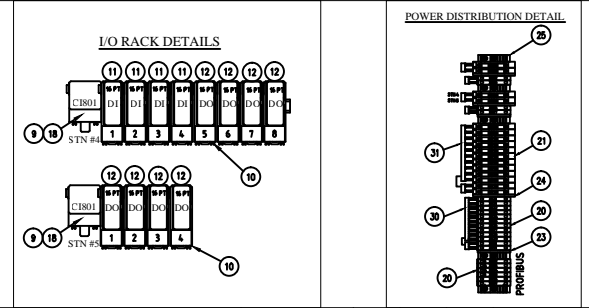


ITEM	QTY	MFR	DESCRIPTION	PART NO.
1	1	RITTAL	TS8, ENCLOSURE, 797mm X 1805mm X 405mm (W X H X D), SINGLE DOOR C/W REAR DETACHABLE PANEL, MOUNT PLATE	8884.500
2	1	RITTAL	TS SIDE PANELS, 1800 X 400mm, PACKAGE OF 2	8184.235
3	1	RITTAL	PLINTH FRONT & REAR PANELS, 800mm X 200mm (D X H), SOLID	8602.800
4	1	RITTAL	PLINTH SIDE PANELS, 400mm X 200mm (D X H), SOLID	8602.040
5	1	RITTAL	PRINT POCKET, STEEL	4118.000
6	1	RITTAL	GROUND BUS, COPPER, 20 GROUNDING CLIPS, 2 ISOLATORS	7113.000
7	1	RITTAL	GROUND BUS, COPPER, 20 GROUNDING CLIPS, 2 ISOLATORS	7113.000
8	1	BY NRCAN	LAMACOID LABEL, 250mm X 150mm (W X H), ENGRAVED WITH 15mm HIGH TEXT AS INDICATED, BLACK LETTERING ON WHITE	
9	2	ABB	CI801-EA PROFIBUS DP-V1 COMMUNICATION INTERFACE INCLUDING: 1 PCE POWER SUPPLY CONNECTOR 1 PCE TB807 MODULEBUS TERMINATOR	B8SE022368R2
10	12	ABB	TU810V1 COMPACT MODULE TERMINAL-ON UNIT, MTU, 50V 2X8 SIGNAL TERMINALS, RATED ISOL 50V	B8SE013230R1
11	4	ABB	DI810-EA DIGITAL INPUT 24V D.C. 2X8 CH. RATED ISOLATION 50V	B8SE008508R2
12	8	ABB	DO810-EA DIGITAL OUTPUT 24 V D.C. 2X8 CH 0.5A	B8SE008510R2
13	1	ABB	SD831 POWER SUPPLY DEVICE, INPUT A.C. 100-240 V OR D.C. 110-300 V. OUTPUT D.C. 24 V 3A.	B8SC610064R1
14	1	ABB	SD833 POWER SUPPLY DEVICE, INPUT A.C. 100-120/200-240 V, AUTO-SELECT INPUT. OUTPUT D.C. 24 V 10A	B8SC610066R1
15	1	ABB	TK801V012 CABLE. MODULEBUS EXTENSION SHIELDED CABLE 1.2M D-SUB 25, MALE-FEMALE.	B8SC950089R3
16	1	ABB	"TB805 BUS OUTLET MODULEBUS EXTENSION CABLE ADAPTOR D-SUB 25, FEMALE"	B8SE008534R1
17	1	ABB	"TB806 BUS INLET MODULEBUS EXTENSION CABLE ADAPTOR D-SUB 25, MALE"	B8SE008536R1
18	2	EASYCONN	PBR PROFIBUS CONNECTOR, 90 DEG [PA003135]	VIPA972-0DPO
19				
20	392	ENTRELEC	STANDARD TERMINAL BLOCK, M 4/6, WITH TEST 2mm TEST SOCKET	115 217.14
21	13	ENTRELEC	FUSED TERMINAL BLOCKM4/8.SF	115 657.25
22		ENTRELEC	TERMINAL BLOCKS, M 6/8	115 118.11
23	3	ENTRELEC	END SECTION, M4/6	118 368.16
24		ENTRELEC	END SECTION, M4/8.SF	116 951.15
25	11	ENTRELEC	END STOP (ALL RAILS)	206 351.16
26	19	ENTRELEC	SEPARATOR END SECTION, RAIL MOUNT, SCF6	118 707.03
27	4.5m	ENTRELEC	ASSEMBLY RAIL, PR30 (TS 35/F6), DIN 3, 35mm, 2 meter	173 220.05
28	9	ENTRELEC	RAIL OFFSET MTG BRACKET, TS0441-SM6 40mm HIGH	010165506
29		ENTRELEC	RAIL OFFSET MTG BRACKET, TS0441-SM6 20mm HIGH	0101653.04
30	2	ENTRELEC	COMB-TYPE JUMPER BAR, PC6, 10 POLE, 35A, (M 4/6)	113 548.26
31	2	ENTRELEC	COMB-TYPE JUMPER BAR, PC81, 10 POLE, 50A, (M 4/8.SF)	173 523.11
32		ENTRELEC	COMB-TYPE JUMPER BAR, PC81, 10 POLE, 50A, (M 6/8)	163 313.24
33		ENTRELEC	SHIELD CONNECTOR, CBM5, PKG OF 10	178 745.14
34	18	ENTRELEC	SM6 MTG BRACKET SCREWS	101 659.12
35				
36	1.03m	IBICO	WIRE DUCT, 4.0 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER	T1-4040G
37	2.66m	IBICO	WIRE DUCT, 3.0 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER	T1-3040G
38	1.98m	IBICO	WIRE DUCT, 2.25 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER	T1-2240G
39	.0m	IBICO	WIRE DUCT, 1.5 x 4.0 IN., 4/PK, GRY, SLOTTED, 2M, WITH COVER	T1-1540G
40	.0m	IBICO	WIRE DUCT, 1.0 x 4.0 IN., 8/PK, GRY, SLOTTED, 2M, WITH COVER	T1-1040G
41				
42				

NOTES:
 1. CONTRACTOR TO ENSURE SUFFICIENT GROUNDING HARDWARE AVAILABLE. NEW GROUNDING BUS TO BE MOUNTED AS REQUIRED.
 2. LABEL TO BE MOUNTED ON CABINET EXTERIOR. LAMACOID LABEL, 250mm X 150mm (W X H), ENGRAVED WITH 15mm HIGH TEXT AS INDICATED, BLACK LETTERING ON WHITE.
 3. ALL ITEMS IN BILL OF MATERIAL SUPPLIED BY NRCAN.



NO	REVISION DESCRIPTION	DATE (Y/M/D)	RCM	CKD	APPD
1	ISSUE FOR TENDER	2017/03/24	RCM		
0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		
No					

REFERENCE DRAWINGS

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DESIGNED
R. McNAIR

DRAWN
R. McNAIR

CHECKED

APPROVED

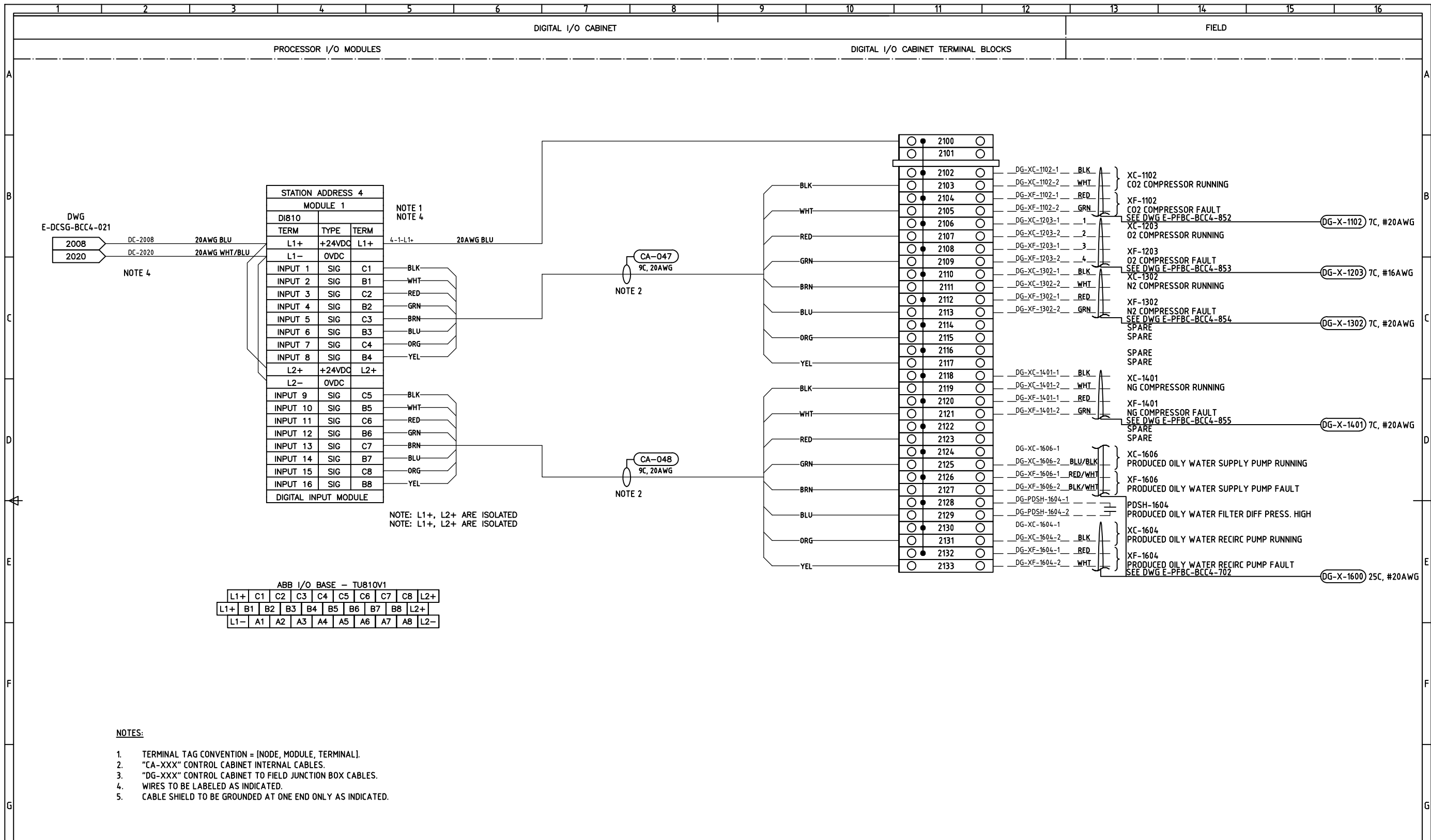
DATE
2016/11/11

SCALE
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PROJECT
NRCAN CANMET DCSG/HIPROX

TITLE
**ELECTRICAL
DCSG-HIPROX
DIGITAL IO CABINET ASSY**

USER	PROJECT	BUILDING	DRAWING	REV.
E	DCSG	BCC4	200	1



NO.	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
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0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		
No					

REFERENCE DRAWINGS

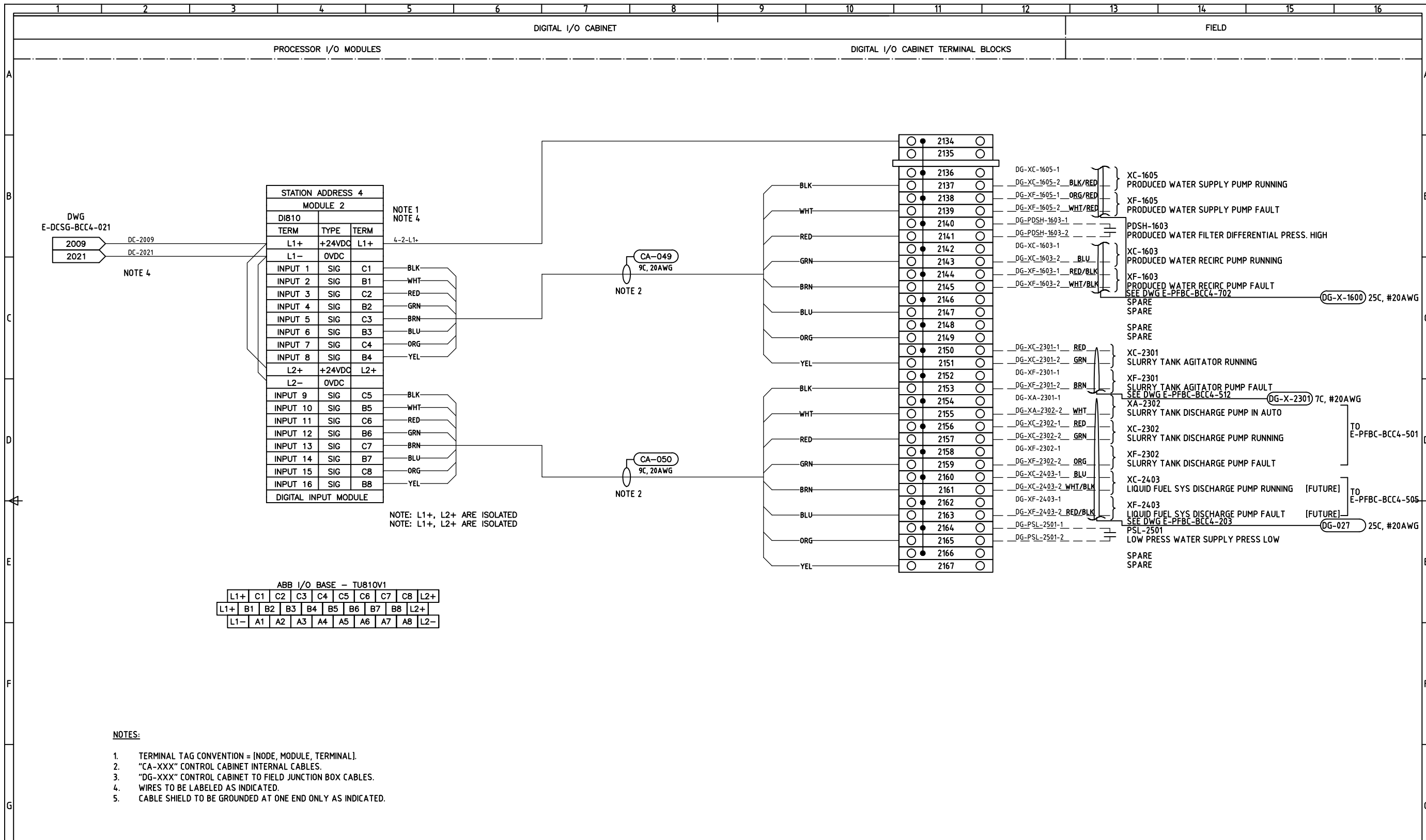
NO.	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
1	ISSUE FOR TENDER	2017/03/24	RCM		
0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		
No					

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CLIENT: **Canada**
Natural Resources Canada
CANMET Energy Technology Center

DESIGNED R. McNAIR
DRAWN R. McNAIR
CHECKED
APPROVED
DATE 2016/11/11
SCALE NONE

PROJECT NRCAN CANMET DCSG/HIPROX				
TITLE ELECTRICAL DCSG-HIPROX DIGITAL I/O CABINET INPUT WIRING NODE ADDRESS 4 - MODULES 1				
USER E	PROJECT DCSG	BUILDING BCC4	DRAWING 201	REV. 1



DWG
E-DCSG-BCC4-021

2009 DC-2009
2021 DC-2021

NOTE 4

STATION ADDRESS 4			
MODULE 2			
DIB10	TERM	TYPE	TERM
L1+	L1+	+24VDC	L1+
L1-	L1-	OVDC	L1-
INPUT 1	SIG	C1	
INPUT 2	SIG	B1	
INPUT 3	SIG	C2	
INPUT 4	SIG	B2	
INPUT 5	SIG	C3	
INPUT 6	SIG	B3	
INPUT 7	SIG	C4	
INPUT 8	SIG	B4	
L2+	L2+	+24VDC	L2+
L2-	L2-	OVDC	L2-
INPUT 9	SIG	C5	
INPUT 10	SIG	B5	
INPUT 11	SIG	C6	
INPUT 12	SIG	B6	
INPUT 13	SIG	C7	
INPUT 14	SIG	B7	
INPUT 15	SIG	C8	
INPUT 16	SIG	B8	
DIGITAL INPUT MODULE			

NOTE 1
NOTE 4

NOTE: L1+, L2+ ARE ISOLATED
NOTE: L1-, L2- ARE ISOLATED

ABB I/O BASE - TU810V1

L1+	C1	C2	C3	C4	C5	C6	C7	C8	L2+
L1+	B1	B2	B3	B4	B5	B6	B7	B8	L2+
L1-	A1	A2	A3	A4	A5	A6	A7	A8	L2-

- NOTES:
1. TERMINAL TAG CONVENTION = [NODE, MODULE, TERMINAL].
 2. "CA-XXX" CONTROL CABINET INTERNAL CABLES.
 3. "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES.
 4. WIRES TO BE LABELED AS INDICATED.
 5. CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

NO	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
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0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		
No	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD

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DESIGNED
R. McNAIR

DRAWN
R. McNAIR

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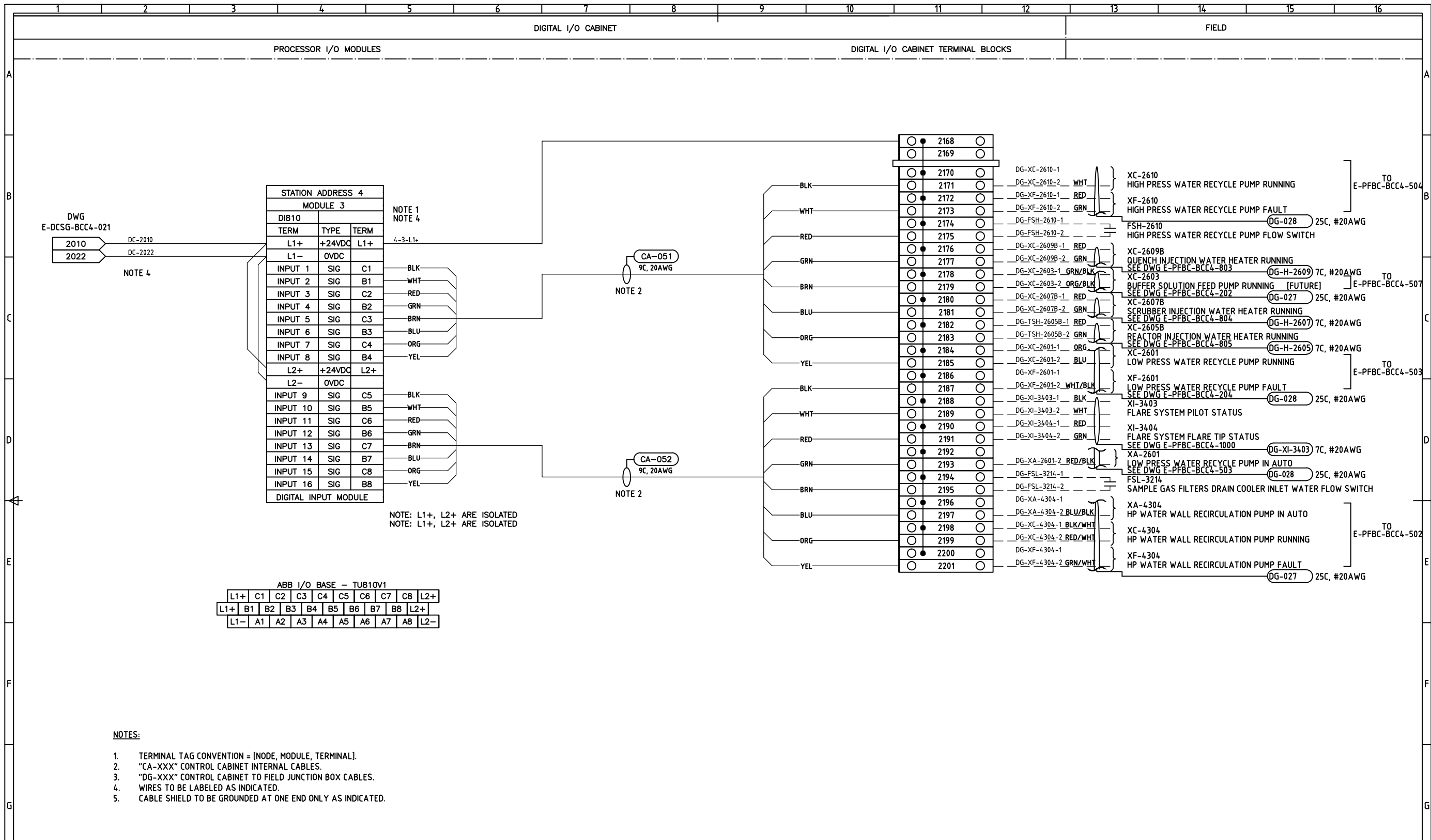
DATE
2016/11/11

SCALE
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PROJECT
NRCAN CANMET DCSG/HIPROX

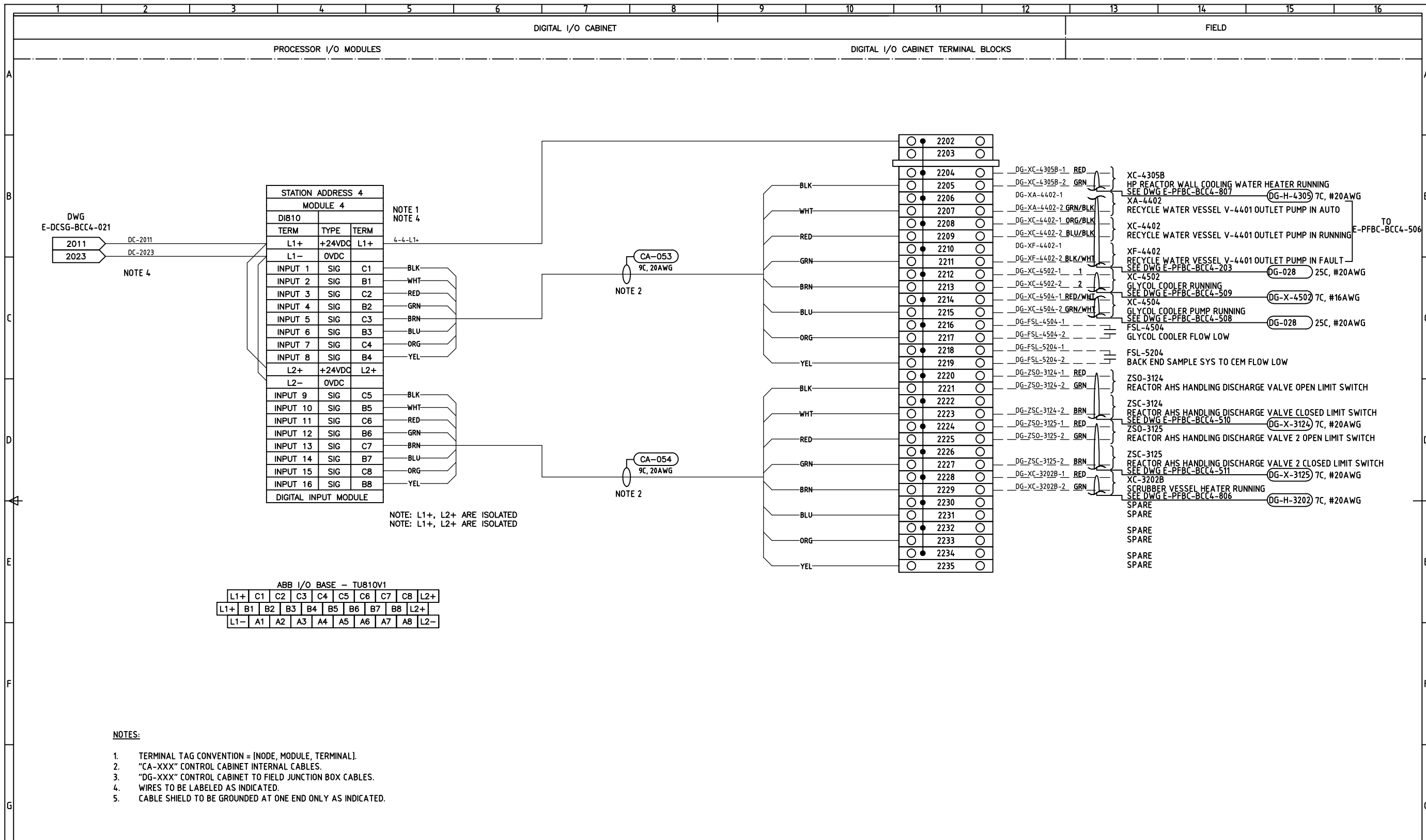
TITLE
ELECTRICAL
DCSG-HIPROX
DIGITAL I/O CABINET INPUT WIRING
NODE ADDRESS 4 - MODULE 2

USER	PROJECT	BUILDING	DRAWING	REV.
E	DCSG	BCC4	202	1



DESIGNED R. McNAIR		PROJECT NRCAN CANMET DCSG/HIPROX	
DRAWN R. McNAIR		TITLE ELECTRICAL DCSG-HIPROX DIGITAL I/O CABINET INPUT WIRING NODE ADDRESS 4 - MODULE 3	
CHECKED		USER E	
APPROVED		PROJECT DCSG	
DATE 2016/11/11		BUILDING BCC4	
SCALE NONE		DRAWING 203	
		REV. 1	

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1 ISSUE FOR TENDER 2017/03/24 RCM		0 ISSUE FOR CLIENT REVIEW 2017/01/09 RCM	
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DWG
E-DCSG-BCC4-021

DC-2011
DC-2023

NOTE 4

STATION ADDRESS 4		
MODULE 4		
DIB10	TYPE	TERM
L1+	+24VDC	L1+
L1-	OVDC	L1-
INPUT 1	SIG	C1
INPUT 2	SIG	B1
INPUT 3	SIG	C2
INPUT 4	SIG	B2
INPUT 5	SIG	C3
INPUT 6	SIG	B3
INPUT 7	SIG	C4
INPUT 8	SIG	B4
L2+	+24VDC	L2+
L2-	OVDC	L2-
INPUT 9	SIG	C5
INPUT 10	SIG	B5
INPUT 11	SIG	C6
INPUT 12	SIG	B6
INPUT 13	SIG	C7
INPUT 14	SIG	B7
INPUT 15	SIG	C8
INPUT 16	SIG	B8
DIGITAL INPUT MODULE		

NOTE 1
NOTE 4

NOTE: L1+, L2+ ARE ISOLATED
NOTE: L1-, L2- ARE ISOLATED

ABB I/O BASE - TU810V1

L1+	C1	C2	C3	C4	C5	C6	C7	C8	L2+
L1+	B1	B2	B3	B4	B5	B6	B7	B8	L2+
L1-	A1	A2	A3	A4	A5	A6	A7	A8	L2-

- NOTES:
1. TERMINAL TAG CONVENTION = [NODE, MODULE, TERMINAL].
 2. "CA-XXX" CONTROL CABINET INTERNAL CABLES.
 3. "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES.
 4. WIRES TO BE LABELED AS INDICATED.
 5. CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

NO.	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
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0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		
No.	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD

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R. McNAIR

DRAWN
R. McNAIR

CHECKED

APPROVED

DATE
2016/11/11

SCALE
NONE

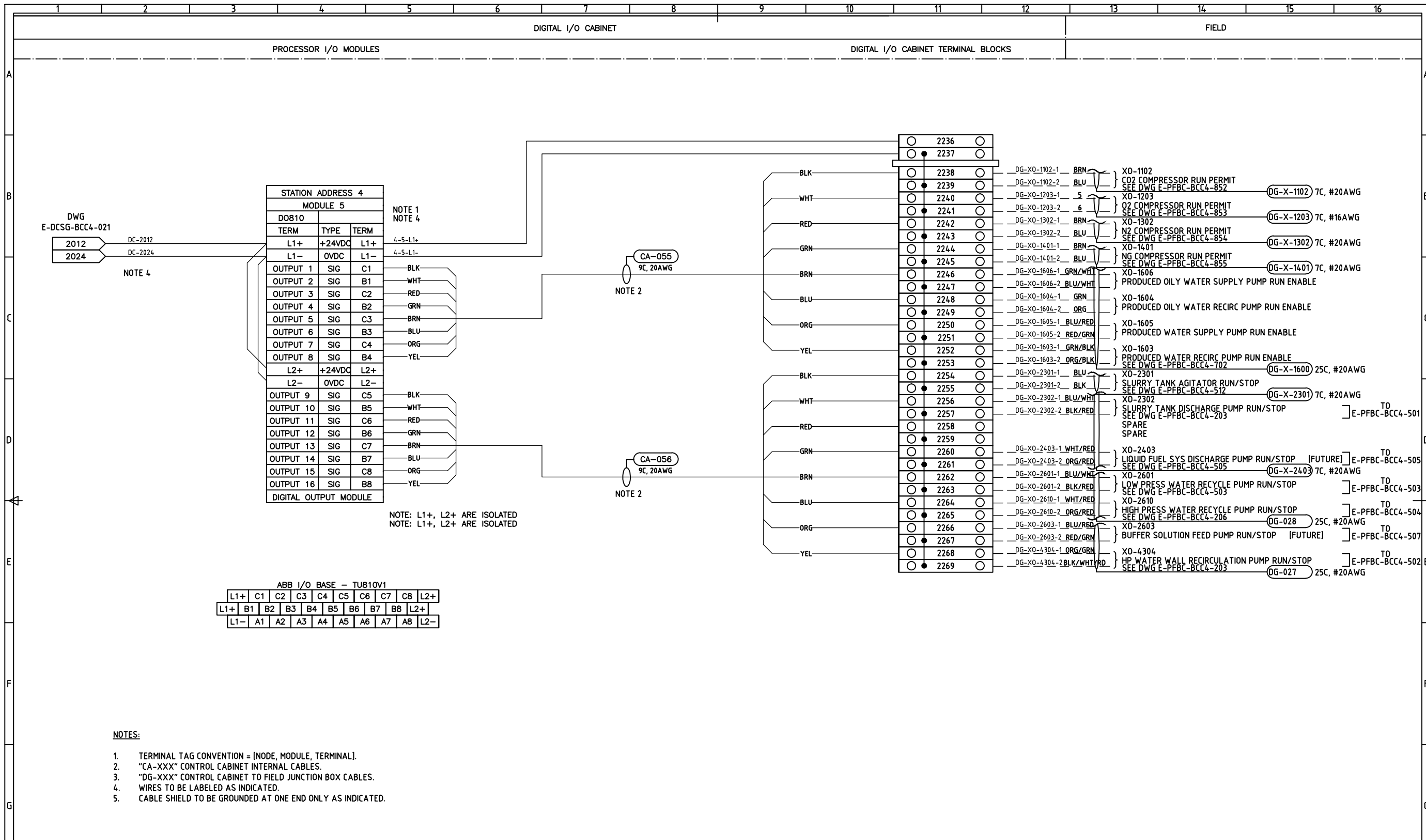
PROJECT
NRCAN CANMET DCSG/HIPROX

TITLE
ELECTRICAL
DCSG-HIPROX
DIGITAL IO CABINET INPUT WIRING
NODE ADDRESS 4 - MODULE 4

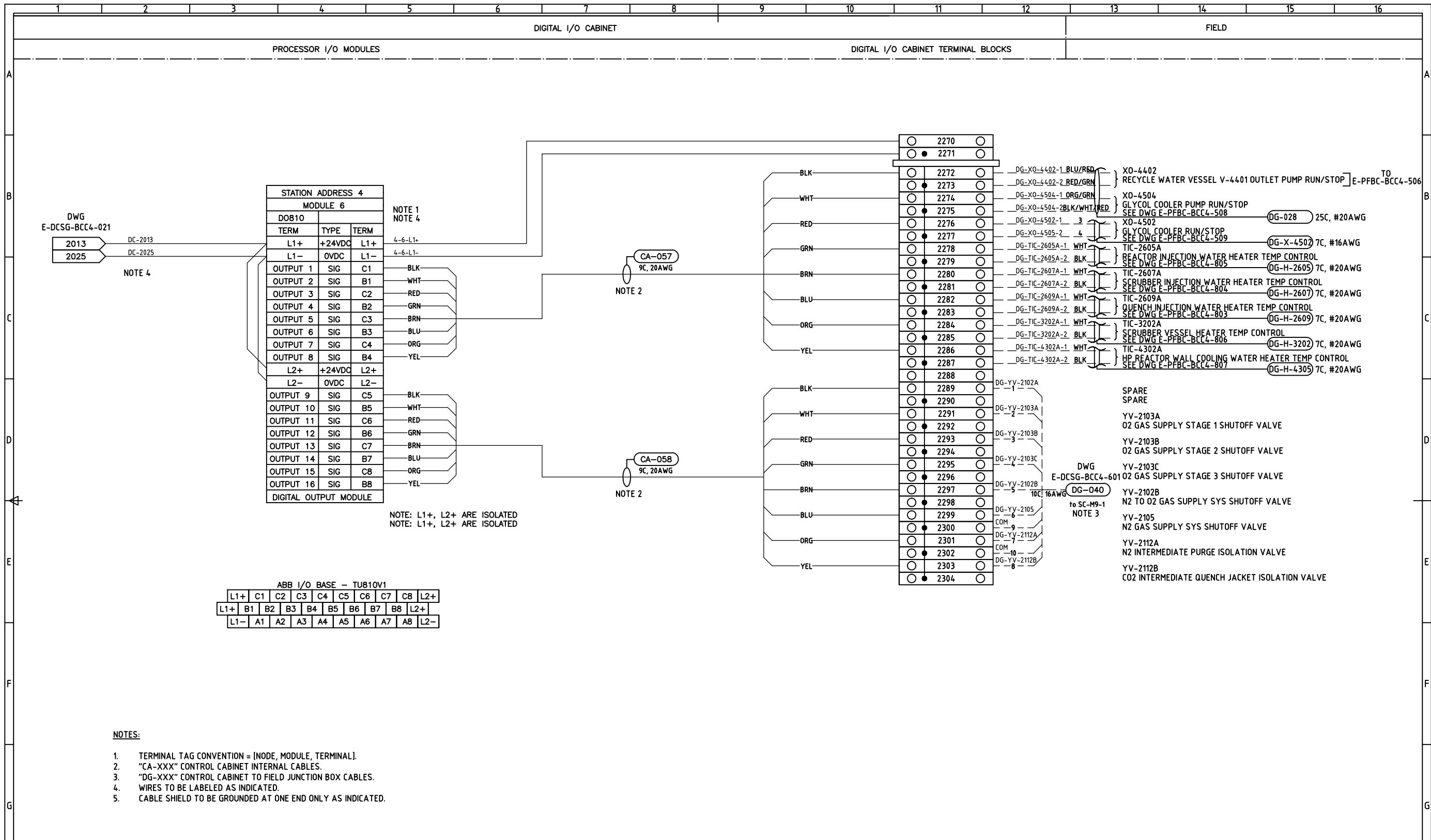
USER	PROJECT	BUILDING	DRAWING	REV.
E	DCSG	BCC4	204	1

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CANMET Energy Technology Center

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Centre de la technologie de l'énergie de CANMET



REFERENCE DRAWINGS		REVISION REGISTER				DESIGNED R. McNAIR DRAWN R. McNAIR CHECKED APPROVED DATE 2016/11/11 SCALE NONE		PROJECT NRCAN CANMET DCSG/HIPROX TITLE ELECTRICAL DCSG-HIPROX DIGITAL I/O CABINET OUTPUT WIRING NODE ADDRESS 4 - MODULE 5									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
		1		ISSUE FOR TENDER	2017/03/24	RCM							USER	PROJECT	BUILDING	DRAWING	REV.
		0		ISSUE FOR CLIENT REVIEW	2017/01/09	RCM							E	DCSG	BCC4	205	1
		No		REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD	CLIENT Natural Resources Canada CANMET Energy Technology Center								



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1	ISSUE FOR TENDER	2017/03/24	RCM	0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM	Natural Resources Canada Ressources naturelles Canada CANMET Energy Technology Center Centre de la technologie de l'énergie de CANMET		DATE 2016/11/11 SCALE NONE		E	DCSG	BCC4	206	1

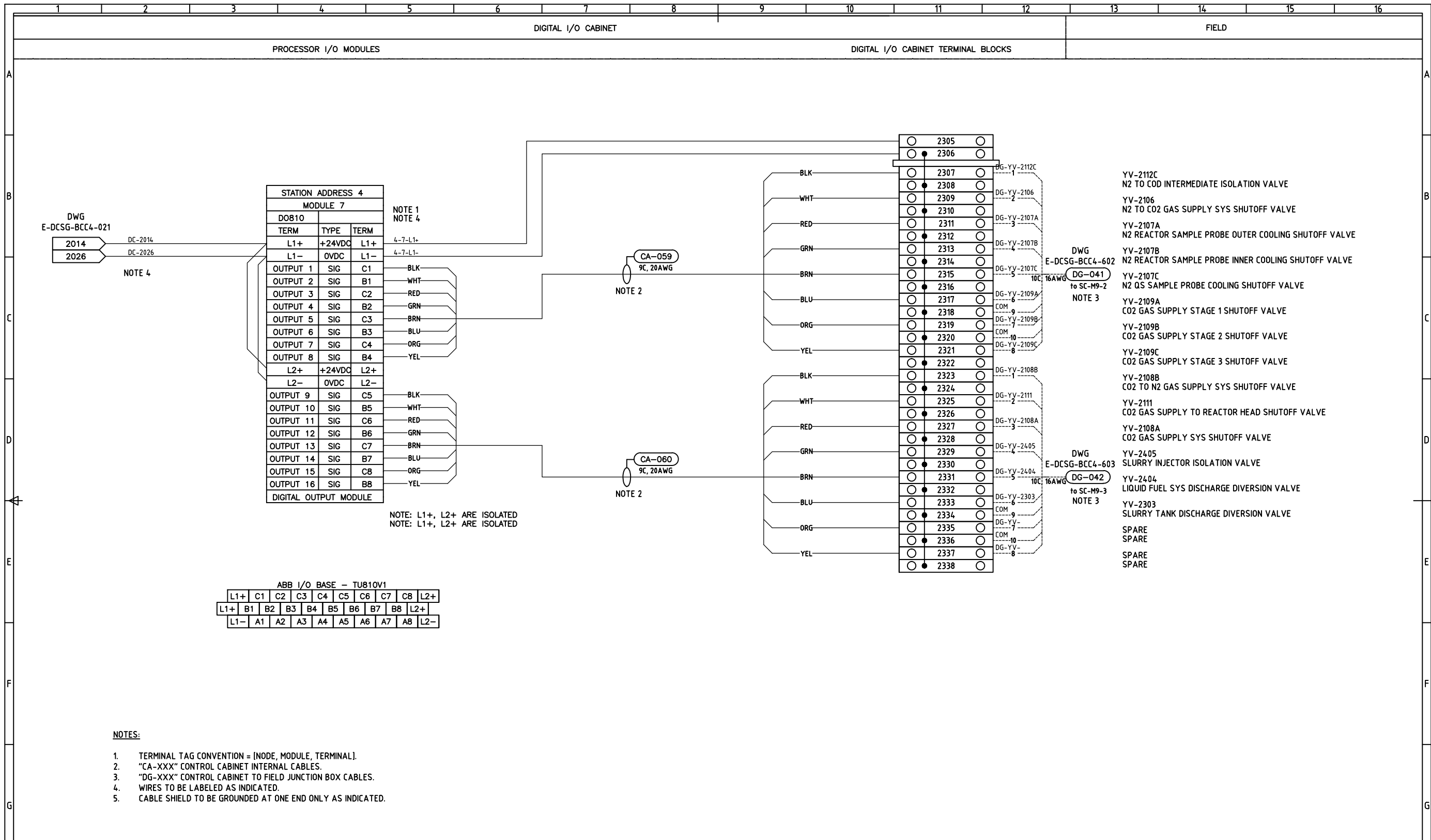


ABB I/O BASE - TU810V1

L1+	C1	C2	C3	C4	C5	C6	C7	C8	L2+
L1+	B1	B2	B3	B4	B5	B6	B7	B8	L2+
L1-	A1	A2	A3	A4	A5	A6	A7	A8	L2-

- NOTES:**
1. TERMINAL TAG CONVENTION = [NODE, MODULE, TERMINAL].
 2. "CA-XXX" CONTROL CABINET INTERNAL CABLES.
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NO.	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
1	ISSUE FOR TENDER	2017/03/24	RCM		
0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		
No					

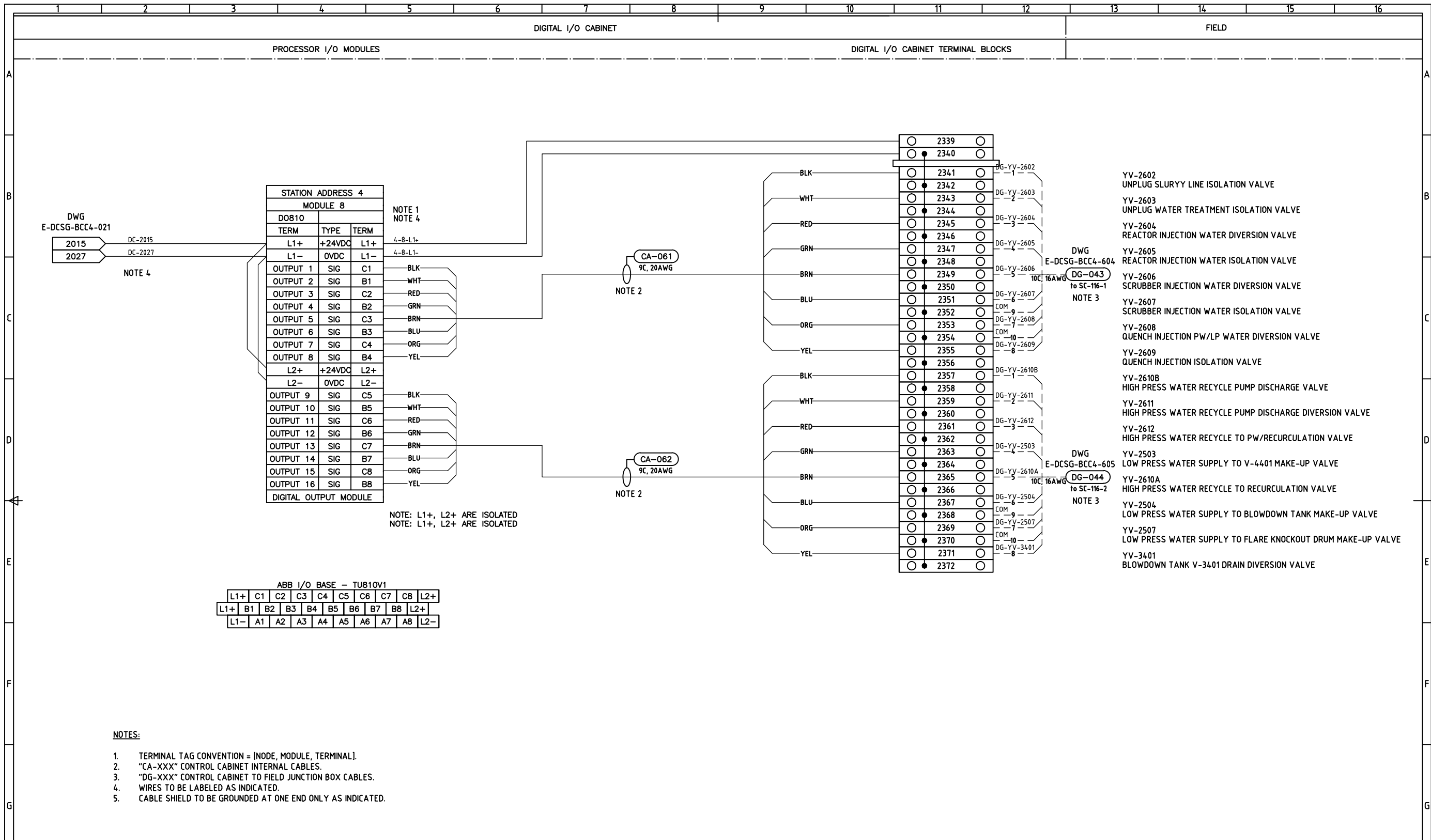
REFERENCE DRAWINGS

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DESIGNED R. McNAIR	PROJECT NRCAN CANMET DCSG/HIPROX				
DRAWN R. McNAIR	TITLE ELECTRICAL DCSG-HIPROX DIGITAL I/O CABINET OUTPUT WIRING NODE ADDRESS 4 - MODULE 7				
CHECKED	USER	PROJECT	BUILDING	DRAWING	REV.
APPROVED	E	DCSG	BCC4	207	1
DATE 2016/11/11					
SCALE NONE					

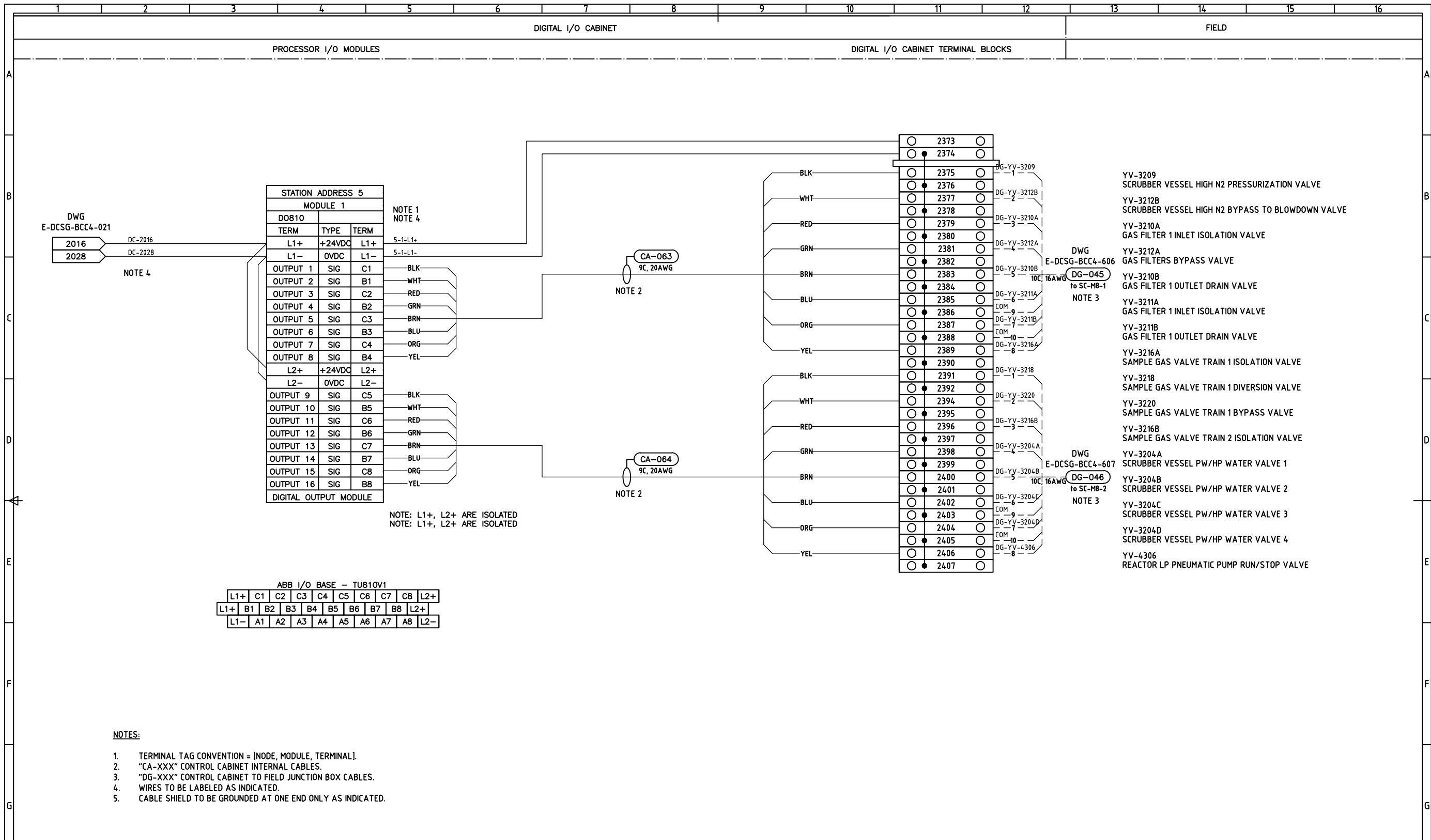


DESIGNED R. McNAIR		PROJECT NRCAN CANMET DCSG/HIPROX	
DRAWN R. McNAIR		TITLE ELECTRICAL DCSG-HIPROX DIGITAL IO CABINET OUTPUT WIRING NODE ADDRESS 4 - MODULE 8	
CHECKED		USER E	
APPROVED		PROJECT DCSG	
DATE 2016/11/11		BUILDING BCC4	
SCALE NONE		DRAWING 208	
		REV. 1	

NO	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
1	ISSUE FOR TENDER	2017/03/24	RCM		
0	ISSUE FOR CLIENT REVIEW		RCM		

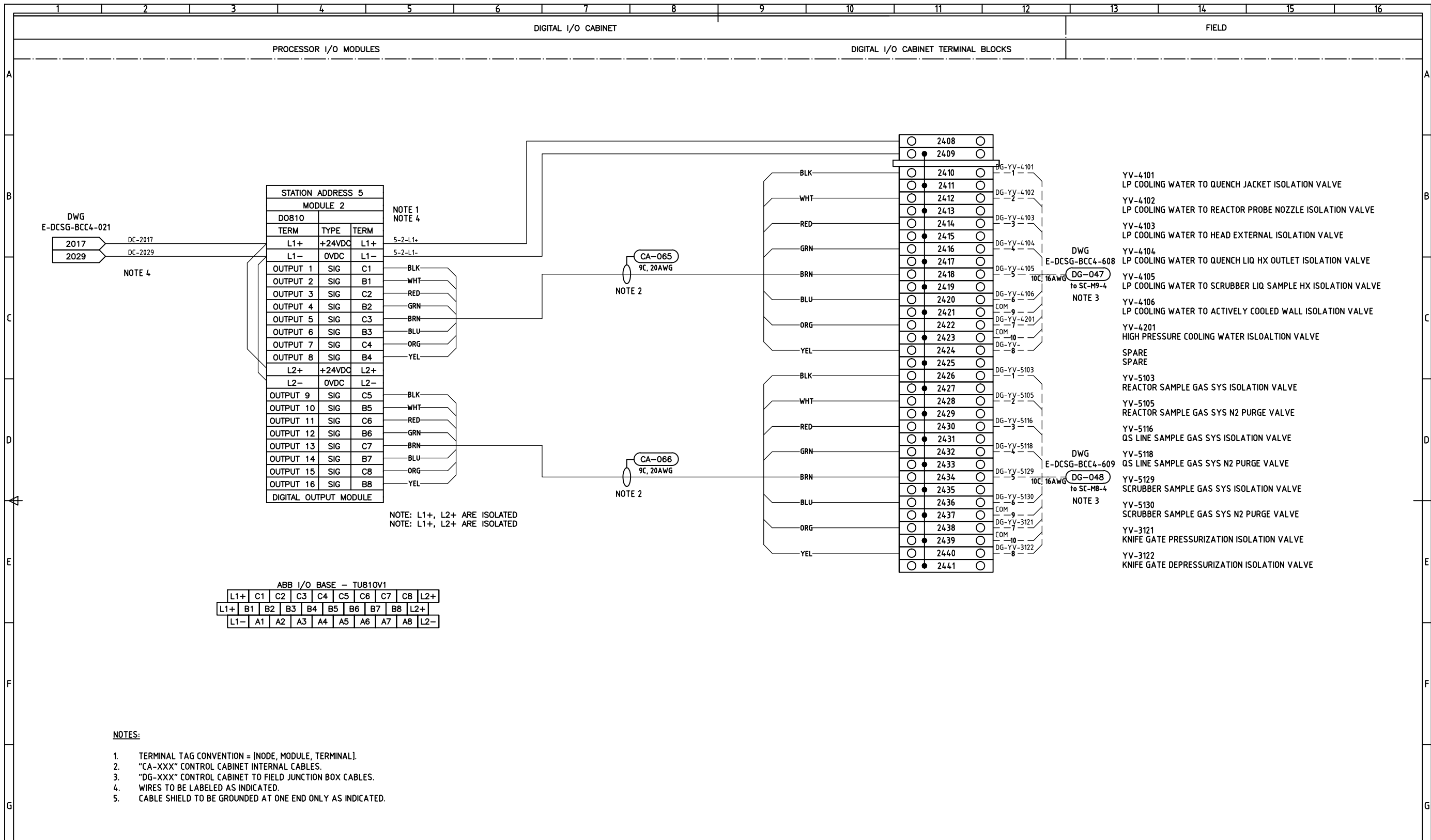
REFERENCE DRAWINGS

REVISION REGISTER



DESIGNED R. McNAIR		PROJECT NRCAN CANMET DCSG/HIPROX		
DRAWN R. McNAIR		TITLE ELECTRICAL DCSG-HIPROX DIGITAL IO CABINET OUTPUT WIRING NODE ADDRESS 5 - MODULE1		
CHECKED		USER E		
APPROVED		PROJECT DCSG		
DATE 2016/11/11		BUILDING BCC4		
SCALE NONE		DRAWING 209		
		REV. 1		

1		ISSUE FOR TENDER	2017/03/24	RCM			
0		ISSUE FOR CLIENT REVIEW	2017/01/09	RCM			
No		REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD	



- YV-4101 LP COOLING WATER TO QUENCH JACKET ISOLATION VALVE
- YV-4102 LP COOLING WATER TO REACTOR PROBE NOZZLE ISOLATION VALVE
- YV-4103 LP COOLING WATER TO HEAD EXTERNAL ISOLATION VALVE
- YV-4104 LP COOLING WATER TO QUENCH LIQ HX OUTLET ISOLATION VALVE
- YV-4105 LP COOLING WATER TO SCRUBBER LIQ SAMPLE HX ISOLATION VALVE
- YV-4106 LP COOLING WATER TO ACTIVELY COOLED WALL ISOLATION VALVE
- YV-4201 HIGH PRESSURE COOLING WATER ISOLATION VALVE
- SPARE
- SPARE
- YV-5103 REACTOR SAMPLE GAS SYS ISOLATION VALVE
- YV-5105 REACTOR SAMPLE GAS SYS N2 PURGE VALVE
- YV-5116 QS LINE SAMPLE GAS SYS ISOLATION VALVE
- YV-5118 QS LINE SAMPLE GAS SYS N2 PURGE VALVE
- YV-5129 SCRUBBER SAMPLE GAS SYS ISOLATION VALVE
- YV-5130 SCRUBBER SAMPLE GAS SYS N2 PURGE VALVE
- YV-3121 KNIFE GATE PRESSURIZATION ISOLATION VALVE
- YV-3122 KNIFE GATE DEPRESSURIZATION ISOLATION VALVE

ABB I/O BASE - TU810V1

L1+	C1	C2	C3	C4	C5	C6	C7	C8	L2+
L1+	B1	B2	B3	B4	B5	B6	B7	B8	L2+
L1-	A1	A2	A3	A4	A5	A6	A7	A8	L2-

- NOTES:**
1. TERMINAL TAG CONVENTION = [NODE, MODULE, TERMINAL].
 2. "CA-XXX" CONTROL CABINET INTERNAL CABLES.
 3. "DG-XXX" CONTROL CABINET TO FIELD JUNCTION BOX CABLES.
 4. WIRES TO BE LABELED AS INDICATED.
 5. CABLE SHIELD TO BE GROUNDED AT ONE END ONLY AS INDICATED.

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No					

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R. McNAIR

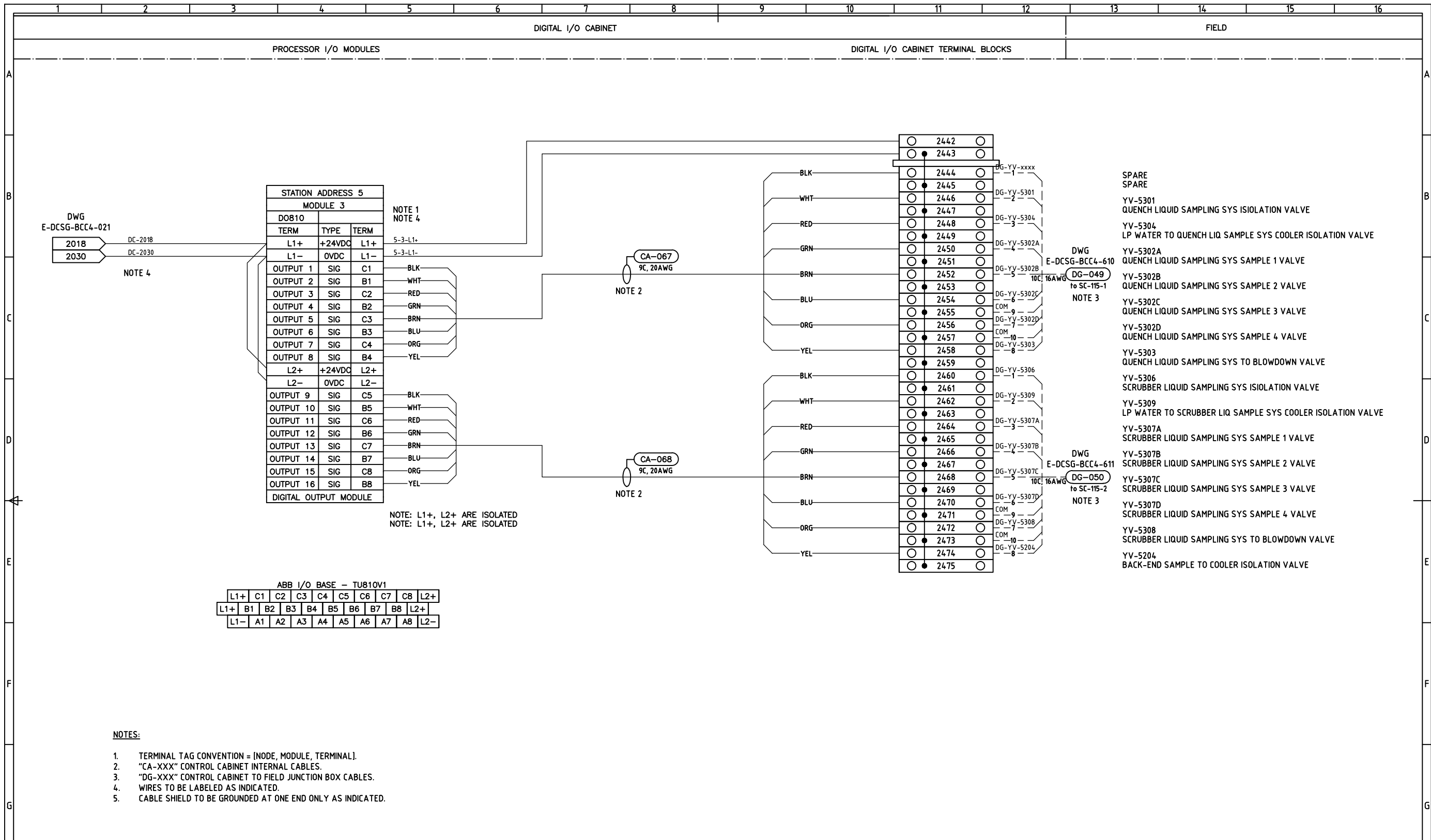
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DATE
2016/11/11

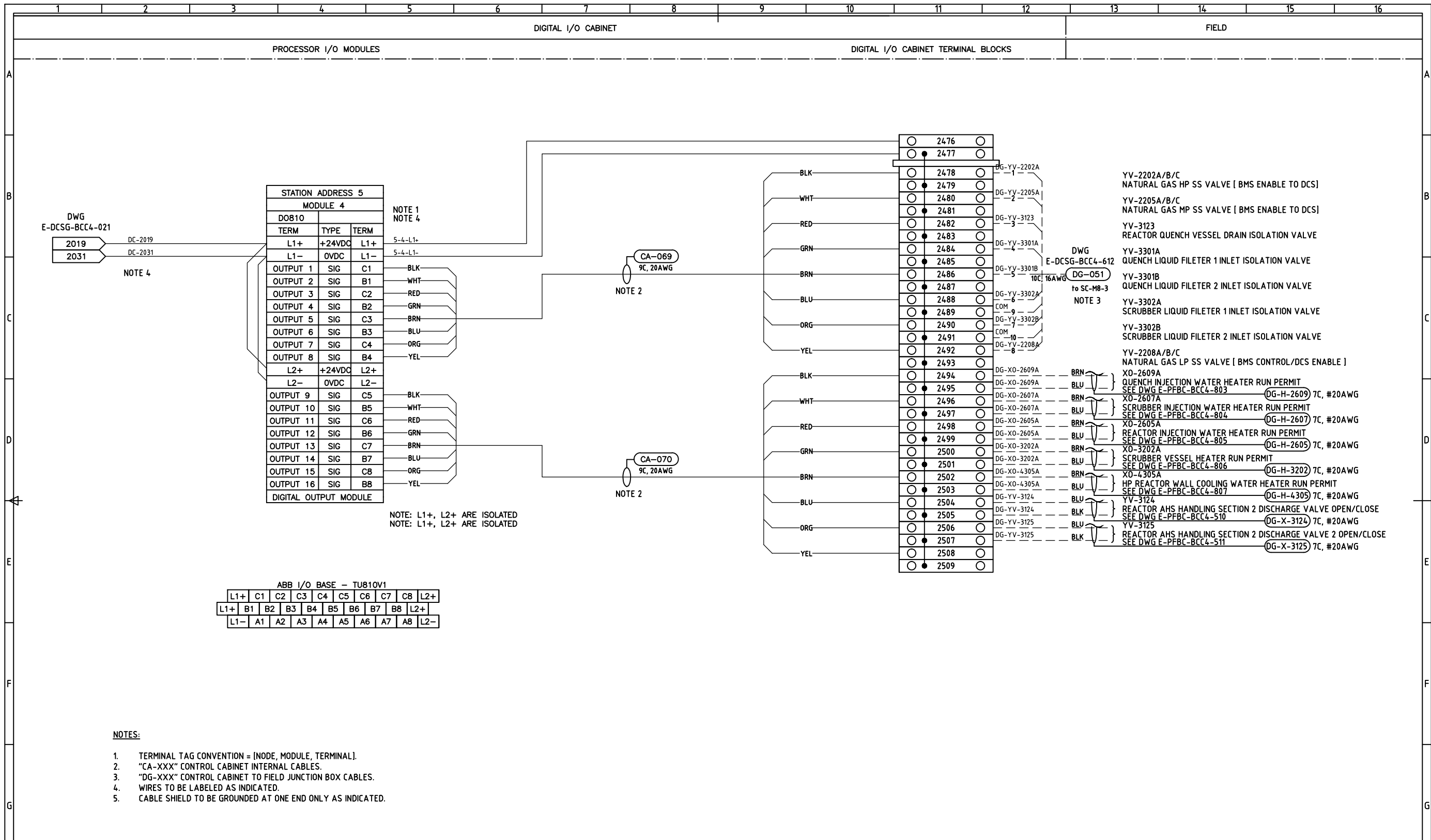
SCALE
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PROJECT NRCAN CANMET DCSG/HIPROX				
TITLE ELECTRICAL DCSG-HIPROX DIGITAL IO CABINET OUTPUT WIRING NODE ADDRESS 5 - MODULE 2				
USER	PROJECT	BUILDING	DRAWING	REV.
E	DCSG	BCC4	210	1



DESIGNED R. McNAIR		PROJECT NRCAN CANMET DCSG/HIPROX	
DRAWN R. McNAIR		TITLE ELECTRICAL DCSG-HIPROX DIGITAL IO CABINET OUTPUT WIRING NODE ADDRESS 5 - MODULE 3	
CHECKED		USER E	
APPROVED		PROJECT DCSG	
DATE 2016/11/11		BUILDING BCC4	
SCALE NONE		DRAWING 211	
		REV. 1	

NO	REVISION DESCRIPTION	DATE (Y/M/D)	DRAWN	CKD	APPD
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0	ISSUE FOR CLIENT REVIEW	2017/01/09	RCM		



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