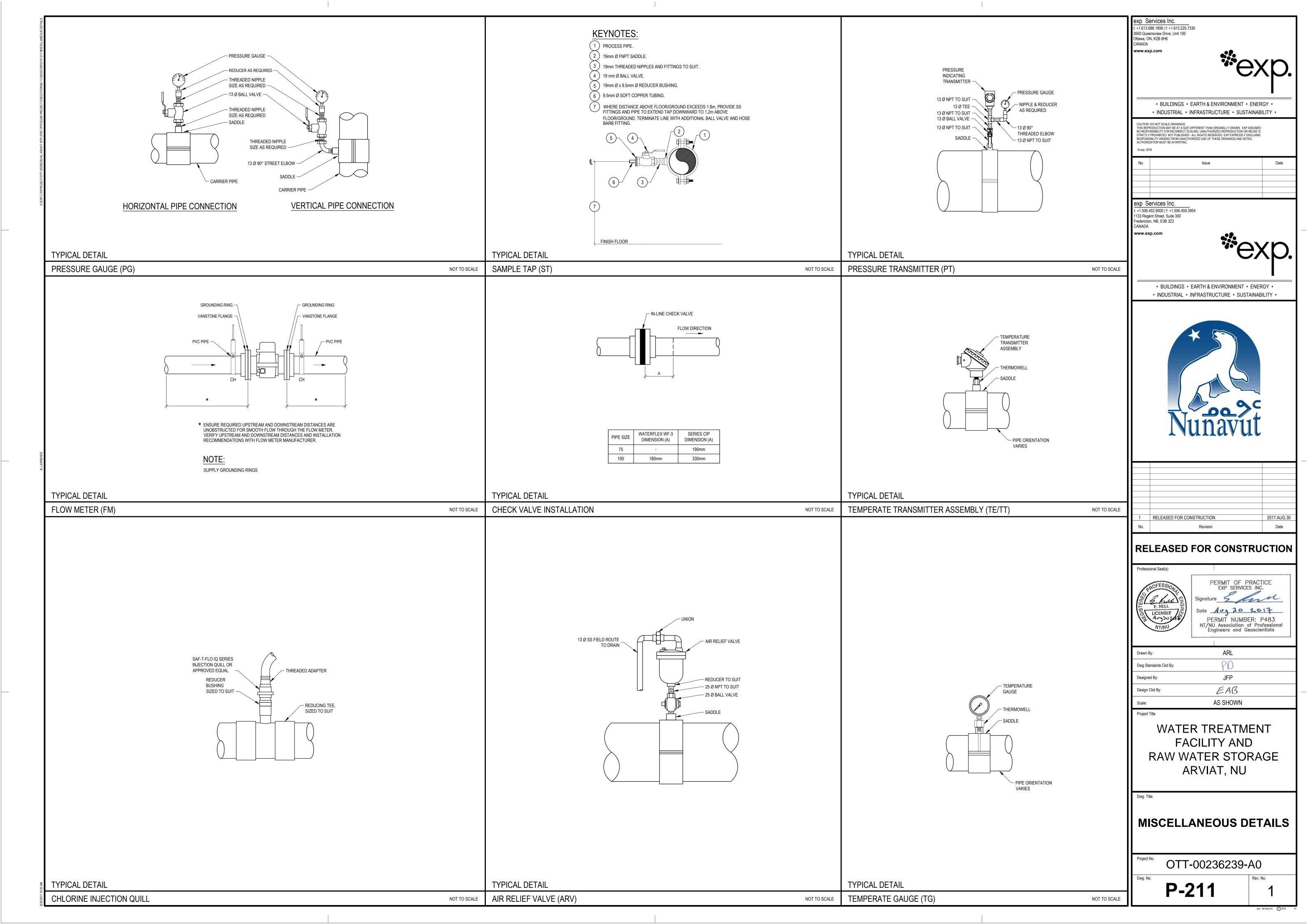
WATER TREATMENT FACILITY AND RAW WATER STORAGE ARVIAT, NU

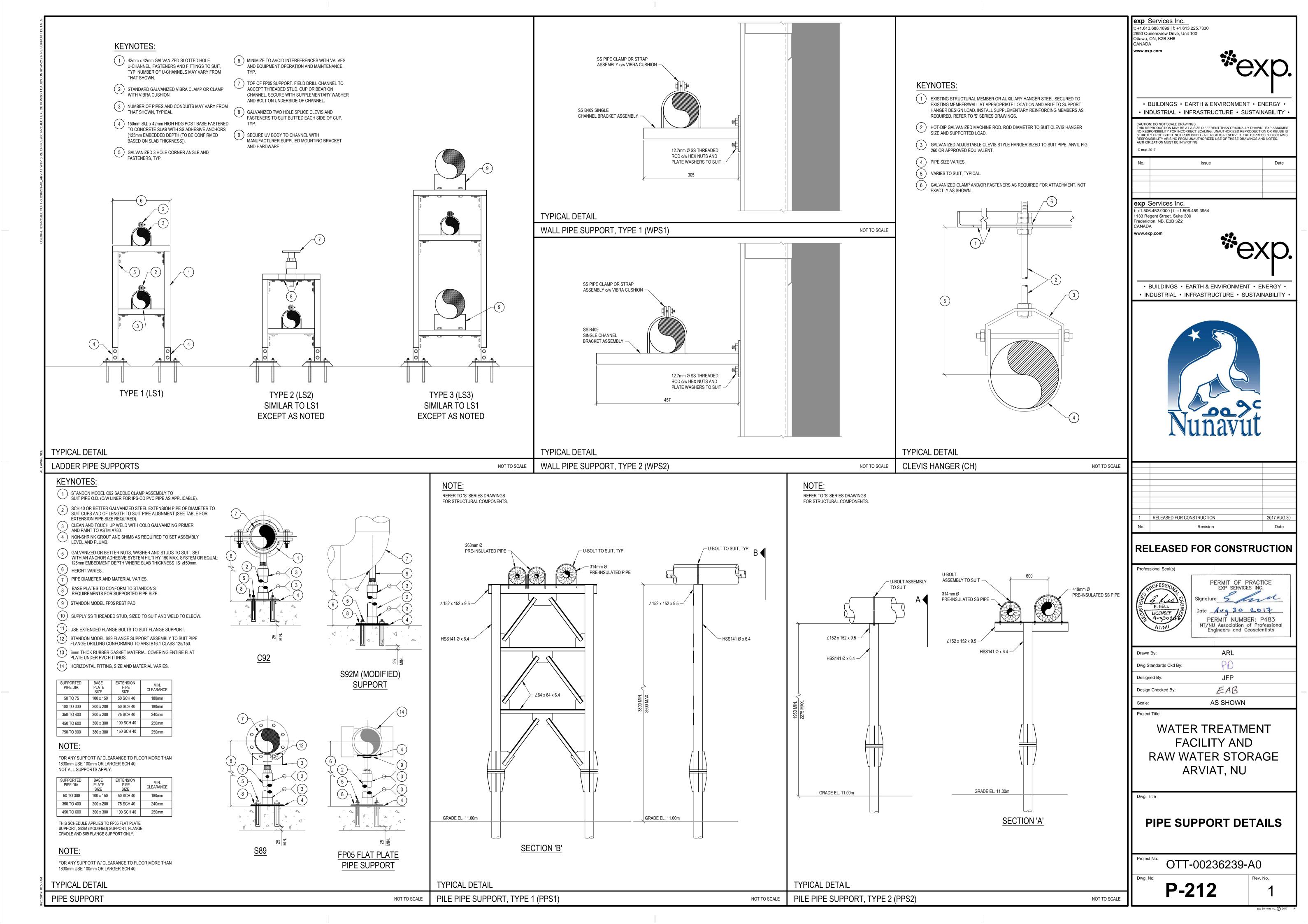
**AS SHOWN** 

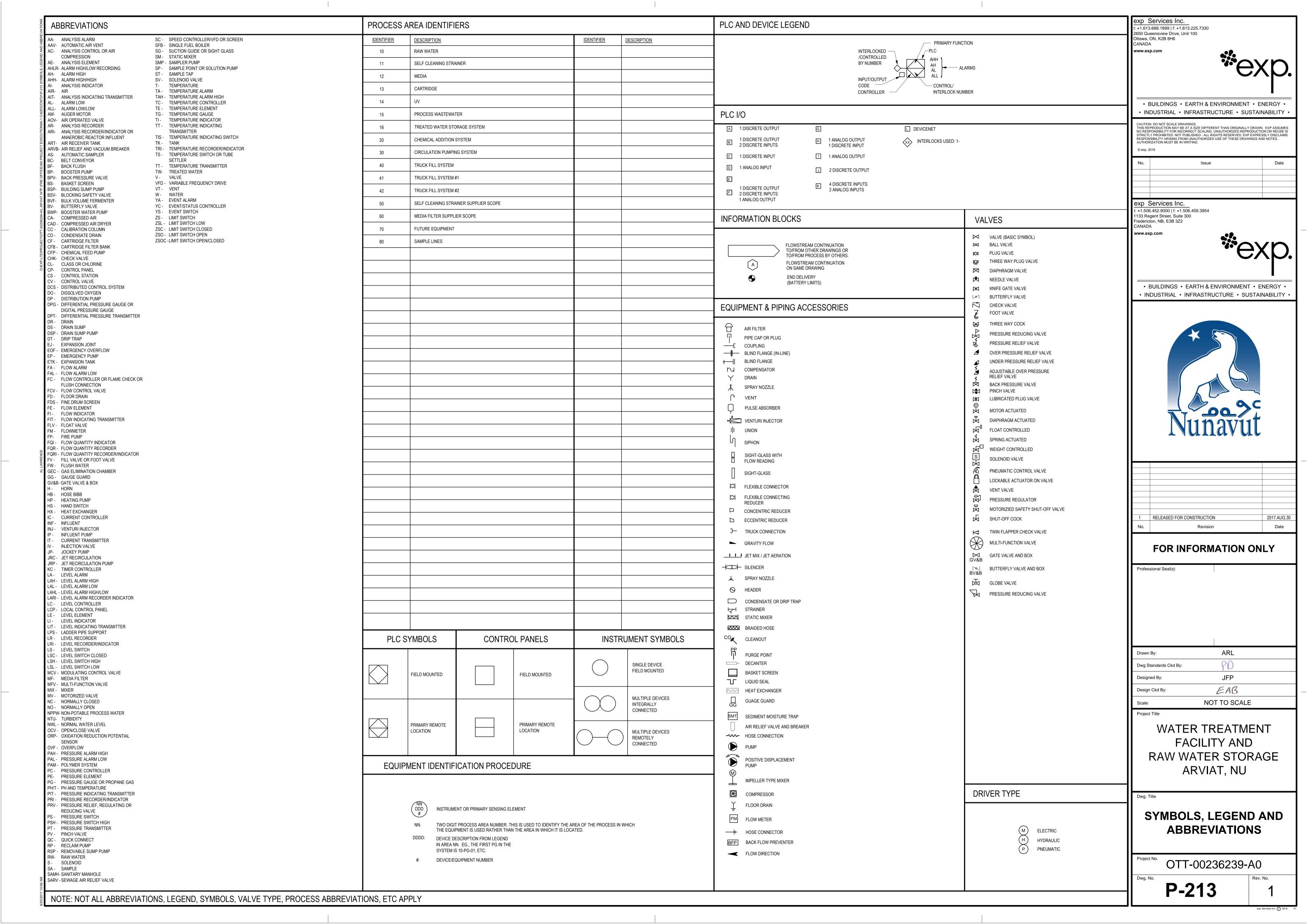
TREATED WATER STORAGE TANK PIPING **SECTIONS AND DETAILS** 

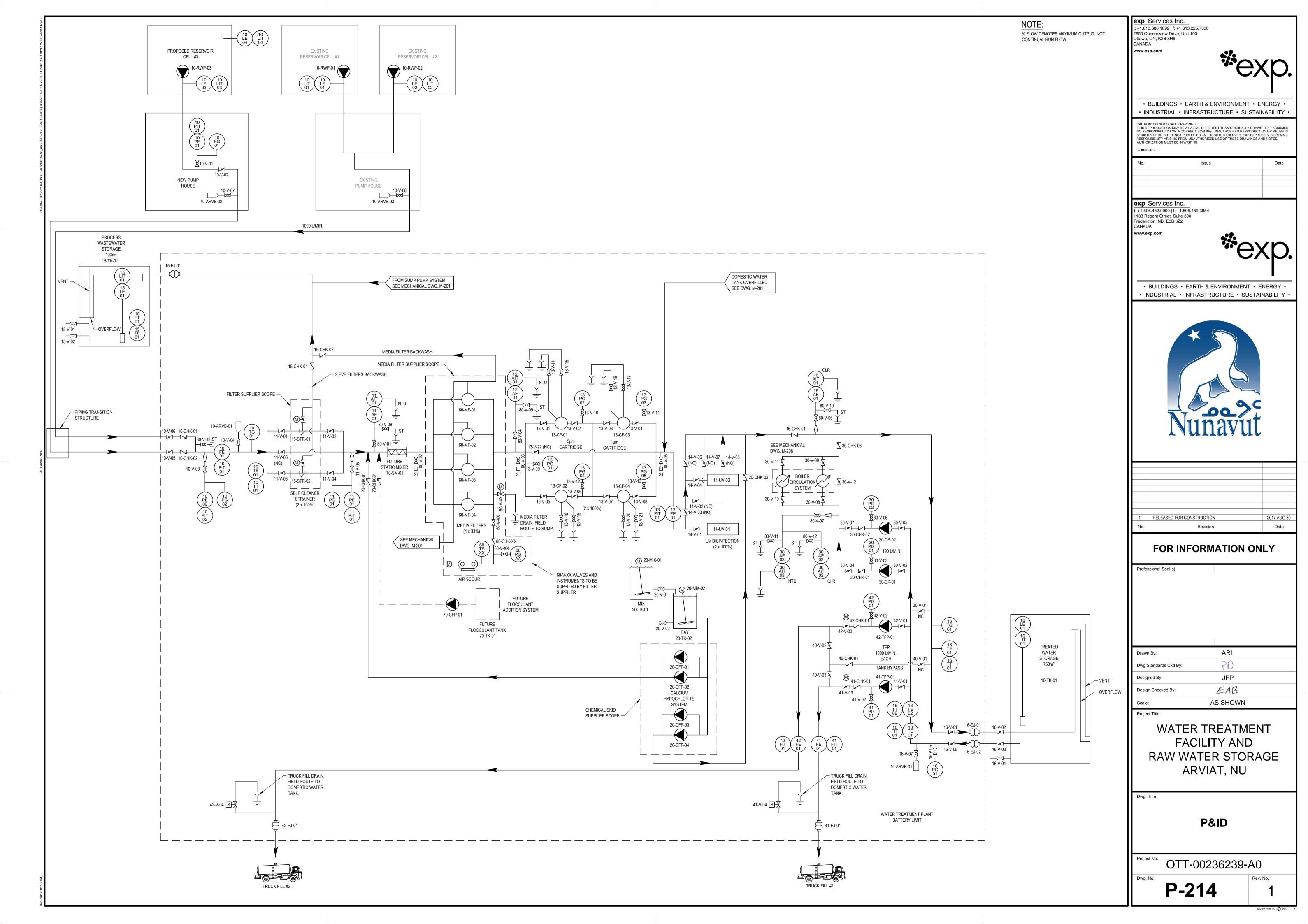
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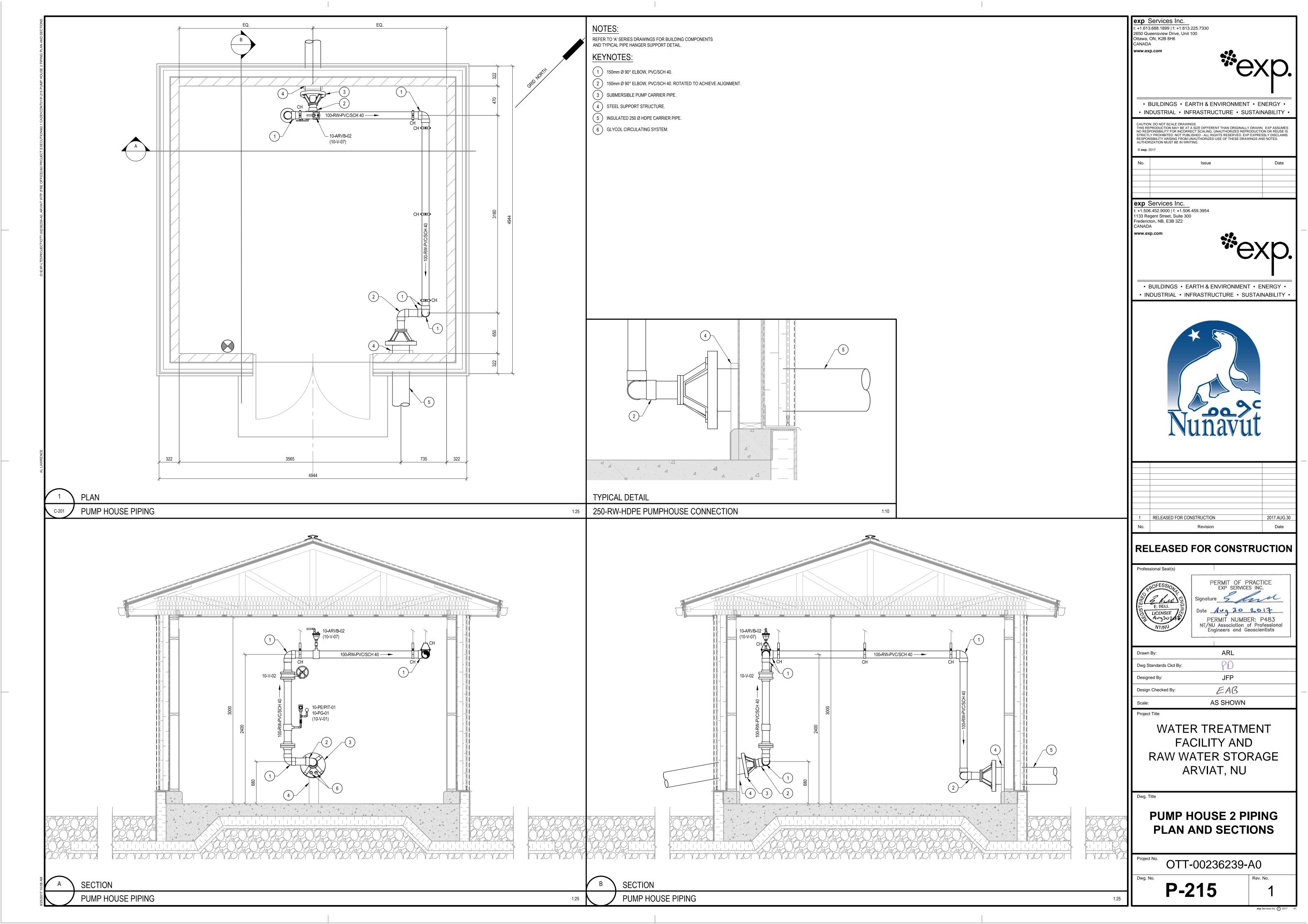
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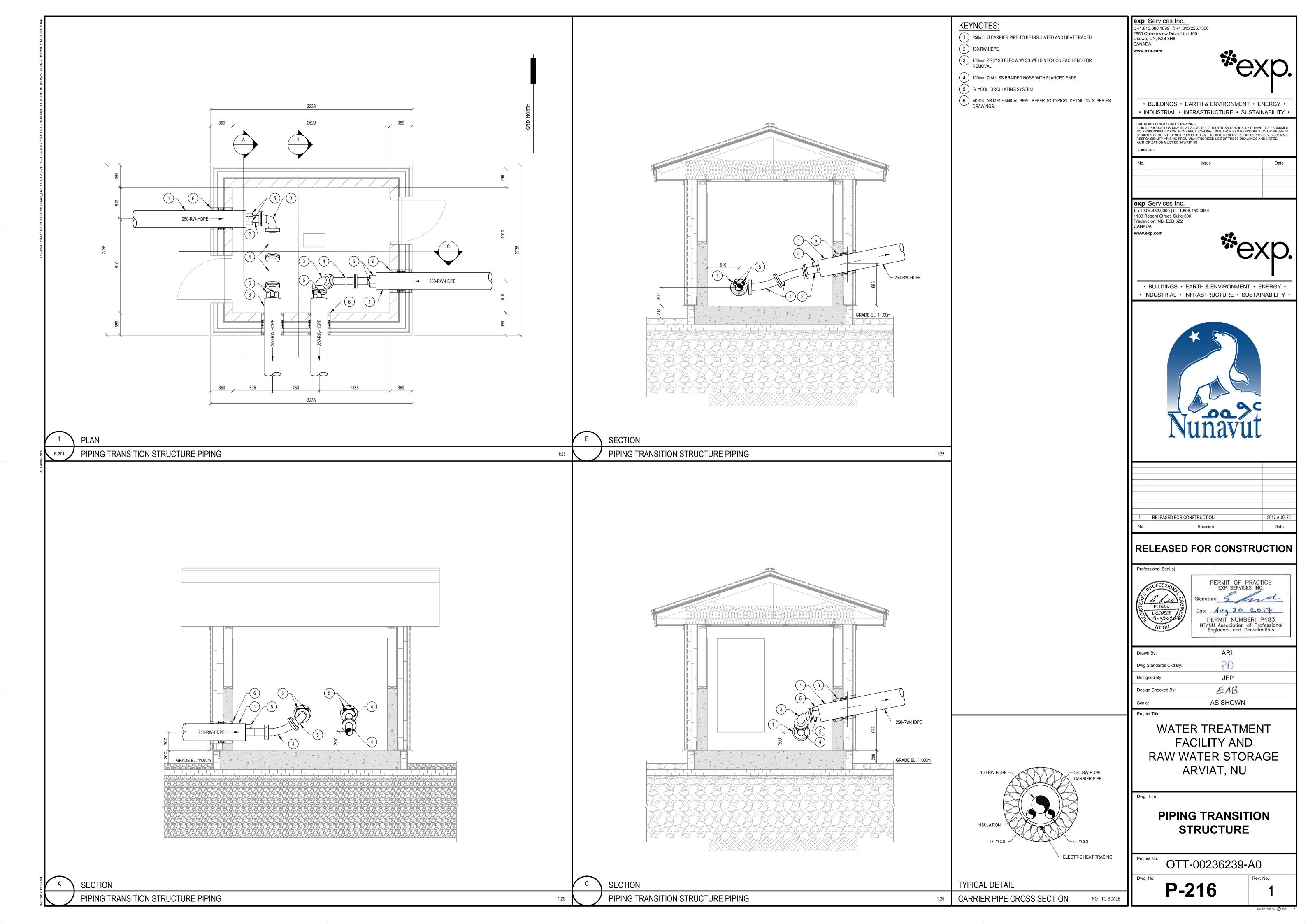


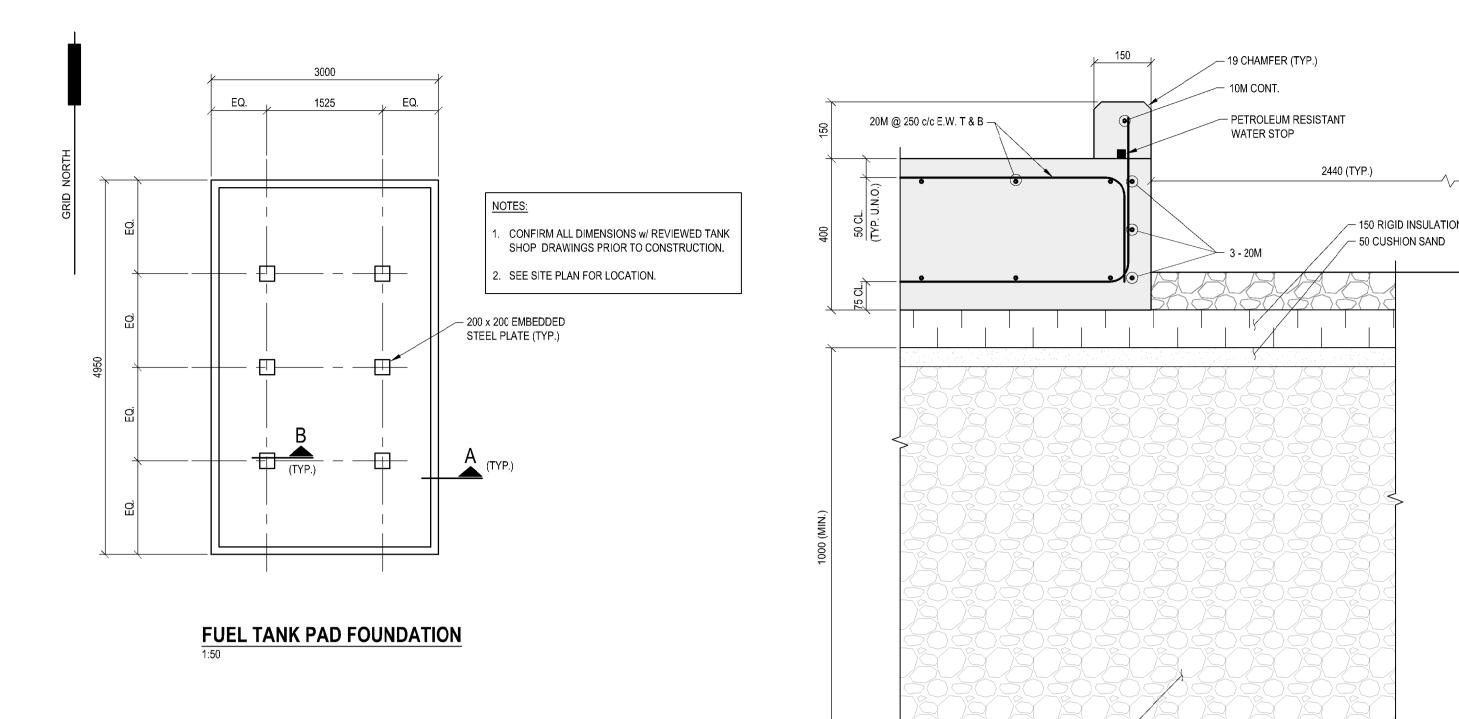


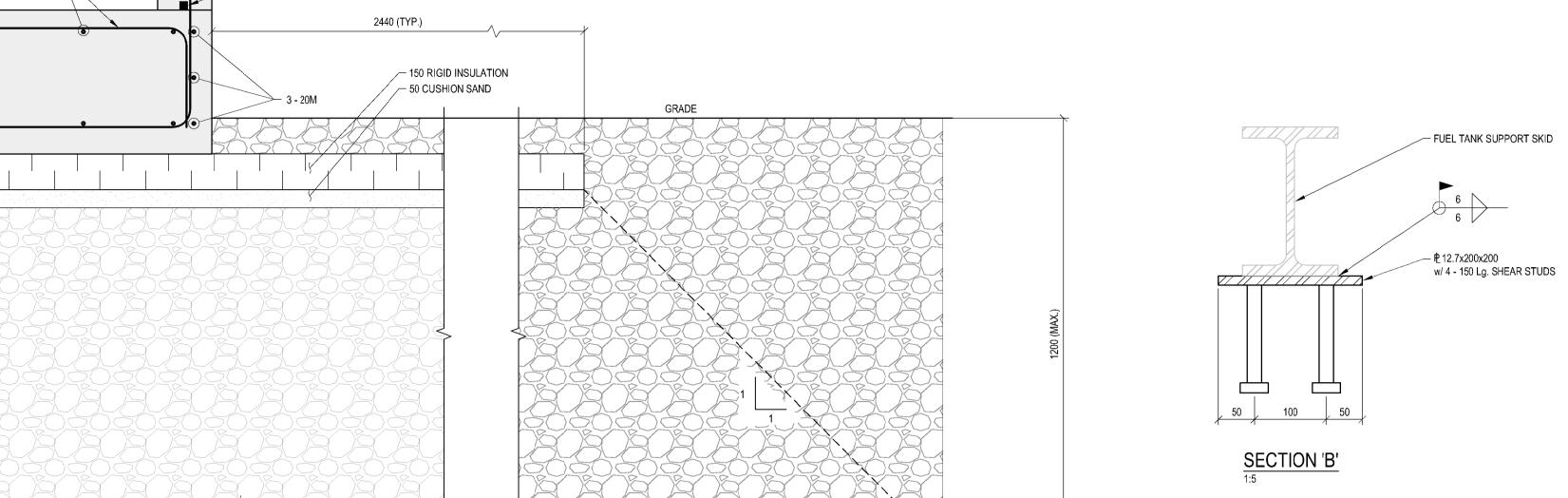


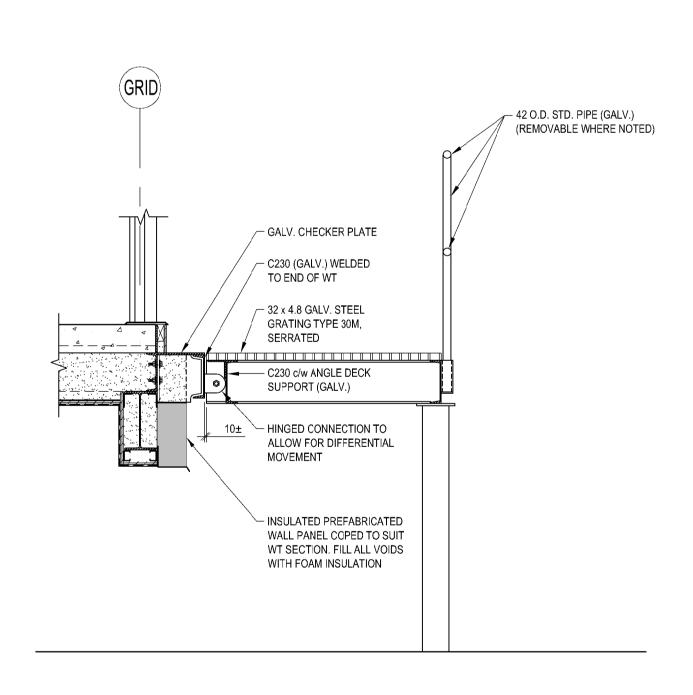




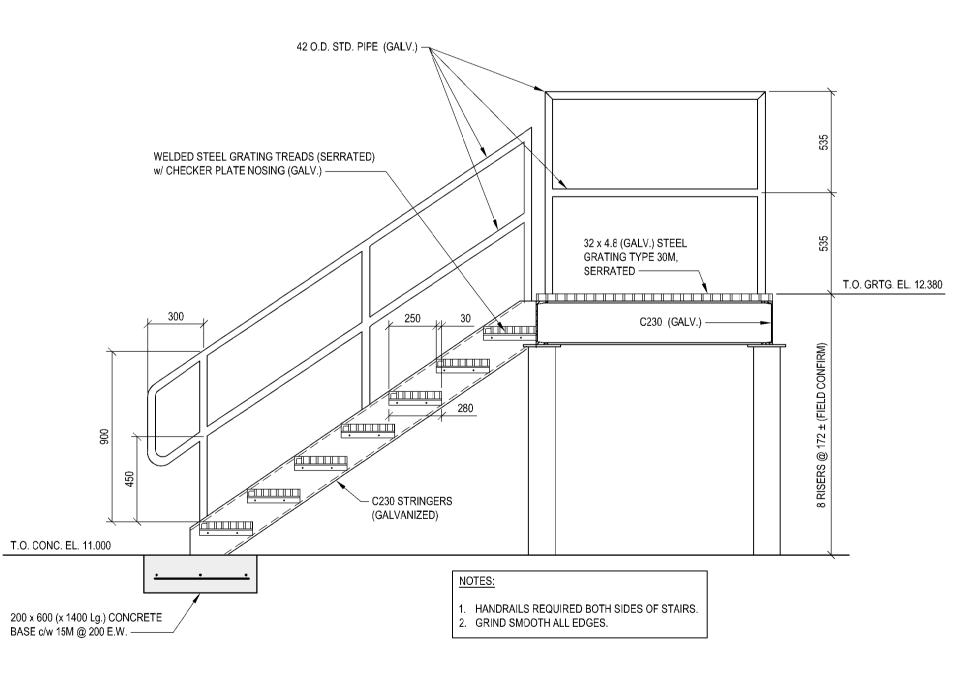








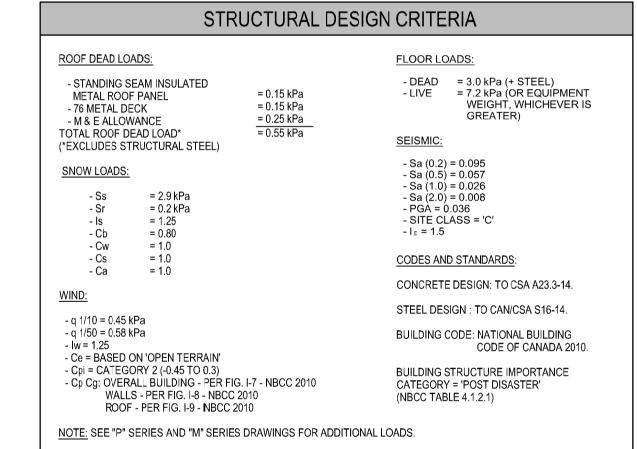
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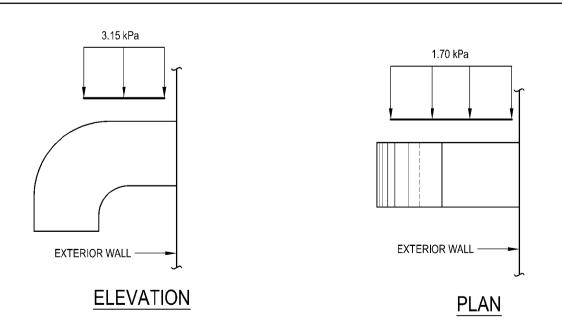
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TYPE B FILL -



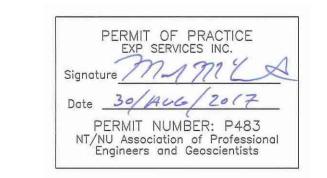


1. SEE DRAWING A-201 FOR GENERAL NOTES AND LEGEND.



WALL HOOD SNOW LOAD
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WALL HOOD WIND LOAD NOT TO SCALE



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ROFESSION

M.J. McCORMICK

LICENSEE

NTINU

Drawn By:	ECM
Dwg Standards Ckd By:	aus
Designed By:	MJM
Design Checked By:	M. 711-

Project Title

WATER TREATMENT FACILITY AND RAW WATER STORAGE ARVIAT, NU

AS SHOWN

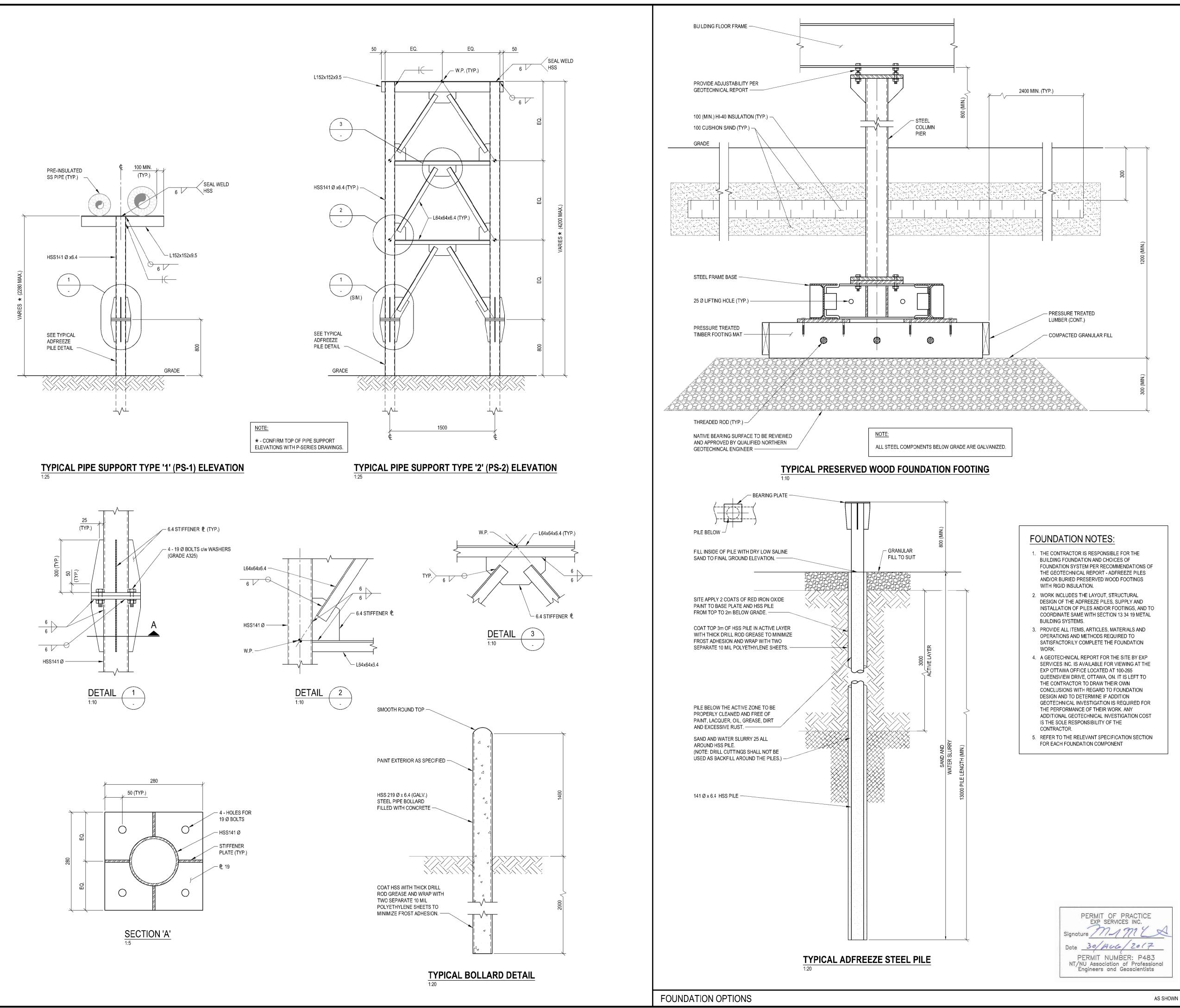
Dwg. Tit

STRUCTURAL DETAILS
SHEET 1

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S-201

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ECM Drawn By: Dwg Standards Ckd By: MJM Designed By: M. M. Design Checked By: **AS SHOWN** 

WATER TREATMENT FACILITY AND RAW WATER STORAGE ARVIAT, NU

STRUCTURAL DETAILS SHEET 2

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**S-202**