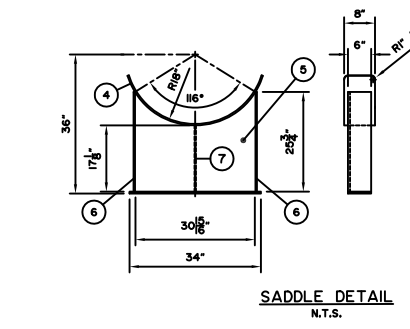


DEMISTER  
N.T.S.



SADDLE DETAIL  
N.T.S.

INSIDE & OUTSIDE OF NOZZLE BE ROUNDED PER UG-76(C)

NOZ NO.	NO. REQ'D	SIZE REQ'D	RATING	TYPE OF SERVICE	OD OF NOZ NECK	PROJECTION OUTSIDE	PROJECTION INSIDE	REIF PAD OD x THK	WELD DETAIL	FILLET WELD SIZE	BILL OF MAT'L ITEM No.	REMARKS
M1	1	18"	600	MANWAY/INSPECTION	23.19"	-	1 7/8"	-	5	3/8" 5/8"	9,10,11,12,13,14	-
N1	1	4"	600	PROCESS INLET	6.00"	-	1 3/8"	-	5	3/8" 5/8"	15	-
N2	1	4"	600	GAS OUTLET	6.00"	6"	1 1/2"	-	5	3/8" 5/8"	15	-
N3	1	2"	600	WATER DRAIN	2.375"	6"	FLUSH	-	4,5	3/8"	17,20	-
N4	1	2"	600	WATER OUT	2.375"	6"	FLUSH	-	4,5	3/8"	17,20	-
N5	1	3"	600	WATER LLC	4.62"	6"	1 1/2"	-	5	3/8" 7/8"	16	-
N6	1	3"	600	PSV	4.62"	6"	1 1/2"	-	5	3/8" 3/8"	16	-
N7	1	3"	600	OIL LLC	4.62"	6"	1 1/2"	-	5	3/8" 5/8"	16	-
N8	1	2"	600	OIL OUT	2.375"	6"	FLUSH	-	4,5	3/8"	17,20	-
N9	1	3"	600	LSDH	4.62"	6"	1 1/2"	-	5	3/8" 5/8"	16	-
N10	1	2"	600	OIL DRAIN	2.375"	6"	FLUSH	-	4,5	3/8"	17,20	-
N11ab	2	2"	600	WATER LLG	2.375"	6"	FLUSH	-	4,5	3/8"	(a) 17,19 (b) 17,20	-
N12ob	2	2"	600	OIL LLG	2.375"	6"	FLUSH	-	4,5	3/8"	(a) 17,18 (b) 17,20	-
N13	1	2"	600	TI	2.375"	6"	FLUSH	-	4,5	3/8"	17,20	-
N14	1	2"	600	PI	2.375"	6"	FLUSH	-	4,5	3/8"	17,20	-

BILL OF MATERIAL

ITEM	QTY.	DESCRIPTION
1	2	S.E. HEAD, 36"OD X 1500" NOM. (1.375" MIN.), SA516-70N
2	1	SHELL, 36"OD X 1500" NOM. X 8'-0" LONG, SA516-70N
3	1	SHELL, 36"OD X 1500" NOM. X 4'-0" LONG, SA516-70N
4	2	ROLLED REPAD, 3/8"TK X 8" X 45 9/16" LONG (ROLLED TO 36"OD), SA516-70N
5	2	SUPPORT PLATE - PLATE, 1/2" X 30 15/16" X 25 9/16", SA36/44W (SEE DETAIL)
6	4	SIDE PLATE - FLAT, 3/8" X 6" X 25 3/4" LONG, A36/44W (SEE DETAIL)
7	2	STIFFENER PLATE - PLATE, 3/8" X 5 1/2" X 17 1/8" LONG, SA36/44W (SEE DETAIL)
8	2	BASE PLATE - FLAT, 1/2" X 6" X 34" LONG, A36/44W (SEE DETAIL)
9	1	RFHW, 18" 600 ANSI X 18" NS OD, SA105N
10	1	RFB, 18" 600 ANSI, SA105N
11	1	DAVIT ARM, 18" - 24"
12	1	316 SPIRALWIND GSKT, 18" 600 ANSI, NASB
13	20	B7M STUD, 1 5/8" X 10 1/2", SA193-B7M
14	40	2HM HEX NUT, 1 5/8", SA194-2HM
15	2	RFLWN, 4" 600 ANSI X 12" OAL, SA105N
16	4	RFLWN, 3" 600 ANSI X 12" OAL, SA105N
17	10	RFW, 2" 600 ANSI SCH. 160, SA105N
18	1	PIPE, 2" SCH. 160 (0.344"), SA106B X 4 11/16" LONG
19	1	PIPE, 2" SCH. 160 (0.344"), SA106B X 4 9/16" LONG
20	8	PIPE, 2" SCH. 160 (0.344"), SA106B X 4 7/16" LONG
21	5	ANGLE, L2.000" X 2.000" X 1/4" X 12 11/16" LONG, A36/44W
22	1	PLATE, 10" X 12" X 1/4", SA36 (SEE INLET DIVERTER DETAIL)
23	1	STD CHANNEL, C12 X 20.7 LB/FT X 10" LONG, A36/44W
24	1	PLATE, 1/4" X 29 1/2"OD, SA36 (SEE REMOVABLE WEIR DETAIL)
25	1	PLATE, 1/4" X 32 7/8"OD, SA36 (SEE REMOVABLE WEIR DETAIL)
26	1	NEOPRENE (BLACK), 29 1/2"OD (CUT TO FIT WEIR), 1/8" THK (SEE REMOVABLE WEIR DETAIL)
27	10	BOLT - 1/2" X 1 1/2", 316SS
28	10	NUT, 1/2", 316SS
29	1	PLATE, 1/4" X 32 7/8"OD, SA36 (WAVE BREAKER DETAIL)
30	4	FLAT, 1/4" X 2" X 3" LONG, A36/44W
31	1	PIPE, 20" SCH. STD. (0.375") X 11" LONG, SA538 (SEE DEMISTER DETAIL)
32	1	DEM 19 1/2"OD X 4"TK, 9LB 316SS, 2 PC c/w GRD
33	A/R	FLAT, 1/4" X 1", A36/44W
34	4	BOLT - 3/8" X 1 1/2", 316SS
35	4	NUT, 3/8", 316SS
36	4	VORTEX BREAKER - PLATE, 3/8", SA36/44W (SEE DETAIL)
37	2	LIFT LUG - PLATE, 1", SA516-70N (SEE DETAIL)
38	1	TAG PLATE HOLDER, SA36
39	1	VESSEL ID PLATE, ALUM
40		

- NOTES:
- ALL STUD LENGTHS GIVEN ARE THREAD TO THREAD
  - ALL RFHB TO BE NUT STOP OD
  - PREHEAT TO 200°F PRIOR TO WELDING
  - ALL REPADS TO HAVE 1/4" WEEP HOLES
  - WEAR PLATE TO HAVE MIN. R1" CORNERS
  - PAINTING BY OTHERS

IMPACT TESTING NOTES:

COMPONENT	COMMENT
SHELL	IMPACT TESTED TEMP. -20°F MIN. ENERGY 15-1211-lb
HEADS	IMPACT TESTED TEMP. -20°F MIN. ENERGY 15-1211-lb
CAT. A & B WELDS	PRODUCTION IMPACT TESTING PER UG8411
NOZZLES	IMPACT TESTING EXEMPT PER UCS66(d)1b

REV. No.	MM	DD	YY	DATE	DESCRIPTION	CALC. No.	BY	CHK'D	SIGN'D
2	10	17	08		AS-BUILT		TTM	SW	SW
1	10	09	08		CHANGED PWHT FROM 60 MIN. TO 90 MIN.		SW	SW	SW
0	07	09	08		ISSUED FOR CONSTRUCTION		GV	SW	SW

ASME 2007 ED. 2007 ADD CODE SEC. VIII DIV. I

BMS AQP (S) 1009 REGISTERED WELD PROCEDURE 505.2  
FOR VESSEL TOLERANCES, SEE WELDER HANDBOOK

VESSEL TYPE: HORIZONTAL

M.A.W.P.: 1440 PSIG (9928 kPa) AT +130°F (+54°C)

M.D.M.T.: -20°F (-29°C) AT 1440 PSIG (9928 kPa)

IMPACT TESTING: SEE NOTES

P.W.H.T.: 1150°F FOR 90 MIN.

RADIOGRAPHY: RT-I CIRC.: FULL LONG: FULL

JOINT EFFICIENCY: HEADS: 1.00 SHELL: 1.00

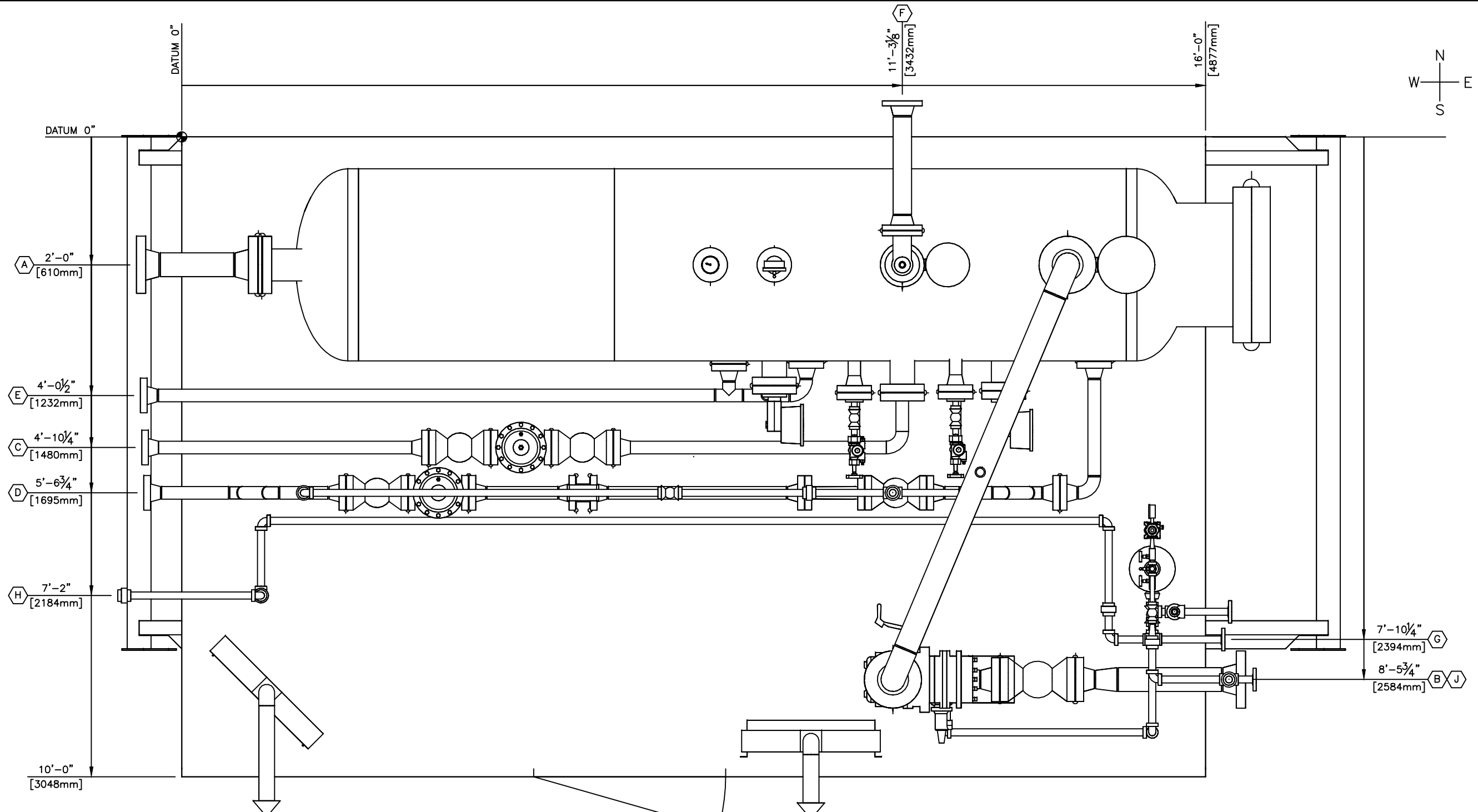
CORROSION ALLOWANCE: 1/8"

HYDROSTATIC TEST: 2160 PSIG (14893 kPa)

VOLUME: 78.9 ft<sup>3</sup> (2.23 m<sup>3</sup>)

WEIGHT (DRY): 13250 lb (6010 kg)

CLIENT	ARGO SALES LTD.		<p>925-23rd Street S.W. Medicine Hat Alberta, Canada, T1A 8R1 (403) 526-3142</p>
PROJECT	(1) 36"OD X 12' X 1440 PSI HORIZONTAL SOUR SEPARATOR		
TITLE	36"OD X 12' X 1440 PSI SEPARATOR		
CRN No.:	U5080.213	Wo No.:	33104
DATE:	MM/DD/YY 07/09/08	SCALE:	3/8" = 1'-0"
DRAWN BY:	G. VANDERMOLEN	REV. No.:	2
		SERIAL No.:	828339
		DATE:	MM/DD/YY 10/17/08
		CAD No.:	33104



PLAN VIEW  
SCALE: 1:20

TAG	TAG DESCRIPTION	CONNECTION SIZE	ELEVATION FBOS		PROJECTION	
A	INLET	4"-600CL RFWN	55 7/16"	1408mm	8 1/2"	216mm
B	GAS OUTLET	4"-600CL RFWN	20 15/16"	532mm	8"	203mm
C	WATER OUTLET	2"-600CL RFWN	17 11/16"	449mm	7 1/2"	191mm
D	OIL OUTLET	2"-600CL RFWN	17 3/16"	437mm	7 1/8"	181mm
E	DRAIN	2"-600CL RFWN	17 11/16"	449mm	7 3/4"	197mm
F	PSV OUTLET	3"-150CL RFWN	21 1/16"	535mm	3 3/4"	95mm

TAG	TAG DESCRIPTION	CONNECTION SIZE	ELEVATION FBOS		PROJECTION	
G	SCRUBBER DRAIN	1"-150CL RFTHD	16 15/16"	430mm	4 1/8"	105mm
H	SCRUBBER DRAIN	1"-NPT 3000# ELB	36 3/8"	924mm	6 1/4"	159mm
J	FUEL GAS OUTLET	1"-150CL RFTHD	30 3/4"	781mm	5"	127mm

PIPING MAY NOT BE EXACTLY AS SHOWN

SHIPPING DIMENSIONS  
 LENGTH: 19'-2" [5842mm]  
 WIDTH: 11'-4" [3454mm]  
 HEIGHT: 11'-6" [3505mm]  
 ESTIMATED WEIGHT: 30,000LBS

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STAMPS, PERMITS AND APPROVALS

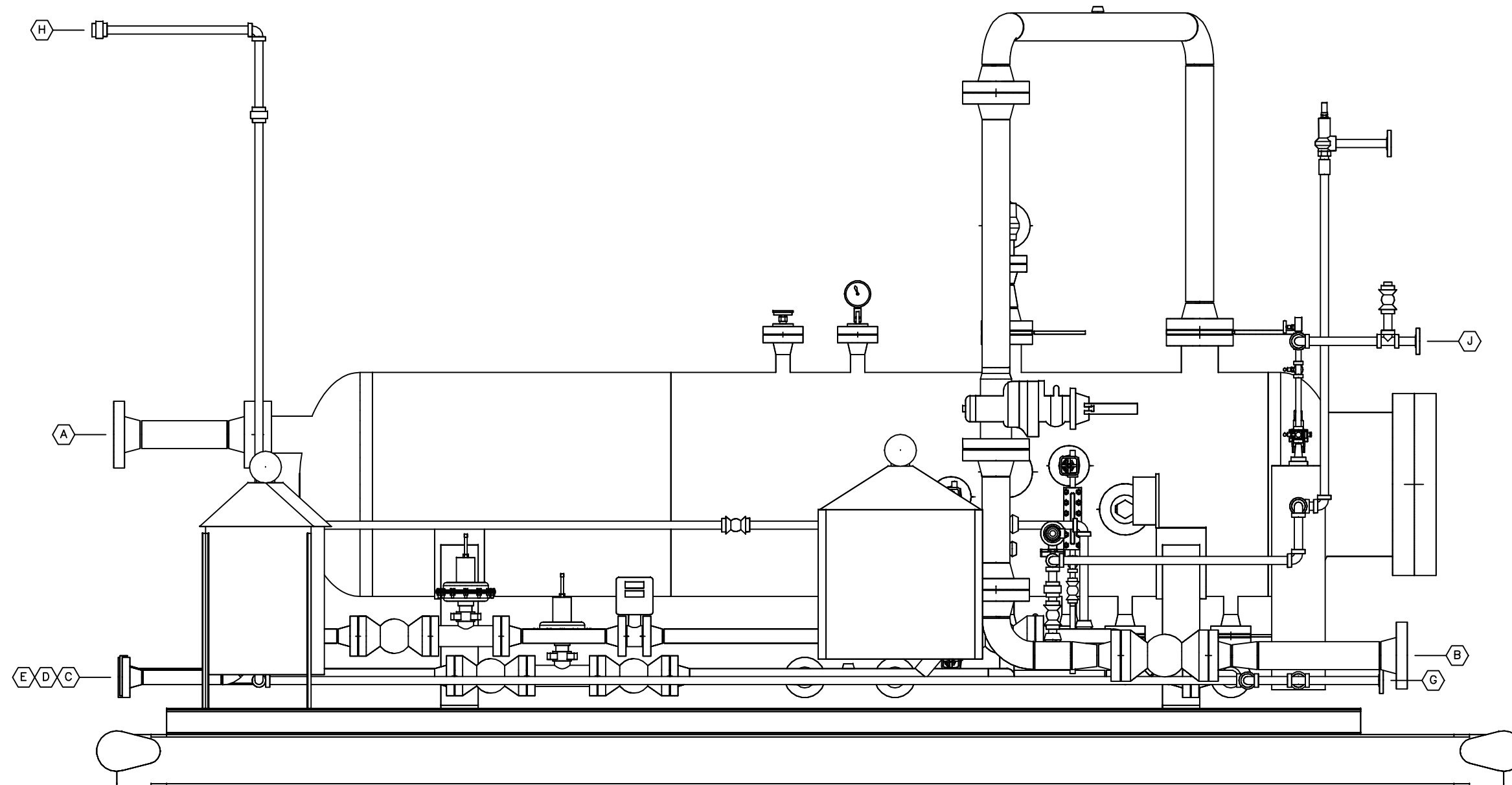
NO.	DATE	REVISIONS	DWN	CHK'D	APP.
0	20-05-26	ISSUED FOR CONSTRUCTION		KG	

**crusader JV**

4TH FLOOR, 909-17th AVE. SW CALGARY, AB T2T 0Z4  
 Phone: (403)263-8078 Fax: (403)261-3609

DATE	20-05-26	CLIENT	LSD:		
DESIGNED BY		TITLE	GENERAL ARRANGEMENT DRAWING FOR 36" x 12'-0" s/s HORIZONTAL SEPARATOR		
DRAWN BY	KG	JOB NO.:	CML-201322	VESSEL SERIAL NO.	828339
CHECKED BY		UNIT NO.:	BU-1000		
APPROVED BY		SHEET NO.:	1 OF 3	DRAWING NO.:	CML-201322PLAN
SCALE:	SEE DWG	REV. NO.:			

PERMIT AND PROFESSIONAL STAMP AFFIXED APPLIES TO THE LATEST REVISION AS INDICATED IN TITLEBLOCK AND BY CLOADED AREAS IF SHOWN.



ELEVATION VIEW S  
SCALE: 1:20

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STAMPS, PERMITS AND APPROVALS

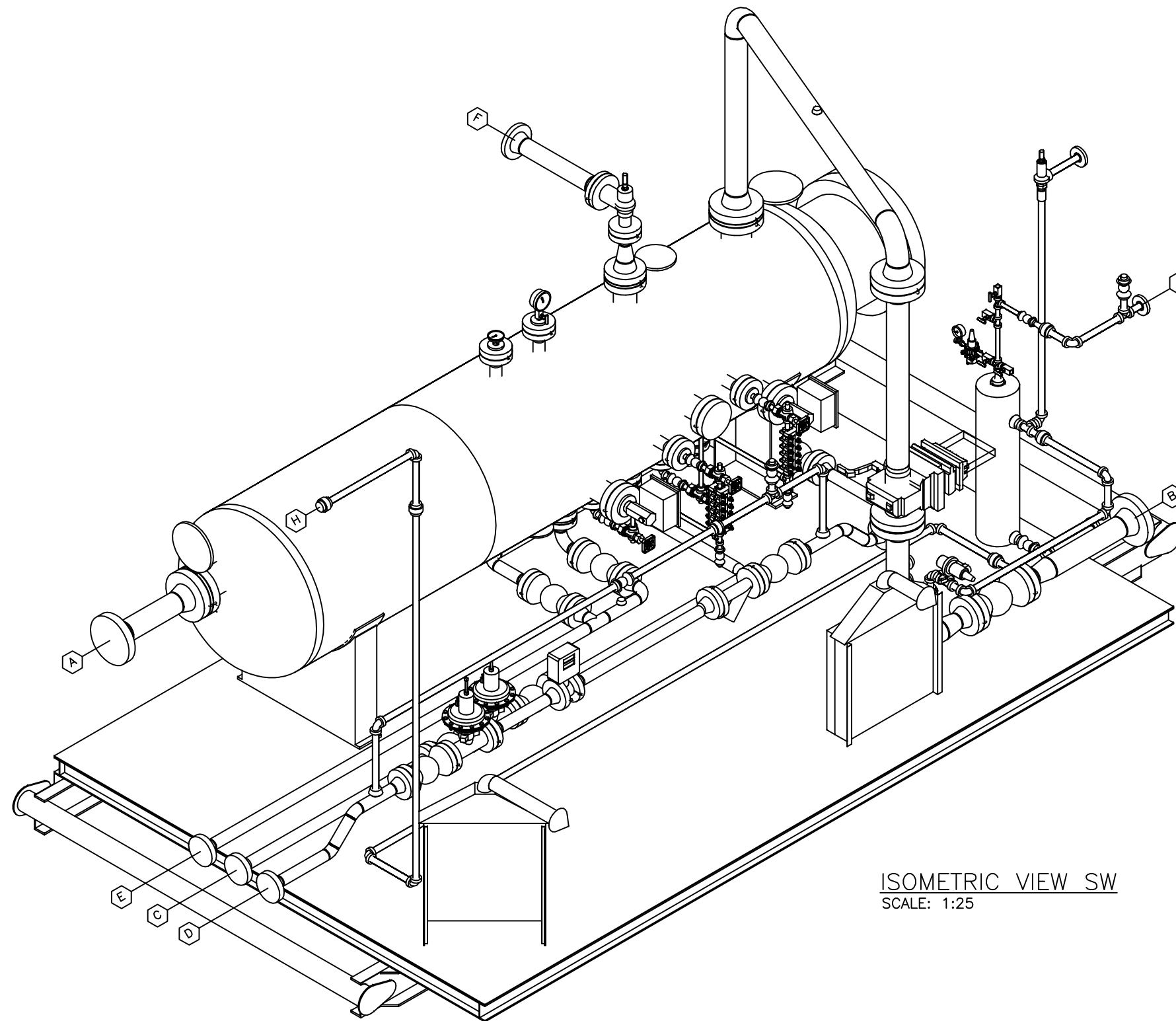
NO.	DATE	REVISIONS	DWN	CHK'D	APP.
0	20-05-26	ISSUED FOR CONSTRUCTION		KG	

**crusader JV**

4TH FLOOR, 909-17th AVE. SW CALGARY, AB T2T 0Z4  
Phone: (403)263-8078 Fax: (403)261-3609

DATE 20-05-26	CLIENT LSD:		
DESIGNED BY	TITLE GENERAL ARRANGEMENT DRAWING FOR 36" x 12'-0" s/s HORIZONTAL SEPARATOR 1440 PSIG @ -20°F / 130°F		
DRAWN BY KG	JOB NO.: CML-201322	VESSEL SERIAL NO.: 828339	UNIT NO.: BU-1000
CHECKED BY	SHEET NO.: 2 OF 3	DRAWING NO.: CML-201322ELE	REV. NO.:
APPROVED BY	SCALE: SEE DWG		

PERMIT AND PROFESSIONAL STAMP AFFIXED APPLIES TO THE LATEST REVISION AS INDICATED IN TITLEBLOCK AND BY CLOADED AREAS IF SHOWN.



ISOMETRIC VIEW SW  
SCALE: 1:25

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STAMPS, PERMITS AND APPROVALS

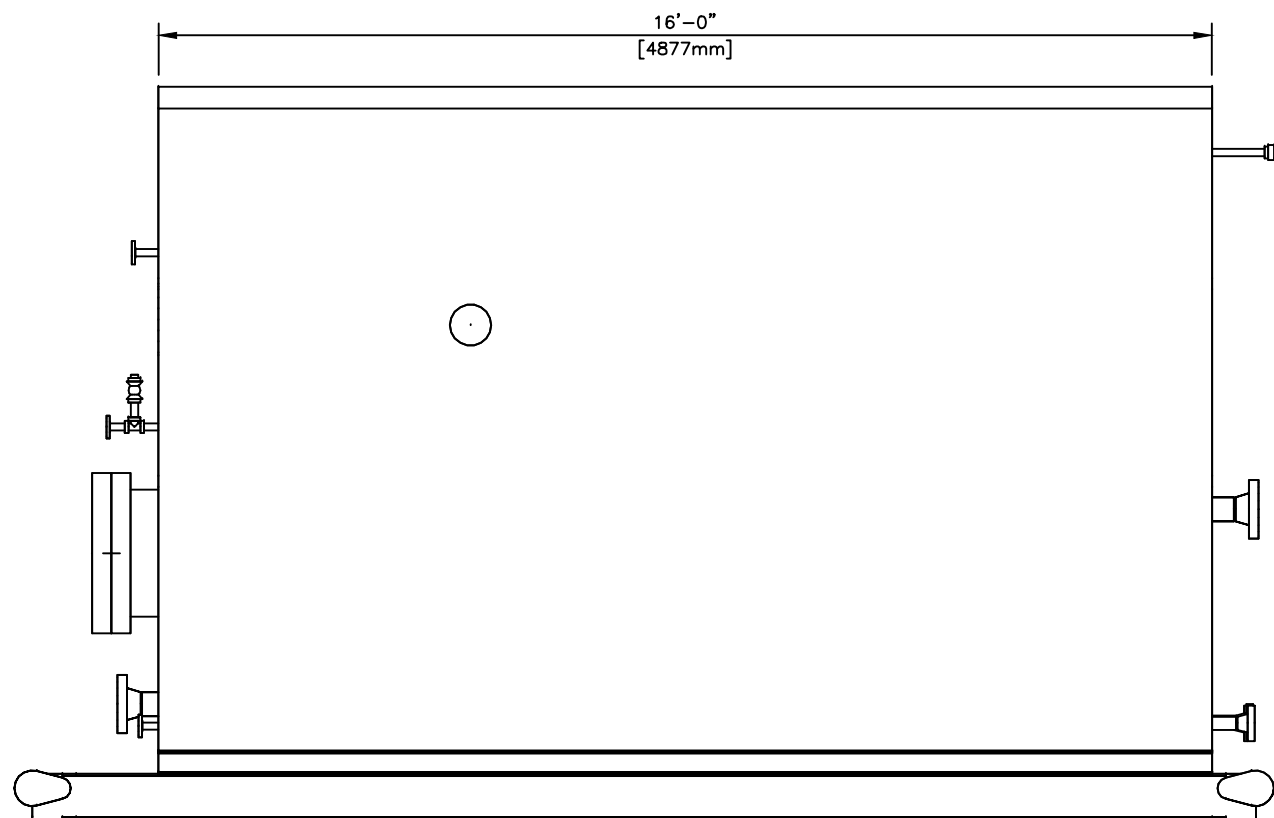
NO.	DATE	REVISIONS	DWN	CHK'D	APP.
0	20-05-26	ISSUED FOR CONSTRUCTION		KG	

**crusader JV**

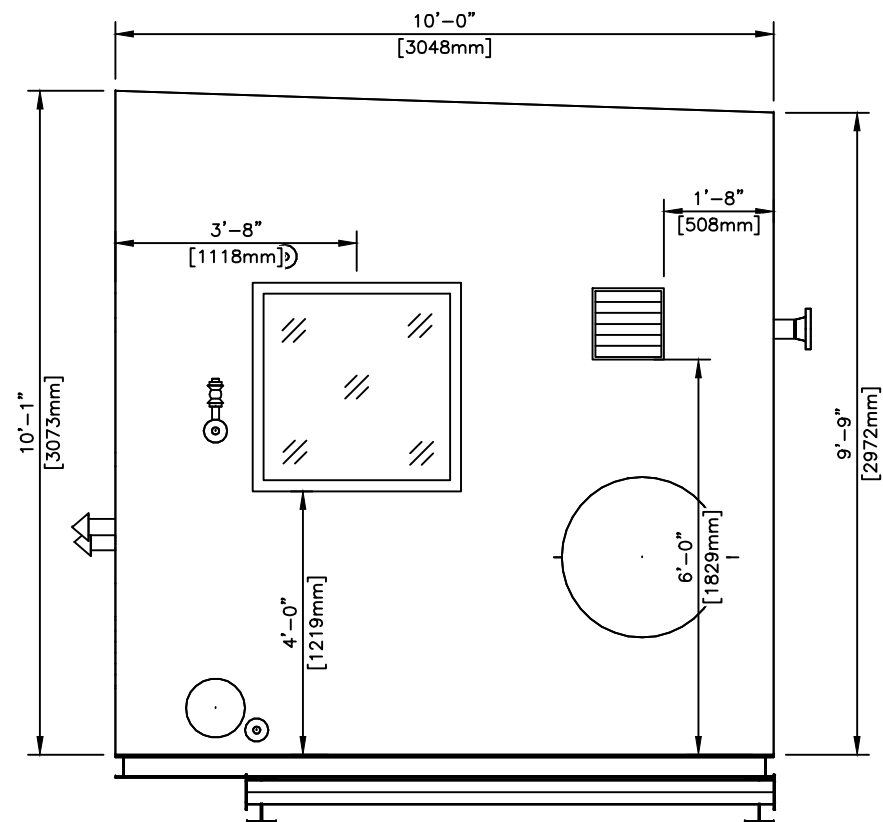
4TH FLOOR, 909-17th AVE. SW CALGARY, AB T2T 0Z4  
Phone: (403)263-8078 Fax: (403)261-3609

DATE	20-05-26	CLIENT	LSD:
DESIGNED BY		TITLE	GENERAL ARRANGEMENT DRAWING FOR 36" x 12'-0" s/s HORIZONTAL SEPARATOR 1440 PSIG @ -20°F / 130°F
DRAWN BY	KG	JOB NO.:	CML-201322
CHECKED BY		VESSEL SERIAL NO.:	828339
APPROVED BY		UNIT NO.:	BU-1000
SCALE:	SEE DWG	SHEET NO.:	3 OF 3
		DRAWING NO.:	CML-201322ISO
		REV. NO.:	△

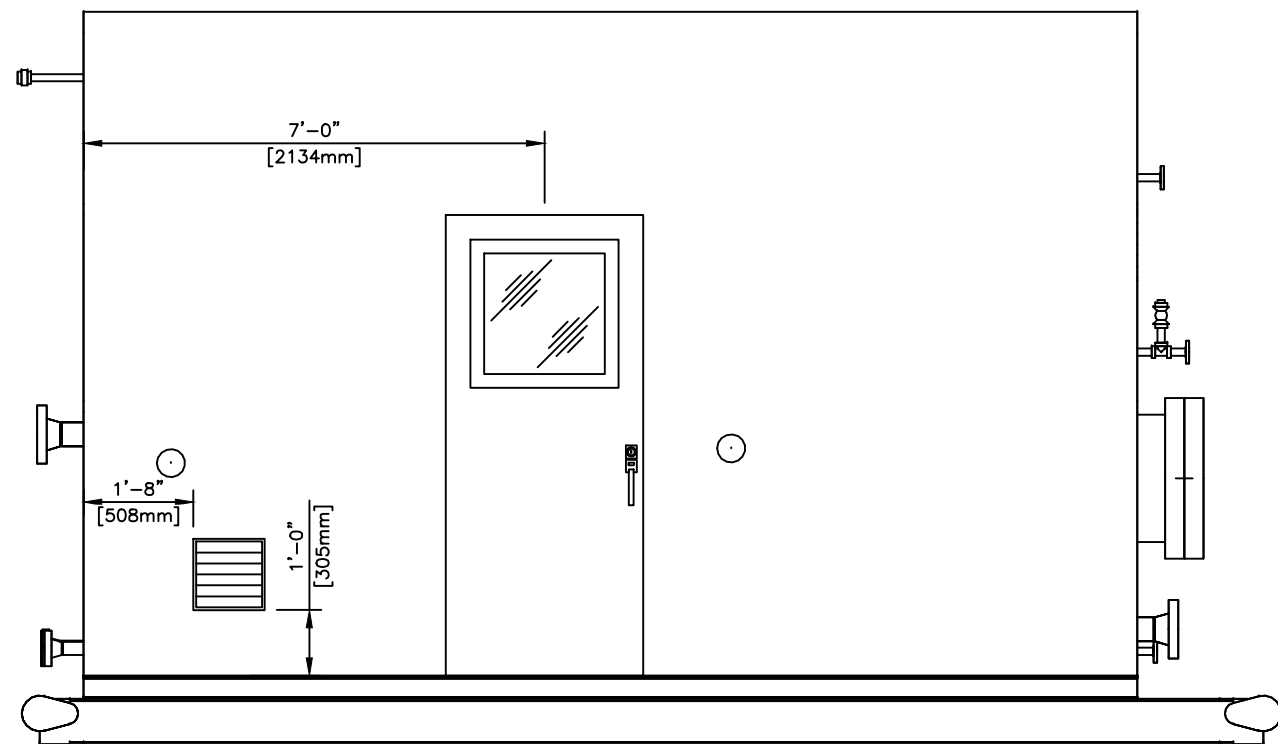
PERMIT AND PROFESSIONAL STAMP AFFIXED APPLIES TO THE LATEST REVISION AS INDICATED IN TITLEBLOCK AND BY CLOADED AREAS IF SHOWN.



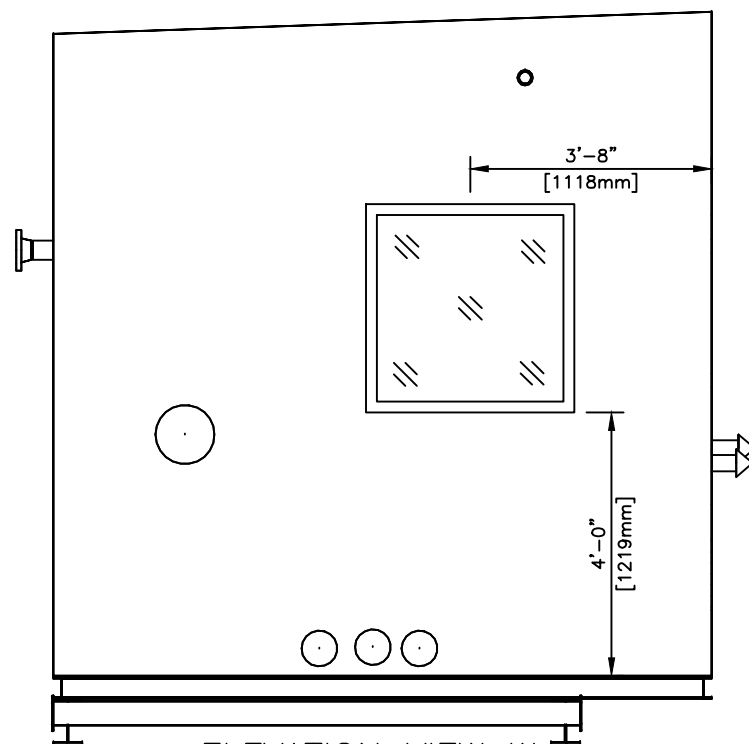
ELEVATION VIEW N  
SCALE: 1:35



ELEVATION VIEW E  
SCALE: 1:35



ELEVATION VIEW S  
SCALE: 1:35



ELEVATION VIEW W  
SCALE: 1:35

STAMPS, PERMITS AND APPROVALS

NO.	DATE	REVISIONS	DWN	CHK'D	APP.
0	20-05-26	ISSUED FOR CONSTRUCTION		KG	

**crusader JV**

4TH FLOOR, 909-17th AVE. SW CALGARY, AB T2T 0Z4  
Phone: (403)263-8078 Fax: (403)261-3609

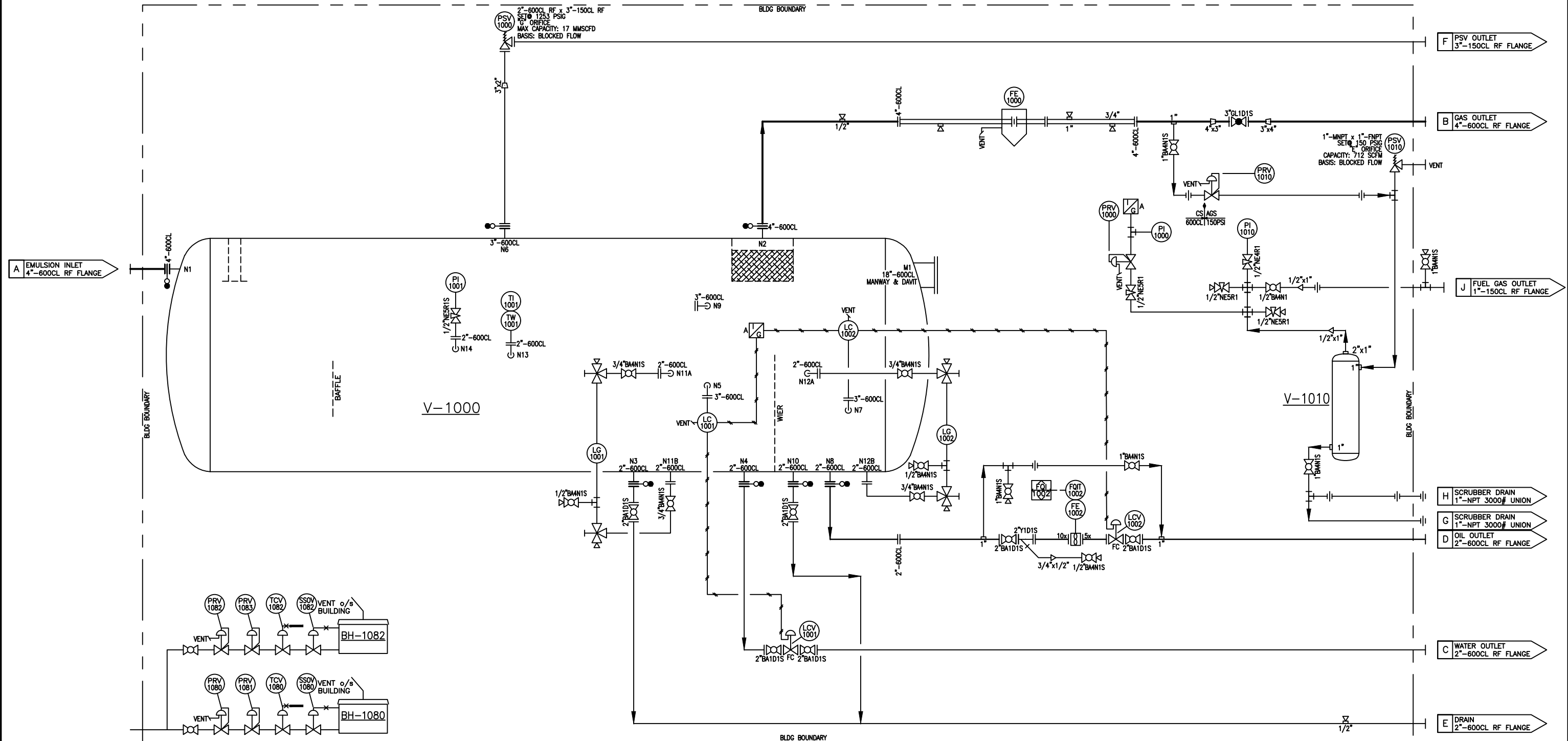
DATE	20-05-26	CLIENT	LSD:	
DESIGNED BY		TITLE	BUILDING DRAWING FOR	
DRAWN BY	KG		36" x 12'-0" s/s HORIZONTAL SEPARATOR	
CHECKED BY			1440 PSIG @ -20°F / 130°F	
APPROVED BY		JOB NO.:	VESSEL SERIAL NO.	UNIT NO.:
		CML-201322	828339	BU-1000
SCALE:	SEE DWG	SHEET NO.:	DRAWING NO.:	REV. NO.:
		1 OF 1	CML-201322BLDG	

PERMIT AND PROFESSIONAL STAMP AFFIXED APPLIES TO THE LATEST REVISION AS INDICATED IN TITLEBLOCK AND BY CLOADED AREAS IF SHOWN.

V-1000  
36" HORIZONTAL SEPARATOR VESSEL  
36" OD x 12'-0" s/s  
MAWP: 1440 PSIG  
-20°F/130°F  
1/8" CORROSION ALLOWANCE  
3 PHASE, DRESSED 3 PHASE  
RT-1, PWHT  
CRN: U5080.213

V-1010  
FUEL GAS SCRUBBER  
8" x 36" OAL  
MAWP: 150 PSIG  
-20°F/200°F  
1/16" CORROSION ALLOWANCE  
S/N: S-14044 CRN: L9476.213

BH-1080/1080  
NATURAL GAS HEATERS  
MAKE: CATADYNE, MK SERIES  
SIZE: 24" x 24"  
c/w REGULATOR, THERMOSTAT, S.S.O.V.,  
PROTECTION GRILL, 12VDC START-UP,  
VENT HOOD & 30' START-UP CABLE  
CSA-XP



STAMPS, PERMITS AND APPROVALS

NO.	DATE	REVISIONS	DWN	CHK'D	APP.
0	20-04-21	ISSUED FOR CONSTRUCTION		KG	

**crusader JV**  
4TH FLOOR, 909-17th AVE. SW CALGARY, AB T2T 0Z4  
Phone: (403)263-8078 Fax: (403)261-3609

DATE	20-04-16		
DESIGNED BY	CAPE MFG.		
DRAWN BY	KG		
CHECKED BY			
APPROVED BY			
SCALE:	N.T.S.		
TITLE	LSD: PIPING & INSTRUMENTATION DRAWING FOR 36" x 12'-0" s/s SOUR SEPARATOR 1440 PSIG @ -20°F / 100°F		
JOB NO.:	CML-201322	VESSEL SERIAL NO.	828339
UNIT NO.:			BU-1000
SHEET NO.:	1 OF 2	DRAWING NO.:	CML-201322PID
REV. NO.:			0

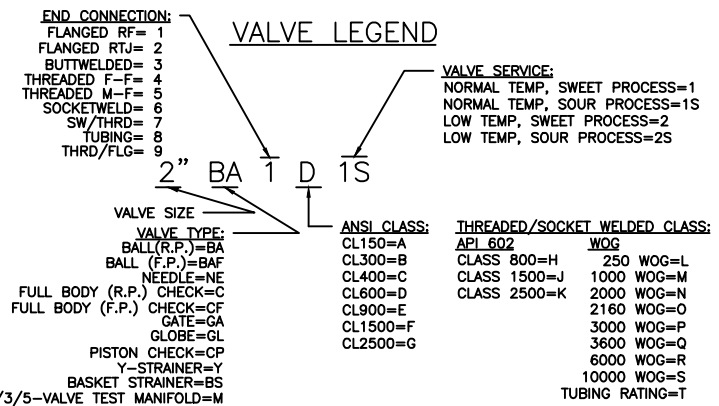
**NOTES:**

1. QUANTITIES IN B.O.M. ARE FOR ONE (1) UNIT.
8. REMOVE ALL FLOATS/DISPLACERS FROM ALL LEVEL CONTROLLERS/SWITCHES; TAG & CRATE FOR SHIPMENT.
9. PROTECT ALL OPENINGS FOR SHIPMENT.
10. PIPING & INSTRUMENTS SECURELY SUPPORTED.

VALVE LIST			
TAG	QTY.	MAKE	DESCRIPTION
½"BA4N1	1		½"-NPT 2000WOG RP BALL VALVE
½"BA4N1S	3		½"-NPT 2000WOG RP BALL VALVE, NACE
¾"BA4N1S	4		¾"-NPT 2000WOG RP BALL VALVE, NACE
1"BA4N1S	5		1"-NPT 2000WOG RP BALL VALVE, NACE
2"BA1D1S	6		2"-600CL RF RP BALL VALVE, NACE
3"GL1D1S	1		3"-600CL RF GLOBE VALVE, NACE
½"NE5R1	4		½"-NPT MxF 6000PSIG NEEDLE VALVE
½"NE5R1S	1		½"-NPT MxF 6000PSIG NEEDLE VALVE, NACE
2"Y1D1S	1		2"-600CL RF Y STRAINER, NACE

BILL OF MATERIALS			
TAG	QTY.	MAKE	DESCRIPTION
FE-1000	1	DANIELS RECONDITIONED	DUAL CHAMBER METER RUN, 4"-600CL, RF, SCH. 80 AGA FIG. 3C c/w PIN STYLE FLOW CONDITIONER
FE-1002	1	PRIMARY FLOW	TURBINE METER, 2"-600CL EZE-IN, MODEL: WM0050-2 ½" METERING, .75-7.5 GPM CAPACITY c/w MAGNETIC PICK-UP
FQIT-1002	1	NUFLO	MCIII FLOW ANALYZER, 4-20mA OUTPUT
LC-1001 LC-1002	2	NORRISEAL	1001A LEVEL CONTROLLER, 2"-NPT, PNEUMATIC DIRECT, SNAP ACTING c/w PVC DISPLACER
LCV-1001	1	NORRISEAL	2220 LEVEL CONTROL VALVE, 2"-600CL RF, STD LCC BODY, ¾" 316 SST TRIM c/w SIZE-9 ACT., FC
LCV-1002	1	NORRISEAL	2220 LEVEL CONTROL VALVE, 2"-600CL RF, STD LCC BODY, ¾" 316 SST TRIM c/w SIZE-9 ACT., FC
LG-1001	1	QUALITY	Q5T20 LEVEL GLASS c/w 330J GAUGE VALVES, 1500PSI, NACE
LG-1002	1	QUALITY	Q6R20 LEVEL GLASS c/w Q146 GAUGE VALVES, 2375PSI, NACE
PI-1000	1	WGI	PRESSURE GAUGE, LIQUID FILLED, SS 2½" FACE x ¼"-NPT, 0-60 PSIG
PI-1001	1	WGI	PRESSURE GAUGE, LIQUID FILLED, SS 4" FACE x ½"-NPT, 0-1500 PSIG
PI-1010	1	WGI	PRESSURE GAUGE, LIQUID FILLED, SS 2½" FACE x ¼"-NPT, 0-200 PSIG
PRV-1000	1	FISHER	PRESSURE REGULATOR 67CFR, 250 PSIG MAWP ¼"-NPT, 0-35 PSIG RANGE
PRV-1010	1	FISHER	PRESSURE REGULATOR, 1"-NPT, 2000PSIG MAWP MODEL: 627, 70-150 PSIG RANGE WCC BODY AND CASE, ½" 316SST ORIFICE, NYLON DISK, NACE
PSV-1000	1	TAYLOR	PRESSURE SAFETY VALVE, MODEL: 8200 2"-600CL RF x 3"-150CL RF, WCB BODY, "G" ORIFICE, SET @ 1253 PSIG
PSV-1010	1	TAYLOR	PRESSURE SAFETY VALVE, MODEL: 8250 1"-MNPT x 1"-FNPT, WCB BODY "E" ORIFICE, SET @ 150 PSIG
TI-1001 TW-1001	1	MASTER-TEMP	TEMPERATURE INDICATOR 3" FACE x ½"-NPT, -40/160°F c/w ½"-FNPT x ¾"-MNPT 316SST THERMOWELL

SKID & BUILDING DESCRIPTION		
TAG	QTY.	DESCRIPTION
BUILDING		10'-0" WIDE x 16'-0" LONG, FOAM PANEL
ROOF		SHED STYLE, 9'-9" LOW EAVE, 10'-1" HIGH EAVE
INSULATION		R12 IN ROOF & WALLS
EXTERIOR		1½" GALVALUME FOAM PANEL
INTERIOR		GALVALUME
DOORS	1	3' x 7' STEEL c/w WINDOW
HARDWARE		CHECK CHAIN, PANIC BAR, LOCK, & WEATHER STRIPPING
WINDOWS	2	36" x 36" DOUBLE GLAZED SLIDING w/ SCREEN
VENTS	2	12" x 12" ADJUSTABLE LOUVRES & SCREENS
ACCESSORIES		NONE
HEATERS	2	CATADYNE, SEE PID
EXHAUST FAN		NONE
SKID		10'-0" WIDE x 18'-6" LONG



STAMPS, PERMITS AND APPROVALS

NO.	DATE	REVISIONS	DWN	CHK'D	APP.
0	20-04-21	ISSUED FOR CONSTRUCTION	KG		

PERMIT AND PROFESSIONAL STAMP AFFIXED APPLIES TO THE LATEST REVISION AS INDICATED IN TITLEBLOCK AND BY CLOADED AREAS IF SHOWN.

<p>4TH FLOOR, 909-17th AVE. SW CALGARY, AB T2T 0Z4                  Phone: (403)263-8078 Fax: (403)261-3609</p>		DATE	20-05-26
		DESIGNED BY	
		DRAWN BY	KG
CHECKED BY		APPROVED BY	
0 20-04-21 ISSUED FOR CONSTRUCTION KG		SCALE:	N.T.S.


LSD: TITLE PIPING & INSTUMENTATION DRAWING FOR 36" OD x 12'-0" s/s HORIZONTAL SEPARATOR 1440 PSIG @ -20°F / 130°F		
JOB NO.:	VESSEL SERIAL NO.	UNIT NO.:
CML-201322	828339	BU-1000
SHEET NO.:	DRAWING NO.:	REV. NO.:
2 OF 2	CML-201322BOM	△

As Built  
 JAN 18/11  
 Tyler Friesen  
 Dalco

DRAWING INDEX		
SPARTAN DWG No.	DESCRIPTION	REV.
SC-26375-AA-010-00	DRAWING INDEX	0
SC-26375-AA-200-00	TYPICAL FIELD INSTALLATION INSTRUCTIONS	0
SC-26375-AA-300-00	WALL INSERT CABINET BILL OF MATERIALS	0
SC-26375-AA-301-00	WALL INSERT CABINET LAYOUT AND DIMENSIONAL INFORMATION	0
SC-26375-AA-500-00	COMMUNICATION AND POWER WIRING DIAGRAM	0
SC-26375-AA-600-00	FB107 I/O WIRING DIAGRAM - SLOT 0-1	0
SC-26375-AA-600-01	FB107 I/O WIRING DIAGRAM - SLOT 2-3	0

December 31, 2010 10:34am

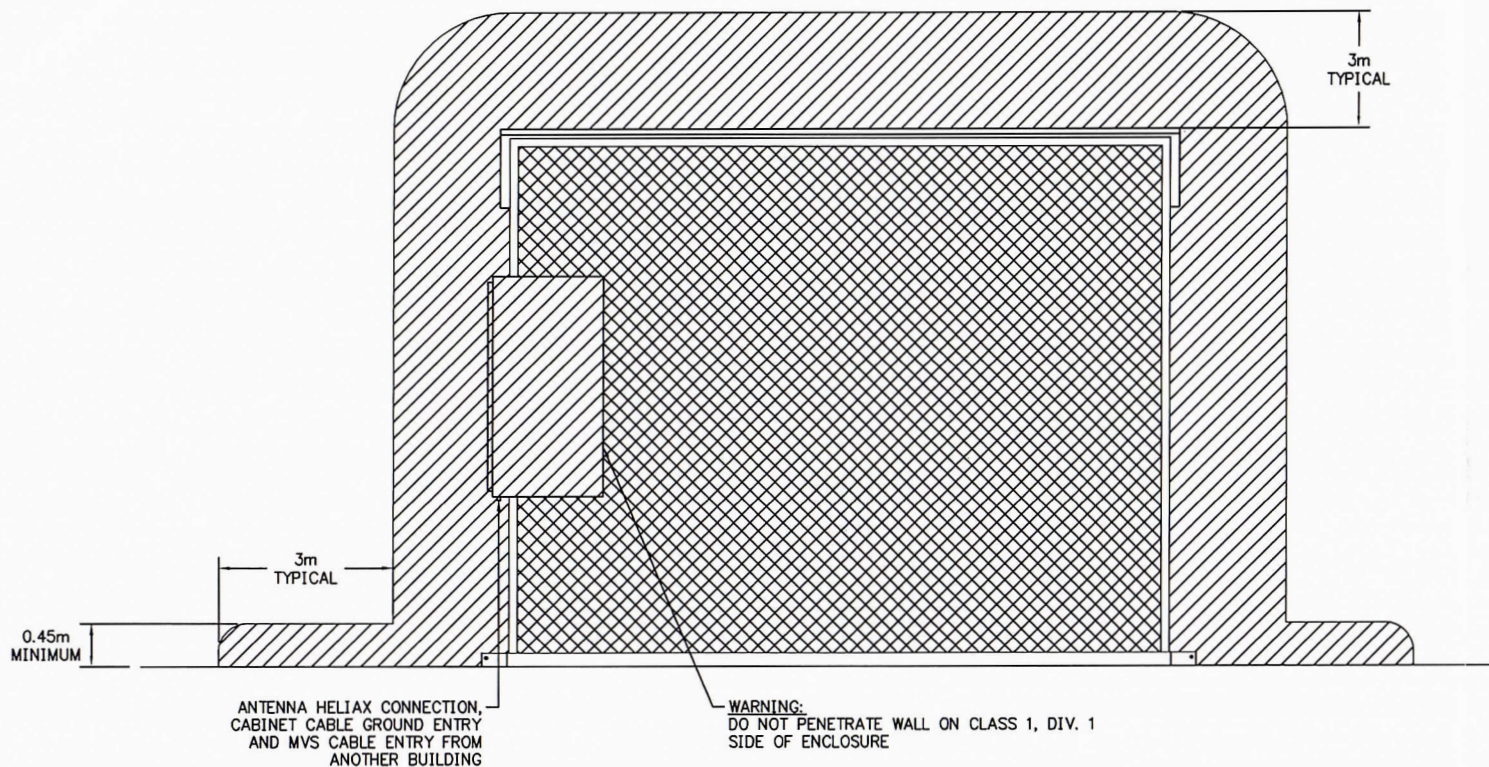
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		0	SPARTAN AS BUILT	31 DEC 10	YKY	JAB	JAB	JAB
		A	ISSUED FOR APPROVAL	17 DEC 10	JTU	JAB	JAB	JAB

 <b>SPARTAN CONTROLS</b> DEVON CANADA CORPORATION - BUBBLES SCADA SYSTEM DRAWING INDEX -		P.O.#	
		LSD:	
PROJECT No. PN26375	SCALE: NTS	DRAWING No. SC-26375-AA-010-00	REV. 0

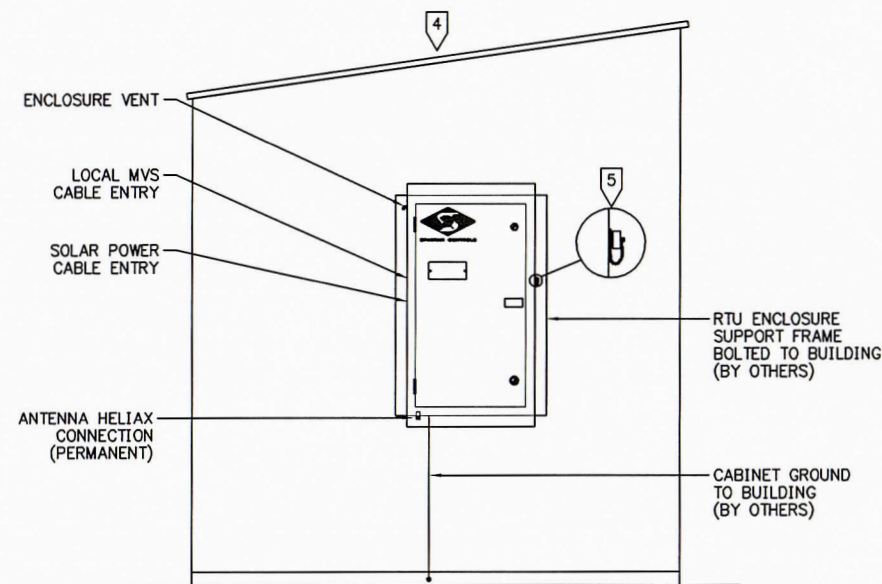
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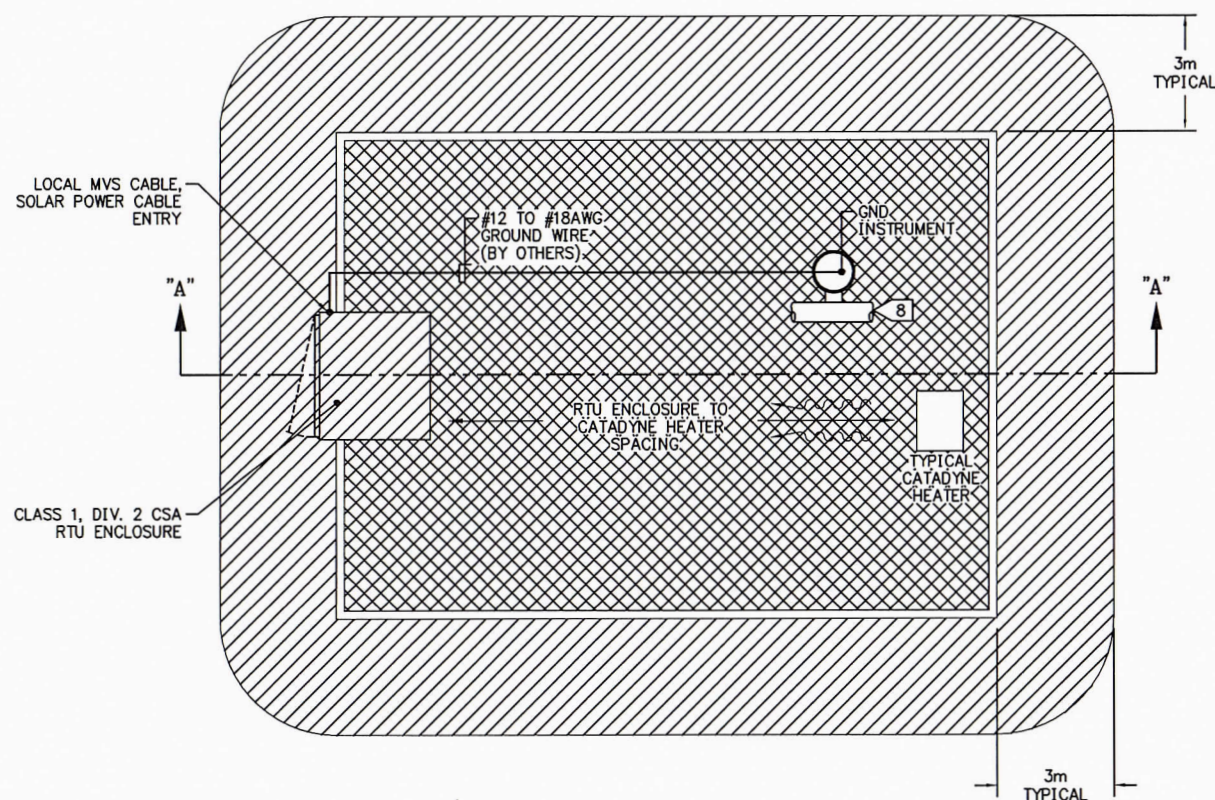
SECTION A-A



SIDE VIEW



PLAN VIEW



HAZARDOUS AREA CLASSIFICATION LEGEND:

- CLASS 1, DIV. 1
- CLASS 1, DIV. 2 (SPARTAN UNIT RATED AT CLASS 1, DIV. 2, GROUPS C,D,T2D)

NOTES:

- 1 REFER TO SPARTAN PROJECT DRAWINGS FOR CABINET LAYOUT, BILL OF MATERIALS AND WIRING (IF NOT SUPPLIED, WILL BE BY OTHERS).
- 2 BATTERIES TO BE SECURED SEPARATE FROM RTU ENCLOSURE DURING SHIPMENT. BATTERIES TO BE CONNECTED AT SITE. OPERATOR MUST CONFIRM AREA IS NON-HAZARDOUS BEFORE CONNECTING OR DISCONNECTING. BATTERY CONNECTIONS MUST BE SECURELY BOLTED. THIS ENCLOSURE IS SUITABLE FOR SEALED BATTERIES ONLY. REPLACE BATTERIES ONLY WITH UNITS RATED AS A "SEALED" BATTERY.
- 3 SPARTAN CONTROLS RECOMMENDS THIS FIELD INSTALLATION METHOD AND IS NOT INTENDED TO OVERRIDE OR REPLACE LOCAL ELECTRICAL CODE.
- 4 DO NOT SLOPE BUILDING ROOF TO SIDE WHERE CABINET IS MOUNTED.
- 5 WEATHER PROOF LOCAL OPERATOR INTERFACE (GV101) FOR LAPTOP COMPUTER. EST. 6-7mA CURRENT FOR RS232 COMMUNICATION. OPERATOR MUST CONFIRM AREA IS NON-HAZARDOUS BEFORE CONNECTING OR DISCONNECTING.
- 6 FIELD DESIGN PRACTICES MUST ENSURE THAT ENCLOSURE ENTRY PENETRATIONS ARE LOCATED ON THE CLASS 1, DIV. 2 SIDE OF THE ENCLOSURE ONLY AND ARE WEATHER PROOF.
- 7 REFER TO STANDARDS CSA C22.1-98;CEC PART 1, CSA C22.2 No. 213 AND API RP500 FOR FIELD INSTALLATION COMPLIANCE.
- 8 ALL INSTRUMENTATION SHOULD BE GROUNDED TO BUILDING STEEL.
- 9 ENCLOSURE TO BE MOUNTED SO FRONT EDGE PROTRUDES 5" FROM EXTERIOR BUILDING WALL.
- 10 SPARTAN CONTROLS ASSUMES NO RESPONSIBILITY FOR THE MOUNTING AND SUPPORT OF THE RTU ENCLOSURE.
- 11 FIELD DESIGN PRACTICES MUST ENSURE THAT THE SPACE BETWEEN THE ENCLOSURE AND THE BUILDING WALL IS PROPERLY VAPOR SEALED.

December 31, 2010 10:34am

DRAWING No.	REFERENCE DRAWINGS	REV.	DESCRIPTION	DATE	DRAWN	CHK	DESIGN	APP
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		A	ISSUED FOR APPROVAL	17 DEC 10	JTU	JAB	JAB	JAB

STAMPS



**SPARTAN CONTROLS**

DEVON CANADA CORPORATION

BUBBLES  
SCADA SYSTEM  
TYPICAL FIELD INSTALLATION INSTRUCTIONS

LSD:	PROJECT No. PN26375	SCALE: NTS	DRAWING No. SC-26375-AA-200-00	P.O.#
				REV. 0

BILL OF MATERIALS				
ITEM	QTY	PART No.	DESCRIPTION	INSTRUCTIONS
1	1	D-512B	NEMA 3 CSA APPROVED ENCLOSURE 38"(H) x 22"(W) x 19"(D) C/W LHS HINGED DOOR, 1 1/2" THICK INSULATION, 14 GAUGE STEEL CONSTRUCTION, POWDER COAT PAINTED TEXTURE BLACK, SECURITY LATCH, LCD BLANK PLATE AND BOLT ON 2" X 2" X 1/4" FRAME OPTION C/W BOLTS AND LOCK WASHERS (SUPPLIED LOOSE W/ ENCL.)	-
1A	1	D-512B BP	14"(H) X 19"(W) ENCLOSURE BACKPLATE	-
1B	1	-	FIELD INSTALLATION INSTRUCTION SHEET C/W ADHESIVE BACK, MOUNTED INSIDE DOOR	BY MFG.
1C	2	VINYL MAT	1/8" RUBBER MAT SHEET	-
1D	1	1/4 ST ELBOW	1/4" NPT STREET ELBOW C/W AMOT #4125 W/O RUBBER INSERT	-
2A	1	107-2036-9106	FLOBOSS 107 BASE CHASSIS	-
2B	1	107-2036-9098	FLOBOSS 107 CPU NON-ISOLATED WITH 6 POINT I/O BOARD (2 AI/DI, 2 DI/PI, 1 AO/DO, 1 DO)	-
2C	1	107-2036-9083	FLOBOSS 107 MVS INTERFACE BOARD	-
2D	1	107-2036-9079	FLOBOSS 107 LCD TOUCHSCREEN DISPLAY	-
3A	1	C-115	115 WATT SOLAR MODULE, CL. I, DIV. 2, CSA APPROVED	SHIP LOOSE
3B	1	VPM1-GE26	VERTICAL POLE MOUNTING KIT FOR 1 SOLAR PANEL	SHIP LOOSE
4A	4	BAT100	12 VDC, 100-120 AMP HOUR DEEP CYCLE AGM BATTERY	SHIP LOOSE
4B	1	-	BATTERY JUMPER CABLE AND FASTENERS	BY MFG.
5	1	SS-10L	SUNSAVER REGULATOR 12V, 10 AMP C/W TEMP. COMPENSATION & LVD	-
6	1	CBL03-36	INTERNAL USER INTERFACE CABLE (LOI TO MILITARY CONNECTOR)	-
7A	3	16319.3	WEIDMULLER SCHTS5 TAG CARRIER	-
7B	5	10113.0	WEIDMULLER WSI 6 LD FUSED TERMINAL BLOCK w/ INDICATION	-
	5	GSD 10A	GOULD GSD 10 AMP CERAMIC FUSE (QTY. 2 SPARES)	-
	4	GDA 2A	BUSSMAN GDA 2 AMP CERAMIC FUSE (QTY. 2 SPARES)	-
7C	5	10201.0	WEIDMULLER WDU 4 FEED-THROUGH TERMINAL BLOCK	-
7D	5	10200.0	WEIDMULLER WDU 2.5 FEED-THROUGH TERMINAL BLOCK	-
7E	1	0000083	GROUND BUS BAR	-
	1	GROUND LUG SMALL	GROUND STUD 2-14 Ga.	-
	2	GL 2165-1A	1" GLASTIC INSULATOR	-
8A	1	LBL02	LAMACOID TAG - FOR RTU IDENTIFICATION	BY MFG.
8B	1	-	WARNING LAMACOID - RED BACKGROUND, WHT LETTERS: "DO NOT PENETRATE ON THE CLASS 1 DIV 1 SIDE OF THIS ENCLOSURE"	BY MFG.
8C	1	-	WARNING LAMACOID, RED BACKGROUND/WHT LETTERS, 5.25"H X 4.25"W WARNING MORE THAN ONE LIVE CIRCUIT (see wiring diagram). ENSURE THERE IS NO GAS PRESENT AND DISCONNECT POWER BEFORE SERVICING, OPERATING DISCONNECT TERMINALS, TEST JUMPERS AND/OR REMOVING FUSES. USE OF CERAMIC OR SAND FILLED FUSES IS RECOMMENDED. DO NOT EXCEED FUSE RATINGS. ALL EQUIPMENT INSTALLED IN THIS PANEL MUST BE SUITABLE FOR CL I DIV.2. SUBSTITUTION OF EQUIPMENT MAY IMPAIR SUITABILITY FOR CL I DIV.2 HAZARDOUS LOCATIONS. AUTHORIZED PERSONNEL ONLY	BY MFG.
8D	1	-	WARNING LAMACOID - RED BACKGROUND, WHT LETTERS: "WARNING - EXPLOSION HAZARD DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS"	BY MFG.
9A	1	RSE-1606-93281	MVS205E REMOTE SENSOR (0.1%) 0-250DP 0-3600PSIG, HASTELLOY C SENSOR CONSTRUCTION	SHIP LOOSE
9B	1	RTD-1.5	RTD ELEMENT, -100 TO 260°C, WITH 1.5" THERMOWELL, 3 WIRE 316 STAINLESS, 3/4" NPT	SHIP LOOSE
10A	1	5TIS-4FLG	5 WAY MANIFOLD FLANGE X 1/2" FNPT NACE	SHIP LOOSE
10B	1	AK-002-10-HD	MOUNTING BRACKET FOR M673 MANIFOLDS, C.S.	SHIP LOOSE

BILL OF MATERIALS				
ITEM	QTY	PART No.	DESCRIPTION	INSTRUCTIONS

NOTES:

1 ELECTRICAL AREA CLASSIFICATION: CLASS I, DIV. 2, GROUP C & D, TEMP CODE T3C.

2 IMPORTANT NOTE: SUBSTITUTING OR ADDING COMPONENTS MAY CAUSE ASSEMBLY ELECTRICAL AREA CLASSIFICATION RATING TO BE DERATED.



SPARTAN CONTROLS

DEVON CANADA CORPORATION

BUBBLES  
SCADA SYSTEM  
WALL INSERT CABINET BILL OF MATERIALS

LSD:

PROJECT No. PN26375

SCALE: NTS

DRAWING No. SC-26375-AA-300-00

REV. 0

P.O.#

DATE

DRAWN

CHK

DESIGN

APP

STAMPS

December 31 2010 10:34am

DRAWING No.

REFERENCE DRAWINGS

REV.

DESCRIPTION

DATE

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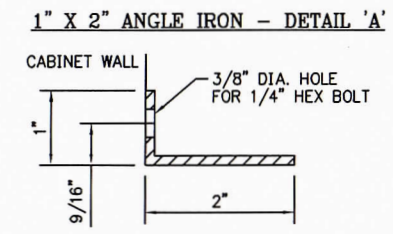
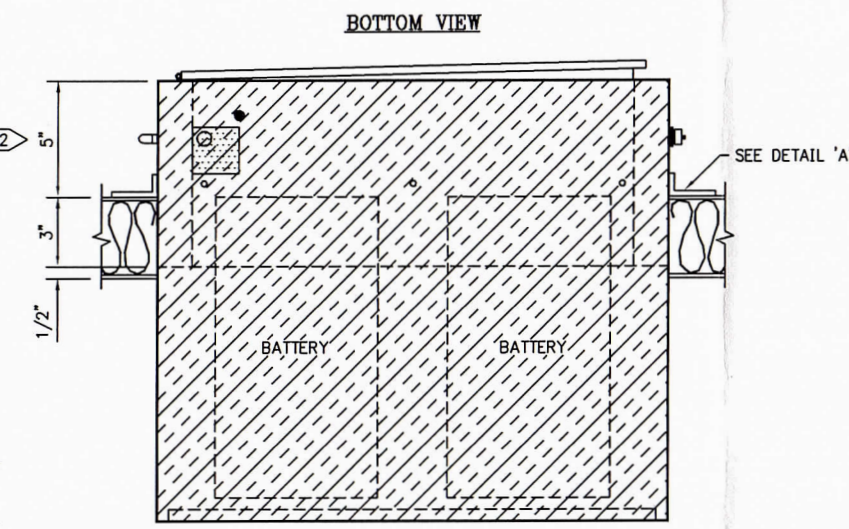
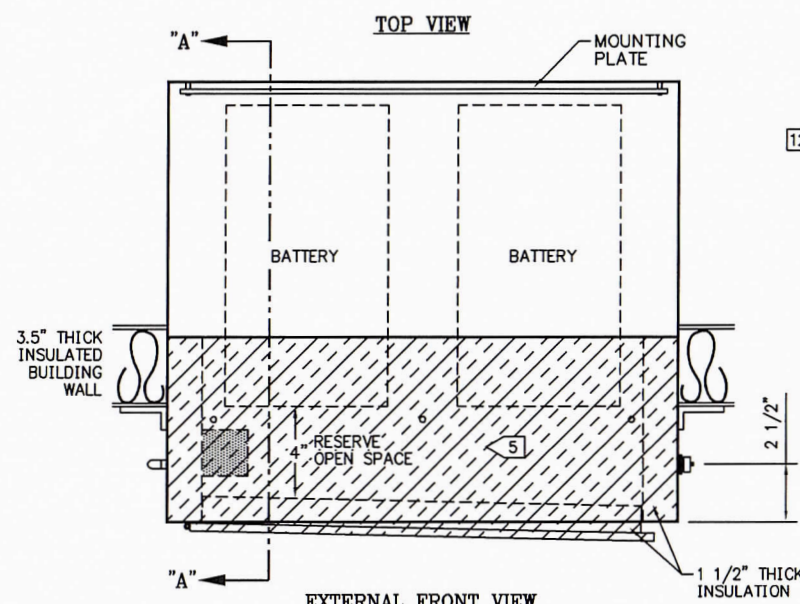
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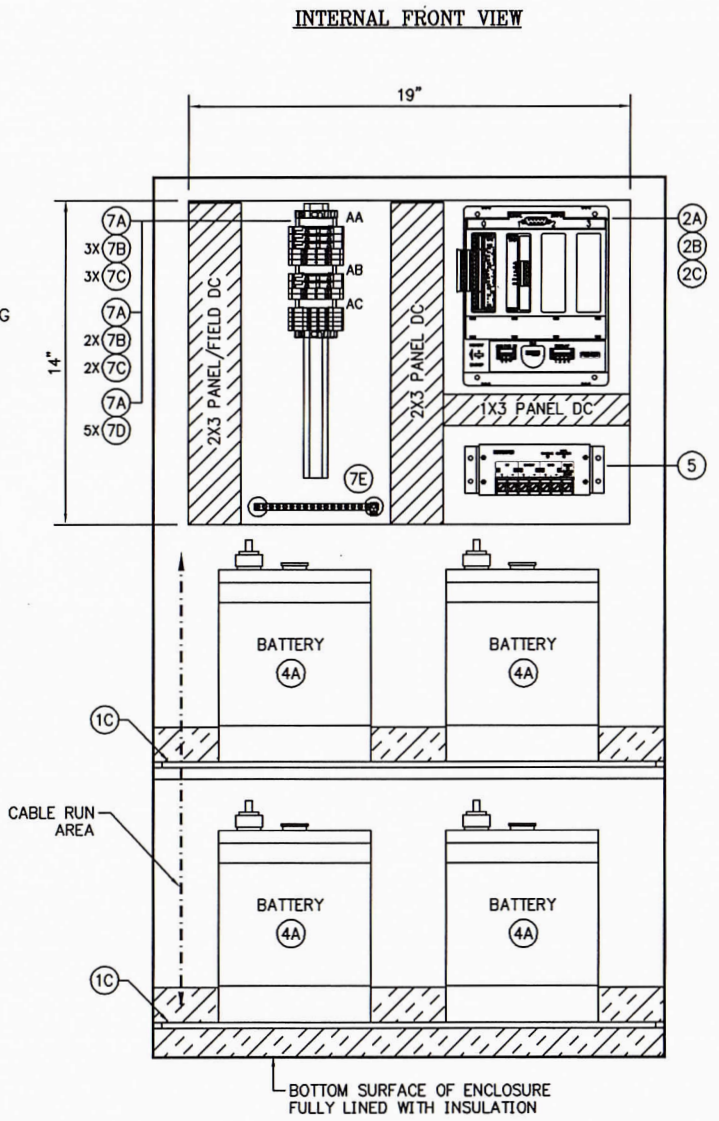
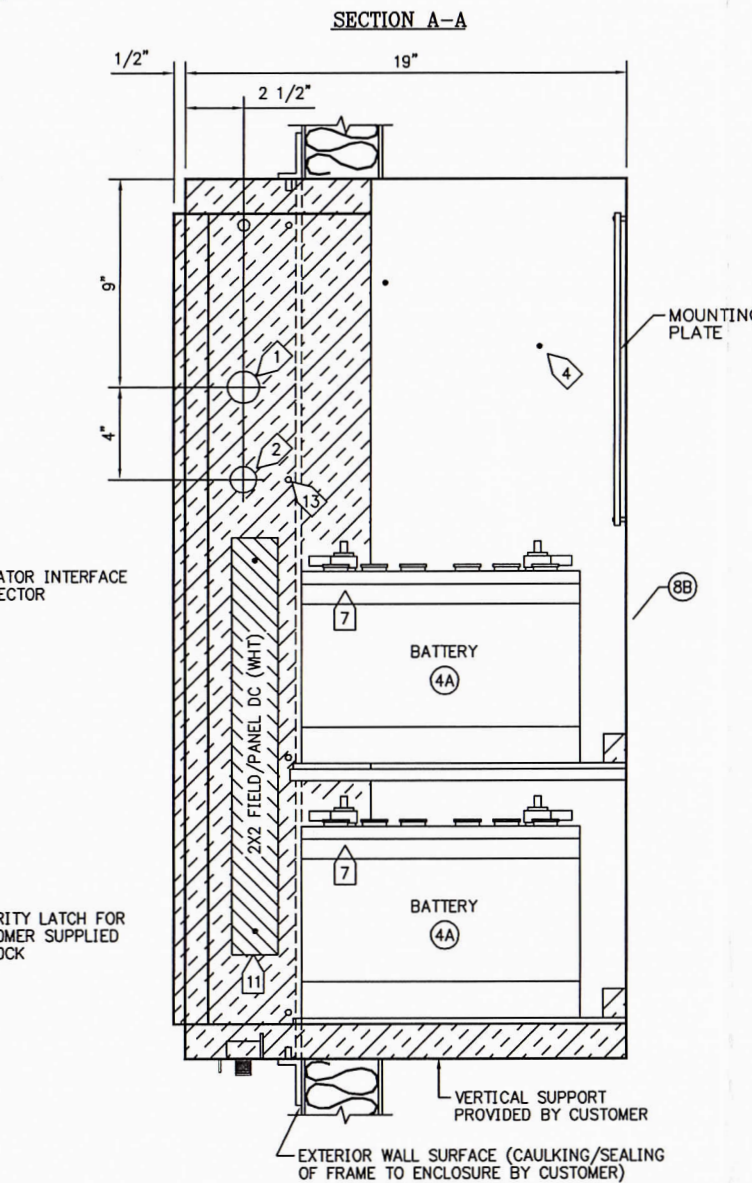
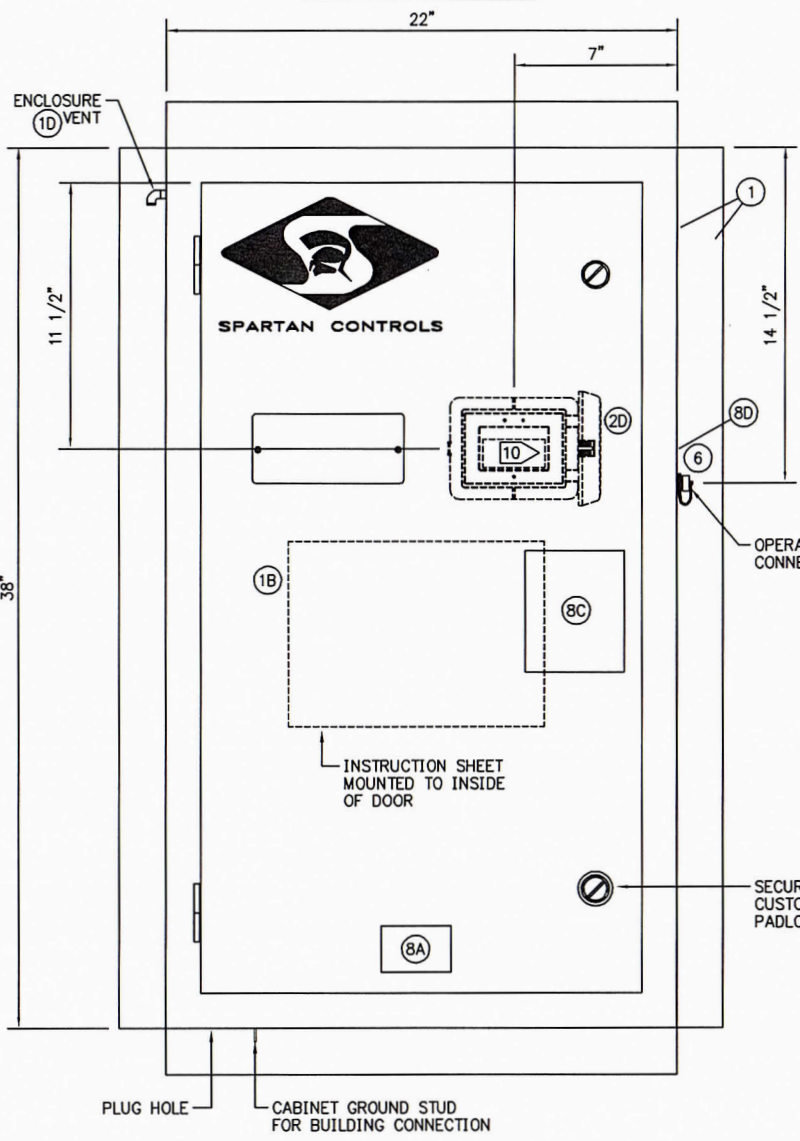
LAMACOID TAG DETAIL

DEVON CANADA CORPORATION (8A)  
 BUBBLES  
 ROC SERIAL #19064398  
 PANEL SERIAL #SC-26375-AA



**TAG CARRIER TABLE**

ITEM	QTY	DESCRIPTION
AA	1	12VDC INPUT
AB	1	12VDC PWR DIST
AC	1	TS2: SLOT 1



NOTES:

- 1 3/8" DIAMETER FIELD 1/0 CONDUIT ENTRY CUTOUT. THE CUSTOMER IS REQUIRED TO ENSURE THAT THIS ENTRY IS SEALED PROPERLY TO RETAIN THE ENCLOSURE NEMA 3 RATING.
- 2 1 1/8" DIAMETER FIELD POWER CONDUIT ENTRY CUTOUT. THE CUSTOMER IS REQUIRED TO ENSURE THAT THIS ENTRY IS SEALED PROPERLY TO RETAIN THE ENCLOSURE NEMA 3 RATING.
- 3 ENCLOSURE TO BE CONSTRUCTED WITH STAINLESS STEEL HINGES, NON CORROSIVE SLOTTED LATCHES. ALL SCREWS TO BE SECURED WITH LOCK WASHERS.
- 4 QTY. 2 - 3/16" DIA. X 3/4"(L) THREADED STUDS WELDED TO LHS OF CABINET WALL FOR MOUNTING OF MDS RADIO.
- 5 1 1/2" THICK INSULATION EXTENDS 8" FROM FRONT OF ENCLOSURE.
- 6 FIELD DESIGN PRACTICES MUST ENSURE THAT ENCLOSURE ENTRY PENETRATIONS ARE LOCATED ON THE CLASS 1, DIV 2 SIDE OF THE ENCLOSURE.
- 7 NEGATIVE BATTERY TERMINALS TO BE LOCATED AT FRONT OF CABINET TO ALLOW PROPER BATTERY CONNECT/RECONNECT PROCEDURES.
- 8 ENCLOSURE DESIGNED FOR MAXIMUM BATTERY SIZE 9 1/2"(H) X 13"(W) X 7"(D).
- 9 ESTIMATED TOTAL WEIGHT 225LBS EXCLUDING BATTERIES.
- 10 FB107 DISPLAY TO BE MOUNTED INSIDE CABINET BEHIND DOOR.
- 11 2" X 2" PANDUIT, ITEM 12, MOUNTED ON PRE-WELDED STUDS. QTY. 2 - 3/16" X 2"(L) THREADED STUDS WELDED TO LHS OF CABINET WALL FOR MOUNTING OF PANDUIT.
- 12 ENCLOSURE MUST NOT PROTRUDE MORE THAN 5" FROM EXTERIOR SURFACE OF BUILDING WALL.
- 13 QTY. 14 - 1/4" X 1/4"(L) STEEL PEMS WELDED FLUSH TO SURFACE OF ENCLOSURE AS MARKED TO ALLOW BOLTING OF ADDITIONAL SUPPORT FRAME MEMBERS (NOT SHOWN).

CLASS 1, DIVISION 2, GROUPS C,D, T3C ENCLOSURE

**SPARTAN CONTROLS**  
 DEVON CANADA CORPORATION  
 BUBBLES  
 SCADA SYSTEM  
 CABINET LAYOUT AND DIMENSIONAL INFORMATION

PROJECT No. PN26375 SCALE: NTS DRAWING No. SC-26375-AA-301-00 P.O.# 0

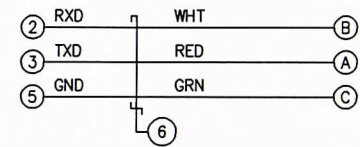
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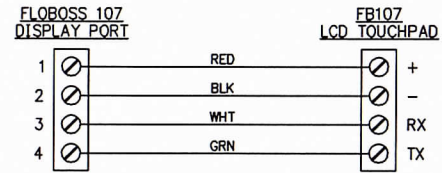
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**CBL03-36**  
**INTERNAL USER INTERFACE CABLE**

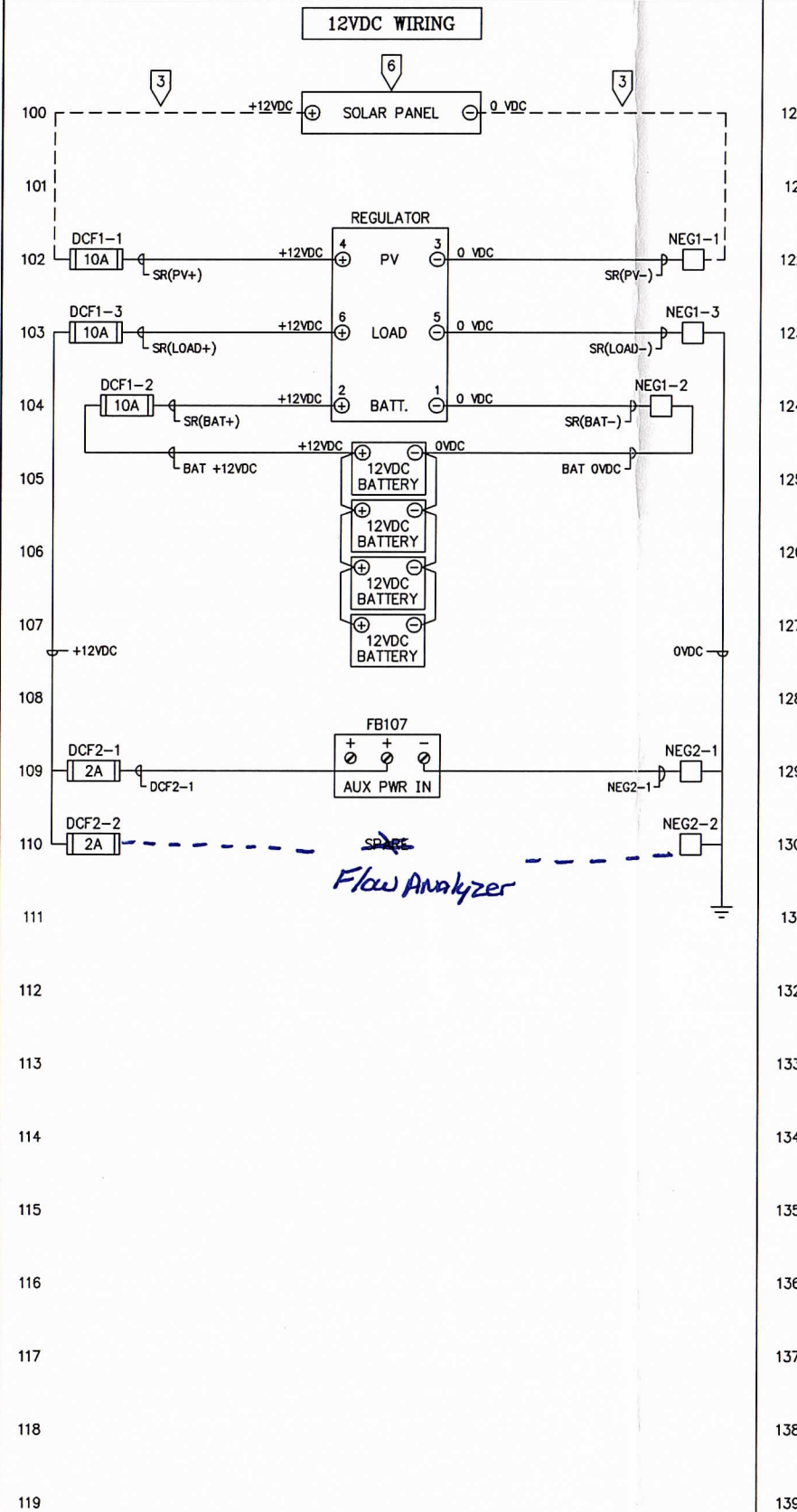
FLOBOSS 107 LOCAL OPERATOR INTERFACE (LOI) 9 PIN - MALE  
WEATHER PROOF OPERATOR CONNECTION MIL. CONNECTOR - MALE



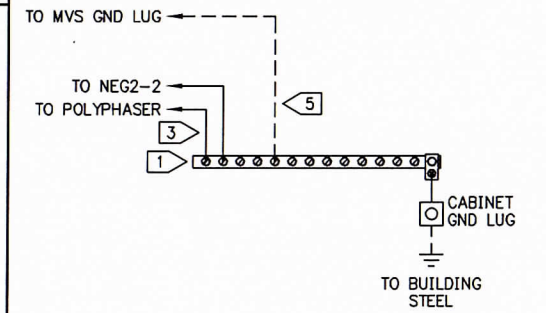
**FLOBOSS 107 TO LCD TOUCHPAD WIRING**



**POWER DISTRIBUTION**



**GROUND BUS BAR DETAIL**



**COLOR CODE:**

**DC:**  
+VDC - RED  
0 VDC - BLUE (BLU)  
SWITCHED - ORANGE (ORG)  
GROUND - GREEN (GRN)

**AC:**  
HOT - BLACK (BLK)  
NEUTRAL - WHITE (WHT)  
SWITCHED - BROWN (BRN)  
GROUND - GREEN (GRN)

**LEGEND:**

- WEIDMULLER WSI 6 FUSED TERMINAL BLOCK
- WEIDMULLER WDU 4 TERMINAL BLOCK
- WEIDMULLER WDU 2.5 TERMINAL BLOCK

**NOTES:**

- ① POWER WIRING TO ROC AND RADIO TO BE #16 AWG OR GREATER.
- ② MVS GROUND WIRE SIZE TO BE #12-18 AWG.
- ③ SOLAR PANEL POWER TECK CABLE TO BE TERMINATED AT RTU ENCLOSURE AT SITE. SUPPLIED BY OTHERS. **WARNING:** SOLAR PANEL(S) ARE A LIVE POWER SOURCE DURING EXPOSURE TO DAYTIME CONDITIONS.
- ④ ALL BATTERY WIRES TO BE MINIMUM #14 AWG STRANDED MINIMUM LOW TEMPERATURE RESISTANT CABLE, TEW PVC INSULATION, MAXIMUM 10A WIRE RATING.
- ⑤ ALL WIRING FROM TERMINAL BLOCKS TO GROUND BAR TO BE #12 AWG GREEN.
- ⑥ RECOMMENDED MAXIMUM WATTAGE FOR SOLAR ARRAY(S) TO BE 150 WATTS FOR CABINET WIRING.

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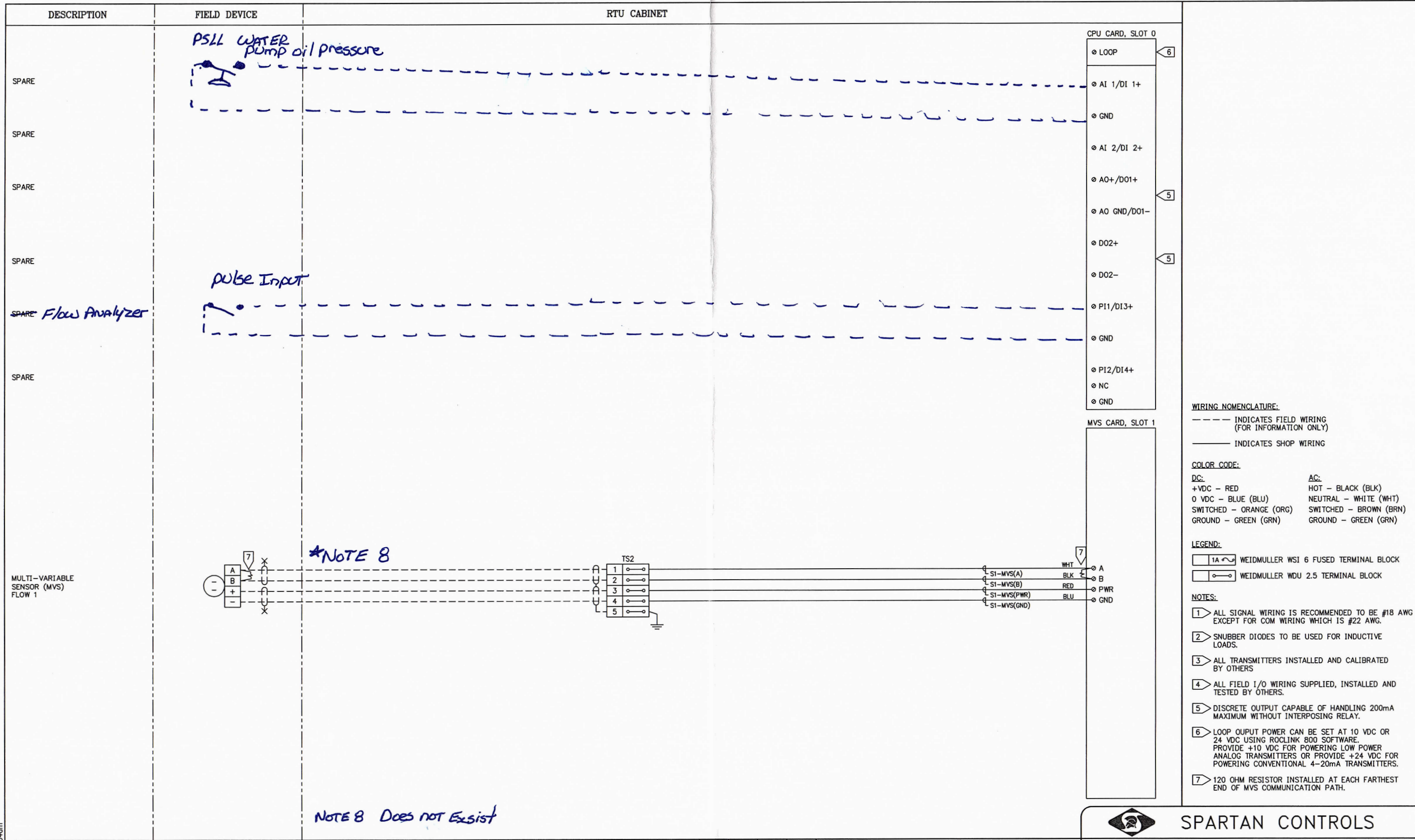
STAMPS



**SPARTAN CONTROLS**


DEVON CANADA CORPORATION  
BUBBLES  
SCADA SYSTEM  
COMMUNICATION AND POWER WIRING DIAGRAM

LSD:	PROJECT No. PN26375	SCALE: NTS	DRAWING No. SC-26375-AA-500-00	P.O.#
				REV. 0

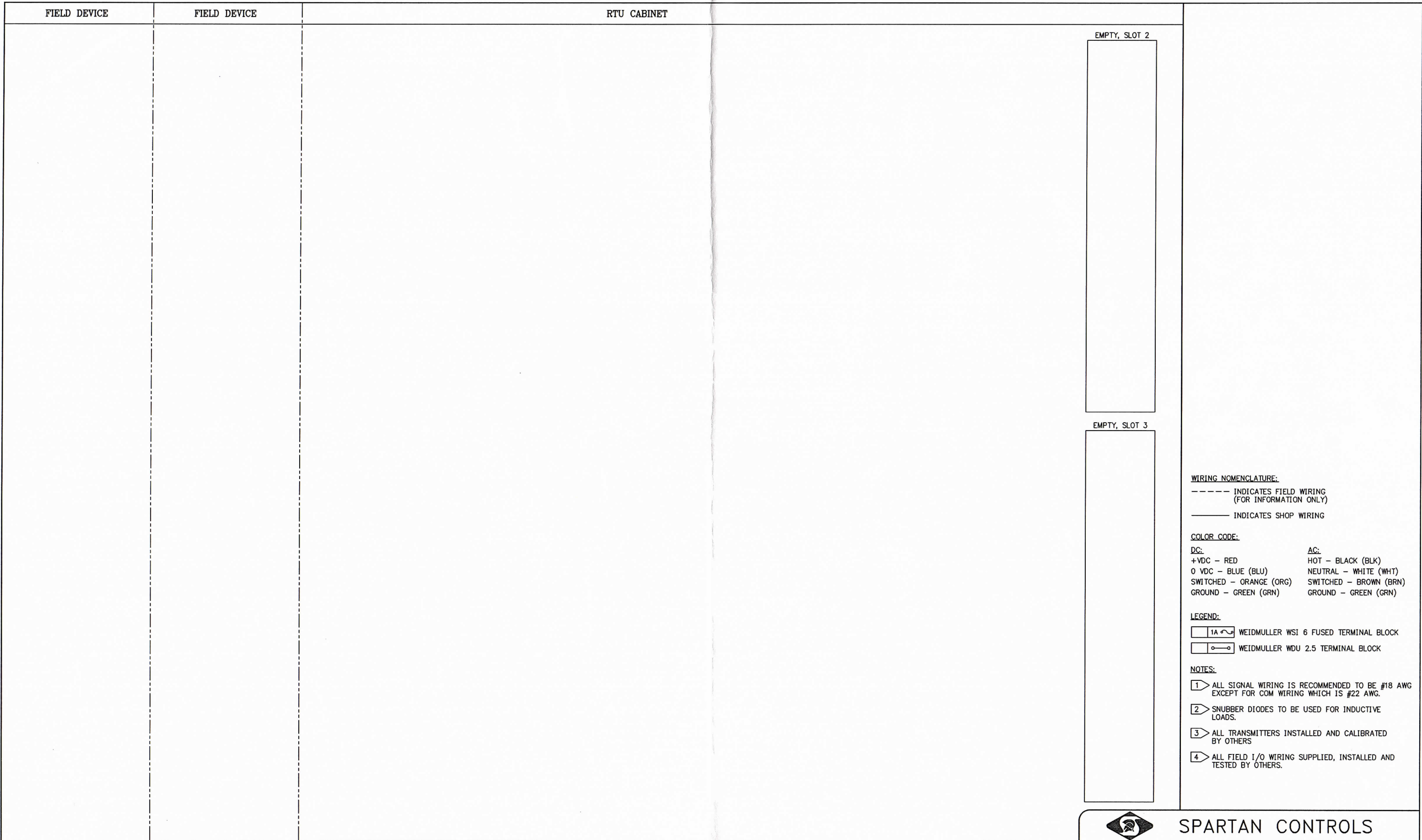


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**SPARTAN CONTROLS**  
 DEVON CANADA CORPORATION  
 BUBBLES  
 SCADA SYSTEM  
 FB107 I/O WIRING DIAGRAM - SLOTS 0 & 1

LSD: \_\_\_\_\_ P.O.# \_\_\_\_\_  
 PROJECT No. PN26375 SCALE: NTS DRAWING No. SC-26375-AA-600-00 REV. 0



**WIRING NOMENCLATURE:**  
 ----- INDICATES FIELD WIRING (FOR INFORMATION ONLY)  
 \_\_\_\_\_ INDICATES SHOP WIRING

**COLOR CODE:**

<b>DC:</b>	<b>AC:</b>
+VDC - RED	HOT - BLACK (BLK)
0 VDC - BLUE (BLU)	NEUTRAL - WHITE (WHT)
SWITCHED - ORANGE (ORG)	SWITCHED - BROWN (BRN)
GROUND - GREEN (GRN)	GROUND - GREEN (GRN)

**LEGEND:**

1A	WEIDMULLER WSI 6 FUSED TERMINAL BLOCK
	WEIDMULLER WDU 2.5 TERMINAL BLOCK

**NOTES:**

- 1 > ALL SIGNAL WIRING IS RECOMMENDED TO BE #18 AWG EXCEPT FOR COM WIRING WHICH IS #22 AWG.
- 2 > SNUBBER DIODES TO BE USED FOR INDUCTIVE LOADS.
- 3 > ALL TRANSMITTERS INSTALLED AND CALIBRATED BY OTHERS
- 4 > ALL FIELD I/O WIRING SUPPLIED, INSTALLED AND TESTED BY OTHERS.

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DRAWING No.	REFERENCE DRAWINGS	REV.	DESCRIPTION	DATE	DRAWN	CHK	DESIGN	APP	

## SPARTAN CONTROLS

DEVON CANADA CORPORATION

BUBBLES

SCADA SYSTEM

FB107 I/O WIRING DIAGRAM - SLOTS 2 & 3

LSD:		P.O.#
PROJECT No. PN26375	SCALE: NTS	REV. 0
DRAWING No. SC-26375-AA-600-01		