

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

**NITINAT RIVER HATCHERY  
 GENERATOR UPGRADES**

**CARMANAH MAIN, NITINAT LAKE, BC  
 FEBRUARY 02, 2017**



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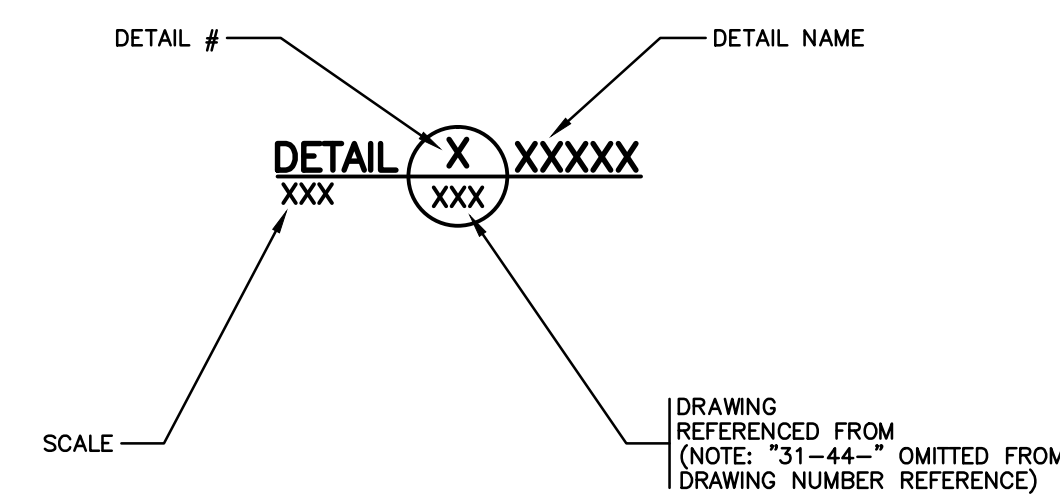
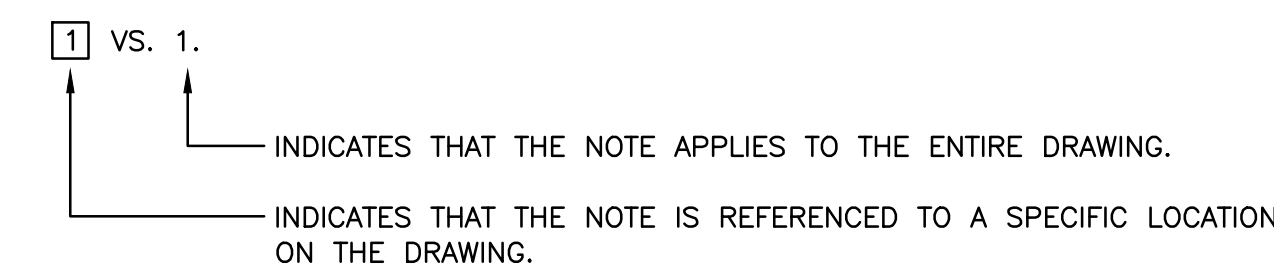
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SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE 120V (GFCI)
	SWITCH (LIGHTING)
	MOTOR
	FAN
	GENERATOR
	OVERLOAD PROTECTION
	DISCONNECT
	FUSE
	POWER/COMMUNICATIONS UTILITY POLE
	GROUNDING
	CONTACTOR/RELAY COIL
	FUSE
	CURRENT TRANSFORMER
	METER
	POWER TRANSFORMER
	NORMAL OPEN CONTACT
	NORMAL CLOSED CONTACT
	CIRCUIT BREAKER
	PANELBOARD, CONTROL PANEL
	THERMOSTAT
	EMERGENCY STOP PUSH BUTTON

LINE TYPE LEGEND	
LINE	DESCRIPTION
	120V CONDUIT/CABLE
	COMMUNICATIONS OR LOW VOLTAGE CONDUIT/CABLE
	347/600V CONDUIT/CABLE
	TECK CABLING
	25kV CONDUIT
	GROUNDING

**NOTES LEGEND:**



**DETAIL REFERENCE CONVENTION:**

**ABBREVIATIONS:**

- ASP - AUTO SEQUENCE PANEL
- ATS - AUTO TRANSFER SWITCH
- BATT - BATTERY
- BCH - BC HYDRO
- C - COIL
- C/W - COMPLETE WITH
- CBX - CIRCUIT BREAKER ("X" DENOTES NUMBER)
- CEC - CANADIAN ELECTRICAL CODE, PART 1, LATEST EDITION
- COMM - COMMUNICATION
- CT - CURRENT TRANSFORMER
- CTRL - CONTROL
- EMT - ELECTRICAL METALLIC TUBING
- FCB - FEEDER CIRCUIT BREAKER
- FVNR - FORWARD VOLTAGE NON-REVERSING
- GEN - GENERATOR SET
- GFCI - GROUND FAULT CIRCUIT INTERRUPTER
- GND - GROUND
- HMI - HUMAN MACHINE INTERFACE
- HOA - HAND-OFF-AUTO CONTROL
- HP - HORSE POWER
- LVL - LEVEL
- MDC - MAIN DISTRIBUTION CENTRE
- MM - MILLIMETER
- MSP - MANUAL SEQUENCE PANEL
- MTS - MANUAL TRANSFER SWITCH
- N - NEUTRAL
- NC - NORMALLY CLOSED
- NO - NORMALLY OPEN
- NS - NETWORK SWITCH
- OL - OVERLOAD
- PC - PERSONAL COMPUTER
- PNL - PANEL
- PS - POWER SUPPLY
- PWR - POWER
- R - RED
- RAD - RADIATOR
- RLY - RELAY
- RMC - RIGID METAL CONDUIT
- RPVC - RIGID POLYVINYL CHLORIDE
- SCADA - SUPERVISORY CONTROL AND DATA ACQUISITION
- SPD - SURGE PROTECTION DEVICE
- SS - STAINLESS STEEL
- SS - SURGE SUPPRESSOR
- TB - TERMINAL BLOCK
- UPS - UNINTERRUPTIBLE POWER SUPPLY
- XFMR - TRANSFORMER

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

**NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL**

**SYMBOLS AND ABBREVIATIONS**

SCALE  
N/A  
DATE  
17-FEB-02  
DRAWING NUMBER  
31-44-461  
REVISION  
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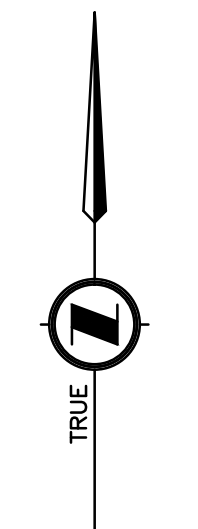
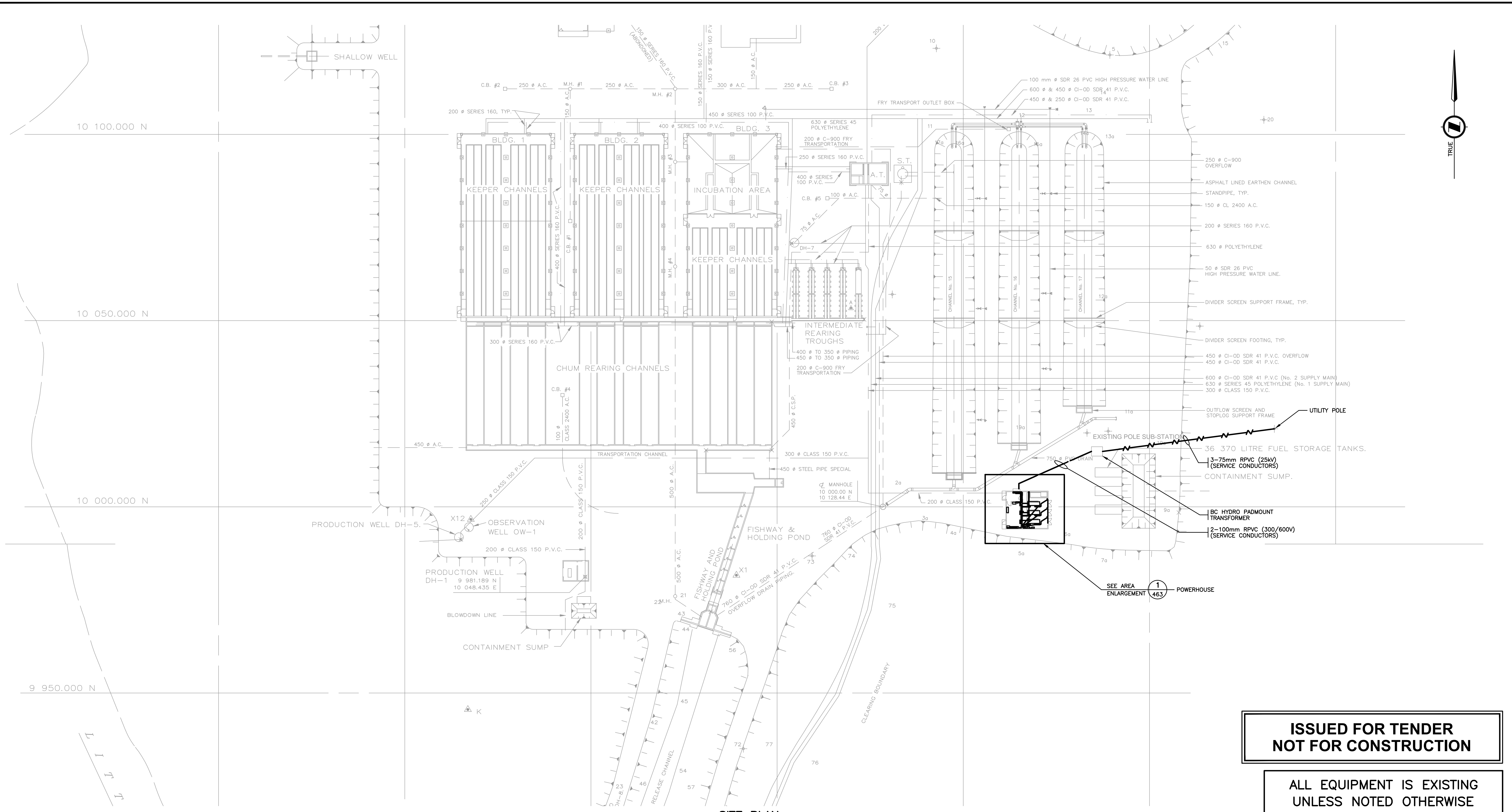
NOTES

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- 2017-FEB-02 ISSUED FOR TENDER

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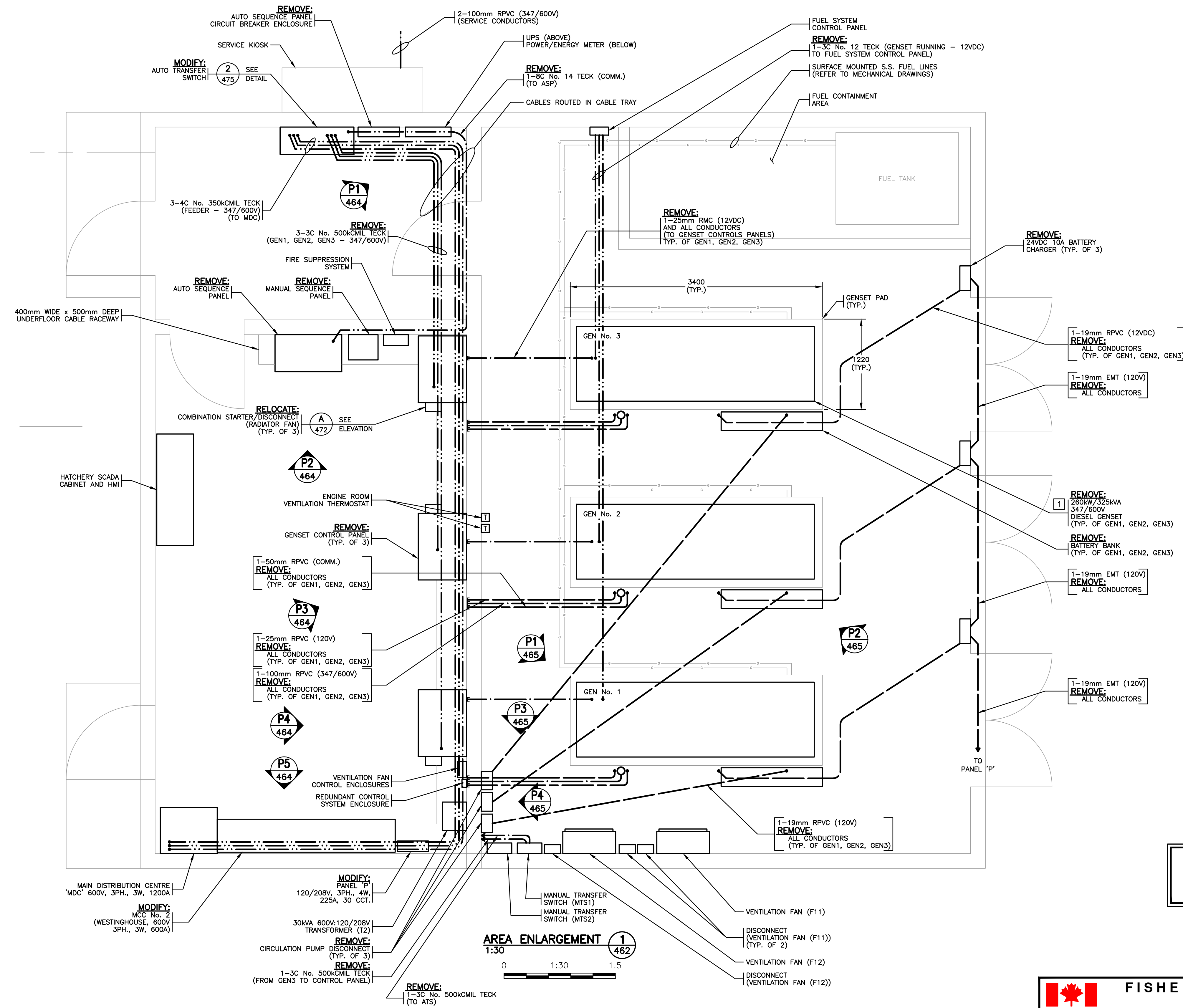
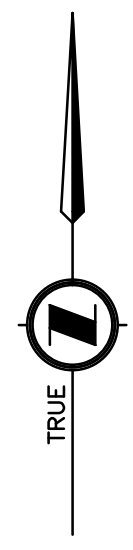
**SITE PLAN**  
0 1:500 25

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<p><b>PBX ENGINEERING</b> PBX ENGINEERING Ltd. Suite 300 - 131 Water St. Vancouver BC, V6B 4M3 Tel 604.408.7222</p>	DESIGNED	<p><b>NITINAT RIVER HATCHERY GENERATOR UPGRADES ELECTRICAL</b></p> <p><b>SITE PLAN</b></p>	SCALE
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	<b>NITINAT RIVER HATCHERY GENERATOR UPGRADES ELECTRICAL</b>		SCALE <b>AS SHOWN</b>
	<b>AREA ENLARGEMENT - POWERHOUSE (DEMOLITION)</b>		DATE <b>17-FEB-02</b>
			DRAWING NUMBER <b>31-44-463</b>
			REVISION -

**NOTES:**

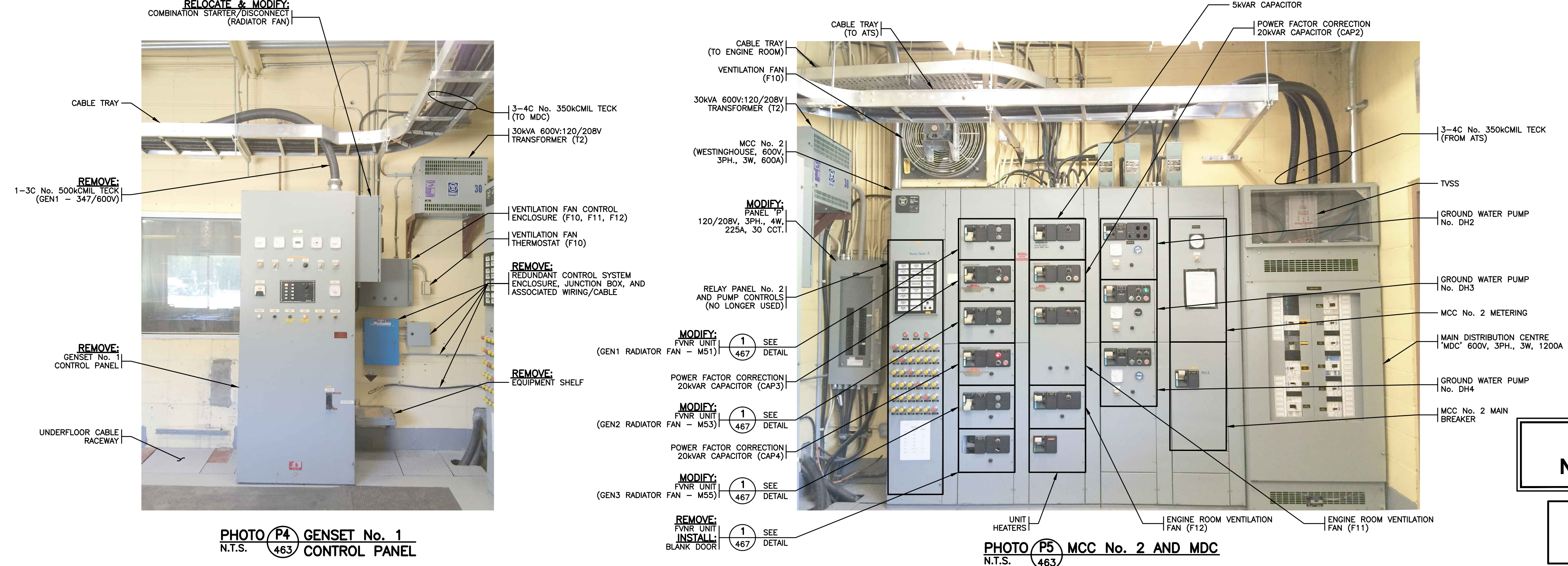
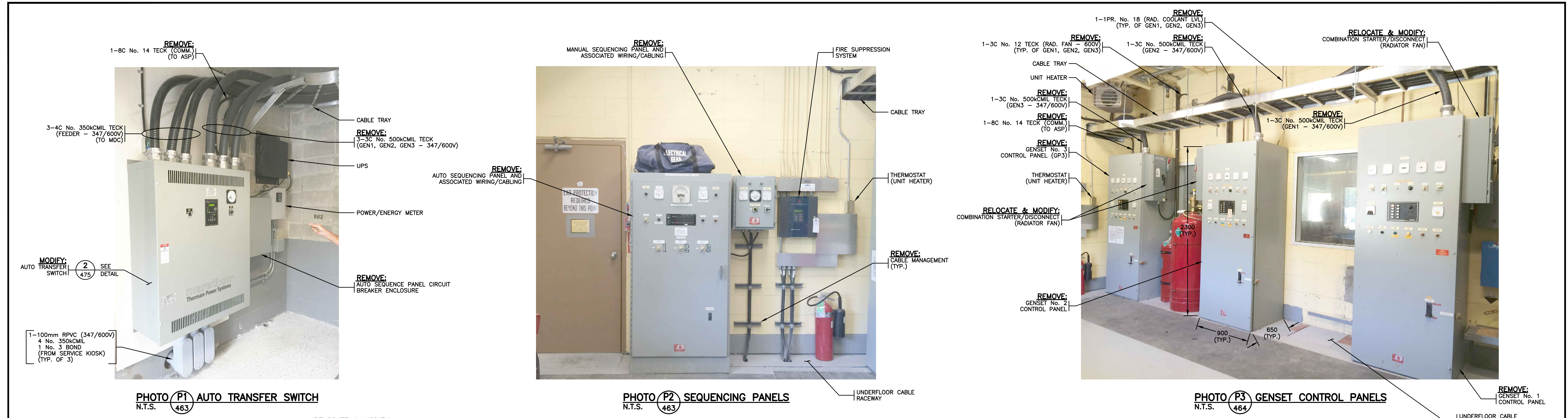
- REFER TO MECHANICAL DRAWINGS FOR EXISTING FUEL LINES, CRANKCASE BREATHER VENT, COOLANT LINES, AND EXHAUST LINE REMOVALS AND MODIFICATIONS.
- REMOVE ROOF MOUNTED RADIATOR FANS, NOT SHOWN, TYPICAL OF 3. REFER TO MECHANICAL DRAWINGS.

NOTES

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**NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL**

SCALE: **AS SHOWN**  
DATE: **17-FEB-02**  
DRAWING NUMBER: **31-44-464**  
REVISION: -

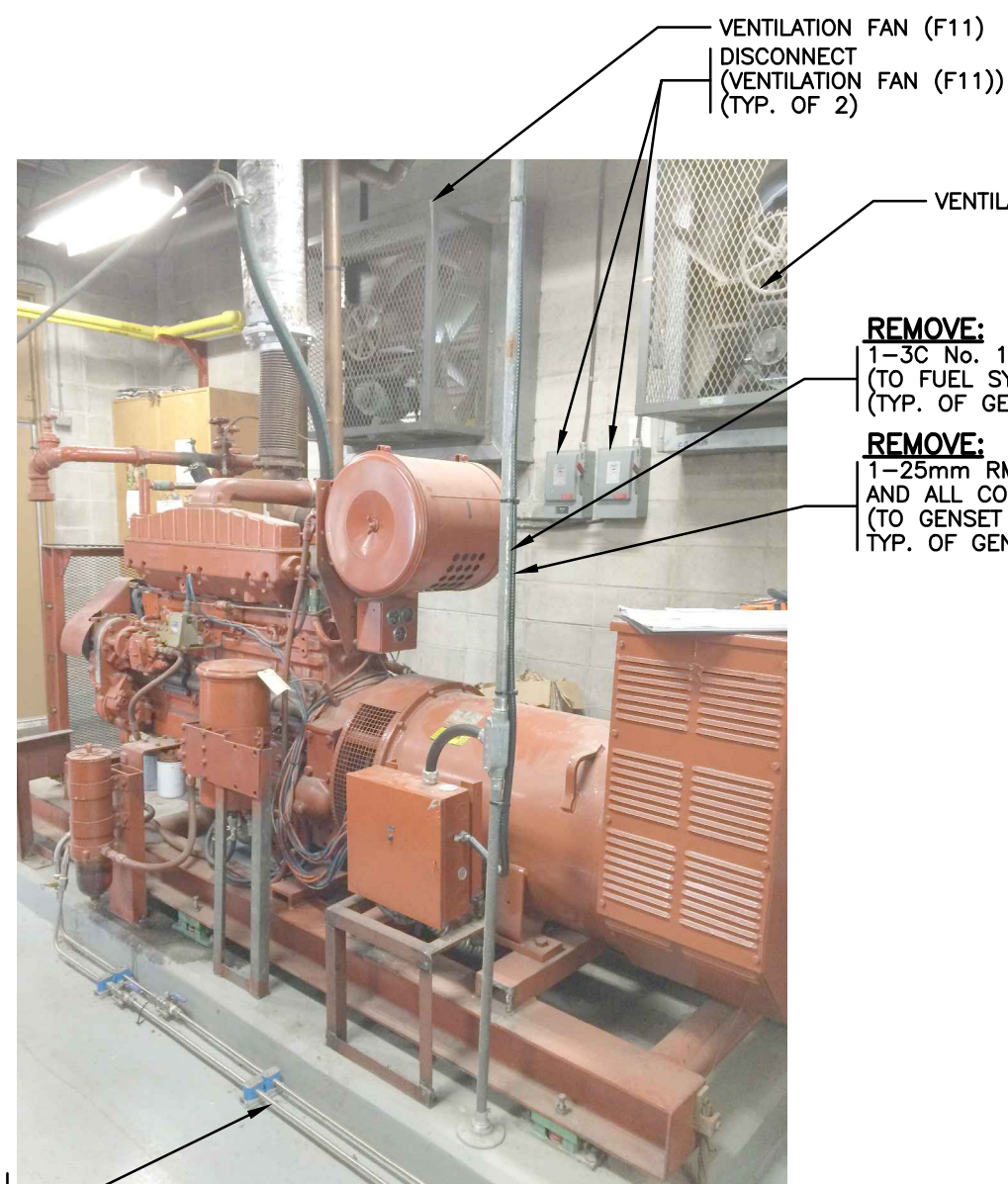
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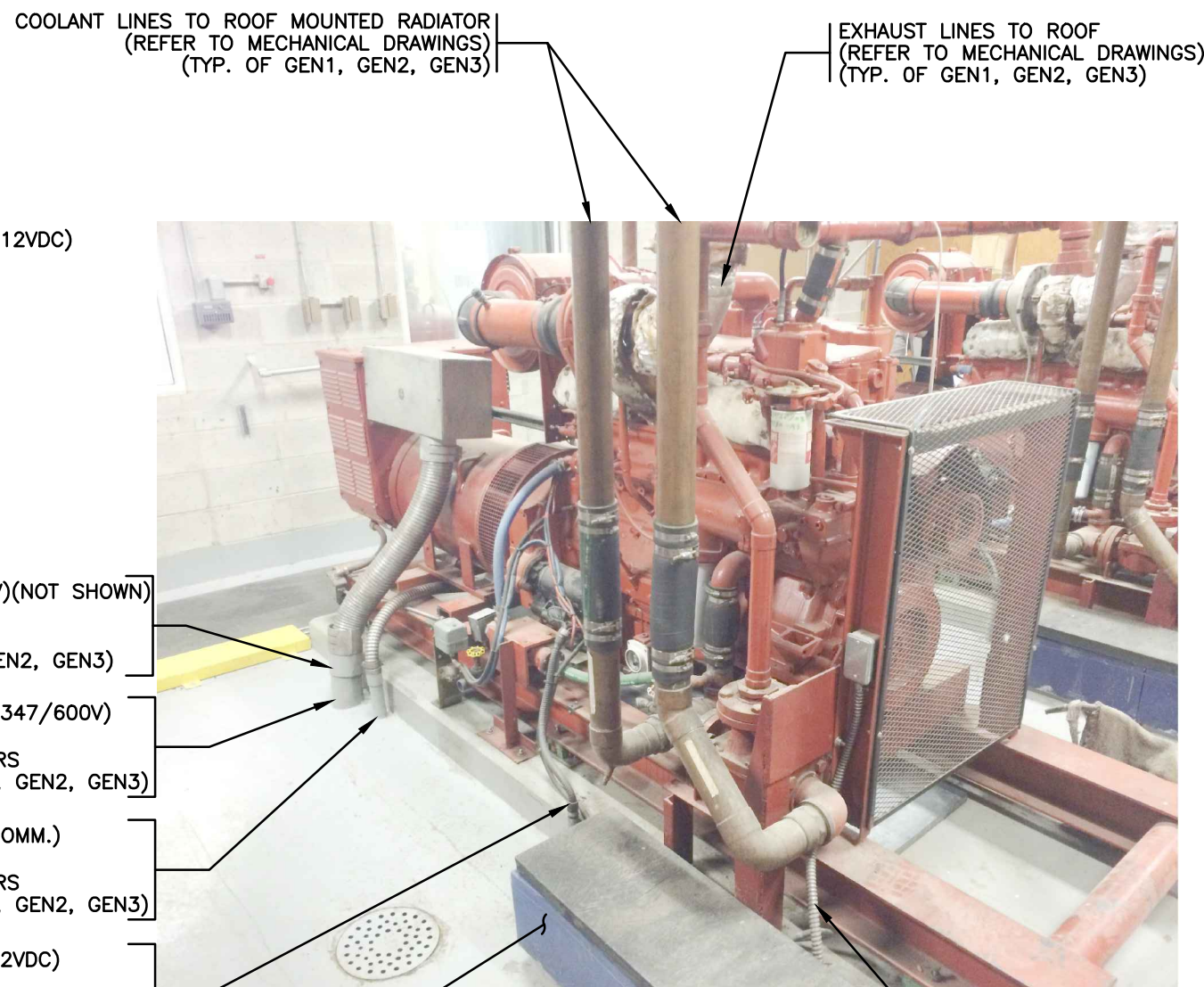
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SURFACE MOUNTED S.S FUEL LINES (REFER TO MECHANICAL DRAWINGS)

PHOTO P1 GENERATOR SET No. 1  
N.T.S. 463

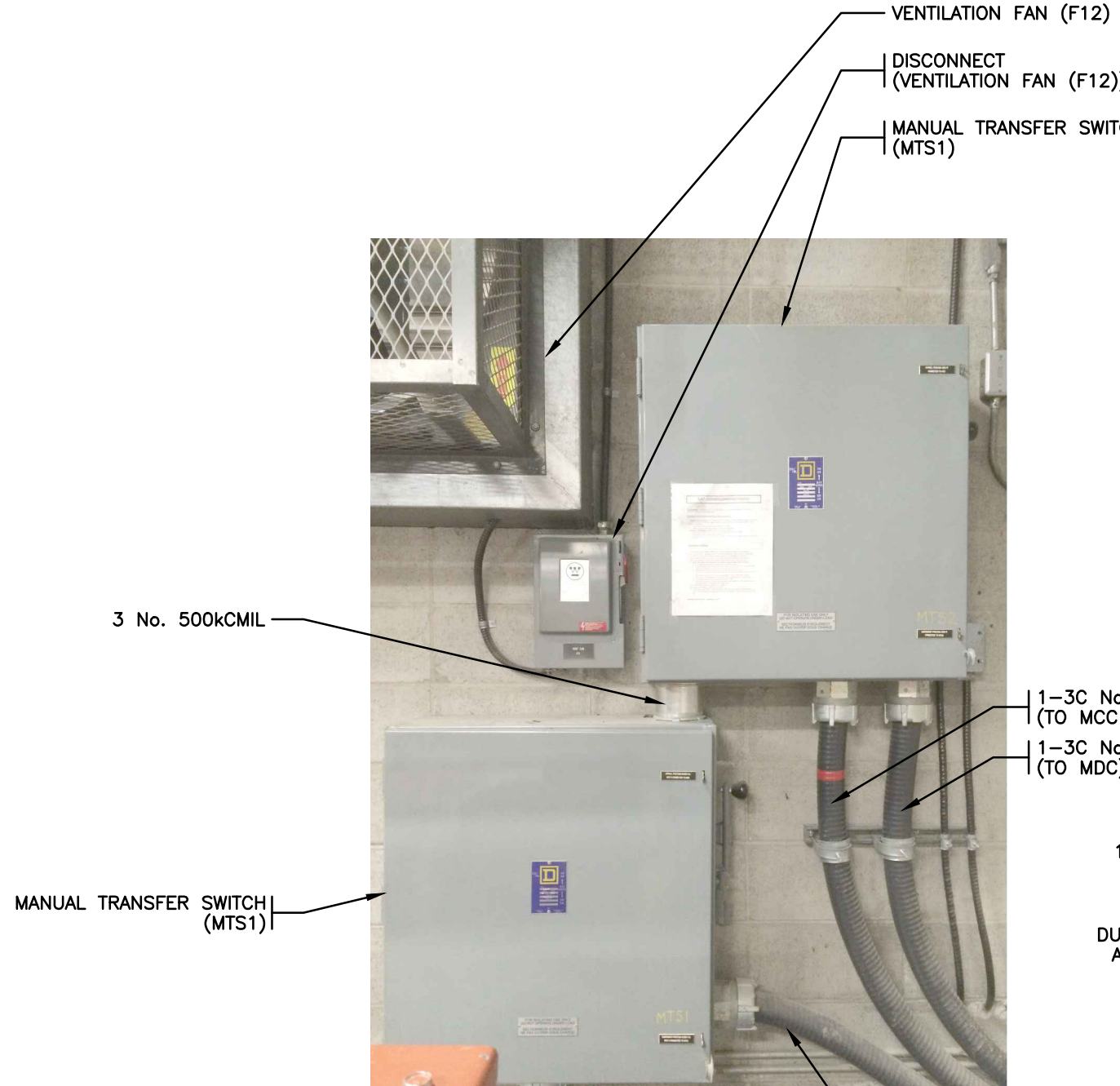
VENTILATION FAN (F11)  
DISCONNECT (VENTILATION FAN (F11)) (TYP. OF 2)  
VENTILATION FAN (F12)  
**REMOVE:**  
1-3C No. 12 TECK (GENSET RUNNING - 12VDC) (TO FUEL SYSTEM CONTROL PANEL) (TYP. OF GEN1, GEN2, GEN3)  
**REMOVE:**  
1-25mm RMC (12VDC) AND ALL CONDUCTORS (TO GENSET CONTROL PANELS) (TYP. OF GEN1, GEN2, GEN3)



1-25mm RPVC (120V)(NOT SHOWN)  
**REMOVE:**  
ALL CONDUCTORS (TYP. OF GEN1, GEN2, GEN3)  
1-100mm RPVC (347/600V)  
**REMOVE:**  
ALL CONDUCTORS (TYP. OF GEN1, GEN2, GEN3)  
1-50mm RPVC (COMM.)  
**REMOVE:**  
ALL CONDUCTORS (TYP. OF GEN1, GEN2, GEN3)  
1-19mm RPVC (12VDC)  
**REMOVE:**  
ALL CONDUCTORS (TYP. OF GEN1, GEN2, GEN3)  
**REMOVE:**  
BATTERY BANK (TYP. OF GEN1, GEN2, GEN3)

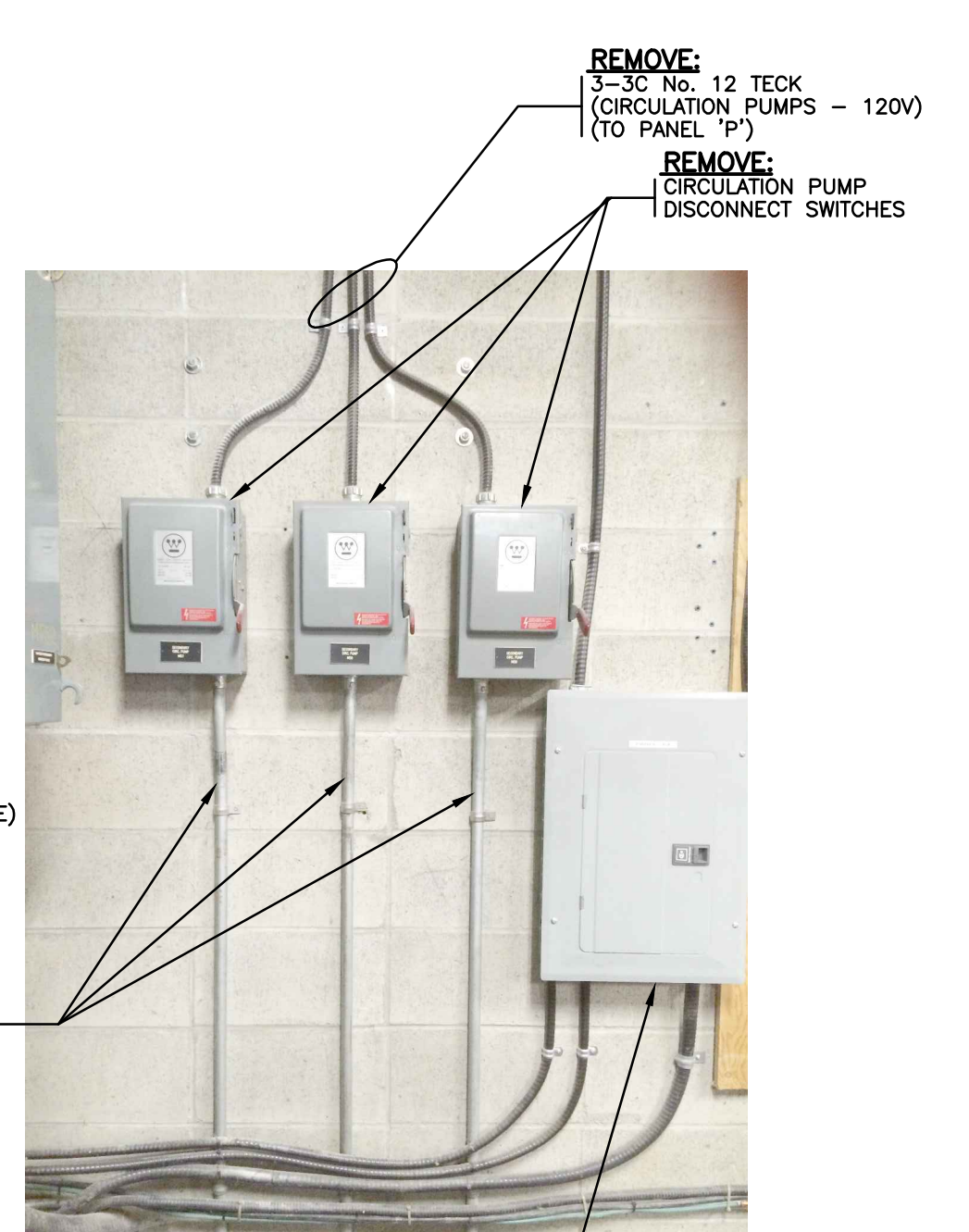
PHOTO P2 GENERATOR SET No. 2  
N.T.S. 463

1-19mm RPVC (120V)(NOT SHOWN)  
**REMOVE:**  
ALL CONDUCTORS (TYP. OF GEN1, GEN2, GEN3)



3 No. 500kCML  
MANUAL TRANSFER SWITCH (MTS1)  
**REMOVE:**  
1-3C No. 500kCML TECK (FROM GEN3 CONTROL PANEL) (NOT SHOWN)  
**REMOVE:**  
1-3C No. 500kCML TECK (TO MCC No. 4 - PUMPHOUSE)  
1-3C No. 500kCML TECK (TO MDC)  
**REMOVE:**  
1-19mm EMT (120V) 3 No. 12  
1 No. 12 BOND  
**INSTALL:**  
DUCT SEAL IN CONDUIT AT SLAB PENETRATION  
**REMOVE:**  
1-3C No. 500kCML TECK (TO ATS)

PHOTO P3 MANUAL TRANSFER SWITCHES  
N.T.S. 463



**REMOVE:**  
3-3C No. 12 TECK (CIRCULATION PUMPS - 120V) (TO PANEL 'P')  
**REMOVE:**  
CIRCULATION PUMP DISCONNECT SWITCHES  
PANEL 'PX'  
120/208V, 3PH., 4W, 30A

PHOTO P4 DISCONNECT SWITCHES  
N.T.S. 463

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BW	31-44-465	
RECOMMENDED	REVISION	-
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NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL  
DETAILS (2 OF 2)  
(DEMOLITION)

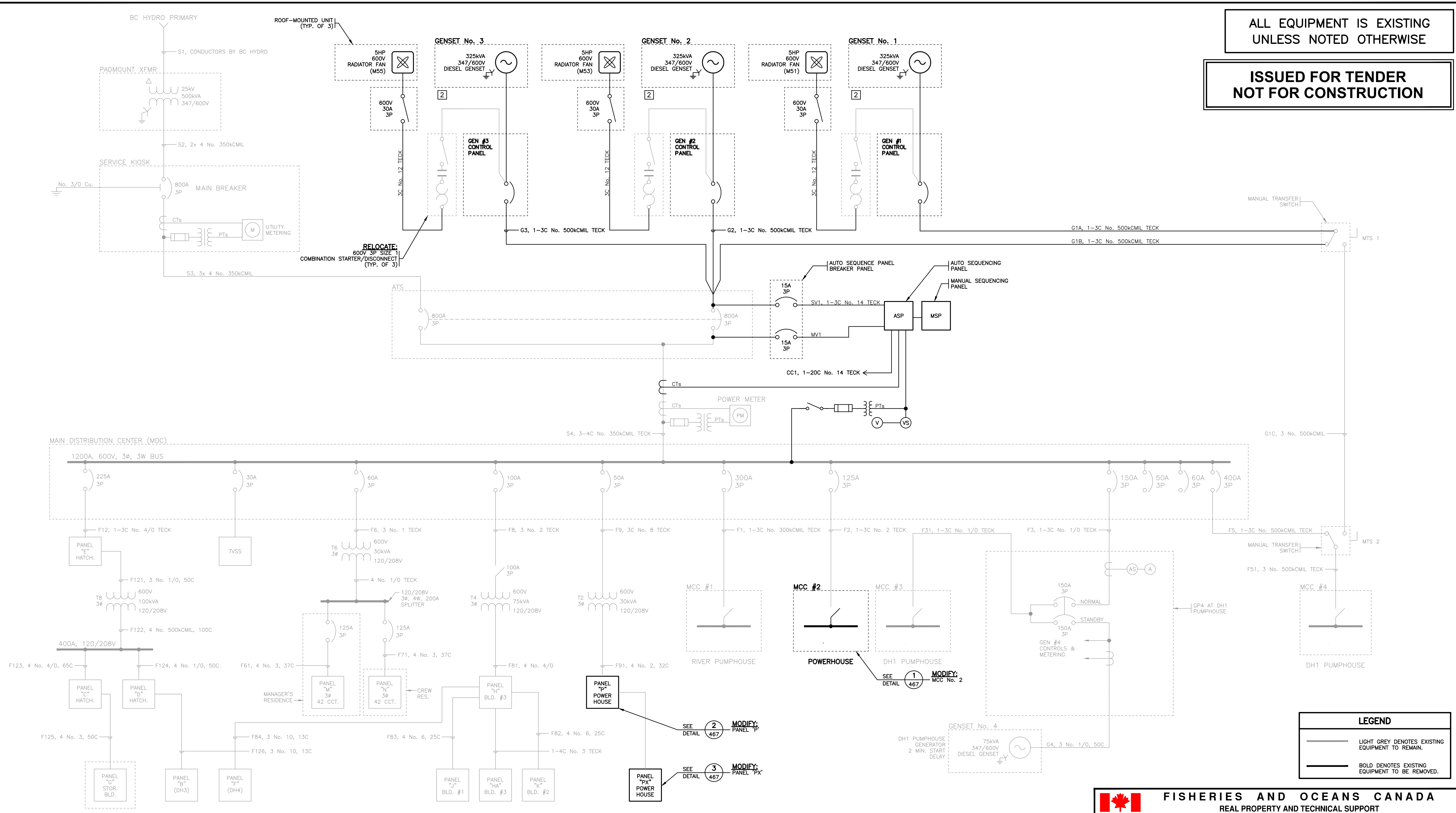
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LEGEND	
	LIGHT GREY DENOTES EXISTING EQUIPMENT TO REMAIN.
	BOLD DENOTES EXISTING EQUIPMENT TO BE REMOVED.

**NOTES:**

- THIS DRAWING HAS BEEN CREATED FROM EXISTING DFO AS-BUILT DRAWINGS. ENGINEER TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF EXISTING EQUIPMENT SHOWN ON THIS DRAWING.
- REFER TO SITE PLAN FOR CONTROL AND LOW VOLTAGE CABLING REMOVALS.

NOTES

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**NITINAT RIVER HATCHERY  
 GENERATOR UPGRADES  
 ELECTRICAL**

**SINGLE LINE DIAGRAM  
 (DEMOLITION)**

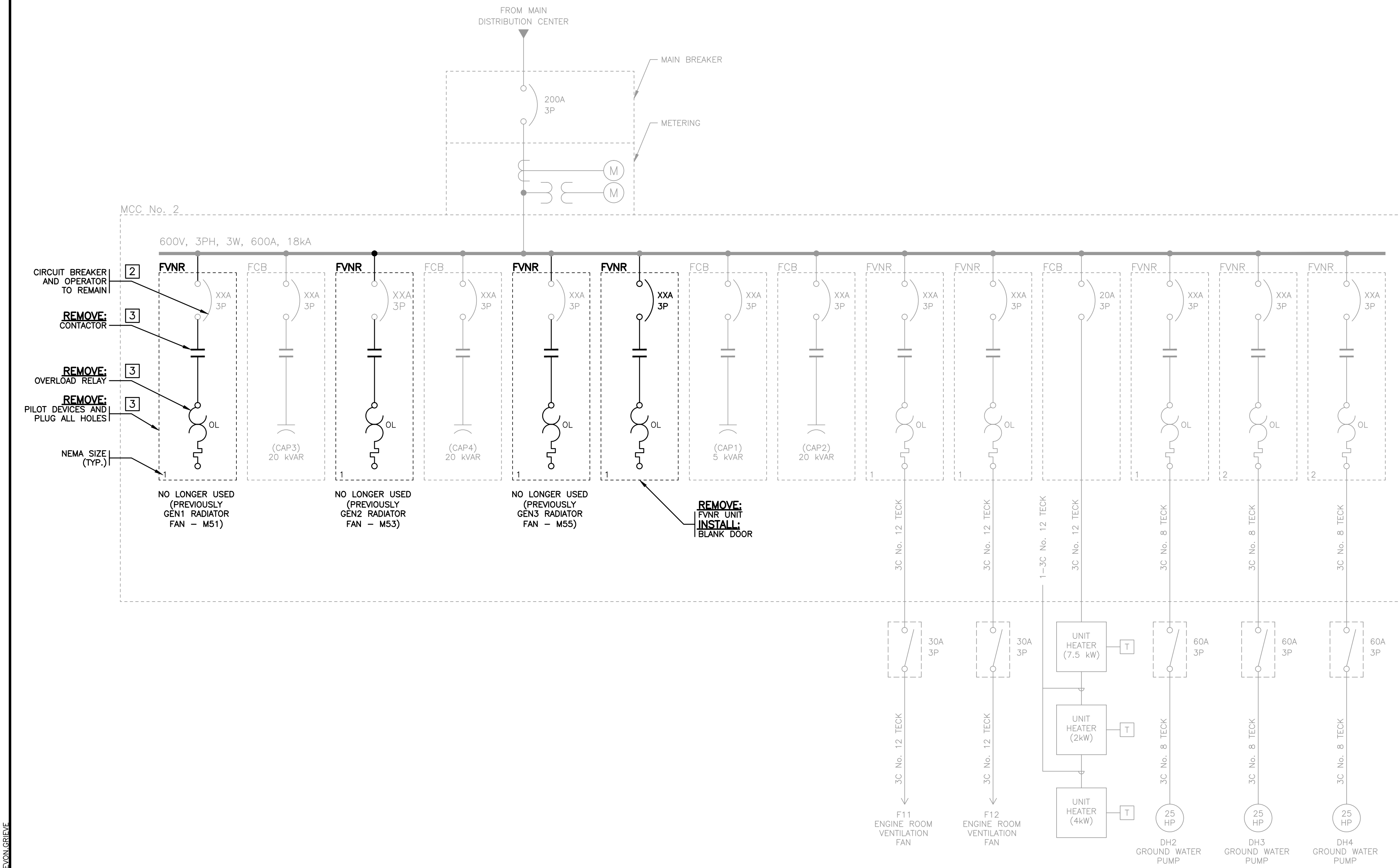
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DATE	17-FEB-02
DRAWING NUMBER	31-44-466
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DETAIL 1/464 1/466 MCC No. 2 SINGLE LINE DIAGRAM  
N.T.S.

PANEL P SCHEDULE						
DESCRIPTION	kW	BKR.	CIRCUIT NO.	BKR.	kW	DESCRIPTION
LIGHTS	-	15A	1-2	15A	-	RECEPTACLE
SERVICE KIOSK	-	15A	3-4	15A	-	RECEPTACLE
			5-6	15A	-	RECEPTACLE
SUB-PANEL 'PX'	-	30A	7-8	15A	-	RECEPTACLE
			9-10	15A	-	STROBE LIGHT & SIREN
			11-12	15A	-	EXHAUST FAN (F10)
GEN #1 VALVE CTRL.	-	15A	13-14	15A	-	POWER SUPPLY (AP2)
GEN #2 VALVE CTRL.	-	15A	15-16	15A	-	HEATER FAN (UH4)
GEN #3 VALVE CTRL.	-	15A	17-18	15A	-	OUTSIDE LIGHTS
GEN #1 HEATER	-	30A	19-20	20A	-	BATTERY CHARGER
GEN #2 HEATER	-	30A	21-22	15A	-	EMERG. LIGHTS
GEN #3 HEATER	-	30A	23-24	15A	-	SPARE
AUTO SEQUENCE PANEL	-	15A	25-26	70A	-	ADULT HAND PANEL
FP2	-	15A	27-28	-	-	
IAP SIGN POWER SUPPLY	-	15A	29-30	3P	-	
TOTAL kW	-					TOTAL

MAINS: 225A  
MOUNTING: SURFACE  
MAIN BKR.: -  
FEEDER: -

VOLTS: 120/208V  
LOCATION: BESIDE MCC No. 2  
FED FROM: TRANSFORMER T2  
ENTER AT: TOP

DETAIL 2/467 PANEL 'P' SCHEDULE  
N.T.S.

PANEL PX SCHEDULE						
DESCRIPTION	kW	BKR.	CIRCUIT NO.	BKR.	kW	DESCRIPTION
DIESEL DISPENSING PUMP	-	15A	1-2	15A	-	DIESEL DISPENSING PUMP
FUEL TANK	-	15A	3-4	15A	-	UPS
			5-6	15A	-	SPARE
			7-8	-	-	-
			9-10			
			11-12			
			13-14			
			15-16			
			17-18			
			19-20			
TOTAL kW	-					TOTAL

MAINS: 30A  
MOUNTING: SURFACE  
MAIN BKR.: -  
FEEDER: -

VOLTS: 120/208V  
LOCATION: ENGINE ROOM  
FED FROM: PANEL P  
ENTER AT: TOP

DETAIL 3/467 PANEL 'PX' SCHEDULE  
N.T.S.

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LEGEND	
	LIGHT GREY DENOTES EXISTING EQUIPMENT TO REMAIN.
	BOLD DENOTES EXISTING EQUIPMENT TO BE REMOVED.

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NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL  
MCC No. 2 SINGLE LINE DIAGRAM  
AND PANEL SCHEDULES  
(DEMOLITION)

SCALE  
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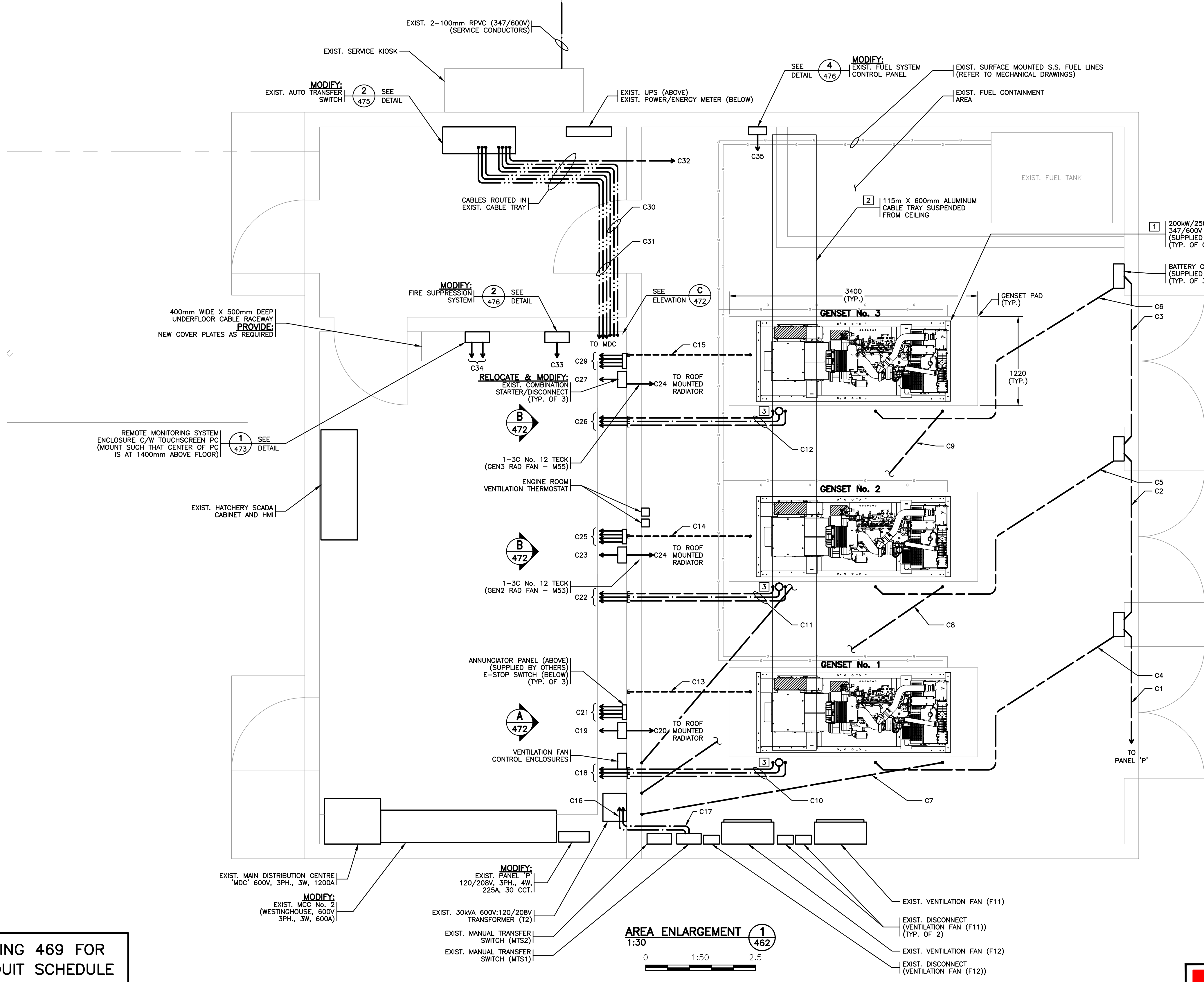
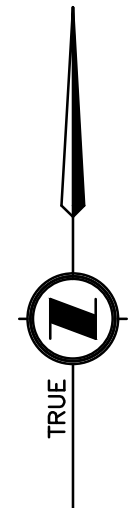
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  - CONTRACTOR TO CONFIRM OCPD TYPE AND SIZE. TYPICAL OF THREE EXISTING GENSET RADIATOR FAN FVNR UNITS.
  - TYPICAL OF THREE EXISTING GENSET RADIATOR FAN FVNR UNITS.

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REFER TO DRAWING 469 FOR  
CABLE AND CONDUIT SCHEDULE

ALL EQUIPMENT IS PROPOSED  
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- NOTES:**
- [1] REFER TO MECHANICAL DRAWINGS FOR FUEL LINE INSTALLATION, COOLANT LINE INSTALLATION, EXHAUST LINE MODIFICATIONS, AND CRITICAL MUFFLER INSTALLATION.
  - [2] REFER TO BLOCK DIAGRAM ON DRAWING 474 FOR CABLING TO BE INSTALLED IN CABLE TRAY. PROVIDE VERTICAL CABLE TRAY ABOVE GENSETS FOR VERTICAL CABLE ROUTING.
  - [3] PROVIDE FLEXIBLE METAL CONDUIT BETWEEN CONDUIT STUB-UP LOCATIONS AND GENSET ELECTRICAL ENCLOSURE.

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REAL PROPERTY AND TECHNICAL SUPPORT

<b>NITINAT RIVER HATCHERY GENERATOR UPGRADES ELECTRICAL</b>	SCALE
	AS SHOWN
<b>AREA ENLARGEMENT - POWERHOUSE (PROPOSED)</b>	DATE
	17-FEB-02
	DRAWING NUMBER
	31-44-468
	REVISION
	-

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CONDUIT AND CABLE SCHEDULE			
CONDUIT	CONDUIT & SYSTEM	CABLES	NOTES
C1	1-19MM EMT (120V)	<b>INSTALL:</b> 2 NO. 12 GEN1 BATT. CHARGER 2 NO. 12 GEN2 BATT. CHARGER 2 NO. 12 GEN3 BATT. CHARGER 1 NO. 12 BOND	FROM PANEL 'P' TO BATTERY CHARGER
C2	1-19MM EMT (120V)	<b>INSTALL:</b> 2 NO. 12 GEN2 BATT. CHARGER 2 NO. 12 GEN3 BATT. CHARGER 1 NO. 12 BOND	FROM CHG1 TO CHG2
C3	1-19MM EMT (120V)	<b>INSTALL:</b> 2 NO. 12 GEN3 BATT. CHARGER 1 NO. 12 BOND	FROM CHG2 TO CHG3
C4	1-19MM RPVC (12VDC)	<b>INSTALL:</b> 2 NO. 10 GEN1 BATT. CHARGER OUTPUT 1 NO. 12 BOND	FROM CHG1 TO GEN1 <b>TERMINATE:</b> TO BATTERY TERMINALS
C5	1-19MM RPVC (12VDC)	<b>INSTALL:</b> 2 NO. 10 GEN2 BATT. CHARGER OUTPUT 1 NO. 12 BOND	FROM CHG2 TO GEN2 <b>TERMINATE:</b> TO BATTERY TERMINALS
C6	1-19MM RPVC (12VDC)	<b>INSTALL:</b> 2 NO. 10 GEN3 BATT. CHARGER OUTPUT 1 NO. 12 BOND	FROM CHG3 TO GEN3 <b>TERMINATE:</b> TO BATTERY TERMINALS
C7	1-19MM RPVC (SPARE)	EMPTY	<b>SEAL:</b> CONDUIT WITH DUCT SEAL
C8	1-19MM RPVC (SPARE)	EMPTY	<b>SEAL:</b> CONDUIT WITH DUCT SEAL
C9	1-19MM RPVC (SPARE)	EMPTY	<b>SEAL:</b> CONDUIT WITH DUCT SEAL
C10	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - GEN1 HEATER)	FROM PANEL 'P' TO GEN1 <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND EXIST. SLEEVE BELOW SLAB
	1-100MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN1)	FROM GEN1 TO MTS1 <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND THROUGH EXISTING BLOCK-OUT IN WALL TO MTS1
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (ISOLATED DC) 2 NO. 14 (GEN1 E-STOP) 2 NO. 14 (GEN1 RUNNING) 2 NO. 14 (GEN1 FIRE PANEL) 1-BELDEN 22405 (PCCNET) 1 NO. 12 BOND	FROM GEN1 TO GEN1 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
C11	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - GEN2 HEATER)	FROM PANEL 'P' TO GEN2 <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND EXIST. SLEEVE BELOW SLAB
	1-100MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN2)	FROM GEN2 TO ATS <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND CABLE TRAY TO ATS
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN2 E-STOP) 2 NO. 14 (GEN2 RUNNING) 2 NO. 14 (GEN2 FIRE PANEL) 1 NO. 12 BOND	FROM GEN2 TO GEN2 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
C12	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - GEN3 HEATER)	FROM PANEL 'P' TO GEN3 <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND EXIST. SLEEVE BELOW SLAB
	1-100MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN3)	FROM GEN3 TO ATS <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND CABLE TRAY TO ATS
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN3 E-STOP) 2 NO. 14 (GEN3 RUNNING) 2 NO. 14 (GEN3 FIRE PANEL) 1 NO. 12 BOND	FROM GEN3 TO GEN3 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
C13	GROUND	EXIST. GROUND CONDUCTOR	<b>EXTEND:</b> GROUND CONDUCTOR WITH COMPRESSION CONNECTOR, AS REQUIRED PER C.E.C. REQUIREMENTS. <b>TERMINATE:</b> EXIST. GROUND CONDUCTOR TO NEW GENSET.
C14	GROUND	EXIST. GROUND CONDUCTOR	<b>EXTEND:</b> GROUND CONDUCTOR WITH COMPRESSION CONNECTOR, AS REQUIRED PER C.E.C. REQUIREMENTS. <b>TERMINATE:</b> EXIST. GROUND CONDUCTOR TO NEW GENSET.
C15	GROUND	EXIST. GROUND CONDUCTOR	<b>EXTEND:</b> GROUND CONDUCTOR WITH COMPRESSION CONNECTOR, AS REQUIRED PER C.E.C. REQUIREMENTS. <b>TERMINATE:</b> EXIST. GROUND CONDUCTOR TO NEW GENSET.
C16	600V - GEN1 TO MTS1	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN1)	FROM GEN1 TO MTS1 <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND THROUGH EXISTING BLOCK-OUT IN WALL TO MTS1

CONDUIT AND CABLE SCHEDULE (CON'T)			
CONDUIT	CONDUIT & SYSTEM	CABLES	NOTES
C17	600V - MTS1 TO ATS	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN1)	FROM MTS1 TO ATS <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND CABLE TRAY TO ATS
C18	120V - PANEL 'P' TO GEN1	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - GEN1 HEATER)	FROM PANEL 'P' TO GEN1 <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND EXIST. SLEEVE BELOW SLAB
	600V - GEN1 TO MTS1	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN1)	FROM GEN1 TO MTS1 <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND THROUGH EXISTING BLOCK-OUT IN WALL TO MTS1
C19	600V - GEN1 RADIATOR FAN (M51)	<b>INSTALL:</b> 2 NO. 14 (ISOLATED DC) 2 NO. 14 (GEN1 E-STOP) 2 NO. 14 (GEN1 RUNNING) 2 NO. 14 (GEN1 FIRE PANEL) 1-BELDEN 22405 (PCCNET) 1 NO. 12 BOND	FROM GEN1 TO GEN1 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
	600V - GEN1 RADIATOR FAN (M51)	<b>INSTALL:</b> 1-3C NO. 12 TECK (600V - GEN1 RAD FAN M51)	FROM MCC NO. 2 TO DISCONNECT SWITCH <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C20	600V - GEN1 RADIATOR FAN (M51)	<b>INSTALL:</b> 1-3C NO. 12 TECK (600V - GEN1 RAD FAN M51)	FROM DISCONNECT SWITCH TO GEN1 RADIATOR FAN (M51) <b>SECURE:</b> CABLE TO CEILING USING CABLE CLAMPS (REFER TO MECHANICAL DRAWINGS FOR ROOF PENETRATION)
	600V - GEN1 RADIATOR FAN (M51)	<b>INSTALL:</b> 2 NO. 14 (ISOLATED DC) 2 NO. 14 (GEN1 E-STOP) 2 NO. 14 (GEN1 RUNNING) 2 NO. 14 (GEN1 FIRE PANEL) 1-BELDEN 22405 (PCCNET) 1 NO. 12 BOND	FROM GEN1 TO GEN1 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
C21	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-25MM EMT & FLEX (COMM.)	FROM GEN1 MONITORING STATION TO FIRE SUPPRESSION PANEL <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-25MM EMT & FLEX (COMM.)	FROM GEN1 MONITORING STATION TO GEN2 MONITORING STATION <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C22	120V - PANEL 'P' TO GEN2	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - GEN2 HEATER)	FROM PANEL 'P' TO GEN2 <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND EXIST. SLEEVE BELOW SLAB
	600V - GEN2 TO ATS	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN2)	FROM GEN2 TO ATS <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND CABLE TRAY TO ATS
C23	600V - GEN2 RADIATOR FAN (M53)	<b>INSTALL:</b> 2 NO. 14 (GEN2 E-STOP) 2 NO. 14 (GEN2 RUNNING) 2 NO. 14 (GEN2 FIRE PANEL) 1 NO. 12 BOND	FROM GEN2 TO GEN2 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
	600V - GEN2 RADIATOR FAN (M53)	<b>INSTALL:</b> 1-3C NO. 12 TECK (600V - GEN2 RAD FAN M53)	FROM MCC NO. 2 TO DISCONNECT SWITCH <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C24	600V - GEN2 RADIATOR FAN (M53)	<b>INSTALL:</b> 1-3C NO. 12 TECK (600V - GEN2 RAD FAN M53)	FROM DISCONNECT SWITCH TO GEN2 RADIATOR FAN (M51) <b>SECURE:</b> CABLE TO CEILING USING CABLE CLAMPS (REFER TO MECHANICAL DRAWINGS FOR ROOF PENETRATION)
	600V - GEN2 RADIATOR FAN (M53)	<b>INSTALL:</b> 2 NO. 14 (GEN2 E-STOP) 2 NO. 14 (GEN2 RUNNING) 2 NO. 14 (GEN2 FIRE PANEL) 1 NO. 12 BOND	FROM GEN2 TO GEN2 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
C25	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-25MM EMT & FLEX (COMM.)	FROM GEN2 MONITORING STATION TO FIRE SUPPRESSION PANEL <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 1-25MM EMT & FLEX (COMM.)	FROM GEN1 MONITORING STATION TO GEN2 MONITORING STATION <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C26	120V - PANEL 'P' TO GEN3	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - GEN3 HEATER)	FROM PANEL 'P' TO GEN3 <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND EXIST. SLEEVE BELOW SLAB
	600V - GEN3 TO ATS	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN3)	FROM GEN3 TO ATS <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB, UNDERFLOOR RACEWAY, AND CABLE TRAY TO ATS
C27	600V - GEN3 RADIATOR FAN (M55)	<b>INSTALL:</b> 2 NO. 14 (GEN3 E-STOP) 2 NO. 14 (GEN3 RUNNING) 2 NO. 14 (GEN3 FIRE PANEL) 1 NO. 12 BOND	FROM GEN3 TO GEN3 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
	600V - GEN3 RADIATOR FAN (M55)	<b>INSTALL:</b> 1-3C NO. 12 TECK (600V - GEN3 RAD FAN M55)	FROM MCC NO. 2 TO DISCONNECT SWITCH <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY

CONDUIT AND CABLE SCHEDULE (CON'T)			
CONDUIT	CONDUIT & SYSTEM	CABLES	NOTES
C28	600V - GEN3 RADIATOR FAN (M55)	<b>INSTALL:</b> 1-3C NO. 12 TECK (600V - GEN3 RAD FAN M55)	FROM DISCONNECT SWITCH TO GEN3 RADIATOR FAN (M51) <b>SECURE:</b> CABLE TO CEILING USING CABLE CLAMPS (REFER TO MECHANICAL DRAWINGS FOR ROOF PENETRATION)
C29	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN3 E-STOP) 2 NO. 14 (GEN3 RUNNING) 2 NO. 14 (GEN3 FIRE PANEL) 1 NO. 12 BOND	FROM GEN3 TO GEN3 MONITORING STATION <b>ROUTE:</b> VIA EXIST. SLEEVE BELOW SLAB
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN3 FIRE PANEL) 1 NO. 12 BOND	FROM GEN3 MONITORING STATION TO FIRE SUPPRESSION PANEL <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (ISOLATED DC) 1-BELDEN 22405 (PCCNET) 1 NO. 12 BOND	FROM GEN2 MONITORING STATION TO GEN3 MONITORING STATION <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C30	600V - GENSETS TO ATS	<b>INSTALL:</b> 2 NO. 14 (ISOLATED DC) 1-BELDEN 22405 (PCCNET) 1 NO. 12 BOND	FROM GEN3 MONITORING STATION TO REMOTE MONITORING SYSTEM ENCLOSURE <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	600V - GENSETS TO ATS	<b>INSTALL:</b> 1-3C NO. 400KCMIL TECK (600V - GEN1) 1-3C NO. 400KCMIL TECK (600V - GEN2) 1-3C NO. 400KCMIL TECK (600V - GEN3)	FROM GENSETS TO ATS <b>ROUTE:</b> VIA UNDERFLOOR RACEWAY AND CABLE TRAY TO ATS
C31	347/600V - FEEDER TO MDC	3-4C NO. 350KCMIL TECK (347/600V - MDC)	FROM ATS TO MDC
C32	COMM. - ATS TO GENSETS	<b>INSTALL:</b> 1-10C NO. 14 TECK (GEN1 ATS) 1-10C NO. 14 TECK (GEN2 ATS) 1-10C NO. 14 TECK (GEN3 ATS)	FROM ATS TO GEN1, GEN2, AND GEN3 <b>SECURE:</b> CABLE TO CEILING USING CABLE CLAMPS <b>ROUTE:</b> TO GENSETS VIA NEW CABLE TRAY
C33	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN1 FIRE PANEL) 1 NO. 12 BOND	FROM GEN1 MONITORING STATION TO FIRE SUPPRESSION PANEL <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN2 FIRE PANEL) 1 NO. 12 BOND	FROM GEN2 MONITORING STATION TO FIRE SUPPRESSION PANEL <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	1-25MM RPVC (SLEEVE)	<b>INSTALL:</b> 2 NO. 14 (GEN3 FIRE PANEL) 1 NO. 12 BOND	FROM GEN3 MONITORING STATION TO FIRE SUPPRESSION PANEL <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C34	120V - PANEL 'P' TO ENCLOSURE	<b>INSTALL:</b> 2 NO. 14 (ISOLATED DC) 1-BELDEN 22405 (PCCNET) 1 NO. 12 BOND	FROM GEN3 MONITORING STATION TO REMOTE MONITORING SYSTEM ENCLOSURE <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
	120V - PANEL 'P' TO ENCLOSURE	<b>INSTALL:</b> 1-2C NO. 12 TECK (120V - REMOTE MON. STN.)	FROM PANEL 'P' TO REMOTE MONITORING SYSTEM ENCLOSURE <b>ROUTE:</b> VIA UNDERFLOOR CABLE RACEWAY
C35	COMM. - FUEL SYSTEM TO GENSETS	<b>INSTALL:</b> 3-2C NO. 14 TECK (FUEL SYSTEM)	FROM FUEL SYSTEM ENCLOSURE TO GENSETS <b>ROUTE:</b> VIA CABLE TRAY

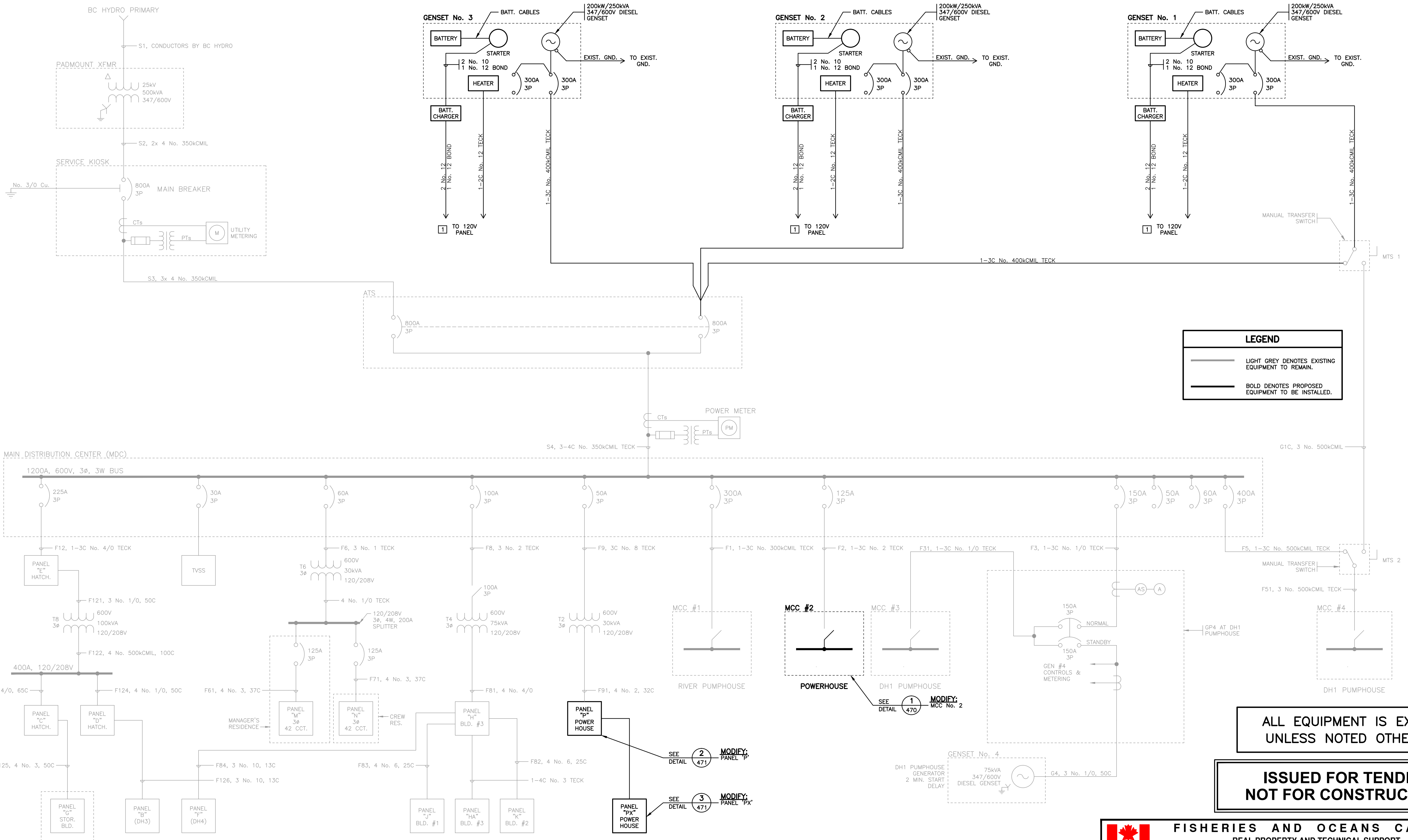
ALL EQUIPMENT IS EXISTING  
UNLESS NOTED OTHERWISE

ISSUED FOR TENDER  
NOT FOR CONSTRUCTION

<b>FISHERIES AND OCEANS CANADA</b> REAL PROPERTY AND TECHNICAL SUPPORT	
<b>NITINAT RIVER HATCHERY GENERATOR UPGRADES ELECTRICAL</b>	SCALE N/A DATE <b>17-FEB-02</b> DRAWING NUMBER <b>31-44-469</b> REVISION -
<b>CONDUIT AND CABLE SCHEDULE (PROPOSED)</b>	

 <b>ENGINEERING</b> PBX ENGINEERING Ltd. Suite 300 - 131 Water St. Vancouver BC, V6B 4M3 Tel 604.408.7222				
	NOTES	NO.	DATE	REVISIONS
		-	2017-FEB-02	ISSUED FOR TENDER

DESIGNED	
IN DRAWN	
PBX CHECKED	
BW RECOMMENDED	
APPROVED	
APPROVED	



**LEGEND**

— LIGHT GREY DENOTES EXISTING EQUIPMENT TO REMAIN.

— BOLD DENOTES PROPOSED EQUIPMENT TO BE INSTALLED.

ALL EQUIPMENT IS EXISTING UNLESS NOTED OTHERWISE

ISSUED FOR TENDER NOT FOR CONSTRUCTION

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

<b>NITINAT RIVER HATCHERY GENERATOR UPGRADES ELECTRICAL</b>	SCALE	N/A
	DATE	17-FEB-02
	DRAWING NUMBER	31-44-470
	REVISION	-
<b>SINGLE LINE DIAGRAM (PROPOSED)</b>		

**NOTES:**

1. THIS DRAWING HAS BEEN CREATED FROM EXISTING DFO AS-BUILT DRAWINGS. ENGINEER TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF EXISTING EQUIPMENT SHOWN ON THIS DRAWING.

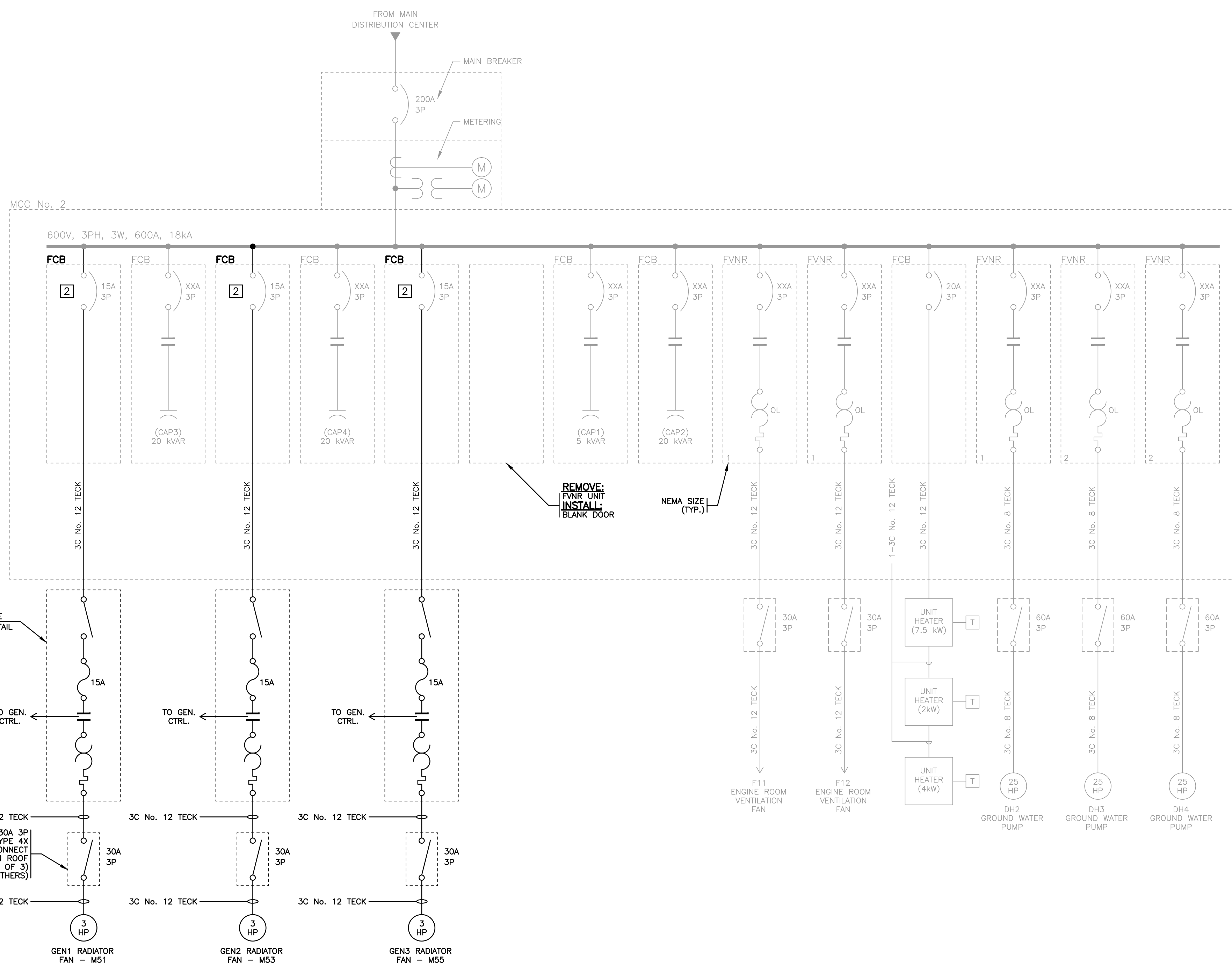
**PBX ENGINEERING**  
PBX ENGINEERING Ltd.  
Suite 300 - 131 Water St.  
Vancouver BC, V6B 4M3 Tel 604.408.7222

NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

DESIGNED	
IN DRAWN	
PBX CHECKED	
BW RECOMMENDED	
APPROVED	
APPROVED	

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**DETAIL 1 MCC No. 2 SINGLE LINE DIAGRAM**  
N.T.S. 469

PANEL P SCHEDULE						
DESCRIPTION	kW	BKR.	CIRCUIT NO.	BKR.	kW	DESCRIPTION
LIGHTS	-	15A	1-2	15A	-	RECEPTACLE
SERVICE KIOSK	-	15A	3-4	15A	-	RECEPTACLE
	-	2P	5-6	15A	-	RECEPTACLE
SUB-PANEL 'PX'	-	30A	7-8	15A	-	RECEPTACLE
	-	-	9-10	15A	-	STROBE LIGHT & SIREN
	-	3P	11-12	15A	-	EXHAUST FAN (F10)
GEN #1 BATTERY CHARGER	.12	15A	13-14	15A	-	POWER SUPPLY (AP2)
GEN #2 BATTERY CHARGER	.12	15A	15-16	15A	-	HEATER FAN (UH4)
GEN #3 BATTERY CHARGER	.12	15A	17-18	15A	-	OUTSIDE LIGHTS
GEN #1 COOLANT HEATER	1.5	20A	19-20	20A	-	SPARE
GEN #2 COOLANT HEATER	1.5	20A	21-22	15A	-	EMERG. LIGHTS
GEN #3 COOLANT HEATER	1.5	20A	23-24	15A	-	SPARE
REMOTE MONITORING ENCLOSURE	.24	15A	25-26	70A	-	ADULT HAND PANEL
FP2	-	15A	27-28	-	-	
IAP SIGN POWER SUPPLY	-	15A	29-30	3P	-	
TOTAL kW	-	-	-	-	-	TOTAL

MAINS: 225A  
MOUNTING: SURFACE  
MAIN BKR.: -  
FEEDER: -

VOLTS: 120/208V  
LOCATION: BESIDE MCC No. 2  
FED FROM: TRANSFORMER T2  
ENTER AT: TOP

**DETAIL 2 PANEL 'P' SCHEDULE**  
N.T.S. 470

PANEL PX SCHEDULE						
DESCRIPTION	kW	BKR.	CIRCUIT NO.	BKR.	kW	DESCRIPTION
DIESEL DISPENSING PUMP	-	15A	1-2	15A	-	DIESEL DISPENSING PUMP
FUEL TANK	-	15A	3-4	15A	-	UPS
	-	-	5-6	15A	-	SPARE
	-	3P	7-8	-	-	-
			9-10			
			11-12			
			13-14			
			15-16			
			17-18			
			19-20			
TOTAL kW	-	-	-	-	-	TOTAL

MAINS: 30A  
MOUNTING: SURFACE  
MAIN BKR.: -  
FEEDER: -

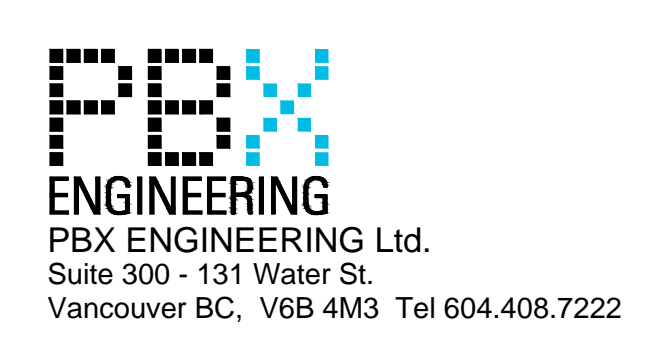
VOLTS: 120/208V  
LOCATION: ENGINE ROOM  
FED FROM: PANEL P  
ENTER AT: TOP

**DETAIL 3 PANEL 'PX' SCHEDULE**  
N.T.S. 470

LEGEND	
	LIGHT GREY DENOTES EXISTING EQUIPMENT TO REMAIN.
	BOLD DENOTES PROPOSED EQUIPMENT TO BE INSTALLED.

ALL EQUIPMENT IS EXISTING UNLESS NOTED OTHERWISE

**ISSUED FOR TENDER  
NOT FOR CONSTRUCTION**



- NOTES:**
- THIS DRAWING HAS BEEN CREATED FROM EXISTING DFO AS-BUILT DRAWINGS. ENGINEER TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF EXISTING EQUIPMENT SHOWN ON THIS DRAWING.
  - CONTRACTOR TO CONFIRM OCPD TYPE AND SIZE. TYPICAL OF THREE EXISTING GENSET RADIATOR FAN FCB UNITS.

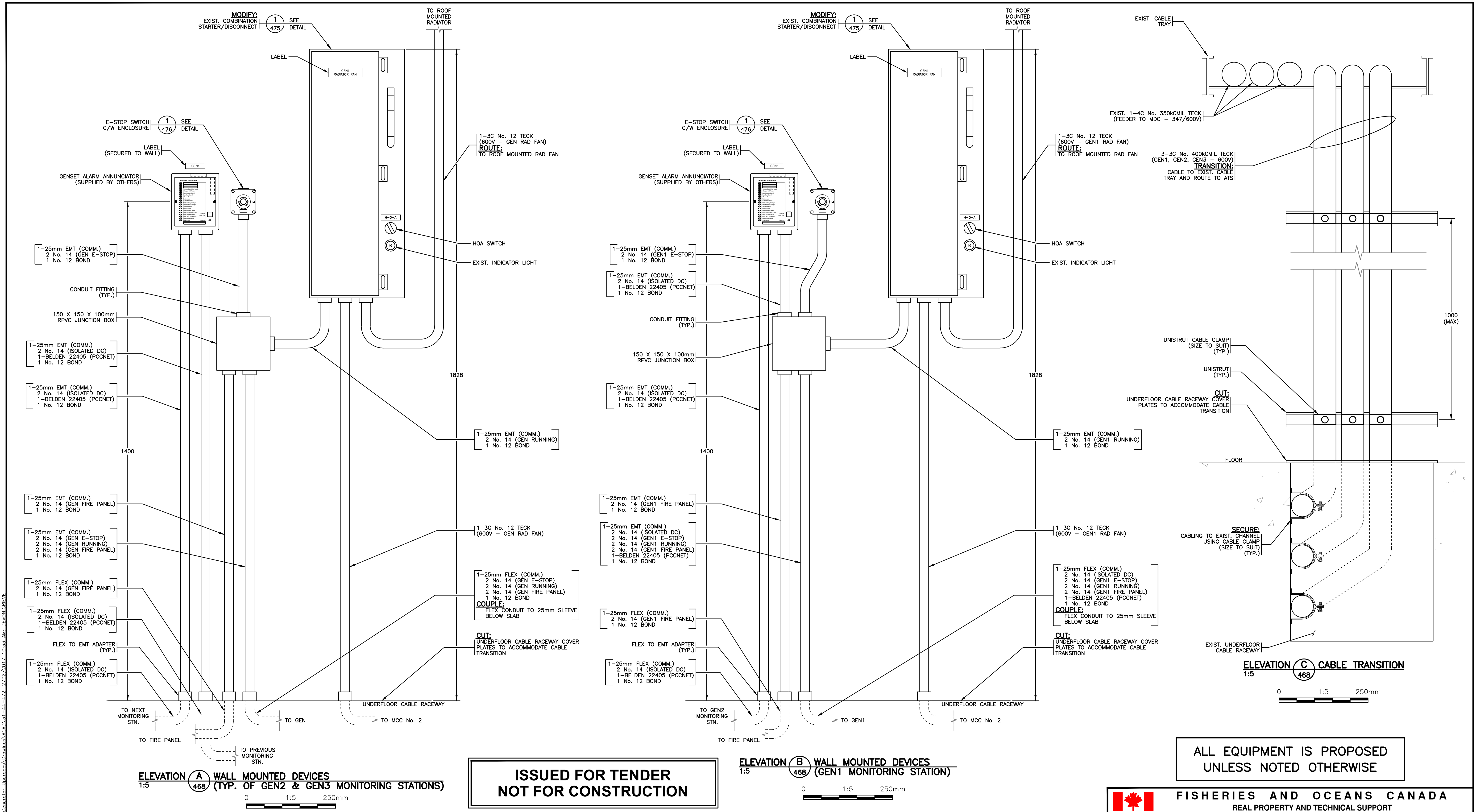
NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

DESIGNED	
IN DRAWN	
PBX CHECKED	
BW RECOMMENDED	
APPROVED	
APPROVED	

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

**NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL  
MCC No. 2 SINGLE LINE DIAGRAM  
AND PANEL SCHEDULES  
(PROPOSED)**

SCALE: N/A  
DATE: 17-FEB-02  
DRAWING NUMBER: 31-44-471  
REVISION: -



**ELEVATION A WALL MOUNTED DEVICES**  
 1:5 (TYP. OF GEN2 & GEN3 MONITORING STATIONS)

0 1:5 250mm

**ISSUED FOR TENDER  
NOT FOR CONSTRUCTION**

**ELEVATION B WALL MOUNTED DEVICES**  
 1:5 (GEN1 MONITORING STATION)

0 1:5 250mm

**ELEVATION C CABLE TRANSITION**  
 1:5

0 1:5 250mm

**ALL EQUIPMENT IS PROPOSED  
UNLESS NOTED OTHERWISE**

**PBX ENGINEERING**  
 PBX ENGINEERING Ltd.  
 Suite 300 - 131 Water St.  
 Vancouver BC, V6B 4M3 Tel 604.408.7222

- NOTES:**
1. SECURE CONDUIT AND CABLING TO WALL USING ONE-HOLE STAPS, UNLESS NOTED OTHERWISE.
  2. CABLE AND CONDUIT WITHIN UNDERFLOOR CABLE RACEWAY SHALL BE SECURED TO EXIST. CHANNEL USING CONDUIT/CABLE, SIZE TO SUIT.

NOTES

NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

DESIGNED	
IN	
DRAWN	
PBX	
CHECKED	
BW	
RECOMMENDED	
APPROVED	
APPROVED	

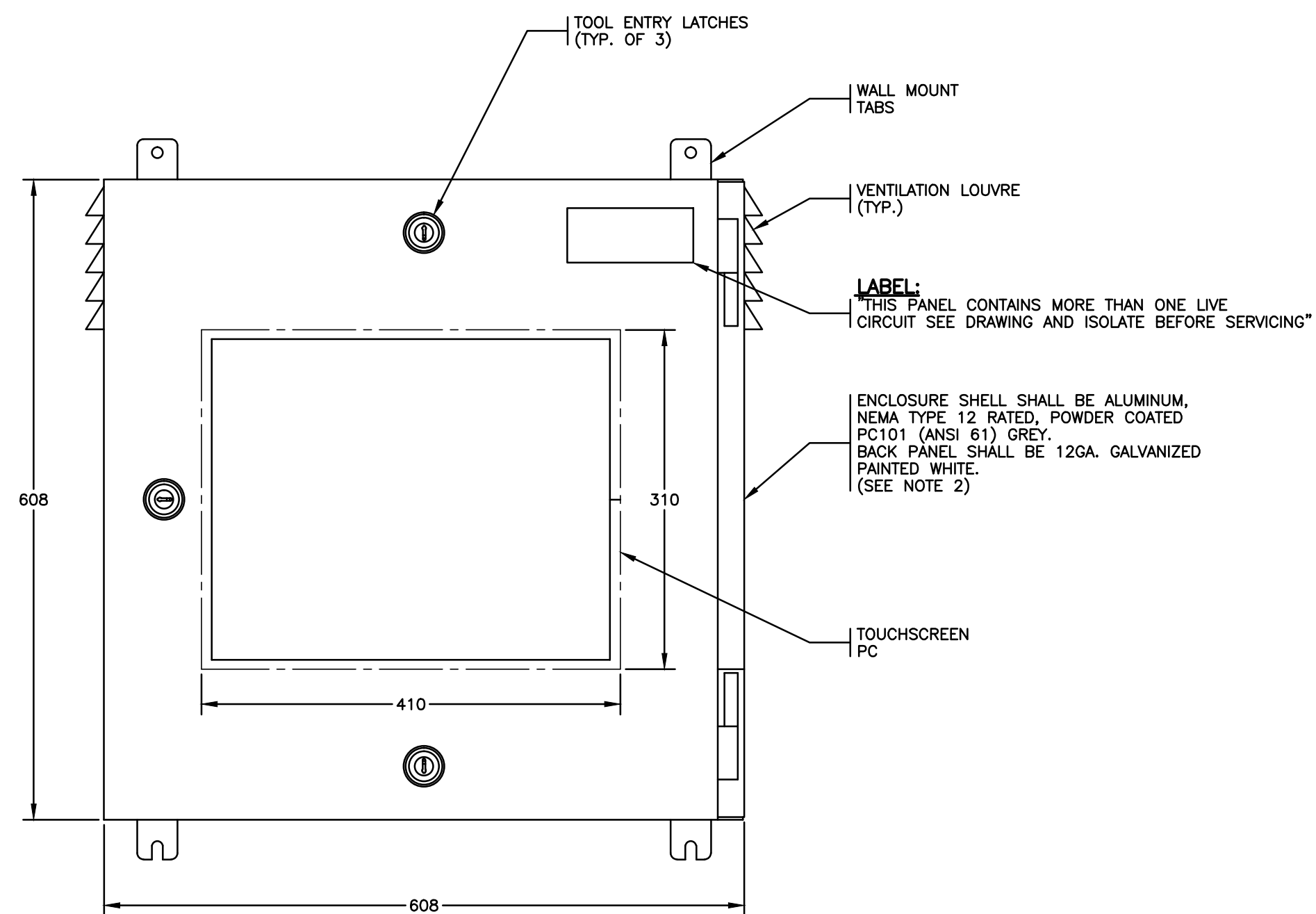
**FISHERIES AND OCEANS CANADA**  
 REAL PROPERTY AND TECHNICAL SUPPORT

**NITINAT RIVER HATCHERY  
 GENERATOR UPGRADES  
 ELECTRICAL**

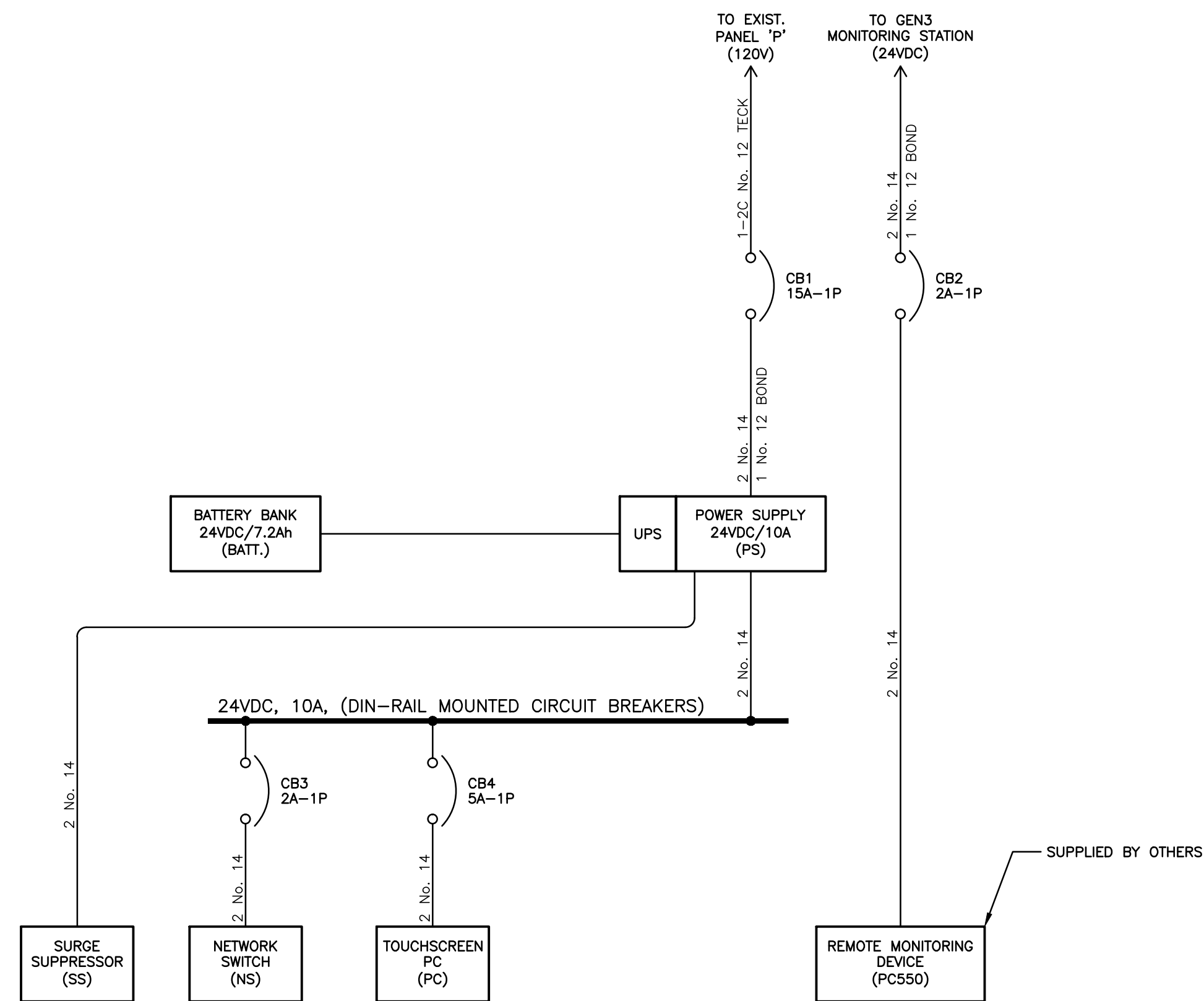
**ELEVATIONS  
 (PROPOSED)**

SCALE	AS SHOWN
DATE	17-FEB-02
DRAWING NUMBER	31-44-472
REVISION	-

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**DETAIL 1 REMOTE MONITORING SYSTEM ENCLOSURE**  
1:5  
468 C/W TOUCHSCREEN PC



**DETAIL 2 REMOTE MONITORING SYSTEM ENCLOSURE**  
N.T.S. SINGLE LINE DIAGRAM

EQUIPMENT LIST				
REFERENCE	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
BATT	1	BATTERY, AGM, 24VDC, 7.2AH, UPS-BAT/VRLA/24DC/7.2AH	PHOENIX CONTACT	2320319
CAB	1	CABINET, POWDER COATED CABINET GREY, HOT ROLLED STEEL, NEMA 12	-	-
CB1	1	CIRCUIT BREAKER, 15A-1P, 120/240VAC, BRANCH-RATED, DIN-MOUNT, MULTI 9 C60	SCHNEIDER	60112
CB2,3,4	2	CIRCUIT BREAKER, 2A-1P, 250VAC/80VDC, DIN-MOUNT, TMC 42-01-2.0A	PHOENIX CONTACT	5600314
CB4	1	CIRCUIT BREAKER, 5A-1P, 250VAC/80VDC, DIN-MOUNT, TMC 42-01-5.0A	PHOENIX CONTACT	5531082
NS1	1	NETWORK SWITCH, 4 PORT (4 CU.), UNMANAGED, DIN-RAIL	RED LION/N-TRON	304TX-N
PC	1	TOUCHSCREEN PC, PANEL MOUNT, 15 IN.	MAPLE SYSTEMS	OMI6715A
PC550	1	REMOTE MONITORING SYSTEM, PC550, DIN-RAIL	CUMMINS	PC550
PS	1	POWER SUPPLY, 240W, 85-264VAC INPUT, 24VDC OUTPUT, QUINT-PS/1AC/24DC/10	PHOENIX CONTACT	2866763
SS	1	SURGE SUPPRESSOR, 24VDC, DIN-RAIL MOUNT	TRANSECTOR	1101-625
TB	-	TERMINAL BLOCK GROUND BLOCK END COVER END BLOCK PARTITION PLATE JUMPER BRIDGE DIODE	PHOENIX CONTACT	AS REQ.
UPS	1	UPS, 240W, 18-30VDC INPUT, 24VDC OUTPUT, UPS/24DC/12DC/5/24DC/10	PHOENIX CONTACT	2320461

**ISSUED FOR TENDER  
NOT FOR CONSTRUCTION**

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

**ALL EQUIPMENT IS PROPOSED  
UNLESS NOTED OTHERWISE**

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

**NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL  
REMOTE SYSTEM MONITORING  
ENCLOSURE  
(PROPOSED)**

SCALE  
**AS SHOWN**  
DATE  
**17-FEB-02**  
DRAWING NUMBER  
**31-44-473**  
REVISION

**PBX ENGINEERING**  
PBX ENGINEERING Ltd.  
Suite 300 - 131 Water St.  
Vancouver BC, V6B 4M3 Tel 604.408.7222

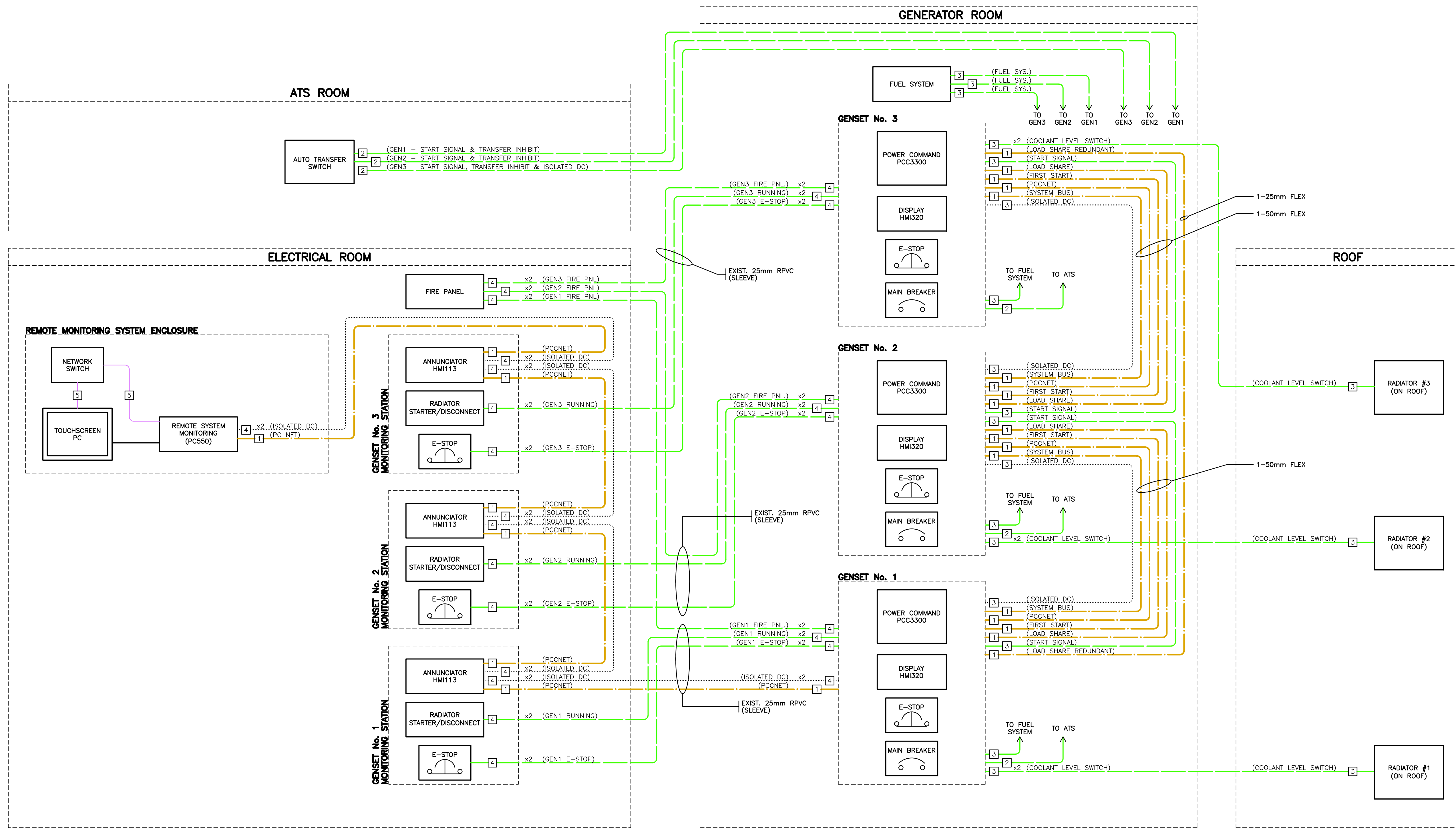
**NOTES:**

- THIS DRAWING HAS BEEN CREATED FROM EXISTING DFO AS-BUILT DRAWINGS. ENGINEER TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF EXISTING EQUIPMENT SHOWN ON THIS DRAWING.
- ENCLOSURE DIMENSIONS ARE APPROXIMATE ONLY. CONTRACTOR TO PROVIDE DETAILED SHOP DRAWING FOR REVIEW PRIOR TO FABRICATION. INTERIOR AND EXTERIOR PANEL LAYOUTS AND WIRING DIAGRAMS TO BE PROVIDED AS PART OF THE SUBMISSION.

NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

CABLE SUMMARY	
CABLE I.D.	CABLE
1	BELDEN 22405 (2PR. No. 18 SHIELDED)
2	10C No. 14 TECK CABLE
3	2C No. 14 TECK CABLE
4	No. 14 RW90 XLPE
5	CATEGORY 5E/6 LAN CABLE

CABLE LEGEND	
	HIGH SPEED DATA (RS485)
	CONTROL CABLE
	ETHERNET (CAT 6 UTP)
	24V DC
	COMPUTER CABLE



**ISSUED FOR TENDER  
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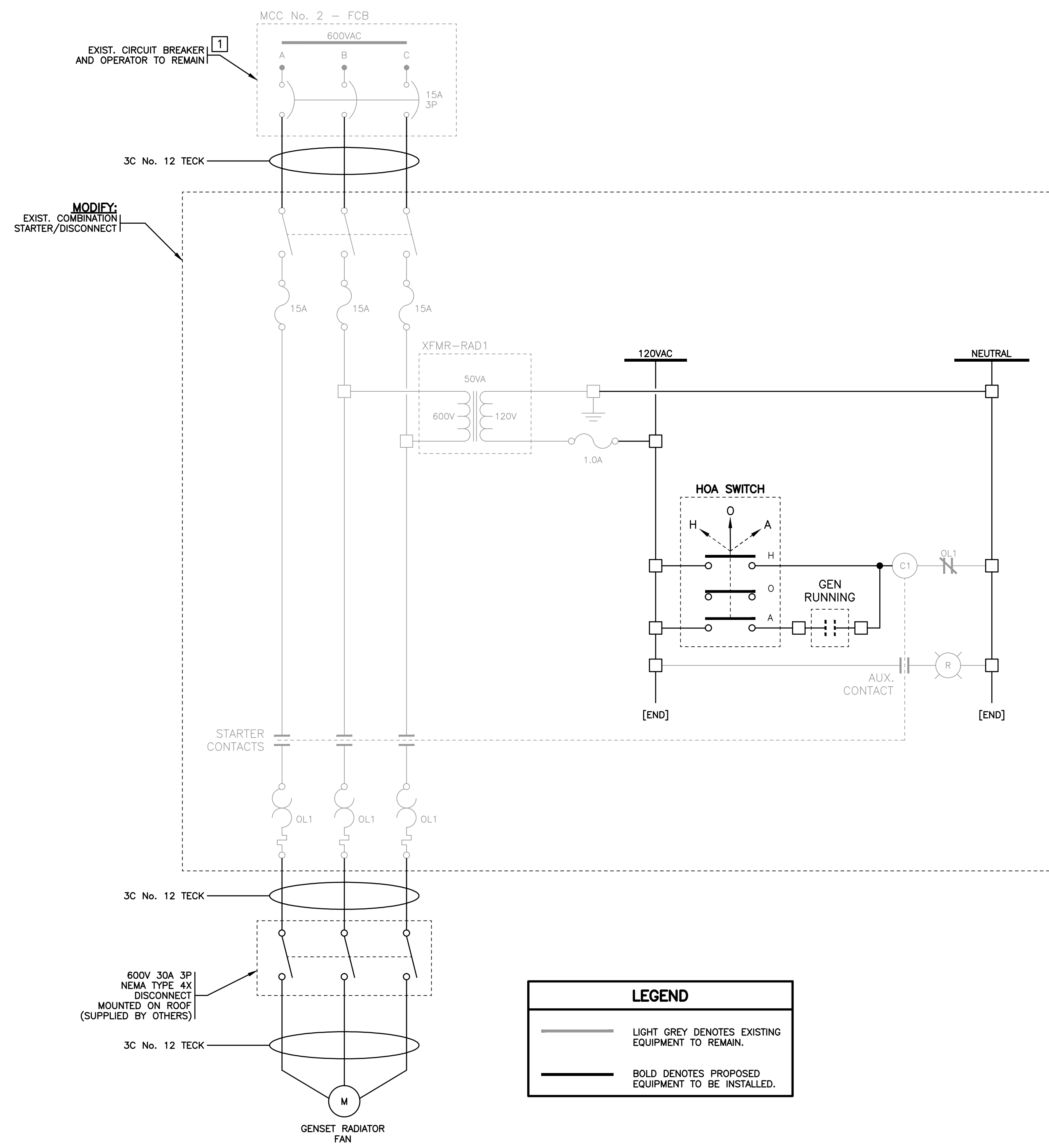
**FISHERIES AND OCEANS CANADA**  
REAL PROPERTY AND TECHNICAL SUPPORT

 <b>PBX ENGINEERING</b> PBX ENGINEERING Ltd. Suite 300 - 131 Water St. Vancouver BC, V6B 4M3 Tel 604.408.7222	DESIGNED	<b>NITINAT RIVER HATCHERY GENERATOR UPGRADES ELECTRICAL</b>  <b>CONTROLS BLOCK DIAGRAM (PROPOSED)</b>	SCALE
	IN DRAWN		N/A
	PBX CHECKED		DATE
	BW RECOMMENDED		17-FEB-02
APPROVED	DRAWING NUMBER	31-44-474	REVISION
APPROVED			

NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

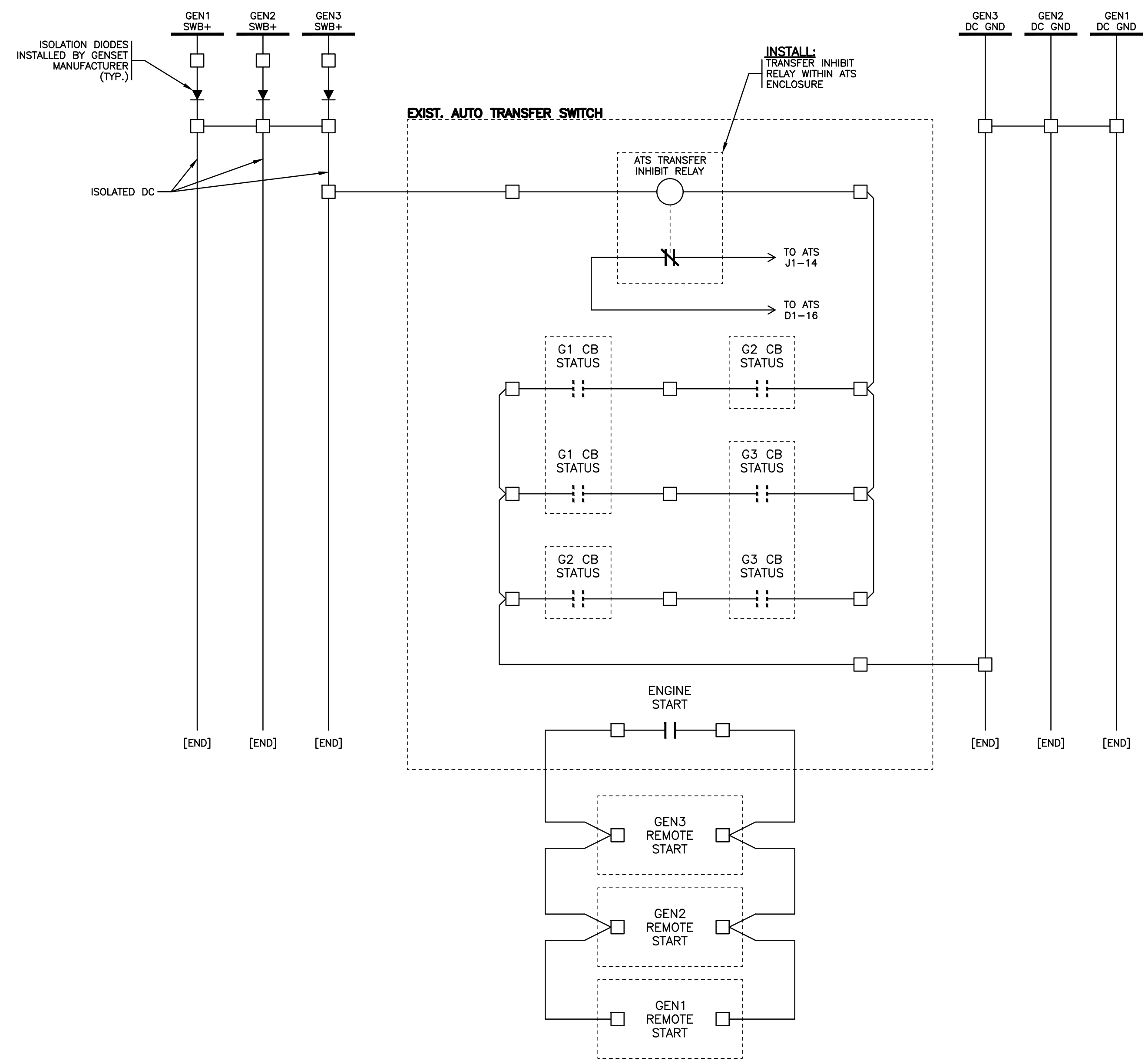
NOTES

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LEGEND	
	LIGHT GREY DENOTES EXISTING EQUIPMENT TO REMAIN.
	BOLD DENOTES PROPOSED EQUIPMENT TO BE INSTALLED.

TYP.DETAIL 1 1 RADIATOR FAN  
N.T.S. 471 472



DETAIL 2 2 2 AUTO TRANSFER SWITCH  
N.T.S. 463 464 468 (TRANSFER INHIBIT & REMOTE ENGINE START)

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

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**NOTES:**  
1 CONTRACTOR TO CONFIRM OCPD TYPE AND SIZE. TYPICAL OF THREE EXISTING GENSET RADIATOR FAN FCB UNITS.

NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

DESIGNED  
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PBX  
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APPROVED  
APPROVED

**FISHERIES AND OCEANS CANADA**  
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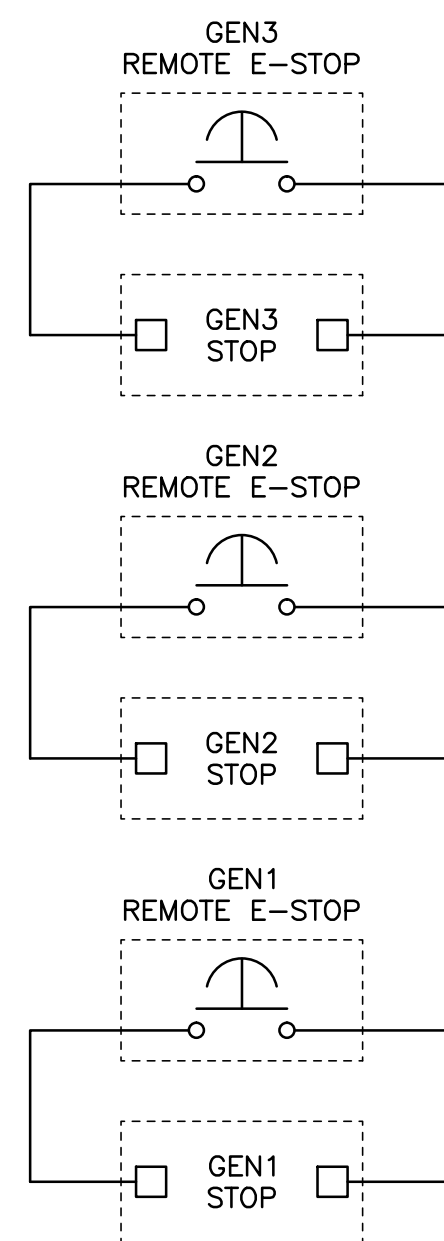
**NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL**

**ELECTRICAL CONTROLS (1 OF 2)  
(PROPOSED)**

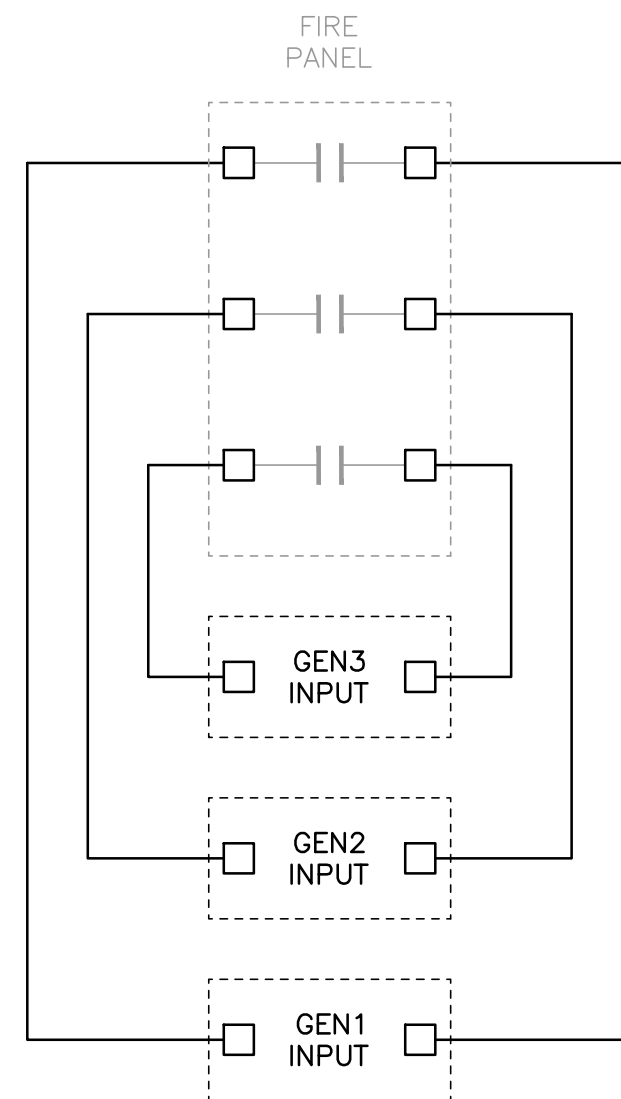
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DATE  
17-FEB-02  
DRAWING NUMBER  
31-44-475  
REVISION  
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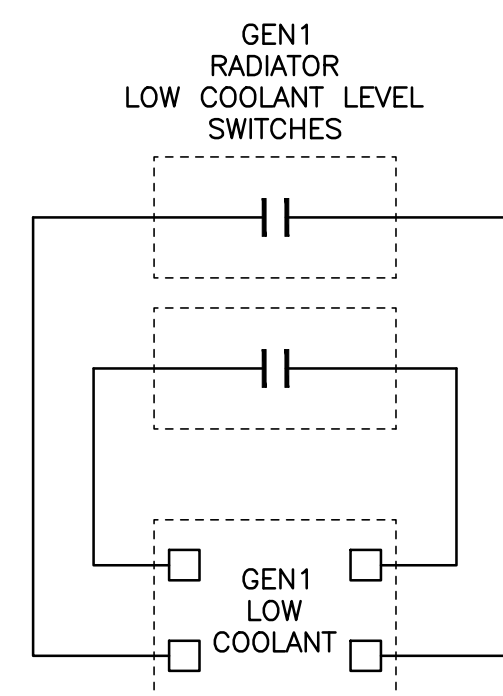
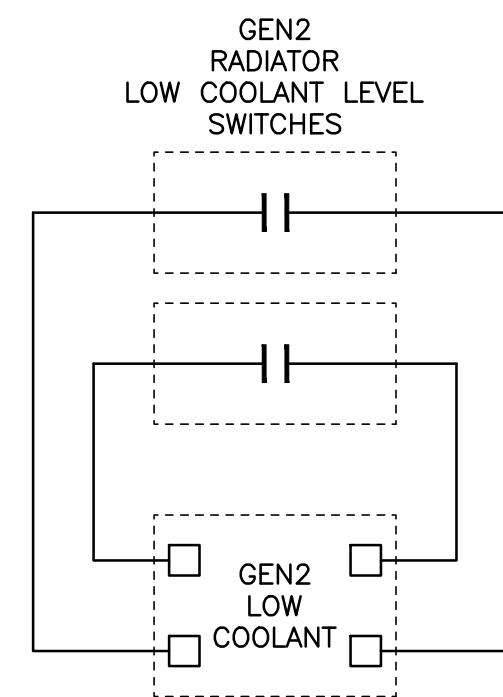
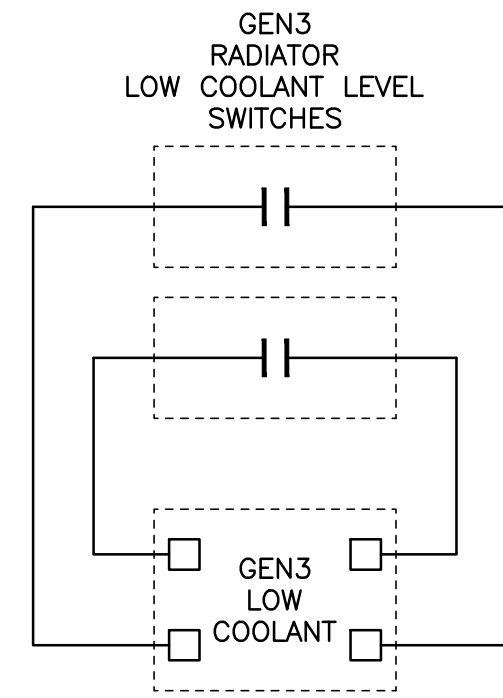




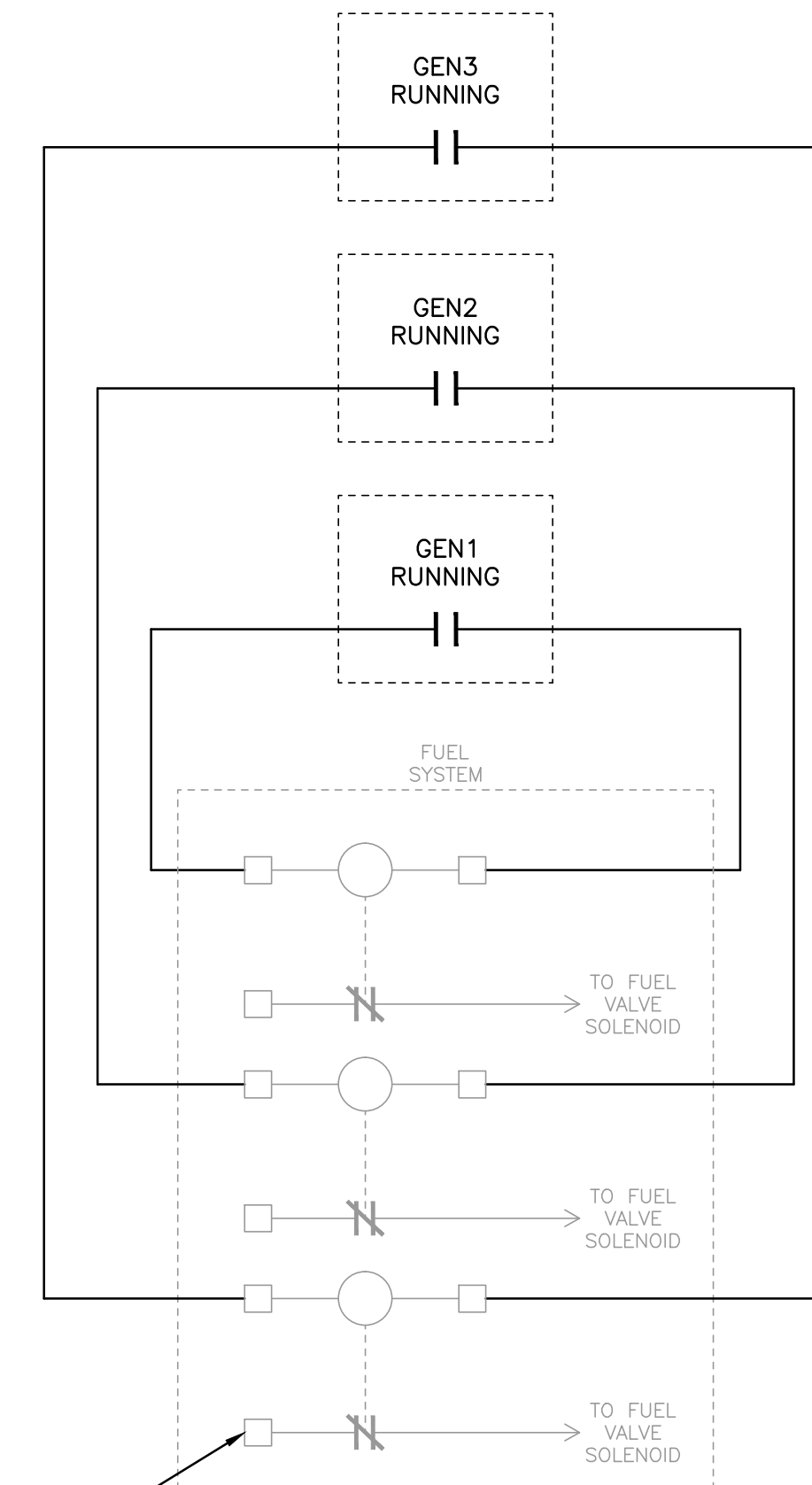
DETAIL 1 GENSET E-STOP CIRCUIT  
N.T.S. 472



DETAIL 2 FIRE PANEL CIRCUIT  
N.T.S. 468



DETAIL 3 GENSET LOW COOLANT CIRCUIT  
N.T.S. -



CONTRACTOR TO CONFIRM EXIST. CONNECTIONS (TYP.)

DETAIL 4 FUEL SYSTEM CIRCUIT  
N.T.S. 468

LEGEND	
	LIGHT GREY DENOTES EXISTING EQUIPMENT TO REMAIN.
	BOLD DENOTES PROPOSED EQUIPMENT TO BE INSTALLED.

ALL EQUIPMENT IS PROPOSED UNLESS NOTED OTHERWISE

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NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

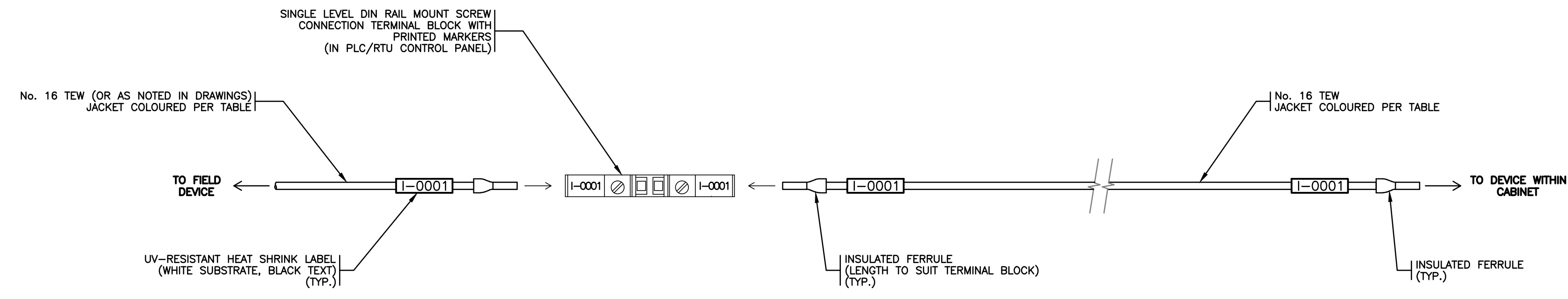
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APPROVED	

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

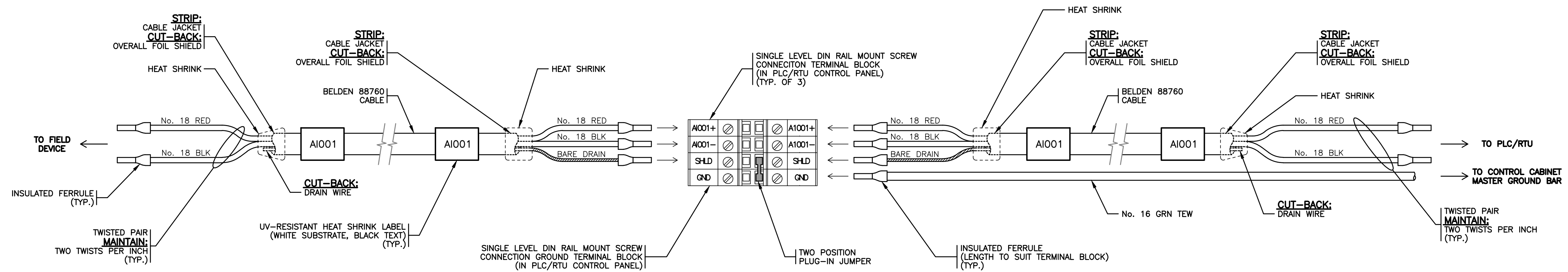
**NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL**  
  
**ELECTRICAL CONTROLS (2 OF 2)  
(PROPOSED)**

SCALE	N/A
DATE	17-FEB-02
DRAWING NUMBER	31-44-476
REVISION	-

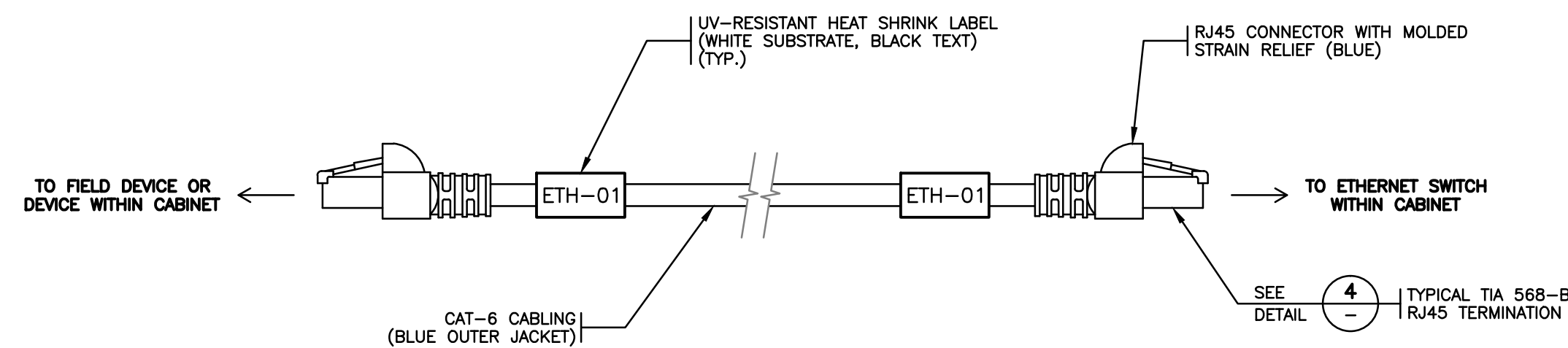
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DETAIL 1 TYPICAL DISCRETE CONTROL FIELD  
N.T.S. WIRING TERMINATION METHOD



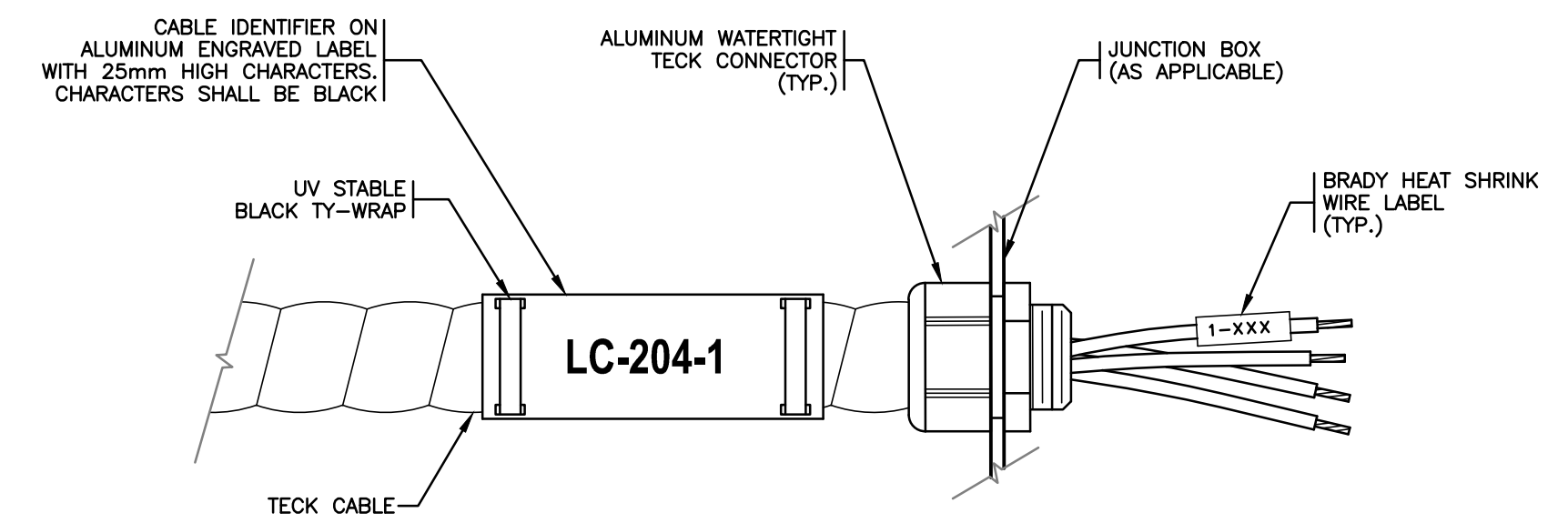
DETAIL 2 TYPICAL ANALOG CONTROL FIELD  
N.T.S. WIRING TERMINATION METHOD



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)



DETAIL 5 TECK CABLE TERMINATION  
N.T.S.

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FISHERIES AND OCEANS CANADA  
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APPROVED

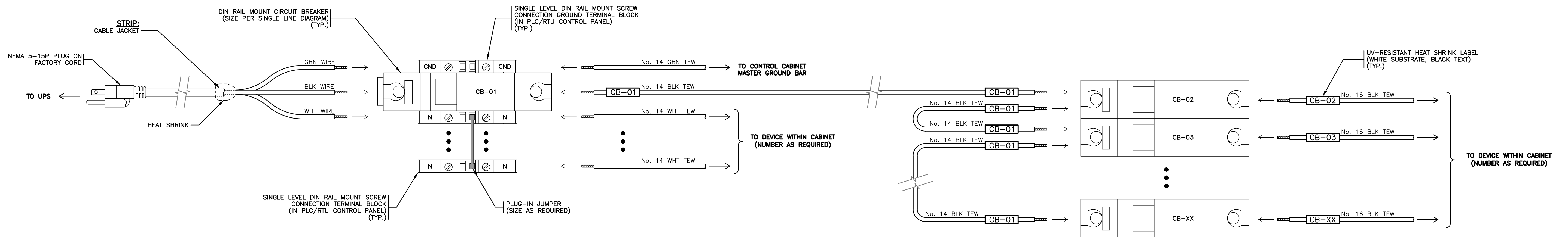
NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL  
TYPICAL WIRING TERMINATIONS  
(1 OF 2)

SCALE  
N/A  
DATE  
17-FEB-02  
DRAWING NUMBER  
31-44-477  
REVISION

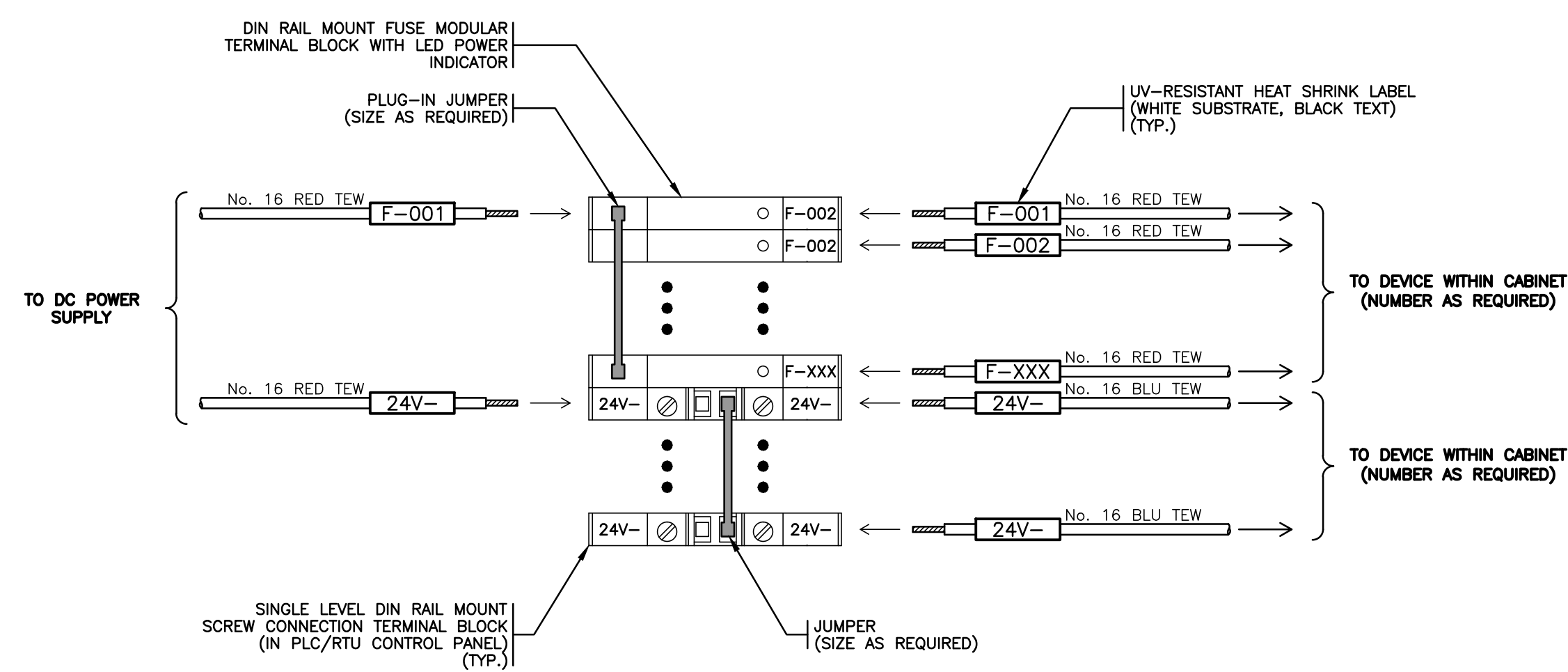
NO.	DATE	REVISIONS
-	2017-FEB-02	ISSUED FOR TENDER

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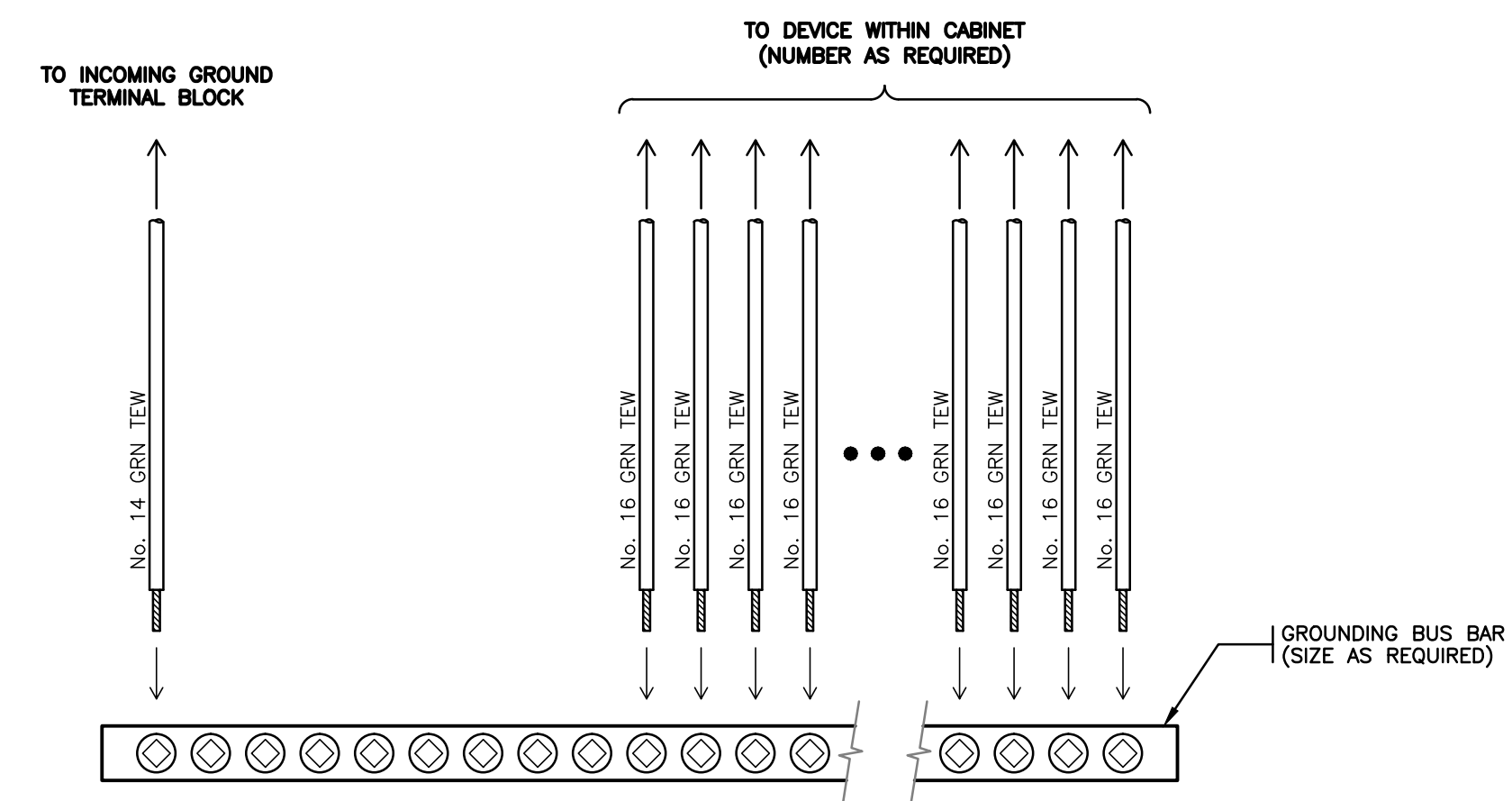
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DETAIL 1 TYPICAL 120V AC DISTRIBUTION  
N.T.S. WIRING TERMINATION METHOD



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



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

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FISHERIES AND OCEANS CANADA  
REAL PROPERTY AND TECHNICAL SUPPORT

NITINAT RIVER HATCHERY  
GENERATOR UPGRADES  
ELECTRICAL

TYPICAL WIRING TERMINATIONS  
(2 OF 2)

SCALE  
N/A  
DATE  
17-FEB-02  
DRAWING NUMBER  
31-44-478  
REVISION

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