

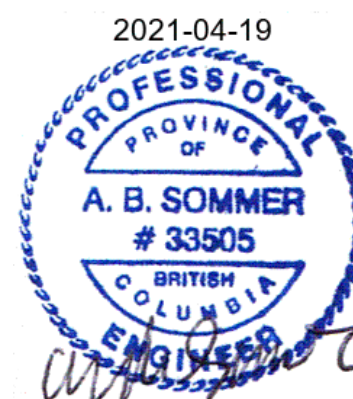
FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY ELECTRICAL UPGRADES DUNCAN, BC

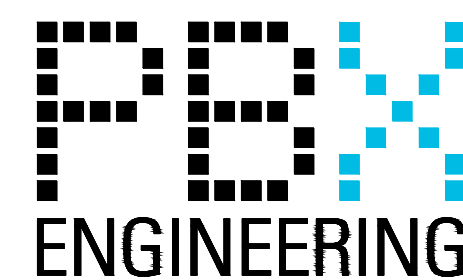
DRAWING NO.	DRAWING DESCRIPTION	REVISION
E000	TITLE SHEET & DRAWING INDEX	0
E001	SYMBOLS AND ABBREVIATIONS	0
E002	SITE PLAN	0
E050	EXISTING SINGLE LINE DIAGRAM	0
E051	PROPOSED SINGLE LINE DIAGRAM	0
E060	CONTROLS BLOCK DIAGRAM	0
E200	ELECTRICAL BUILDING - DEMOLITION	0
E201	ELECTRICAL BUILDING AND AERATION TOWER - PROPOSED	0
E202	ELECTRICAL BUILDING WEST WALL ELEVATION - PROPOSED	0
E210	INTERPRETIVE BUILDING - EXISTING	0
E600	DETAILS - TYPICAL VFD	0
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E607	CONTROL PANEL WIRING DIAGRAMS SHEET 5 OF 14	0
E608	CONTROL PANEL WIRING DIAGRAMS SHEET 6 OF 14	0
E609	CONTROL PANEL WIRING DIAGRAMS SHEET 7 OF 14	0
E610	CONTROL PANEL WIRING DIAGRAMS SHEET 8 OF 14	0
E611	CONTROL PANEL WIRING DIAGRAMS SHEET 9 OF 14	0
E612	CONTROL PANEL WIRING DIAGRAMS SHEET 10 OF 14	0
E613	CONTROL PANEL WIRING DIAGRAMS SHEET 11 OF 14	0
E614	CONTROL PANEL WIRING DIAGRAMS SHEET 12 OF 14	0
E615	CONTROL PANEL WIRING DIAGRAMS SHEET 13 OF 14	0
E616	CONTROL PANEL WIRING DIAGRAMS SHEET 14 OF 14	0
E620	DETAILS - INSTRUMENT INSTALLATION	0
E630	DETAILS - WIRING TERMINATIONS (SHEET 1/2)	0
E640	DETAILS - WIRING TERMINATIONS (SHEET 2/2)	0
E650	DUCTBANK SECTIONS	0
E651	DETAILS & ELEVATIONS	0
E701	PANEL SCHEDULES	0



KEY MAP



PREPARED BY:



SYMBOL LEGEND	
SYMBOL	DESCRIPTION
•	CONDUIT STUB
✕	GROUND ELECTRODE/ROD
	GROUNDING SYSTEM EXTENSION TAIL
	DUPLEX RECEPTACLE 120V (GFCI)
§	SWITCH (LIGHTING)
	MOTOR
	INDICATOR LIGHT R=RED, A=AMBER, G=GREEN

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	GROUNDING
	CONTACTOR/RELAY COIL
	FUSE
	POWER TRANSFORMER
	NORMAL OPEN CONTACT
	NORMAL CLOSED CONTACT
	THERMOSTAT
	CIRCUIT BREAKER
	PANELBOARD, CONTROL PANEL
	FLUORESCENT FIXTURE – 48", 2 TUBES
	ELAPSED TIME METER
	MOMENTARY PUSHBUTTON – NORMALLY CLOSED
	MOMENTARY PUSHBUTTON – NORMALLY OPEN
	SELECTOR SWITCH, NUMBER OF POSITIONS AND CONTACTS AS SHOWN. SOLID LINE INDICATES CONTACT STATE AS DRAWN.
	MOTOR OVERLOAD
	UTILITY METER
	PUMP MOTOR – NUMBER INDICATES HORSEPOWER
	EQUIPMENT TAG REFERENCE NUMBER

LINE TYPE LEGEND	
LINE	DESCRIPTION
	120V CONDUIT/CABLE
	COMMUNICATIONS OR LOW VOLTAGE CONDUIT/CABLE
	347/600V CONDUIT/CABLE
	GROUNDING
	FIBRE OPTIC (RED)
	ETHERNET (PURPLE)
	PHONE LINE (GREEN)

ABBREVIATIONS:

ATS	AUTOMATIC TRANSFER SWITCH
C	COIL
CC	CONTROL CABINET
CEC	CANADIAN ELECTRICAL CODE, PART1, LATEST EDITION
CTRL	CONTROL
DET	DETAIL
ETM	ELAPSED TIME METER
F	FUSE
FMC	FLEXIBLE METAL CONDUIT
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GRD	GROUNDING
H	HOT/ENERGIZED
HOA	HAND-OFF-AUTO CONTROL
HP	HORSE POWER
MGB	MASTER GROUND BAR
N	NEUTRAL
NIC	NOT IN CONTRACT
OL	OVERLOAD PROTECTION
PH, Ø	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PT	PRESSURE TRANSMITTER
R	RELAY
RAC	RIGID ALUMINIUM CONDUIT
REC	RECEPTACLES
RPVC	RIGID PVC (SCHEDULE 40)
RTU	REMOTE TERMINAL UNIT
SPD	SURGE PROTECTION DEVICE
STP	SHIELDED TWISTED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
XFMR	TRANSFORMER

INSTRUMENTATION IDENTIFIERS:

LI	LEVEL INDICATOR
LSLL	LEVEL SWITCH LOW LOW
LT	LEVEL TRANSMITTER
TT	TEMPERATURE TRANSMITTER
HS	HAND SWITCH
SY	SPEED AUXILIARY DEVICE
YA	EVENT ALARM
YI	EVENT INDICATOR

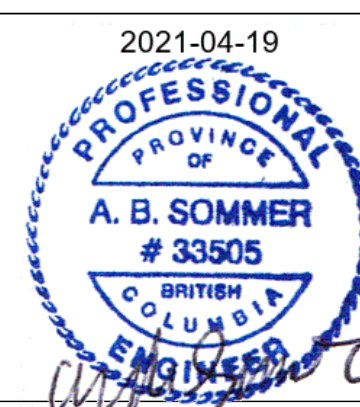
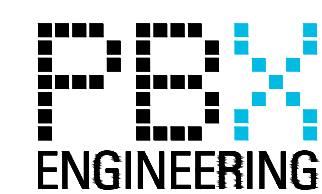
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FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

SYMBOLS AND ABBREVIATIONS

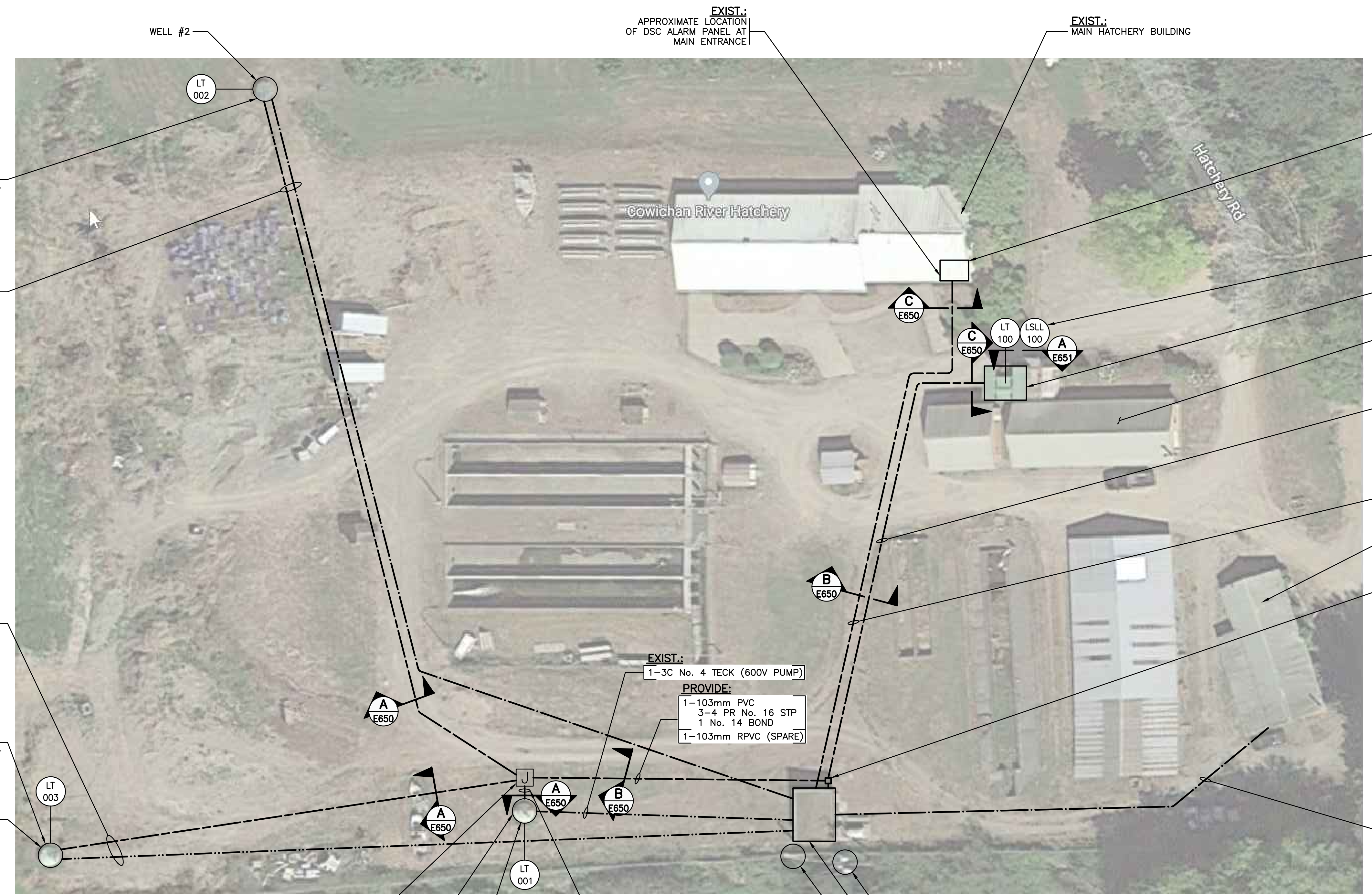
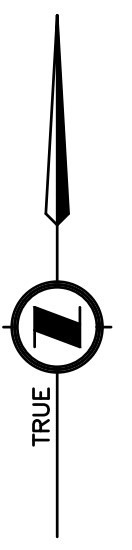
SCALE
N/A
DATE
26-JAN-21
DRAWING NUMBER
E001
REVISION
0



NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED
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PBX
CHECKED
AS
RECOMMENDED
APPROVED
APPROVED



PROVIDE:
LEVEL TRANSMITTER COMPLETE WITH DROP TUBE SIZED TO SUIT INSTALLED IN EXISTING WELL. PROVIDE NEMA 4X RPVC JUNCTION BOX COMPLETE WITH TERMINAL BLOCKS TO SPLICE MANUFACTURER CABLES TO FIELD WIRING. AIR REFERENCE BELLOWS TO BE INSTALLED IN THIS JUNCTION BOX. (TYP. OF 3 WELLS)

2 SEE DETAIL E620

EXIST.:
1-50mm PVC (POWER)
1-3C No. 4 Cu. (600V PUMP)

PROVIDE:
1-53mm RPVC (COMM)
1-4 PR No. 16 STP (LT-002, TT-002)
1 No. 14 BOND

EXIST.:
1-3C No. 3 TECK (600V PUMP)

PROVIDE:
1-53mm RPVC (COMM)
1-4 PR No. 16 STP (LT-003, TT-003)
1 No. 14 BOND

2 SEE DETAIL E620

PROVIDE:
LEVEL TRANSMITTER COMPLETE WITH DROP TUBE SIZED TO SUIT INSTALLED IN EXISTING WELL. PROVIDE NEMA 4X RPVC JUNCTION BOX COMPLETE WITH TERMINAL BLOCKS TO SPLICE MANUFACTURER CABLES TO FIELD WIRING. AIR REFERENCE BELLOWS TO BE INSTALLED IN THIS JUNCTION BOX. (TYP. OF 3 WELLS)

EXIST.:
APPROX. LOCATION OF MAIN OFFICE

SEE DETAIL 1 E620 **PROVIDE:**
LEVEL TRANSMITTER AND FLOAT SWITCH IN EXIST. AERATION TOWER

SEE DETAIL 2 E201 **EXIST.:**
AERATION TOWER

PROVIDE:
1-103mm RPVC (COMM)
1-4 PR No. 16 STP (LT-100, TT-100)
3 No. 14 RW90 (LSLL-100)
1 No. 14 BOND

1-103mm PVC (FUTURE - N.I.C.)
1-ETHERNET (CAT6) (FUTURE - N.I.C.)

SEE DETAIL 2 E210 1 E210 **EXIST.:**
OLD HATCHERY BUILDING (INTERPRETIVE BUILDING)
EXIST. ELECTRICAL INSTALLATION

PROVIDE:
NEW JUNCTION BOX

EXIST.:
1-4C No. 1/0 TECK (600V DISTRIBUTION)

NOTES:

1. THE CONDUIT ROUTE IS ESTIMATED AND NOT BASED ON SITE SURVEY.
2. ITEMS SHOWN IN LIGHT LINETYPE ARE EXISTING TO REMAIN. ITEMS SHOWN IN DARK LINETYPE ARE TO BE PROVIDED.
3. JUNCTION BOXES SHALL BE MMCD LARGE CONCRETE JUNCTION BOX TYPE PER MMCD DRAWING E2.3.
4. CONTRACTOR SHALL PERFORM GPR SCANNING OF PROPOSED EXCAVATION ROUTES PRIOR TO PROCEEDING WITH ANY TRENCHING WORK.

PROVIDE:
LEVEL TRANSMITTER COMPLETE WITH DROP TUBE SIZED TO SUIT INSTALLED IN EXISTING WELL. PROVIDE NEMA 4X RPVC JUNCTION BOX COMPLETE WITH TERMINAL BLOCKS TO SPLICE MANUFACTURER CABLES TO FIELD WIRING. AIR REFERENCE BELLOWS TO BE INSTALLED IN THIS JUNCTION BOX. (TYP. OF 3 WELLS)

2 SEE DETAIL E620

PROVIDE:
NEW JUNCTION BOX

EXIST.:
1-3C No. 4 TECK (600V PUMP)

PROVIDE:
1-103mm PVC
3-4 PR No. 16 STP
1 No. 14 BOND
1-103mm RPVC (SPARE)

SEE DETAIL 1 E200 1 E201 **EXIST. AND PROPOSED ELECTRICAL BUILDING FLOOR PLAN**

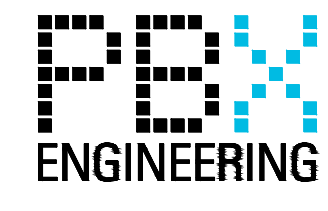
SITE PLAN
N.T.S.

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REAL PROPERTY AND TECHNICAL SUPPORT

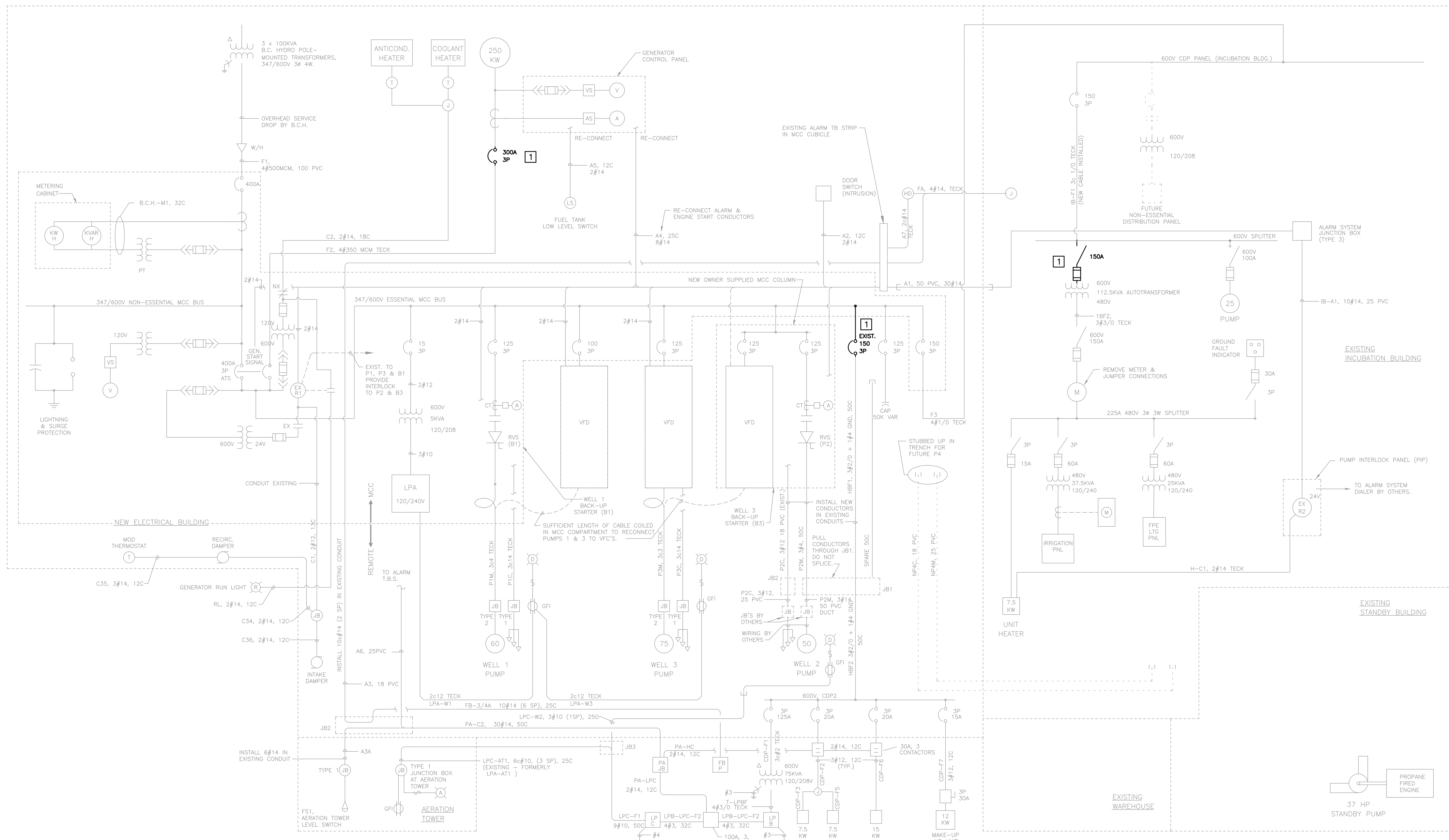
COWICHAN HATCHERY ELECTRICAL UPGRADES SITE PLAN	SCALE	N/A
	DATE	26-JAN-21
DRAWING NUMBER E002	DRAWING NUMBER	E002
	REVISION	0



NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED	KM
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CHECKED	AS
RECOMMENDED	AS
APPROVED	
APPROVED	

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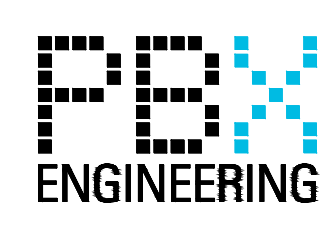


NOTES:

- 1 CONTRACTOR TO CONFIRM THE EXISTING BREAKER/FUSE SIZE.
- 2. EXISTING SINGLE LINE DIAGRAM PROVIDED FOR REFERENCE ONLY. REMOVE AND REPLACE EQUIPMENT AS INDICATED ELSEWHERE IN THIS DRAWING PACKAGE.

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NOTES

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APPROVED	
APPROVED	

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REAL PROPERTY AND TECHNICAL SUPPORT

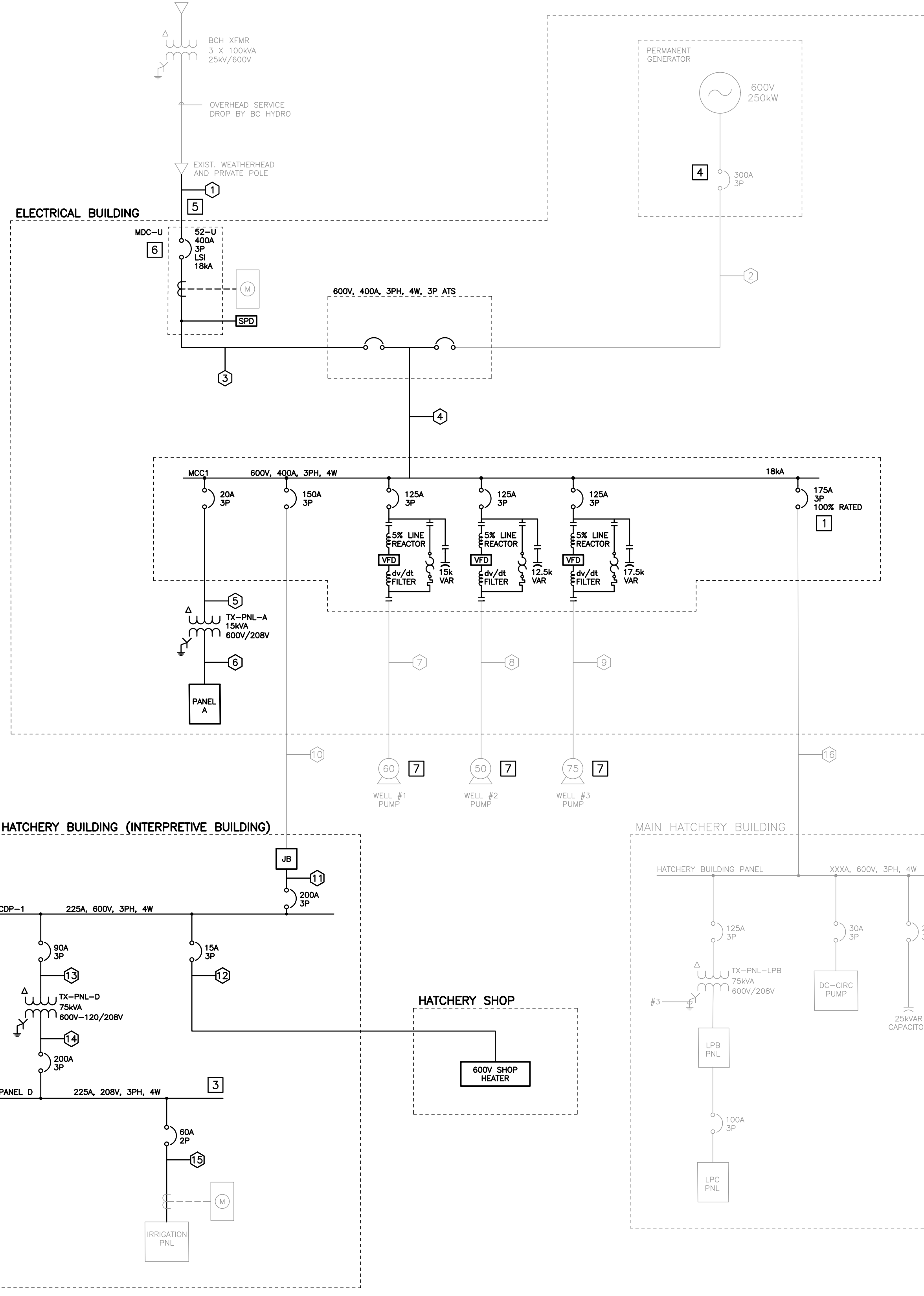
**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

EXISTING SINGLE LINE DIAGRAM

SCALE	N/A
DATE	26-JAN-21
DRAWING NUMBER	E050
REVISION	0

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FEEDER CABLE SCHEDULE								
ID	FROM	TO	RUNS	CABLE SIZE	BOND	CONDUCTOR TYPE	CONDUIT	NOTES:
1	PRIVATE WEATHERHEAD	MAIN BREAKER (52-U)	1	4-No. 600 kCMIL Cu	No. 2 Cu	RW90	EXIST-103mm	1,4
2	GENERATOR	ATS	1	4-No. 500 kCMIL Cu	Incl.	TECK	N/A	2
3	MAIN BREAKER (52-U)	ATS	2	4- No. 3/0 Cu	No. 6 Cu	RW90	53mm EMT	
4	ATS	MCC1	2	4- No. 3/0 Cu	No. 6 Cu	RW90	53mm EMT	
5	MCC1	TX-PNL- A	1	3-No. 12 Cu	No. 12 Cu	RW90	21mm EMT	
6	TX-PNL- A	PANEL A	1	4-No. 8 Cu	No. 10 Cu	RW90	35mm EMT	
7	MCC1	WELL #1 PUMP	1	3-No. 4 Cu	Incl.	TECK-EXIST	N/A	2
8	MCC1	WELL #2 PUMP	1	3-No. 4 Cu	Incl.	TECK-EXIST	N/A	2
9	MCC1	WELL #3 PUMP	1	3-No. 3 Cu	Incl.	TECK-EXIST	N/A	2
10	MCC1	JB	1	4- No. 1/0 Cu	No. 6 Cu	RW90	53mm EMT	2
11	JB	CDP-1	1	4- No. 1/0 Cu	No. 6 Cu	RW90	53mm EMT	
12	CDP-1	600V SHOP HEATER	1	3-No. 12 Cu	No. 12 Cu	RW90	21mm EMT	2,3
13	CDP-1	TX-PNL-D	1	3-No. 1/0 Cu	No. 6 Cu	RW90	41mm EMT	
14	TX-PNL-D	PANEL D	2	4-No. 4/350	No. 3 Cu	RW90	78mm EMT	
15	PANEL D	IRRIGATION PANEL	1	4-No. 6 Cu	No. 8 Cu	RW90	35mm EMT	
16	MCC1	HATCHERY BUILDING PANEL	1	4-No. 2/0 Cu	No. 6 Cu	RW90	53mm EMT	2
17								

- NOTES:
1. Re-use existing conduit
 2. Re-use existing conduit and conductors
 3. Contractor to confirm the size and adequacy of installed cable with the load
 4. Contractor to confirm conduit size and notify Consultant if it is less than 103mm

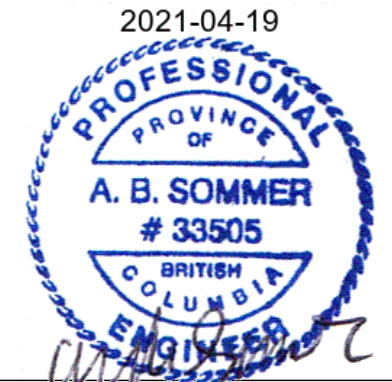
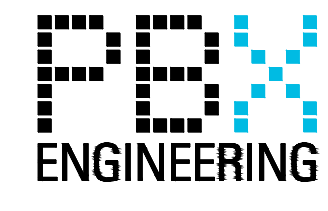
NOTES:

1. CONTRACTOR TO CONFIRM EXISTING BREAKER SIZE PRIOR TO ORDERING EQUIPMENT.
2. ITEMS IN LIGHT LINETYPE ARE EXISTING OUTSIDE OF SCOPE OF WORK. ITEMS IN DARK LINETYPE ARE TO BE PROVIDED UNLESS NOTED OTHERWISE.
3. PROVIDE NEW PANELBOARD TO REPLACE EXISTING FPE STABLOK 240V PANEL.
4. CONTRACTOR TO CONFIRM EXISTING BREAKER SIZE. PRIOR TO ORDERING EQUIPMENT, NOTIFY ENGINEER IF SIZE DEVIATES FROM DRAWING.
5. CONTRACTOR TO CONFIRM EXIST. CONDUIT SIZE. NOTIFY CONSULTANT IF CONDUIT IS SMALLER THAN 103mm.
6. PROVIDE ELECTRONIC TRIP BREAKER COMPLETE WITH CURRENT, POWER FACTOR, KW, AND KVA METERING CAPABILITIES.
7. CONTRACTOR TO CONFIRM EXISTING WELL PUMP HORSEPOWER AND FULL LOAD AMPS. PRIOR TO ORDERING EQUIPMENT.
8. CONTRACTOR SHALL PROVIDE ALL AS-CONSTRUCTED FIELD INFORMATION TO CONSULTANT REQUIRED FOR COMPLETION OF A SITE-WIDE ARC FLASH STUDY INCLUDING BUT NOT LIMITED TO: CONDUCTOR SIZES, CONDUCTOR LENGTHS, EQUIPMENT CONFIGURATIONS, BREAKER FRAME AND TRIP UNIT MODELS AND PHOTOS, TRANSFORMER NAMEPLATE DATA, AND MOTOR NAMEPLATE DATA.

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ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES	SCALE N/A DATE 26-JAN-21 DRAWING NUMBER E051
PROPOSED SINGLE LINE DIAGRAM	
DESIGNED KM DRAWN PBE CHECKED AS RECOMMENDED APPROVED APPROVED	NO. DATE REVISIONS

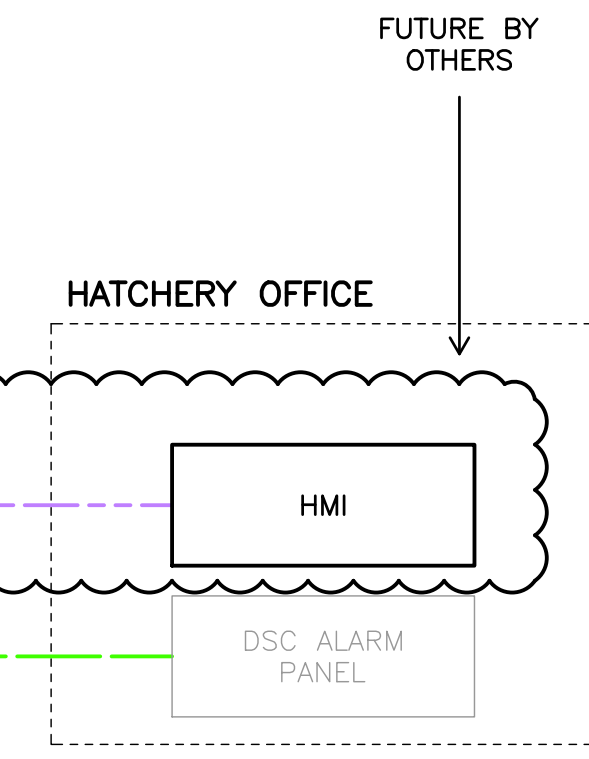
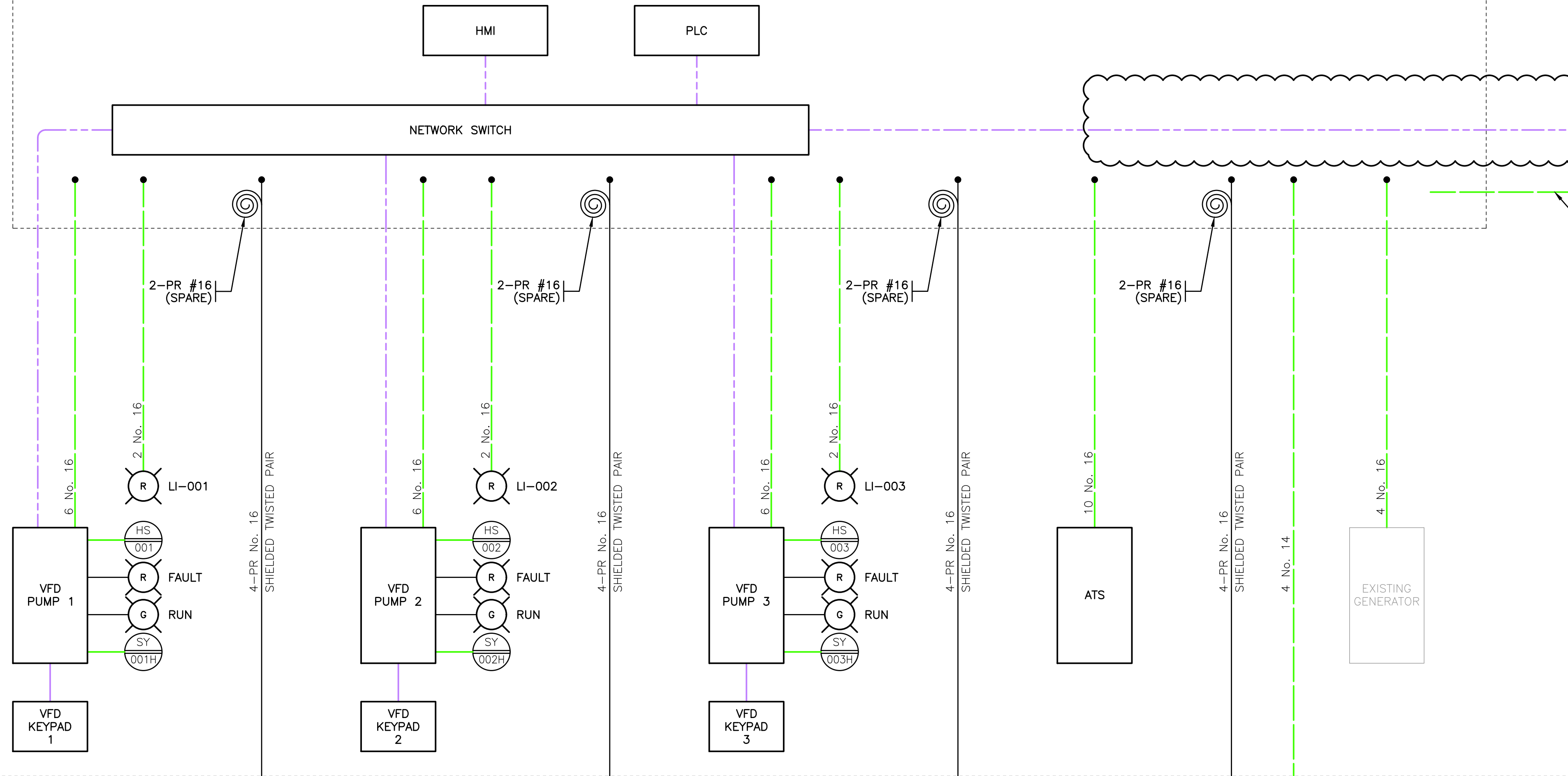


NOTES

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ELECTRICAL BUILDING

PUMP CONTROL PANEL



CABLE LEGEND	
	HIGH SPEED DATA (RS485, RS232, POTS)
	COAXIAL CABLE
	CONTROL CABLE
	ETHERNET (CAT 6)
	POWER OVER ETHERNET (CAT 6)
	COMPUTER CABLE/ANALOG SIGNAL

JUNCTION BOX

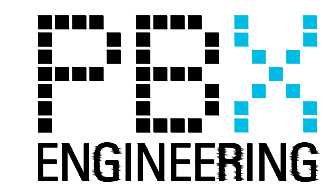


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NOTES:

- REFER TO I/O DRAWINGS FOR PLC CABINET TERMINATION DETAILS.



NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED	KM
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RECOMMENDED	AS
APPROVED	
APPROVED	

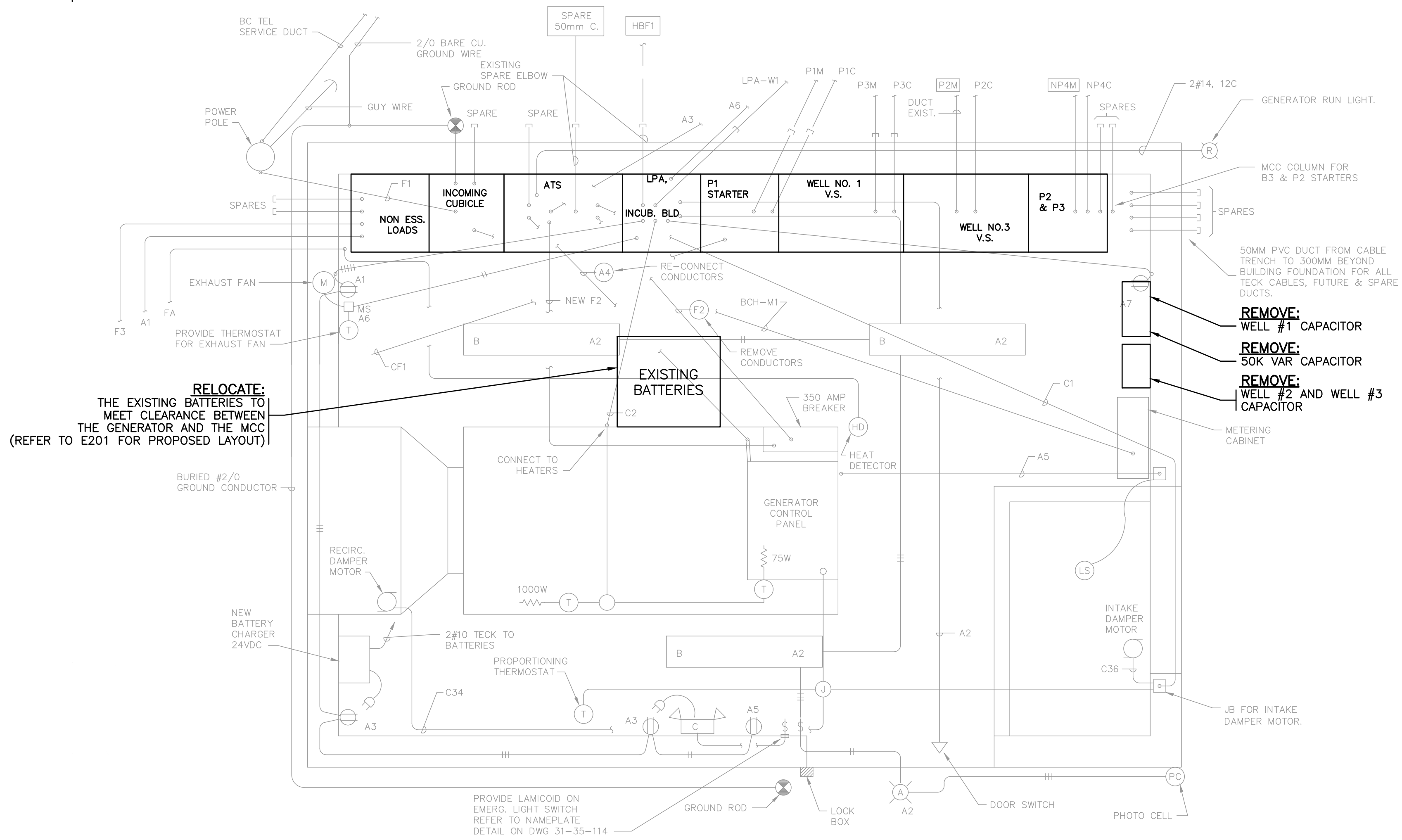
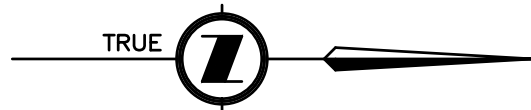
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REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

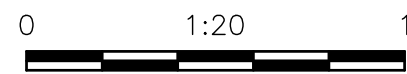
**BLOCK DIAGRAM -
COMMUNICATIONS &
INSTRUMENTATION**

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E060**
REVISION: 0

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DETAIL 1 BUILDING EQUIPMENT LAYOUT – DEMOLITION
1:20

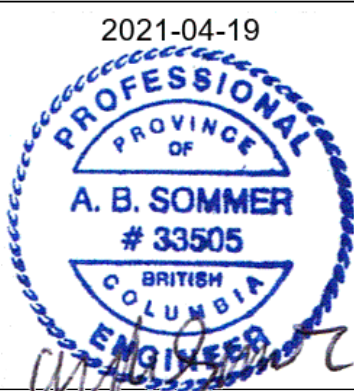
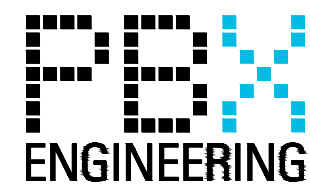


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ALL EQUIPMENT IS EXISTING
UNLESS NOTED OTHERWISE

NOTES:

- ITEMS IN LIGHT LINETYPE ARE EXISTING OUTSIDE OF SCOPE OF WORK. ITEMS IN DARK LINETYPE ARE TO BE REMOVED UNLESS NOTED OTHERWISE.



NOTES

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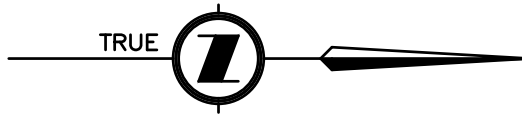
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REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

ELECTRICAL BUILDING - DEMOLITION

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E200**
REVISION: 0

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PROVIDE:
NEW DISTRIBUTION, MOTOR
CONTROL CENTRE, AND ATS.
REFER TO SINGLE LINE DIAGRAM.

PROVIDE:
1-27mm EMT
10 No. 14
1 No. 14 BOND

PROVIDE:
1-53mm EMT
24 No. 16
1 No. 14 BOND

PROVIDE:
NEW 208V PANEL A
PROVIDE:
1-35mm EMT
4-No. 4 Cu (PNL-A)
1-No. 6 BOND

PROVIDE:
NEW JUNCTION BOX FOR BC
HYDRO COMMUNICATION

PROVIDE:
1-35mm EMT
1 No. 14 BOND
(FOR FUTURE BCH COMM)
MAX. 270DEG TOTAL BENDS

PROVIDE:
NEW 15kVA 600/120V
TRANSFORMER TO BE WALL
MOUNTED ON TOP OF BCH METER

EXISTING:
BCH METER

AIR INTAKE LOUVRE

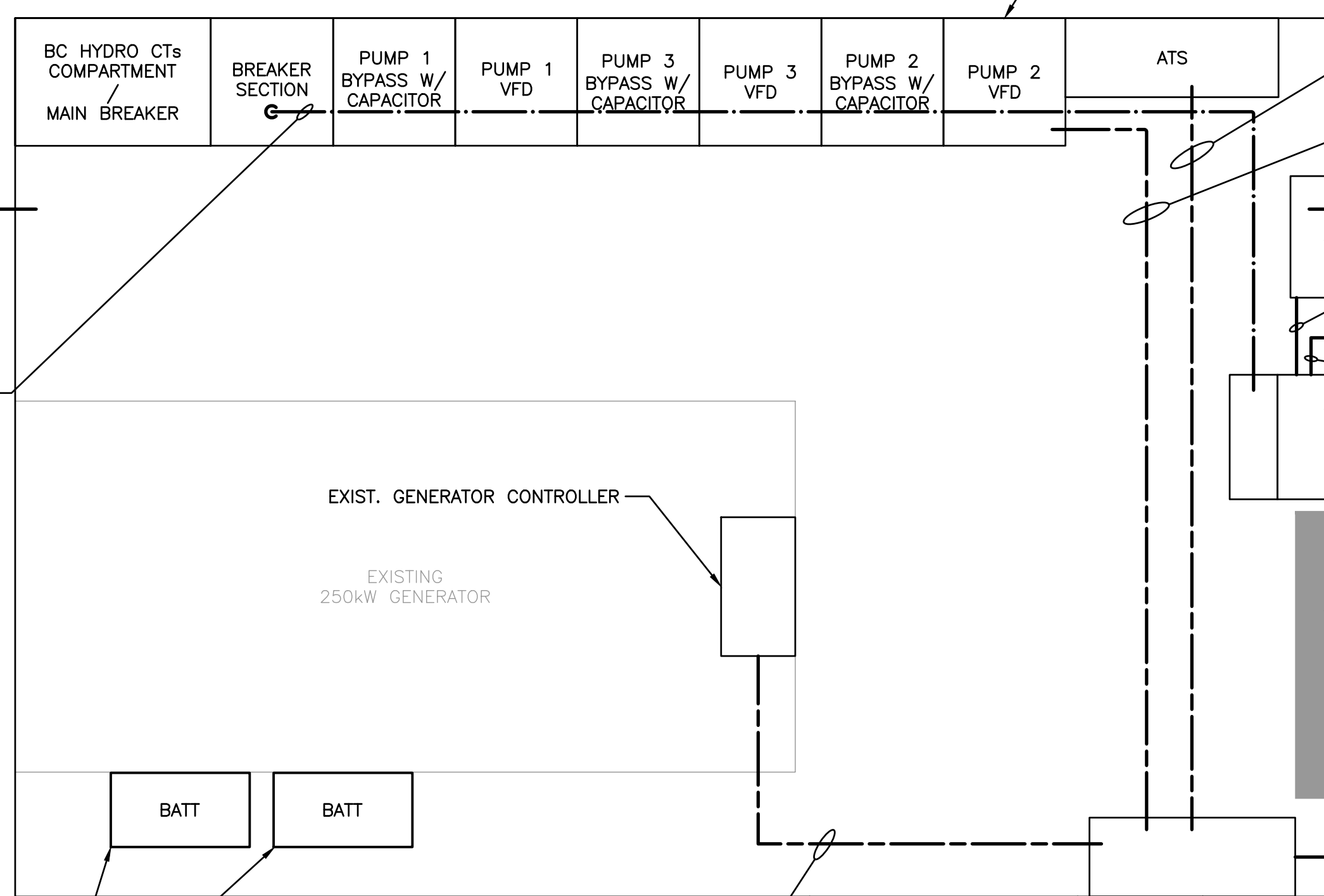
TO WELLS
TO AERATION TOWER

CONTINUED ON
DRAWING E002

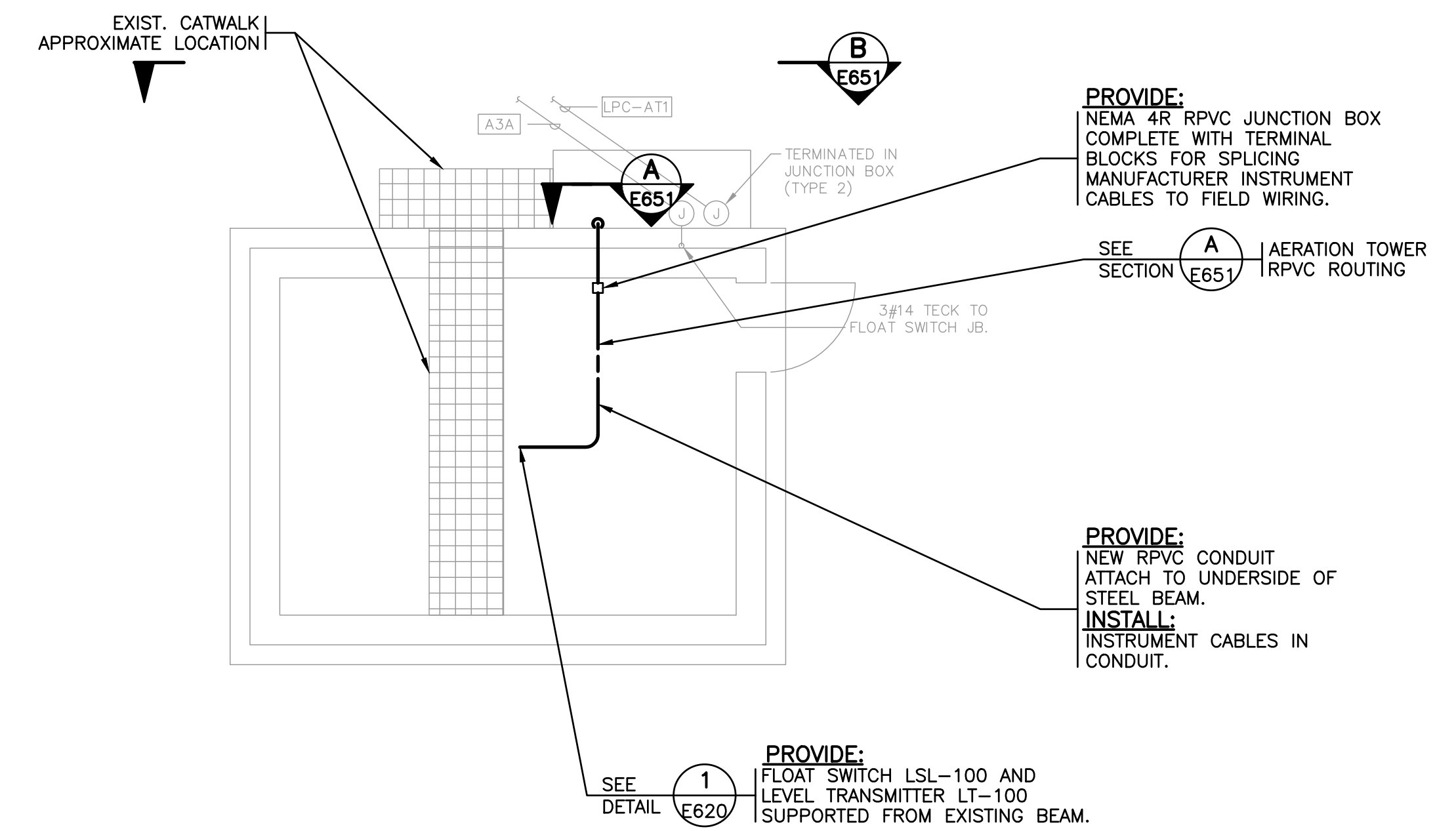
PROVIDE:
1-103mm RPVC (COMM)
4-2 PR No. 16 STP
1 No. 14 BOND
1-103mm RPVC (SPARE)

INSTALL:
CONTROL CABINET
PROVIDED BY OTHERS
(REMOVE EXISTING MAINTENANCE CUPBOARD)

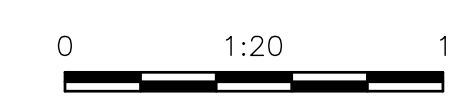
PROVIDE:
1-21mm EMT
3-No. 12 Cu (TX-PNL-A)
1-No. 12 BOND



DETAIL 1 ELECTRICAL BUILDING EQUIPMENT LAYOUT - PROPOSED
1:20



DETAIL 2 AERATION TOWER UPPER LEVEL
1:50



RELOCATE:
EXISTING GENERATOR BATTERIES.
PROVIDE NEW BATTERY RACK COMPLETE
WITH SEISMIC ANCHORAGE AS REQUIRED.

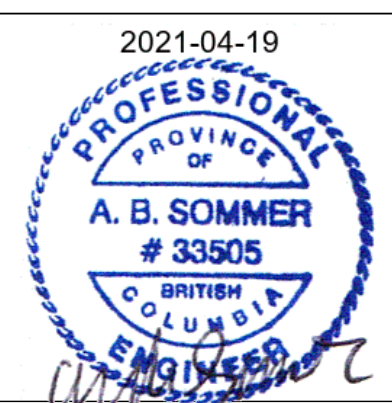
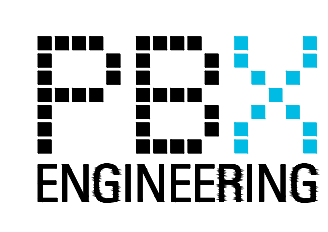
PROVIDE:
1-21mm EMT
4 No. 16
1 No. 14 BOND

- NOTES:**
- ITEMS IN LIGHT LINETYPE ARE EXISTING OUTSIDE OF SCOPE OF WORK. ITEMS IN DARK LINETYPE ARE TO BE PROVIDED UNLESS NOTED OTHERWISE.
 - JUNCTION BOX 150X150X150mm C/W LAMACOID LABEL "FOR BC HYDRO METER COMMUNICATIONS" PER BC HYDRO METERING REQUIREMENTS. EXTERIOR JUNCTION BOX SHALL BE NEMA 3R RATED OR BETTER.

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

**ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE**

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT		SCALE N/A DATE 26-JAN-21 DRAWING NUMBER E201 REVISION 0
COWICHAN HATCHERY ELECTRICAL UPGRADES		
ELECTRICAL BUILDING AND AERATION TOWER - PROPOSED		

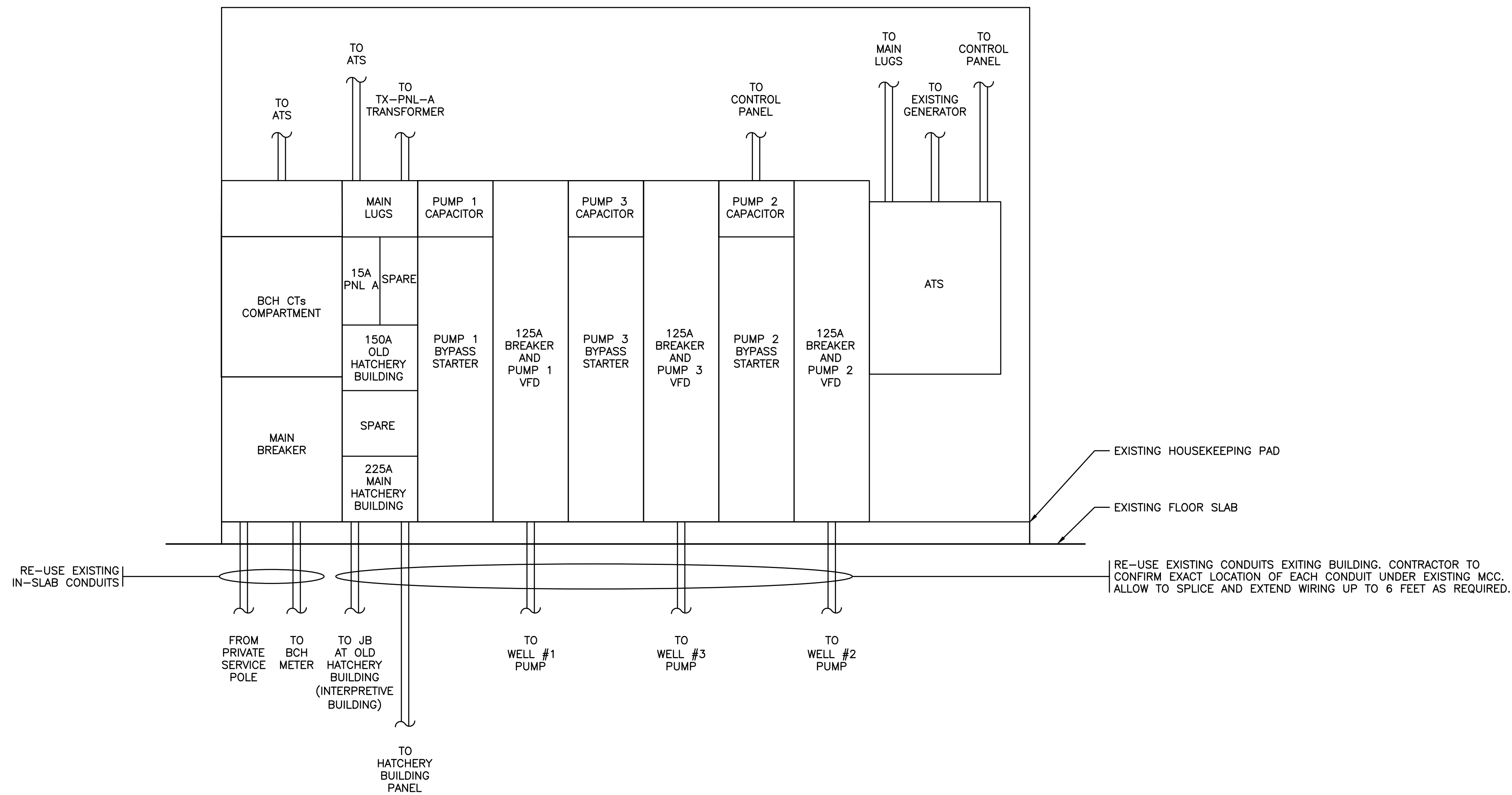
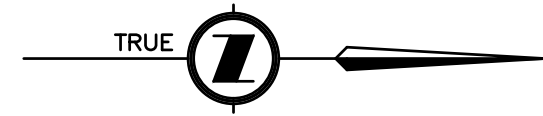


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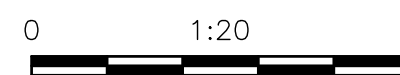
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0	2021-04-19	ISSUED FOR TENDER

DESIGNED	
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APPROVED	
APPROVED	

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ELEVATION A ELECTRICAL BUILDING - PROPOSED
 1:20 WEST WALL ELEVATION



NOTES:

- EXISTING HOUSEKEEPING PAD INCLUDES CENTRE CHANNEL WHICH WILL ALLOW FOR RE-DIRECTION OF WIRING UNDER THE NEW MCC AS REQUIRED.

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

		DESIGNED	SCALE
		KM	N/A
		DRAWN	DATE
		PBX	26-JAN-21
		CHECKED	DRAWING NUMBER
		AS RECOMMENDED	E202
		APPROVED	REVISION
		APPROVED	0

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

**ELECTRICAL BUILDING
WEST WALL ELEVATION - PROPOSED**

P:\2021-04-19 Cowichan Hatchery Distribution Upgrades\01 - Consultation - Engineering Services\Drawings\MCCAD\E202_00_19_04_2021_10:44 AM - ROBERT PETERSON

P:\2021-04-19\Cowichan Hatchery Distribution Upgrade\01 - Consultation - Engineering Services\Drawings\CAD\210 - 01 - 19_04_2021_10:44 AM - ROBERT PETERSON

REMOVE: EXISTING 480V 200A MAIN SWITCH
 REMOVE: EXISTING PULL BOX
 REMOVE: EXISTING OUT OF SERVICE EQUIPMENT
 REMOVE: EXISTING 15A FUSE FOR SHOP HEATER
 REMOVE: 60A FUSE FOR 25kVA 480/120V TRANSFORMER



IRRIGATION PANEL & METER TO BE RETAINED. RE-FEED FROM NEW PANEL D. REFER TO SINGLE LINE DIAGRAM.

REMOVE: EXISTING 480V SPLITTER

REMOVE: EXISTING OUT OF SERVICE EQUIPMENT

REMOVE: EXISTING 600V, 150A FUSED SWITCH

REPLACE: EXISTING 120/240V PANEL WITH NEW 208V PANEL. REFER TO SINGLE LINE DIAGRAM. RE-TERMINATE EXISTING CONDUCTORS AT NEW PANEL.

REMOVE: EXISTING 480V - 120/240V 25kVA LDP TRANSFORMER.
 PROVIDE: NEW TRANSFORMER. REFER TO SINGLE LINE DIAGRAM.

REMOVE: EXISTING OUT OF SERVICE EQUIPMENT

REMOVE: EXISTING 480V - 120/240V 37.5kVA IRRIGATION PANEL TRANSFORMER

REMOVE: EXISTING 600V SPLITTER

REMOVE: EXISTING 600V - 480V TRANSFORMER LOCATED ON OPPOSITE SIDE OF PARTITION WALL.

REMOVE: EXISTING 600V, 100A SWITCH



REMOVE: 60A FUSE, 480V FOR THE 3HP SUB

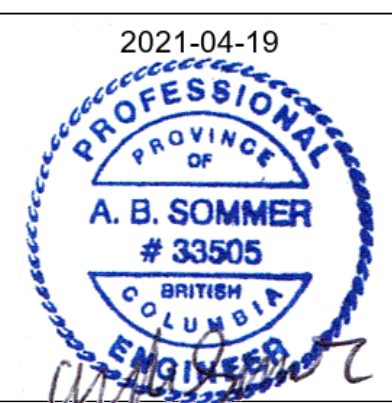
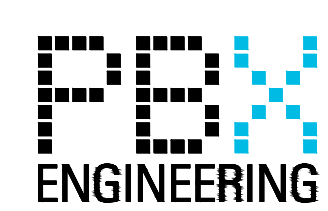
DETAIL 1 INTERPRETIVE BUILDING - EXISTING
 N.T.S. E210 240V AND 480V DISTRIBUTION

DETAIL 2 INTERPRETIVE BUILDING - EXISTING
 N.T.S. E210 600V DISTRIBUTION

**ISSUED FOR TENDER
 NOT FOR CONSTRUCTION**

ALL EQUIPMENT IS EXISTING
 UNLESS NOTED OTHERWISE

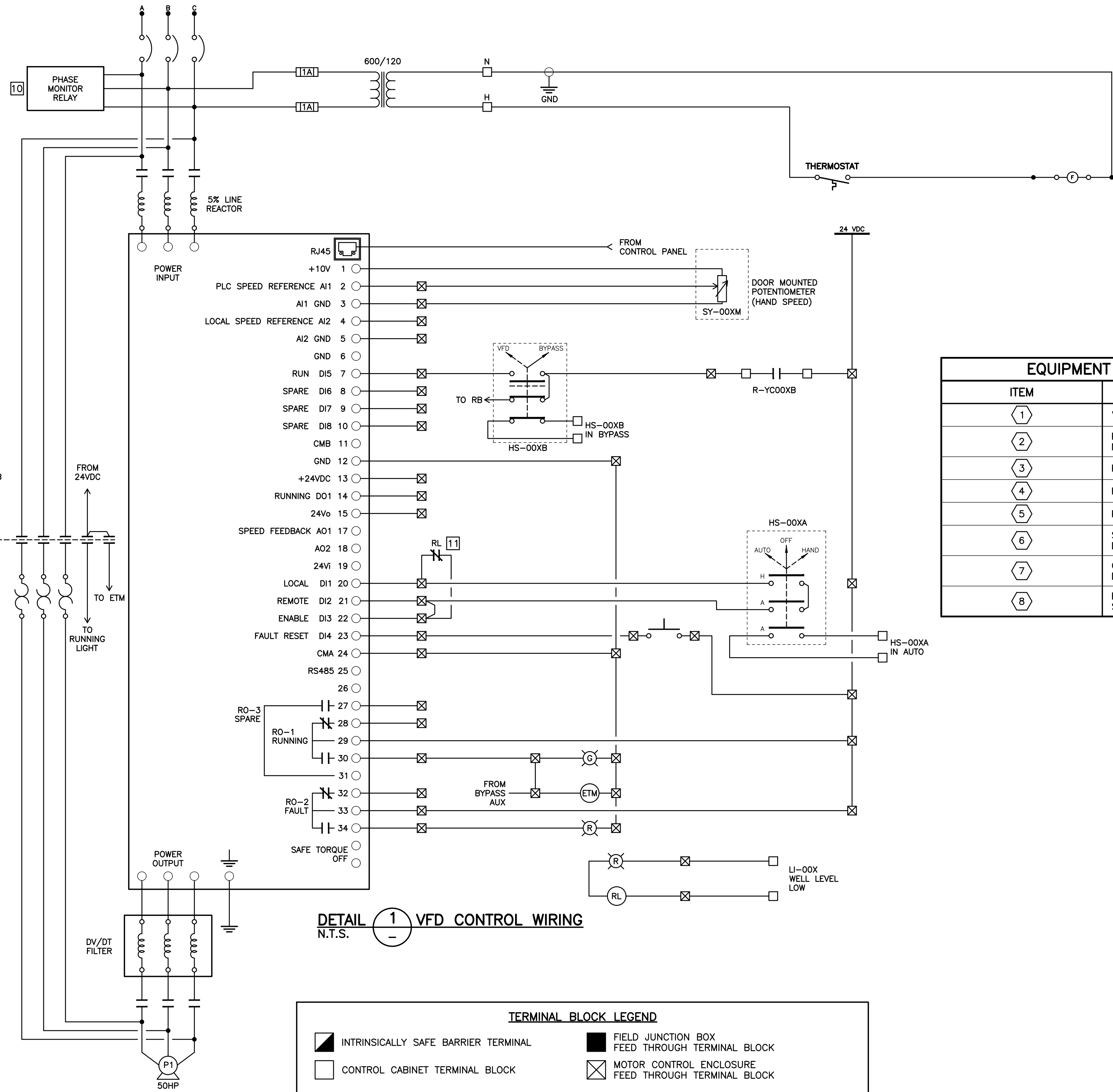
FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT		SCALE N/A DATE 26-JAN-21 DRAWING NUMBER E210 REVISION 0
COWICHAN HATCHERY ELECTRICAL UPGRADES		
INTERPRETIVE BUILDING - EXISTING		



NOTES

NO.	DATE	REVISIONS
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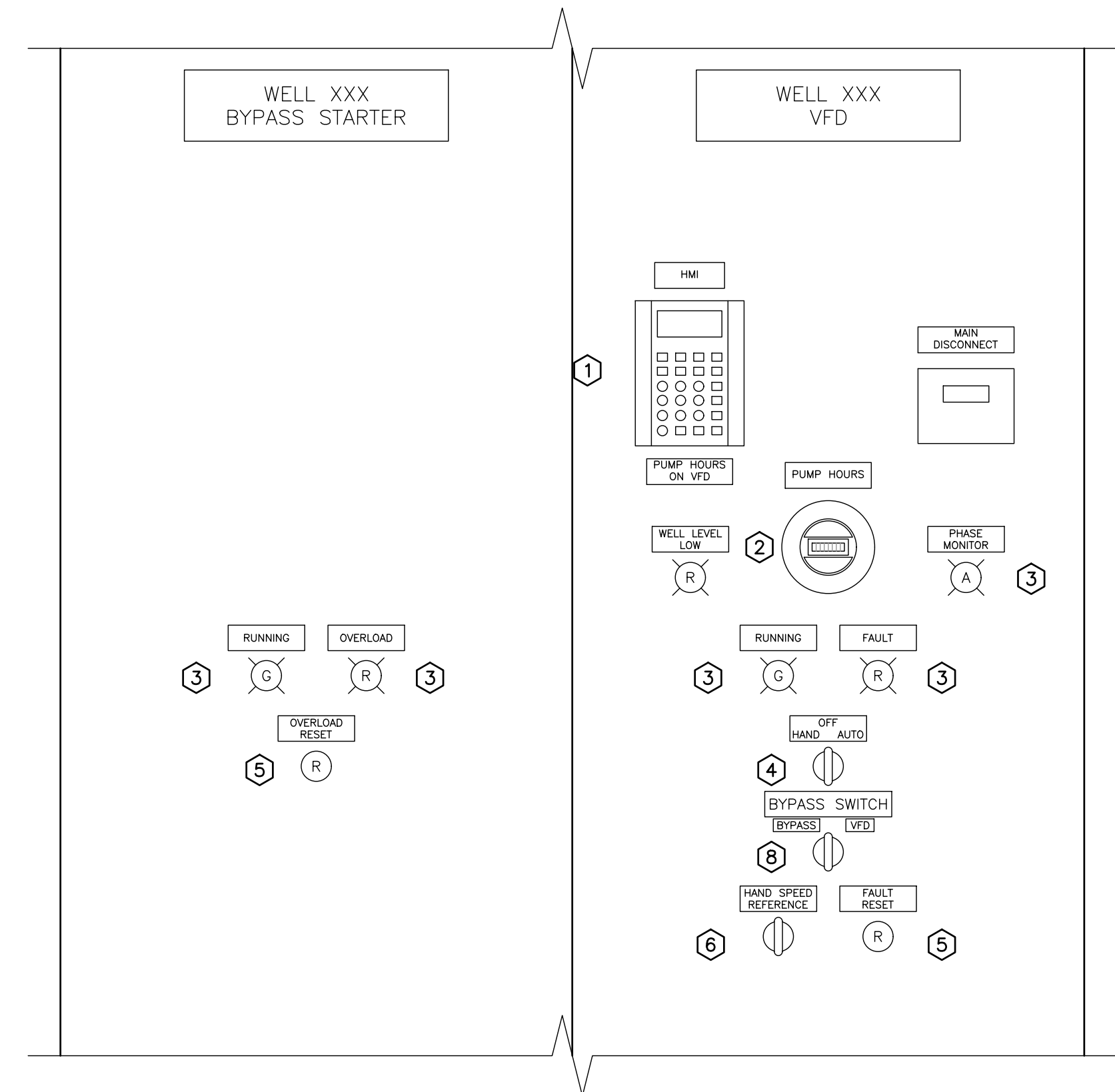
DESIGNED	
KM	
DRAWN	
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CHECKED	
AS	
RECOMMENDED	
APPROVED	
APPROVED	



NOTES:

- INTERNAL CABINET WIRING SHALL BE TEW (TINNED), No. 14 FOR 120VAC CIRCUITS, AND No. 18 FOR 24VDC CIRCUITS. UNLESS NOTED OTHERWISE.
- CONTRACTOR TO PROVIDE DETAILED SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION. INTERIOR AND EXTERIOR PANEL LAYOUTS AND WIRING DIAGRAMS TO BE PROVIDED AS PART OF THE SUBMISSION. REFER TO SPECIFICATIONS FOR SPECIFIC LAYOUT DETAILS AND EQUIPMENT REQUIREMENTS.
- FERRULES SHALL BE USED ON CONTROL CABLING TERMINATIONS.
- WIRING DIAGRAMS BASED ON THE EATON DG1 DRIVE. DIAGRAM INDICATES CONTROLS CONCEPT AND OPERATIONAL REQUIREMENTS. CONTRACTOR SHALL PROVIDE A COMPLETE AND FUNCTIONING SYSTEM AS REQUIRED TO ACHIEVE THE INTENT SHOWN HERE.
- PROVIDE LOCAL KEYPAD FOR ALL VFDs. MOUNT KEYPAD ON FRONT OF MCC ENCLOSURE.
- FANS NOT SHOWN ON VFD ENCLOSURE LAYOUT. PROVIDE FANS AS REQUIRED TO MAINTAIN VFD OPERATING TEMPERATURE.
- DETAILED BYPASS CONTROL WIRING NOT SHOWN. EQUIPMENT MANUFACTURER SHALL PROVIDE BYPASS CONTACTORS AND CONTROL WIRING AS REQUIRED TO PROVIDED A COMPLETE AND FUNCTIONING BYPASS SYSTEM.
- REFER TO THE I/O DRAWINGS FOR TERMINAL WIRING, TERMINATIONS AND I/O ADDRESSES.
- CONTROL AND FEEDBACK SIGNALS BETWEEN VFD AND SCADAPACK CONTROLLER ARE BY MODBUS TCP/IP.
- WIRING FOR PHASE MONITOR INDICATOR LIGHT AND INTERLOCK NOT SHOWN. INTERLOCK PHASE MONITORING WITH BYPASS STARTER.
- WELL LOW LEVEL INTERLOCK FOR VFD HAND OPERATION. RELAY CONTACT SHALL OPEN ON WELL LOW LEVEL.

EQUIPMENT LIST	
ITEM	DESCRIPTION
1	VFD HMI
2	PUMP HOUR METER NON-RESETTABLE
3	PILOT LIGHTS
4	HOA SWITCH
5	PUSH BUTTONS
6	SPEED REFERENCE DIAL
7	CIRCUIT BREAKER DISCONNECT
8	BYPASS SELECTOR SWITCH



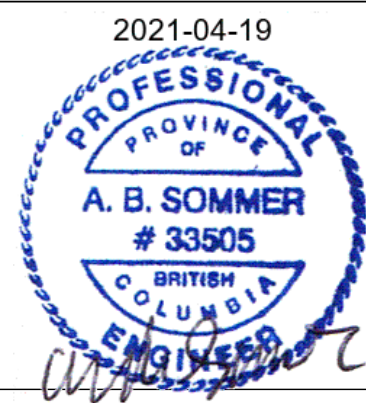
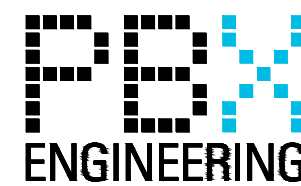
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NOT FOR CONSTRUCTION**

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

DETAILS - TYPICAL VFD

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E600**
REVISION: 0



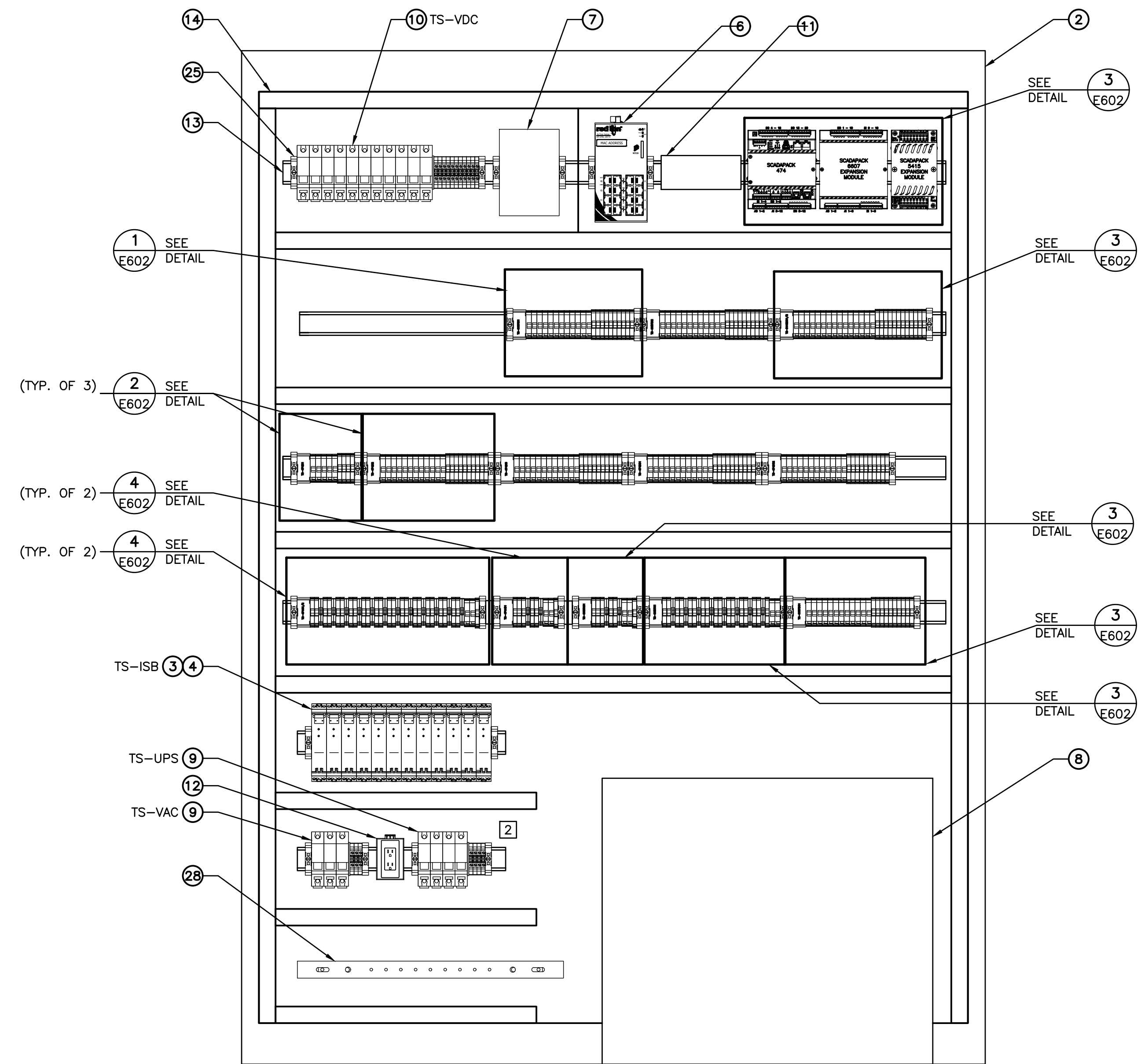
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NO.	DATE	REVISIONS
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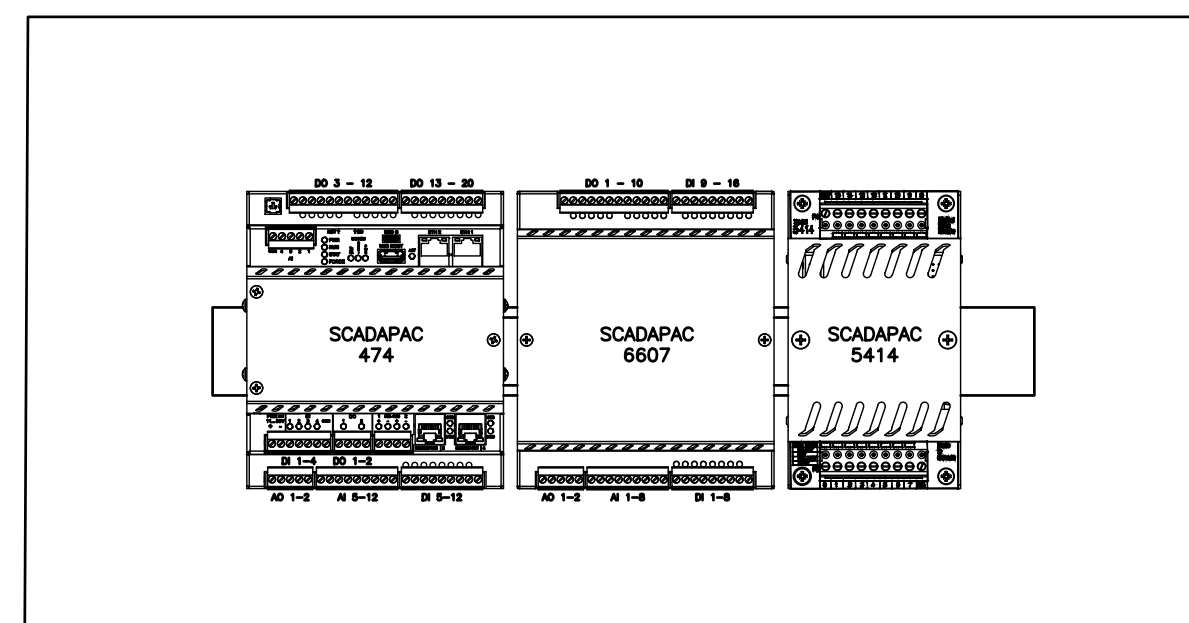
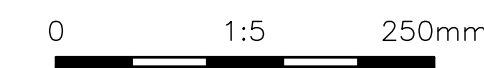
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DRAWN: PBX
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RECOMMENDED: APPROVED
APPROVED:

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EQUIPMENT LIST (MER-CP-1)				
ITEM NO.	DESCRIPTION	MANUFACTURER	PART NO.	QUANTITY
1	ENCLOSURE, NEMA 12 1527 X 1221 X 322 C/W FLOORMOUNT FEET	8	1422B12F	1
2	ENCLOSURE BACKPANEL	HAMMOND	22P5644	1
3	INTRINSICALLY SAFE RELAY, 1 CHANNEL	WEIDMULLER	ACT-20X-HDI	9
4	INTRINSICALLY SAFE BARRIER, 1 CHANNEL	WEIDMULLER	ACT-20X-HAI	3
5	HMI, 12.1" COLOR LCD (MOUNT ON DOOR - NOT SHOWN)	MAPLE	HMI5121 XL	1
6	NETWORK SWITCH, 16 PORT, MANAGED, DIN-RAIL	RED LION	NT24K-16X	1
7	POWER SUPPLY, 480W, 85-264VAC INPUT, 24VDC OUTPUT, QUINT-PS/1AC/24DC/20	PHOENIX CONTACT	2866776	1
8	UPS, 1500VA C/W INTELISLOT RELAY CARD FOR STATUS MONITORING	LIEBERT	GTX4	1
9	CIRCUIT BREAKERS, 120VAC, SIZE AS REQUIRED	WEIDMULLER	CB4200	AS REQ'D
10	CIRCUIT BREAKERS, 24VDC, SIZE AS REQUIRED	WEIDMULLER	CB4200	AS REQ'D
11	ROUTER	RED LION	RAM 6021	1
12	DIN RAIL MOUNT RECEPTACLE	-	-	1
13	TS35 DIN-RAIL	-	AS REQUIRED	AS REQ'D
14	WIRE DUCT	-	AS REQUIRED	AS REQ'D
15	ENCLOSURE VENTILATION FAN (NOT SHOWN)	-	-	1
16	THERMOSTAT (NOT SHOWN)	-	-	1
17	ENCLOSURE LED LIGHT KIT COMPLETE WITH DOOR SWITCH (NOT SHOWN)	-	-	1
18	FUSES - 0.25A FOR FUSED TERMINAL BLOCKS	-	-	AS REQ'D
19	RJ45 JACK C/W CAT6 CABLE TO NETWORK SWITCH (MOUNT ON DOOR FRONT - NOT SHOWN)	-	-	1
20	FEED THROUGH TERMINAL BLOCK	WEIDMULLER	SAK 4	AS REQ'D
21	FUSED TERMINAL BLOCK C/W LED INDICATOR	WEIDMULLER	ASK1	AS REQ'D
22	TERMINAL STRIP LABELS	WEIDMULLER	SCHT 5	AS REQ'D
23	KNIFE DISCONNECT TERMINAL BLOCK	WEIDMULLER	SAKR/35	AS REQ'D
24	GROUND TERMINAL BLOCK	WEIDMULLER	EK4	AS REQ'D
25	PARTITION PLATES, END STOPS	WEIDMULLER	AS REQ'D	AS REQ'D
26	SOLID STATE RELAYS	PHOENIX CONTACT	PLC-INTERFACE	AS REQ'D
27	NOT USED			1
28	25MMW GROUND BUS, PRE-DRILLED AND TAPPED, 305MM LONG	-	-	1
29	SCADAPACK 474 CONTROLLER	SCHNEIDER		1
30	SCADAPACK 6607 EXPANSION MODULE	SCHNEIDER		1
31	SCADAPACK 5415 DRY CONTACT VERSION EXPANSION MODULE	SCHNEIDER		1
32	NOT USED			1
33	NOT USED			
34	NOT USED			
35	NOT USED			



DETAIL 1 CONTROLS ENCLOSURE MER-CP-1
1:5 LAYOUT



NOTES:

- INCLUDED FOR INFORMATION ONLY. PANEL TO BE MANUFACTURED BY OWNER AND SUPPLIED TO CONTRACTOR FOR INSTALLATION.
- MODIFY UPS OUTPUT TO PROVIDE HARD WIRED CONNECTION TO TERMINAL STRIP.
- CONTROL SIGNAL WIRE LABELLING (PLC CARD TO TERMINAL BLOCK) TO CONSIST OF 6 NUMBERS THAT MAKE UP THE PHYSICAL LOCATION ON THE PLC CARD THE SIGNAL IS WIRED TO. THESE SIX DIGITS WILL CONSIST OF THE RACK, SLOT AND CHANNEL INFORMATION AS RRSSCC. POWER SIGNALS SHOULD BE LABELED WITH A + OR - CHARACTER AND THE END (RRSSCC+, RRSSCC-) IF NECESSARY.
- FIELD WIRE LABELS (FIELD DEVICE THROUGH TO CONTROL CABINET TERMINAL BLOCKS) TO CONSIST OF THE DEVICE NAME WITH LOOP NUMBER AND WIRE NUMBER. THE DEVICE NAME AND LOOP NUMBER WILL MATCH THE NAMING FROM THE P&IDS (WHERE AVAILABLE) AND I/O LOOP DRAWINGS. FIELD CABLING WILL INCLUDE A LABEL FOR EACH CONDUCTOR WITH THE CABLE (FOR EXAMPLE FIT1000-1, FIT1000-2). THE SAME LABEL NAME WILL BE USED FOR ALL FIELD CONNECTIONS FROM THE CONTROL CABINET TO THE END DEVICE (INCLUDING TERMINATIONS WITHIN JUNCTION BOXES).

FOR INFORMATION ONLY

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

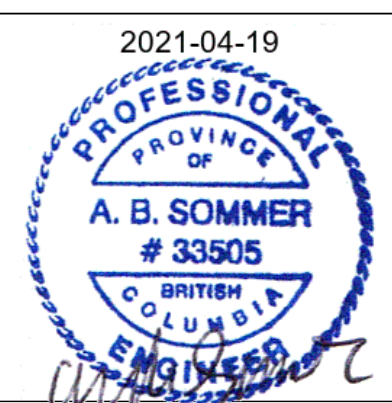
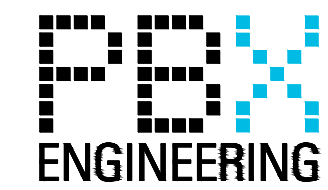
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CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR
ENGINEER'S APPROVAL PRIOR TO FABRICATION**

**FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT**

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

**CONTROL PANEL LAYOUT
SHEET 1 OF 2**

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E601**
REVISION: 0



NOTES

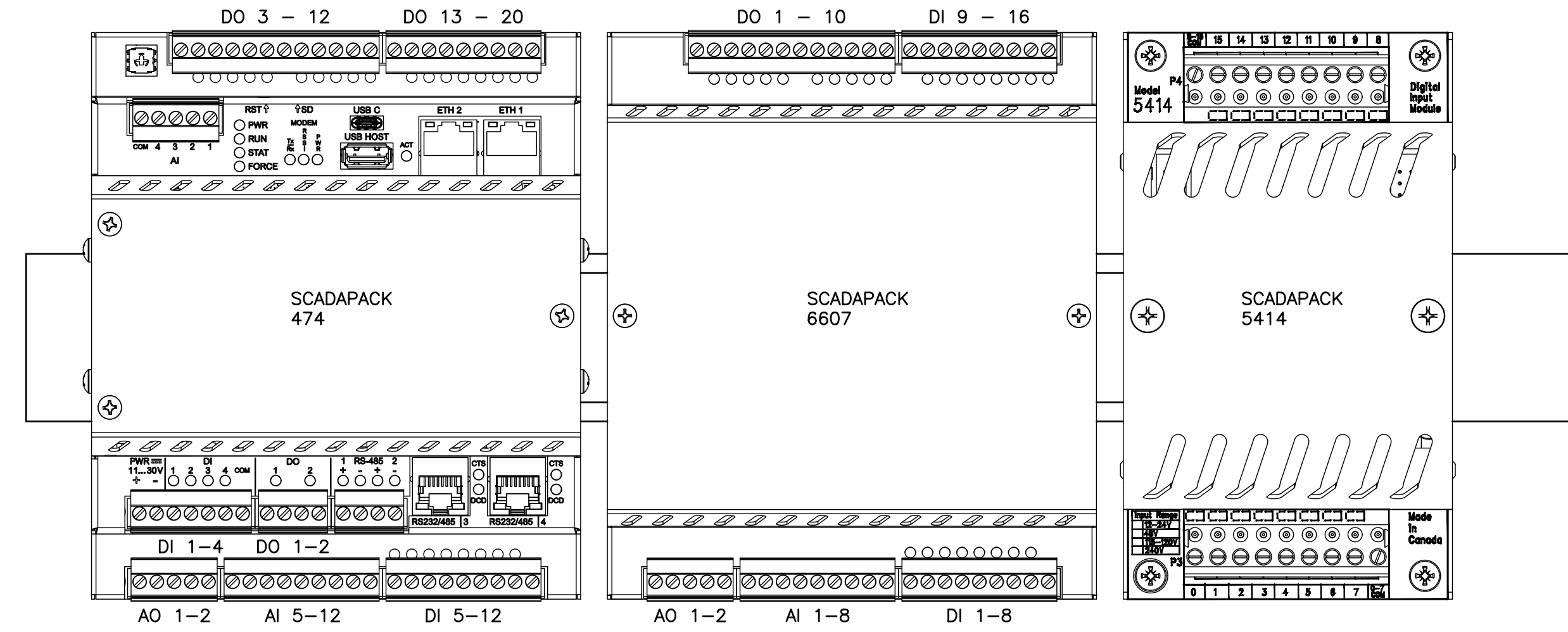
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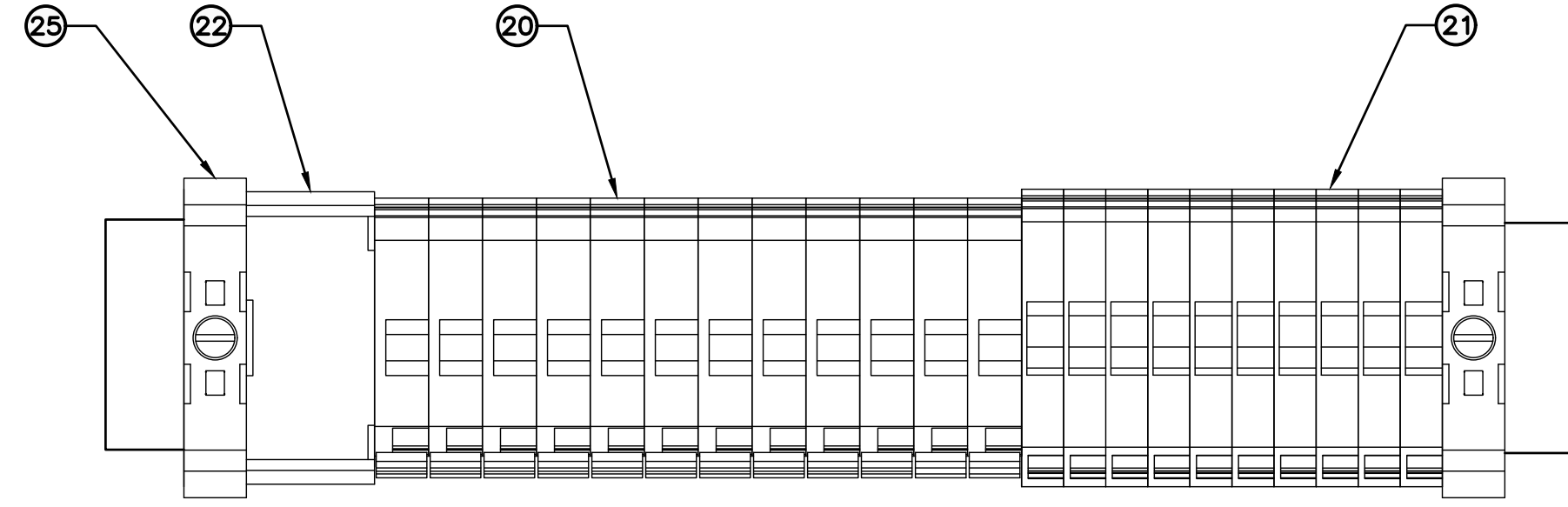
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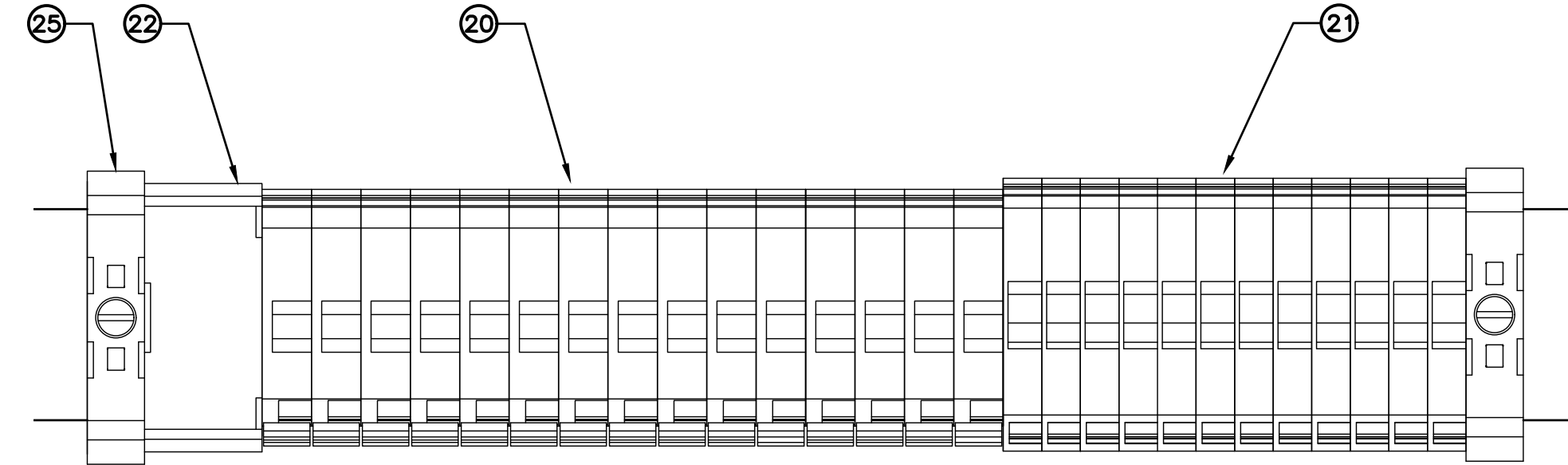
1. INCLUDED FOR INFORMATION ONLY. PANEL TO BE MANUFACTURED BY OWNER AND SUPPLIED TO CONTRACTOR FOR INSTALLATION.
2. REFER TO DRAWING E-601 FOR EQUIPMENT LIST.



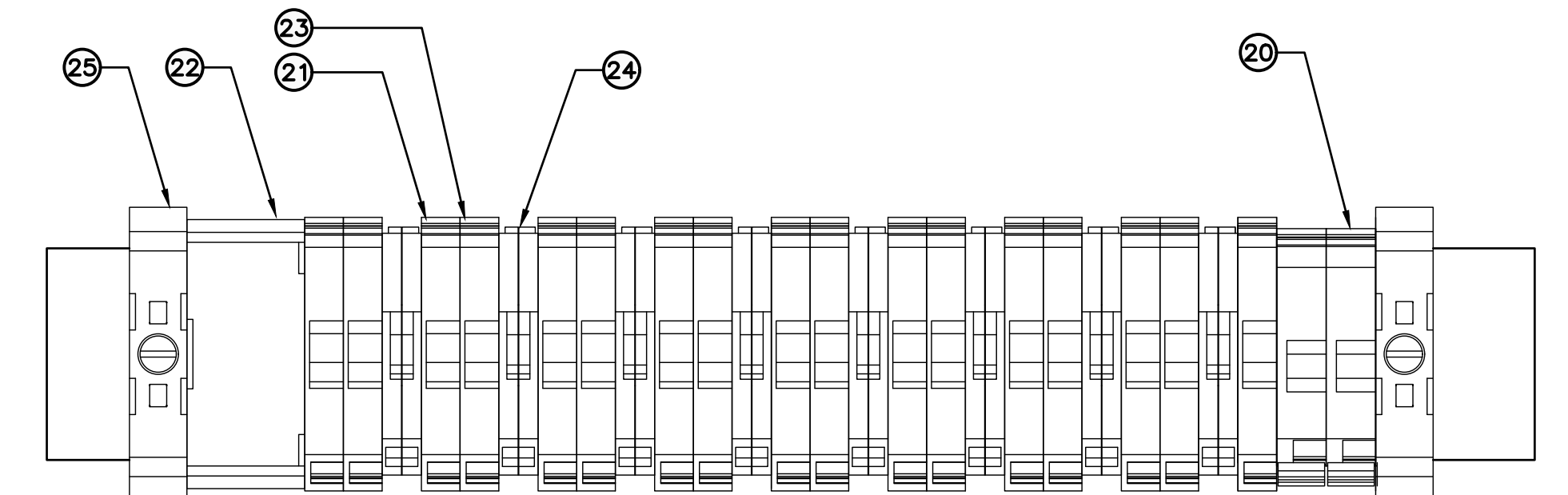
DETAIL 1 MAIN ELECTRICAL ROOM PLC (MER-CP-1)
RACK 1 LAYOUT
1:1 E601



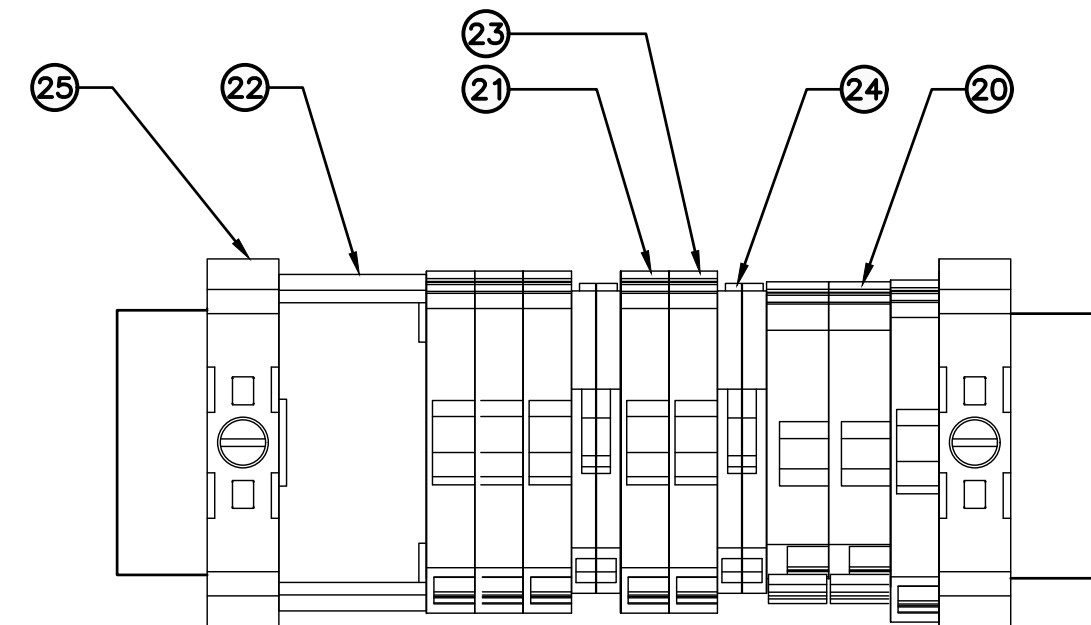
DETAIL 2 474 & 6607 DIGITAL INPUT/OUTPUT TERMINAL STRIP
1:1 E601



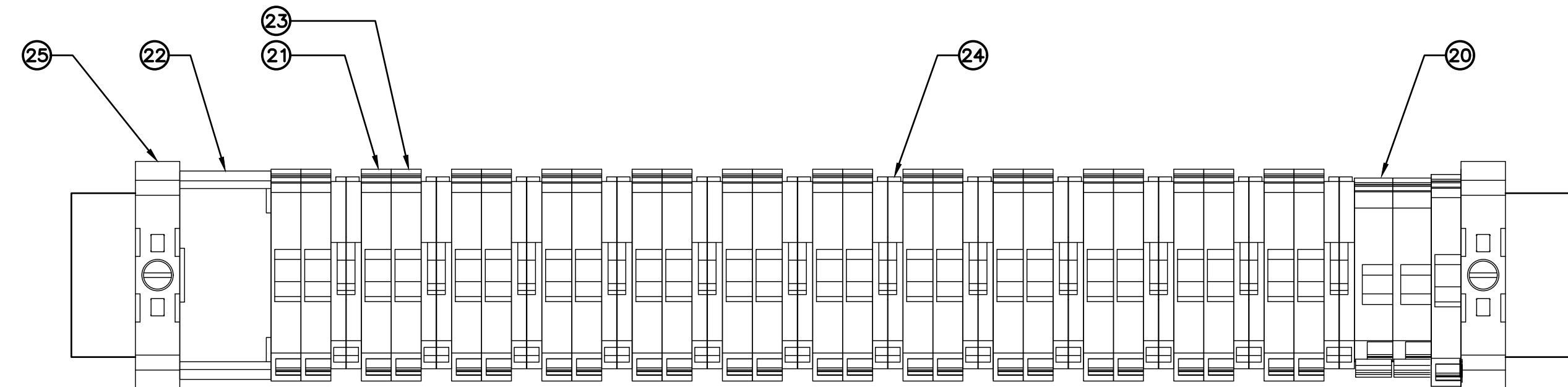
DETAIL 3 5415 EXPANSION CARD DIGITAL OUTPUT TERMINAL STRIP
1:1 E601



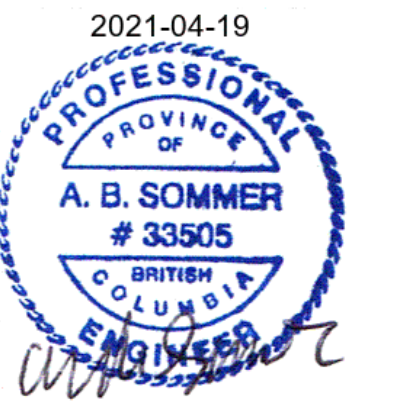
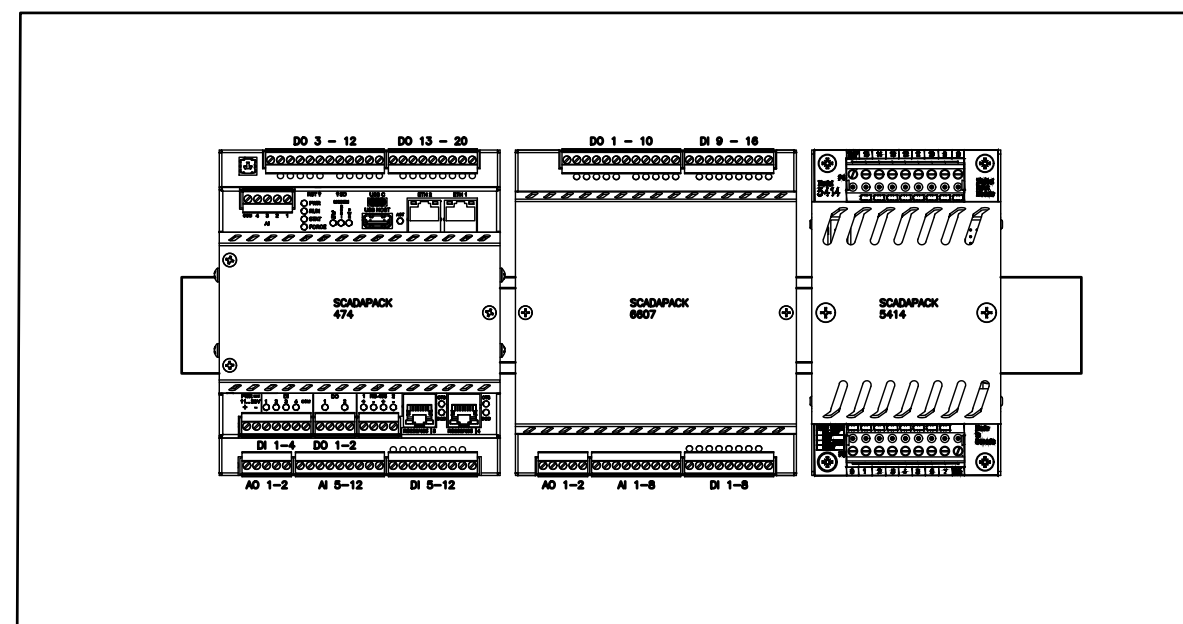
DETAIL 4 6607 EXPANSION CARD ANALOG INPUT TERMINAL STRIP
1:1 E601



DETAIL 5 474 & 6607 EXPANSION CARD ANALOG OUTPUT TERMINAL STRIP
1:1 E601



DETAIL 6 474 ANALOG INPUT TERMINAL STRIP
1:1 E601 (COMBINED INPUT TERMINAL BLOCKS 1 & 2)



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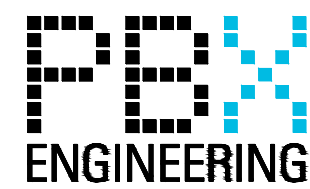
FOR INFORMATION ONLY

**FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT**

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

**CONTROL PANEL LAYOUT
SHEET 2 OF 2**

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E602**
REVISION: 0



**FUNCTIONAL DESIGN ONLY
CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR
ENGINEER'S APPROVAL PRIOR TO FABRICATION**

**ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE**

NOTES

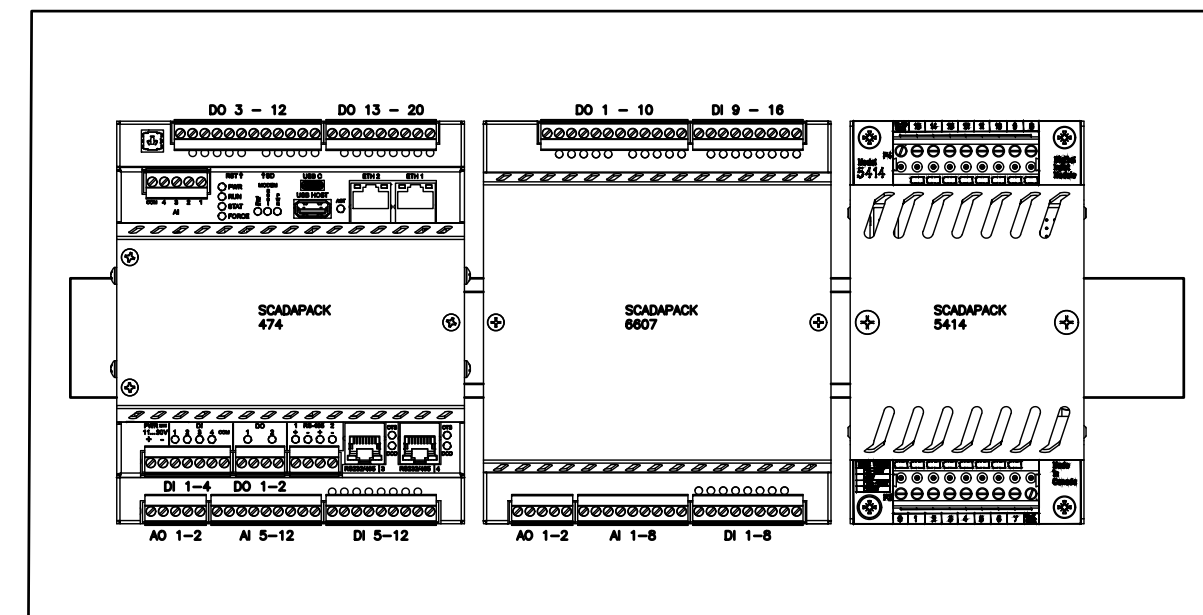
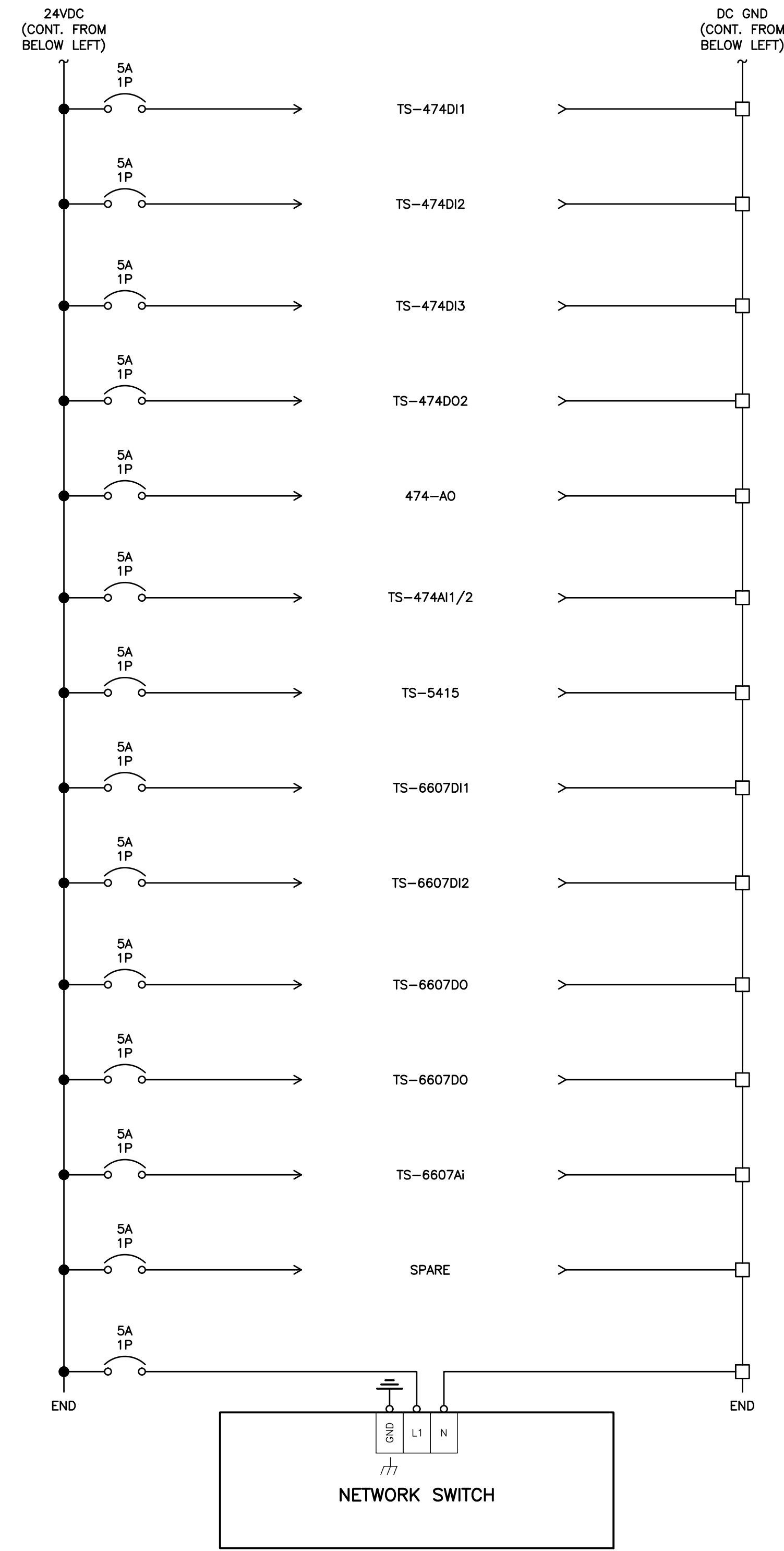
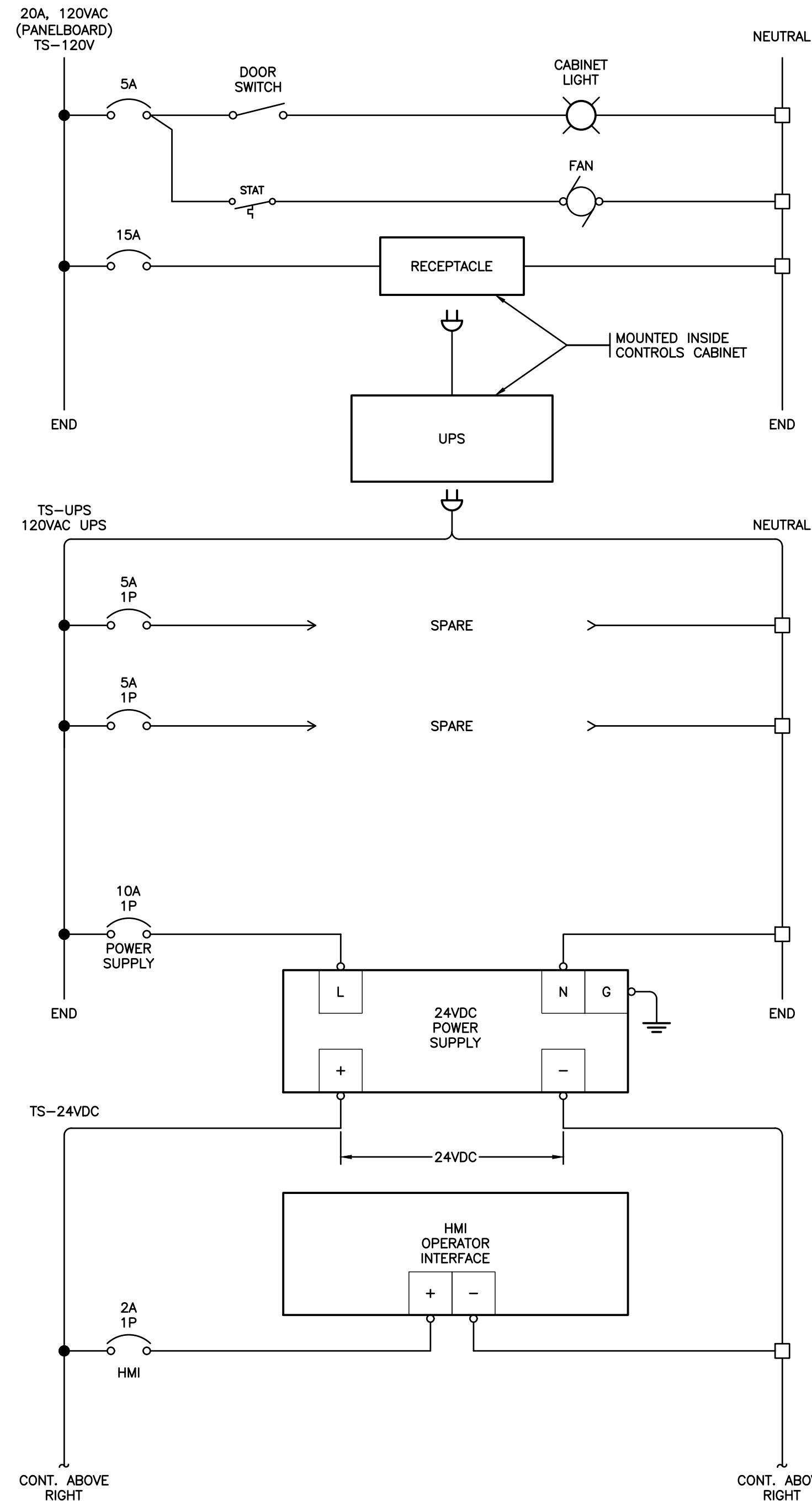
NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED: KM
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CHECKED: AS
RECOMMENDED: AS
APPROVED: [Signature]
APPROVED: [Signature]

DATE: 2021-04-19 11:03 FILE: P:\030310_Cowichan_Hatchery_Distribution_Upgrade\01_Consulting_Engineering_Services\Drawings\ACAD\E602.dwg

NOTES:

1. INCLUDED FOR INFORMATION ONLY. PANEL TO BE MANUFACTURED BY OWNER AND SUPPLIED TO CONTRACTOR FOR INSTALLATION.



TERMINAL BLOCK LEGEND

	INTRINSICALLY SAFE BARRIER TERMINAL		KNIFE-DISCONNECT TERMINAL BLOCK
	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

FUNCTIONAL DESIGN ONLY
CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR
ENGINEER'S APPROVAL PRIOR TO FABRICATION

FOR INFORMATION ONLY

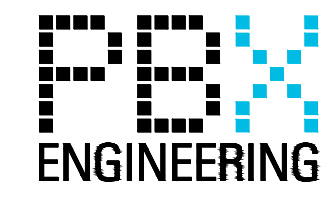
ISSUED FOR TENDER
NOT FOR CONSTRUCTION

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY
ELECTRICAL UPGRADES

CONTROL PANEL - WIRING DIAGRAMS
SHEET 1 OF 14

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E603**
REVISION: 0



NOTES

NO.	DATE	REVISIONS
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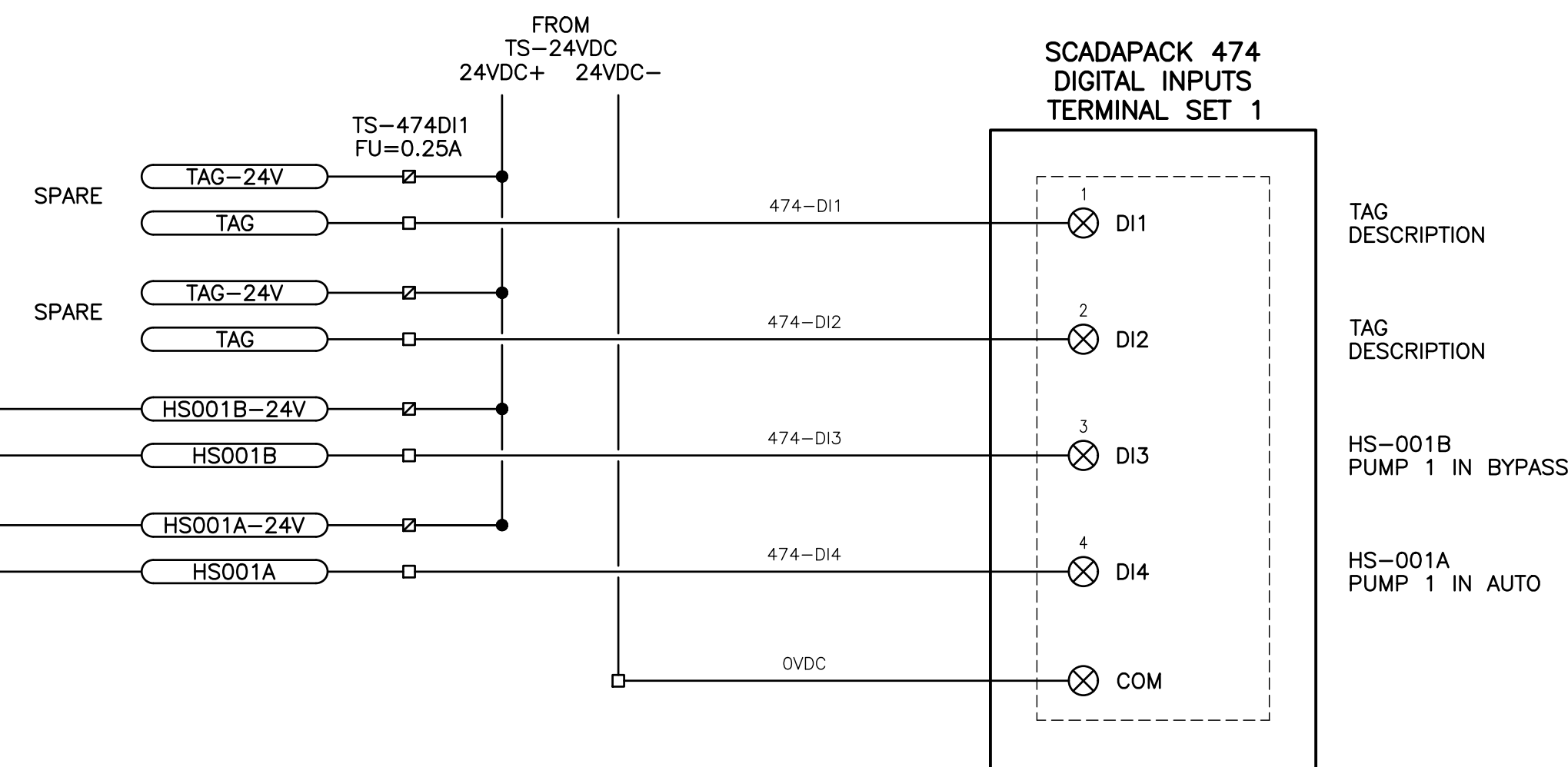
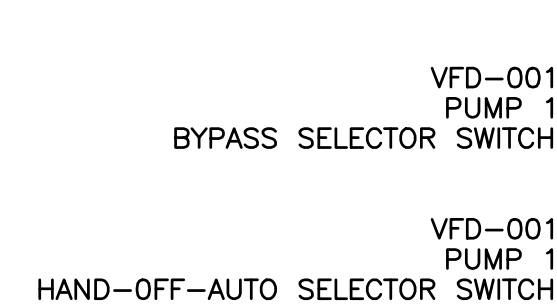
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DRAWN	PBX
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RECOMMENDED	AS
APPROVED	
APPROVED	

DATE: 2021-04-19 11:03 FILE: P:\0510_Cowichan Hatchery Distribution Upgrades\01_Consulting Engineers Services\Drawings\CAD\E603_0.dwg

FIELD DEVICE

FIELD JUNCTION BOX

CONTROL CABINET



NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

TERMINAL BLOCK LEGEND

- INTRINSICALLY SAFE BARRIER TERMINAL
- KNIFE-DISCONNECT TERMINAL BLOCK
- FEED THROUGH TERMINAL BLOCK
- FUSED TERMINAL BLOCK

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

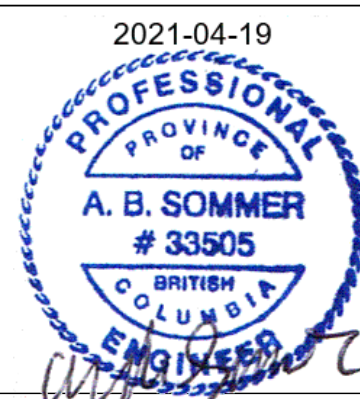
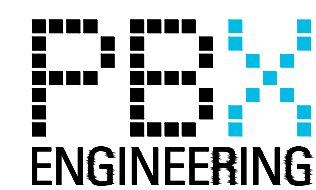
ISSUED FOR TENDER NOT FOR CONSTRUCTION

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY ELECTRICAL UPGRADES

CONTROL PANEL - WIRING DIAGRAMS SHEET 2 OF 14

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E604**
REVISION: PA

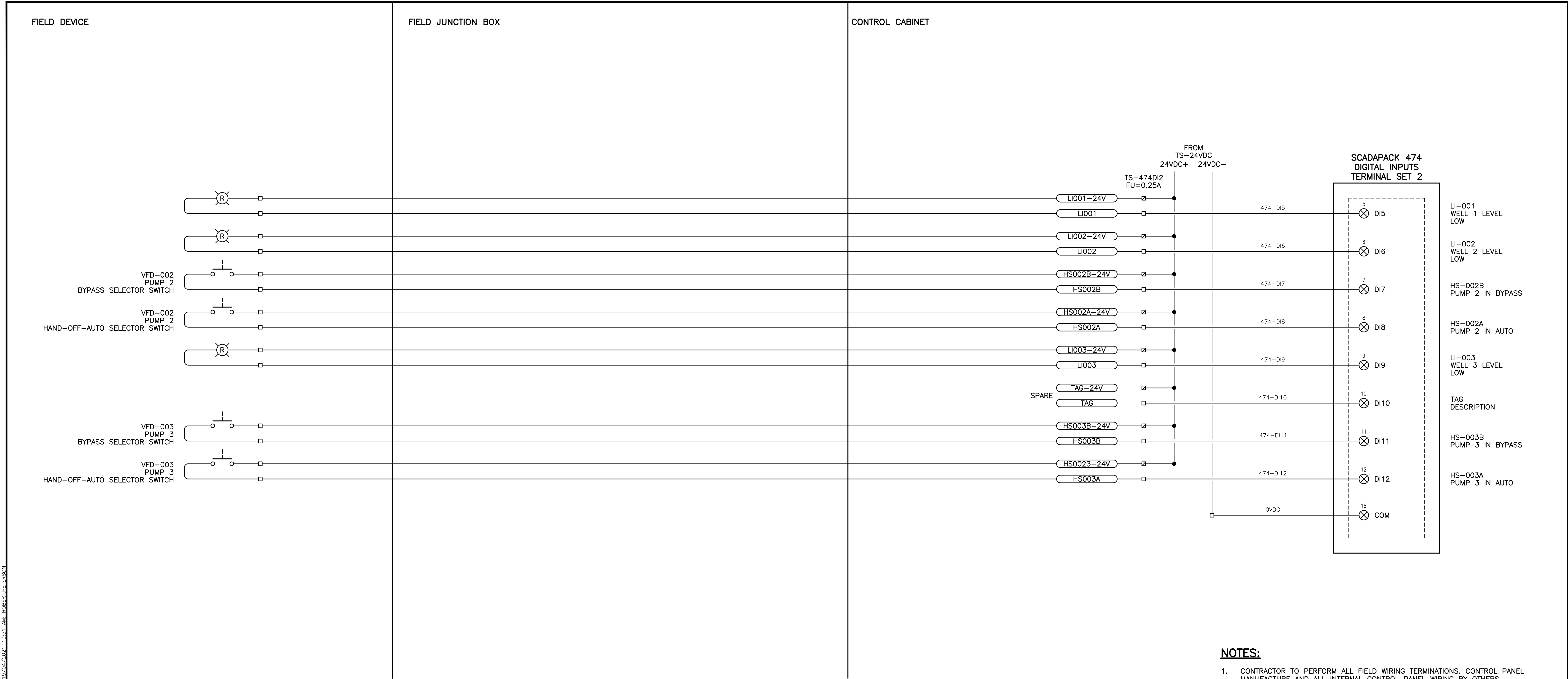


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NO.	DATE	REVISIONS
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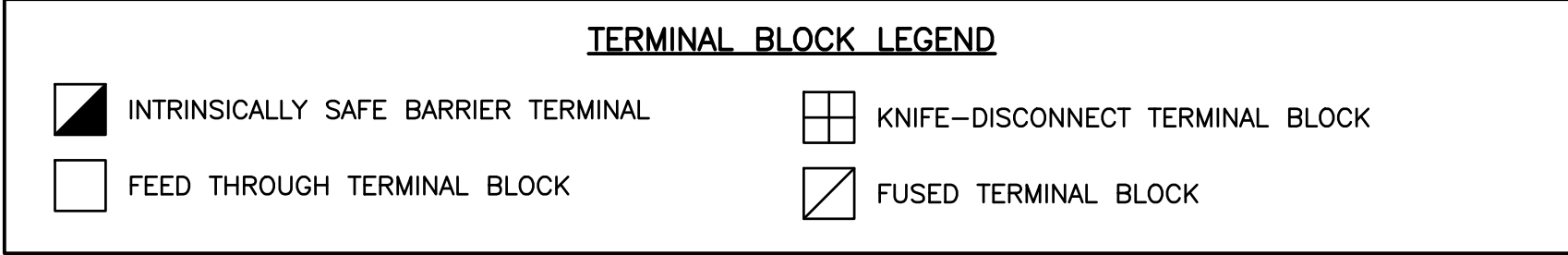
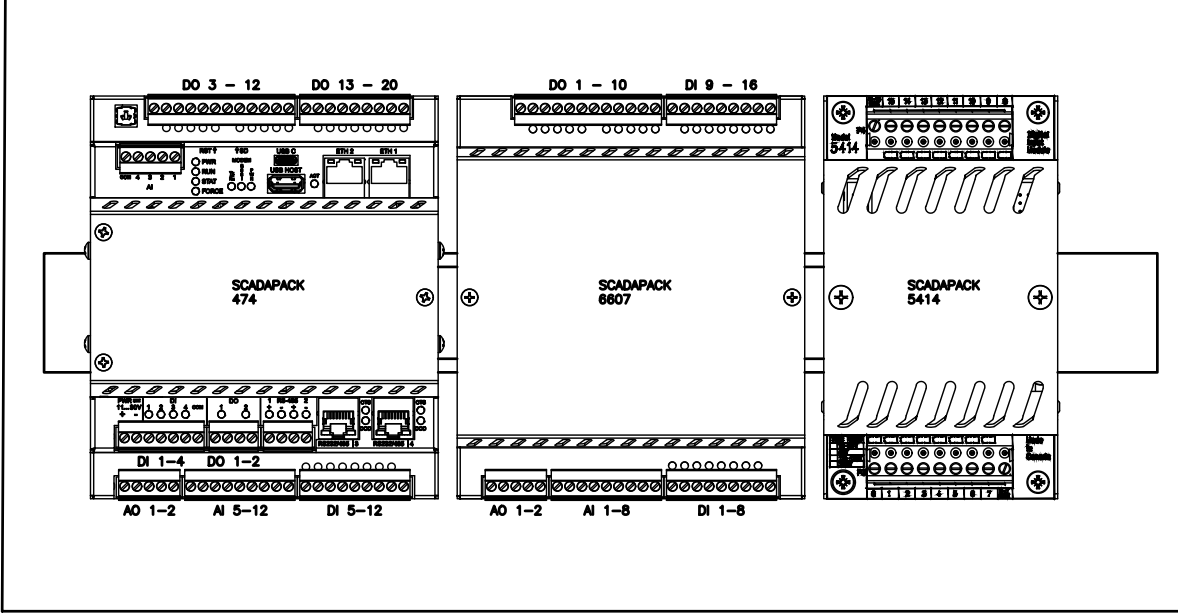
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DRAWN: PEX
CHECKED: AS
RECOMMENDED: AS
APPROVED: AS
APPROVED: AS

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NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.



ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

**CONTROL PANEL - WIRING DIAGRAMS
SHEET 3 OF 14**

SCALE: N/A
DATE: 26-JAN-21
DRAWING NUMBER: **E605**
REVISION: 0

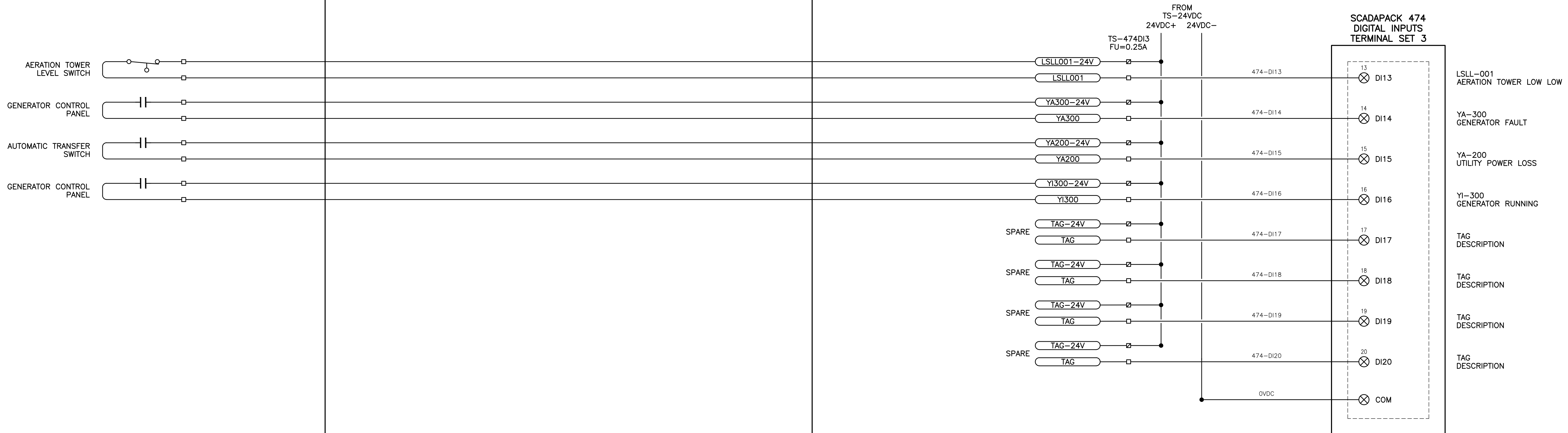
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NO.	DATE	REVISIONS	

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FIELD DEVICE

FIELD JUNCTION BOX

CONTROL CABINET

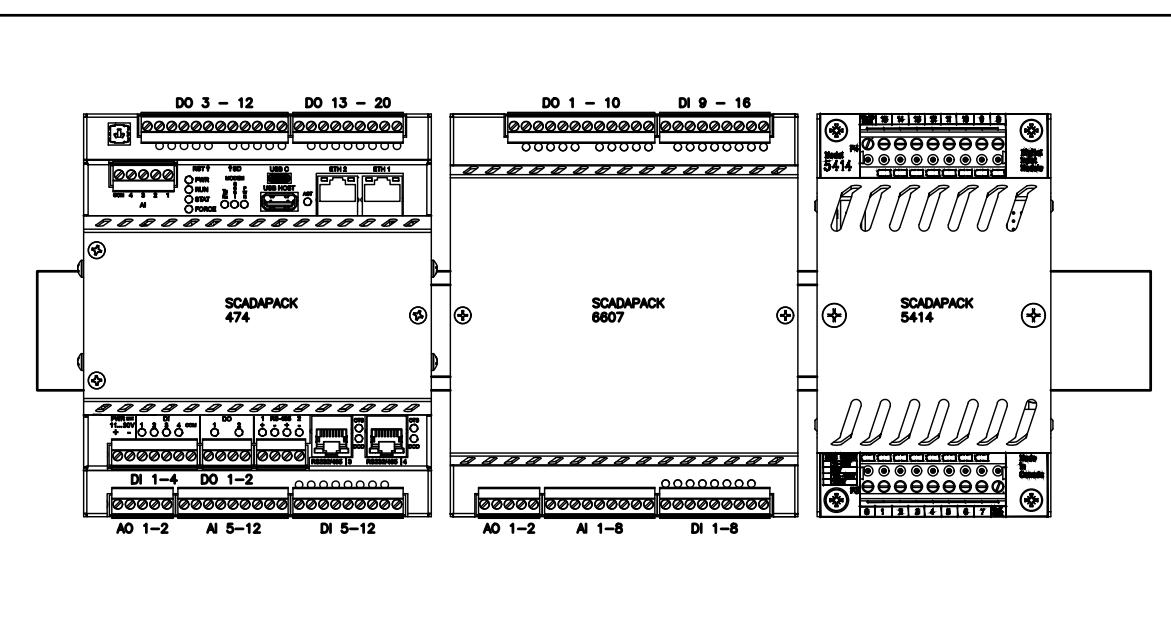


NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

ISSUED FOR TENDER NOT FOR CONSTRUCTION



TERMINAL BLOCK LEGEND

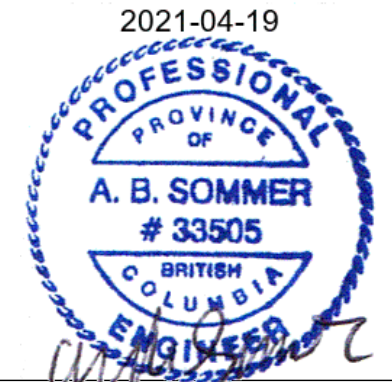
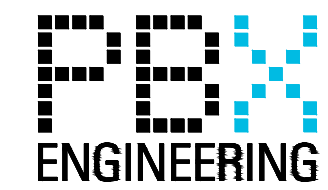
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	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY ELECTRICAL UPGRADES

CONTROL PANEL - WIRING DIAGRAMS
SHEET 4 OF 14

SCALE	N/A
DATE	26-01-21
DRAWING NUMBER	E606
REVISION	0



NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED
DRAWN
CHECKED
RECOMMENDED
APPROVED
APPROVED

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FIELD DEVICE

FIELD JUNCTION BOX

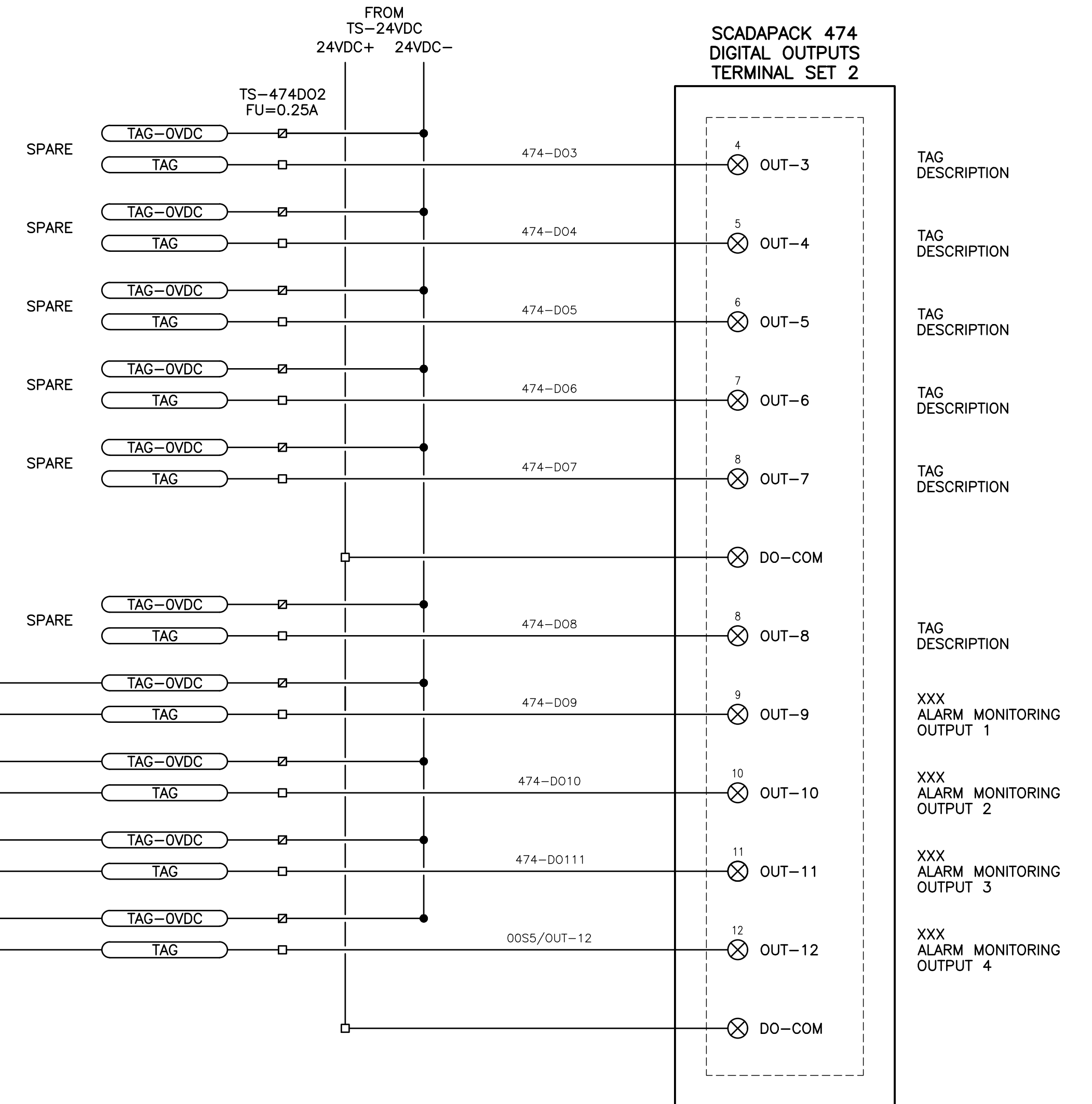
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ALARM MONITORING
PANEL OUTPUT 1

ALARM MONITORING
PANEL OUTPUT 2

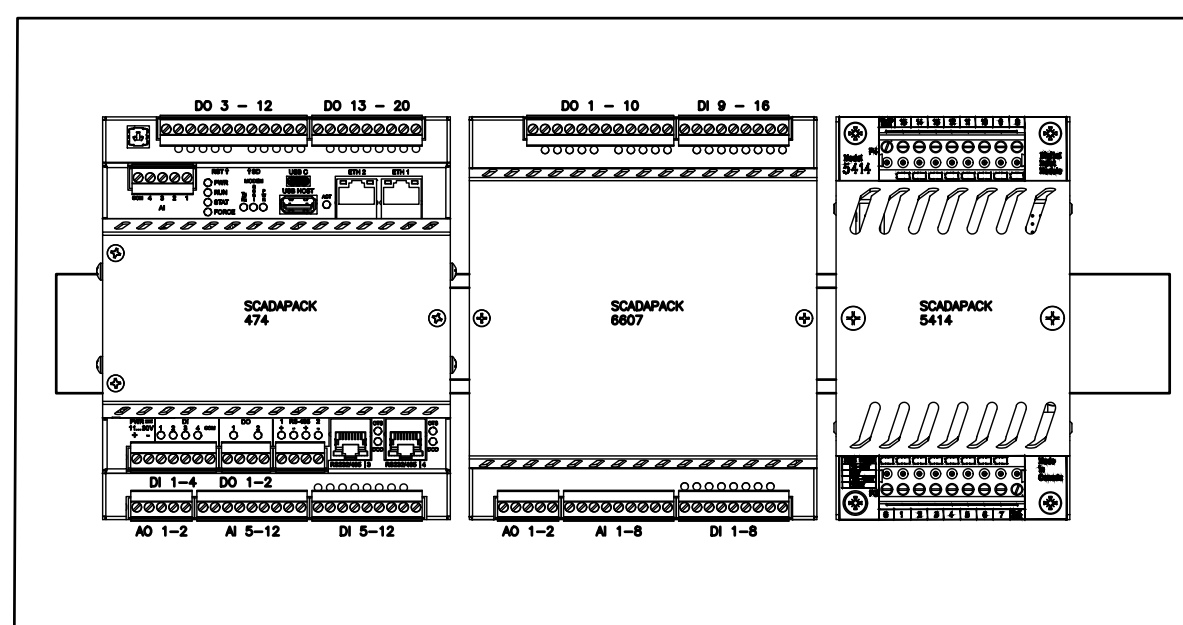
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PANEL OUTPUT 3

ALARM MONITORING
PANEL OUTPUT 4



NOTES:

- 1. CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.



TERMINAL BLOCK LEGEND

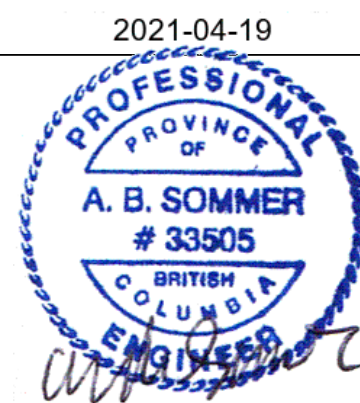
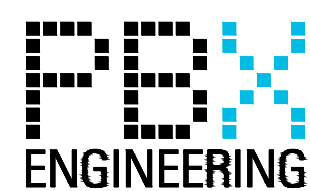
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	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

ISSUED FOR TENDER
NOT FOR CONSTRUCTION

		FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES		SCALE N/A	
CONTROL PANEL - WIRING DIAGRAMS SHEET 5 OF 14		DATE 26-JAN-21	
E607		DRAWING NUMBER	
		E607	
		REVISION	
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PA 2021.0 Cowichan Hatchery Distribution Upgrade V01 - Consultation - Engineering Services - Drawings - A6001.E607 - 0 - 19/04/2021 10:52 AM - ROBERT PETERSON



NOTES

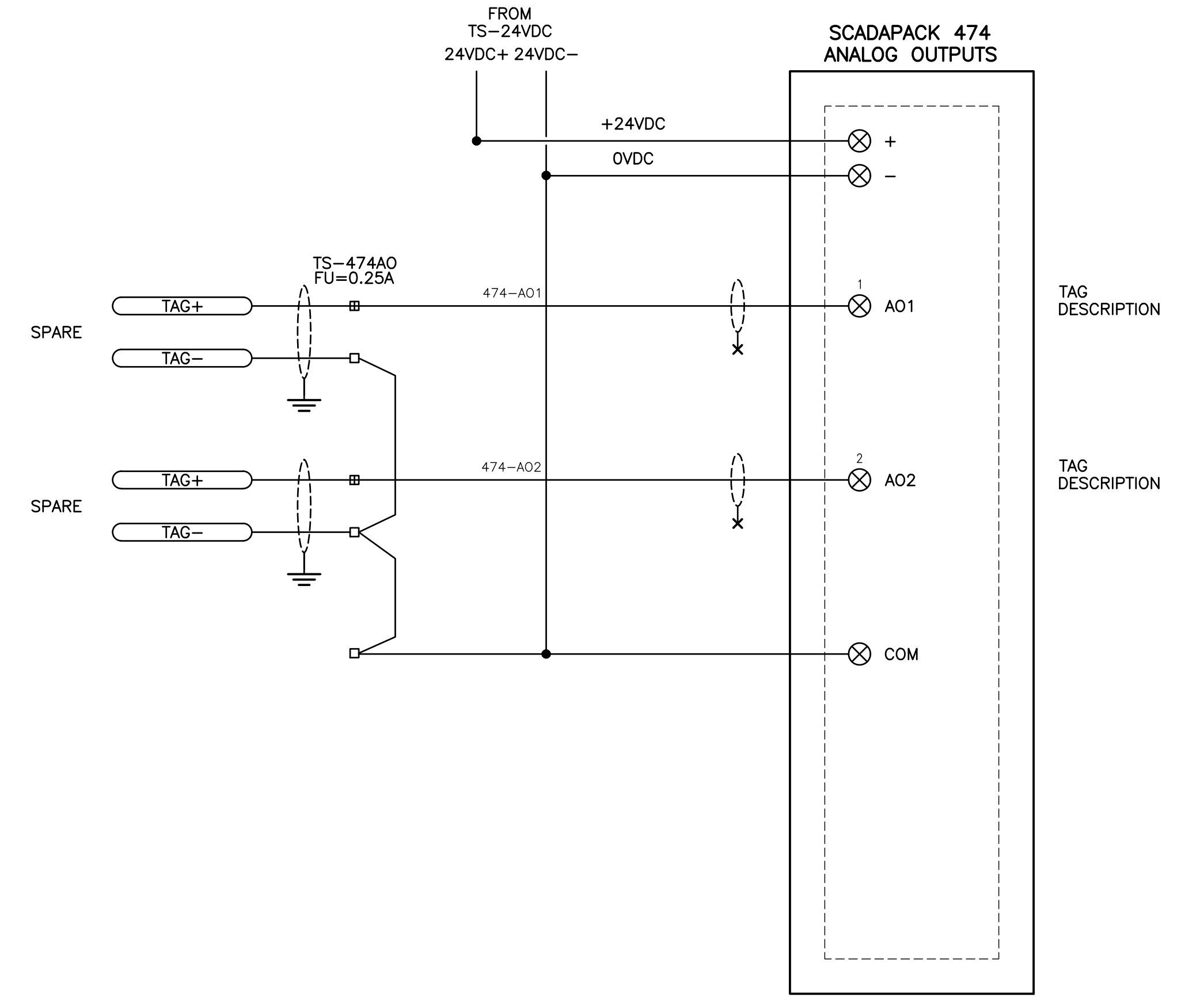
NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED
KM
DRAWN
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CHECKED
AS
RECOMMENDED
APPROVED
APPROVED

FIELD DEVICE

FIELD JUNCTION BOX

CONTROL CABINET



NOTES:

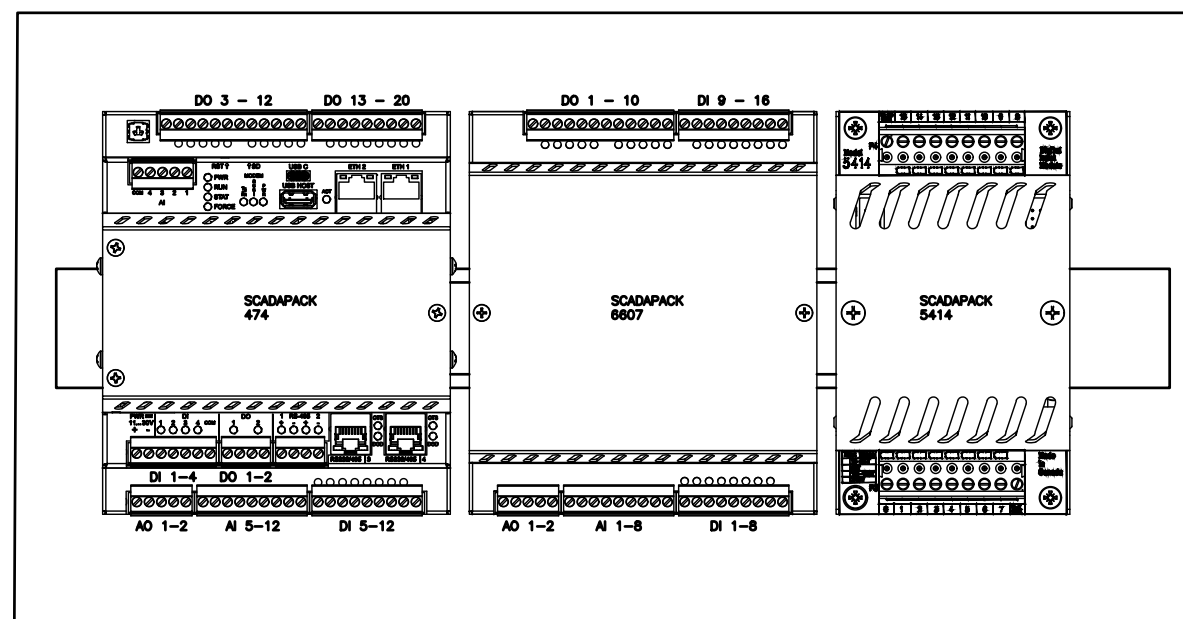
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ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

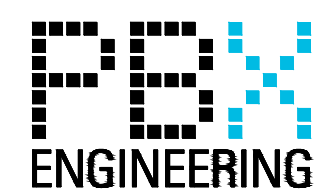
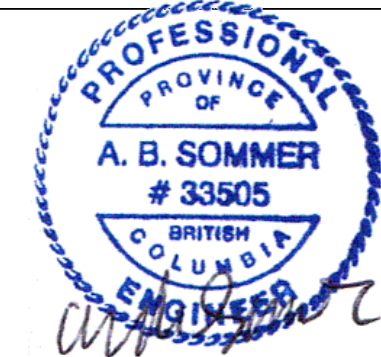
**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

TERMINAL BLOCK LEGEND

- INTRINSICALLY SAFE BARRIER TERMINAL
- FEED THROUGH TERMINAL BLOCK
- KNIFE-DISCONNECT TERMINAL BLOCK
- FUSED TERMINAL BLOCK



2021-04-19



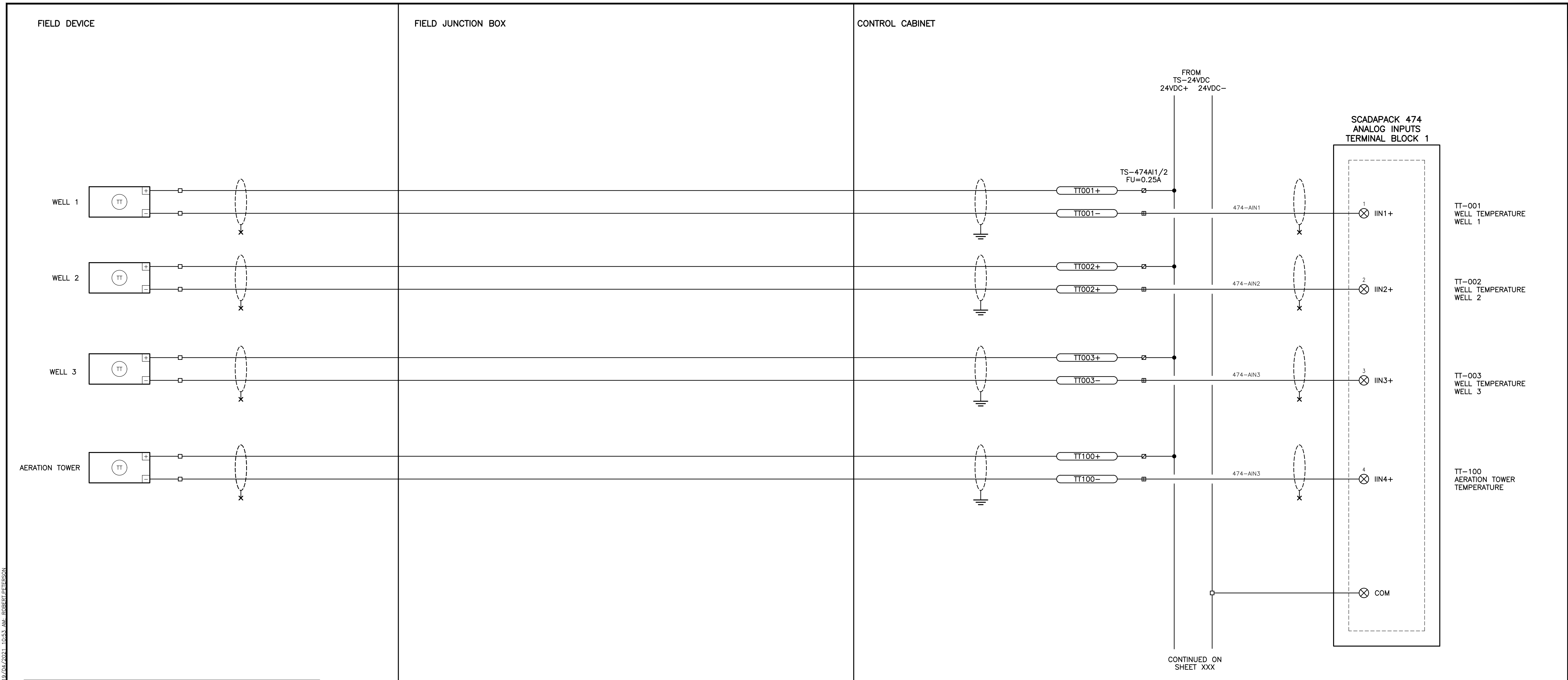
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NO.	DATE	REVISIONS
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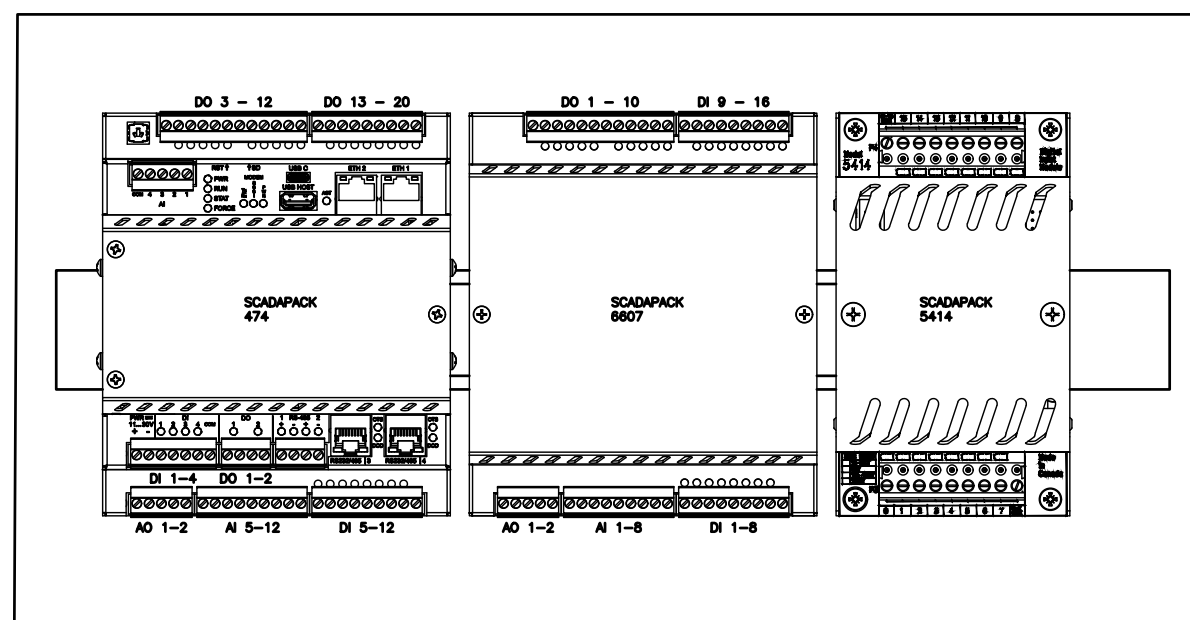
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CHECKED
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APPROVED
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FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES	
CONTROL PANEL - WIRING DIAGRAMS SHEET 6 OF 14	
SCALE N/A	DATE 26-JAN-21
DRAWING NUMBER E608	
REVISION	0

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CONTINUED ON SHEET XXX



TERMINAL BLOCK LEGEND

	INTRINSICALLY SAFE BARRIER TERMINAL		KNIFE-DISCONNECT TERMINAL BLOCK
	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

NOTES:
 1. CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

**ISSUED FOR TENDER
 NOT FOR CONSTRUCTION**

FISHERIES AND OCEANS CANADA
 REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY ELECTRICAL UPGRADES

CONTROL PANEL - WIRING DIAGRAMS SHEET 7 OF 14

DESIGNED: KM
 DRAWN: PBX
 CHECKED: AS
 RECOMMENDED: APPROVED
 APPROVED: APPROVED

SCALE: N/A
 DATE: 26-JAN-21
 DRAWING NUMBER: **E609**
 REVISION: 0

2021-04-19

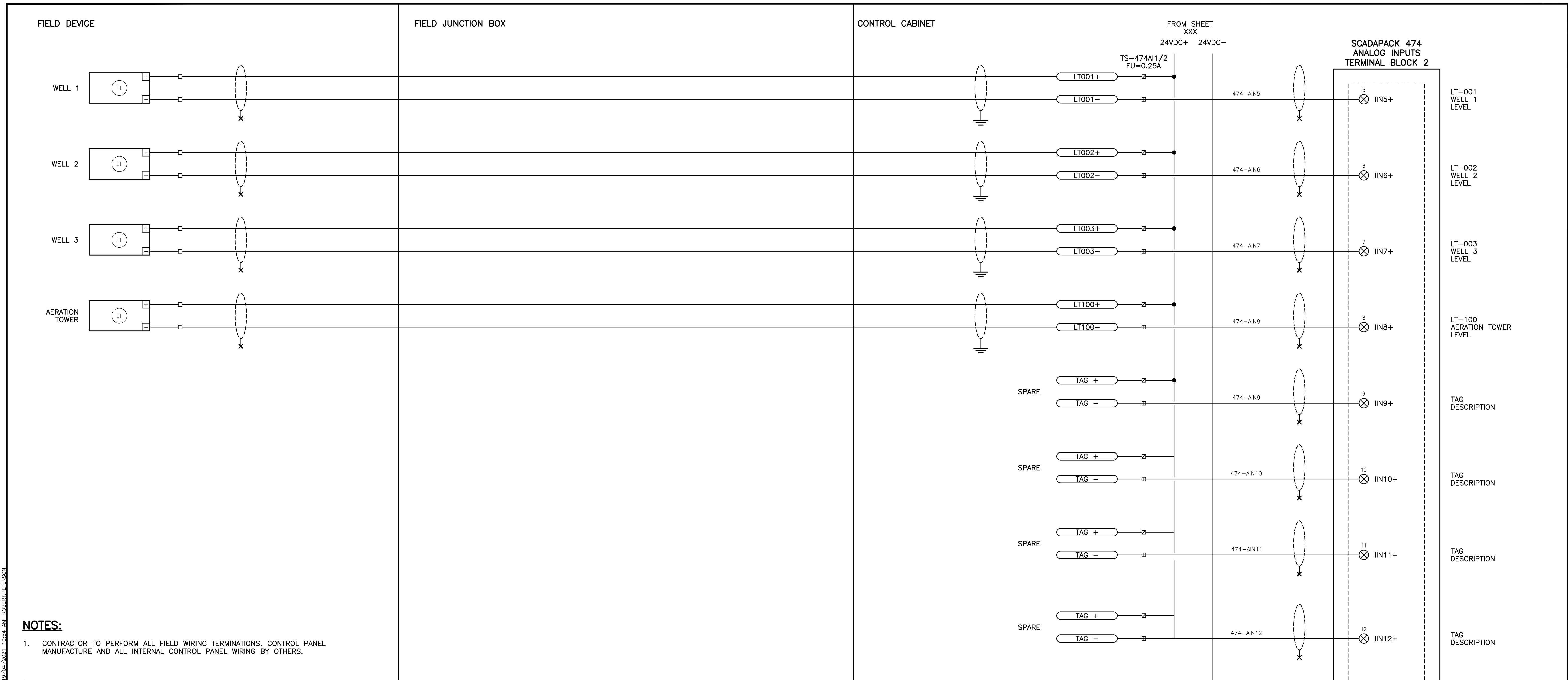
PROFESSIONAL ENGINEER
 A. B. SOMMER
 # 33505
 BRITISH COLUMBIA

PBX ENGINEERING

NOTES

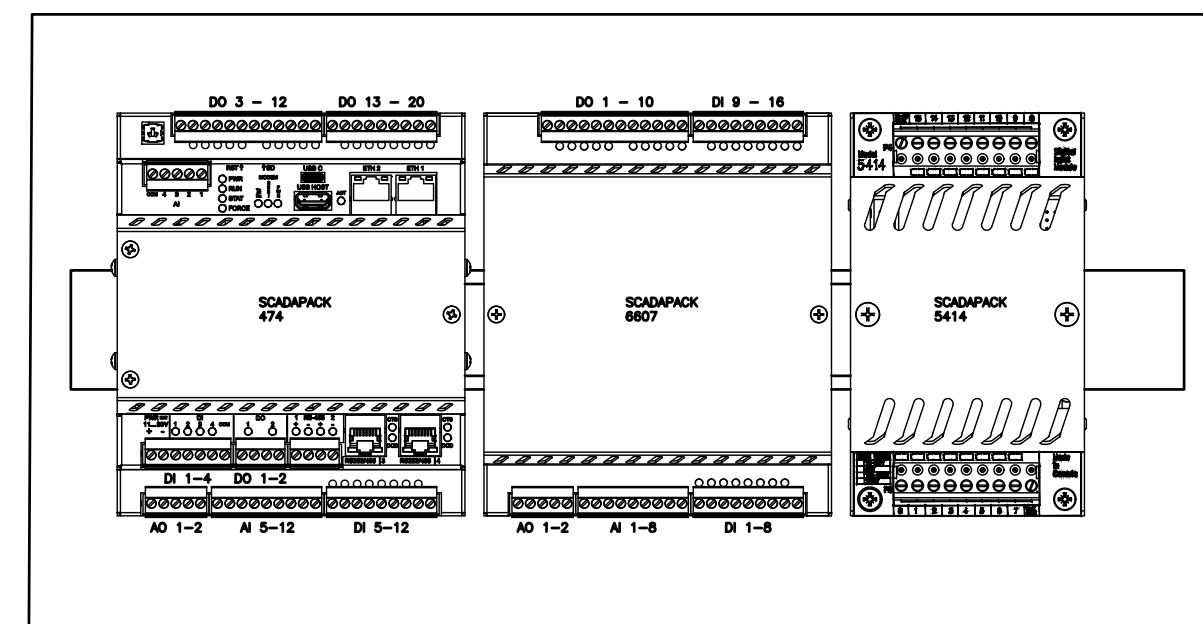
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NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS, CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.



TERMINAL BLOCK LEGEND

	INTRINSICALLY SAFE BARRIER TERMINAL		KNIFE-DISCONNECT TERMINAL BLOCK
	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

ISSUED FOR TENDER
NOT FOR CONSTRUCTION

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY
ELECTRICAL UPGRADES

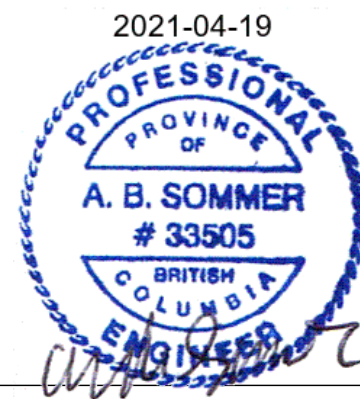
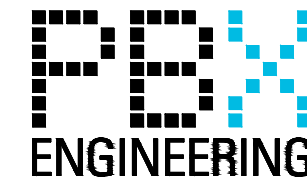
CONTROL PANEL - WIRING DIAGRAMS
SHEET 8 OF 14

SCALE
N/A

DATE
26-JAN-21

DRAWING NUMBER
E610

REVISION
0



NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

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KM

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RECOMMENDED
AS

APPROVED

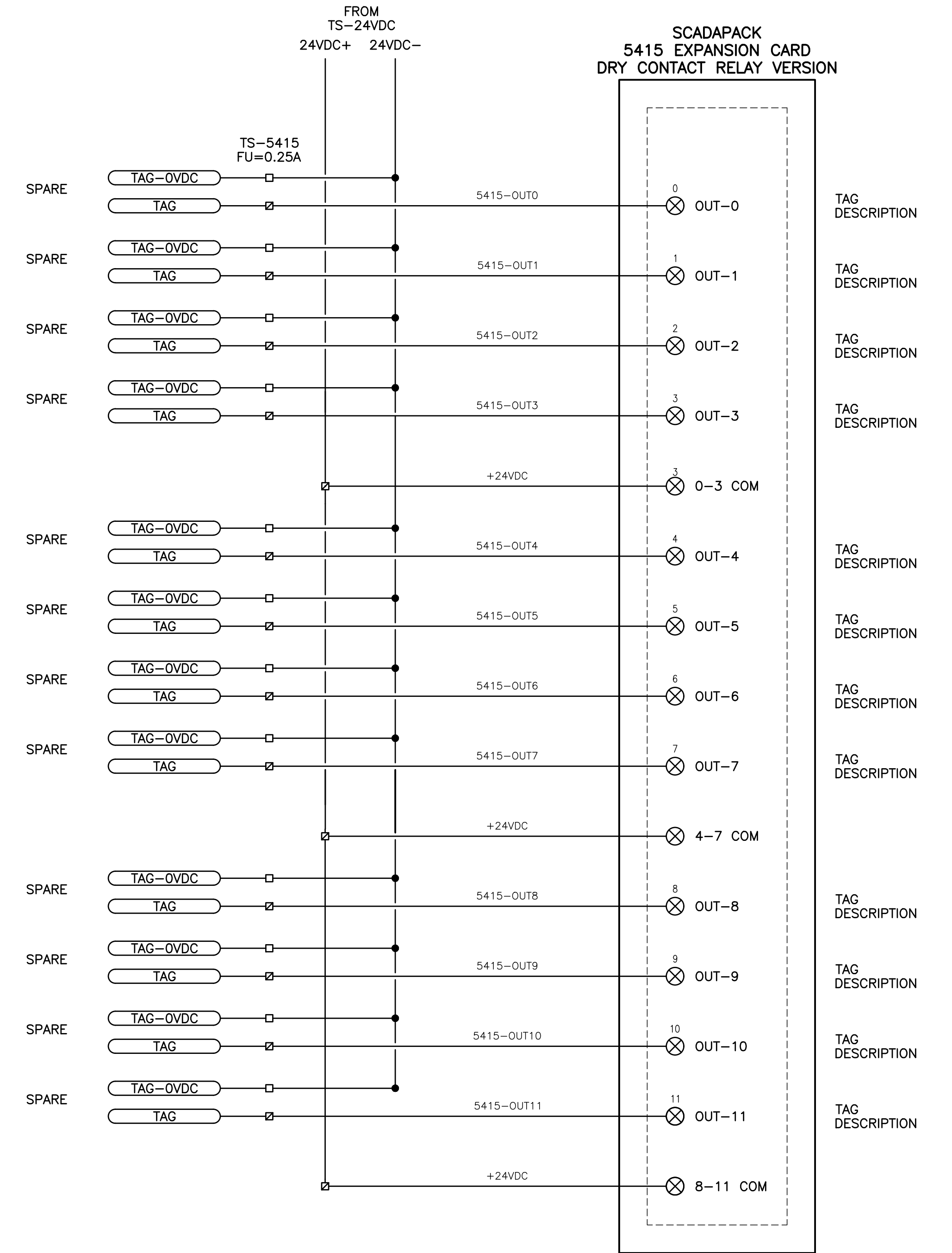
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FIELD DEVICE

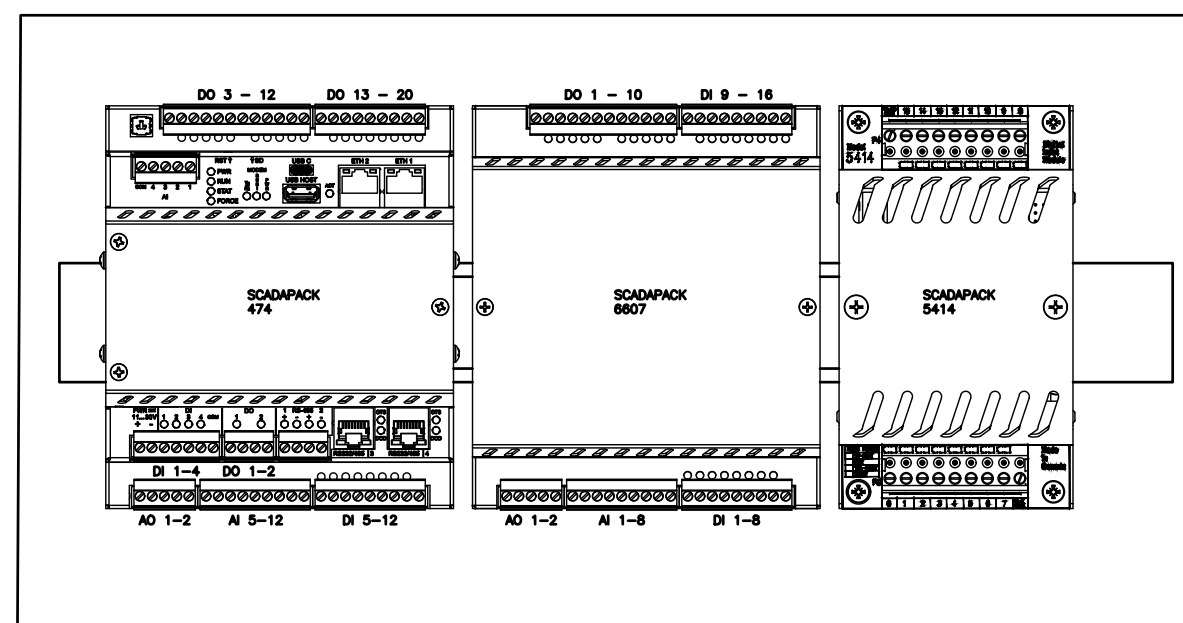
FIELD JUNCTION BOX

CONTROL CABINET



NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS, CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

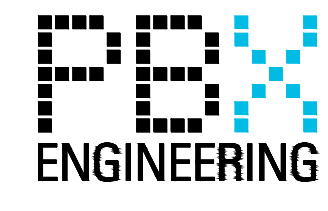


	INTRINSICALLY SAFE BARRIER TERMINAL		KNIFE-DISCONNECT TERMINAL BLOCK
	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES	SCALE N/A DATE 26-01-21 DRAWING NUMBER E611
CONTROL PANEL - WIRING DIAGRAMS SHEET 9 OF 14	
DESIGNED KM DRAWN PEX CHECKED AS RECOMMENDED APPROVED APPROVED	NO. DATE REVISIONS 0 2021-04-19 ISSUED FOR TENDER NO. DATE REVISIONS
REVISION 0	REVISION 0



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NO. DATE REVISIONS

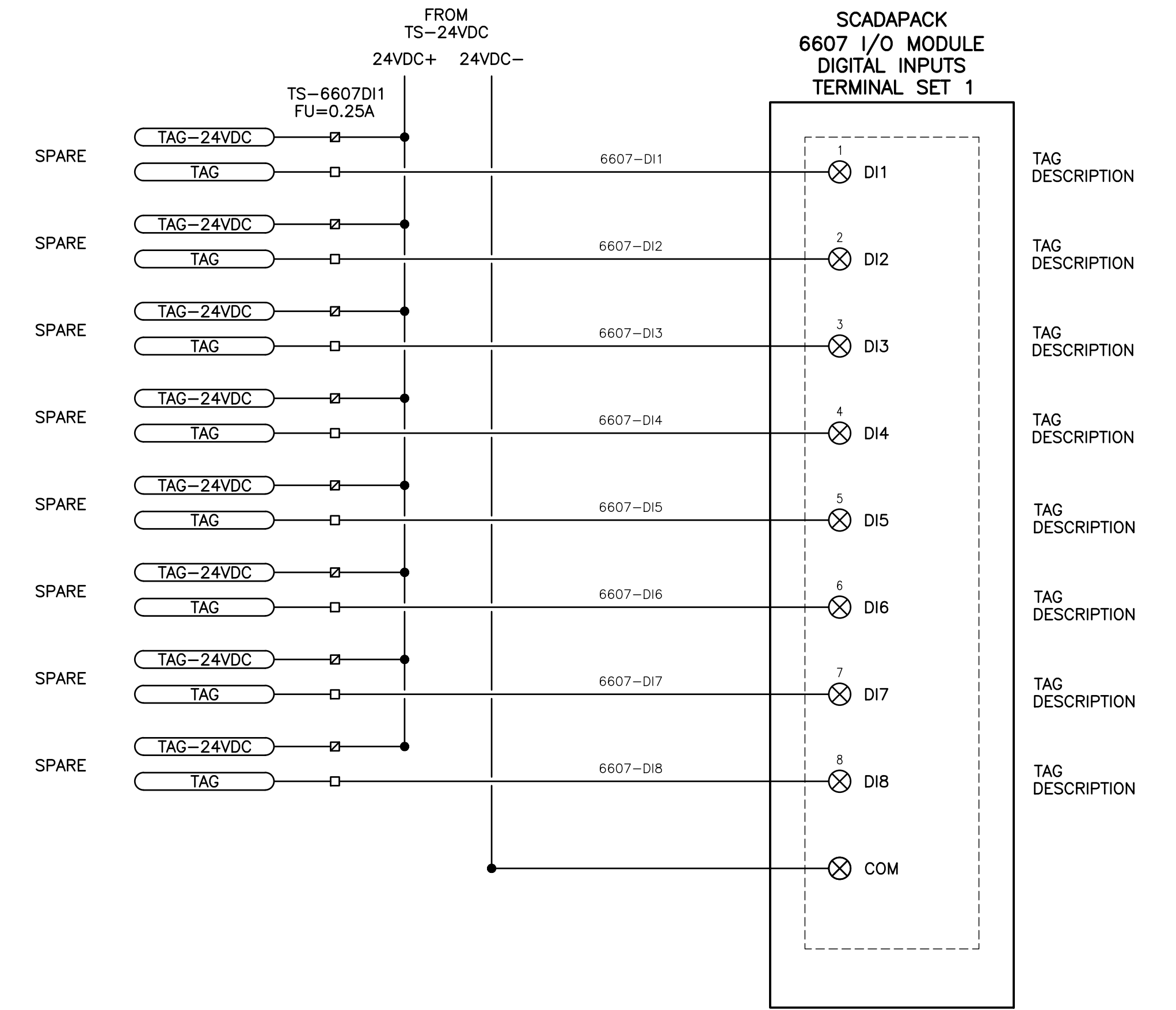
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FIELD DEVICE

FIELD JUNCTION BOX

CONTROL CABINET

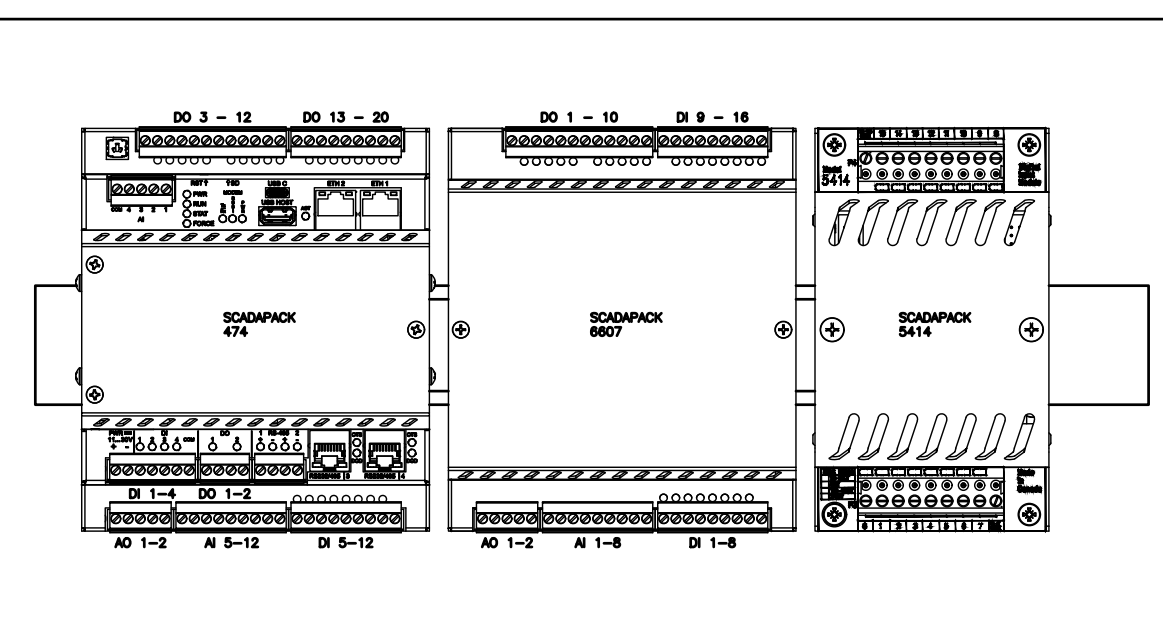


NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

ISSUED FOR TENDER
NOT FOR CONSTRUCTION



TERMINAL BLOCK LEGEND

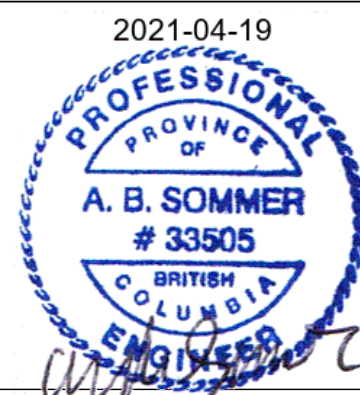
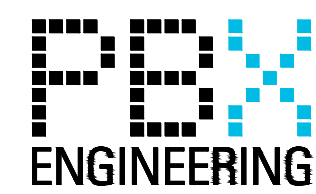
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- FEED THROUGH TERMINAL BLOCK
- KNIFE-DISCONNECT TERMINAL BLOCK
- FUSED TERMINAL BLOCK

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

**CONTROL PANEL - WIRING DIAGRAMS
SHEET 10 OF 14**

SCALE: N/A
DATE: 26-01-21
DRAWING NUMBER: **E612**
REVISION: 0



NOTES

NO. DATE REVISIONS

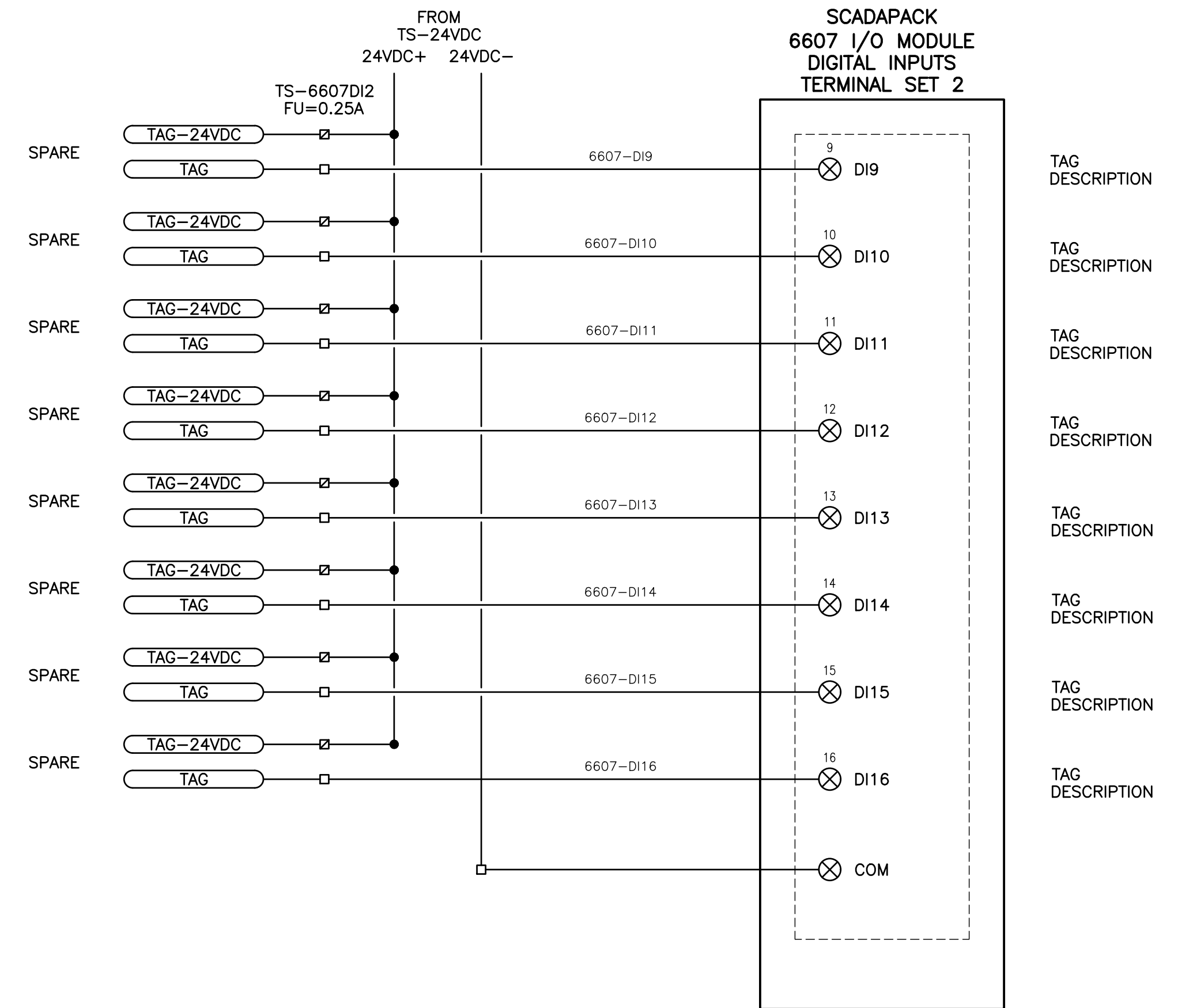
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DRAWN: PEX
CHECKED: AS
RECOMMENDED:
APPROVED:
APPROVED:

0 2021-04-19 ISSUED FOR TENDER

FIELD DEVICE

FIELD JUNCTION BOX

CONTROL CABINET

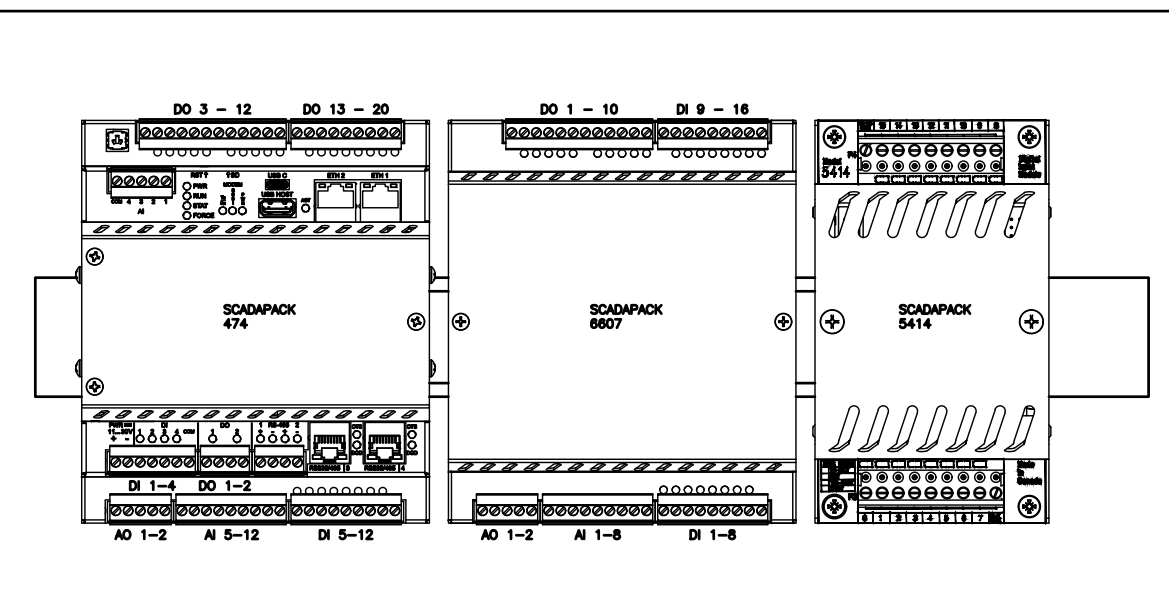


NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**



TERMINAL BLOCK LEGEND

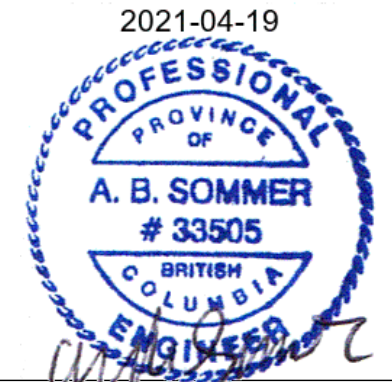
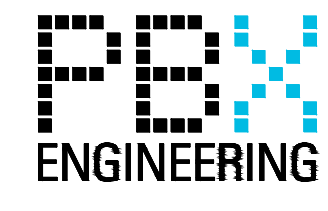
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<input type="checkbox"/> FEED THROUGH TERMINAL BLOCK	<input checked="" type="checkbox"/> FUSED TERMINAL BLOCK

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

**CONTROL PANEL - WIRING DIAGRAMS
SHEET 11 OF 14**

SCALE: N/A
DATE: 26-01-21
DRAWING NUMBER: **E613**
REVISION: 0



NOTES

NO.	DATE	REVISIONS
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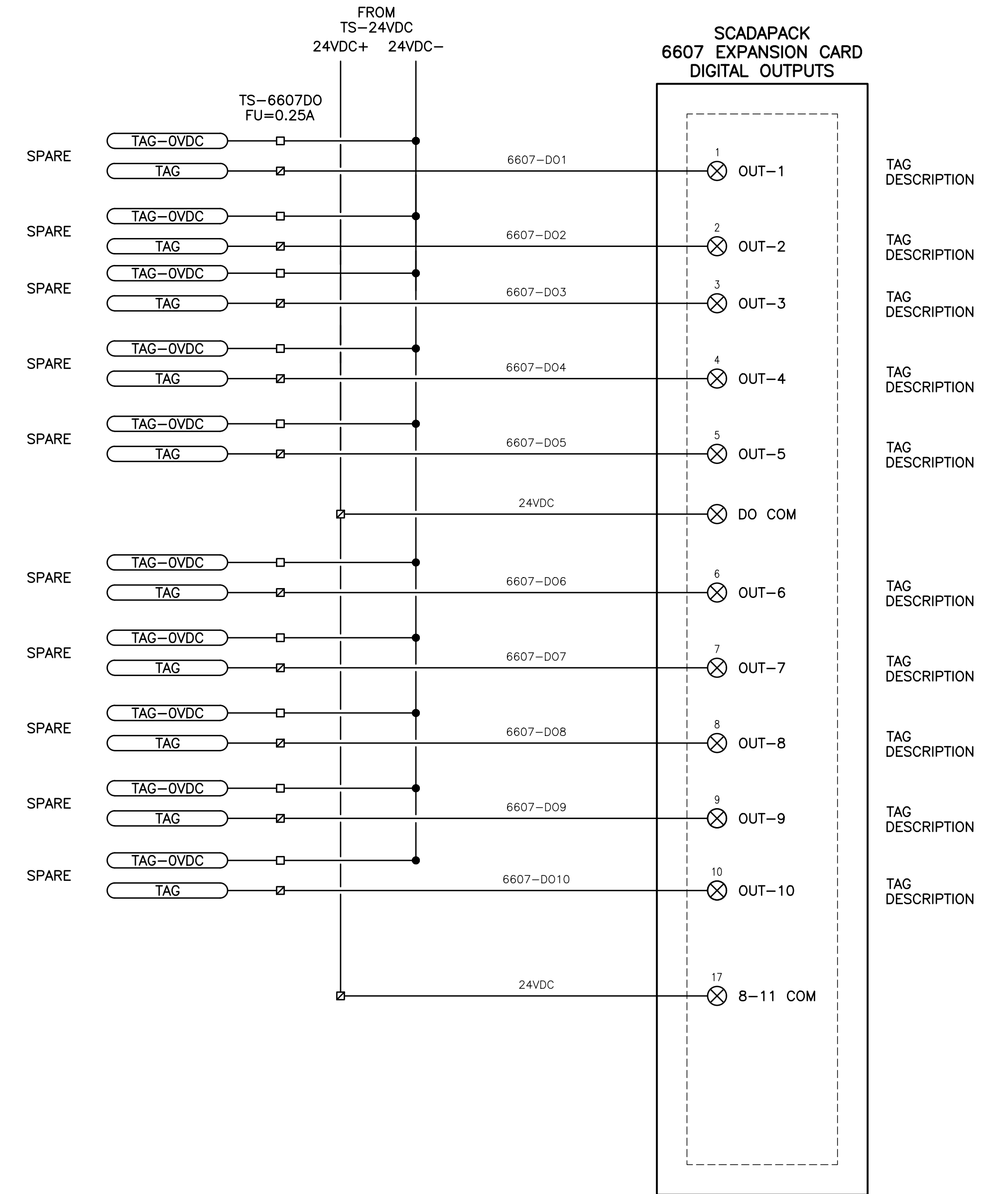
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DRAWN	PBX
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APPROVED	
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FIELD DEVICE

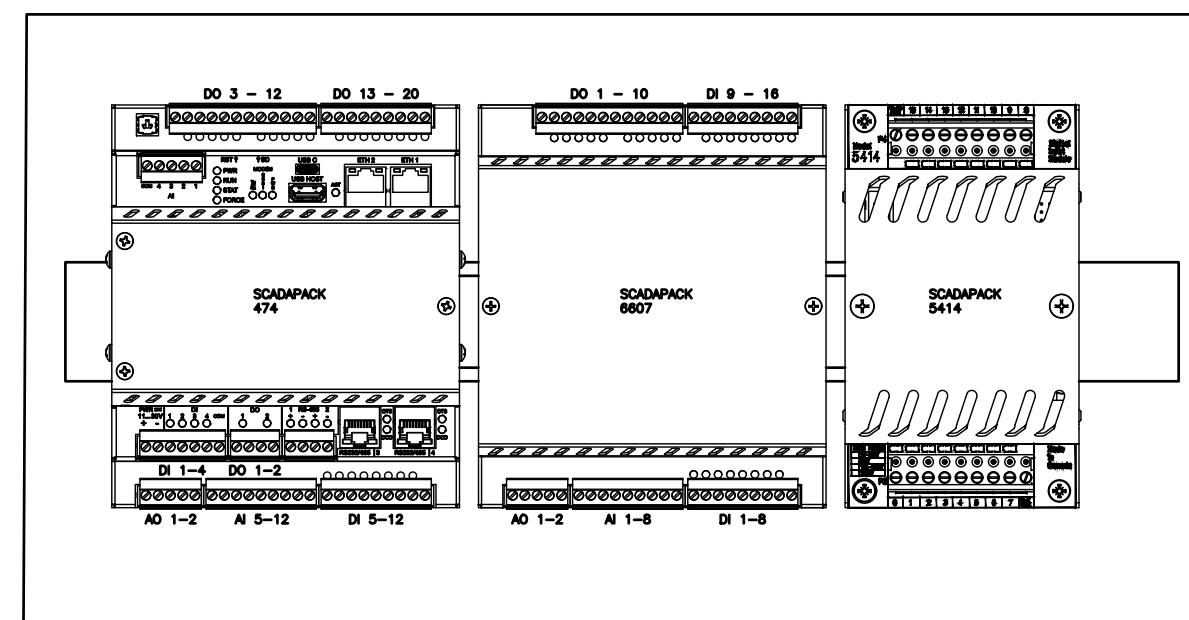
FIELD JUNCTION BOX

CONTROL CABINET



NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.



TERMINAL BLOCK LEGEND

	INTRINSICALLY SAFE BARRIER TERMINAL		KNIFE-DISCONNECT TERMINAL BLOCK
	FEED THROUGH TERMINAL BLOCK		FUSED TERMINAL BLOCK

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

ISSUED FOR TENDER NOT FOR CONSTRUCTION

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY ELECTRICAL UPGRADES

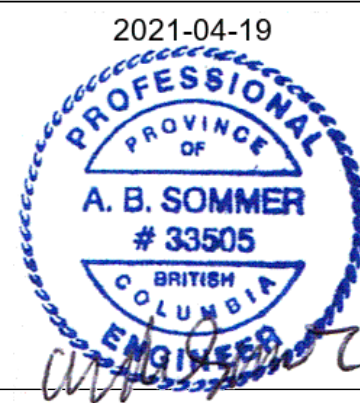
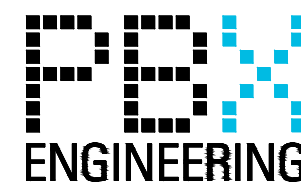
CONTROL PANEL - WIRING DIAGRAMS SHEET 12 OF 14

SCALE N/A

DATE 26-01-21

DRAWING NUMBER E614

REVISION 0



NOTES

NO.	DATE	REVISIONS
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DESIGNED KM

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CHECKED AS

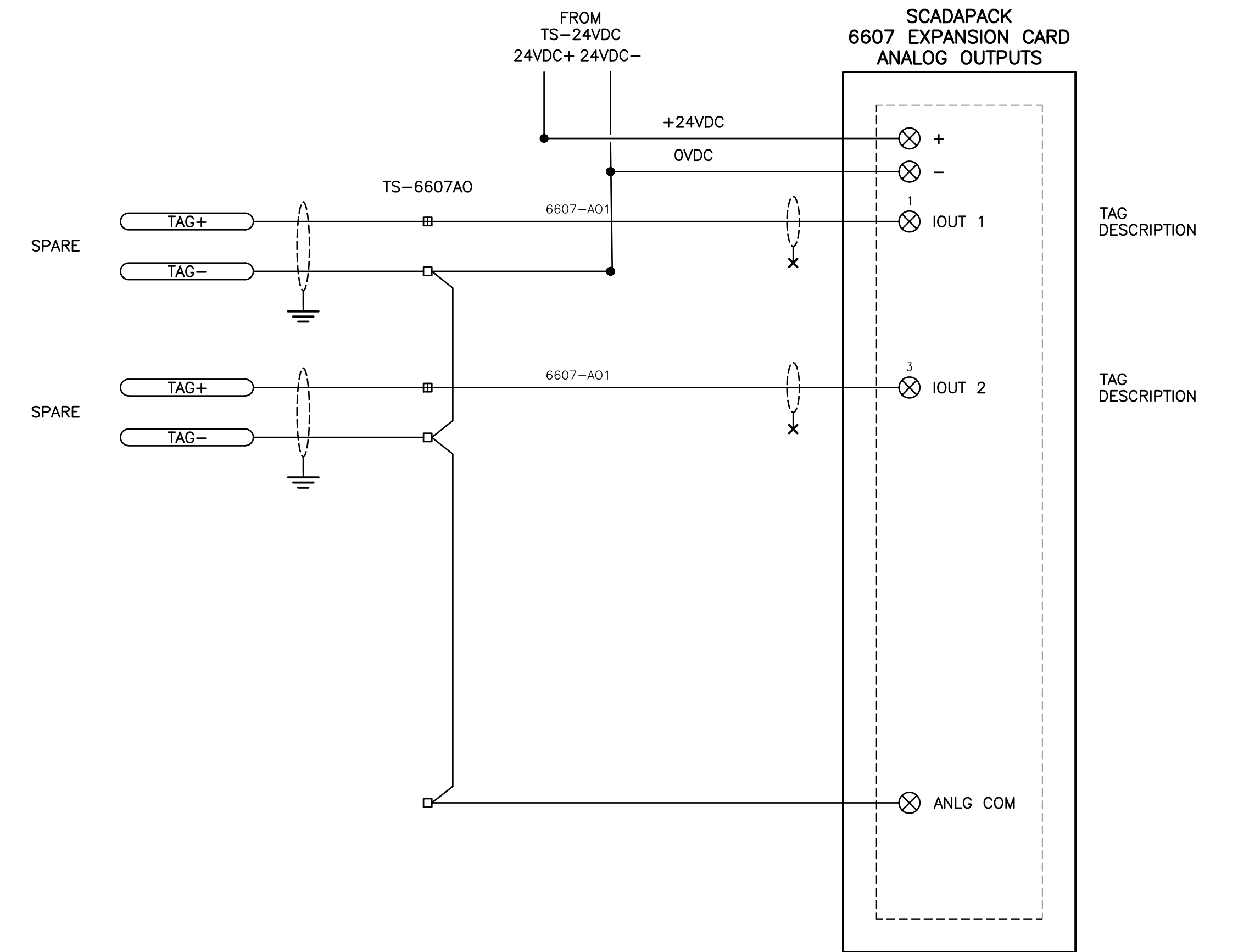
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APPROVED

FIELD DEVICE

FIELD JUNCTION BOX

CONTROL CABINET

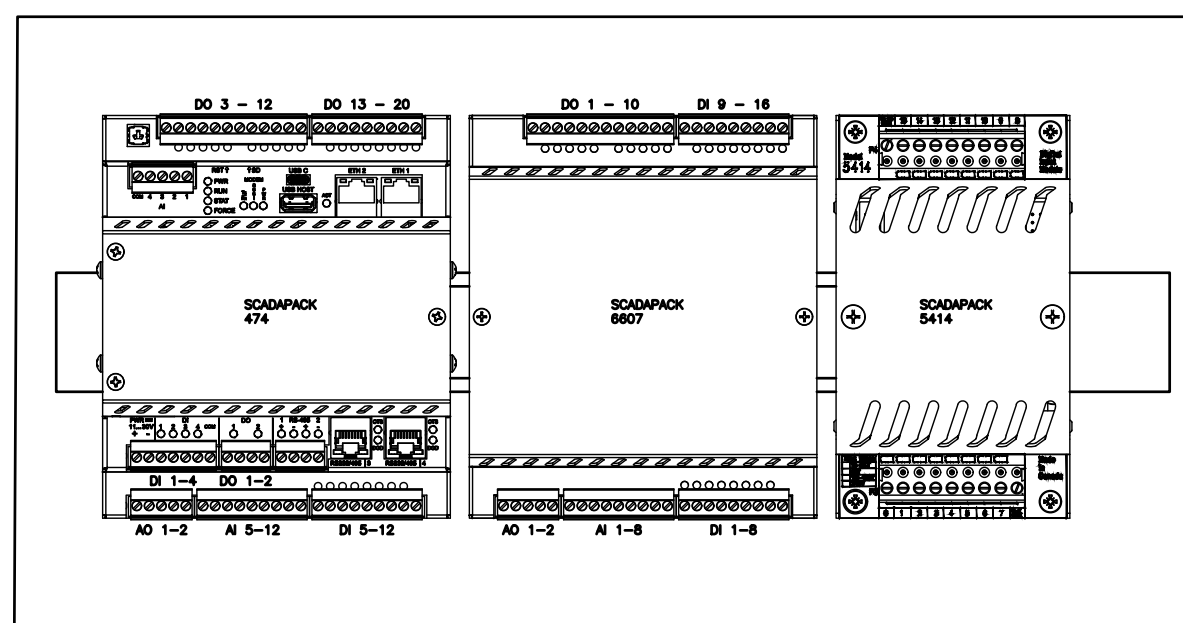


NOTES:

- CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

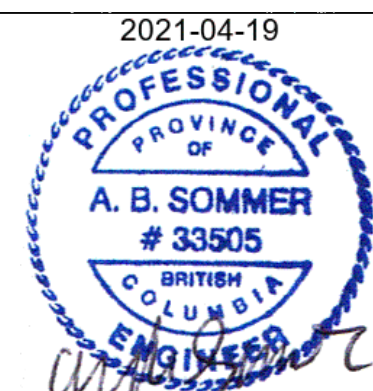
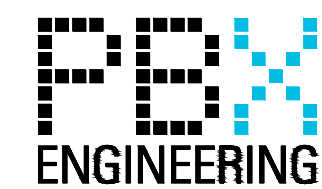


ACE3600 3 I/O CHASSIS

TERMINAL BLOCK LEGEND

- INTRINSICALLY SAFE BARRIER TERMINAL
- KNIFE-DISCONNECT TERMINAL BLOCK
- FEED THROUGH TERMINAL BLOCK
- FUSED TERMINAL BLOCK

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES	SCALE N/A
CONTROL PANEL - WIRING DIAGRAMS SHEET 13 OF 14	DATE 26-JAN-21
E615	DRAWING NUMBER E615
	REVISION 0



NOTES

NO.	DATE	REVISIONS
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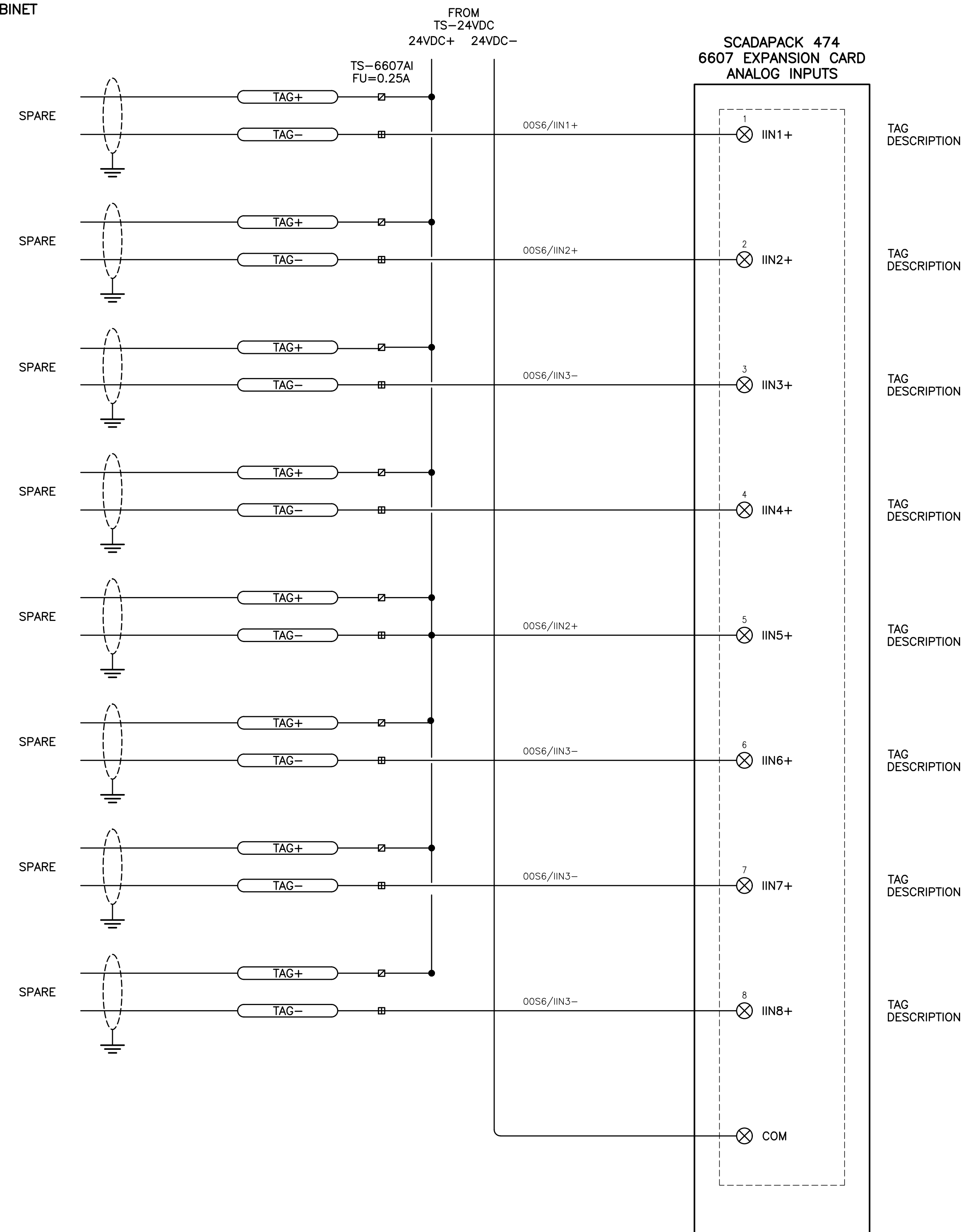
- DESIGNED
- DRAWN
- CHECKED
- RECOMMENDED
- APPROVED
- APPROVED

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FIELD DEVICE

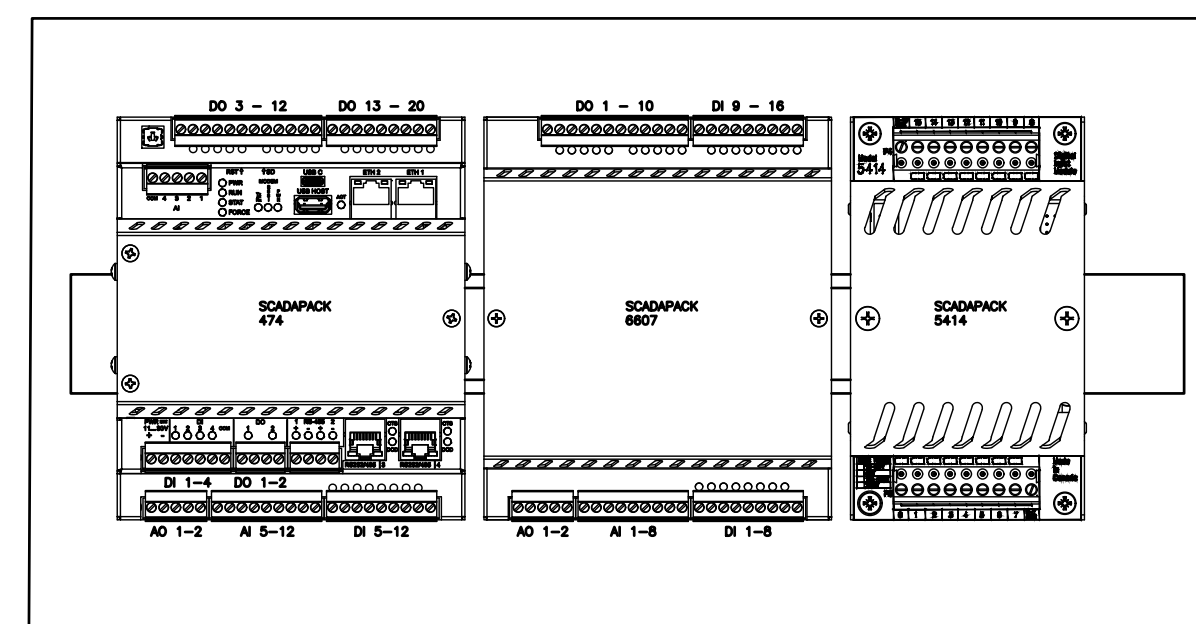
FIELD JUNCTION BOX

CONTROL CABINET

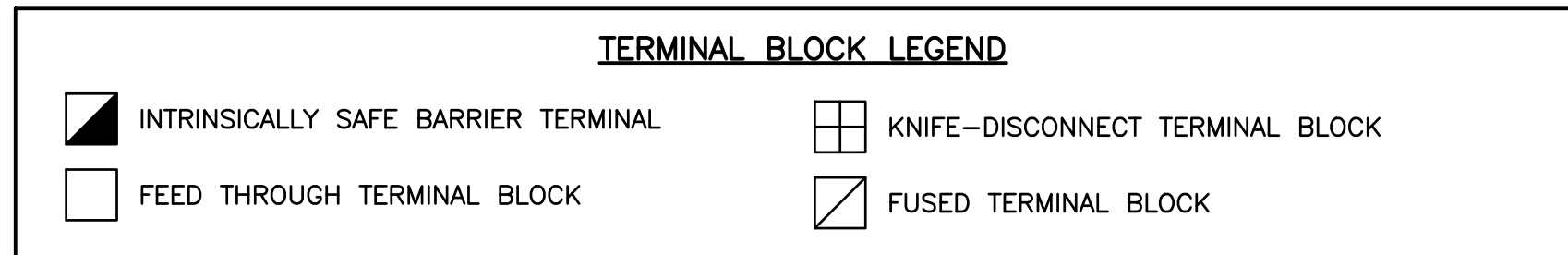


NOTES:

- 1. CONTRACTOR TO PERFORM ALL FIELD WIRING TERMINATIONS. CONTROL PANEL MANUFACTURE AND ALL INTERNAL CONTROL PANEL WIRING BY OTHERS.



ACE3600 3 I/O CHASSIS



ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

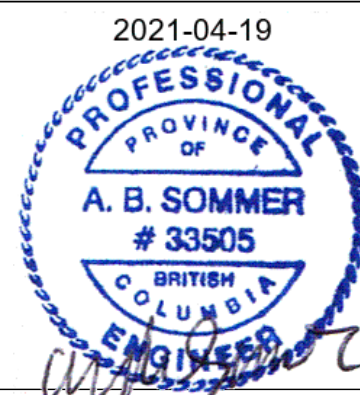
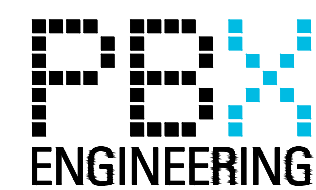
ISSUED FOR TENDER NOT FOR CONSTRUCTION

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

COWICHAN HATCHERY ELECTRICAL UPGRADES

CONTROL PANEL - WIRING DIAGRAMS
SHEET 14 OF 14

SCALE: N/A
DATE: 26-01-21
DRAWING NUMBER: **E616**
REVISION: 0



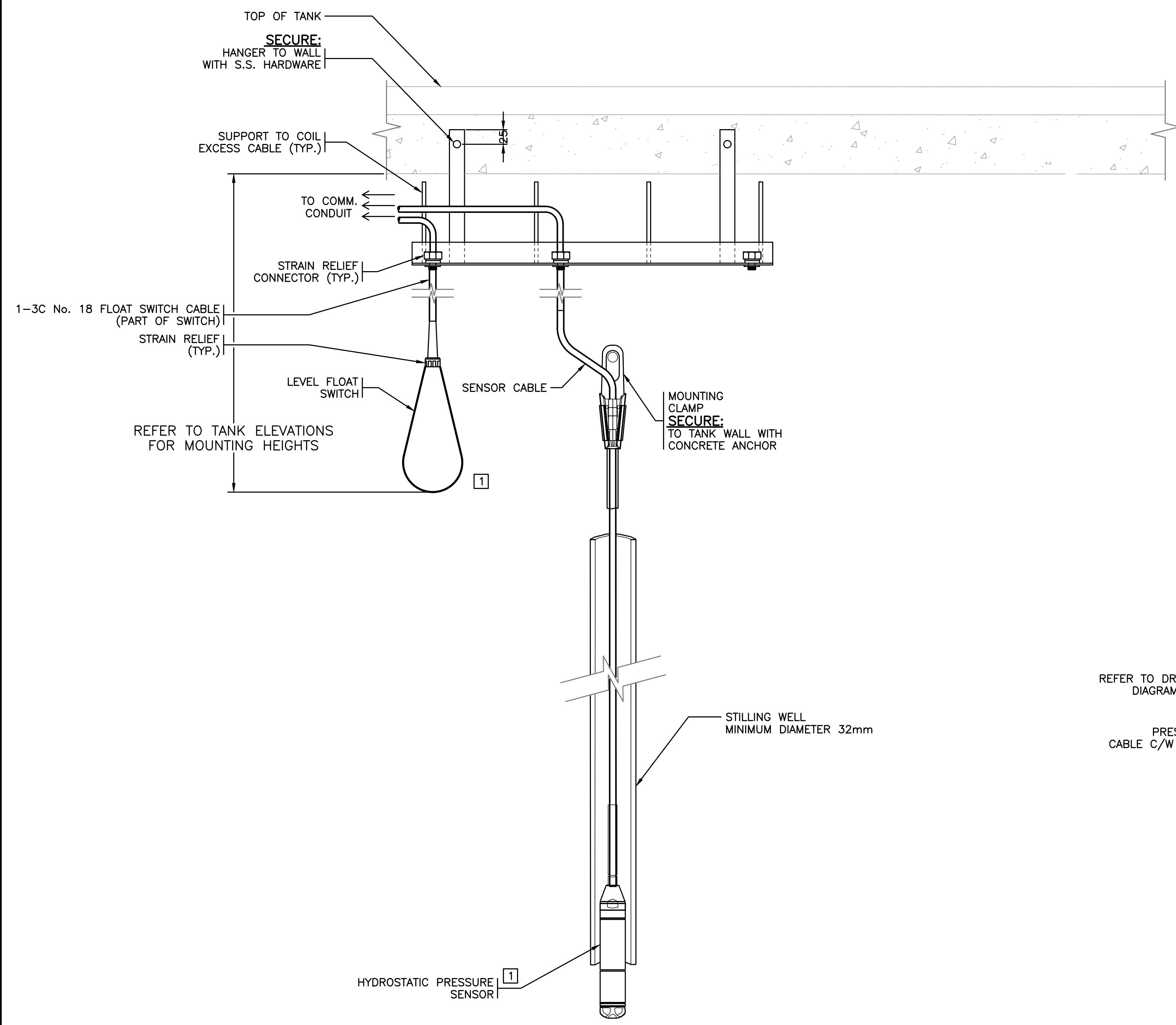
NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED: KM
DRAWN: PEX
CHECKED: AS
RECOMMENDED: AS
APPROVED: [Signature]
APPROVED: [Signature]

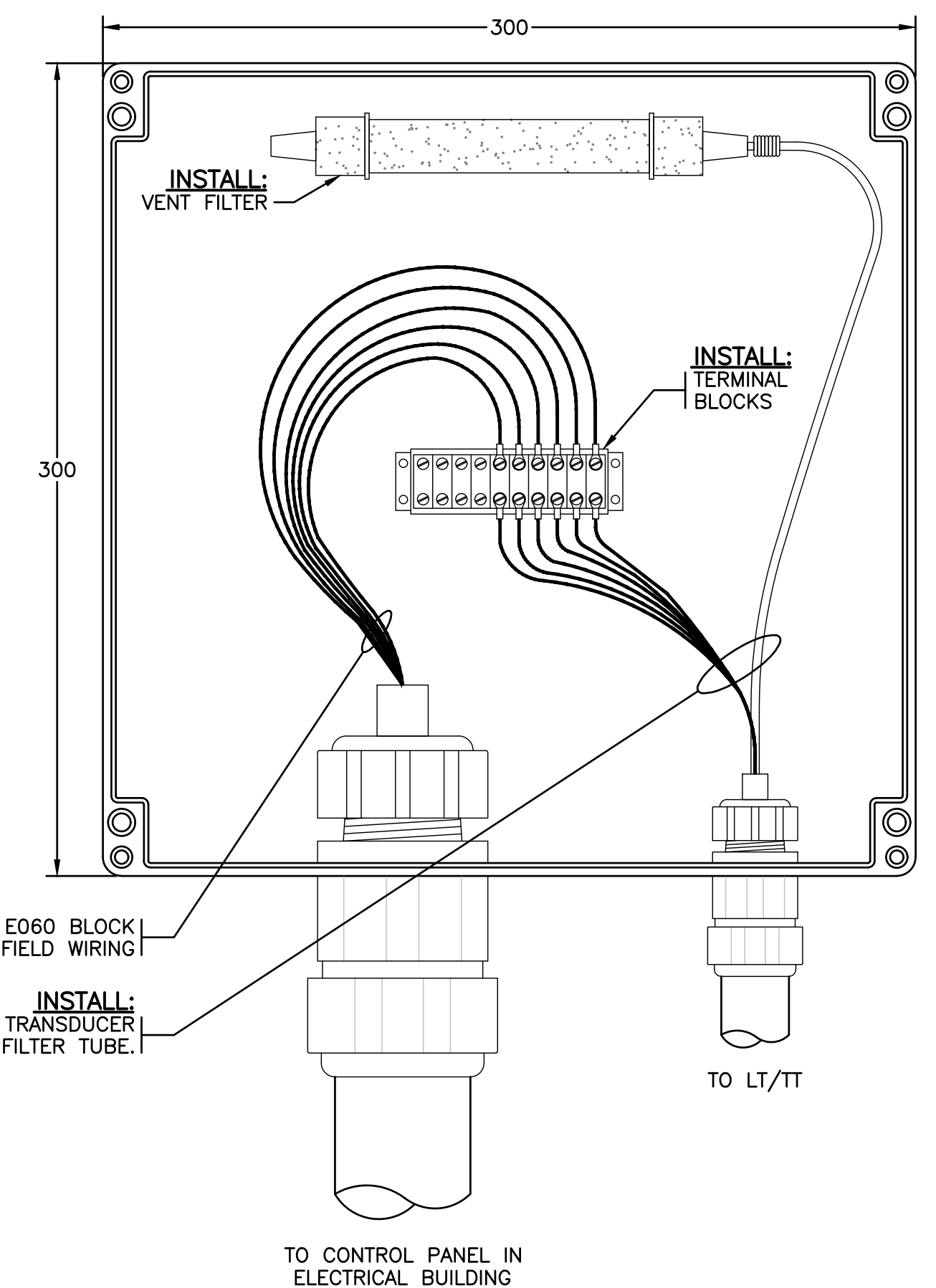
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P:\2025\0 - Cowichan Hatchery Distribution Upgrades\01 - Consultation - Engineering Services\Drawings\CAD\E620 - 0 - 19-04-2021 - 10:57 AM - ROBERT PETERSON

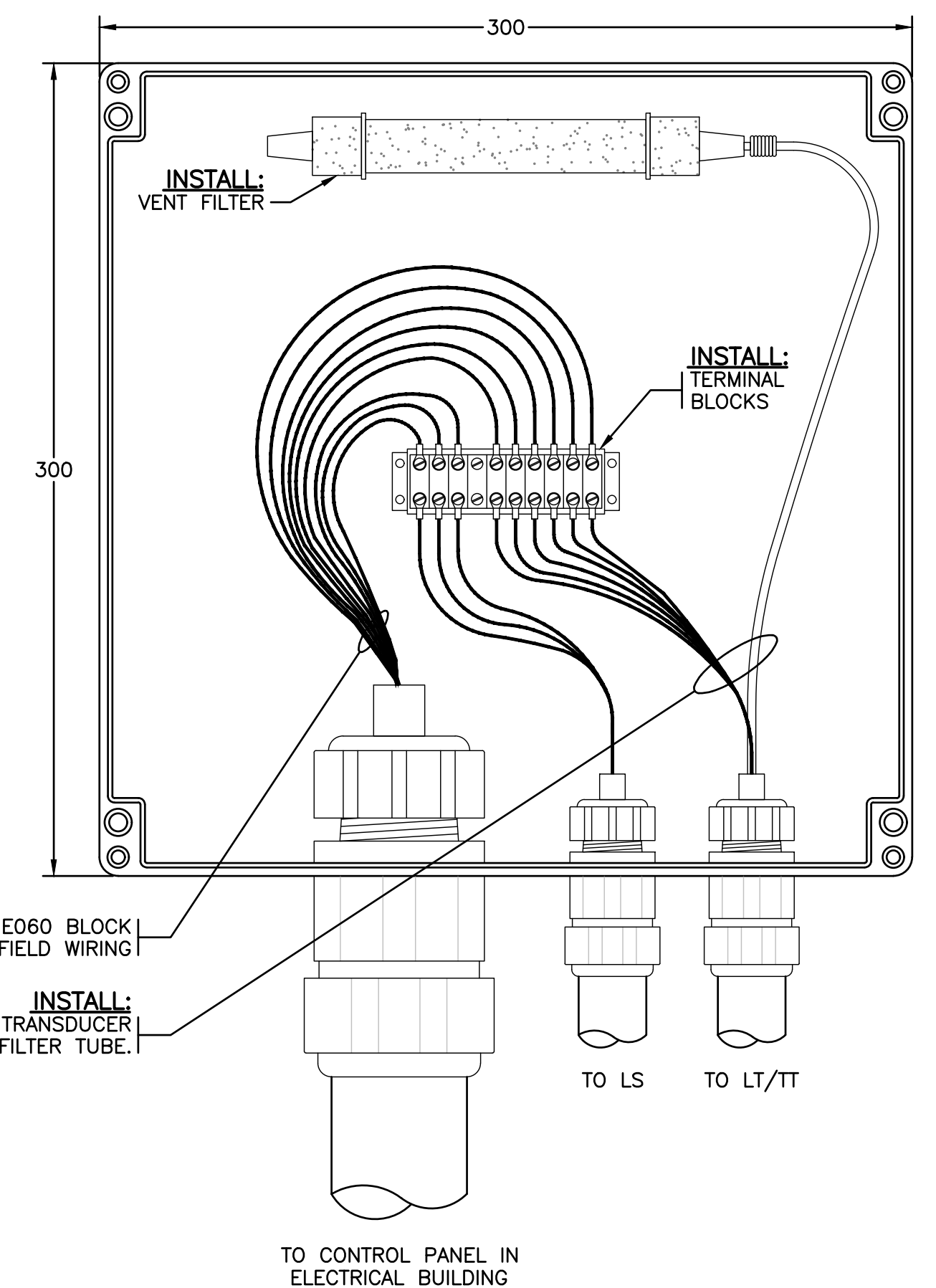


DETAIL 1 1 1 INSTRUMENTATION WALL MOUNT INSTALLATION
N.T.S. E002 E201 E651

- NOTES:**
- INSTALL INSTRUMENTS/SENSORS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 - CONTRACTOR SHALL COORDINATE WITH INSTRUMENTATION PROVIDER TO ESTABLISH BEST MOUNTING POSITIONS AND MOUNTING ASSEMBLIES FOR EACH LOCATION.



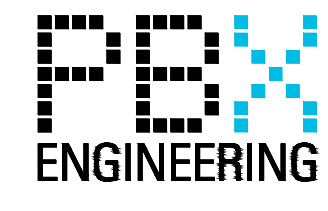
DETAIL 2 WELL COMMUNICATIONS JUNCTION BOX
1:2 E002



DETAIL 3 AERATION TOWER COMMUNICATIONS JUNCTION BOX
1:2 E002

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

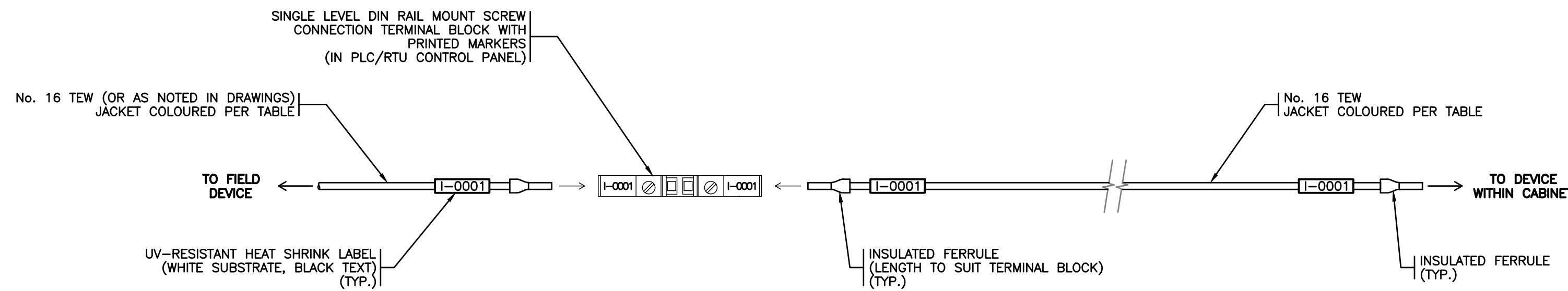
FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT		SCALE N/A DATE 26-01-21 DRAWING NUMBER E620 REVISION 0
COWICHAN HATCHERY ELECTRICAL UPGRADES		
DETAILS - INSTRUMENT INSTALLATION		



NOTES

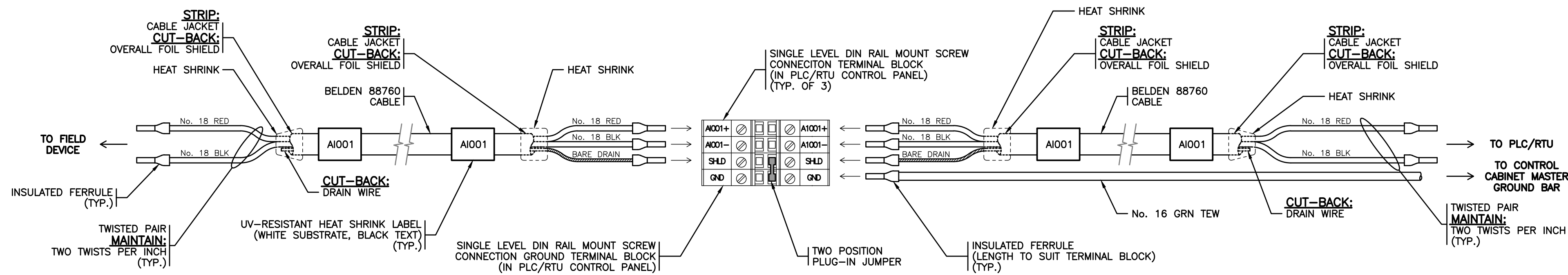
NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED	KM
DRAWN	PEX
CHECKED	AS
RECOMMENDED	AS
APPROVED	
APPROVED	

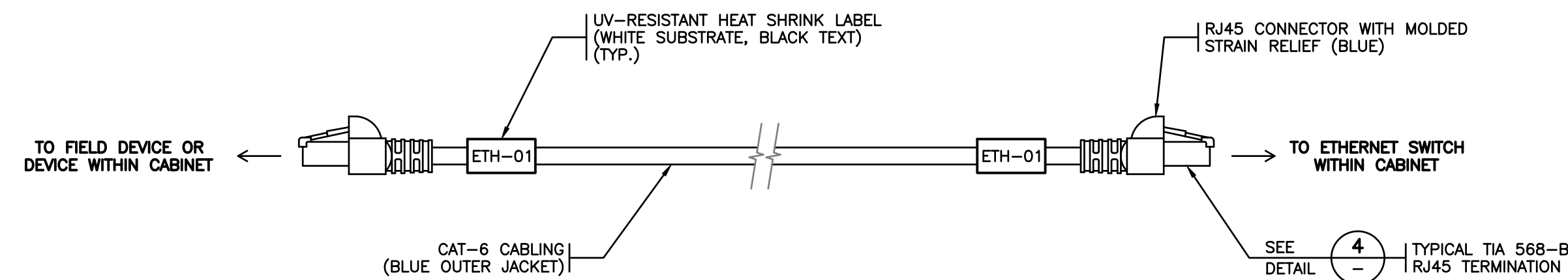


DISCRETE CONTROL CABLE COLOUR CODE LEGEND	
COLOUR	FUNCTION
YELLOW	BACKUP GENERATOR
RED	DC POSITIVE
BLUE	DC NEGATIVE
BLACK	AC HOT
WHITE	AC NEUTRAL
GREEN	ELECTRICAL GROUND

DETAIL 1 TYPICAL DISCRETE CONTROL FIELD
N.T.S. WIRING TERMINATION METHOD



DETAIL 2 TYPICAL ANALOG CONTROL FIELD
N.T.S. WIRING TERMINATION METHOD



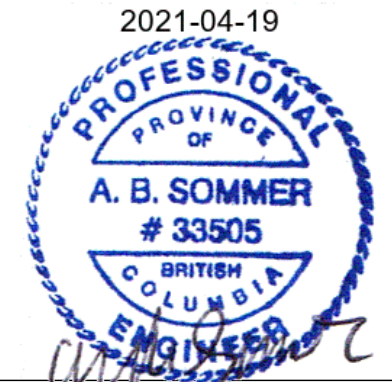
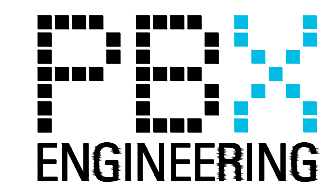
DETAIL 3 TYPICAL ETHERNET CABLING
N.T.S. TERMINATION METHOD

PIN	COLOUR
1	WHT/ORG
2	ORG
3	WHT/GRN
4	BLU
5	WHT/BLU
6	GRN
7	WHT/BRN
8	BRN

DETAIL 4 TYPICAL TIA 568-B RJ45 TERMINATION
N.T.S. (CLIP FACING AWAY)

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES	SCALE N/A
DETAILS - WIRING TERMINATIONS (SHEET 1/2)	DATE 26-JAN-21
	DRAWING NUMBER E630
	REVISION 0

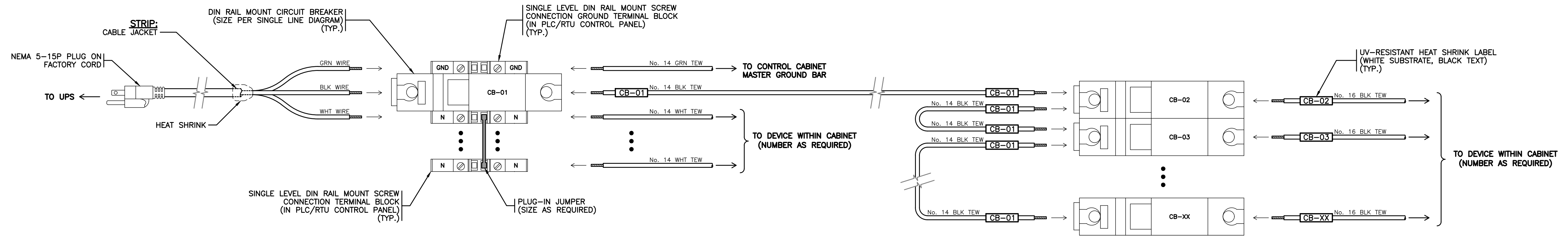


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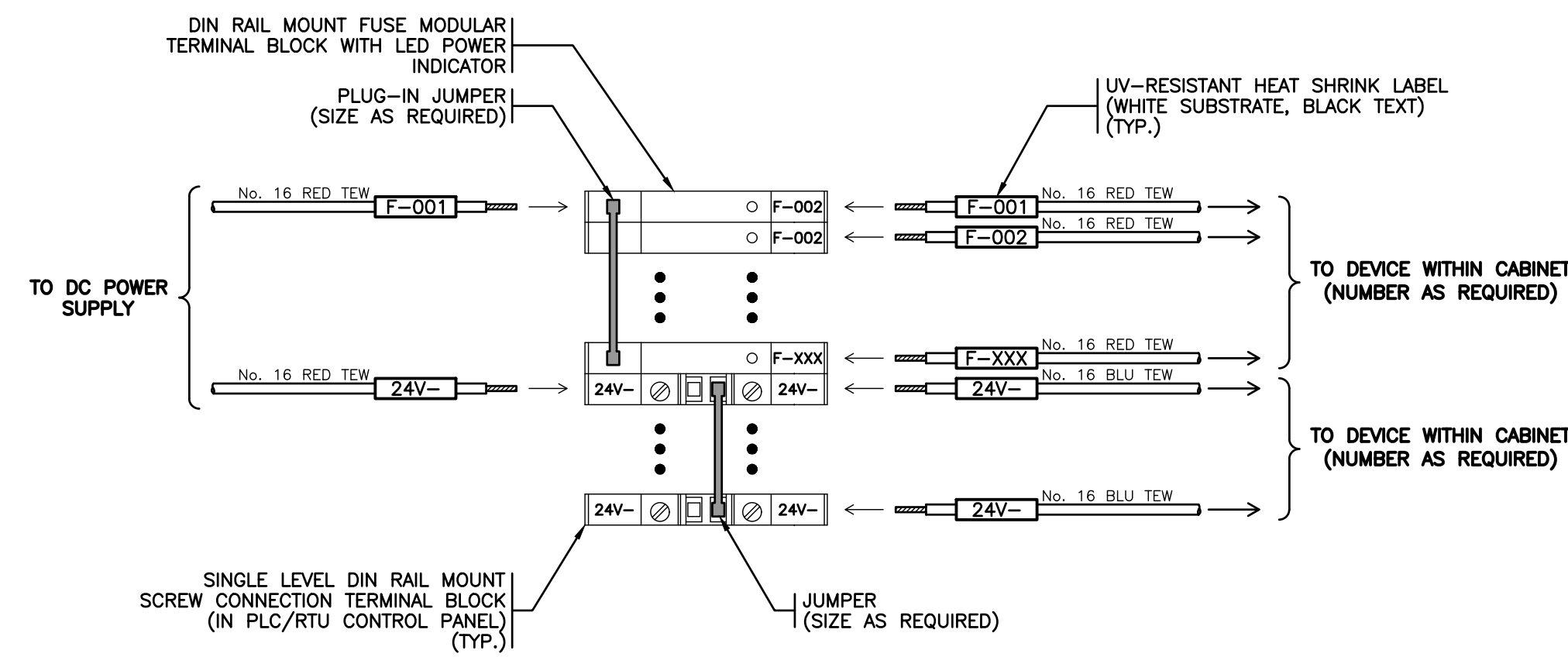
NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED	
KM	
DRAWN	
PBX	
CHECKED	
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RECOMMENDED	
APPROVED	
APPROVED	

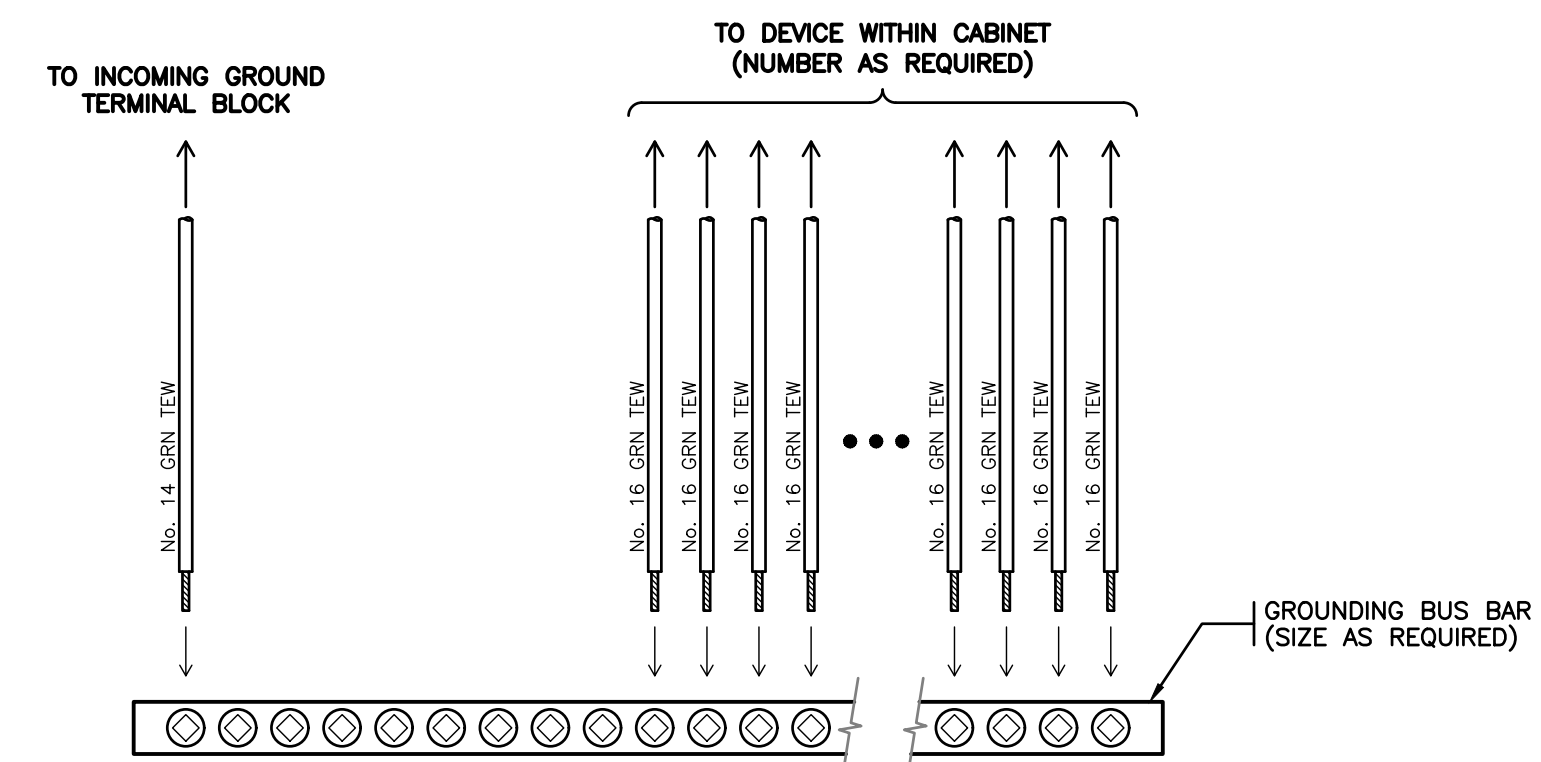
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DETAIL 1 TYPICAL 120V AC DISTRIBUTION
N.T.S. WIRING TERMINATION METHOD

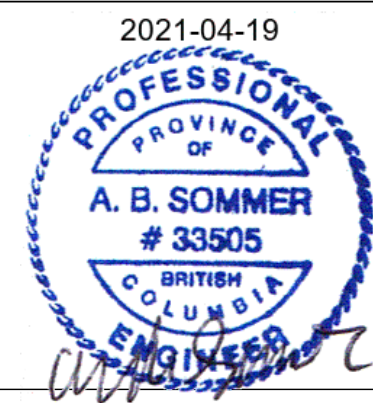
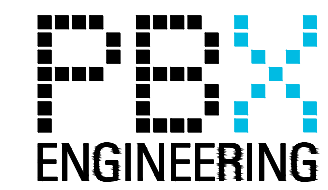


DETAIL 2 TYPICAL DC DISTRIBUTION
N.T.S. WIRING TERMINATION METHOD



DETAIL 3 TYPICAL MASTER GROUND BUS
N.T.S. TERMINATION METHOD

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

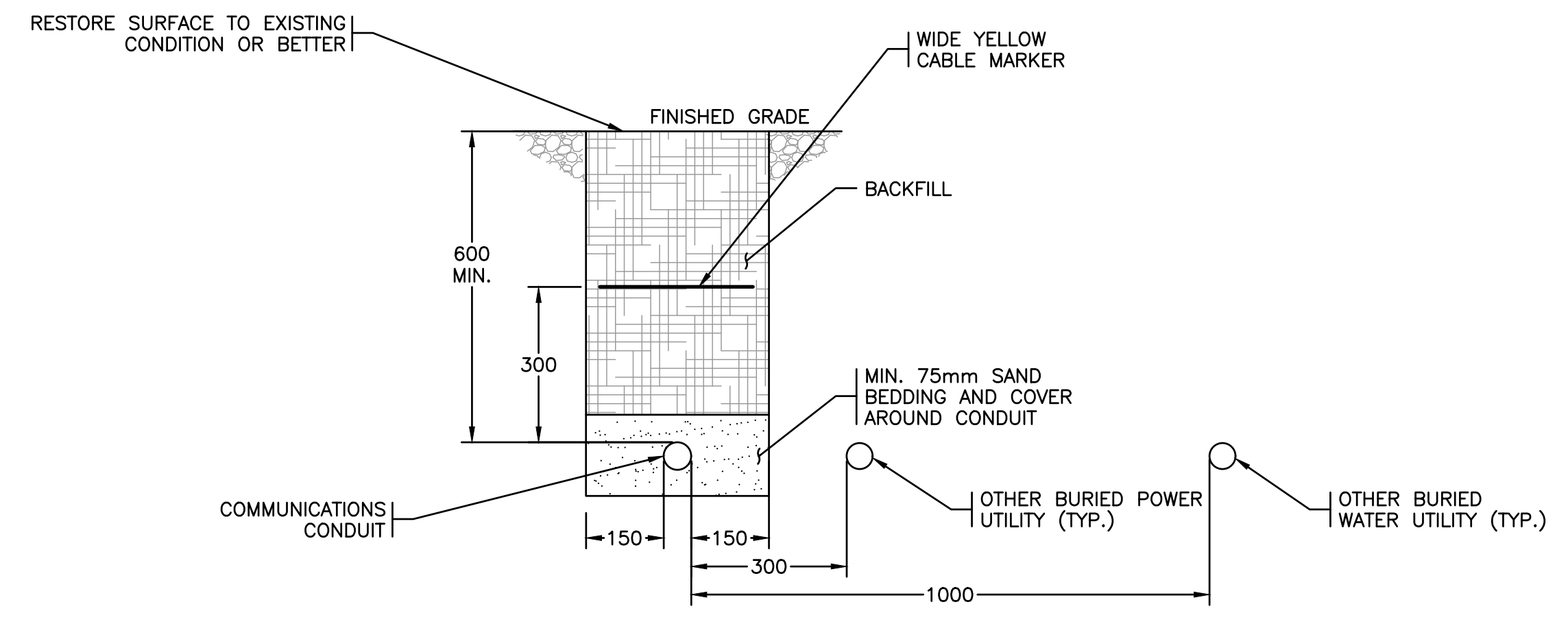


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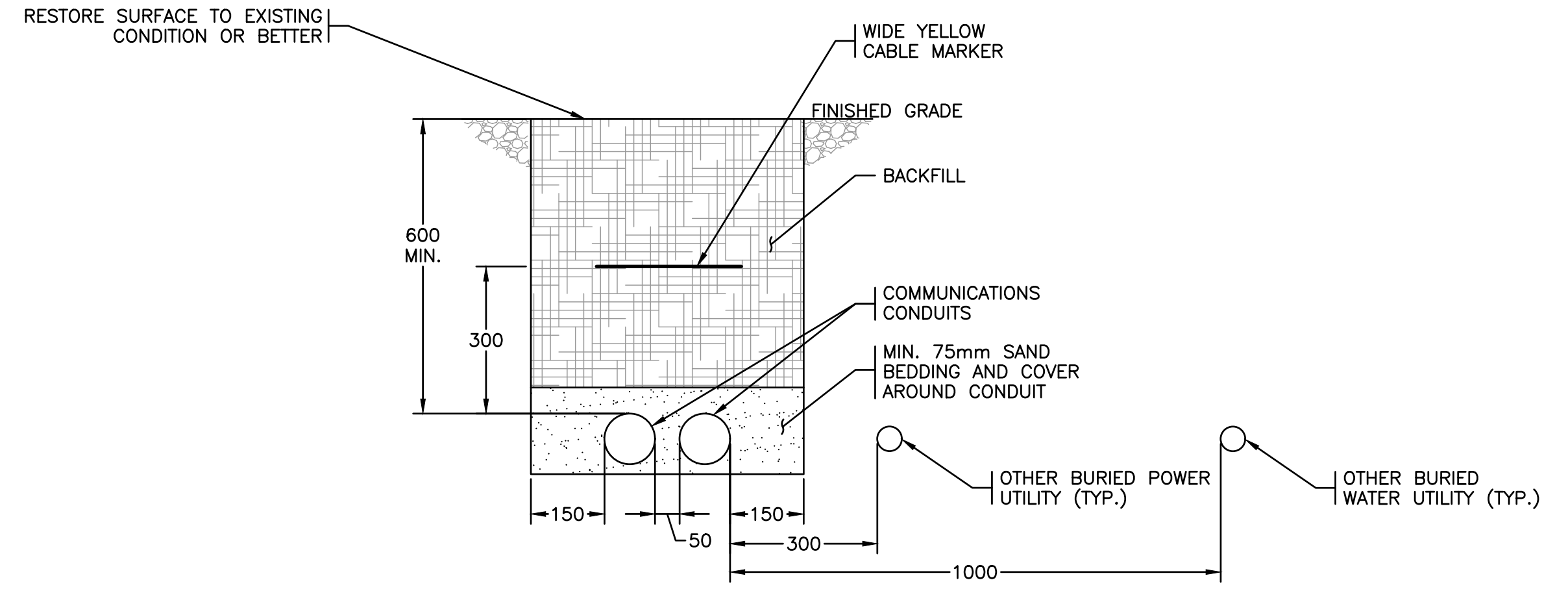
NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED	KM
DRAWN	PEX
CHECKED	AS
RECOMMENDED	AS
APPROVED	
APPROVED	

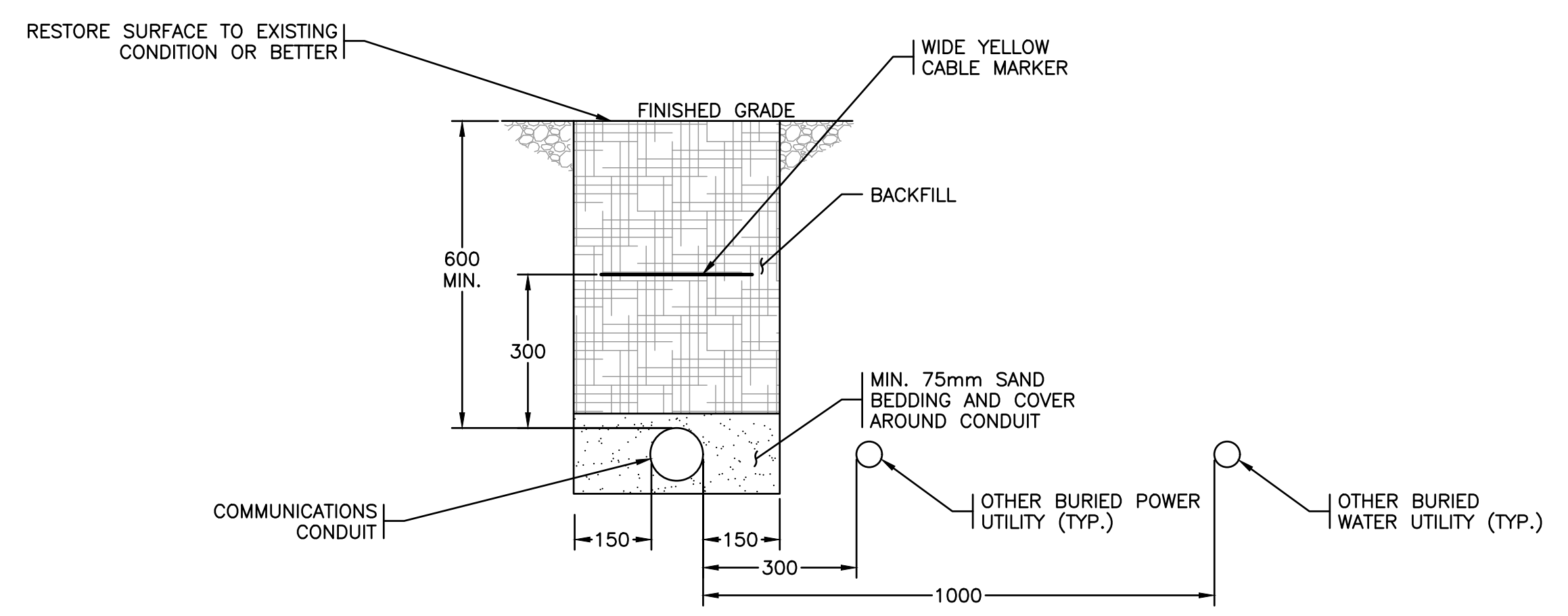
FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT	
COWICHAN HATCHERY ELECTRICAL UPGRADES	
DETAILS - WIRING TERMINATIONS (SHEET 2/2)	
SCALE	N/A
DATE	26-JAN-21
DRAWING NUMBER	E640
REVISION	0



SECTION **A** TYPICAL DUCTBANK SECTION
N.T.S. (E002) NEW JUNCTION BOX AND WELL # 1-3



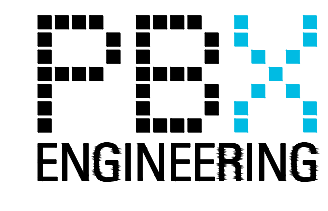
SECTION **B** EXISTING ELECTRICAL BUILDING AND
N.T.S. (E002) NEW JUNCTION BOX



SECTION **C** TYPICAL DUCTBANK SECTION
N.T.S. (E002)

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

FISHERIES AND OCEANS CANADA REAL PROPERTY AND TECHNICAL SUPPORT		SCALE N/A
COWICHAN HATCHERY ELECTRICAL UPGRADES		DATE 26-JAN-21
DUCTBANK SECTIONS		DRAWING NUMBER E650
		REVISION 0

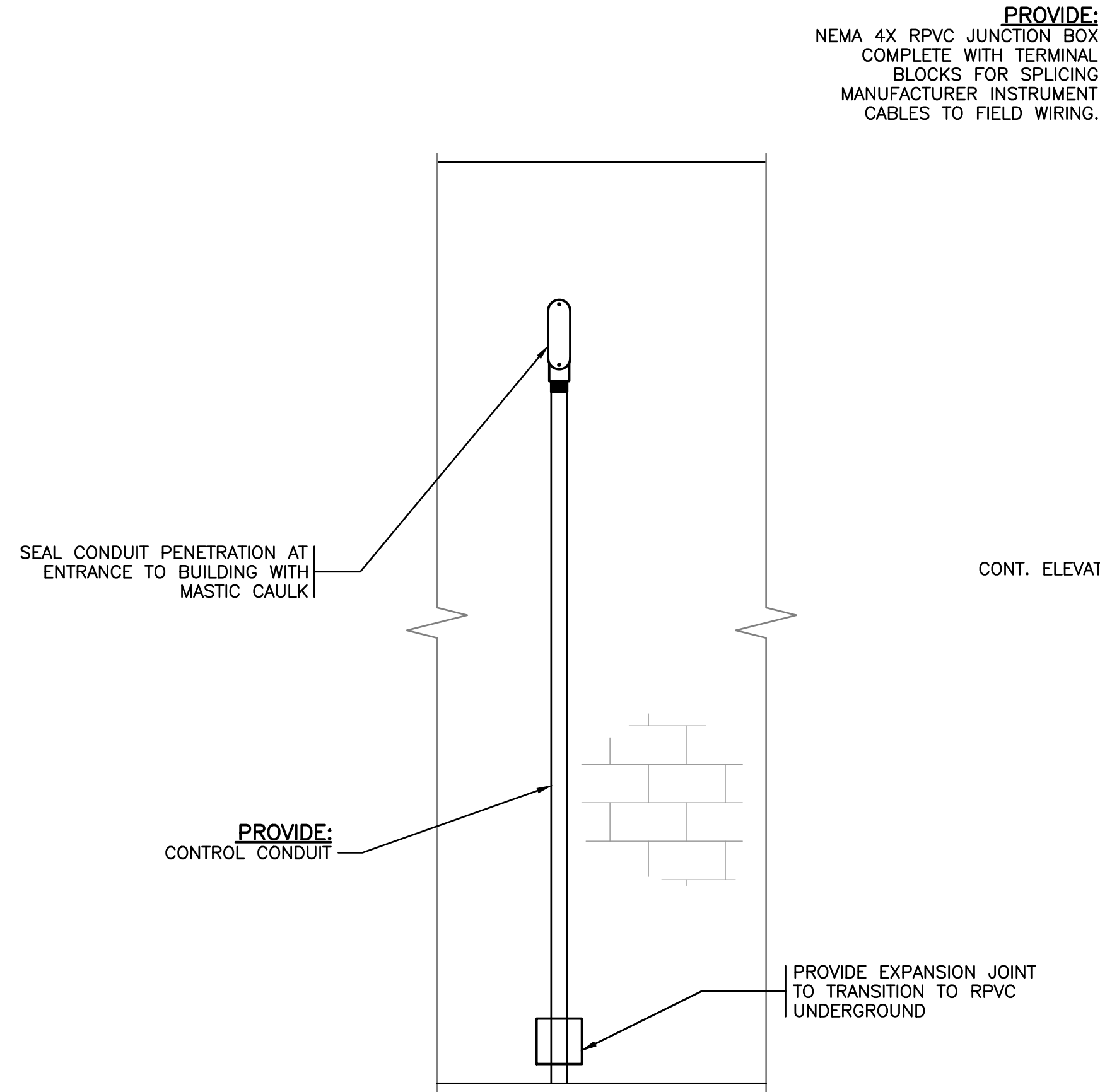


NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED	KM
DRAWN	PBX
CHECKED	AS
RECOMMENDED	AS
APPROVED	
APPROVED	

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NOTES:

- 1. SINGLE ENTRY SHOWN. SEE PLANS FOR EXACT NUMBER OF CONDUITS AND CONDUIT SIZES REQUIRED.

ELEVATION A BUILDING CONDUIT ENTRANCE N.T.S. - EXTERIOR WALL

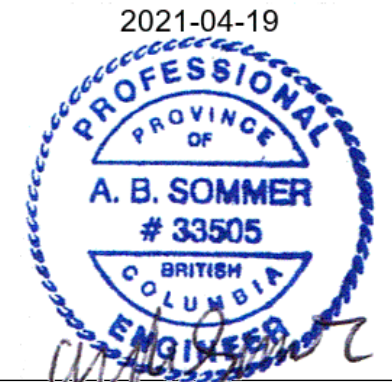
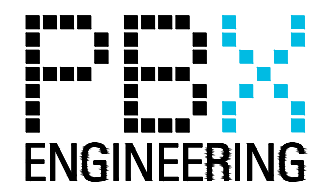
DETAIL A AERATION TOWER N.T.S. E201 RPVC ROUTING

DETAIL B AERATION TOWER N.T.S. E201

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

ALL EQUIPMENT IS EXISTING
UNLESS NOTED OTHERWISE

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT



NOTES

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER

DESIGNED
KM
DRAWN
PEX
CHECKED
AS
RECOMMENDED
APPROVED
APPROVED

**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

DETAILS AND ELEVATIONS

SCALE
N/A
DATE
26-JAN-21
DRAWING NUMBER
E651
REVISION
0

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PANEL: A								LOCATION: Electrical Room				
NOTE	LOAD	TYPE	DESCRIPTION	BRKR	CCT	PHASE	CCT	BRKR	DESCRIPTION	TYPE	LOAD	NOTE
			SOUTH WALL OUTLET	15A-1P	1	A	2	15A-1P	LIGHTS			
			BATT CHARGER EM OUTLET	15A-1P	3	B	4					
			EAST WALL OUTLET	15A-1P	5	C	6	15A-1P	WALL EXHAUST FAN & WELL FLOR			
			NORTH WALL OUTLET	15A-1P	7	A	8	15A-1P	WELL LIGHTS & OUTLETS			
			STORE LIGHT	15A-1P	9	B	10					
			VENT CONTROL	15A-1P	11	C	12	15A-2P	HEATER			
			BLOCK HEATER	15A-1P	13	A	14					
					15	B	16					
					17	C	18					
					19	A	20					
					21	B	22					
					23	C	24					
LOAD BREAKDOWN				CONNECTED	DERATED			PANEL DESCRIPTION				
L	LIGHTING:			0	100%	0		VOLTAGE	:	120/208	V	
C	COOLING:			0	100%	0		PHASEWIRE	:	3/4		
H	HEATING:			0	100%	0		AMPERAGE	:	-	A	
M	MECHANICAL:			0	100%	0		PANEL AMPACITY	:	100	A	
R	GENERAL RECEPTACLES:			0	100%	0		MAIN BREAKER	:	NONE	A	
E	OWNER EQUIPMENT:			0	100%	0		# OF TUBS	:	1		
TOTAL:				0	W	0						
NOTE DESCRIPTION												
1												
2												
3												

DETAIL **A** PANEL A PROPOSED
N.T.S.

NOTES TO CONTRACTOR:

- EXISTING PANEL SCHEDULES ARE TAKEN FROM AS-BUILT INFORMATION PROVIDED BY OTHERS. THESE ARE FOR INFORMATION PURPOSES ONLY AND PROVIDED AS A GUIDELINE FOR RE-CIRCUITING. THE CONTRACTOR SHALL FIELD VERIFY THIS INFORMATION PRIOR TO PERFORMING ANY WORK.

**ISSUED FOR TENDER
NOT FOR CONSTRUCTION**

ALL EQUIPMENT IS PROPOSED
UNLESS NOTED OTHERWISE

FISHERIES AND OCEANS CANADA
REAL PROPERTY AND TECHNICAL SUPPORT

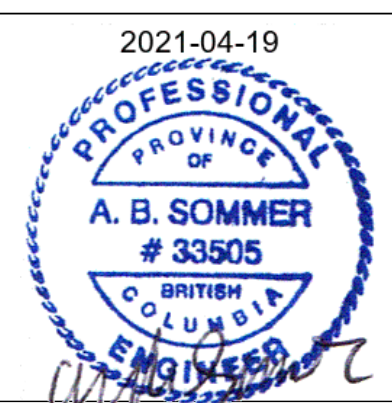
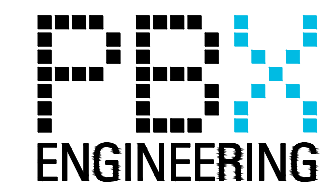
**COWICHAN HATCHERY
ELECTRICAL UPGRADES**

PANEL SCHEDULES

SCALE
N/A
DATE
26-JAN-21
DRAWING NUMBER
E701
REVISION 0

DESIGNED
KM
DRAWN
PEX
CHECKED
AS
RECOMMENDED
APPROVED
APPROVED

NO.	DATE	REVISIONS
0	2021-04-19	ISSUED FOR TENDER



NOTES