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REFERENCE DRAWINGS

1. P&ID: 40181-PR-PID-001

2. SITE GENERAL ARRANGEMENT : 40181-PI-GAD-001

3. STANDARD LIFTING DETIALS: TPL-FAB-200-00

GENERAL

1. DIMENSIONS ARE SHOWN IN MILLIMETER (mm) UNLESS STATED OTHERWISE

2. TOLERANCES:

TANK DIMENSIONS: +/- 6 mm

NOZZLE LOCATIONS: +/- 6 mm

3. AWC PROVIDES CATHODIC PROTECTION FOR ALL ALUMINUM TANKS.

ENGINEERING, STANDARDS & SPECIFICATION

1. AWC WILL PERFORM SEISMIC ANCHOR SIZING AS PER THE SPECIFICATION AND APPLICABLE GOVERNING CODES AND STANDARDS AND WILL INCLUDE AND STAMP ANCHOR DETAILS SHOWING THE REQUIRED ANCHOR REACTION FORCE, ANCHOR SIZE, MATERIAL AND GRADE.

2. ALL CALCULATIONS RELATED TO CONCRETE STRENGTH, EMBEDMENT DEPTH AND/OR EPOXY SELECTION AND ANY OTHER ASSOCIATED CALCULATIONS/DESIGN AND ANCHOR SUPPLY BY OTHERS.

3. STRUCTURAL DESIGN BY AWC WILL BE AUTHENTICATED BY IN HOUSE STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA, CANADA. ISSUED FOR CONSTRUCTION (IFC) ISSUE'S ONLY.

4. ALL TANK, SKID, PLATFORM & STAIR WELDING TO CONFORM TO CSA W47.1.

5. ALL WELDED PIPE SPOOLS TO CONFORM TO ASME B31.3.

6. ALL AWC ALUMINUM TANKS ARE NSF61 COMPLIANT WHEN THE WATER IS WITHIN A PH RANGE OF 6-9.

7. ALL WETTED FASTENERS INSIDE TANK TO BE ISOLATED FROM DISSIMILAR METAL CONTACT.

MATERIALS

1. ALL TANK PLATE MATERIAL TO BE ALUMINUM 5086-H116

2. ALL TANK STRUCTURAL MEMBERS TO BE ALUMINUM 6061-T6

3. ALL PIPING TO BE 304/304L STAINLESS STEEL UNLESS STATED OTHERWISE.

4. ALL HARDWARE TO BE ASTM F593, 18-8 SS

FINISH

1. ALL WELDS TO BE CLEANED USING A STAINLESS STEEL WIRE BRUSH.

2. ALL WELDED SS WATER SERVICE PIPING TO BE PICKLED & PASSIVATED AS PER ASTM A967-A967M-17 AND ASTM A380 / A380M-17 USING AVESTA RED ONE 240.

TESTING

1. ALL WELDS TO BE VISUALLY INSPECTED FOR DEFECTS.

2. TANK TO BE FULLY HYDRO TESTED TO CHECK FOR LEAKS.

ELECTRICAL

1. MINIMUM 1M OF CLEARANCE REQUIRED IN FRONT OF ANY ELECTRICAL PANEL / JUNCTION BOX.

WALKWAYS & STAIRS

1. WALKWAY STRUCTURAL FRAMING MEMBERS TO BE ALUMINUM 6061-T6.

2. WALKWAY GRATING TO BE 2" SAFETY GRIP GRATING - ROUND HOLE. ALUMINUM 5032-H32.

3. WALKWAY RAILINGS TO BE 2" x 2" x 3/16" SQUARE TUBE (ROUND CORNER) ALUMINUM 6061-T6.

4. STAIRS TO BE IN ACCORDANCE WITH OSHA REGULATIONS.

5. ANY COLUMNS / STAIRS ATTACHING TO THE CONCRETE FLOOR TO INCLUDE A 1" GAP FOR GROUTING.

6. STAIRS TO BE PROVIDED WITH A 1" GAP FOR GROUTING.

INSTALLATION

1. EPDM ISOLATION MEMBRANE IS REQUIRED BETWEEN THE CONCRETE FLOOR AND THE BOTTOM OF THE TANK BASEPLATE. MEMBRANE TO BE SUPPLIED AND INSTALLED BY OTHERS.

2. SUPPLY AND INSTALLATION OF SEISMIC ANCHOR BOLTS TO BE SUPPLIED AND INSTALLED BY OTHERS.

3. ALL INTERCONNECTING PIPING BETWEEN AWC'S EQUIPMENT AND THE WTP TO BE DESIGNED, SUPPLIED & INSTALLED BY OTHERS.

4. TANK NOZZLES SHALL NOT BE SUBJECTED TO EXTERNAL PIPING FORCES AND MOMENTS. ZERO LOADING WILL BE ACCEPTED.

ESTIMATED WEIGHTS

1.

TANK (EACH TRAIN)

FILTER DRY WEIGHT (FOR SHIPPING)1,700 KG

DAF DRY WEIGHT (FULLY ASSEMBLED)1,850 KG

OPERATING WEIGHT (WITH WATER & MEDIA)33,000 KG

2.

WALKWAYS

TOTAL WEIGHT OF WALKWAYSN/A

STAIRSN/A

LEGEND

_____ BY AWC

- - - - - BY OTHERS

- . - . - . FUTURE

10

HV-01

ITEM NUMBER
P&ID TAG NUMBER

TP-01

P&ID TIE POINT NUMBER

PARTS LIST

ITEM	QTY	DESCRIPTION	SIZE (in)	MATERIAL	MANUFACTURER	MODEL #	REV
1	1	BUTTERFLY VALVE C/W ELEC ACTUATOR, MODULATING (BACKWASH SUPPLY)	12"	D.I.	KEystone	222 / EPI2	A
2	1	BUTTERFLY VALVE, MODULATING (EFFLUENT)	6"	D.I.	KEystone	222 / EPI2	A
3	1	BUTTERFLY VALVE, C/W ELEC ACTUATOR, MODULATING (RINSE TO WASTE)	6"	D.I.	KEystone	222 / EPI2	A
4	1	BUTTERFLY VALVE C/W ELEC ACTUATOR, MODULATING (FILTERED WATER)	6"	D.I.	KEystone	222 / EPI2	A
5	1	BUTTERFLY VALVE C/W ELEC ACTUATOR, ON/OFF (AIR SCOUR)	4"	D.I.	KEystone	222 / EPI2	A
6	1	BALL VALVE, THREADED	2"	SS	CRANE	9502	A
7	3	BALL VALVE, THREADED	1/2"	SS	CRANE	9502	A
8	1	SOLENOID VALVE	1/2"	BRASS	ASCO	8210G094MO	A
9	1	FLOW TRANSMITTER	6"	C.I.	E+H	W10	A
10	1	PRESSURE TRANSMITTER	1/4"		WIKA	A10	A
11	1	PRESSURE GAUGE, 2-1/2" DIAL, 0-15PSI	1/4"	316 SS	WIKA	213.53DW	A
12	1	LEVEL TRANSMITTER			VEGA	C11	A
13	1	ANODE ASSEMBLY, FILTER	33"	MAGNESIUM / AL-6061-T6	AWC	N/A	A
14	391	FILTER NOZZLE	1-1/4"	PLASTIC	ORTHOS	TYPE DSP	A
15	1	TURBIDITY METER		N/A	HACH	TU5300	A
16	1	UNIVERSAL CONTROLLER		N/A	HACH	SC200	A
17	1	ELECTRICAL PANEL	72x72x12	STEEL	BEL	HD727212F	A
18	4	SEISMIC ANCHOR ASSEMBLY	N/A	VARIES	AWC	CUSTOM	A

TIE POINT SCHEDULE (FILTER TANK)

ITEM	DESCRIPTION	SIZE (mm)	TYPE
TP-150	EFFLUENT FROM DAF	200	FLANGE, FF, 150#
TP-151	BACKWASH WASTE	300	FLANGE, FF, 150#
TP-153	BACKWASH WATER FROM PUMP	300	FLANGE, FF, 150#
TP-154	AIR SCOUR FROM BLOWER	100	FLANGE, FF, 150#
TP-155	RINSE TO WASTE / FILTERED WATER	150	FLANGE, FF, 150#
TP-156	BACKPRESSURE PSV DISCHARGE	100	FLANGE, FF, 150#

SHEET INDEX:

1: STANDARD NOTES & PARTS LIST

2: ISO VIEW

3: PLAN VIEW

4: VIEW A

5: VIEW B & C

6: SECTION D

7: SECTION E

8: SHIPPING ENVELOPE

9: CONCRETE PAD & SEISMIC ANCHOR DETAILS

NEW FILTER TRAIN QTY. : 1

EXISTING FILTER TRAIN QTY. : 3

NOTES:

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CLIENT

DILLON CONSULTING, HALIFAX

PROJECT

EAST HANTS ENFIELD DAF UPGRADE

TITLE

FILTER TANK GENERAL ARRANGEMENT

SCALE

NTS

PROJECTION

DEFAULT UNITS

mm

SHEET SIZE

17 x 11

SHEET

1 OF 9

DRAWING NO.

40181-PI-GAD-110

REV

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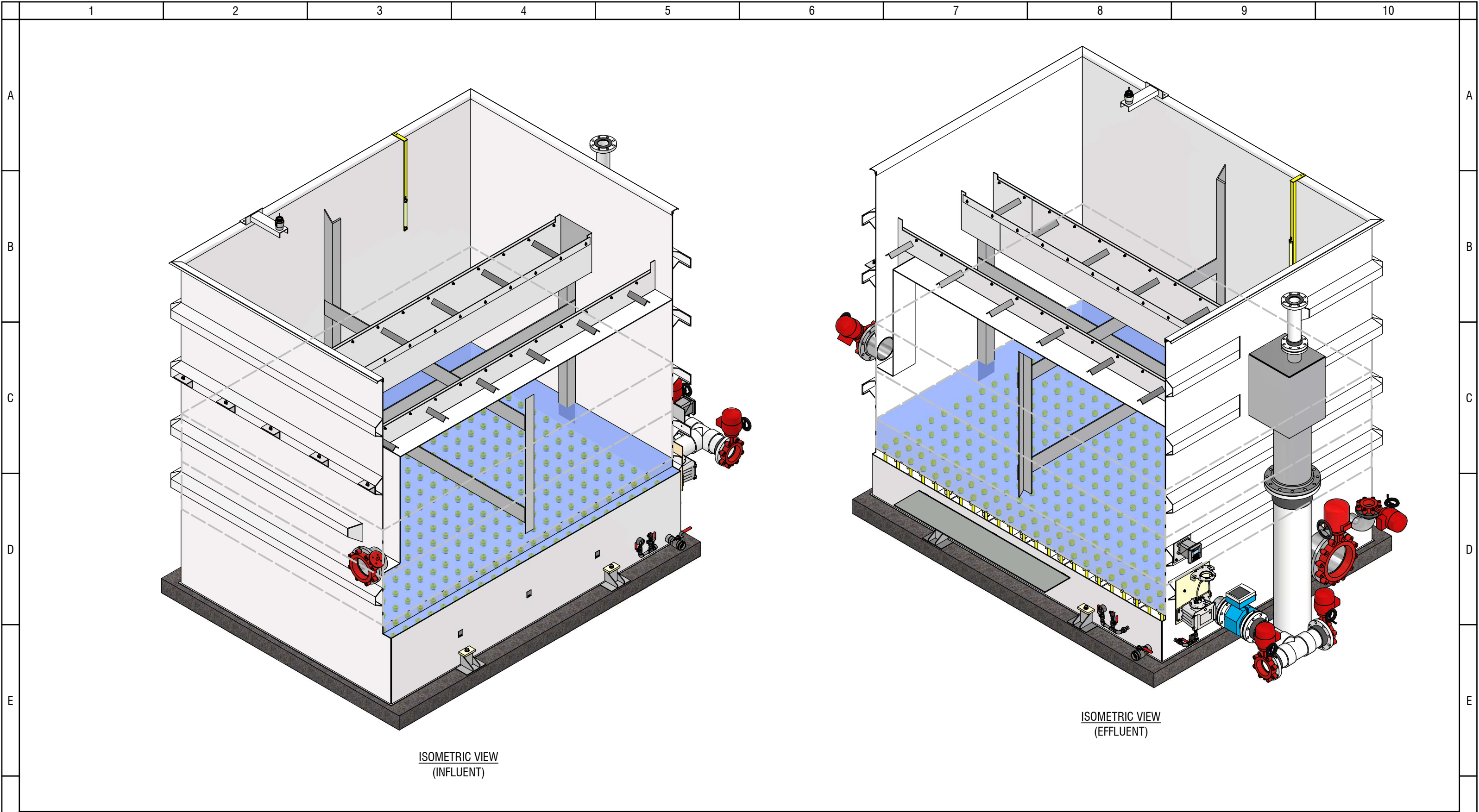
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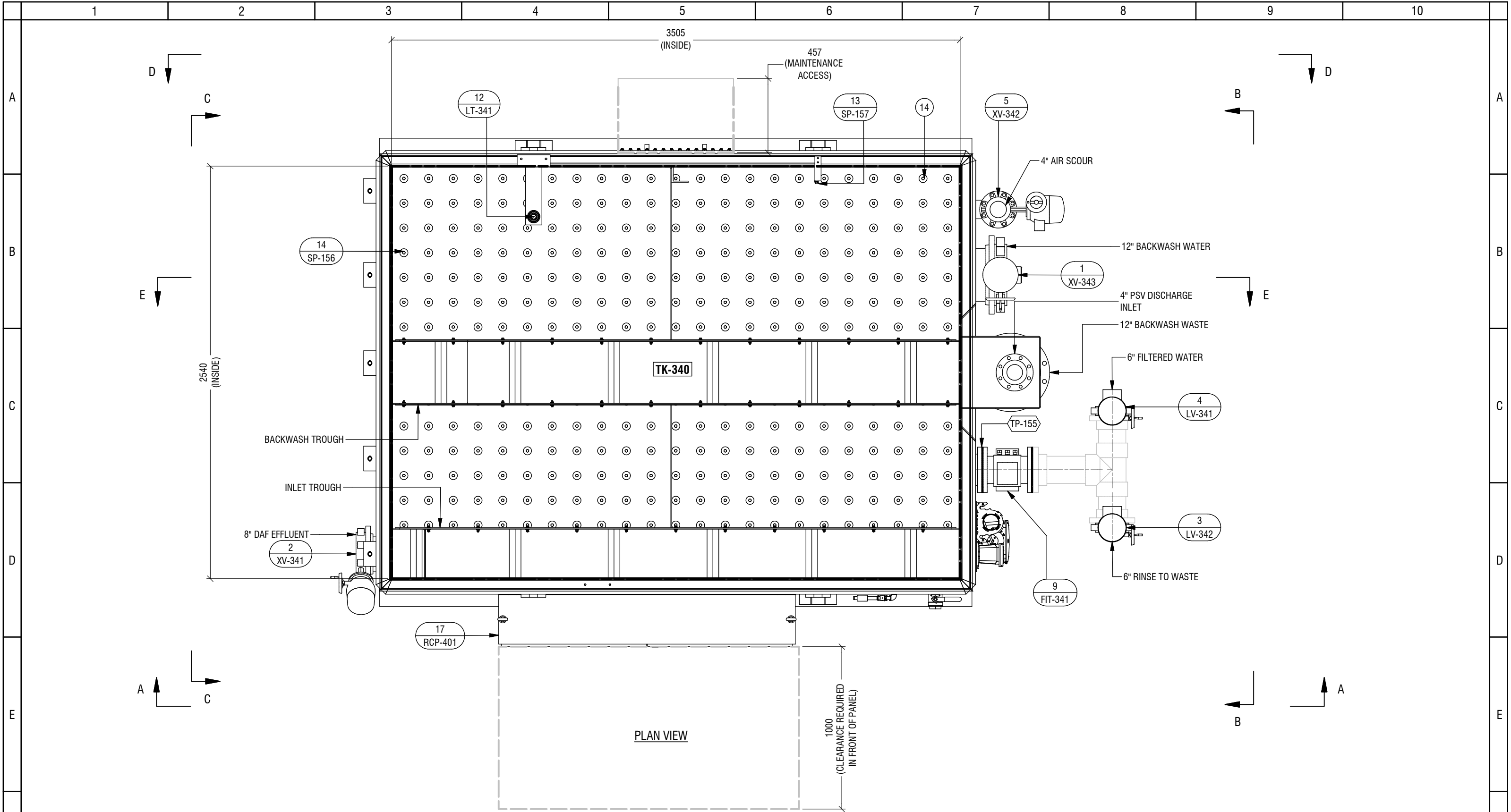
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PROJECT	EAST HANTS ENFIELD DAF UPGRADE				
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SCALE	NTS	PROJECTION	DEFAULT UNITS	SHEET SIZE	SHEET
			mm	17 x 11	2 OF 9
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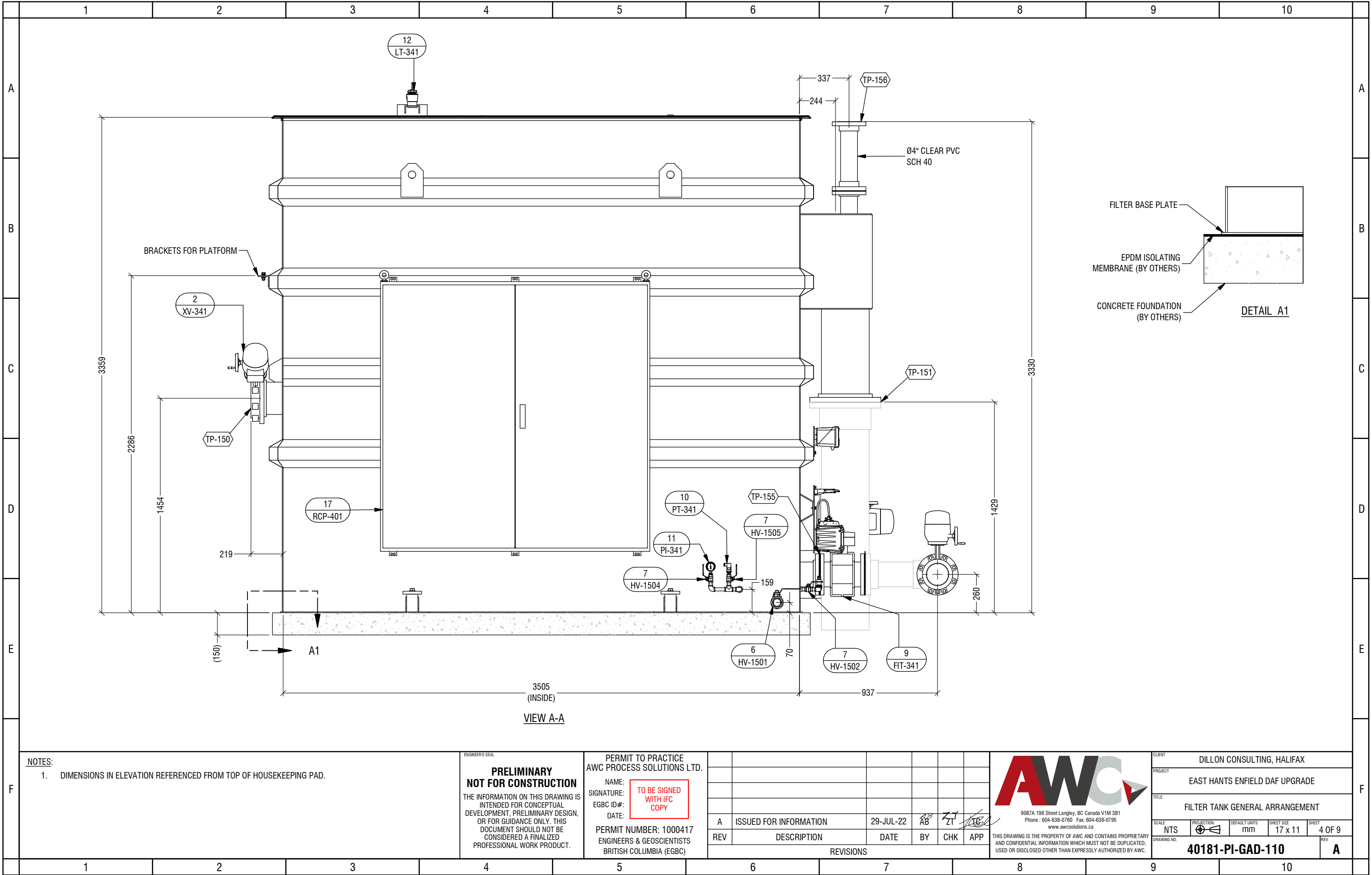
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NOTES:

1. DIMENSIONS IN ELEVATION REFERENCED FROM TOP OF HOUSEKEEPING PAD.

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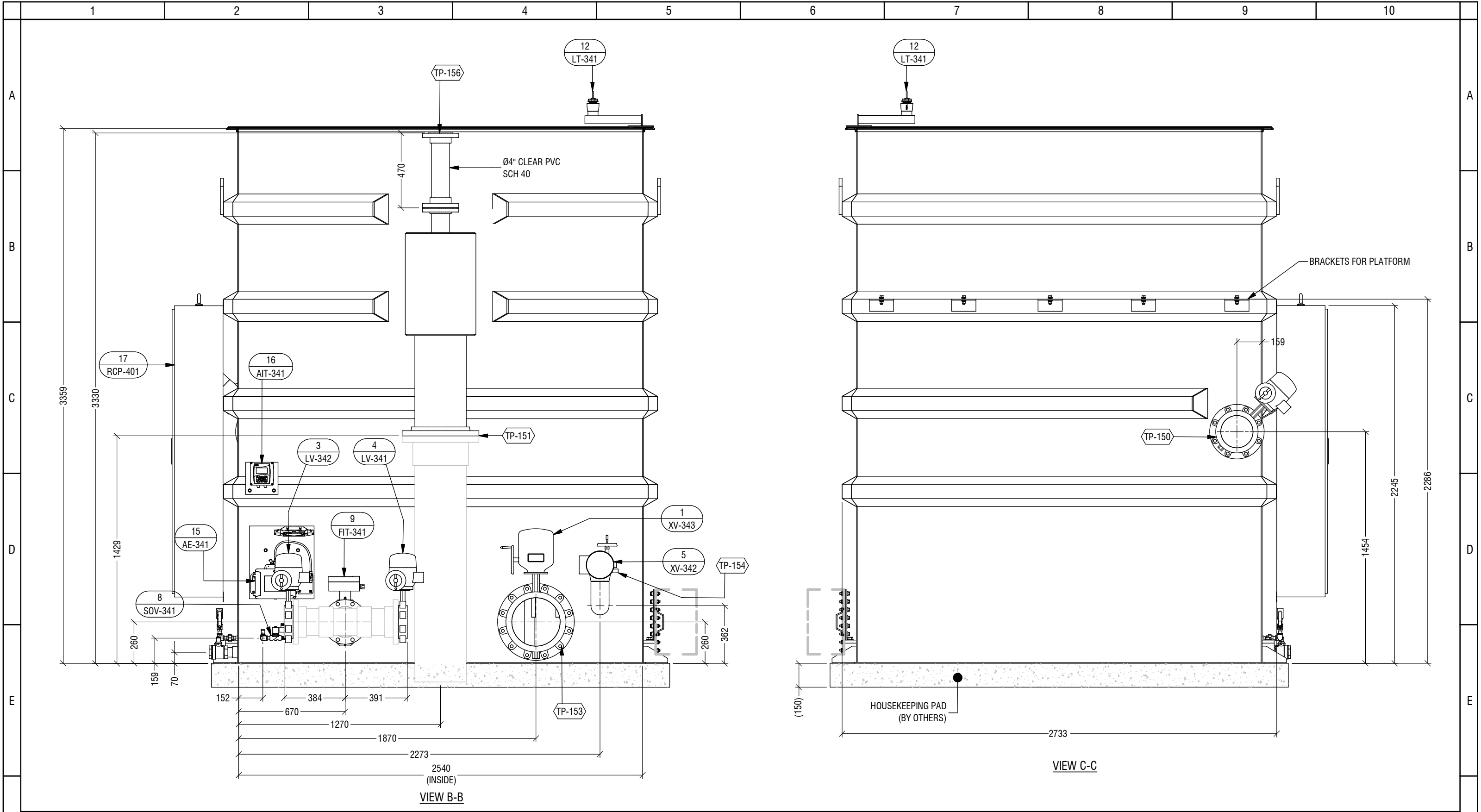
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
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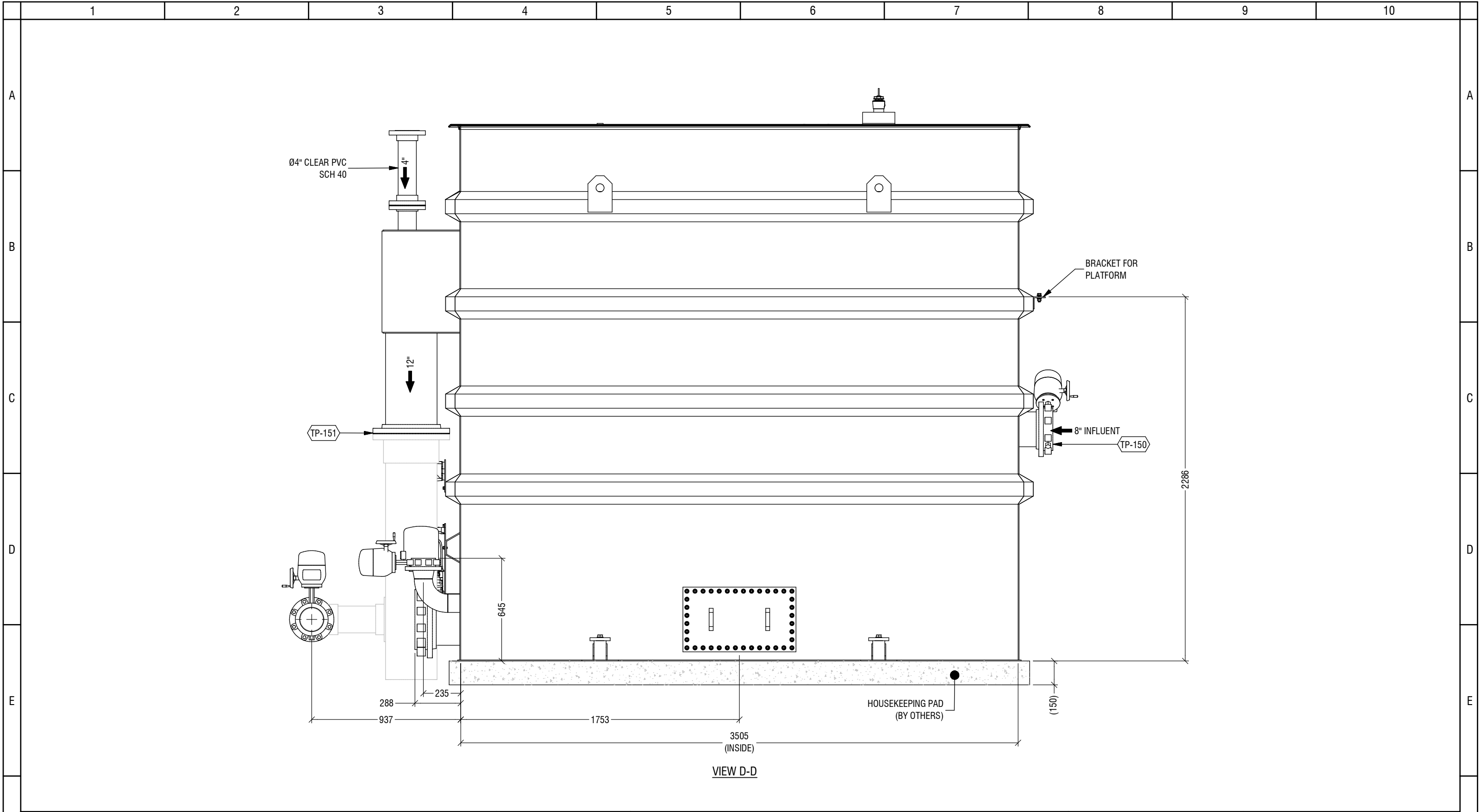
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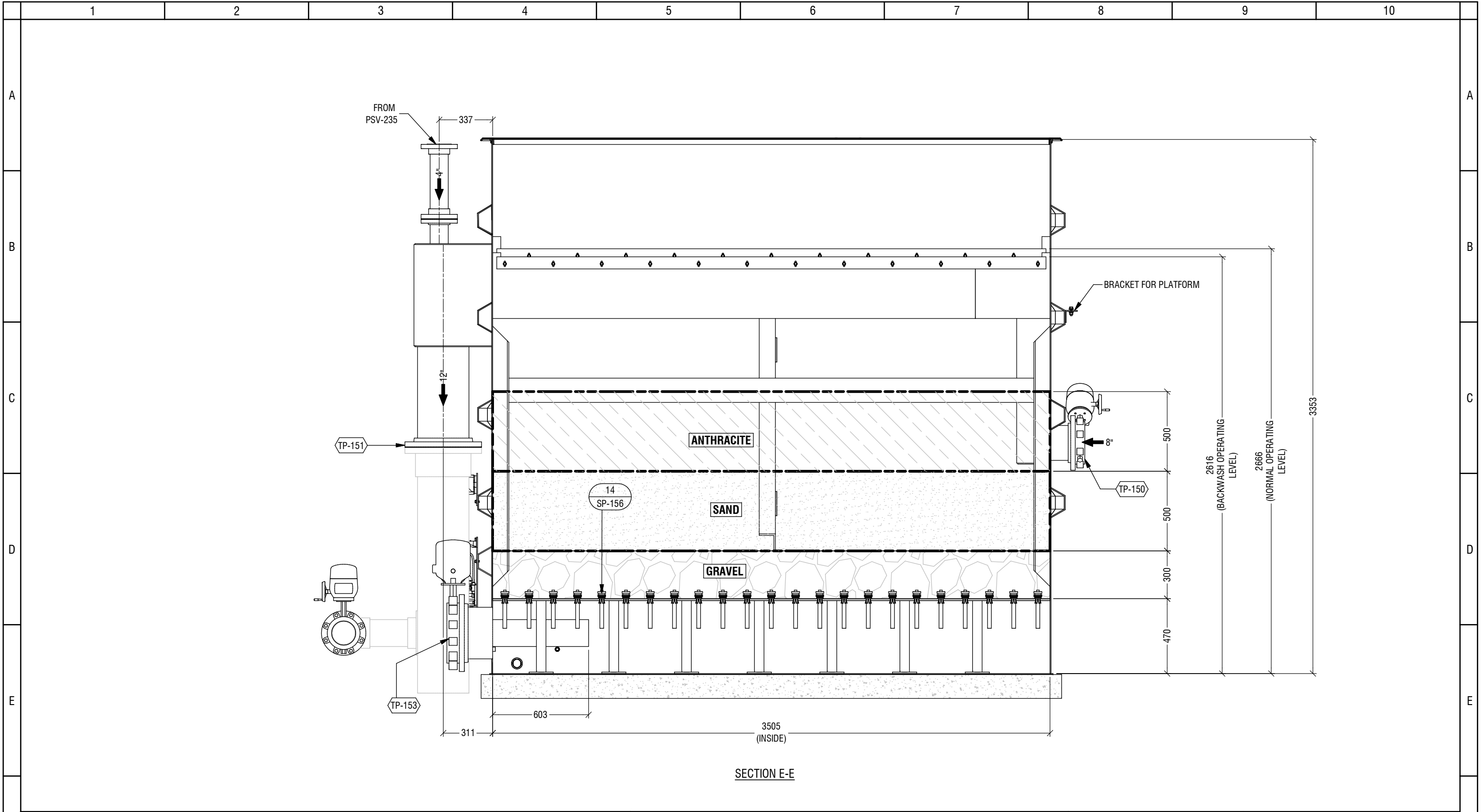
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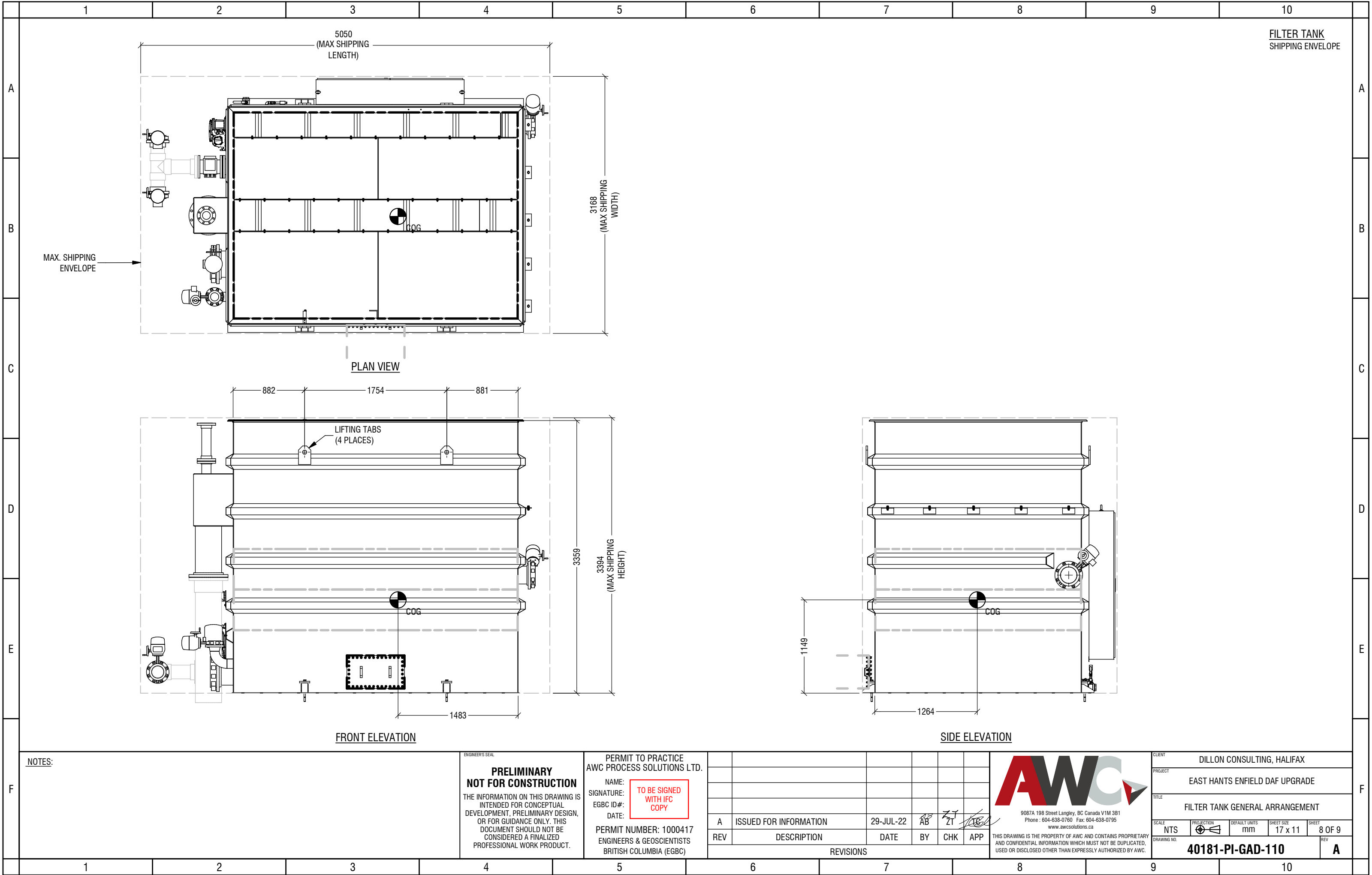
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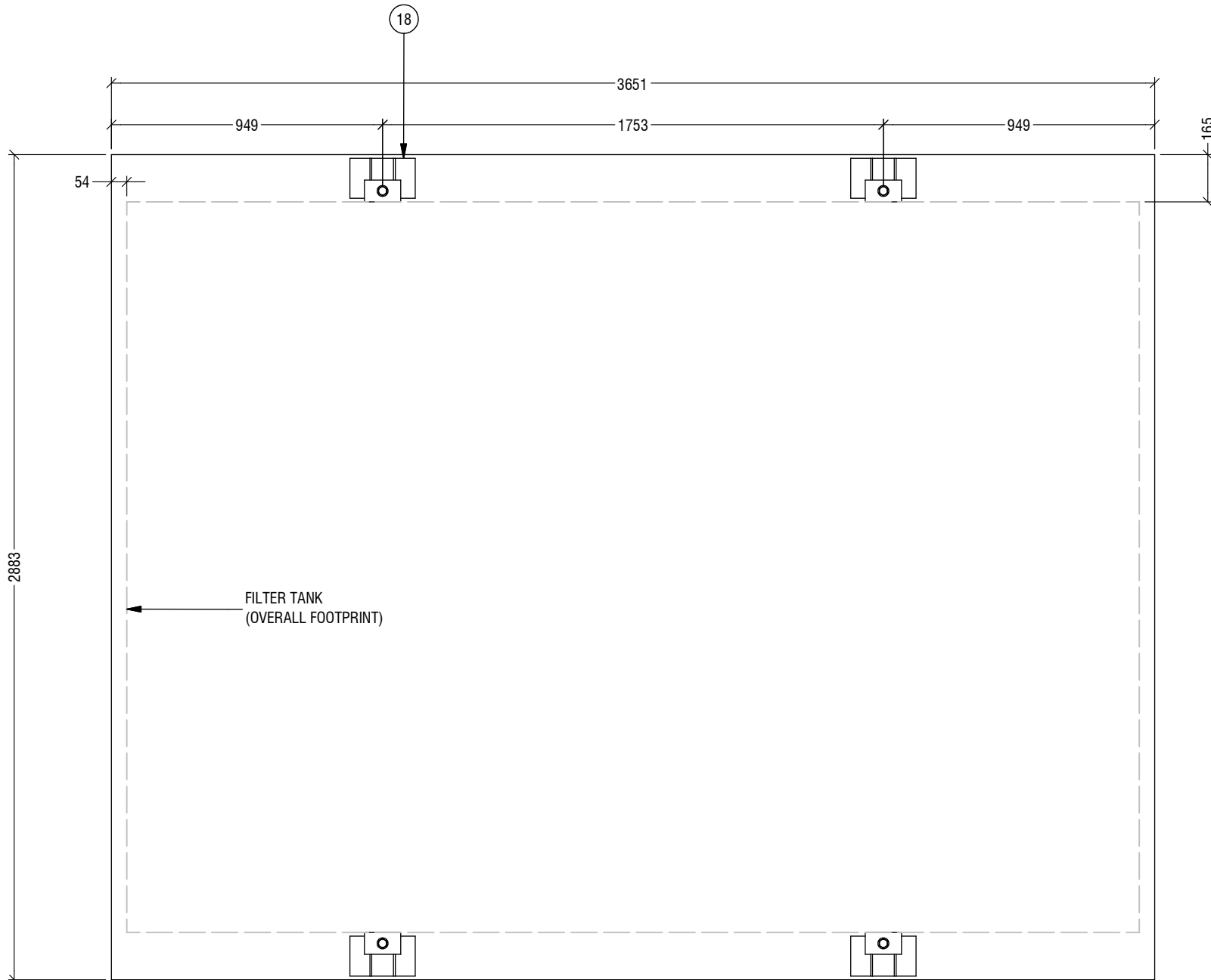
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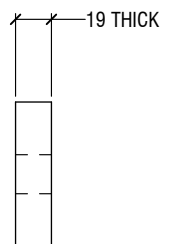
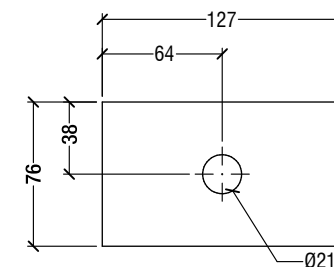
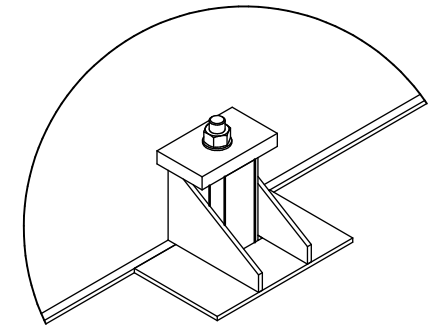
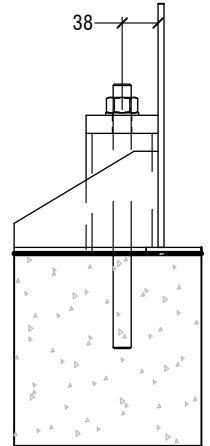
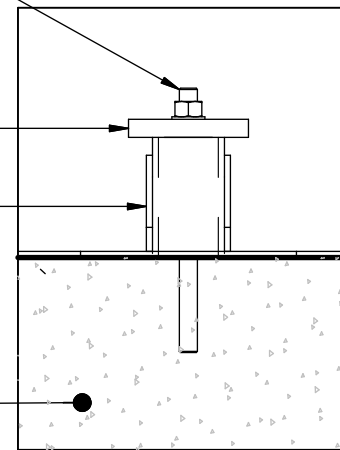


Technical drawing of a rectangular filter tank. The overall footprint is indicated by a dashed line. Dimensions are provided in millimeters (mm):

- Overall width: 3651 mm
- Overall height: 2883 mm
- Distance from left wall to first support: 949 mm
- Distance between supports: 1753 mm
- Distance from second support to right wall: 949 mm
- Distance from left wall to first support (inner): 54 mm
- Distance from right wall to second support (inner): 165 mm

Four support structures are shown, two on the top wall and two on the bottom wall. Each support structure consists of a rectangular base with a circular opening in the center. A dimension line labeled '18' indicates the height of the support structures. A label 'FILTER TANK (OVERALL FOOTPRINT)' with an arrow points to the dashed line.

CONCRETE
FOUNDATION-
(BY OTHERS)



NOTES:

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REV	DESCRIPTION	DATE	BY	CHK
REVISIONS				



CLIENT	DILLON CONSULTING, HALIFAX
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PROJECT	EAST HANTS ENFIELD DAF UPGRADE
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TITLE	FILTER TANK GENERAL ARRANGEMENT
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SCALE NTS	PROJECTION 	DEFAULT UNITS mm	SHEET SIZE 17 x 11	SHEET 9 OF 9
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DRAWING NO.	REV
40181-PI-GAD-110	A

	1	2	3	4	5	6	7	8	9	10																																																																																																																																																																																																	
A	<div>REFERENCE DRAWINGS</div> <div>1. P&ID: 40181-PR-PID-001</div> <div>2. SITE GENERAL ARRANGEMENT : 40181-PI-GAD-001</div> <div>GENERAL</div> <div>1. DIMENSIONS ARE SHOWN IN MILLIMETER (mm) UNLESS STATED OTHERWISE</div> <div>2. TOLERANCES: TANK DIMENSIONS: +/- 6 mm</div> <div>NOZZLE LOCATIONS: +/- 6 mm</div> <div>3. AWC PROVIDES CATHODIC PROTECTION FOR ALL ALUMINUM TANKS.</div> <div>ENGINEERING, STANDARDS & SPECIFICATION</div> <div>1. AWC WILL PERFORM SEISMIC ANCHOR SIZING AS PER THE SPECIFICATION AND APPLICABLE GOVERNING CODES AND STANDARDS AND WILL INCLUDE AND STAMP ANCHOR DETAILS SHOWING THE REQUIRED ANCHOR REACTION FORCE, ANCHOR SIZE, MATERIAL AND GRADE.</div> <div>2. ALL CALCULATIONS RELATED TO CONCRETE STRENGTH, EMBEDMENT DEPTH AND/OR EPOXY SELECTION AND ANY OTHER ASSOCIATED CALCULATIONS/DESIGN AND ANCHOR SUPPLY BY OTHERS.</div> <div>3. STRUCTURAL DESIGN BY AWC WILL BE AUTHENTICATED BY IN HOUSE STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA, CANADA. ISSUED FOR CONSTRUCTION (IFC) ISSUE'S ONLY.</div> <div>4. ALL TANK, SKID, PLATFORM & STAIR WELDING TO CONFORM TO CSA W47.1.</div> <div>5. ALL WELDED PIPE SPOOLS TO CONFORM TO ASME B31.3.</div> <div>6. ALL AWC ALUMINUM TANKS ARE NSF61 COMPLIANT WHEN THE WATER IS WITHIN A PH RANGE OF 6-9.</div> <div>7. ALL WETTED FASTENERS INSIDE TANK TO BE ISOLATED FROM DISSIMILAR METAL CONTACT.</div> <div>MATERIALS</div> <div>1. ALL STRUCTURAL MEMBERS TO BE ALUMINUM 6061-T6</div> <div>2. ALL PIPING TO BE 304/304L STAINLESS STEEL UNLESS STATED OTHERWISE.</div> <div>3. ALL HARDWARE TO BE ASTM F593, 18-8 SS</div> <div>FINISH</div> <div>1. ALL WELDS TO BE CLEANED USING A STAINLESS STEEL WIRE BRUSH.</div> <div>2. ALL WELDED SS WATER SERVICE PIPING TO BE PICKLED & PASSIVATED AS PER ASTM A967-A967M-17 AND ASTM A380 / A380M-17 USING AVESTA RED ONE 240.</div> <div>TESTING</div> <div>1. ALL WELDS TO BE VISUALLY INSPECTED FOR DEFECTS.</div> <div>2. ALL PIPING TO BE HYDROTESTED TO ASME B31.3 STANDARDS.</div> <div>ELECTRICAL</div> <div>1. MINIMUM 1M OF CLEARANCE REQUIRED IN FRONT OF ANY ELECTRICAL PANEL / JUNCTION BOX.</div>						<div>INSTALLATION</div> <div>1. EPDM ISOLATION MEMBRANE IS REQUIRED BETWEEN THE CONCRETE FLOOR AND THE BOTTOM OF THE SKID BASEPLATE. MEMBRANE TO BE SUPPLIED AND INSTALLED BY OTHERS.</div> <div>2. SUPPLY AND INSTALLATION OF SEISMIC ANCHOR BOLTS TO BE SUPPLIED AND INSTALLED BY OTHERS.</div> <div>3. ANY INTERCONNECTING PIPING BETWEEN AWC'S EQUIPMENT AND THE WTP TO BE DESIGNED, SUPPLIED & INSTALLED BY OTHERS.</div> <div>4. SKID PIPING SHALL NOT BE SUBJECTED TO EXTERNAL PIPING FORCES AND MOMENTS. ZERO LOADING WILL BE ACCEPTED.</div> <div>ESTIMATED WEIGHTS</div> <div>1. RECYCLE SKID ASSEMBLY</div> <div>DRY WEIGHT800 KG</div> <div>OPERATING WEIGHT (WITH WATER)1,150 KG</div> <div>2. SATURATOR</div> <div>DRY WEIGHT550 KG</div> <div>OPERATING WEIGHT (WITH WATER)900 KG</div>						<div>PARTS LIST</div> <table><thead><tr><th>ITEM</th><th>QTY</th><th>DESCRIPTION</th><th>SIZE (in)</th><th>MATERIAL</th><th>MANUFACTURER</th><th>MODEL #</th><th>REV</th></tr></thead><tbody><tr><td>1</td><td>2</td><td>RECYCLE PUMP</td><td>2"</td><td>C.I.</td><td>GOULDS</td><td>10SV6FGE460</td><td>A</td></tr><tr><td>2</td><td>1</td><td>SATURATOR VESSEL</td><td>18"</td><td>STEEL</td><td>KOOTNEY</td><td>CUSTOM</td><td>A</td></tr><tr><td>3</td><td>1</td><td>BUTTERFLY VALVE C/W ELEC ACTUATOR, MODULATING</td><td>3"</td><td>D.I.</td><td>KEYSTONE</td><td>222 / EPI2</td><td>A</td></tr><tr><td>4</td><td>1</td><td>BUTTERFLY VALVE C/W HANDWHEEL</td><td>3"</td><td>D.I.</td><td>KEYSTONE</td><td>222</td><td>A</td></tr><tr><td>5</td><td>4</td><td>BUTTERFLY VALVE C/W HANDWHEEL</td><td>2"</td><td>D.I.</td><td>KEYSTONE</td><td>222</td><td>A</td></tr><tr><td>6</td><td>2</td><td>WAFER CHECK VALVE</td><td>2"</td><td>C.I.</td><td>VALMATIC</td><td>1402</td><td>A</td></tr><tr><td>7</td><td>2</td><td>CONTROL VALVE</td><td>3/4"</td><td>BRONZE</td><td>CLA-VAL</td><td>136-01</td><td>A</td></tr><tr><td>8</td><td>1</td><td>CHECK VALVE</td><td>1/2"</td><td>BRASS</td><td>MA STEWART</td><td>MAS-700</td><td>A</td></tr><tr><td>9</td><td>1</td><td>SOLENOID VALVE</td><td>1/2"</td><td>BRASS</td><td>ASCO</td><td>8210</td><td>A</td></tr><tr><td>10</td><td>15</td><td>BALL VALVE, FNPT</td><td>1/2"</td><td>SS</td><td>CRANE</td><td>9502</td><td>A</td></tr><tr><td>11</td><td>3</td><td>BALL VALVE, FNPT</td><td>1/4"</td><td>SS</td><td>CRANE</td><td>9502</td><td>A</td></tr><tr><td>12</td><td>1</td><td>MAGNETIC FLOW METER</td><td>2"</td><td>STEEL</td><td>E + H</td><td>W10</td><td>A</td></tr><tr><td>13</td><td>4</td><td>PRESSURE GAUGE</td><td>4"</td><td>SS</td><td>WIKA</td><td>233.53</td><td>A</td></tr><tr><td>14</td><td>2</td><td>PRESSURE TRANSMITTER</td><td>1/4"</td><td></td><td>WIKA</td><td>A10</td><td>A</td></tr><tr><td>15</td><td>1</td><td>PRESSURE RELIEF VALVE</td><td>3/4"</td><td>BRONZE</td><td>EMERSON</td><td>6010DDM01-KM0140</td><td>A</td></tr><tr><td>16</td><td>1</td><td>DIFFERENTIAL PRESSURE TRANSMITTER</td><td>1/2"</td><td>316 SS</td><td>E + H</td><td>PDM55B-CFL9/0</td><td>A</td></tr><tr><td>17</td><td>1</td><td>PRESSURE TRANSMITTER</td><td>1/2"</td><td>316 SS</td><td>E + H</td><td>PMP51</td><td>A</td></tr><tr><td>18</td><td>1</td><td>AIR PRESSURE REGULATOR</td><td>1/2"</td><td>ALUMINUM</td><td>ARO</td><td>AR40-N04G-Z 1/2"</td><td>A</td></tr><tr><td>19</td><td>1</td><td>SIGHT GLASS, 16" LONG</td><td>1/2"</td><td>316L SS</td><td>JOHN C ERNST</td><td>441</td><td>A</td></tr><tr><td>20</td><td>1</td><td>PRESSURE GAUGE, 2-1/2" DIAL, 0-160PSI</td><td>1/4"</td><td>316 SS</td><td>WIKA</td><td>213.53</td><td>A</td></tr><tr><td>21</td><td>1</td><td>JUNCTION BOX</td><td></td><td>STEEL</td><td>HAMMOND</td><td>EJ10106</td><td>A</td></tr><tr><td>22</td><td>2</td><td>DISCONNECT SWITCH</td><td></td><td></td><td>ABB</td><td>EOT32U3P4-P</td><td>A</td></tr></tbody></table>						ITEM	QTY	DESCRIPTION	SIZE (in)	MATERIAL	MANUFACTURER	MODEL #	REV	1	2	RECYCLE PUMP	2"	C.I.	GOULDS	10SV6FGE460	A	2	1	SATURATOR VESSEL	18"	STEEL	KOOTNEY	CUSTOM	A	3	1	BUTTERFLY VALVE C/W ELEC ACTUATOR, MODULATING	3"	D.I.	KEYSTONE	222 / EPI2	A	4	1	BUTTERFLY VALVE C/W HANDWHEEL	3"	D.I.	KEYSTONE	222	A	5	4	BUTTERFLY VALVE C/W HANDWHEEL	2"	D.I.	KEYSTONE	222	A	6	2	WAFER CHECK VALVE	2"	C.I.	VALMATIC	1402	A	7	2	CONTROL VALVE	3/4"	BRONZE	CLA-VAL	136-01	A	8	1	CHECK VALVE	1/2"	BRASS	MA STEWART	MAS-700	A	9	1	SOLENOID VALVE	1/2"	BRASS	ASCO	8210	A	10	15	BALL VALVE, FNPT	1/2"	SS	CRANE	9502	A	11	3	BALL VALVE, FNPT	1/4"	SS	CRANE	9502	A	12	1	MAGNETIC FLOW METER	2"	STEEL	E + H	W10	A	13	4	PRESSURE GAUGE	4"	SS	WIKA	233.53	A	14	2	PRESSURE TRANSMITTER	1/4"		WIKA	A10	A	15	1	PRESSURE RELIEF VALVE	3/4"	BRONZE	EMERSON	6010DDM01-KM0140	A	16	1	DIFFERENTIAL PRESSURE TRANSMITTER	1/2"	316 SS	E + H	PDM55B-CFL9/0	A	17	1	PRESSURE TRANSMITTER	1/2"	316 SS	E + H	PMP51	A	18	1	AIR PRESSURE REGULATOR	1/2"	ALUMINUM	ARO	AR40-N04G-Z 1/2"	A	19	1	SIGHT GLASS, 16" LONG	1/2"	316L SS	JOHN C ERNST	441	A	20	1	PRESSURE GAUGE, 2-1/2" DIAL, 0-160PSI	1/4"	316 SS	WIKA	213.53	A	21	1	JUNCTION BOX		STEEL	HAMMOND	EJ10106	A	22	2	DISCONNECT SWITCH			ABB	EOT32U3P4-P	A	A
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Phone : 604-638-0760 Fax: 604-638-0795
www.awcsolutions.ca


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CLIENT
DILLON CONSULTING, HALIFAX

PROJECT
EAST HANTS ENFIELD DAF UPGRADE

TITLE
RECYCLE SKID GENERAL ARRANGEMENT

SCALE
NTS

PROJECTION


DEFAULT UNITS
mm

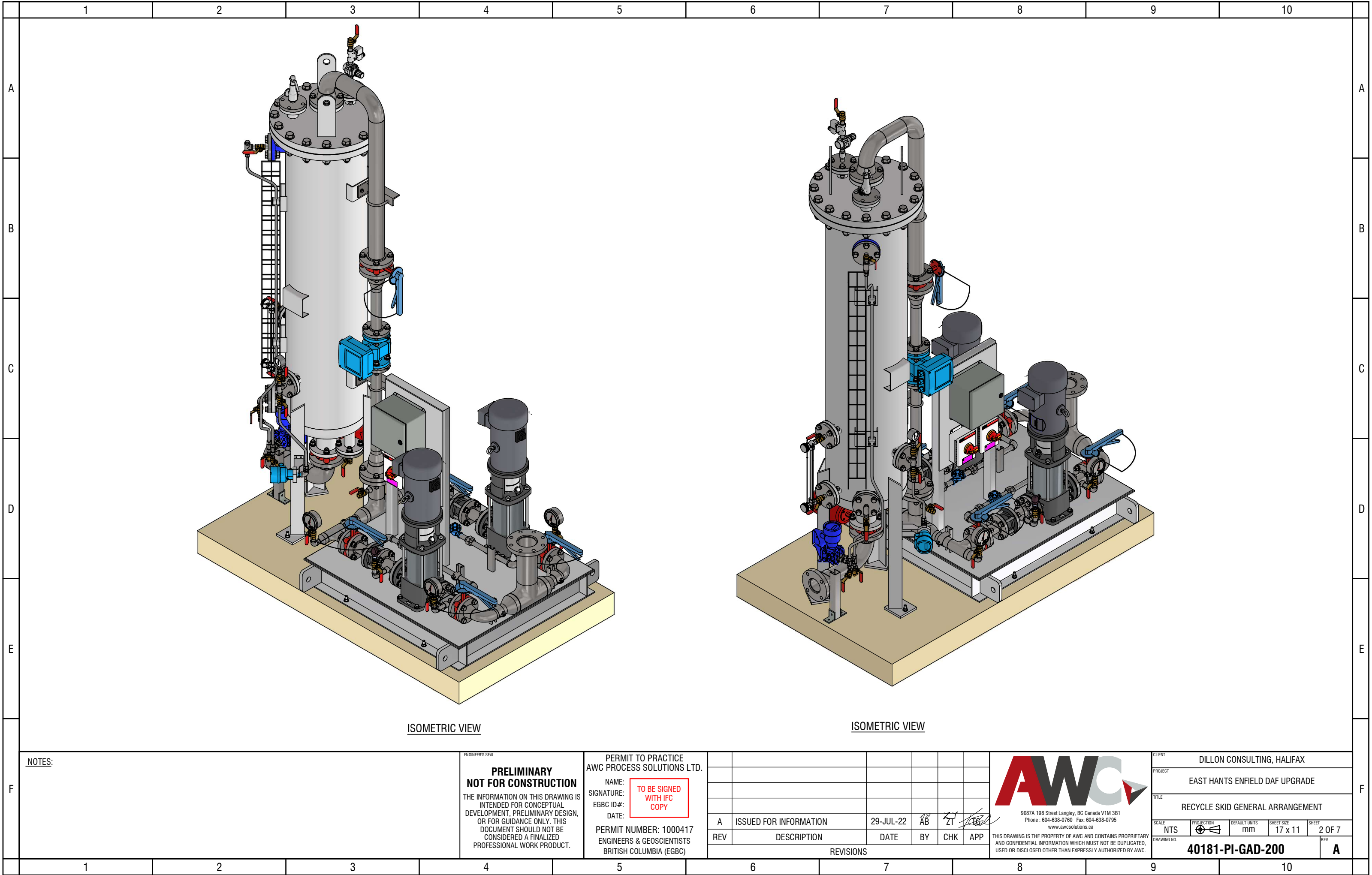
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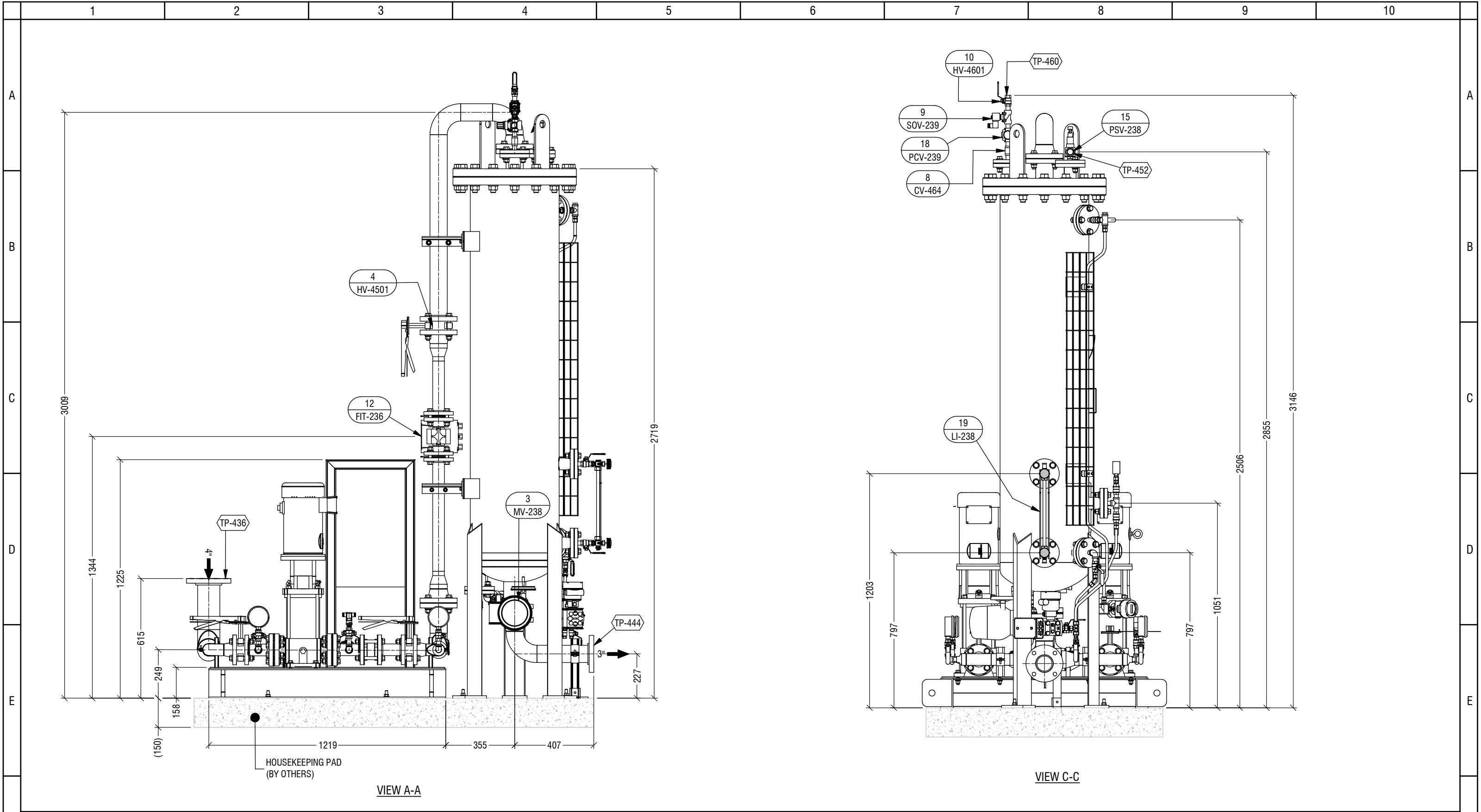
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1 OF 7

DRAWING NO.
40181-PI-GAD-200

REV
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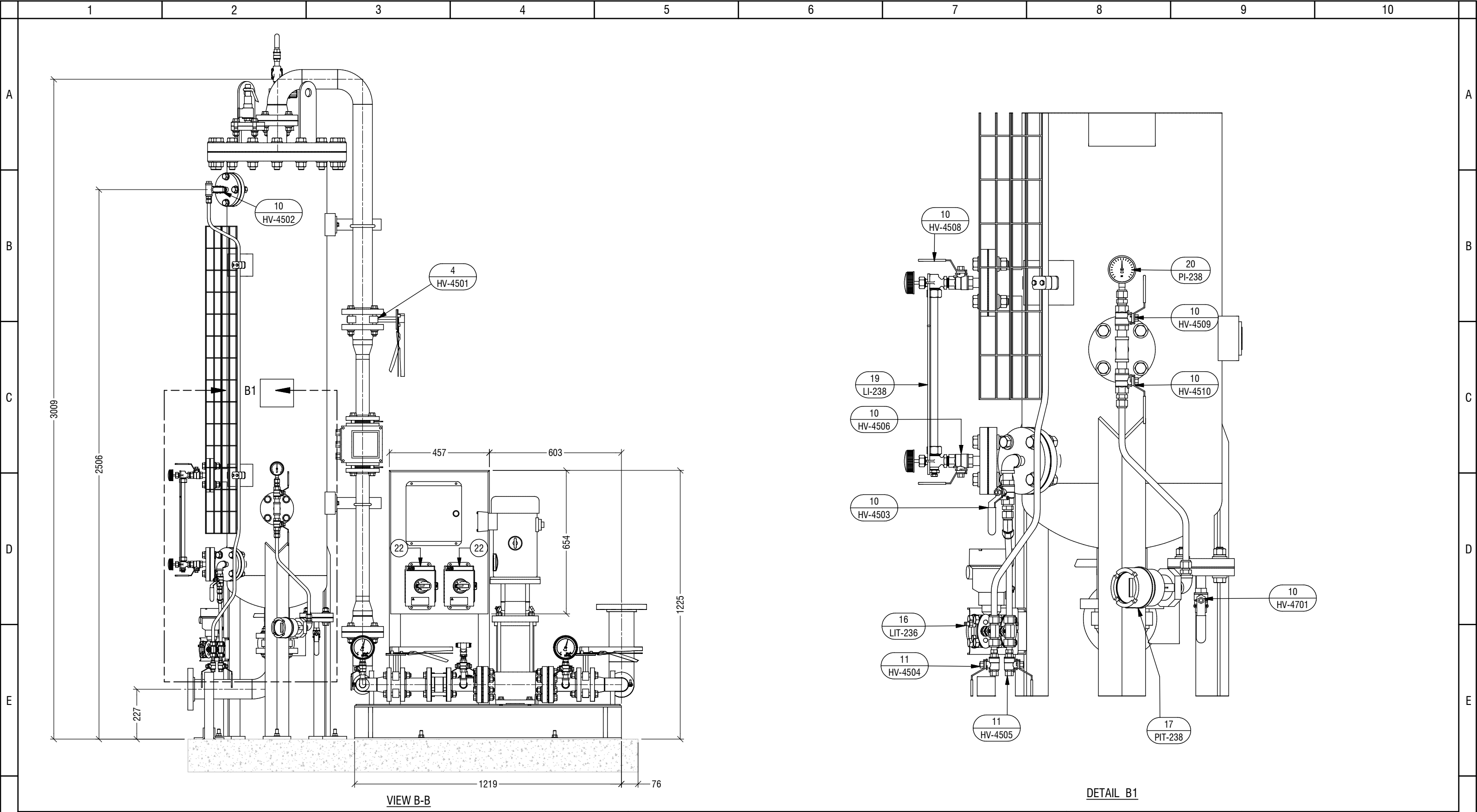
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CLIENT	DILLON CONSULTING, HALIFAX								
PROJECT	EAST HANTS ENFIELD DAF UPGRADE								
TITLE	RECYCLE SKID GENERAL ARRANGEMENT								
SCALE	NTS	PROJECTION		DEFAULT UNITS	mm	SHEET SIZE	17 x 11	SHEET	4 OF 7
DRAWING NO.	40181-PI-GAD-200							REV	A

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CLIENT
DILLON CONSULTING, HALIFAX

PROJECT
EAST HANTS ENFIELD DAF UPGRADE

TITLE
RECYCLE SKID GENERAL ARRANGEMENT

SCALE
NTS

PROJECTION
First Angle

DEFAULT UNITS
mm

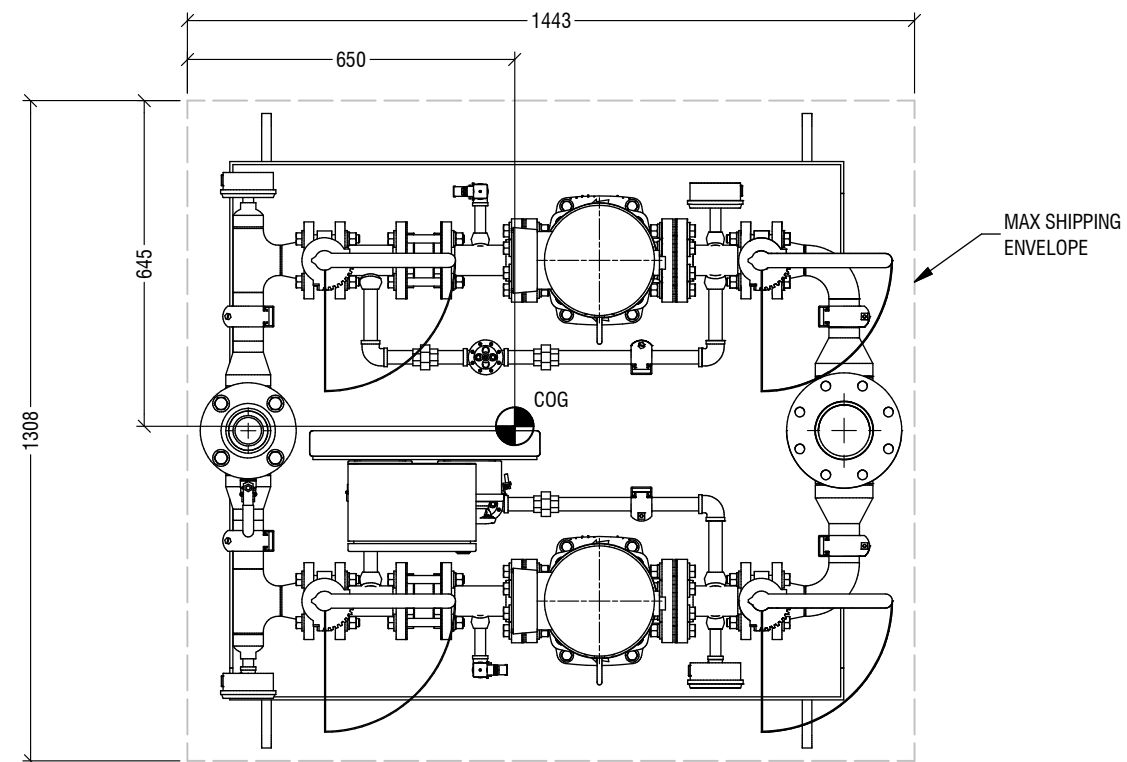
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SHEET
5 OF 7

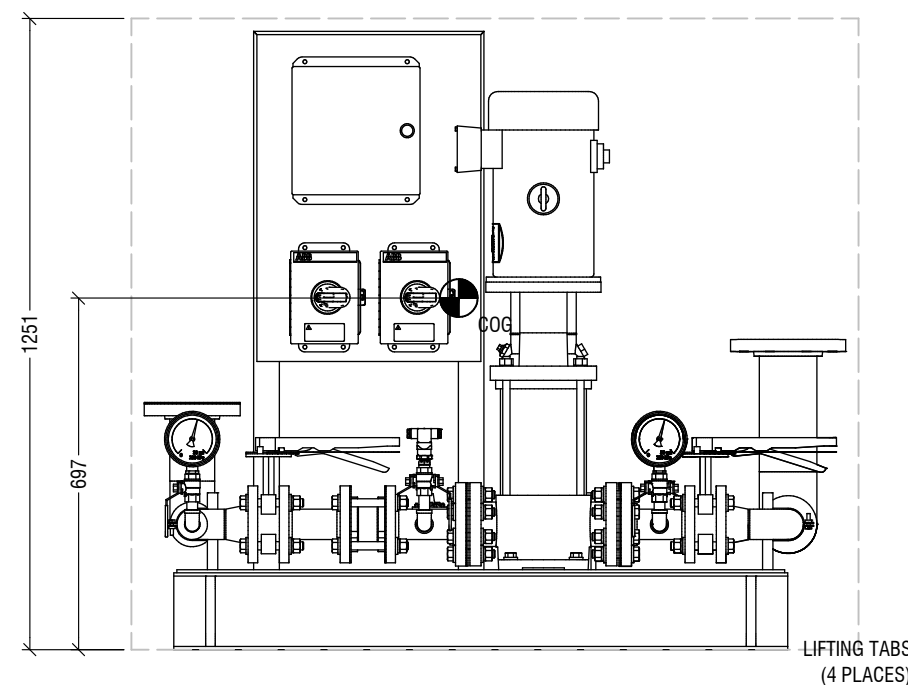
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40181-PI-GAD-200

REV
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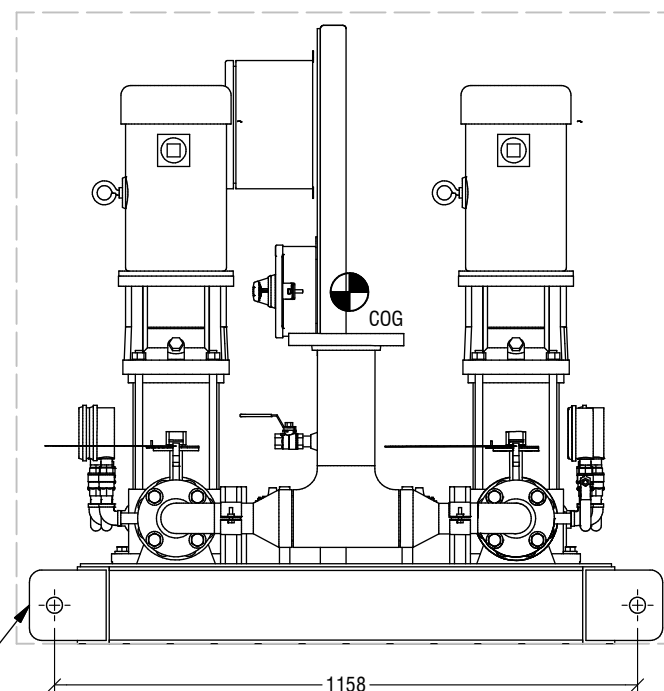
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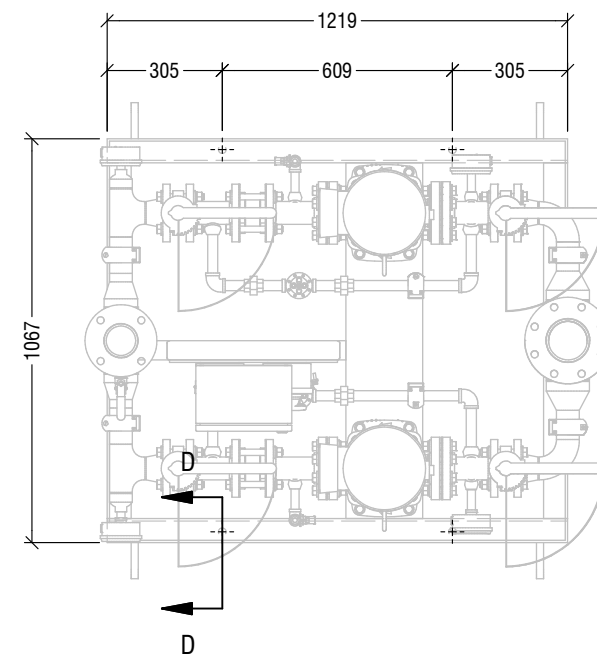
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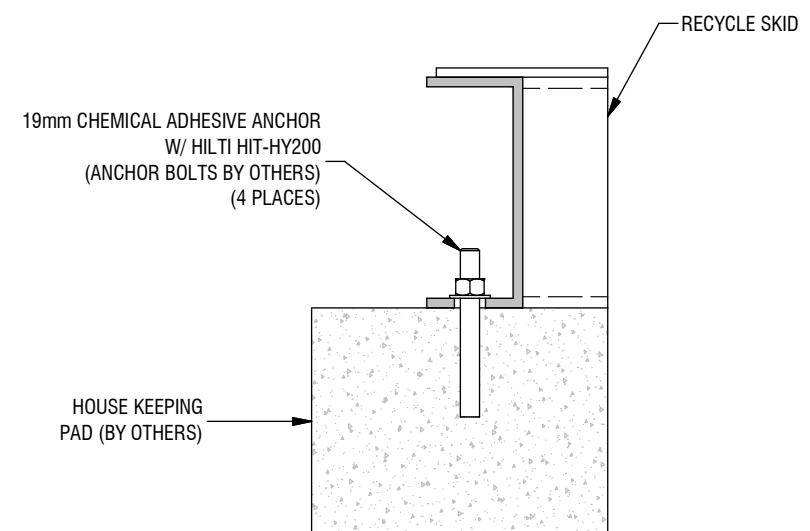
FRONT ELEVATION



SIDE ELEVATION



RECYCLE SKID ANCHOR LAYOUT



SECTION D-D

NOTES:

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9087A 198 Street Langley, BC Canada V1M 3B1
Phone : 604-638-0760 Fax: 604-638-0795
www.awcsolutions.ca

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EAST HANTS ENFIELD DAF UPGRADE

TITLE RECYCLE SKID GENERAL ARRANGEMENT

SCALE NTS	PROJECTION 	DEFAULT UNITS mm	SHEET SIZE 17 x 11	SHEET 6 OF 7
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DRAWING NO. **40181-PI-GAD-200**

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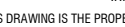


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PROJECT NAME: East Hants Enfield DAF Upgrade

PROJECT NO.: 40181

DOCUMENT NAME: Tie-In List

DOCUMENT NO.: 40181-PI-LST-001

A	29-Jul-22	Issued for Review	ZT ZT	FM m	JEE
Rev	Date	Revision Description	Originator	Checker	Approver

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East Hants (Enfield) DAF WTP Upgrade

PROCESS DESIGN CRITERIA

40181-PR-EDS-001

Project No: 40181

Municipality of East Hants

B	17-Jun-22	Issued for Design	KC KC	FL FL	KW KW
A	10-May-22	Issued for Review	KC	FL	KW
Rev	Date	Rev Description	Originator	Checker	Approver



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1. INTRODUCTION

1.1. Scope

This design basis outlines the overall design parameters and criteria to be adopted in the selection of process equipment and systems used for the project.

The East Hants (Enfield) WTP DAF Upgrade will consist of the following unit operations:

- 2-Stage Mechanical Flocculator
- DAF Clarifier
- Recycle/Saturator System
- Mixed Media Filter

These criteria will discuss all process equipment.

1.2. Abbreviations/ Acronyms

Abbreviation	Definition
AO	Aesthetic Objective
CU / TCU	Color Units / True Color Units
DAF	Dissolved Air Flotation
HMI	Human Machine Interface
HOA	Hand/Off/Auto
ITP	Inspection Test Plan
LCP	Local Control Panel
MAWP	Maximum Allowable Working Pressure
NTU	Nephelometric Turbidity Unit
P&ID	Piping and Instrumentation Diagram
PLC	Programmable Logic Controller
SCADA	System Control and Data Acquisition
STP	Standard Temperature and Pressure
VCP	Vendor Control Panel



Abbreviation	Definition
VFD	Variable Frequency Drive
WTP	Water Treatment Plant

1.3. Codes and Standards

Systems and equipment will be designed in accordance with applicable codes, standards, and local, provincial/state and federal regulations in effect at the date of execution of the contract. Codes, standards, and regulations will be referenced as required in the relevant technical specifications and calculations. In some cases, equipment may be purchased based on other standards or codes that the Client considers suitable. **All materials in contact with water will be NSF61 compliant.**

In case of conflict among this Design Basis Document, referenced codes and standards, and manufacturer's standard practices, the Client and AWC will mutually agree on which will govern. Where conflicts exist between specifications, codes and standards, the following descending order of precedence will apply:

- Government or Local Requirements
- Project Data Sheet
- Project Equipment Specification
- Company Standard Specification
- Industry Standard.

Any deviation from listed codes and standards may occur only with Client. The organizational bodies that govern the applicable codes, standards and regulations include, but are not limited to the following:

- ANSI – American National Standards Institute
- API – American Petroleum Institute
- ASME – American Society of Mechanical Engineers
- ASTM – American Society for Testing and Materials
- AWWA – American Water Works Association
- CSA – Canadian Standards Association
- ISA – Instrument Society of America
- ISO – International Standards Organization
- **NSF – National Science Foundation**
- UL – Underwriters Laboratories, Inc.



1.4. Units of Measure

The East Hants (Enfield) WTP DAF Upgrade will be measured using the metric system.

Category	Units	Useful Conversions
Acceleration	Feet per second squared – ft/s ² Meters per second squared – m/s ²	ft/s ² x 0.3048 = m/s ²
Acceleration - Standard	32.174 ft/s ² 9.80665 m/s ²	
Air Flow	Std. cubic feet per min – scfm (60 °F, 14.7 psia) Std. cubic meters per Hour – Sm ³ /h (15 °C, 101.325 kPaa)	scfm x 1.699 = Sm ³ /h
Areas	Square feet – ft ² Square meters – m ²	ft ² x 0.09290 = m ²
Concentrations	Parts per million - ppm, Parts per billion - ppb	
Density	Pound per cubic feet - lb/ft ³ Kilograms per cubic meter – kg/m ³	lb/ft ³ x 16.02 = kg/m ³
Specific Gravity	Compared to water or air – SG	
Distance	Feet – ft Mile – mi Millimeter - mm Meter – m Kilometer – km	ft x 0.3048 = m mi x 1.609 = km
Energy	British thermal unit - BTU, Kilojoules – kJ	BTU x 1.054 = kJ
Flow	US gallons per minute – gpm Cubic meters per hour – m ³ /h Cubic meters per day - m ³ /d Liters per second – L/s	gpm x 0.2271 = m ³ /h gpm x 0.06309 = L/s
Lengths	Inch - in, Feet – ft Millimeter – mm Meter – m	in x 25.4 = mm ft x 0.3048 = m
Loading	Gallons per minute per square foot – gpm/ft ²	gpm/ft ² x 2.445 = m ³ /h/m ² = m/h



Category	Units	Useful Conversions
	Cubic meters per hour per square meter – $\text{m}^3/[\text{h}\cdot\text{m}^2]$ = m/h	
Power	Horse-Power - HP Kilowatts – kW	HP x 0.746 = kW
Pressure (a – absolute, g – gauge, d - differential)	Pound per square inch – psi (psia, psig, psid) Kilopascals – kPa (kPaa, kPag, kPad) Atmosphere – atm	PSI x 6.895 = kPa
Pressure - Standard Atmosphere	14.70 psia 101.325 kPaa	
Speed	Feet per second – ft/s Mile per hour – mph Meters per Second – m/s Kilometers per Hour – km/h	ft/s x 0.3048 = m/s mph x 1.609 = km/h
STP	Standard Temperature and Pressure 15 °C @ 101.325 kPaa or 60 °F @ 14.7 psia	
Temperature	Degrees Fahrenheit - °F Degrees Celsius - °C	°C = (°F – 32)/1.8 °F = °C x 1.8 +32
Viscosity	Centipoise – cP (absolute) Centistokes – cSt (kinematic) pascal-second - Pa·s	
Volume	Cubic feet – ft ³ US Gallon – gal Cubic meters – m ³ Liters – L	gal x 3.785 = L ft ³ x 28.32 = L
Weight	Ounce – oz, Pound – lb Kilogram – kg Gram - g	lb x 0.4536 = kg oz x 28.35 = g

1.5. Design Flow

Water for the East Hants (Enfield) WTP will come from the Shubenacadie River. Raw water flows to the plant via gravity from a remote intake structure where it passes through a manually cleaned screen to a wet well. A set of existing pumps (P-001/002/003) are then used to deliver the water to the entire plant by pumping it into a common header that feeds the new and existing trains. The table below provides a summary of the flow conditions for the East Hants WTP. This flow data is taken from the Municipality of East Hants Enfield Water Treatment Plant Process Equipment Specification 11300 – Process Equipment Section 2.1 Design and Performance Criteria – Process Equipment Package.

Source	Flow Rate (m ³ /d)
Net Production Rate per WTP	5,730
Net Production Capacity per DAF Train	2,365
Net Production Capacity per Filter Train	1,910

* All flow rates presented exclude the DAF saturator recycle flow.

1.6. Raw Water Quality

As this project is an expansion based on already operating trains, most raw water quality parameters are not included in this design document. The required water quality parameters can be found in the current edition of the 'Canadian Guidelines for Drinking Water Quality'. The additional specified criteria listed in the table below was also provided in the Municipality of East Hants Enfield Water Treatment Plant Process Equipment Specification 11300 – Process Equipment Section 2.1 Design and Performance Criteria – Process Equipment Package.

Parameter	Units	Average	Range
Protozoan Cysts*	-	N/A	>2.5 Log reduction
Aluminum	mg/L	<0.2	0-1.0
Colour	TCU	<5 TCU	0-15
Turbidity	NTU	< 0.1 NTU	0-0.2
Total Organic Carbon (TOC)	mg/L	< 3 mg/L	0-5

*Assumes 0.5 log inactivation through disinfection to achieve plant total log reduction of 3.0 of Giardia and Cryptosporidium.



1.7. Mechanical Selection Criteria

The equipment will be robust and fit for heavy-duty applications found in the municipal environment.

Process equipment will be conservatively rated and sized to withstand a net production rate of 5,730 m³/d when one filter is offline.

Process equipment will be designed to meet the site design conditions, such as altitude, ambient temperatures, seismic, wind, rain, snow, ice, humidity and any corrosive surrounding atmosphere.

Wherever possible, standard “off the shelf” equipment and components will be used.

Materials used in the construction or assembly of equipment will be purchased new. AWC’s Inspection Test Plan (ITP) will be followed and signed off prior to shipping.

Where required for operation, maintenance or cleaning, equipment will be provided with appropriate access. This access may include stairs and/or ladders, walkways and platforms complete with handrails, knee rails and kickboards that comply with the current applicable health and safety regulations.

Equipment will be designed and/or selected in accordance with the process and site condition requirements. Other factors to be considered for equipment selection will include the following:

- Maximization of personnel health, safety and protection
- Ease of installation, operation, inspection, cleaning, maintenance, equipment removal and repairs
- Minimization of vibration and excessive noise
- Minimization of thermal expansion stresses
- Maximization of standardized components
- Availability of spare parts
- Demonstrate a successful operational history of comparable equipment and components in similar installations.

Equipment heavier than 50 kg shall be provided with lifting lugs or another convenient lifting arrangement.

Mechanical moving parts will be guarded. The design of the guards will allow their removal without having to remove other items of equipment. Openings, sumps, vessels, bins, hoppers, elevated platforms or pits that constitute a hazard will be adequately fenced or otherwise guarded. Equipment will be provided with appropriate access areas where required for operation, maintenance or cleaning.

Material transfer points shall be designed to minimize spillage.

1.8. Hydraulics/Piping Selection Criteria

The optimal design pipe velocity for pumped fluids will be 1 m/s or greater to optimize the life of the pipes and eliminate settling. This velocity will dictate the size and head of piping, valves and pumps. Design pressure for process piping will be between 0 and 1034 kPa under most conditions. Large bore piping is defined as greater than 50 mm nominal diameter, while small bore is defined as 50 mm and smaller nominal diameter.



The plant piping will follow the schedule presented below.

Pipe Service	Material	Connections	Specifications
Large Process SS01	304 SS Sch 10S	Flange	ASTM A240
Small Process SS01	304 SS Sch 10S	NPT	ASTM A240
Large Process PV01	PVC Sch 80	Flange	ASTM D1785, TYPE I
Small Process PV01	PVC Sch 80	NPT	ASTM D1785, TYPE I

Miscellaneous “out-of-spec” or speciality items not specified in the individual line classes will be identified on P&IDs and drawings with applicable item descriptions.

Various type of valving will be used through the Enfield WTP facility depending upon the material transported through a piping. Specific valving is as follows:

- Butterfly Valves – process water, where applicable
- Plug Valves – process water containing high solids
- Ball Valves –reagent and service water pipelines
- Control Valves –Control valves will be electrically actuated with a fail-last position where applicable. Actuators will have visual indication of the valve position.

Process water pumps will be vertical end suction centrifugal, flexible coupling style on a steel base. Pumps supplied as part of standard vendor packages will be per their standard. Motors will all be TEFC.

1.9. Process Equipment

All process systems will be as per this process design criteria and Piping and Instrument Diagrams (P&IDs).

2. OVERALL PROCESS DESCRIPTION

Below is an abbreviated version of the Process Description. Refer to 40181-PR-NAR-001 – Process Description for additional information.

2.1. Summary

The East Hants (Enfield) DAF WTP Upgrade will add an additional DAF & Filter train to work in parallel with the existing trains of a similar design.

This project includes the following equipment for the overall DAF system:

1. 2-Stage Mechanical Flocculator
2. DAF Clarifier
3. Recycle/Saturator System
4. Mixed Media Filter

3. FLOCCULATION

3.1. Summary

Following injection of the coagulant **and caustic** upstream, the coagulated water is delivered to each train. Due to the length of the infeed pipe, no flash mixer is required for the chemical reaction tank in this train as there has been enough time for the water to sufficiently coagulate after chemical dosing. The water then passes through a 2-stage mechanical flocculator, where each stage is equipped with a variable speed drive to provide variations in energy input and allow tapered flocculation for optimized floc formation. Manual drain valves permit tank draining and cleaning.

Note: AWC will provide the rapid flash mixing tank. Future rapid mixer has been accounted for in both electrical and mechanical drawings and design.

3.2. Design Criteria

Parameter	Value
Number of Flocculator Stages per train	2 in series
Total Flocculator Detention Time (with two in series)	29.9 mins
Flocculator G Value per cell	100 to 60 S ⁻¹
Flocculator Tank Useful Volume	49.07 m ³
Flocculator Tank Dimension	3,960 mm L X 3,810 mm W X 3,356 mm H

4. DAF CLARIFIER

4.1. Summary

The flocculated water then enters the inlet contact zone of the DAF clarifier at a low level where microscopic air bubbles are injected. These bubbles attach to the floc particles, rendering them buoyant. The contact zone is bounded by an inclined baffle which ensures good contact and does not allow denser layers of unaerated water to pass back into the air inlet zone. As the flow passes over the baffle, the buoyant flocs rise to the surface forming a floating sludge layer. Clarified water is collected from the floor of the cell through submerged perforated pipes and then passes over a high-level outlet weir.

The floating sludge layer is periodically removed by a mechanical, variable speed, surface skimmer. The skimmer pushes the float into the sludge collection trough which then drains to waste. The length and frequency of this operation are adjustable through the PLC. A spray bar with a solenoid valve is also provided in the trough to assist in the removal of the float.



4.2. Design Criteria

Parameter	Value
Surface Loading Rate (Max)	8.92 m/hr
Total DAF Clarifier Detention Time	21.8 min

5. RECYCLE/SATURATOR SYSTEM

5.1. Summary

The clarified water is pumped into the packed tower saturator. Compressed air enters the top of the saturator. Water passes through media and becomes fully saturated with air. Saturated water re-enters the DAF clarifier through the two manifolds. There is a dedicated recycle/saturator system for each DAF unit.

5.2. Design Criteria

Parameter	Value
Recycle Flowrate	284 m ³ /day
Recycle Rate	12 %
Saturator Loading Rate	73.9 m/h
Total Dynamic Head for Recycle Pump	70.1 m
Recycle Pump Motor Power	5 HP

6. MIXED MEDIA FILTER

6.1. Summary

Clarified water then flows to the top of the filter and flows by gravity through a dual media filter. The filter is rated for 1,910 m³/day at a maximum loading of 8.93 m/h and operates on a constant level, constant rate principle.

The media is comprised of layers of Anthracite, sand and gravel. The media layers are supported by a plenum containing an array of nozzles, which allow the filtered water to drain under the plenum, as well as control the distribution of air and water during backwash (below).

A level control valve is provided on each filter which controls the downstream effluent valve (and rinse valve post backwash), to maintain a constant level above the media.



6.2. Design Criteria

Parameter	Value
Hydraulic Loading (Max)	8.93 m/hr
Detention Time	6.5 min

Filter Media Layers	Depth (mm)
Gravel	300
Sand	500
Anthracite	500

7. FILTER BACKWASHING

7.1. Summary

Based upon the amount of turbidity contained in the incoming water, the filter media becomes saturated with the removed solids, causing an increase in filter headloss and/or a rise in effluent turbidity. At this point a backwash cycle will be automatically initiated. Backwashing can also be automatically initiated at pre-set time intervals or manually at any time.

The backwash sequence includes an initial air scour followed by a water only backwash. A flow control valve modulates the backwash flow and provides for controlled start up of the backwash flow. Dirty backwash water is collected through surface launders and is directed to waste.

After completion of the backwash, the filter is run to waste (rinse cycle) to ensure the effluent quality meets the required standard. At that point the filter is returned to normal service.

7.2. Design Criteria

Parameter	Value
Filter Backwash High Flow Loading	39.11 m/hr
Filter Backwash High Flow Rate	8,358 m ³ /day
Filter Backwash Low Flow Loading	19.56 m/hr
Filter Backwash Low Flow Rate	4,179 m ³ /day
Air Scour Flow Rate (Min)	54 m/hr



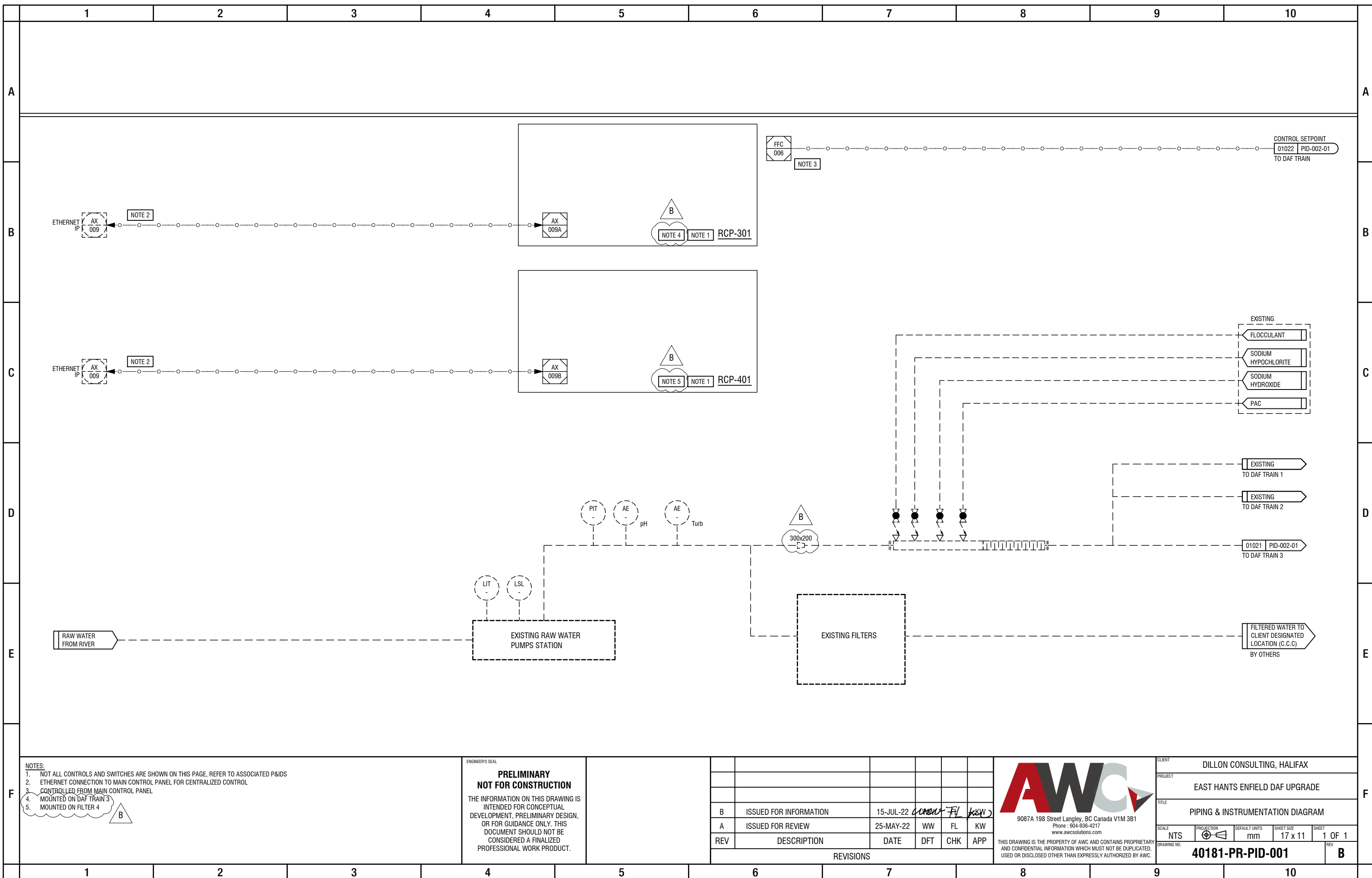
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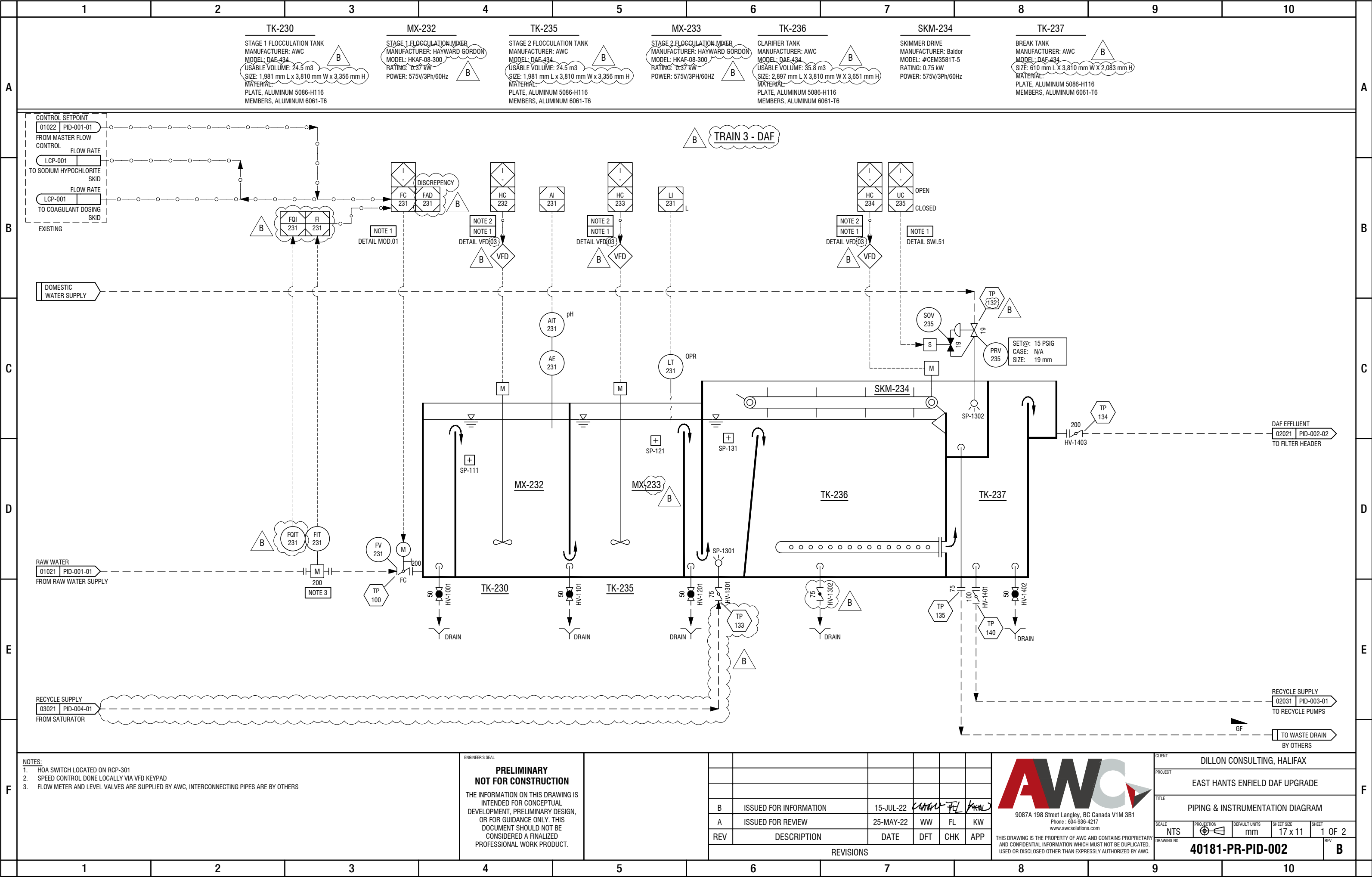
8.1. Pumps

Pumps should be sized for normal operating conditions as a default, but the rate point must be on the pump curve. Rated flow rate is in actual m³/d at normal operating pressure and temperature and is to be indicated as per following table:

Service	Rate Capacity over Normal
Recycle Pump	53%

Note: Filter backwash, air scour, DAF influent flow control and on/off and filter level control/on/off will be integrated with the existing trains through the existing main plant PLC to ensure the entire system operates cohesively as one plant.









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NOTES:
1. DOUBLE DASH INDICATES A SOFT TAG "- -"

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REVISIONS

9087A 198 Street Langley, BC Canada V1M 3B1

Phone : 604-936-4217

www.awcsolutions.com

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CLIENT

DILLON CONSULTING, HALIFAX

PROJECT

EAST HANTS ENFIELD DAF UPGRADE

TITLE

PIPING & INSTRUMENTATION DIAGRAM

SCALE

NTS

PROJECTION

DEFAULT UNITS

mm

SHEET SIZE

17 x 11

SHEET

1 OF 1

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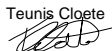
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A	<div>LINE TYPES</div> <div><div><div><div></div></div><div>FLOW LINE PRIMARY (.3MM PLINE)</div></div><div><div><div></div></div><div>FLOW LINE SECONDARY (.15MM PLINE)</div></div><div><div><div></div></div><div>FLOW LINE BY OTHERS (.15MM PLINE)</div></div><div><div><div></div></div><div>FLOW LINE FUTURE (.25MM PLINE)</div></div><div><div><div></div></div><div>FLOW LINE UNDER GROUND (.000MM PLINE)</div></div><div><div><div></div></div><div>DEMOLISHED LINES OR EQUIPMENT</div></div><div><div><div></div></div><div>PACKAGE UNIT OR BATTERY LIMITS (.015" PLINE)</div></div></div> <div><div><div></div></div><div>CONNECTION TO PROCESS OR MECHANICAL LINK, OR INSTRUMENT INPUT SUPPLY</div></div> <div><div><div></div></div><div>ELECTRIC SIGNAL (HARDWIRED)</div></div> <div><div><div></div></div><div>PNEUMATIC SIGNAL</div></div> <div><div><div></div></div><div>CAPILLARY TUBING (FILLED SYSTEM)</div></div> <div><div><div></div></div><div>HYDRAULIC SIGNAL</div></div> <div><div><div></div></div><div>ELECTROMAGNETIC OR SONIC (GUIDED)</div></div> <div><div><div></div></div><div>ELECTROMAGNETIC / NUCLEAR OR SONIC (UNGUIDED)</div></div> <div><div><div></div></div><div>INTERNAL SERIAL LINK (SOFTWARE, FIBER-OPTIC, DATALINK, ETC.)</div></div> <div><div><div></div></div><div>EXTERNAL SERIAL LINK (SOFTWARE, FIBER-OPTIC, DATALINK, ETC.)</div></div> <div><div><div></div></div><div>MECHANICAL LINK</div></div> <div><div><div></div></div><div>UNDEFINED SIGNAL</div></div>		<div>LINE DESIGNATIONS</div> <div><div><div><div></div></div><div>AA-BB-CCCC-DD</div></div><div><div><div></div></div><div>MATERIAL CODE</div></div><div><div><div></div></div><div>LINE NUMBER</div></div><div><div><div></div></div><div>LINE SERVICE CODE</div></div><div><div><div></div></div><div>LINE SIZE (METRIC)</div></div></div> <div>LINE SERVICE CODES</div> <div>AA - ACETIC ACID AM - ALUM AS - AIR SCOUR BW - BACKWASH WATER DHW - DOMESTIC HOT WATER DCW - DOMESTIC COLD WATER DR - DRAIN FC - FERRIC CHLORIDE FL - FLOCCULANT FW - FILTERED WATER HA - HYDROCHLORIC ACID HWS - HOT WATER SUPPLY CWS - COLD WATER SUPPLY IA - INSTRUMENT AIR NO - CAUSTIC SODA NT - NITROGEN OV - OVERFLOW POL - POLYMER PA - PLANT AIR PF - PLANT FEED PPS - POTASSIUM PERMANGANATE PW - POTABLE WATER RW - RAW WATER SUA - SULPHURIC ACID SW - SANITARY WASTE TW - TREATED WATER UW - UTILITY WATER WW - WASTE WATER</div> <div>MATERIAL CODES</div> <div>CPVC - CHLORINATED POLYVINYL CHLORIDE PVC - POLYVINYL CHLORIDE CS - CARBON STEEL DI - DUCTILE IRON CUL - COPPER TYPE "L" CUK - COPPER TYPE "K" HDPE - HIGH DENSITY POLY ETHYLENE LDPE - LDPE FLEXIBLE TUBING SS4 - 304SS OR 304L SS6 - 316SS OR 316L CSL - CARBON STEEL, LINED PEX - PEX POLY TUBING HPR - HIGH PRESSURE RUBBER HOSE HAS - HASTELLOY C A20 - ALLOY-20 PP - POLYPROPYLENE PE - POLYETHYLENE PTFE - POLYTETRAFLUOROETHYLENE PVDF - POLYVINYLDENE FLUORIDE FRP - FIBERGLASS REINFORCED PLASTIC</div>		<div>VALVE SYMBOLS</div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GATE VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GATE VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GLOBE VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GLOBE VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>PLUG VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>PLUG VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>BALL VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>BALL VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>V BALL VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>V BALL VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>BUTTERFLY VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>BUTTERFLY VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>KNIFE GATE VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>KNIFE GATE VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>NEEDLE VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>NEEDLE VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>DIAPHRAGM VALVE</div></div>		<div>VALVE SYMBOLS (CONT.)</div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GATE VALVE ANGLE</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GATE VALVE ANGLE</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GATE VALVE 3 WAY</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>BALL VALVE 3 WAY</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>GATE VALVE 4 WAY</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>BALL VALVE 4 WAY</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>PINCH VALVE NORMALLY OPEN</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>PINCH VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>100</div><div>HV-101</div></div><div>FLOAT VALVE</div></div> <div><div><div><div></div></div><div>25</div><div>HV-101</div></div><div>VENT VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>25</div><div>HV-101</div></div><div>VENT VALVE NORMALLY CLOSED WITH CAP</div></div> <div><div><div><div></div></div><div>25</div><div>HV-101</div></div><div>VENT VALVE NORMALLY CLOSED WITH PLUG</div></div> <div><div><div><div></div></div><div>25</div><div>HV-101</div></div><div>DRAIN VALVE NORMALLY CLOSED</div></div> <div><div><div><div></div></div><div>25</div><div>HV-101</div></div><div>DRAIN VALVE NORMALLY CLOSED WITH CAP</div></div> <div><div><div><div></div></div><div>25</div><div>HV-101</div></div><div>DRAIN VALVE NORMALLY CLOSED WITH PLUG</div></div>		<div>VALVE SYMBOLS (CONT.)</div> <div><div><div><div></div></div><div>100</div><div>CV-101</div></div><div>CHECK VALVE</div></div> <div><div><div><div></div></div><div>200</div><div>BFP-101</div></div><div>BACK FLOW PREVENTER DOUBLE CHECK VALVE</div></div> <div><div><div><div></div></div><div>200</div><div>RPZA-101</div></div><div>BACK FLOW PREVENTER WITH REDUCED PRESSURE ZONE</div></div> <div><div><div><div></div></div><div>100</div><div>IQ</div></div><div>INJECTION QUILL C/W BUILT-IN CHECK VALVE</div></div> <div><div><div><div></div></div><div>100</div><div>CV-101</div></div><div>CHECK VALVE FOOT</div></div> <div><div><div><div></div></div><div>25</div><div>AV-101</div></div><div>AIR VENT VALVE</div></div> <div><div><div><div></div></div><div>25</div><div>CAV-101</div></div><div>COMBINATION AIR VALVE</div></div> <div><div><div><div></div></div><div>25</div><div>VB-101</div></div><div>VACCUM BREAKER</div></div> <div><div><div><div></div></div><div>15</div><div>SP-101</div></div><div>PULSATION DAMPENR</div></div> <div><div><div><div></div></div><div>XV</div><div>101</div></div><div>SOLENOID VALVE</div></div>		<div>ACTUATORS</div> <div><div><div><div></div></div><div>PNEUMATIC ACTUATOR DOUBLE ACTING</div></div><div><div><div><div></div></div><div>PNEUMATIC ACTUATOR SPRING TO CLOSE</div></div><div><div><div><div></div></div><div>PNEUMATIC ACTUATOR SPRING TO OPEN</div></div><div><div><div><div></div></div><div>DIAPHRAGM ACTUATOR</div></div><div><div><div><div></div></div><div>DIAPHRAGM ACTUATOR WITH MANUAL OVERRIDE</div></div><div><div><div><div></div></div><div>M</div><div>M</div></div><div>MOTORIZED ACTUATOR</div></div><div><div><div><div></div></div><div>M</div><div></div></div><div>MOTORIZED ACTUATOR WITH MANUAL OVERRIDE</div></div><div><div><div><div></div></div><div>S</div></div><div>SOLENOID ACTUATOR</div></div><div><div><div><div></div></div><div>T</div></div><div>MANUAL LEVER</div></div><div><div><div><div></div></div><div>SPRING OR WEIGHTED RELIEF ACTUATOR</div></div></div></div></div></div></div></div>		<div>ANNOTATIONS</div> <div><div><div><div></div></div><div>TK-401</div></div><div>EQUIPMENT TAG LABEL</div></div> <div><div><div><div></div></div><div>P-101</div></div><div>SOME KIND OF PUMP FLOW RATE MATERIALS, SIZE MOTOR DETAILS</div><div>EQUIPMENT DESCRIPTION</div></div> <div><div><div><div></div></div><div>SP-101</div></div><div>SPECIALTY PART LABEL</div></div> <div><div><div><div></div></div><div>0</div></div><div>REVISION TAG</div></div> <div><div><div><div></div></div><div>1</div><div>2</div></div><div>FLOW ARROWS</div></div> <div><div><div><div></div></div><div>1</div><div>2</div></div><div>DOWNWARD SLOPE</div></div> <div><div><div><div></div></div><div>1</div><div>2</div></div><div>UPWARD SLOPE</div></div> <div><div><div><div></div></div><div>GF</div></div><div>FLOW BY GRAVITY</div></div> <div><div><div><div></div></div><div>LINE BREAK</div></div></div>		<div>INSULATION AND HEAT TRACE</div> <div><div><div><div></div></div><div>50mm</div><div>P</div></div><div>E = ELECTRICAL S = STEAM G = GLYCOL C = COLD INSULATION P = PERSONAL PROTECTION</div></div>	
B											B					
C											C					
D											D					
E	<div>VALVE IDENTIFICATION</div> <div><div><div><div></div></div><div>VALVE SIZE (METRIC)</div></div><div><div><div></div></div><div>100</div></div><div><div><div></div></div><div>VALVE IDENTIFIER</div></div><div><div><div></div></div><div>HV-101</div></div><div><div><div></div></div><div>N.O.</div></div><div><div><div></div></div><div>SEQUENTIAL NUMBER</div></div></div> <div>VALVE IDENTIFIER</div> <div>HV - HAND VALVE BFV - BUTTERFLY VALVE BV - BALL VALVE CV - CHECK VALVE ARV - AIR RELEASE VALVE CAV - COMBINATION AIR VALVE AAV - AIR VACUUM VALVE PRV - PRESSURE SAFETY VALVE BFP - BACKFLOW PREVENTER PSV - PRESSURE SAFETY / RELIEF VALVE PCV - PRESSURE CONTROL VALVE (BACK, REDUCING, SUSTAINING RPZA - REDUCED PRESSURE ZONE ASSEMBLY TMV - THERMOSTATIC MIXING VALVE</div> <div>VALVE OPTION</div> <div>N.C. - NORMALLY CLOSED N.O. - NORMALLY OPEN F.C. - FAIL CLOSED F.O. - FAIL OPEN F.P. - FAIL TO POSITION L.O. - LOCKED OPEN L.C. - LOCKED CLOSED T.S. -TRAVEL STOP</div>												E			
F	<div>NOTES:</div> <div>1. SYMBOLS BASED ON ISA 5.1</div>		<div>ENGINEER'S SEAL</div>		<div>PERMIT TO PRACTICE</div> <div>PERMIT TO PRACTICE AWC WATER SOLUTIONS LTD.</div> <div>NAME: Teunis Cloete SIGNATURE:  EGBC ID#: 221630 DATE: 28-APR-2022 PERMIT NUMBER: 1000417 ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA (EGBC)</div>		<div>0</div> <div>ISSUED FOR USE</div> <div>28-APR-22</div> <div>SBW</div> <div>MS/KW</div> <div>REV</div> <div>DESCRIPTION</div> <div>DATE</div> <div>DFT</div> <div>CHK</div> <div>APP</div>		<div>AWC</div> <div>9087A 198 Street Langley, BC Canada V1M 3B1 Phone : 604-936-4217 www.awcsolutions.com</div> <div>THIS DRAWING IS THE PROPERTY OF AWC AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY AWC.</div>		<div>CLIENT</div> <div>DILLON CONSULTING, HALIFAX</div> <div>PROJECT</div> <div>EAST HANTS ENFIELD DAF UPGRADE</div> <div>TITLE</div> <div>P&ID LEGEND SHEETS</div> <div>SCALE</div> <div>NTS</div> <div>PROJECTION</div> <div>DEFAULT UNITS</div> <div>mm</div> <div>SHEET SIZE</div> <div>17 x 11</div> <div>SHEET</div> <div>1 OF 7</div> <div>DRAWING NO.</div> <div>40181-PR-PID-005</div> <div>REV</div> <div>0</div>		F			
	1	2	3	4	5	6	7	8	9	10						

INSULATION AND HEAT TRACE

50mm

E = ELECTRICAL



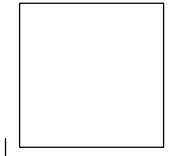
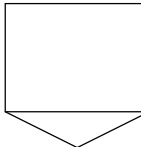
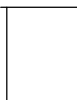

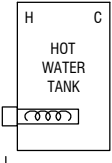
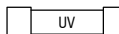



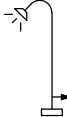


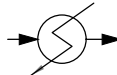
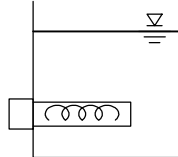
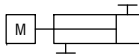
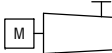
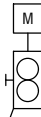

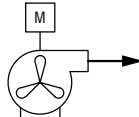
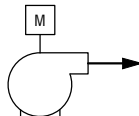
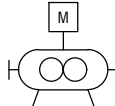

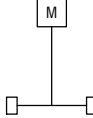
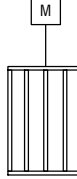
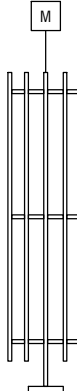






S = STEAM

G = GLYCOL

C = COLD INSULATION

P = PERSONAL PROTECTION

	1	2	3	4	5	6	7	8	9	10													
A	<div>BOUNDARIES</div> <div><div></div>TIE POINT MARKER</div> <div><div></div>SCOPE LIMIT</div> <div><div></div></div> <div><div></div>GRADE</div> <div><div></div>BUILDING LIMITS</div> <div><div></div>INSULATION / TRACING CHANGE</div> <div><div></div>SPECIFICATION CHANGE</div> <div><div></div>CLIENT / CONTRACTOR INTERFACE</div>		<div>FLOW SENSORS</div> <div><div></div>FLOW METER GENERIC ORIFICE PLATE</div> <div><div></div>FLOW METER GENERIC VENTURI TUBE</div> <div><div></div>FLOW METER PITOT TUBE</div> <div><div></div>FLOW METER TURBINE</div> <div><div></div>FLOW METER M - MAGNETIC V - VORTEX C - CORIOLIS T - THERMAL MASS N - NUCLEAR</div> <div><div></div>FLOW METER SONIC</div>		<div>ANALYTICAL SENSORS</div> <div><div></div>ANALYSIS SENSOR NON FLOW THROUGH TYPE</div> <div><div></div>ANALYSIS SENSOR THROUGH FLOW CELL</div>		<div>LEVEL SENSORS</div> <div><div></div>LEVEL SENSOR GAUGE GLASS, DISPLACEMENT OR DIFFERENTIAL PRESSURE TYPE</div> <div><div></div>LEVEL SENSOR SWITCH CAP - CAPACITANCE COND - CONDUCTIVITY T.F. - TUNING FORK</div> <div><div></div>ATMOSPHERIC LEVEL SENSOR (HEAD PRESSURE)</div> <div><div></div>LEVEL SENSOR ULT - ULTRASONIC TYPE GWR - GUIDED RADAR TYPE OPR - OPEN PATH RADAR TYPE</div>		<div>SELF ACTUATED DEVICES - PRESSURE</div> <div><div></div>PRESSURE AND VACUUM RELIEF VALVE</div> <div><div></div>PRESSURE RELIEF OR SAFETY VALVE ANGLE PATTERN SPRING</div> <div><div></div>PRESSURE RELIEF OR SAFETY VALVE STRAIGHT THROUGH PATTERN SPRING</div> <div><div></div>RUPTURE DISC</div> <div><div></div>BACK PRESSURE / PRESSURE RELIEF MULTIFUNCTION VALVE FOR METERING PUMPS</div> <div><div></div>PRESSURE CONTROL VALVE WITH PILOTED SOLENOID VALVE</div> <div><div></div>PRESSURE REDUCING VALVE WITH INTERNAL TAP</div> <div><div></div>BACK PRESSURE REGULATOR VALVE WITH INTERNAL TAP</div>														
B											B												
C											C												
D	<div>DRAWING PAGE CONNECTORS</div> <div><div><div>DESCRIPTION 1</div></div>OFF PAGE CONNECTOR END OF SCOPE</div> <div><div><div>DESCRIPTION 1</div><div>DESCRIPTION 2</div></div>OFF PAGE CONNECTOR END OF SCOPE</div> <div><div><div>SOME KIND OF LIQUID</div><div>12345 PID-101-01</div></div>TO / FROM SOMEWHERE</div> <div><div><div>SOME KIND OF LIQUID</div><div>12345 PID-101-01</div></div>TO / FROM SOMEWHERE</div> <div><div><div>SOME KIND OF LIQUID</div><div>12345 PID-101-01</div></div>TO / FROM SOMEWHERE</div> <div><div><div>SOME KIND OF SIGNAL</div><div>12345 PID-101-01</div></div>TO / FROM SOMEWHERE</div>		<div>FLOW SENSORS</div> <div><div></div>FLOW METER VARIABLE AREA INDICATOR (ROTAMETER)</div> <div><div></div>FLOW METER INLINE</div>		<div>PRESSURE SENSORS</div> <div><div></div>DIRECT CONNECTION</div> <div><div></div>DIAPHRAGM SEAL CONNECTION</div> <div><div></div>REMOTE DIAPHRAGM SEAL C/W CAPILLIARY TUBING</div>						D												
E			<div>TEMPERATURE SENSORS</div> <div><div></div>TEMPERATURE INSTRUMENT C/W FLANGED THERMOWELL</div> <div><div></div>TEMPERATURE INSTRUMENT C/W THREADED THERMOWELL</div>								E												
F	<div>NOTES:</div> <div>1. SYMBOLS BASED ON ISA 5.1</div> <div>2. UNLESS OTHERWISE STATED, THERMOWELL INCLUDED WITH ALL TEMPERATURE SENSORS.</div>			<div>ENGINEER'S SEAL</div>	<div>PERMIT TO PRACTICE</div> <div>PERMIT TO PRACTICE AWC WATER SOLUTIONS LTD.</div> <div>NAME: Teunis Cloete</div> <div>SIGNATURE: </div> <div>EGBC ID#: 221630</div> <div>DATE: 28-APR-2022</div> <div>PERMIT NUMBER: 1000417</div> <div>ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA (EGBC)</div>	<div>REVISIONS</div> <table><tr><th>REV</th><th>DESCRIPTION</th><th>DATE</th><th>DFT</th><th>CHK</th><th>APP</th></tr><tr><td>0</td><td>ISSUED FOR USE</td><td>28-APR-22</td><td>SBW</td><td>MS/KW</td><td>AWC</td></tr></table>			REV	DESCRIPTION	DATE	DFT	CHK	APP	0	ISSUED FOR USE	28-APR-22	SBW	MS/KW	AWC	<div></div> <div>9087A 198 Street Langley, BC Canada V1M 3B1</div> <div>Phone : 604-936-4217</div> <div>www.awcsolutions.com</div> <div>THIS DRAWING IS THE PROPERTY OF AWC AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY AWC.</div>	<div>CLIENT</div> <div>DILLON CONSULTING, HALIFAX</div> <div>PROJECT</div> <div>EAST HANTS ENFIELD DAF UPGRADE</div> <div>TITLE</div> <div>P&ID LEGEND SHEETS</div> <div>SCALE</div> <div>NTS</div> <div>PROJECTION</div> <div>DEFULT UNITS</div> <div>mm</div> <div>SHEET SIZE</div> <div>17 x 11</div> <div>SHEET</div> <div>2 OF 7</div> <div>DRAWING NO.</div> <div>40181-PR-PID-005</div> <div>REV</div> <div>0</div>	F
REV	DESCRIPTION	DATE	DFT	CHK	APP																		
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A	<div>TANKS & VESSELS</div> <div><div></div><div>PRESSURE VESSEL VERTICAL OR HORIZONTAL (TANKS, RECEIVERS, DRYERS, SEPARATORS)</div></div> <div><div></div><div>TK-101 TANK OPEN TOP</div></div> <div><div></div><div>TK-101 TANK CLOSED TOP WITH SECONDARY CONTAINMENT</div></div> <div><div></div><div>TK-101 TANK CONE BOTTOM</div></div> <div><div></div><div>TK-101 CHEMICAL TANK SINGLE WALL</div></div> <div><div></div><div>TK-101 CHEMICAL TANK DOUBLE WALL</div></div> <div><div></div><div>HWT-101 HOT WATER TANK</div></div>		<div>FILTRATION / TREATMENT SYMBOLS</div> <div><div></div><div>UV-101 ULTRAVIOLET REACTOR</div></div> <div><div></div><div>FILTRATION MEMBRANES</div></div> <div><div></div><div>F-101 FILTER</div></div> <div><div>FIRE & SAFETY</div><div><div></div><div>SAFETY SHOWER WITH EYE WASH</div></div><div><div></div><div>SAFETY SHOWER</div></div><div><div></div><div>EYE WASH</div></div><div><div>TMV-101 THERMOSTATIC MIXING VALVE</div><div></div></div></div> <div><div>HEAT EXCHANGERS</div><div><div></div><div>HEAT EXCHANGER</div></div><div><div></div><div>ELECTRIC HEATER</div></div></div>		<div>COMPRESSORS</div> <div><div></div><div>C-101 COMPRESSOR RECIPROCATING</div></div> <div><div></div><div>C-101 CENTRIFUGAL COMPRESSOR</div></div> <div><div></div><div>C-101 ROTARY SCREW COMPRESSOR</div></div> <div><div>FAN / BLOWERS</div><div><div></div><div>B-101 FAN</div></div><div><div></div><div>B-101 FAN WITH OUTLET DUCT</div></div><div><div></div><div>B-101 BLOWER</div></div><div><div></div><div>B-101 PD AIR BLOWER</div></div></div>		<div>MIXERS</div> <div><div></div><div>MX-101 MIXER PROPELLER</div></div> <div><div></div><div>MX-101 MIXER PADDLE</div></div> <div><div></div><div>MX-101 MIXER RAKE</div></div> <div><div></div><div>MX-101 FLOCCULATOR PADDLE MIXER</div></div>																																				
B											B																																
C											C																																
D											D																																
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F	<div>ENGINEER'S SEAL</div>			<div>PERMIT TO PRACTICE PERMIT TO PRACTICE AWC WATER SOLUTIONS LTD. NAME: Teunis Cloete SIGNATURE:  EGBC ID#: 221630 DATE: 28-APR-2022 PERMIT NUMBER: 1000417 ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA (EGBC)</div>		<table><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>0</td><td>ISSUED FOR USE</td><td>28-APR-22</td><td>SBW</td><td>MS/KW</td><td></td></tr><tr><td>REV</td><td>DESCRIPTION</td><td>DATE</td><td>DFT</td><td>CHK</td><td>APP</td></tr></table>																					0	ISSUED FOR USE	28-APR-22	SBW	MS/KW		REV	DESCRIPTION	DATE	DFT	CHK	APP	<div><div>9087A 198 Street Langley, BC Canada V1M 3B1 Phone : 604-936-4217 www.awcsolutions.com</div><div>THIS DRAWING IS THE PROPERTY OF AWC AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY AWC.</div></div>		<div>CLIENT DILLON CONSULTING, HALIFAX</div> <div>PROJECT EAST HANTS ENFIELD DAF UPGRADE</div> <div>TITLE P&ID LEGEND SHEETS</div> <div>SCALE NTS</div> <div>PROJECTION </div> <div>DEFAULT UNITS mm</div> <div>SHEET SIZE 17 x 11</div> <div>SHEET 4 OF 7</div> <div>DRAWING NO. 40181-PR-PID-005</div> <div>REV 0</div>		F
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A	INSTRUMENTATION DEVICE AND FUNCTION SYMBOLS			DEVICE AND INSTRUMENT IDENTIFICATION LETTERS					FUNCTION SYMBOLS			A					
	LOCATION AND ACCESSIBILITY	DISCRETE INSTRUMENT	SHARED DISPLAY AND CONTROL (DCS)	PLC									B				
	FIELD MOUNTED 1. LOCATED IN FIELD 2. VISIBLE AT FIELD LOCATION 3. NORMALLY ACCESSIBLE TO AN OPERATOR													C			
	PRIMARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. LOCATED IN OR ON FRONT OF CENTRAL OR MAIN CONTROL PANEL 2. VISIBLE ON FRONT OF MAIN PANEL OR ON VIDEO DISPLAY 3. NORMALLY ACCESSIBLE TO AN OPERATOR AT PANEL FRONT OR CONSOLE														D		
PRIMARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. LOCATED IN REAR OF CENTRAL OR MAIN PANEL 2. NOT VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY 3. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE												E					
AUXILIARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. LOCATED IN OR ON FRONT OF SECONDARY LOCAL PANEL OR CONSOLE 2. VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY 3. NORMALLY ACCESSIBLE TO AN OPERATOR AT PANEL FRONT OR CONSOLE													F				
AUXILIARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. LOCATED IN REAR OF SECONDARY LOCAL PANEL OR CONSOLE 2. LOCATED IN FIELD CABINET 3. NOT VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY 4. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE																	
X - FOR TYPE OF ANALYSER (pH, TURB, ETC.) Y - APPLICABLE FOR TYPE OF INSTRUMENT (PD, OPR, ETC.) XX / YY - FOR ALARM AND CONTROL POSITIONS																	
B																	
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NOTES: 1. SYMBOLS BASED ON ISA 5.1			ENGINEER'S SEAL	PERMIT TO PRACTICE PERMIT TO PRACTICE AWC WATER SOLUTIONS LTD. NAME: Teunis Cloete SIGNATURE: EGBC ID#: 221630 DATE: 28-APR-2022 PERMIT NUMBER: 1000417 ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA (EGBC)												 9087A 198 Street Langley, BC Canada V1M 3B1 Phone : 604-936-4217 www.awcsolutions.com THIS DRAWING IS THE PROPERTY OF AWC AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY AWC.	
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PROJECT NAME: EAST HANTS ENFIELD DAF UPGRADE

PROJECT NO.: 40181

DOCUMENT NAME: ELECTRICAL LOAD LIST

DOCUMENT NO.: 40181 - EL - LST - 001

B	13/Jul/22	ISSUED FOR INFORMATION	<i>CW</i>	PL	<i>EB</i>
A	10/Jun/22	ISSUED FOR INFORMATION	EB	PL	CW
Rev	Date	Revision Description	Originator	Checker	Approver

		1		2		3		4		5		6		7		8		9		10								
REV #	Equipment					Watts	Motor - Hp	Voltage	Motor FLA**	Phase	Consumed Load						Notes											
	Tag Description		Tag #	Quantity	Load Duty						Continuous		Intermittent	Standby	Phase 2 Continuous (H)	Phase 2 Intermittent (I)		Phase 2 Standby (J)										
											F	G	H	I	J	K												
						A	B	C	D	E	kVA=(C*F*SQRT(G)/1000)	kVA=(C*F*SQRT(G)/1000)	kVA=(C*F*SQRT(G)/1000)	kVA=(C*F*SQRT(G)/1000)	kVA=(C*F*SQRT(G)/1000)	kVA=(C*F*SQRT(G)/1000)												
A	A	600-120VAC CONTROL TRANSFORMER		XF-001	1	Continuous	3000		575	-	3	3.00						120VAC AND UPS POWER IS TO BE FED TO RCP-401 FROM RCP-301										
	B	STAGE #1 FLOCCULATOR MIXER		MX-232	1	Continuous	373	0.5	575	0.90	3	0.90																
	B	STAGE #2 FLOCCULATOR MIXER		MX-233	1	Continuous	373	0.5	575	0.90	3	0.90																
	A	SKIMMER DRIVE		SKM-234	1	Intermittent	746	1	575	1.7	3		1.69															
	A	RECYCLE PUMP #1		P-231	1	Continuous	3730	5	575	6.1	3	6.08																
	A	RECYCLE PUMP #2		P-232	1	Standby	3730	5	575	6.1	3			6.08														
	A	FUTURE RAPID MIXER		TBA	1	Continuous	1492	2	575	2.7	3	2.69						FUTURE MIXER MAX 2 HP RATING										
B						0		0		1																		
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						0		0		1																		
F	x = 100	Estimated Operational Running Load (Est. (H*X%)+(I*Y%)):			14.4	kVA	Phase 1	0.0	kVA	Phase 2	Site Voltage:	575	Total:	13.6	1.7	6.1	0.0	0.0	0.0									
	y = 50	Peak Load (Est. (H*X%)+(I*Y%)+(J%Z)):			15.2	kVA	Phase 1	0.0	kVA	Phase 2	Site Phases:	3	Total Load kVA:	21.33														
	z = 0	Estimated Generator Load VA:			15.2	kVA	Phase 1	0.0	kVA	Phase 2	*Main Incoming Service Amps:											22.35						
F	NOTES: *Feeder Equipment Sized By Others **FLA From CSA 22.1 Table 44										ENGINEER'S SEAL PRELIMINARY NOT FOR CONSTRUCTION THE INFORMATION ON THIS DRAWING IS INTENDED FOR CONCEPTUAL DEVELOPMENT, PRELIMINARY DESIGN, OR FOR GUIDANCE ONLY. THIS DOCUMENT SHOULD NOT BE CONSIDERED A FINALIZED PROFESSIONAL WORK PRODUCT.			PERMIT TO PRACTICE													CLIENT DILLON CONSULTING, HALIFAX	
																						PROJECT EAST HANTS ENFIELD DAF UPGRADE						
														B		ISSUED FOR INFORMATION		13/7/2022		CW		PL		EB				
														A		ISSUED FOR INFORMATION		6/Jun/22		EB		PL		CW				
											REV			DESCRIPTION		DATE		BY		CHK		APP		DRAWING NO. 40181-EL-LST-001-01				
																							SHEET 1 OF 1					
																							REVISIONS					
																							B					
		1		2		3		4		5		6		7		8		9		10								



PROJECT NAME: EAST HANTS ENFIELD DAF UPGRADE

PROJECT NO.: 40181

DOCUMENT NAME: CABLE SCHEDULE (CONTRACTOR CONNECTIONS ONLY)

DOCUMENT NO.: 40181-EL-SCH-001

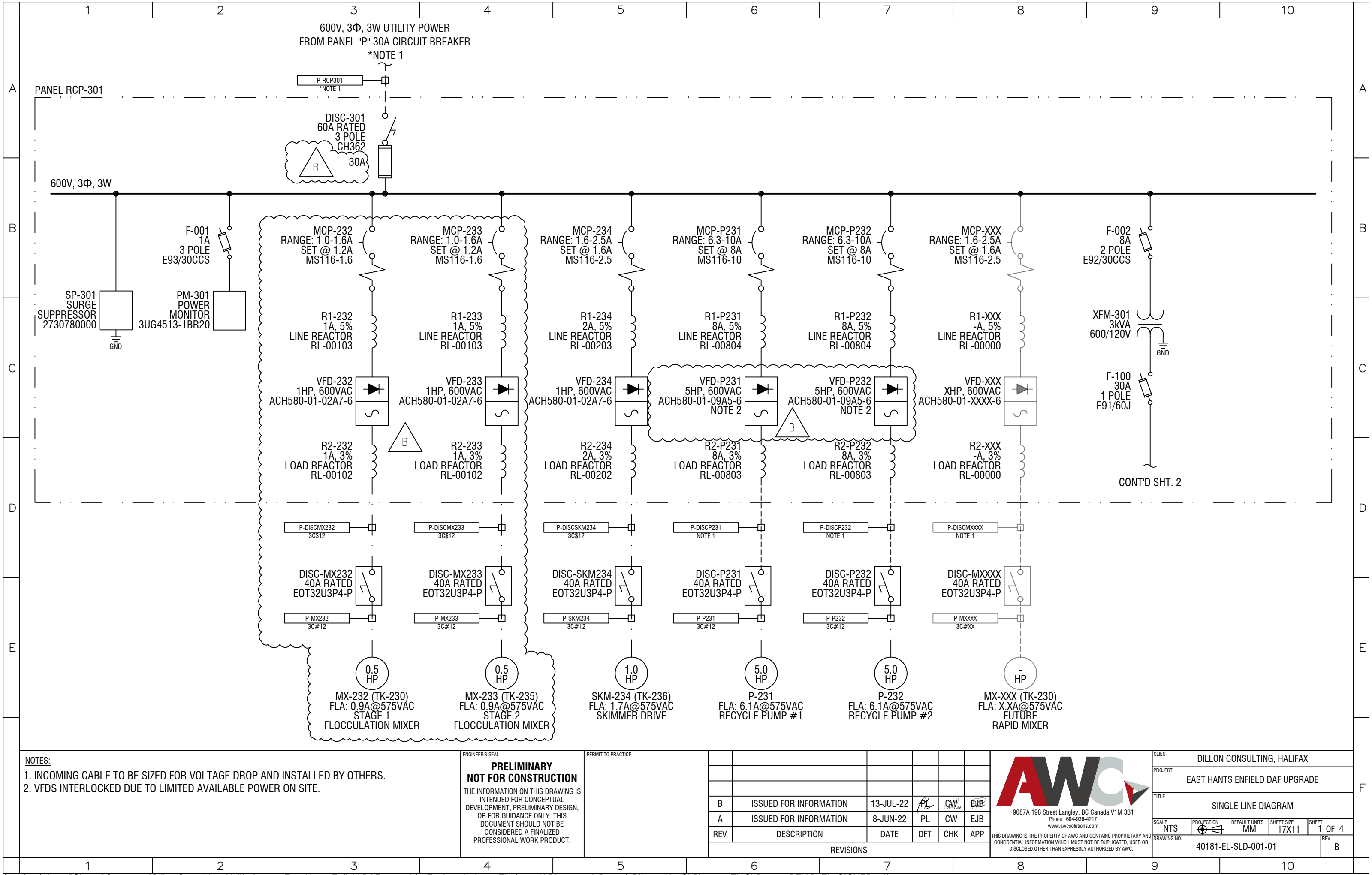
A	13-JUN-22	ISSUED FOR INFORMATION	<i>PL</i>	<i>CW</i> <i>Wiles</i>	<i>EJB</i>
REVISION	DATE	REVISION DESCRIPTION	ORIGINATOR	CHECKER	APPROVER

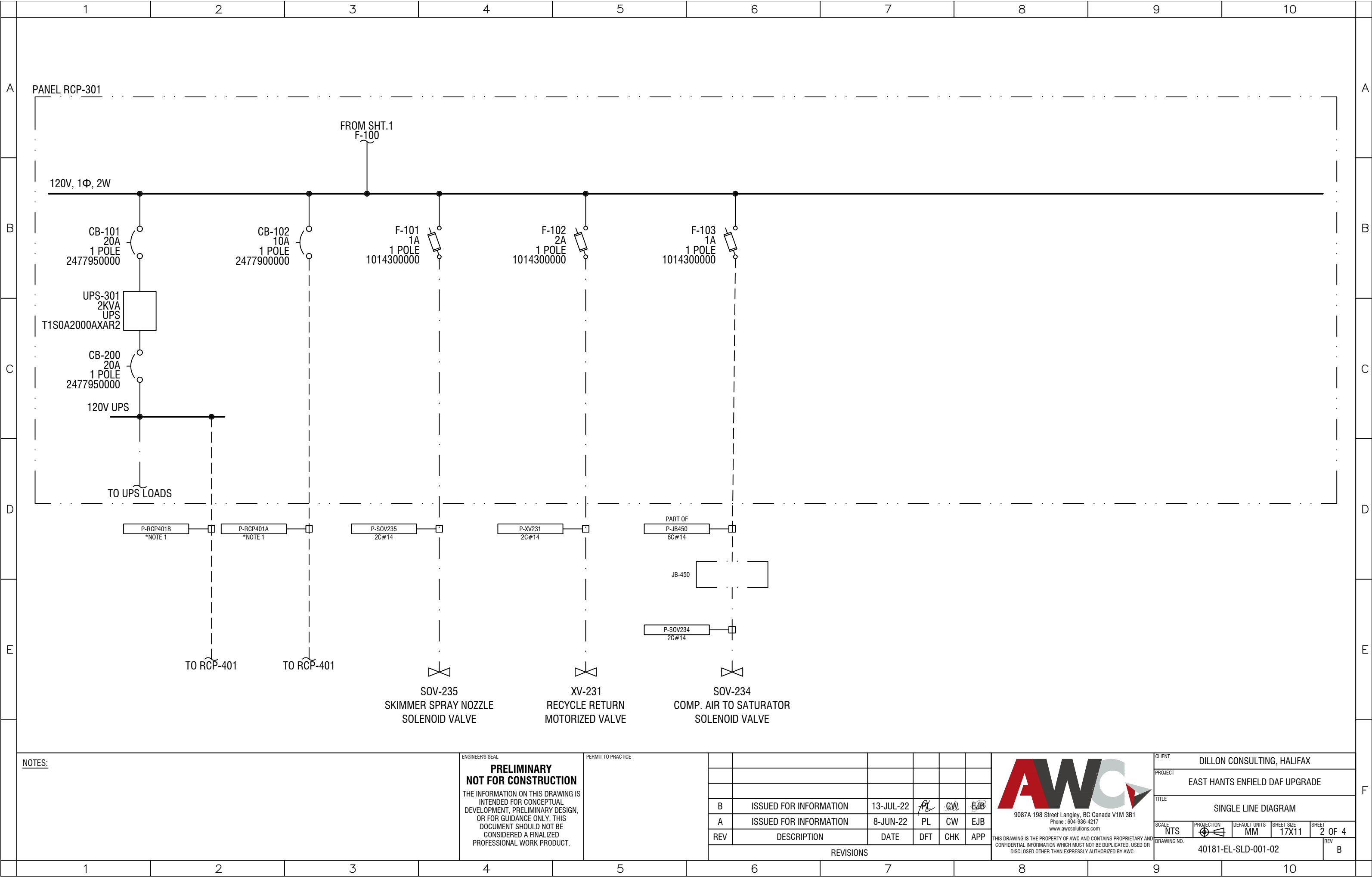
[illegible]



Phone : 604-936-4217
www.awcsolutions.com

PROJECT NAME: EAST HANTS ENFIELD DAF UPGRADE
PROJECT NUMBER: 40181
DOCUMENT NO.: 40181-EL-SLD-001-00
REVISION: ISSUED FOR INFORMATION
DOCUMENT NAME: SINGLE LINE DIAGRAM





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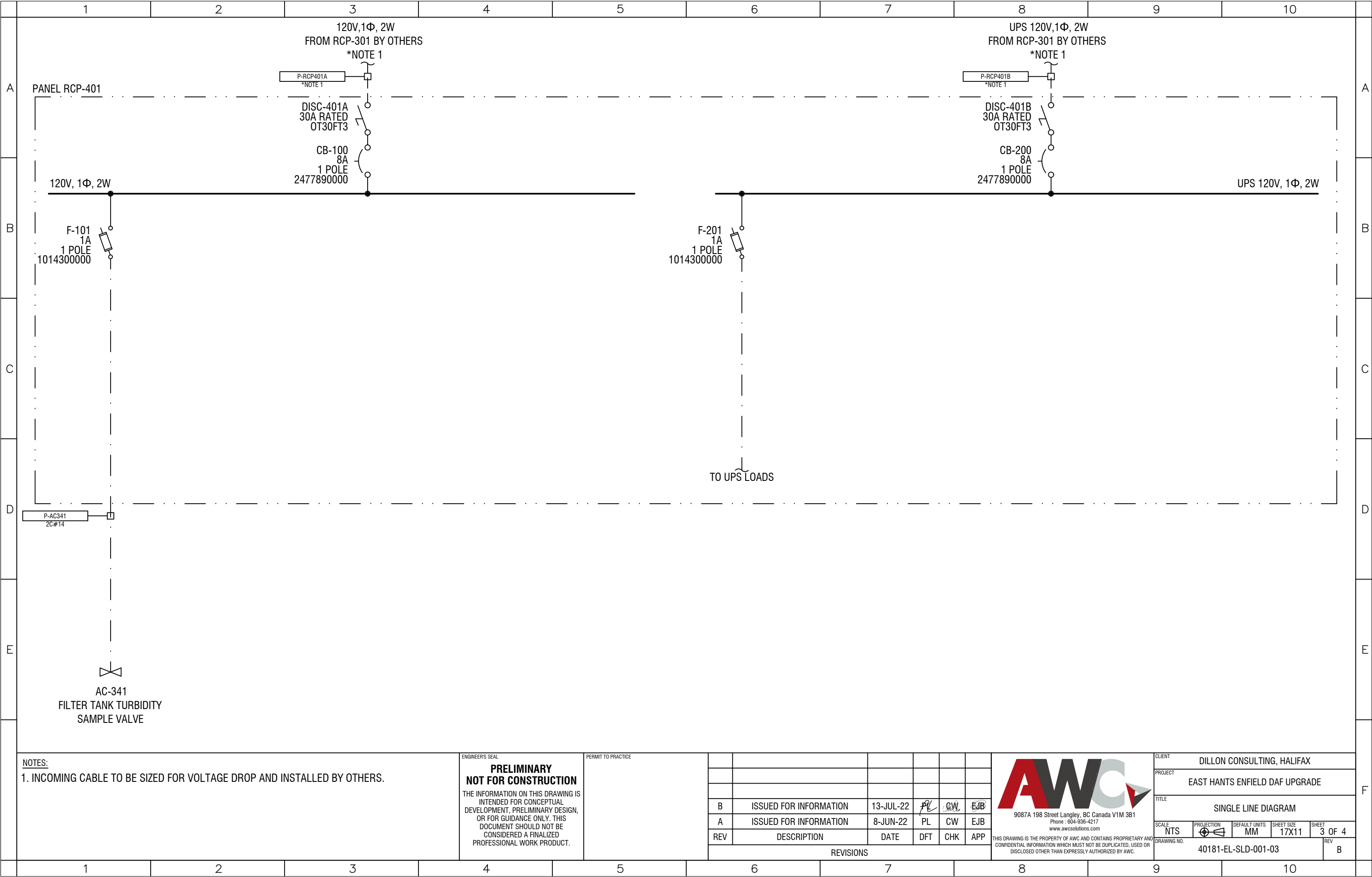
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A												<div>ELECTRICAL LINE TYPES</div> <div><div><div></div><div>PANEL WIRING BY AWC</div></div><div><div></div><div>FIELD WIRING BY AWC</div></div><div><div></div><div>FIELD WIRING BY AWC - DISCONNECTED FOR SHIPPING THEN REINSTALLED BY OTHERS</div></div><div><div></div><div>WIRING DONE BY OTHERS</div></div><div><div></div><div>MECHANICAL JUMPER BAR</div></div></div>												<div>ABBREVIATIONS</div> <div><div>A</div><div>AMPERE</div><div>AE</div><div>ANALYZER ELEMENT</div><div>AI</div><div>ANALOG INPUT</div><div>AIT</div><div>ANALYZER INDICATION TRANSMITTER</div><div>AO</div><div>ANALOG OUTPUT</div><div>AUX</div><div>AUXILIARY</div><div>CR</div><div>CONTROL RELAY</div><div>DAF</div><div>DISSOLVED AIR FLOTATION</div><div>DI</div><div>DISCRETE INPUT</div><div>DISC</div><div>DISCONNECT SWITCH</div><div>DO</div><div>DISCRETE OUTPUT</div><div>F</div><div>FUSE</div><div>FIT</div><div>FLOW INDICATION TRANSMITTER</div><div>FLA</div><div>FULL LOAD AMPS</div><div>FV</div><div>FLOW VALVE</div><div>GAD</div><div>GENERAL ARRANGEMENT DRAWING</div><div>GFCI</div><div>GROUND FAULT CIRCUIT INTERRUPTER</div><div>GND</div><div>GROUND</div><div>HS</div><div>HAND SWITCH</div><div>HMI</div><div>HUMAN MACHINE INTERFACE</div><div>JB</div><div>JUNCTION BOX</div><div>LCP</div><div>LOCAL CONTROL PANEL</div><div>LIT</div><div>LEVEL INDICATION TRANSMITTER</div><div>LS</div><div>LEVEL SWITCH</div><div>LSHH</div><div>LEVEL SWITCH HIGH HIGH</div><div>LSLL</div><div>LEVEL SWITCH LOW LOW</div><div>LV</div><div>LEVEL VALVE</div><div>MCB</div><div>MAIN CIRCUIT BREAKER</div><div>MCP</div><div>MOTOR CIRCUIT PROTECTOR</div><div>NC</div><div>NORMALLY CLOSED</div><div>NO</div><div>NORMALLY OPEN</div><div>NS</div><div>NETWORK SWITCH</div><div>P</div><div>PUMP</div><div>PLC</div><div>PROGRAMMABLE LOGIC CONTROLLER</div><div>PS</div><div>POWER SUPPLY</div><div>PSH</div><div>PRESSURE SWITCH HIGH</div><div>PSL</div><div>PRESSURE SWITCH LOW</div><div>PT</div><div>PRESSURE TRANSMITTER</div><div>RCP</div><div>REMOTE CONTROL PANEL</div><div>REV</div><div>REVISION</div><div>SCD</div><div>SCHEMATIC</div><div>SHLD</div><div>SHIELD</div><div>SKM</div><div>SKIMMER</div><div>SP</div><div>SURGE PROTECTOR</div><div>TSH</div><div>TEMPERATURE SWITCH HIGH</div><div>TSL</div><div>TEMPERATURE SWITCH LOW</div><div>LM</div><div>LINE MONITOR</div><div>UPS</div><div>UNINTERRUPTIBLE POWER SUPPLY</div><div>V</div><div>VALVE</div><div>V AC</div><div>VOLTAGE ALTERNATING CURRENT</div><div>V DC</div><div>VOLTAGE DIRECT CURRENT</div><div>VFD</div><div>VARIABLE FREQUENCY DRIVE</div><div>WTP</div><div>WATER TREATMENT PLANT</div></div>												<div>ELECTRICAL SCHEMATIC SYMBOLS</div> <table><tr><td></td><td>CIRCUIT BREAKER</td><td></td><td>LIMIT SWITCH NORMALLY OPEN HELD CLOSED</td><td></td><td>TWO POSITION MAINTAINED NORMALLY OPEN AND CLOSED</td></tr><tr><td></td><td>MOTOR CIRCUIT PROTECTOR</td><td></td><td>LIMIT SWITCH NORMALLY CLOSED HELD OPEN</td><td></td><td>THREE POSITION MAINTAINED NORMALLY OPEN AND CLOSED</td></tr><tr><td></td><td>REACTOR</td><td></td><td>SWITCH</td><td></td><td>PUSH BUTTON NORMALLY OPEN AND NORMALLY CLOSED</td></tr><tr><td></td><td>DISCONNECT SWITCH</td><td></td><td>POTENTIOMETER</td><td></td><td>E-STOP BUTTON NORMALLY CLOSED AND NORMALLY OPEN</td></tr><tr><td></td><td>FUSED DISCONNECT SWITCH</td><td></td><td>HEATER</td><td></td><td>LIMIT SWITCH NORMALLY OPEN AND NORMALLY CLOSED</td></tr><tr><td></td><td>FUSE BLOCK</td><td></td><td>CABLE SHIELD (NOT TERMINATED)</td><td></td><td>TEMP. SWITCH NORMALLY OPEN AND NORMALLY CLOSED</td></tr><tr><td></td><td>FUSE HOLDER</td><td></td><td>CABLE SHIELD</td><td></td><td>LEVEL SWITCH NORMALLY OPEN AND NORMALLY CLOSED</td></tr><tr><td></td><td>SOLENOID</td><td></td><td></td><td></td><td>PRESSURE SWITCH NORMALLY OPEN AND NORMALLY CLOSED</td></tr><tr><td></td><td>THERMISTOR</td><td></td><td></td><td></td><td>RELAY CONTACT NORMALLY OPEN AND NORMALLY CLOSED</td></tr><tr><td></td><td>DIODE</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>RESISTOR</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>CAPACITOR</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>GROUND</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>3 PHASE MOTOR</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>1 PHASE MOTOR</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>COIL - RELAY OR CONTACTOR</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>LIGHT</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>PANEL FAN</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>CURRENT TRANSFORMER</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>DUPLEX RECEPTACLE</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td>SIMPLEX RECEPTACLE</td><td></td><td></td><td></td><td></td></tr></table>													CIRCUIT BREAKER		LIMIT SWITCH NORMALLY OPEN HELD CLOSED		TWO POSITION MAINTAINED NORMALLY OPEN AND CLOSED		MOTOR CIRCUIT PROTECTOR		LIMIT SWITCH NORMALLY CLOSED HELD OPEN		THREE POSITION MAINTAINED NORMALLY OPEN AND CLOSED		REACTOR		SWITCH		PUSH BUTTON NORMALLY OPEN AND NORMALLY CLOSED		DISCONNECT SWITCH		POTENTIOMETER		E-STOP BUTTON NORMALLY CLOSED AND NORMALLY OPEN		FUSED DISCONNECT SWITCH		HEATER		LIMIT SWITCH NORMALLY OPEN AND NORMALLY CLOSED		FUSE BLOCK		CABLE SHIELD (NOT TERMINATED)		TEMP. SWITCH NORMALLY OPEN AND NORMALLY CLOSED		FUSE HOLDER		CABLE SHIELD		LEVEL SWITCH NORMALLY OPEN AND NORMALLY CLOSED		SOLENOID				PRESSURE SWITCH NORMALLY OPEN AND NORMALLY CLOSED		THERMISTOR				RELAY CONTACT NORMALLY OPEN AND NORMALLY CLOSED		DIODE						RESISTOR						CAPACITOR						GROUND						3 PHASE MOTOR						1 PHASE MOTOR						COIL - RELAY OR CONTACTOR						LIGHT						PANEL FAN						CURRENT TRANSFORMER						DUPLEX RECEPTACLE						SIMPLEX RECEPTACLE					B											
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PROJECT NAME: EAST HANTS ENFIELD DAF UPGRADE

PROJECT NO.: 40181

DOCUMENT NAME: INSTRUMENT INDEX

DOCUMENT NO.: 40181-IC-IDX-001

A	14 Jul 22	Issued for Review	<i>KK</i> KK	<i>CV</i> CV	<i>MSM</i> MSM
Rev	Date	Revision Description	Originator	Checker	Approver

INSTRUMENT INDEX

Rev	Index	Equip Number	Loop Number	Loop Service	Tag Number	Tag Description	P&ID	Sheet	Status	IO Type Name	System	Instrument Type	Power Voltage	Control Voltage	Signal	Power / Current	UPS Powered	Location	Wired To/From	Line or Equipment No.	Notes	Exceptions to Specification
A	1	PLC	A-009	Ethernet Communications	AX-009A	Ethernet Communications from PLC to DAF RCP-301	40181-PR-PID-001	1 of 1	New	-	PLC	-	-	-	-	-	-	PLC	RCP-301 Panel	-	-	-
A	2	PLC	A-009	Ethernet Communications	AX-009B	Ethernet Communications from PLC to Filter RCP-401	40181-PR-PID-001	1 of 1	New	-	PLC	-	-	-	-	-	-	PLC	RCP-401 Panel	-	-	-
A	3	-	F-006	Raw Water Inlet	FFC-006	Raw Water Inlet Master Setpoint	40181-PR-PID-001	1 of 1	New	Soft	PLC	Soft Controller Setpoint	-	-	-	-	-	-	-	-	-	-
A	4	FIT-31	F-231	Train #3 Raw Water Inlet	FIT-231	Train #3 Raw Water Inlet Flow	40181-PR-PID-002	1 of 2	New	AI	PLC	Electromagnetic Flowmeter	120 VAC	24 VDC	4-20 mA	Hold	Yes	Field	RCP-301 Panel	-	-	E&H Promag W10 - 8"150# Preferred AWC Supplier
A	5	-	F-231	Train #3 Raw Water Inlet	FI-231	Train #3 Raw Water Inlet Flow Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	6	FIT-31	F-231	Train #3 Raw Water Inlet	FQIT-231	Train #3 Raw Water Inlet Totalizer	40181-PR-PID-002	1 of 2	New	DI	PLC	Flowmeter Totalizer	-	24 VDC	-	-	Yes	Field	RCP-301 Panel	-	-	-
A	7	-	F-231	Train #3 Raw Water Inlet	FQI-231	Train #3 Raw Water Inlet Totalizer Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	8	-	F-231	Train #3 Raw Water Inlet	PI-231	Train #3 Raw Water Inlet Valve	40181-PR-PID-002	1 of 2	New	-	PLC	Butterfly Valve	-	-	-	-	-	Field	-	-	TK-230 Keystone Butterfly F222 (lug) - 8"150# Meets Spec	
A	9	-	F-231	Train #3 Raw Water Inlet	PV-231	Train #3 Raw Water Inlet Valve Actuator	40181-PR-PID-002	1 of 2	New	-	-	Electric Actuator - Modulating	120 VAC	-	-	0.81 A	Yes	Field	RCP-301 Panel	-	-	Keystone EP12 w/ OM1 card (modulating) Preferred AWC Supplier
A	10	FV-231	F-231	Train #3 Raw Water Inlet	FC-231	Train #3 Raw Water Inlet Valve Position Output	40181-PR-PID-002	1 of 2	New	AO	PLC	Controller Position Output	-	-	4-20 mA	-	Yes	RCP-301 Panel	Field	-	-	-
A	11	-	F-231	Train #3 Raw Water Inlet	FAD-231	Train #3 Raw Water Inlet Valve Controller Discrepancy Alarm	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	12	XHS-231HD	F-231	Train #3 Raw Water Inlet	XHS-231HD	Train #3 Raw Water Inlet Valve HOA Hand	40181-PR-PID-002	1 of 2	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-301 Panel	RCP-301 Panel	-	-	-
A	13	XHS-231AU	F-231	Train #3 Raw Water Inlet	XHS-231AU	Train #3 Raw Water Inlet Valve HOA Auto	40181-PR-PID-002	1 of 2	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-301 Panel	RCP-301 Panel	-	-	-
A	14	-	F-231	Train #3 Raw Water Inlet	XHI-231	Train #3 Raw Water Inlet Valve HOA Position Indicator	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	15	FV-231	F-231	Train #3 Raw Water Inlet	XSC-231	Train #3 Raw Water Inlet Valve Switch Closed	40181-PR-PID-002	1 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-301 Panel	-	-	-
A	16	-	F-231	Train #3 Raw Water Inlet	XIC-231	Train #3 Raw Water Inlet Valve Indicate Closed	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	17	FV-231	F-231	Train #3 Raw Water Inlet	XSO-231	Train #3 Raw Water Inlet Valve Switch Open	40181-PR-PID-002	1 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-301 Panel	-	-	-
A	18	-	F-231	Train #3 Raw Water Inlet	XIO-231	Train #3 Raw Water Valve Indicate Open	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	19	FV-231	F-231	Train #3 Raw Water Inlet	HSI-231	Train #3 Raw Water Inlet Valve Open Indication	40181-PR-PID-002	1 of 2	New	DO	PLC	Indicator Light	-	24 VDC	-	-	Yes	RCP-301 Panel	RCP-301 Panel	-	-	-
A	20	-	U-232	Train #3 Stage 1 Flocculation Mixer	HC-232	Train #3 Stage 1 Flocculation Mixer Controller	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft VFD Controller - On/Off & Speed	-	-	-	-	-	-	-	-	-	-
A	21	-	U-232	Train #3 Stage 1 Flocculation Mixer	UA-232	Train #3 Stage 1 Flocculation Mixer Fault Alarm	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	22	-	U-232	Train #3 Stage 1 Flocculation Mixer	UI-232	Train #3 Stage 1 Flocculation Mixer Run Status Indicator	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	23	HHS-232HD	U-232	Train #3 Stage 1 Flocculation Mixer	HHS-232HD	Train #3 Stage 1 Flocculation Mixer HOA Hand	40181-PR-PID-002	1 of 2	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	-
A	24	HHS-232AU	U-232	Train #3 Stage 1 Flocculation Mixer	HHS-232AU	Train #3 Stage 1 Flocculation Mixer HOA Auto	40181-PR-PID-002	1 of 2	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	Second Auto Contact in Output Circuit
A	25	-	U-232	Train #3 Stage 1 Flocculation Mixer	HHI-232	Train #3 Stage 1 Flocculation Mixer HOA Auto Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	26	AIT-231	A-231	Train #3 Stage 1 Flocculator PH	AIT-231	Train #3 Stage 1 Flocculator pH	40181-PR-PID-002	1 of 2	New	AI	PLC	Analyzer Controller	120 VAC	-	4-20 mA	-	Yes	Field	RCP-301 Panel	-	-	Prominent_PHE1 112 SE with DULCOMETER DMta transmitter Meets Spec
A	27	-	A-231	Train #3 Stage 1 Flocculator PH	AI-231	Train #3 Stage 1 Flocculator pH Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	28	-	U-233	Train #3 Stage 2 Flocculation Mixer	HC-233	Train #3 Stage 2 Flocculation Mixer Controller	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft VFD Controller - On/Off & Speed	-	-	-	-	-	-	-	-	-	-
A	29	-	U-233	Train #3 Stage 2 Flocculation Mixer	UA-233	Train #3 Stage 2 Flocculation Mixer Fault Alarm	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	30	-	U-233	Train #3 Stage 2 Flocculation Mixer	UI-233	Train #3 Stage 2 Flocculation Mixer Run Status Indicator	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	31	HHS-233HD	U-233	Train #3 Stage 2 Flocculation Mixer	HHS-233HD	Train #3 Stage 2 Flocculation Mixer HOA Hand	40181-PR-PID-002	1 of 2	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	-
A	32	HHS-233AU	U-233	Train #3 Stage 2 Flocculation Mixer	HHS-233AU	Train #3 Stage 2 Flocculation Mixer HOA Auto	40181-PR-PID-002	1 of 2	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	Second Auto Contact in Output Circuit
A	33	-	U-233	Train #3 Stage 2 Flocculation Mixer	HHI-233	Train #3 Stage 2 Flocculation Mixer HOA Auto Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	34	LT-231	L-231	Train #3 Stage 2 Flocculator Level	LT-231	Train #3 Stage 2 Flocculator Level	40181-PR-PID-002	1 of 2	New	AI	PLC	Radar Level Transmitter	-	24 VDC	4-20 mA	< 485 mW	Yes	Field	RCP-301 Panel	-	-	TK-235 Vega C11 Preferred AWC Supplier, Seps not defined.
A	35	-	L-231	Train #3 Stage 2 Flocculator Level	LI-231	Train #3 Stage 2 Flocculator Level Indicator	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	36	-	L-231	Train #3 Stage 2 Flocculator Level	LAL-231	Train #3 Stage 2 Flocculator Level Alarm Low	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	37	-	U-234	Train #3 Stage 1 Flocculation Mixer	HC-234	Train #3 Skimmer Controller	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft VFD Controller - On/Off & Speed	-	-	-	-	-	-	-	-	-	-
A	38	-	U-234	Train #3 Stage 1 Flocculation Mixer	UA-234	Train #3 Skimmer Fault Alarm	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	39	-	U-234	Train #3 Stage 1 Flocculation Mixer	UI-234	Train #3 Skimmer Run Status Indicator	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	40	HHS-234HD	U-234	Train #3 Stage 1 Flocculation Mixer	HHS-234HD	Train #3 Skimmer HOA Hand	40181-PR-PID-002	1 of 2	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	-
A	41	HHS-234AU	U-234	Train #3 Stage 1 Flocculation Mixer	HHS-234AU	Train #3 Skimmer HOA Auto	40181-PR-PID-002	1 of 2	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	Second Auto Contact in Output Circuit
A	42	-	U-234	Train #3 Stage 1 Flocculation Mixer	HHI-234	Train #3 Skimmer HOA Auto Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	43	-	P-235	Train #3 Trough Spray PRV	PRV-235	Train #3 Trough Spray Pressure Reducing Valve	40181-PR-PID-002	1 of 2	New	-	-	Pressure Reducing Valve	-	-	-	-	-	Field	-	-	TK-237 Cla-Vsl 90-01BT - 3/4"NPT Spec not defined, Preferred AWC Supplier.	
A	44	XY-235	X-235	Train #3 Trough Spray	SOV-235	Train #3 Trough Spray Solenoid Valve	40181-PR-PID-002	1 of 2	New	DO	PLC	2 Way Solenoid Valve	120 VAC	-	-	16 VA	-	Field	-	-	TK-237 Asco 82106094-120VAC Meets Spec	
A	45	XY-235	X-235	Train #3 Trough Spray	XC-235	Train #3 Trough Spray Solenoid Valve Command Open	40181-PR-PID-002	1 of 2	New	DO	PLC	Open Command	-	24 VDC	-	-	Yes	RCP-301 Panel	Field	-	-	-
A	46	XHS-235HD	X-235	Train #3 Trough Spray	XHS-235HD	Train #3 Trough Spray Solenoid Valve HOA Hand	40181-PR-PID-002	1 of 2	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	-
A	47	XHS-235AU	X-235	Train #3 Trough Spray	XHS-235AU	Train #3 Trough Spray Solenoid Valve HOA Auto	40181-PR-PID-002	1 of 2	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	Second Auto Contact in Output Circuit
A	48	-	X-235	Train #3 Trough Spray	XHI-235	Train #3 Trough Spray Solenoid Valve HOA Auto Indication	40181-PR-PID-002	1 of 2	New	Soft	PLC	Valve Indication	-	-	-	-	-	-	-	-	-	-
A	49	-	X-341	Train #4 Filter Inlet Valve	XV-341	Train #4 Filter Inlet Valve	40181-PR-PID-002	2 of 2	New	-	-	Butterfly Valve	-	-	-	-	-	Field	-	-	-	-
A	50	-	X-341	Train #4 Filter Inlet Valve	XY-341	Train #4 Filter Inlet Valve Actuator	40181-PR-PID-002	2 of 2	New	-	-	Electric Actuator - On/Off	120 VAC	-	-	0.81 A	Yes	Field	RCP-401 Panel	-	TK-340 Keystone Butterfly F222 (lug) - 8"150# Preferred AWC Supplier	
A	51	XV-341	X-341	Train #4 Filter Inlet Valve	XC-341	Train #4 Filter Inlet Valve Command Open	40181-PR-PID-002	2 of 2	New	DO	PLC	Open Command	-	24 VDC	-	-	Yes	RCP-401 Panel	Field	-	-	-
A	52	-	X-341	Train #4 Filter Inlet Valve	XLI-341	Train #4 Filter Inlet Valve Discrepancy	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	53	XHS-341HD	X-341	Train #4 Filter Inlet Valve	XHS-341HD	Train #4 Filter Inlet Valve HOA Hand	40181-PR-PID-002	2 of 2	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	-
A	54	XHS-341AU	X-341	Train #4 Filter Inlet Valve	XHS-341AU	Train #4 Filter Inlet Valve HOA Auto	40181-PR-PID-002	2 of 2	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	Second Auto Contact in Output Circuit
A	55	-	X-341	Train #4 Filter Inlet Valve	XHI-341	Train #4 Filter Inlet Valve HOA Auto Indicator	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	56	XV-341	X-341	Train #4 Filter Inlet Valve	XSC-341	Train #4 Filter Inlet Valve Switch Closed	40181-PR-PID-002	2 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-401 Panel	-	-	-
A	57	-	X-341	Train #4 Filter Inlet Valve	XIC-341	Train #4 Filter Inlet Valve Indicate Closed	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	58	XV-341	X-341	Train #4 Filter Inlet Valve	XSO-341	Train #4 Filter Inlet Valve Switch Open	40181-PR-PID-002	2 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-401 Panel	-	-	-
A	59	-	X-341	Train #4 Filter Inlet Valve	XIO-341	Train #4 Filter Inlet Valve Indicate Open	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	60	LT-341	L-341	Train #4 Filter Level	LT-341	Train #4 Filter Level	40181-PR-PID-002	2 of 2	New	AI	PLC	Radar Level Transmitter	-	24 VDC	4-20 mA	< 485 mW	Yes	Field	RCP-401 Panel	-	TK-340 Vega C11 Preferred AWC Supplier, Seps not defined.	
A	61	-	L-341	Train #4 Filter Level	LI-341	Train #4 Filter Level Indicator	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	-
A	62	-	L-341	Train #4 Filter Level	LALL-341	Train #4 Filter Level Alarm Low Low	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	63	-	L-341	Train #4 Filter Level	LAL-341	Train #4 Filter Level Alarm Low	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	64	-	L-341	Train #4 Filter Level	LAH-341	Train #4 Filter Level Alarm High	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	65	-	L-341	Train #4 Filter Level	LAHH-341	Train #4 Filter Level Alarm High High	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	-
A	66	-	X-343	Train #4 Filter Backwash Valve	XV-343	Train #4 Filter Backwash Valve	40181-PR-PID-002	2 of 2	New	-	-	Butterfly Valve	-	-	-	-	-	Field	-	-	-	-
A	67																					

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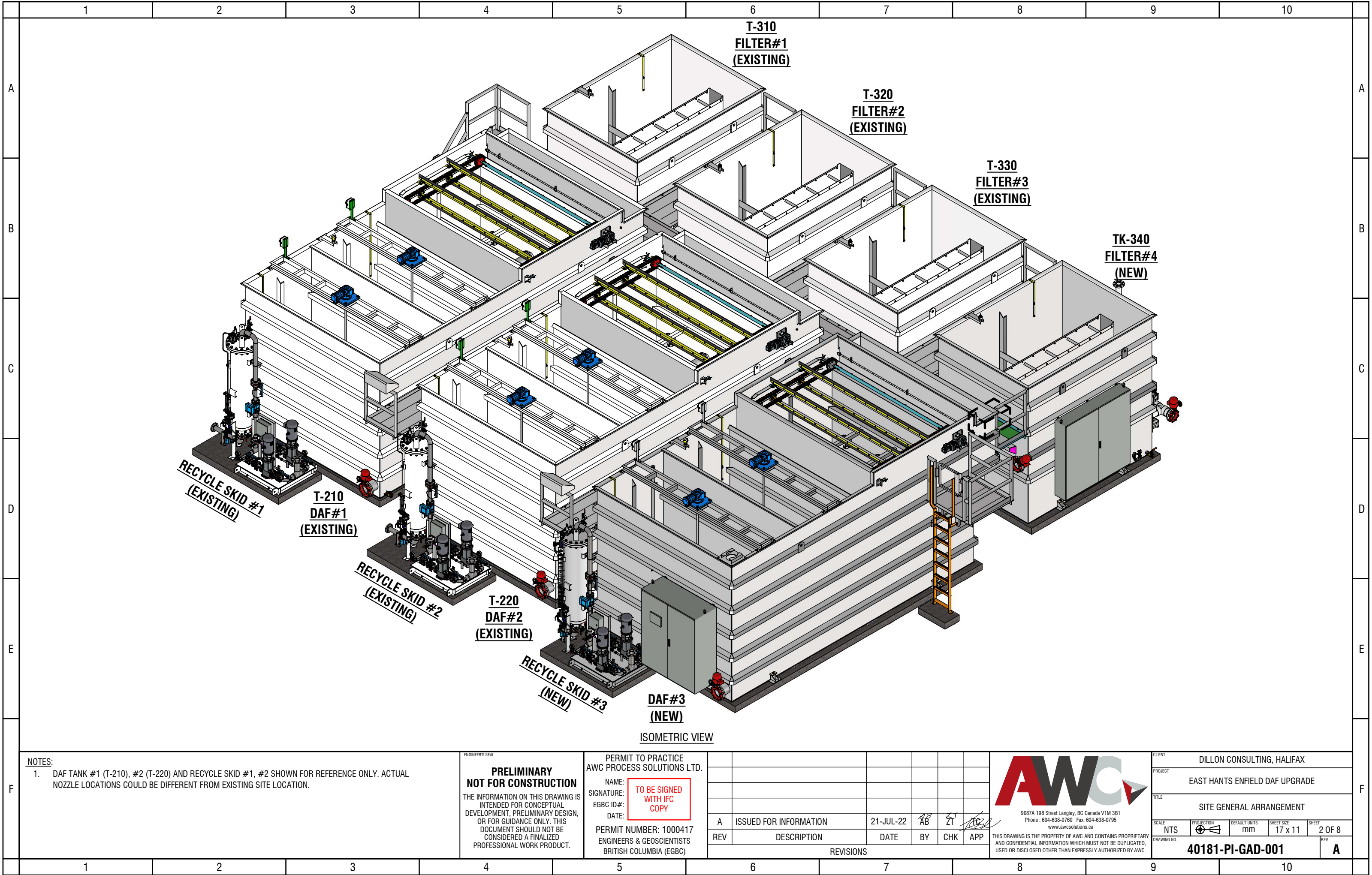
A	106	-	L-342	Train #4 Rinse to Waste Valve	LV-342	Train #4 Rinse to Waste Valve	40181-PR-PID-002	2 of 2	New	-	-	Butterfly Valve	-	-	-	-	-	Field	-	-	Keystone Butterfly F222 (lug)-6"150#	Meets Spec
A	107	-	L-342	Train #4 Rinse to Waste Valve	LV-342	Train #4 Rinse to Waste Valve Actuator	40181-PR-PID-002	2 of 2	New	-	-	Electric Actuator - Modulating	120 VAC	-	-	0.81 A	Yes	Field	-	-	Keystone EP12 w/ OM1 card (modulating)	Preferred AWC Supplier
A	108	LV-342	L-342	Train #4 Rinse to Waste Valve	LC-342	Train #4 Rinse to Waste Valve Position Output	40181-PR-PID-002	2 of 2	New	AO	PLC	Controller Position Output	-	-	-	4-20 mA	-	RCP-401 Panel	RCP-401 Panel	-	-	
A	109	-	L-342	Train #4 Rinse to Waste Valve	LAD-342	Train #4 Rinse to Waste Valve Controller Discrepancy Alarm	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	110	XHS-342HD	L-342	Train #4 Rinse to Waste Valve	XHS-342HD	Train #4 Rinse to Waste Valve HOA Hand	40181-PR-PID-002	2 of 2	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	
A	111	XHS-342AU	L-342	Train #4 Rinse to Waste Valve	XHS-342AU	Train #4 Rinse to Waste Valve HOA Auto	40181-PR-PID-002	2 of 2	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	
A	112	-	L-342	Train #4 Rinse to Waste Valve	XHI-342	Train #4 Rinse to Waste Valve HOA Position Indicator	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	113	LV-342	L-342	Train #4 Rinse to Waste Valve	XSC-342	Train #4 Rinse to Waste Valve Switch Closed	40181-PR-PID-002	2 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-401 Panel	-	-	
A	114	-	L-342	Train #4 Rinse to Waste Valve	XIC-342	Train #4 Rinse to Waste Valve Indicate Closed	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	115	LV-342	L-342	Train #4 Rinse to Waste Valve	XSO-342	Train #4 Rinse to Waste Valve Switch Open	40181-PR-PID-002	2 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-401 Panel	-	-	
A	116	-	L-342	Train #4 Rinse to Waste Valve	XIO-342	Train #4 Rinse to Waste Valve Indicate Open	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	117	LV-342	L-342	Train #4 Rinse to Waste Valve	HSI-342	Train #4 Rinse to Waste Valve Open Indication	40181-PR-PID-002	2 of 2	New	DO	PLC	Indicator Light	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	
A	118	-	L-341	Train #4 Treated Water Valve	LV-341	Train #4 Treated Water Valve	40181-PR-PID-002	2 of 2	New	-	-	Butterfly Valve	-	-	-	-	-	Field	-	-	Keystone Butterfly F222 (lug)-6"150#	
A	119	-	L-341	Train #4 Treated Water Valve	LY-341	Train #4 Treated Water Valve Actuator	40181-PR-PID-002	2 of 2	New	-	-	Electric Actuator - Modulating	120 VAC	-	-	0.81 A	Yes	Field	RCP-401 Panel	-	Meets Spec	
A	120	LV-341	L-341	Train #4 Treated Water Valve	LC-341	Train #4 Treated Water Valve Position Output	40181-PR-PID-002	2 of 2	New	AO	PLC	Controller Position Output	-	-	-	4-20 mA	-	RCP-401 Panel	Field	-	-	
A	121	-	L-341	Train #4 Treated Water Valve	LAD-341	Train #4 Treated Water Valve Controller Discrepancy Alarm	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	122	XHS-341HD	L-341	Train #4 Treated Water Valve	XHS-341HD	Train #4 Treated Water Valve HOA Hand	40181-PR-PID-002	2 of 2	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	
A	123	XHS-341AU	L-341	Train #4 Treated Water Valve	XHS-341AU	Train #4 Treated Water Valve HOA Auto	40181-PR-PID-002	2 of 2	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	
A	124	-	L-341	Train #4 Treated Water Valve	XHI-341	Train #4 Treated Water Valve HOA Auto Indicator	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	125	LV-341	L-341	Train #4 Treated Water Valve	XSC-341	Train #4 Treated Water Valve Switch Closed	40181-PR-PID-002	2 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-401 Panel	-	-	
A	126	-	L-341	Train #4 Treated Water Valve	XIC-341	Train #4 Treated Water Valve Indicate Closed	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	127	LV-341	L-341	Train #4 Treated Water Valve	XSO-341	Train #4 Treated Water Valve Switch Open	40181-PR-PID-002	2 of 2	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-401 Panel	-	-	
A	128	-	L-341	Train #4 Treated Water Valve	XIO-341	Train #4 Treated Water Valve Indicate Open	40181-PR-PID-002	2 of 2	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	129	LV-341	L-341	Train #4 Treated Water Valve	HSI-341	Train #4 Treated Water Valve Open Indication	40181-PR-PID-002	2 of 2	New	DO	PLC	Indicator Light	-	24 VDC	-	-	Yes	RCP-401 Panel	RCP-401 Panel	-	-	
A	130	-	P-235	Backwash Supply Pressure Relief	PSV-235	Backwash Supply Pressure Relief Valve	40181-PR-PID-002	2 of 2	New	-	-	Pressure Saftey Valve	-	-	-	-	-	Field	-	-	Cla-Val Model TBD - 4" Angle Flange	
A	131	-	P-235	Train #3 Recycle Pump P-236 Suction	PI-235	Train #3 Recycle Pump P-236 Suction Pressure Gauge	40181-PR-PID-003	1 of 1	New	-	-	Pressure Gauge	-	-	-	-	-	Field	-	-	Wika 213.53DW	
A	132	-	L-236	Train #3 Recycle Pump P-236	LHS-236	Train #3 Recycle Pumps P-236 / P-237 Duty Select Soft Switch	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Selector	-	-	-	-	-	-	-	-	-	
A	133	-	L-236	Train #3 Recycle Pump P-236	LC-236	Train #3 Recycle Pump P-236 Controller	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft VFD Controller - On/Off & Speed	-	-	-	-	-	-	-	-	-	
A	134	-	L-236	Train #3 Recycle Pump P-236	LAD-236	Train #3 Recycle Pump P-236 Controller Discrepancy Alarm	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	135	-	U-236	Train #3 Recycle Pump P-236	UA-236	Train #3 Recycle Pump P-236 Fault Alarm	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	136	-	U-236	Train #3 Recycle Pump P-236	UI-236	Train #3 Recycle Pump P-236 Run Status Indicator	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	137	HHS-236HD	U-236	Train #3 Recycle Pump P-236	HHS-236HD	Train #3 Recycle Pump P-236 HOA Hand	40181-PR-PID-003	1 of 1	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	
A	138	HHS-236AU	U-236	Train #3 Recycle Pump P-236	HHS-236AU	Train #3 Recycle Pump P-236 HOA Auto	40181-PR-PID-003	1 of 1	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	
A	139	-	U-236	Train #3 Recycle Pump P-236	HHI-236	Train #3 Recycle Pump P-236 HOA Auto Indication	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	140	-	P-236	Train #3 Recycle Pump P-236 PSV	PSV-236	Train #3 Recycle Pump P-236 PSV	40181-PR-PID-003	1 of 1	New	-	-	Pressure Relief Valve	-	-	-	-	-	Field	-	-	Cla-Val 50-Q1B - 2"NPT	
A	141	-	P-236	Train #3 Recycle Pump P-236 Disch Press	PI-236	Train #3 Recycle Pump P-236 Discharge Pressure Gauge	40181-PR-PID-003	1 of 1	New	-	-	Pressure Gauge	-	-	-	-	-	Field	-	-	Wika 213.53DW	
A	142	PT-236	P-236	Train #3 Recycle Pump P-236 Disch Press	PT-236	Train #3 Recycle Pump P-236 Discharge Pressure	40181-PR-PID-003	1 of 1	New	AI	PLC	Gauge Pressure Transmitter	-	24 VDC	4-20 mA	0.02 A	Yes	Field	JB/ RCP-301 Panel	-	Spec not defined. Preferred AWC Supplier.	
A	143	-	P-236	Train #3 Recycle Pump P-236 Disch Press	PI-236	Train #3 Recycle Pump P-236 Discharge Pressure Indication	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	Wika A10	
A	144	-	P-236	Train #3 Recycle Pump P-236 Disch Press	PAH-236	Train #3 Recycle Pump P-236 Discharge Alarm High	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	145	-	P-236	Train #3 Recycle Pump P-236 Disch Press	PAHH-236	Train #3 Recycle Pump P-236 Discharge Alarm High High	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	146	-	P-239	Train #3 Recycle Pump P-237 Suction	PI-239	Train #3 Recycle Pump P-237 Suction Pressure Gauge	40181-PR-PID-003	1 of 1	New	-	-	Pressure Gauge	-	-	-	-	-	Field	-	-	Wika 213.53DW	
A	147	-	L-237	Train #3 Recycle Pump P-237	LC-237	Train #3 Recycle Pump P-237 Controller	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft VFD Controller - On/Off & Speed	-	-	-	-	-	-	-	-	-	
A	148	-	L-237	Train #3 Recycle Pump P-237	LAD-237	Train #3 Recycle Pump P-237 Controller Discrepancy Alarm	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	149	-	U-237	Train #3 Recycle Pump P-237	UA-237	Train #3 Recycle Pump P-237 Fault Alarm	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	150	-	U-237	Train #3 Recycle Pump P-237	UI-237	Train #3 Recycle Pump P-237 Run Status Indicator	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	151	HHS-237HD	U-237	Train #3 Recycle Pump P-237	HHS-237HD	Train #3 Recycle Pump P-237 HOA Hand	40181-PR-PID-003	1 of 1	New	Hardwired	Interposing Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	
A	152	HHS-237AU	U-237	Train #3 Recycle Pump P-237	HHS-237AU	Train #3 Recycle Pump P-237 HOA Auto	40181-PR-PID-003	1 of 1	New	DI & Hardwired	PLC & Relay	Panel Mounted HOA	-	24 VDC	-	-	-	RCP-301 Panel	RCP-301 Panel	-	-	
A	153	-	U-237	Train #3 Recycle Pump P-237	HHI-237	Train #3 Recycle Pump P-237 HOA Auto Indication	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	154	-	P-237	Train #3 Recycle Pump P-237 PSV	PSV-237	Train #3 Recycle Pump P-237 PSV	40181-PR-PID-003	1 of 1	New	-	-	Pressure Relief Valve	-	-	-	-	-	Field	-	-	Cla-Val 50-Q1B - 2"NPT	
A	155	-	P-237	Train #3 Recycle Pump P-237 Disch Press	PI-237	Train #3 Recycle Pump P-237 Discharge Pressure Gauge	40181-PR-PID-003	1 of 1	New	-	-	Pressure Gauge	-	-	-	-	-	Field	-	-	Wika 213.53DW	
A	156	PT-237	P-237	Train #3 Recycle Pump P-237 Disch Press	PT-237	Train #3 Recycle Pump P-237 Discharge Pressure	40181-PR-PID-003	1 of 1	New	AI	PLC	Gauge Pressure Transmitter	-	24 VDC	4-20 mA	0.02 A	Yes	Field	JB/ RCP-301 Panel	-	Spec not defined. Preferred AWC Supplier.	
A	157	-	P-237	Train #3 Recycle Pump P-237 Disch Press	PI-237	Train #3 Recycle Pump P-237 Discharge Pressure Indication	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	Wika A10	
A	158	-	P-237	Train #3 Recycle Pump P-237 Disch Press	PAH-237	Train #3 Recycle Pump P-237 Disch Alarm High	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	159	-	P-237	Train #3 Recycle Pump P-237 Disch Press	PAHH-237	Train #3 Recycle Pump P-237 Disch Alarm High High	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	160	FIT-236	F-236	Train #3 Recycle Flow	FIT-236	Train #3 Recycle Flow	40181-PR-PID-003	1 of 1	New	AI	PLC	Electromagnetic Flowmeter	120 VAC	24 VDC	4-20 mA	Hold	Yes	Field	JB/ RCP-301 Panel	-	E&H Promag W10 - 1-1/2"150#	
A	161	-	F-236	Train #3 Recycle Flow	FI-236	Train #3 Recycle Flow Indication	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	Yes	-	-	-	-	
A	162	-	F-236	Train #3 Recycle Flow	FAL-236	Train #3 Recycle Flow Alarm Low	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	163	-	M-238	Train #3 Recycle Return Valve	MV-238	Train #3 Recycle Return Valve	40181-PR-PID-003	1 of 1	New	-	-	Butterfly Valve	-	-	-	-	-	Field	-	-	TK-230	
A	164	-	M-238	Train #3 Recycle Return Valve	MY-238	Train #3 Recycle Return Valve Actuator	40181-PR-PID-003	1 of 1	New	-	-	Electric Actuator - Modulating	120 VAC	-	-	0.81 A	Yes	Field	RCP-301 Panel	-	Keystone Butterfly F222 (lug)-8"150#	
A	165	MV-238	M-238	Train #3 Recycle Return Valve	MC-238	Train #3 Recycle Return Valve Position Output	40181-PR-PID-003	1 of 1	New	AO	PLC	Controller Position Output	-	-	-	4-20 mA	-	RCP-301 Panel	Field	-	Meets Spec	
A	166	-	M-238	Train #3 Recycle Return Valve	MAD-238	Train #3 Recycle Return Valve Controller Discrepancy Alarm	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Alarm	-	-	-	-	-	-	-	-	-	
A	167	XHS-238HD	M-238	Train #3 Recycle Return Valve	XHS-238HD	Train #3 Recycle Return Valve HOA Hand	40181-PR-PID-003	1 of 1	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-301 Panel	RCP-301 Panel	-	-	
A	168	XHS-238AU	M-238	Train #3 Recycle Return Valve	XHS-238AU	Train #3 Recycle Return Valve HOA Auto	40181-PR-PID-003	1 of 1	New	DI	PLC	Panel Mounted HOA	-	24 VDC	-	-	Yes	RCP-301 Panel	RCP-301 Panel	-	-	
A	169	-	M-238	Train #3 Recycle Return Valve	XHI-238	Train #3 Recycle Return Valve HOA Auto Indicator	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	170	MV-238	M-238	Train #3 Recycle Return Valve	XSC-238	Train #3 Recycle Return Valve Switch Closed	40181-PR-PID-003	1 of 1	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-301 Panel	-	-	
A	171	-	M-238	Train #3 Recycle Return Valve	XIC-238	Train #3 Recycle Return Valve Indicate Closed	40181-PR-PID-003	1 of 1	New	Soft	PLC	Soft Indicator	-	-	-	-	-	-	-	-	-	
A	172	MV-238	M-238	Train #3 Recycle Return Valve	XSO-238	Train #3 Recycle Return Valve Switch Open	40181-PR-PID-003	1 of 1	New	DI	PLC	Limit Switch Output	-	24 VDC	-	-	Yes	Field	RCP-301 Panel	-	-	
A	173	-	M-238	Train #3 Recycle Return Valve	XIO-238	Train #3 Recycle Return Valve Indicate Open	40181-PR-PID-003															



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PROJECT NAME: EAST HANTS ENFIELD DAF UPGRADE
PROJECT NUMBER: 40181
DOCUMENT NO.: 40181-IC-NET-001-00
REVISION: ISSUED FOR INFORMATION
DOCUMENT NAME: NETWORK ARCHITECTURE

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A	<div>REFERENCE DRAWINGS</div> <div>1. P&ID: 40181-PR-PID-001</div> <div>2. STANDARD LIFTING DETIALS: TPL-FAB-200-00</div> <div>GENERAL</div> <div>1. DIMENSIONS ARE SHOWN IN MILLIMETER (mm) UNLESS STATED OTHERWISE</div> <div>2. TOLERANCES: TANK DIMENSIONS: +/- 6 mm</div> <div>NOZZLE LOCATIONS: +/- 6 mm</div> <div>3. AWC PROVIDES CATHODIC PROTECTION FOR ALL ALUMINUM TANKS.</div> <div>ENGINEERING, STANDARDS & SPECIFICATION</div> <div>1. AWC WILL PERFORM SEISMIC ANCHOR SIZING AS PER THE SPECIFICATION AND APPLICABLE GOVERNING CODES AND STANDARDS AND WILL INCLUDE AND STAMP ANCHOR DETAILS SHOWING THE REQUIRED ANCHOR REACTION FORCE, ANCHOR SIZE, MATERIAL AND GRADE.</div> <div>2. ALL CALCULATIONS RELATED TO CONCRETE STRENGTH, EMBEDMENT DEPTH AND/OR EPOXY SELECTION AND ANY OTHER ASSOCIATED CALCULATIONS/DESIGN AND ANCHOR SUPPLY BY OTHERS.</div> <div>3. STRUCTURAL DESIGN BY AWC WILL BE AUTHENTICATED BY IN HOUSE STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA, CANADA. ISSUED FOR CONSTRUCTION (IFC) ISSUE'S ONLY.</div> <div>4. ALL TANK, SKID, PLATFORM & STAIR WELDING TO CONFORM TO CSA W47.1.</div> <div>5. ALL WELDED PIPE SPOOLS TO CONFORM TO ASME B31.3.</div> <div>6. ALL AWC ALUMINUM TANKS ARE NSF61 COMPLIANT WHEN THE WATER IS WITHIN A PH RANGE OF 6-9.</div> <div>7. ALL WETTED FASTENERS INSIDE TANK TO BE ISOLATED FROM DISSIMILAR METAL CONTACT.</div> <div>MATERIALS</div> <div>1. ALL TANK PLATE MATERIAL TO BE ALUMINUM 5086-H116</div> <div>2. ALL TANK STRUCTURAL MEMBERS TO BE ALUMINUM 6061-T6</div> <div>3. ALL PIPING TO BE 304/304L STAINLESS STEEL UNLESS STATED OTHERWISE.</div> <div>4. ALL HARDWARE TO BE ASTM F593, 18-8 SS</div> <div>FINISH</div> <div>1. ALL WELDS TO BE CLEANED USING A STAINLESS STEEL WIRE BRUSH.</div> <div>2. ALL WELDED SS WATER SERVICE PIPING TO BE PICKLED & PASSIVATED AS PER ASTM A967-A967M-17 AND ASTM A380 / A380M-17 USING AVESTA RED ONE 240.</div> <div>TESTING</div> <div>1. ALL WELDS TO BE VISUALLY INSPECTED FOR DEFECTS.</div> <div>2. TANK TO BE FULLY HYDRO TESTED TO CHECK FOR LEAKS.</div> <div>ELECTRICAL</div> <div>1. MINIMUM 1M OF CLEARANCE REQUIRED IN FRONT OF ANY ELECTRICAL PANEL / JUNCTION BOX.</div>									<div>SHEET INDEX: 1: STANDARD NOTES & PARTS LIST 2: ISO VIEW 3: PLAN VIEW 4: SECTION A 5: VIEW B 6: VIEW C 7: VIEW D 8: CONCRETE PAD & SEISMIC ANCHOR DETAILS</div>		A
B											B	
C											C	
D											D	
E											E	
F	<div>NOTES:</div> <div>ENGINEER'S SEAL</div> <div>PRELIMINARY NOT FOR CONSTRUCTION</div> <div>THE INFORMATION ON THIS DRAWING IS INTENDED FOR CONCEPTUAL DEVELOPMENT, PRELIMINARY DESIGN, OR FOR GUIDANCE ONLY. THIS DOCUMENT SHOULD NOT BE CONSIDERED A FINALIZED PROFESSIONAL WORK PRODUCT.</div> <div>PERMIT TO PRACTICE AWC PROCESS SOLUTIONS LTD.</div> <div>NAME: SIGNATURE: EGBC ID#: DATE:</div> <div>PERMIT NUMBER: 1000417 ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA (EGBC)</div> <div>TO BE SIGNED WITH IFC COPY</div> <div>9087A 198 Street Langley, BC Canada V1M 3B1 Phone : 604-638-0760 Fax: 604-638-0795 www.awcsolutions.ca</div> <div>THIS DRAWING IS THE PROPERTY OF AWC AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY AWC.</div> <div>CLIENT DILLON CONSULTING, HALIFAX</div> <div>PROJECT EAST HANTS ENFIELD DAF UPGRADE</div> <div>TITLE SITE GENERAL ARRANGEMENT</div> <div>SCALE NTS</div> <div>PROJECTION</div> <div>DEFAULT UNITS mm</div> <div>SHEET SIZE 17 x 11</div> <div>SHEET 1 OF 8</div> <div>DRAWING NO. 40181-PI-GAD-001</div> <div>REV A</div>										F	
	1	2	3	4	5	6	7	8	9	10		



NOTES:
1. DAF TANK #1 (T-210), #2 (T-220) AND RECYCLE SKID #1, #2 SHOWN FOR REFERENCE ONLY. ACTUAL NOZZLE LOCATIONS COULD BE DIFFERENT FROM EXISTING SITE LOCATION.

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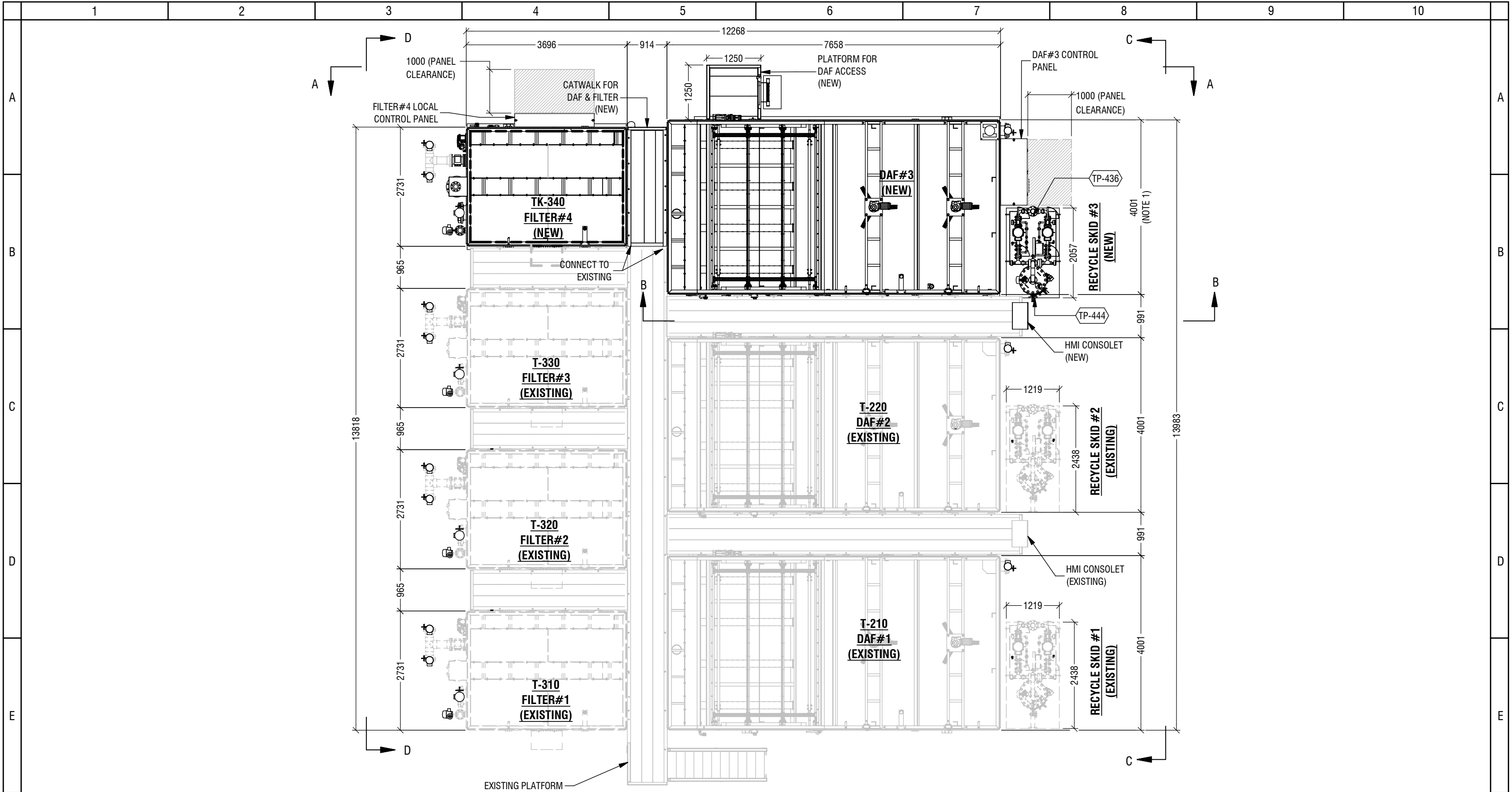
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A	ISSUED FOR INFORMATION	21-JUL-22	AB	ZT	PC
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PROJECT	EAST HANTS ENFIELD DAF UPGRADE				
TITLE	SITE GENERAL ARRANGEMENT				
SCALE	NTS	PROJECTION	DEFAULT UNITS	SHEET SIZE	SHEET
			mm	17 x 11	2 OF 8
DRAWING NO.	40181-PI-GAD-001				REV
					A



PLAN VIEW

NOTES:

1. DIMENSIONS ON THIS SHEET FROM TANK OUTER TRAPEZOID EDGE.

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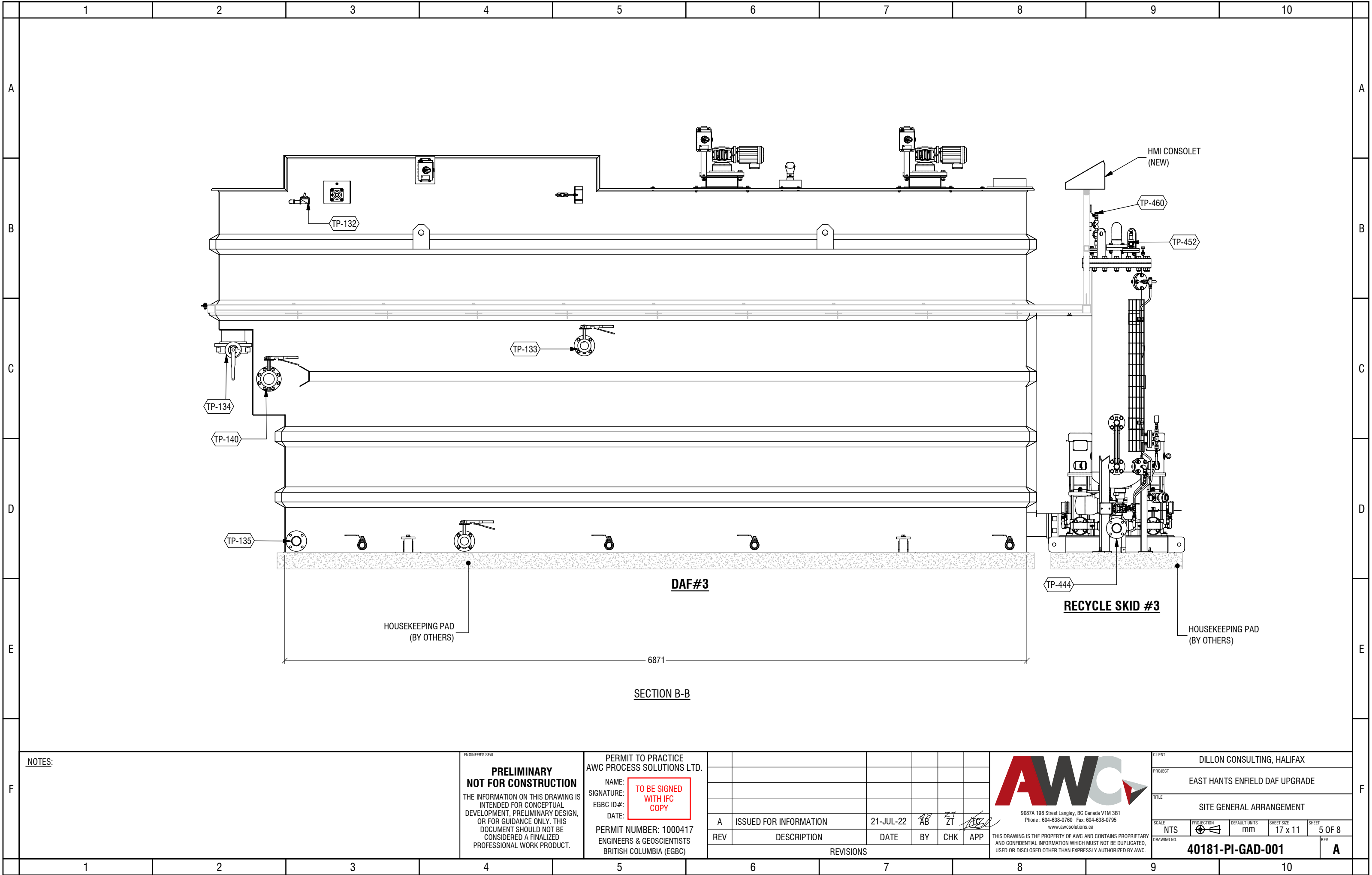
PROJECT
EAST HANTS ENFIELD DAF UPGRADE

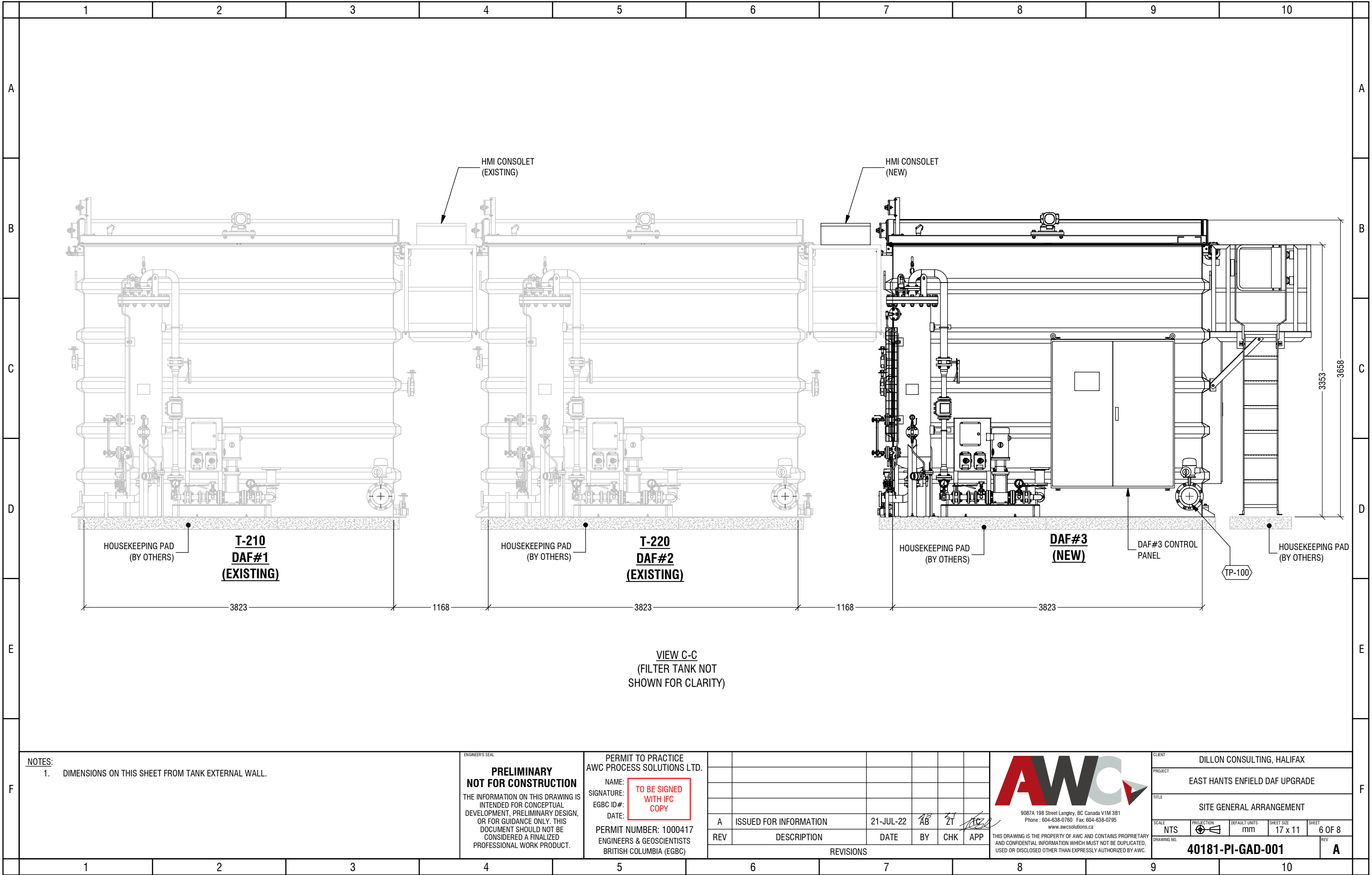
TITLE
SITE GENERAL ARRANGEMENT

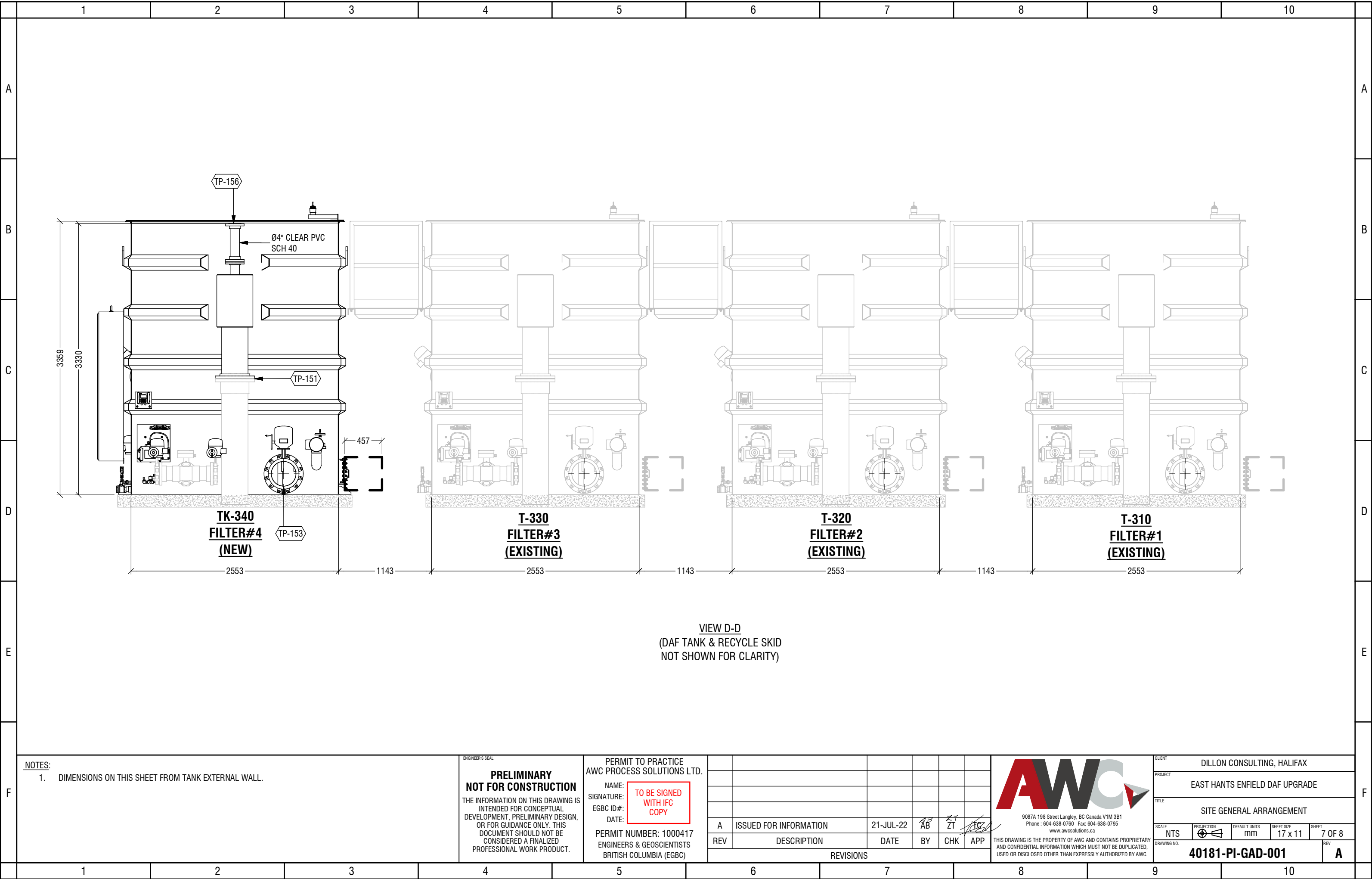
SCALE NTS	PROJECTION 	DEFAULT UNITS mm	SHEET SIZE 17 x 11	SHEET 3 OF 8
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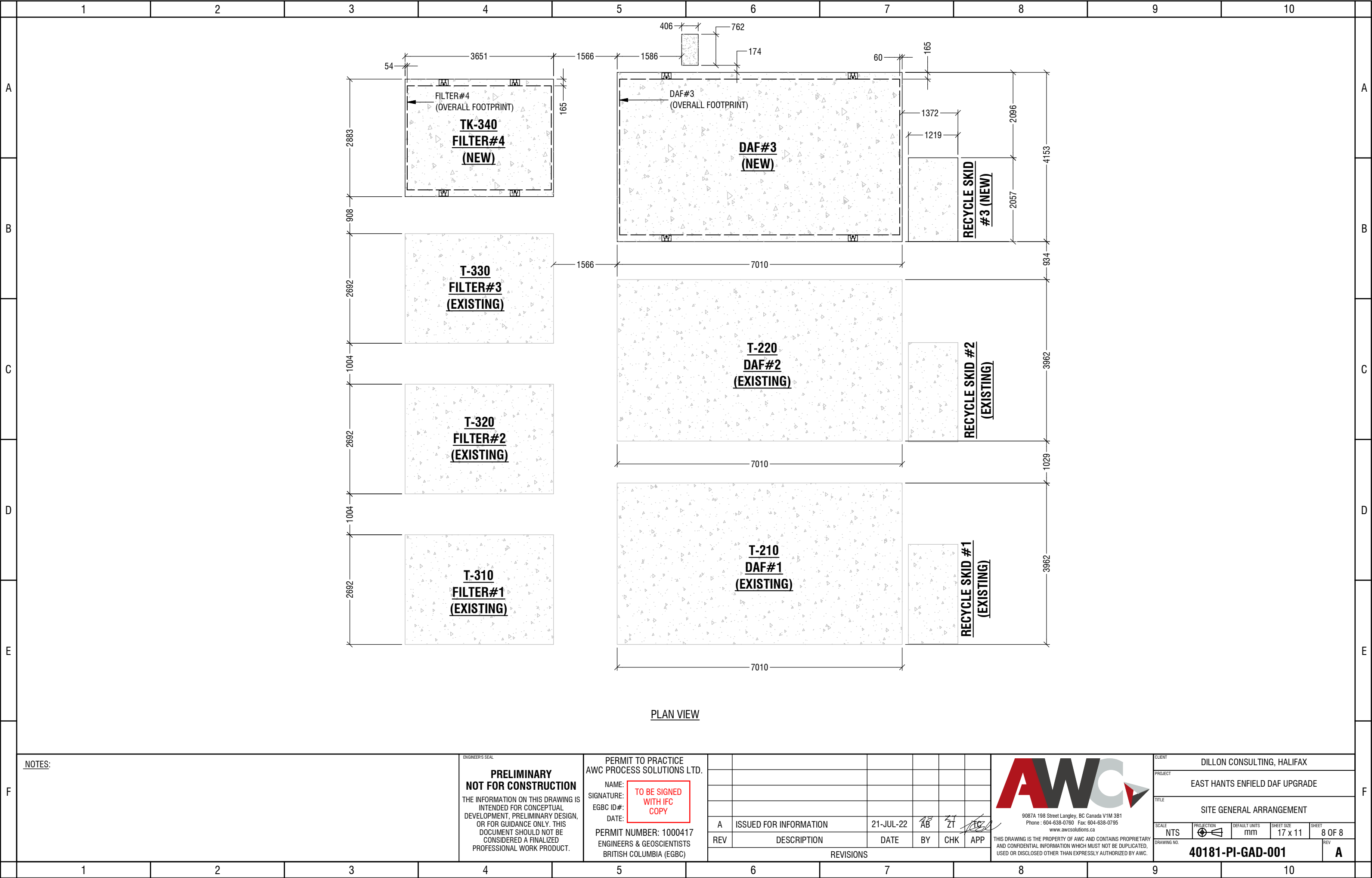
DRAWING NO.
40181-PI-GAD-001

REV
A









PLAN VIEW

NOTES:

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			mm	17 x 11
DRAWING NO.	40181-PI-GAD-001			REV
				A

1

2

3

4

5

6

7

8

9

10

REFERENCE DRAWINGS

1. P&ID: 40181-PR-PID-001

2. SITE GENERAL ARRANGEMENT : 40181-PI-GAD-001

3. STANDARD LIFTING DETIALS: TPL-FAB-200-00

GENERAL

1. DIMENSIONS ARE SHOWN IN MILLIMETER (mm) UNLESS STATED OTHERWISE

2. TOLERANCES:
TANK DIMENSIONS: +/- 6 mm

NOZZLE LOCATIONS: +/- 6 mm

3. AWC PROVIDES CATHODIC PROTECTION FOR ALL ALUMINUM TANKS.

ENGINEERING, STANDARDS & SPECIFICATION

1. AWC WILL PERFORM SEISMIC ANCHOR SIZING AS PER THE SPECIFICATION AND APPLICABLE GOVERNING CODES AND STANDARDS AND WILL INCLUDE AND STAMP ANCHOR DETAILS SHOWING THE REQUIRED ANCHOR REACTION FORCE, ANCHOR SIZE, MATERIAL AND GRADE.

2. ALL CALCULATIONS RELATED TO CONCRETE STRENGTH, EMBEDMENT DEPTH AND/OR EPOXY SELECTION AND ANY OTHER ASSOCIATED CALCULATIONS/DESIGN AND ANCHOR SUPPLY BY OTHERS.

3. STRUCTURAL DESIGN BY AWC WILL BE AUTHENTICATED BY IN HOUSE STRUCTURAL ENGINEER REGISTERED IN THE PROVINCE OF BRITISH COLUMBIA, CANADA. ISSUED FOR CONSTRUCTION (IFC) ISSUE'S ONLY.

4. ALL TANK, SKID, PLATFORM & STAIR WELDING TO CONFORM TO CSA W47.1.

5. ALL WELDED PIPE SPOOLS TO CONFORM TO ASME B31.3.

6. ALL AWC ALUMINUM TANKS ARE NSF61 COMPLIANT WHEN THE WATER IS WITHIN A PH RANGE OF 6-9.

7. ALL WETTED FASTENERS INSIDE TANK TO BE ISOLATED FROM DISSIMILAR METAL CONTACT.

MATERIALS

1. ALL TANK PLATE MATERIAL TO BE ALUMINUM 5086-H116

2. ALL TANK STRUCTURAL MEMBERS TO BE ALUMINUM 6061-T6

3. ALL PIPING TO BE 304/304L STAINLESS STEEL UNLESS STATED OTHERWISE.

4. ALL HARDWARE TO BE ASTM F593, 18-8 SS

FINISH

1. ALL WELDS TO BE CLEANED USING A STAINLESS STEEL WIRE BRUSH.

2. ALL WELDED SS WATER SERVICE PIPING TO BE PICKLED & PASSIVATED AS PER ASTM A967-A967M-17 AND ASTM A380 / A380M-17 USING AVESTA RED ONE 240.

TESTING

1. ALL WELDS TO BE VISUALLY INSPECTED FOR DEFECTS.

2. TANK TO BE FULLY HYDRO TESTED TO CHECK FOR LEAKS.

ELECTRICAL

1. MINIMUM 1M OF CLEARANCE REQUIRED IN FRONT OF ANY ELECTRICAL PANEL / JUNCTION BOX.

WALKWAYS & STAIRS

1. WALKWAY STRUCTURAL FRAMING MEMBERS TO BE ALUMINUM 6061-T6.

2. WALKWAY GRATING TO BE 2" SAFETY GRIP GRATING - ROUND HOLE. ALUMINUM 5032-H32.

3. WALKWAY RAILINGS TO BE 2" x 2" x 3/16" SQUARE TUBE (ROUND CORNER) ALUMINUM 6061-T6.

4. STAIRS TO BE IN ACCORDANCE WITH OSHA REGULATIONS.

5. ANY COLUMNS ATTACHING TO THE CONCRETE FLOOR TO INCLUDE A 1" GAP FOR GROUTING.

6. STAIRS TO BE PROVIDED WITH A 1" GAP FOR GROUTING.

INSTALLATION

1. EPDM ISOLATION MEMBRANE IS REQUIRED BETWEEN THE CONCRETE FLOOR AND THE BOTTOM OF THE TANK BASEPLATE. MEMBRANE TO BE SUPPLIED AND INSTALLED BY OTHERS.

2. SUPPLY AND INSTALLATION OF SEISMIC ANCHOR BOLTS TO BE SUPPLIED AND INSTALLED BY OTHERS.

3. ANY INTERCONNECTING PIPING BETWEEN AWC'S EQUIPMENT AND THE WTP TO BE DESIGNED, SUPPLIED & INSTALLED BY OTHERS.

4. TANK NOZZLES SHALL NOT BE SUBJECTED TO EXTERNAL PIPING FORCES AND MOMENTS. ZERO LOADING WILL BE ACCEPTED.

ESTIMATED WEIGHTS

1. TANK (EACH TRAIN)
DAF DRY WEIGHT (FOR SHIPPING) 2,200 KG
DAF DRY WEIGHT (FULLY ASSEMBLED) 3,200 KG
OPERATING WEIGHT (WITH WATER & MEDIA) 72,000 KG

2. WALKWAYS
TOTAL WEIGHT OF WALKWAYS 200 KG
STAIRS N/A

LEGEND

BY AWC

BY OTHERS

FUTURE

10

HV-01

ITEM NUMBER
P&ID TAG NUMBER

TP-01

P&ID TIE POINT NUMBER

ITEM

QTY

DESCRIPTION

SIZE (in)

MATERIAL

MANUFACTURER

MODEL #

REV

1

1

BUTTERFLY VALVE C/W ELEC ACTUATOR, MODULATING (INLET)

8"

D.I.

KEystone

222 / EPI2

A

2

1

BUTTERFLY VALVE C/W HANDWHEEL (EFFLUENT)

8"

D.I.

KEystone

222

A

3

1

BUTTERFLY VALVE C/W HANDWHEEL (RECYCLE RETURN)

4"

D.I.

KEystone

222

A

4

1

BUTTERFLY VALVE C/W HANDWHEEL (RECYCLE SUPPLY)

3"

D.I.

KEystone

222

A

5

1

BUTTERFLY VALVE C/W HANDWHEEL (SLUDGE)

3"

D.I.

KEystone

222

A

6

4

BALL VALVE, FNPT

2"

SS

CRANE

9502

A

7

1

PRESSURE RELIEF VALVE

3/4

BRONZE

CLA-VAL

90-01BY

A

8

1

LEVEL TRANSMITTER, RADAR

VEGA

C11

A

9

1

pH SENSOR

3/4"

N/A

PROMINENT

PHEI 112 SE

A

10

2

ANODE ASSEMBLY

60"

MAGNESIUM / AL-6061-T6

AWC

N/A

A

11

1

SKIMMER DRIVE

BALDOR

CEM3581T-5

A

12

2

FLOCCULATION MIXER

C.I.

HAYWARD GORDON

HKAF-08-300

A

13

1

ELECTRICAL PANEL

72x60x24

STEEL

BEL

HD726024F

A

14

3

DISCONNECT SWITCH

ABB

EOT32U3P4-P

A

15

4

SEISMIC ANCHOR BASE PLATE

1/4"

VARIES

AWC

CUSTOM

A

TIE POINT SCHEDULE (DAF TANK)

ITEM

DESCRIPTION

SIZE (mm)

TYPE

TP-100

RAW WATER INLET

200

FLANGE, FF, 150#

TP-132

DOMESTIC WATER SUPPLY

19

FNPT

TP-133

RECYCLE SUPPLY FROM SATURATOR

75

FLANGE, FF, 150#

TP-134

DAF EFFLUENT TO FILTER

200

FLANGE, FF, 150#

TP-135

TO WASTE DRAIN

75

FLANGE, FF, 150#

TP-140

RECYCLE SUPPLY TO RECYCLE PUMPS

100

FLANGE, FF, 150#

SHEET INDEX:

1: STANDARD NOTES & PARTS LIST

2: ISO VIEW

3: PLAN VIEW

4: VIEW A

5: VIEW B & C

6: SECTION D

7: SECTION E

8: SHIPPING ENVELOPE

9: CONCRETE PAD & SEISMIC ANCHOR DETAILS

NOTES:

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BRITISH COLUMBIA (EGBC)

10

HV-01

ITEM NUMBER
P&ID TAG NUMBER

TP-01

P&ID TIE POINT NUMBER

REVISIONS

A

ISSUED FOR INFORMATION

29-JUL-22

AB

ZT

100

REV

DESCRIPTION

DATE

BY

CHK

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CLIENT

DILLON CONSULTING, HALIFAX

PROJECT

EAST HANTS ENFIELD DAF UPGRADE

TITLE

DAF GENERAL ARRANGEMENT

SCALE

NTS

PROJECTION

DEFULT UNITS

mm

SHEET SIZE

17 x 11

SHEET

1 OF 9

DRAWING NO.

40181-PI-GAD-100

REV

A

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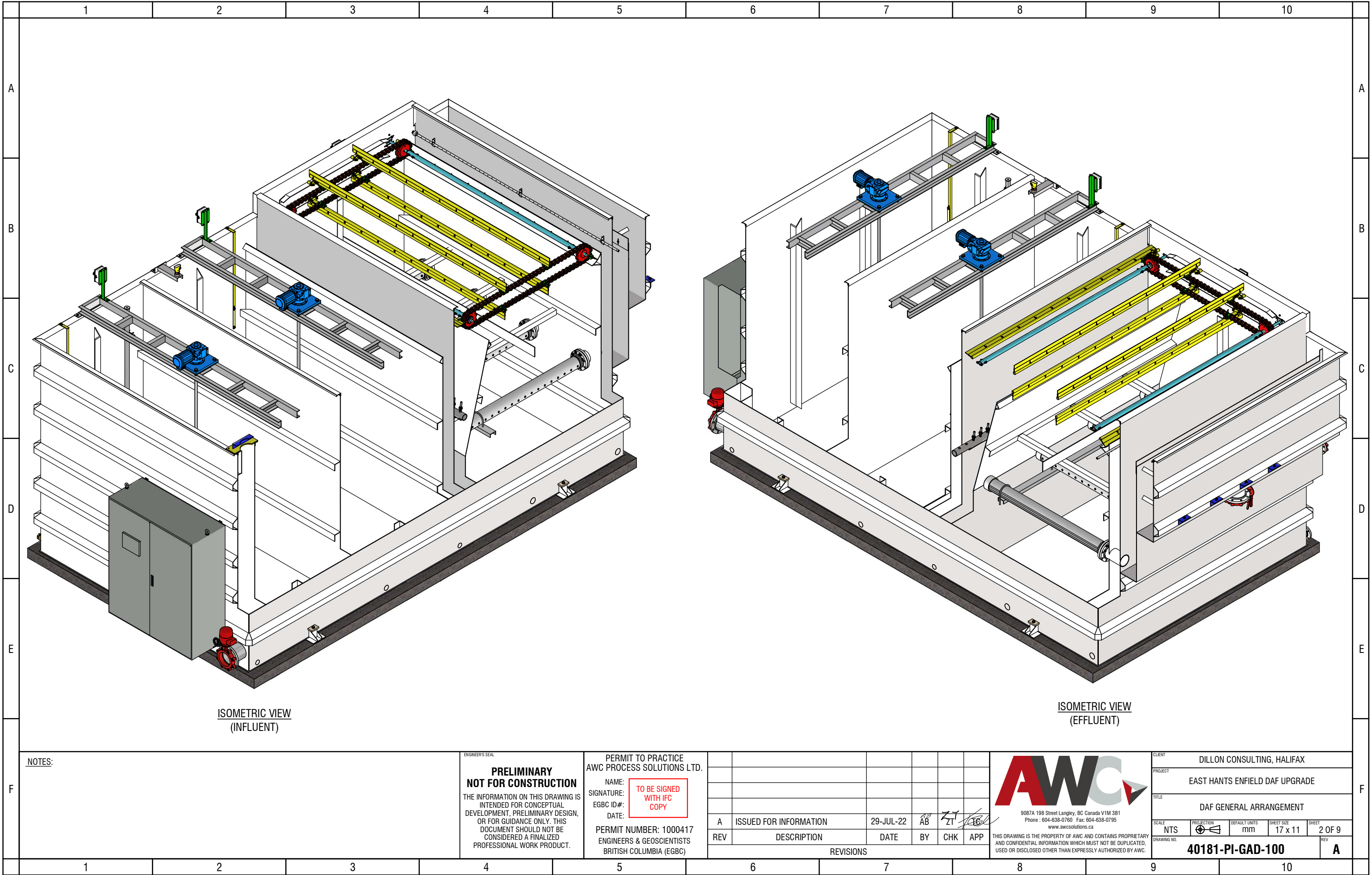
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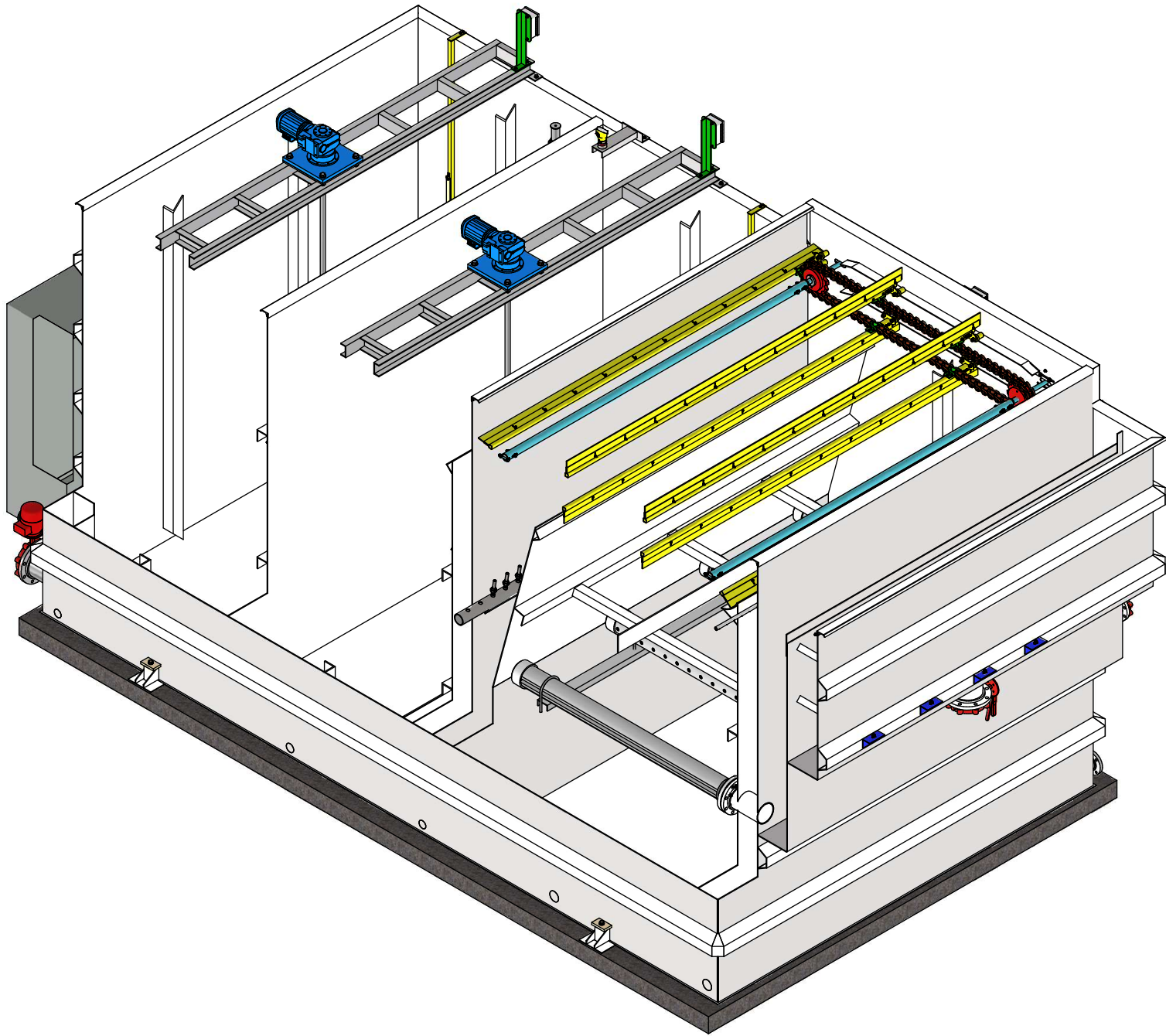
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10

FILE: \\srv-fs01\shared\Shared\Customers\Dillon Consulting, Halifax\40181 East Hants Enfield DAF upgrade\5 Engineering\5.13 Piping\5.13.H Diagrams & Dwgs (2D)\5.13.H.1 GAs & Elev Dwgs



ISOMETRIC VIEW
(INFLUENT)



ISOMETRIC VIEW
(EFFLUENT)

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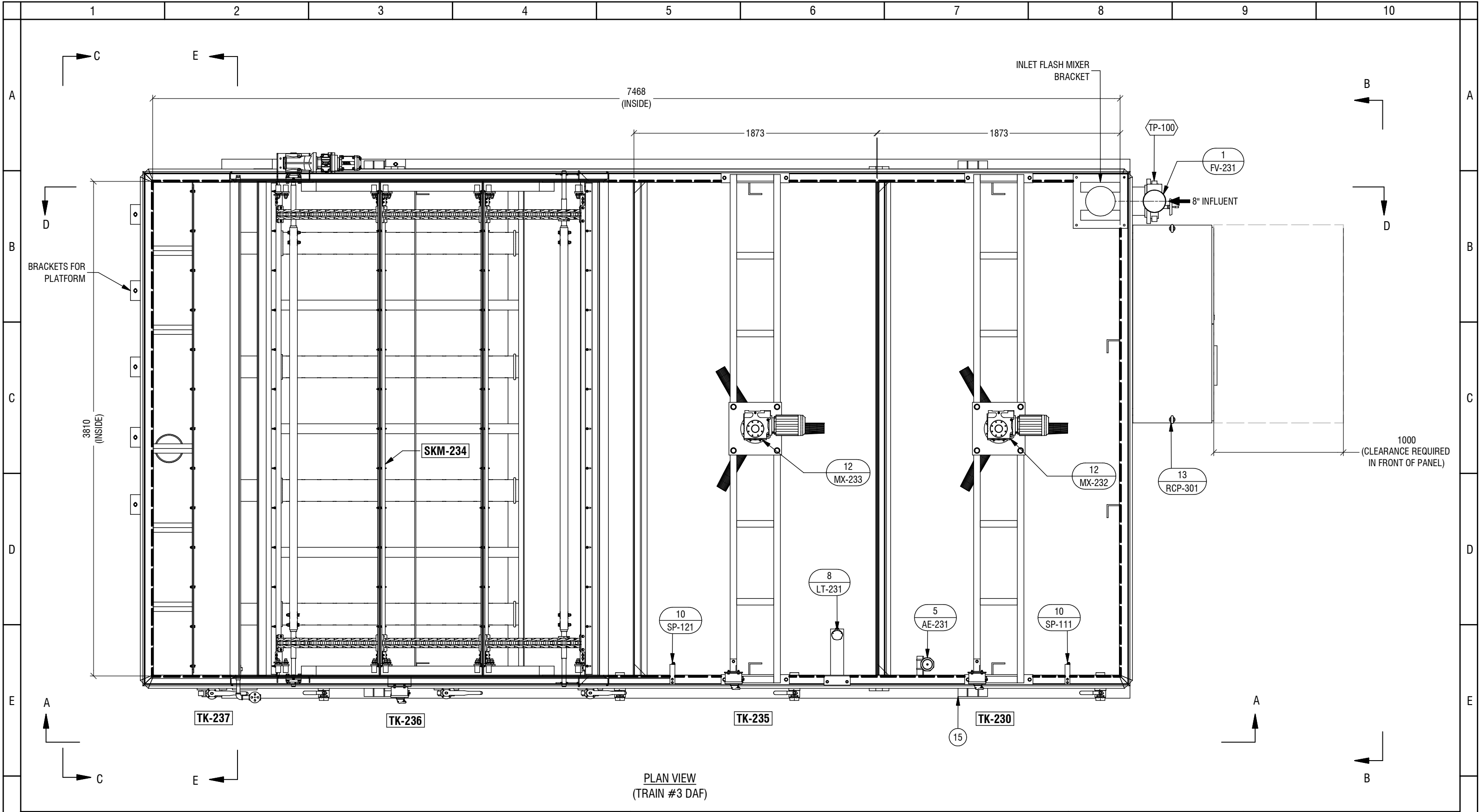
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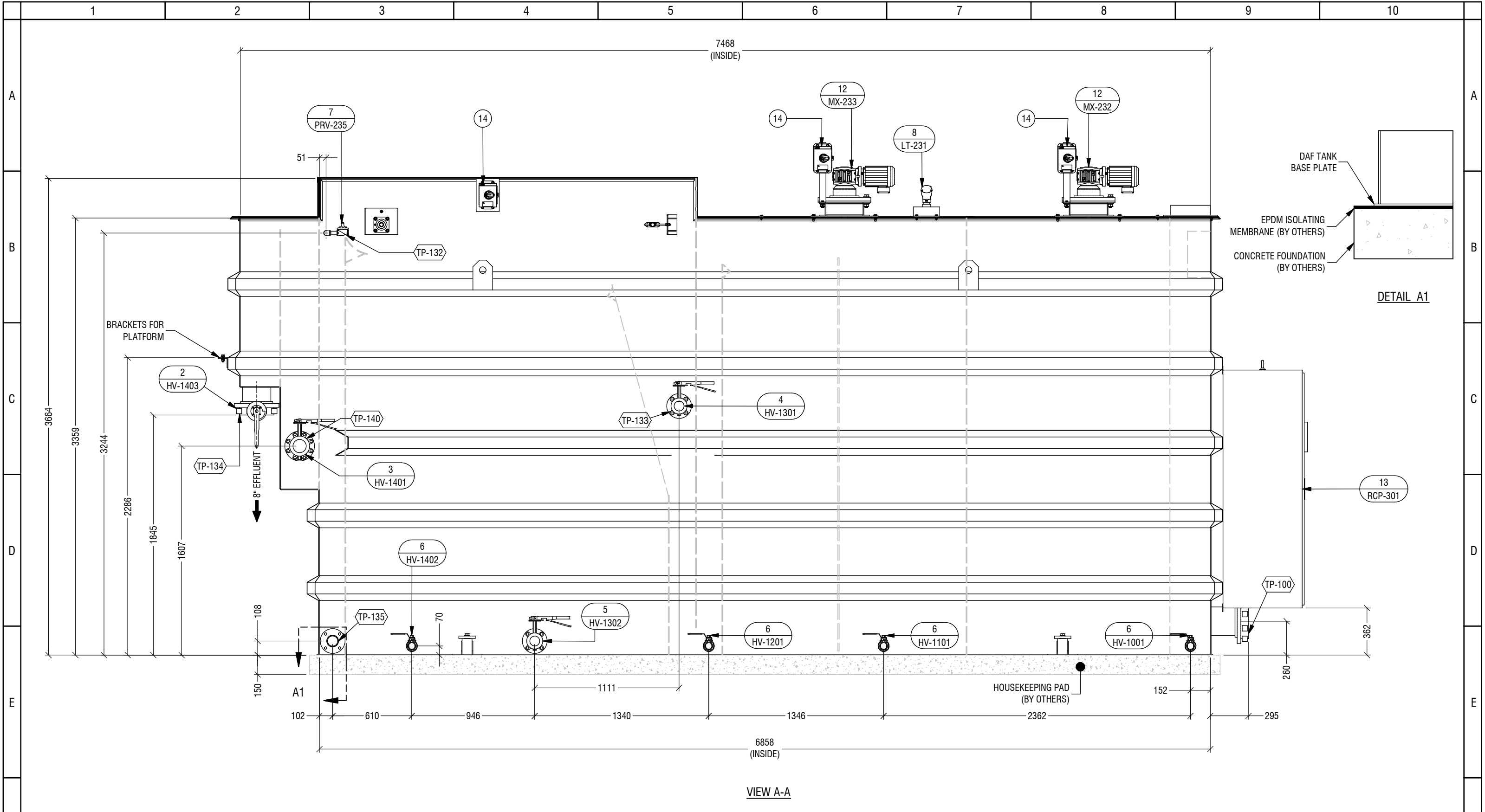
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PROJECT	EAST HANTS ENFIELD DAF UPGRADE				
TITLE	DAF GENERAL ARRANGEMENT				
SCALE	NTS	PROJECTION	DEFAULT UNITS	SHEET SIZE	SHEET
			mm	17 x 11	2 OF 9
DRAWING NO.	40181-PI-GAD-100				REV
					A



PLAN VIEW
(TRAIN #3 DAF)

F	NOTES:				<div>ENGINEER'S SEAL</div> <div>PRELIMINARY NOT FOR CONSTRUCTION</div> <div>THE INFORMATION ON THIS DRAWING IS INTENDED FOR CONCEPTUAL DEVELOPMENT, PRELIMINARY DESIGN, OR FOR GUIDANCE ONLY. THIS DOCUMENT SHOULD NOT BE CONSIDERED A FINALIZED PROFESSIONAL WORK PRODUCT.</div>				<div>PERMIT TO PRACTICE AWC PROCESS SOLUTIONS LTD.</div> <div>NAME: SIGNATURE: EGBC ID#: DATE:</div> <div>TO BE SIGNED WITH IFC COPY</div> <div>PERMIT NUMBER: 1000417 ENGINEERS & GEOSCIENTISTS BRITISH COLUMBIA (EGBC)</div>				<div>CLIENT</div> <div>PROJECT</div> <div>TITLE</div> <div>9087A 198 Street Langley, BC Canada V1M 3B1 Phone : 604-638-0760 Fax: 604-638-0795 www.awcsolutions.ca</div> <div>THIS DRAWING IS THE PROPERTY OF AWC AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY AWC.</div>				<div>AWC</div> <div>9087A 198 Street Langley, BC Canada V1M 3B1 Phone : 604-638-0760 Fax: 604-638-0795 www.awcsolutions.ca</div>				<div>CLIENT</div> <div>DILLON CONSULTING, HALIFAX</div> <div>PROJECT</div> <div>EAST HANTS ENFIELD DAF UPGRADE</div> <div>TITLE</div> <div>DAF GENERAL ARRANGEMENT</div> <div>SCALE</div> <div>NTS</div> <div>PROJECTION</div> <div>DEFAULT UNITS</div> <div>mm</div> <div>SHEET SIZE</div> <div>17 x 11</div> <div>SHEET</div> <div>3 OF 9</div> <div>DRAWING NO.</div> <div>40181-PI-GAD-100</div> <div>REV</div> <div>A</div>			
				REVISIONS																				



VIEW A-A

NOTES:

1. DIMENSIONS IN ELEVATION REFERENCED FROM TOP OF HOUSEKEEPING PAD.

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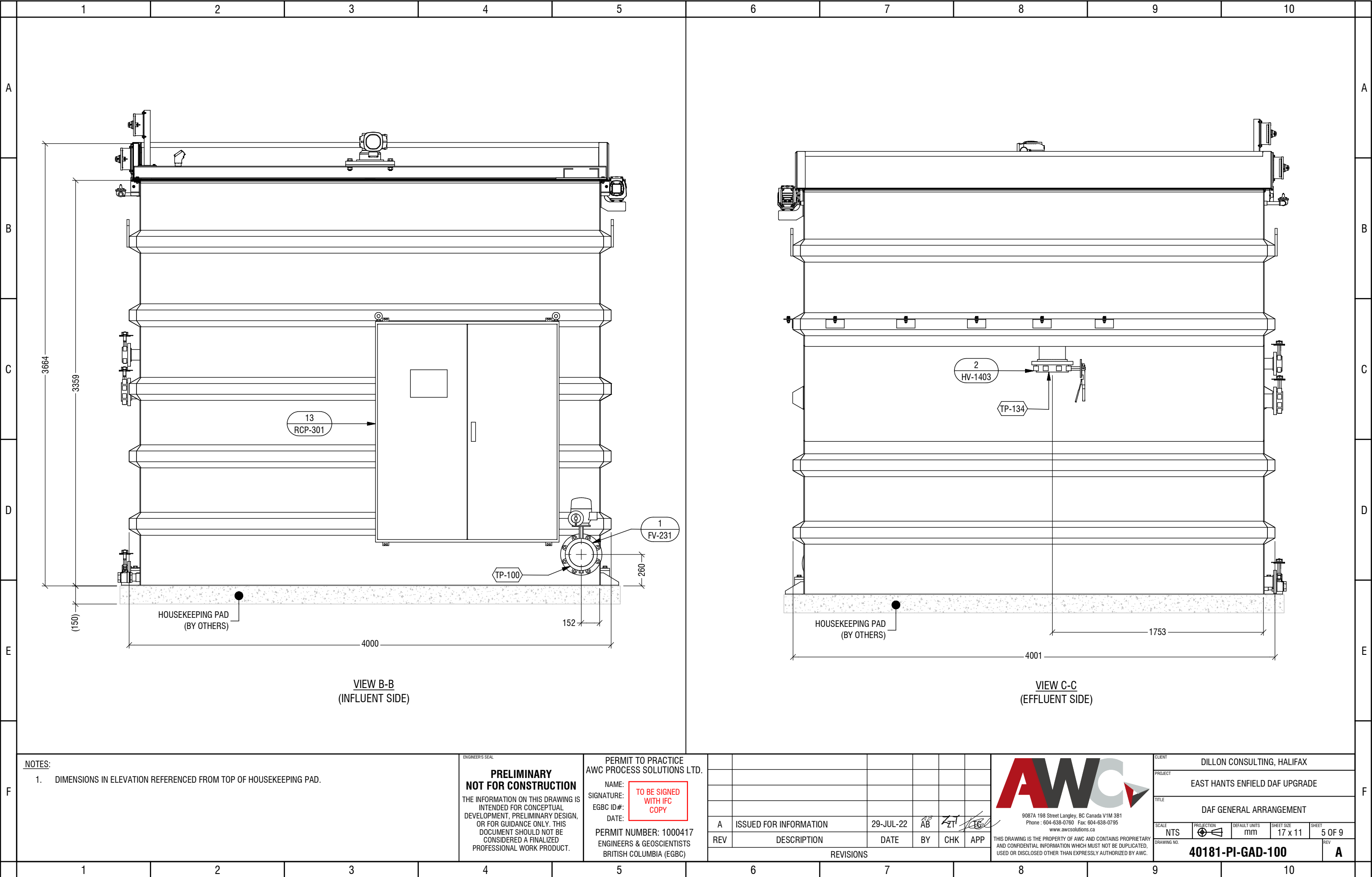
CLIENT: DILLON CONSULTING, HALIFAX

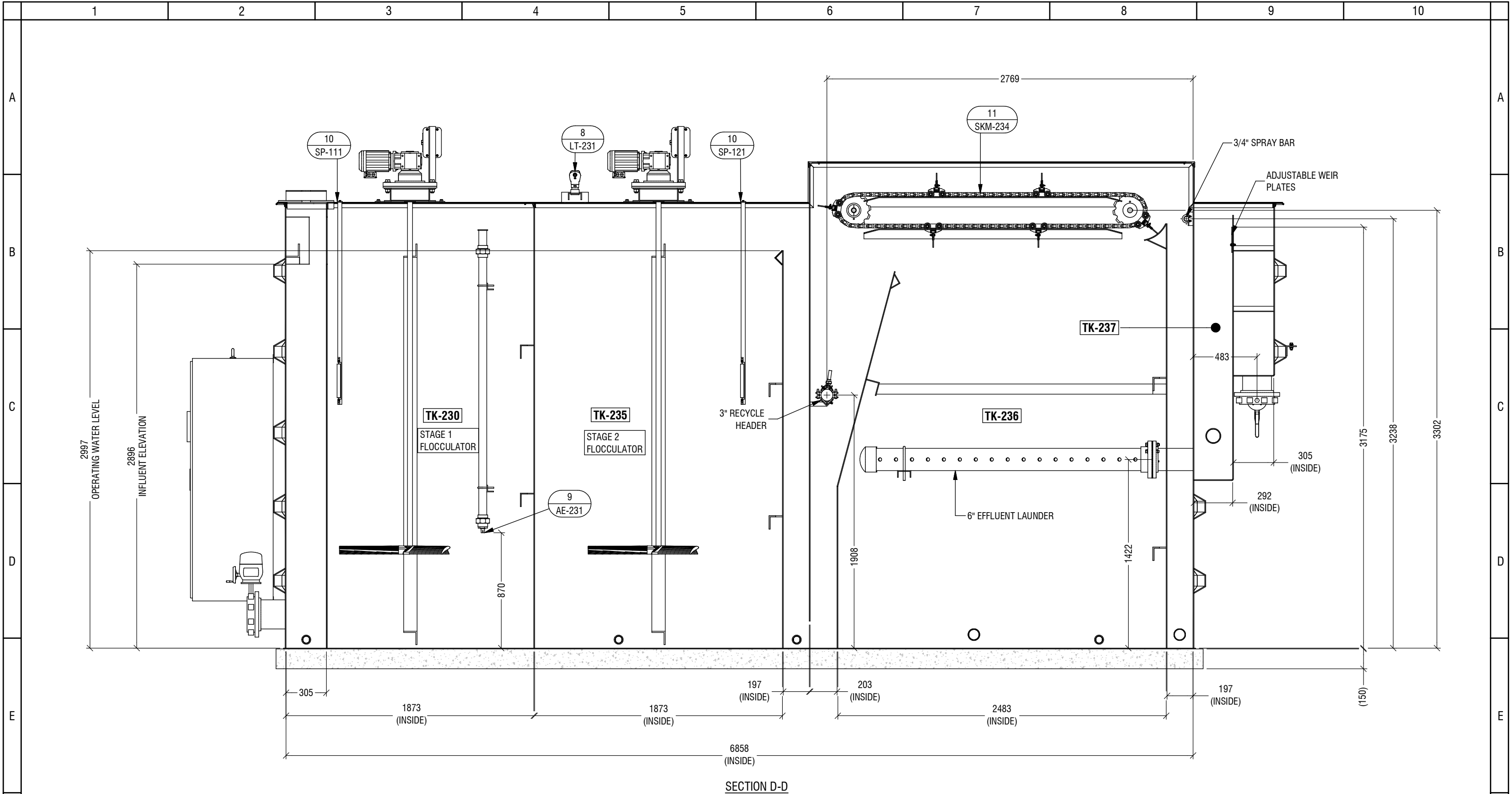
PROJECT: EAST HANTS ENFIELD DAF UPGRADE

TITLE: DAF GENERAL ARRANGEMENT

SCALE: NTS	PROJECTION:	DEFAULT UNITS: mm	SHEET SIZE: 17 x 11	SHEET: 4 OF 9
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DRAWING NO. **40181-PI-GAD-100** REV **A**





NOTES:
1. DIMENSIONS IN ELEVATION REFERENCED FROM TOP OF BASE PLATE

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