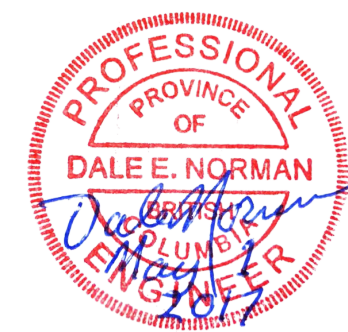




ROBERTSON CREEK HATCHERY GROUNDWATER WELLS No. 1 AND No.2

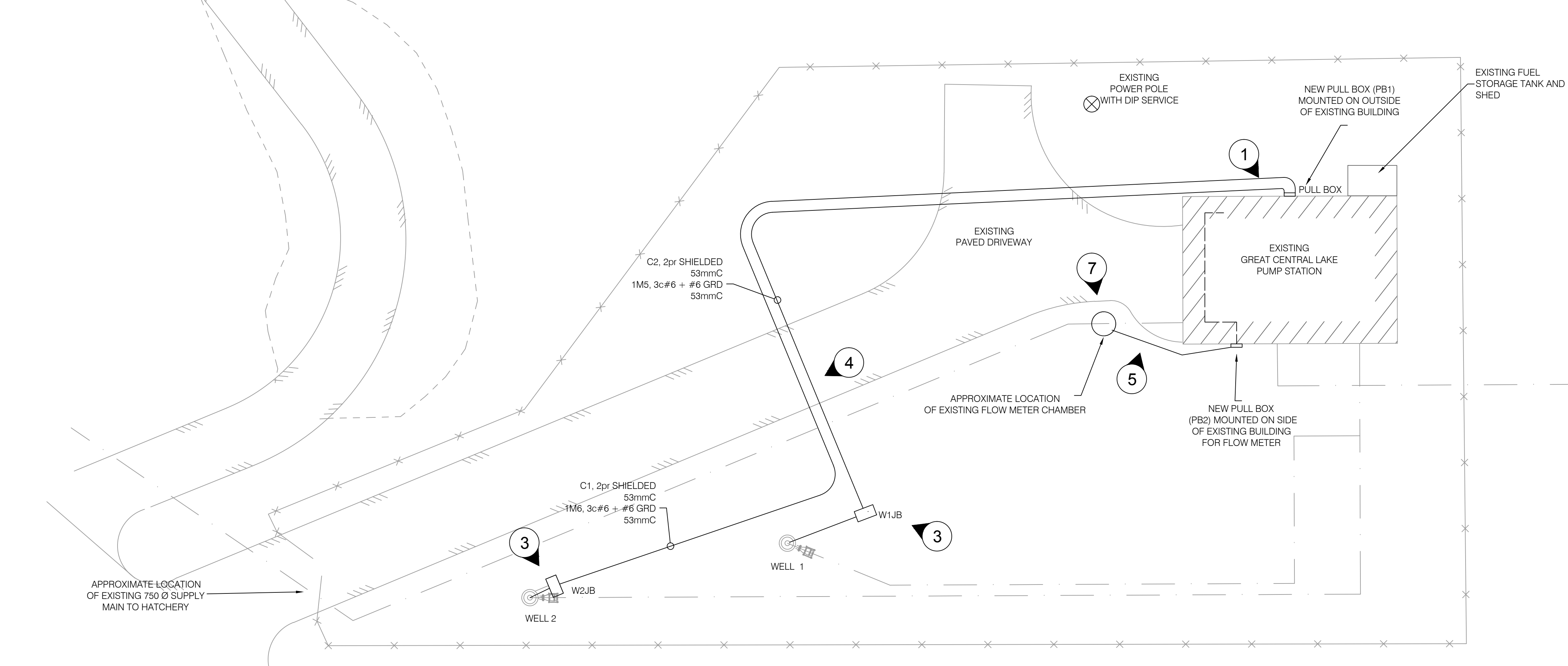
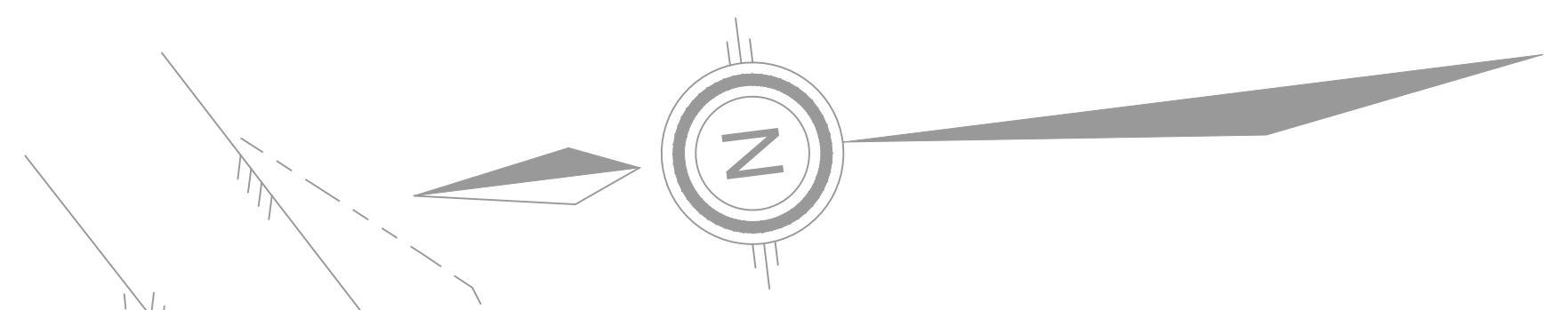
LIST OF ELECTRICAL AND CONTROL DRAWINGS

<u>DRAWING #</u>	<u>DRAWING TITLE</u>
31-16-930 REV 1	SITE PLAN
31-16-931 REV 1	BUILDING LAYOUT
31-16-932 REV 1	SINGLE LINE DIAGRAM
31-16-933 REV 1	WALL ELEVATIONS
31-16-934 REV 1	PUMPS 1 AND 2
31-16-935 REV 1	PUMPS 3 AND 4
31-16-936 REV 1	WELL PUMPS 1 AND 2
31-16-937 REV 1	EXHAUST FAN AND POWER MONITOR
31-16-938 REV 1	WELL HEAD DETAILS



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- NOTES
- 1) MOUNT NEW PULL BOX (PB1) (HAMMOND PN 1418N4CR6 - TYPE 4 406x508x152 mm WITH HINGE DOOR AND CLAMPS) AT A HEIGHT 1M ABOVE THE MCC INSIDE. CREATE NEW ENTRIES THROUGH BUILDING SIDING AND SEAL INSULATION. TERMINATE ALL 4x53MM CONDUITS AT PB1. RUN WIRING INTO MCC & CONNECT TO VFDS. ENGAGE EATON TO ATTEND SITE TO COMMISSION WELL VFDS.
 - 2) PLANNED TRENCHING ROUTE IS EXPECTED TO BE IN THE VICINITY OF EXISTING WATER LINES AND BC HYDRO CONNECTIONS. CONTRACTOR TO COORDINATE WITH BC ONE CALL BEFORE EXCAVATING.
 - 3) NEW JUNCTION BOXES TO BE INSTALLED AT WELL HEAD. MOUNTED ON CANTRUSS FRAME 1500mm MIN ABOVE GROUND. SEE DWG 31-16-938 FOR DETAILS.
 - 4) CROSS PAVED DRIVEWAY AT EXISTING CRACK IN PAVEMENT. TRENCH SHOULD CROSS SHORTEST PATH (I.E PERPENDICULAR TO THE ROADWAY)
 - 5) LIMITED INFORMATION IS AVAILABLE REGARDING WIRING/CONDUIT FROM EXISTING FLOW METER. CONTRACTOR SHALL ASSUME NEW WIRE, CONDUIT AND WALL MOUNTED PULL BOX. CONTRACTORS SHALL MAKE A PROVISION TO ROUTE THE INSTRUMENT WIRE TO THE EXISTING CONTROL PANEL ON THE INTERIOR EAST WALL. IF THE EXISTING WIRE OR CONDUIT IS DEEMED IN GOOD CONDITION AND IS COMPATIBLE WITH THE NEW FLOW METER THEN IT CAN BE REUSED.
 - 6) CONTROL WIRES C1 AND C2 ARE SHIELDED ANALOG SIGNAL WIRES FROM THE NEW WELL LEVEL TRANSMITTERS. CONTRACTOR SHALL ENSURE SHIELDING IS CONTINUOUS FOR ENTIRE RUN FROM WELLHEAD JB. SHIELD SHALL BE GROUNDED IN CONTROL PANEL BY DFO NOT AT THE WELL HEAD JB. FINAL CONNECTION IN CONTROL PANEL TO BE COMPLETED BY DFO. PROVIDE AN EXTRA 10M AT THE PULL BOX TO ENSURE THE WIRES WILL REACH THE EXISTING CONTROL PANEL. EXTEND 1x27mmC WITHIN 1M OF CONTROL PANEL & COIL WIRES.
 - 7) NEW FLOW METER TO BE INSTALLED SHALL BE HYDRINS2 WITH 'DISPLAY C' FOR ANALOG OUTPUT.



ELECTRICAL SITE PLAN
SCALE: 1:120



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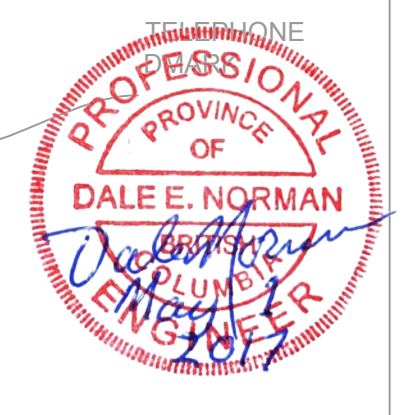
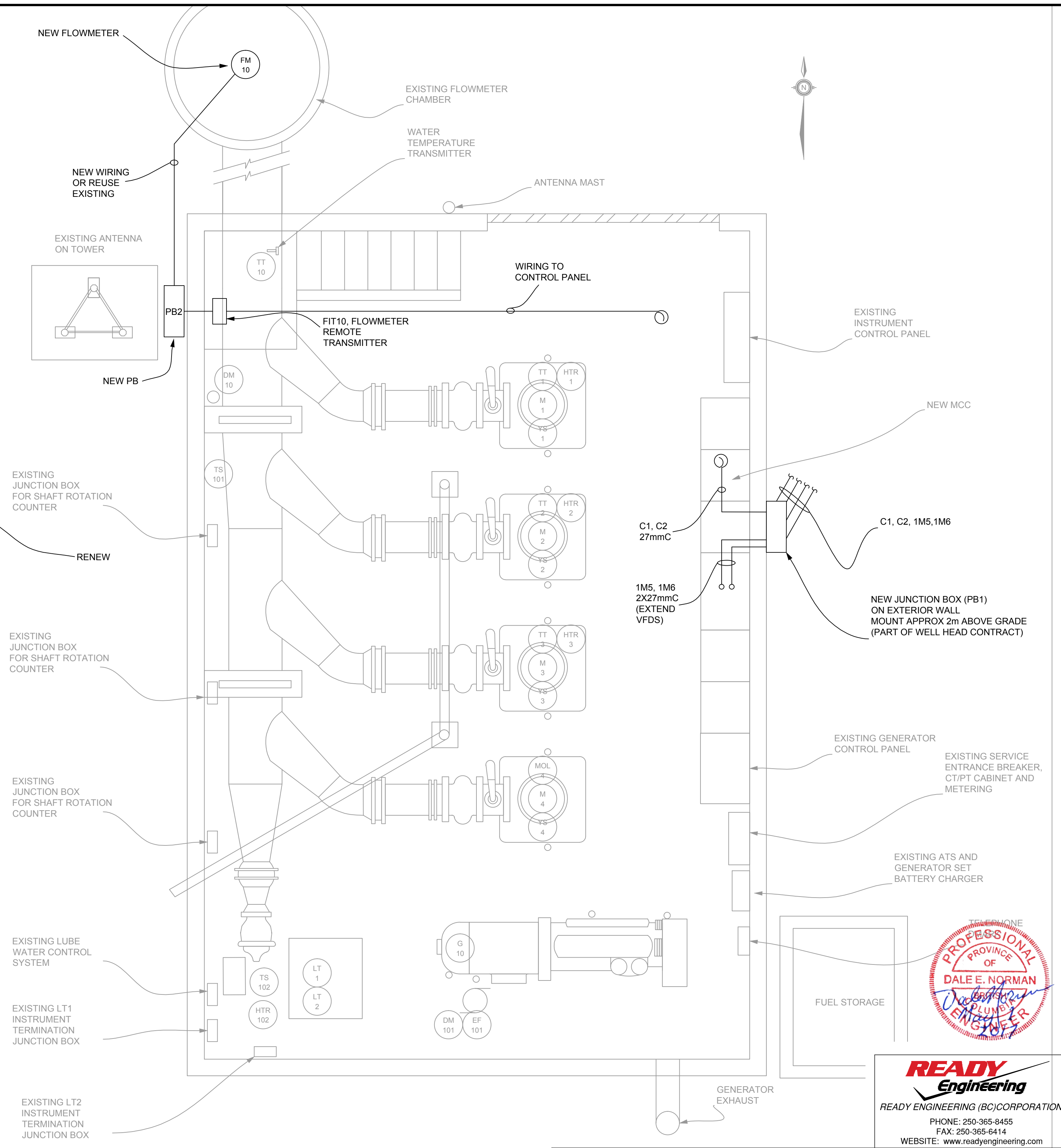
FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY	
ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS SITE PLAN	
SCALE	AS NOTED
DATE	11/11/16
DRAWING NUMBER	31-16-930
REVISION	1

DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS	DESIGNED LCR	DRAWN LCR	CHECKED DJM	RECOMMENDED DJM	APPROVED
			1	04/25/17	ISSUED FOR TENDER - PUMPS AND FLOW METER					
			0	11/11/16	ISSUED FOR CLIENT REVIEW					

- NOTES
 1. EXISTING CABLE RUNS FROM MOTORS TO MCC ARE NOT EXPECTED TO REACH THE NEW VFD LOCATIONS. CONTRACTORS ARE TO BID AS IF MOTOR FEED CABLES WILL BE REPLACED IN EXISTING CONDUIT.
 2. N.I.C. NOT IN CONTRACT (BY OTHERS IN A SEPARATE CONTRACT)

SYMBOL LEGEND				
EQUIPMENT # OR INSTRUMENT TAG	QUANTITY	DESCRIPTION	NEW OR EXISTING	COMMENTS
	1 OF EACH	3φ, 600V VERTICAL PUMP WITH ELECTRIC MOTOR. MOTOR INCLUDES ANTI-CONDENSATION STRIP HEATER	EXISTING	EXISTING INSTRUMENTS TO BE RE-CONNECTED TO THE NEW MCC AND CONTROL CABINET. RE-USE EXISTING CONDUITS WHERE SUITABLE. RE-USE EXISTING CONDUCTORS AND CABLES WHERE SUITABLE AND ONLY WHERE THE CONDUCTORS ARE IN CONTINUOUS LENGTH BETWEEN THE INSTRUMENT CONNECTION POINT AND THE MCC OR CONTROL CABINET CONNECTION POINT. (SPLICING ON SHORT EXTENSION SHALL NOT BE PERMITTED)
	1 OF EACH	3φ, 600V VERTICAL PUMP WITH ELECTRIC MOTOR. MOTOR INCLUDES ANTI-CONDENSATION STRIP HEATER	EXISTING	
	1 OF EACH	3φ, 600V VERTICAL PUMP WITH ELECTRIC MOTOR. MOTOR INCLUDES ANTI-CONDENSATION STRIP HEATER	EXISTING	
	1 OF EACH	3φ, 600V VERTICAL PUMP WITH ELECTRIC MOTOR. MOTOR INCLUDES INTEGRAL MOTOR OVER LOAD CONTACT. MOTOR OVER LOAD CONTACT NO LONGER NEEDED DUE TO VFD INSTALLATION.	EXISTING	
	1 OF EACH	3φ, 600V SUBMERSIBLE PUMP WITH ELECTRIC MOTOR. WELL INCLUDES DIFFERENTIAL PRESSURE TRANSMITTER.	N.I.C.	PRESSURE TRANSMITTER TO INCLUDE VENTILATED CABLE, BELLWIS OR EQUIVALENT, AND ANALOG SURGE PROTECTION.
	1 OF EACH	3φ, 600V SUBMERSIBLE PUMP WITH ELECTRIC MOTOR. WELL INCLUDES DIFFERENTIAL PRESSURE TRANSMITTER.	N.I.C.	PRESSURE TRANSMITTER TO INCLUDE VENTILATED CABLE, BELLWIS OR EQUIVALENT, AND ANALOG SURGE PROTECTION.
	1 OF EACH			
	1 OF EACH	SIERRA SERIES 205 STRAP-ON FLOW METER, WITH EXTERNAL DISPLAY AND 4-20mA OUTPUT FROM DISPLAY UNIT	N.I.C.	120VAC POWER SUPPLY TO FLOW METER DISPLAY UNIT FROM CONTROL PANEL, AND 4-20mA ANALOG SIGNAL FROM FLOW METER DISPLAY UNIT TO THE CONTROL PANEL
	1	HYDROSTATIC PRESSURE TRANSDUCER FOR LEVEL MEASUREMENT	EXISTING	
	1	HYDROSTATIC PRESSURE TRANSDUCER FOR LEVEL MEASUREMENT	EXISTING	
	1 OF EACH	BUILDING SYSTEMS: EXHAUST FAN, DAMPER MOTOR FOR LOUVER CONTROL.	EXISTING	THE EXISTING EXHAUST FAN, DAMPER MOTOR AND LOUVERS ARE TO BE INTEGRATED INTO THE NEW MCC. THE CONTRACTOR IS TO CONFIRM SYSTEM OPERATION PRIOR TO ORDERING THE NEW MCC AND PRIOR TO ANY EXISTING MCC DEMOLITION WORK. THE CONTRACTOR IS TO REPORT THE SYSTEM OPERATION FINDINGS TO THE ENGINEER AND REQUEST SITE INSTRUCTIONS IF ASSISTANCE IS REQUIRED.
	1 OF EACH	BUILDING SECURITY AND FIRE PROTECTION SYSTEM ALARM STATUS SIGNAL CONTACTS	EXISTING	
	1 OF EACH	RADIO EQUIPMENT AND TELEPHONE MODEM	EXISTING	
	1 OF EACH	BUILDING SYSTEMS: ELECTRIC HEATER AND THERMOSTAT	EXISTING	THE EXISTING BUILDING HEATING SYSTEM IS TO BE INTEGRATED INTO THE NEW MCC. THE CONTRACTOR IS TO CONFIRM SYSTEM OPERATION PRIOR TO ORDERING THE NEW MCC AND PRIOR TO ANY EXISTING MCC DEMOLITION WORK. THE CONTRACTOR IS TO REPORT THE SYSTEM OPERATION FINDINGS TO THE ENGINEER AND REQUEST SITE INSTRUCTIONS IF ASSISTANCE IS REQUIRED.
	1	STATION DISCHARGE WATER TEMPERATURE TRANSDUCER	EXISTING	

- NOTES
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FISHERIES AND OCEANS CANADA
 REAL PROPERTY, SAFETY AND SECURITY

**ROBERTSON CREEK HATCHERY
 COLD WATER PUMP STATION
 GROUNDWATER WELLS No. 1 AND No. 2
 ELECTRICAL DRAWINGS
 BUILDING LAYOUT**

SCALE AS NOTED
 DATE 11/08/16
 DRAWING NUMBER 31-16-931
 REVISION 1

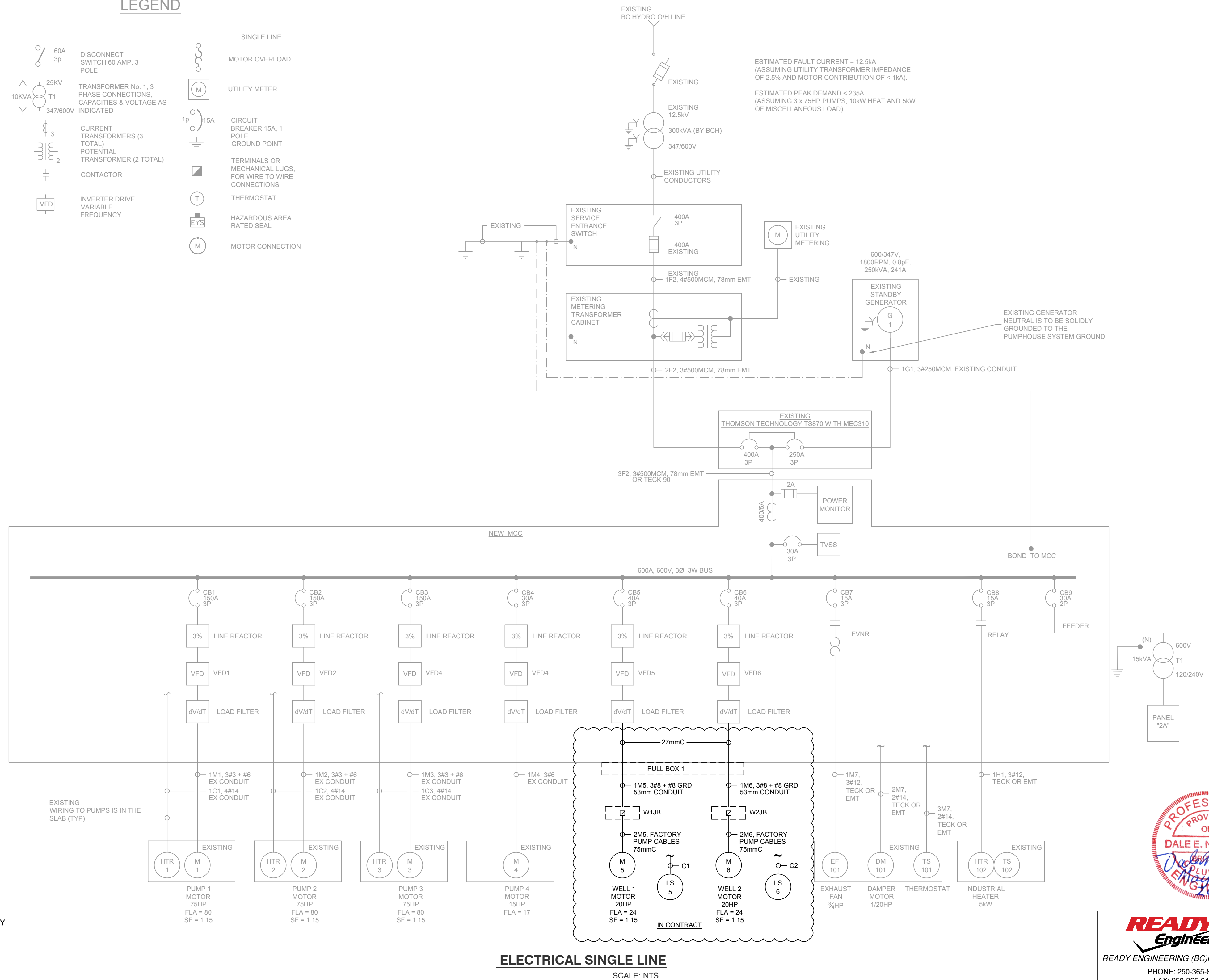
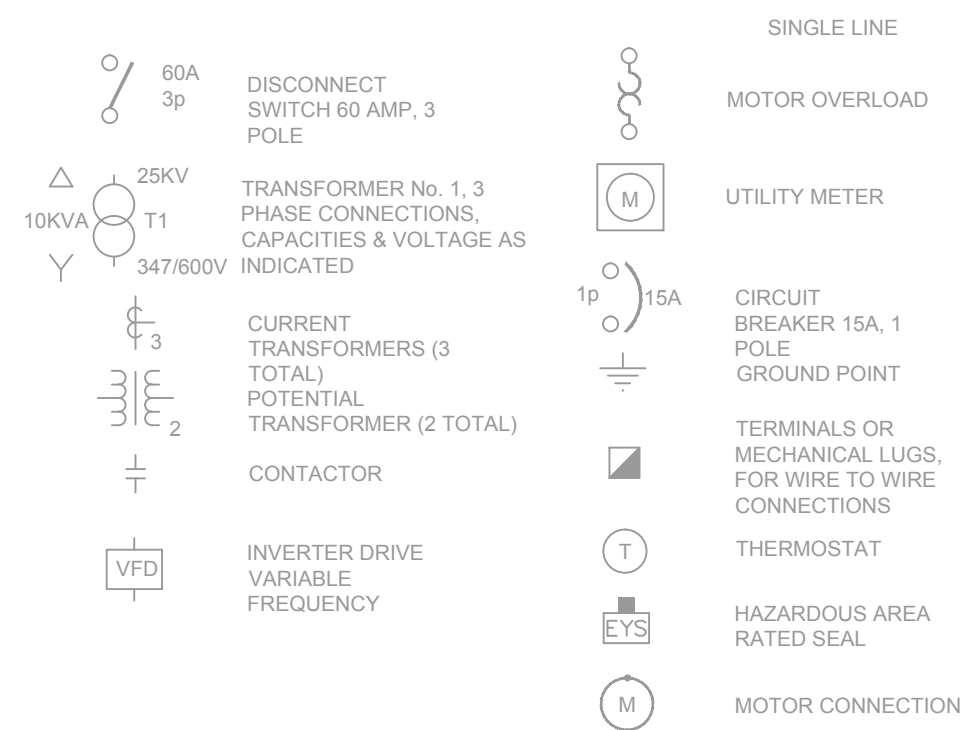
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			1	04/25/17	ISSUED FOR TENDER - PUMPS AND FLOW METER					
			0	11/18/16	ISSUED FOR TENDER					

100 Amp Main Bus		Panel 2A				120/240 VAC, 1 ϕ	
No Main Breaker						Surface Mount	
32 circuits						Isolate the Neutral	
INTERIOR LIGHTS	15 ASP	1	2	15 ASP		SPARE	
EXTERIOR LIGHTS	15 ASP	3	4	15 ASP		SPARE	
GENERAL RECEPTACLES	15 ASP	5	6	15 ASP		BENCH RECEPTACLE	
LUBE WATER SYSTEM FOR 15HP PUMP	15 ASP	7	8	15 ASP		GENERATOR BATTERY CHARGER	
GENERAL RECEPTACLES	15 ASP	9	10	15 ASP		GENERATOR WATER HEATER	
		11	12	20 ASP		SPARE	
		13	14	20 ASP		SPARE	
		15	16				
		17	18				
		19	20				
		21	22				
		23	24				
		25	26				
		27	28				
		29	30				
		31	32				

PANEL 2A SCHEDULE
SCALE: NTS

- NOTES
- ITEMS IN LIGHT ARE MEANT TO BE USED FOR REFERENCE ONLY. DARK ITEMS ARE INCLUDED IN THIS CONTRACT.
 - LS5 & LS6 ARE PRESSURE TRANSDUCERS PLACED IN THE WELLS WITH THE PUMPS. ROUTE WIRING & CONDUITS (C1 & C2) TO THE CONTROL PANEL AS SHOWN ON THE DRAWINGS. FINAL CONNECTION WILL BE BY DFO.

LEGEND



ELECTRICAL SINGLE LINE
SCALE: NTS



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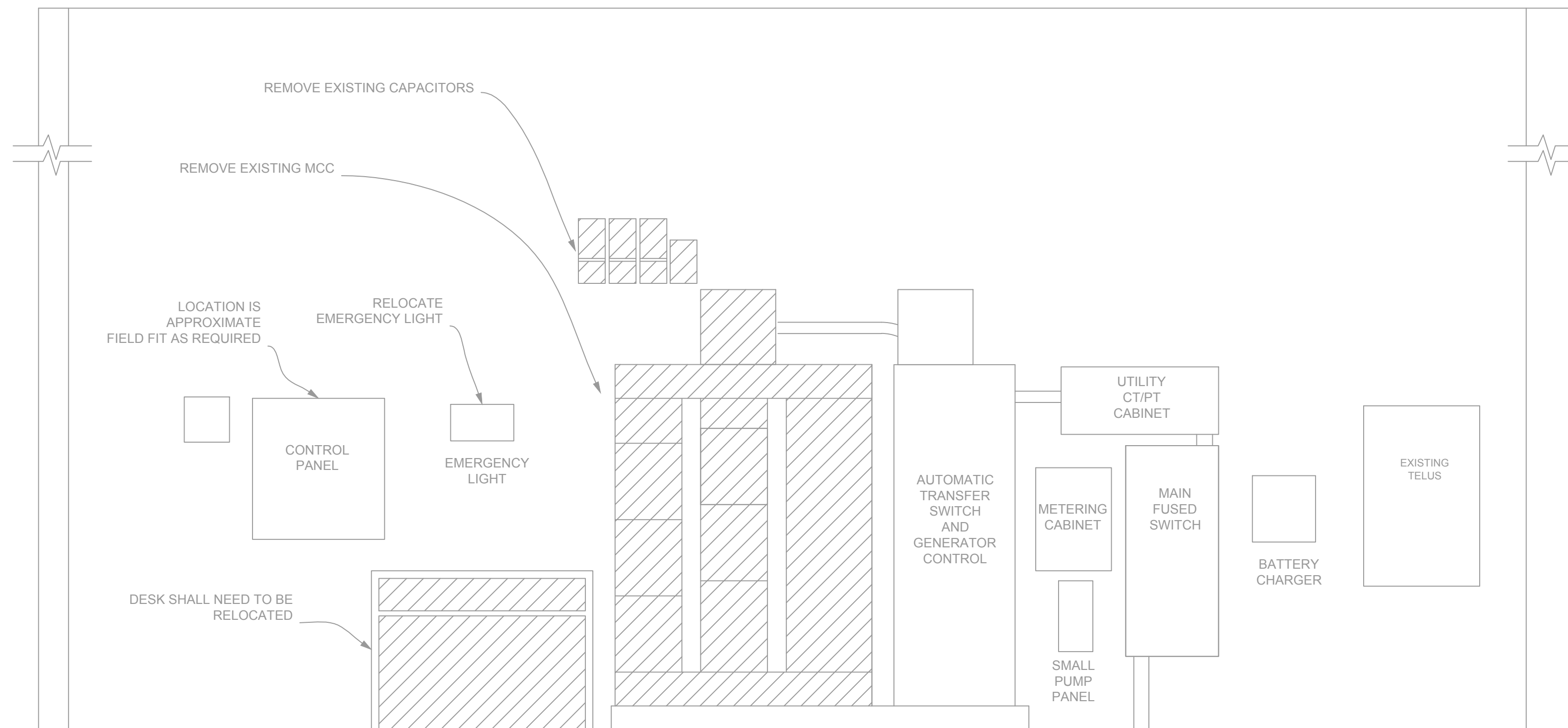
FISHERIES AND OCEANS CANADA
REAL PROPERTY, SAFETY AND SECURITY

ROBERTSON CREEK HATCHERY
COLD WATER PUMP STATION
GROUNDWATER WELLS No. 1 AND No. 2
ELECTRICAL DRAWINGS
SINGLE LINE DIAGRAM

DESIGNED	LCR
DRAWN	LCR
CHECKED	DJM
RECOMMENDED	DN
APPROVED	
APPROVED	

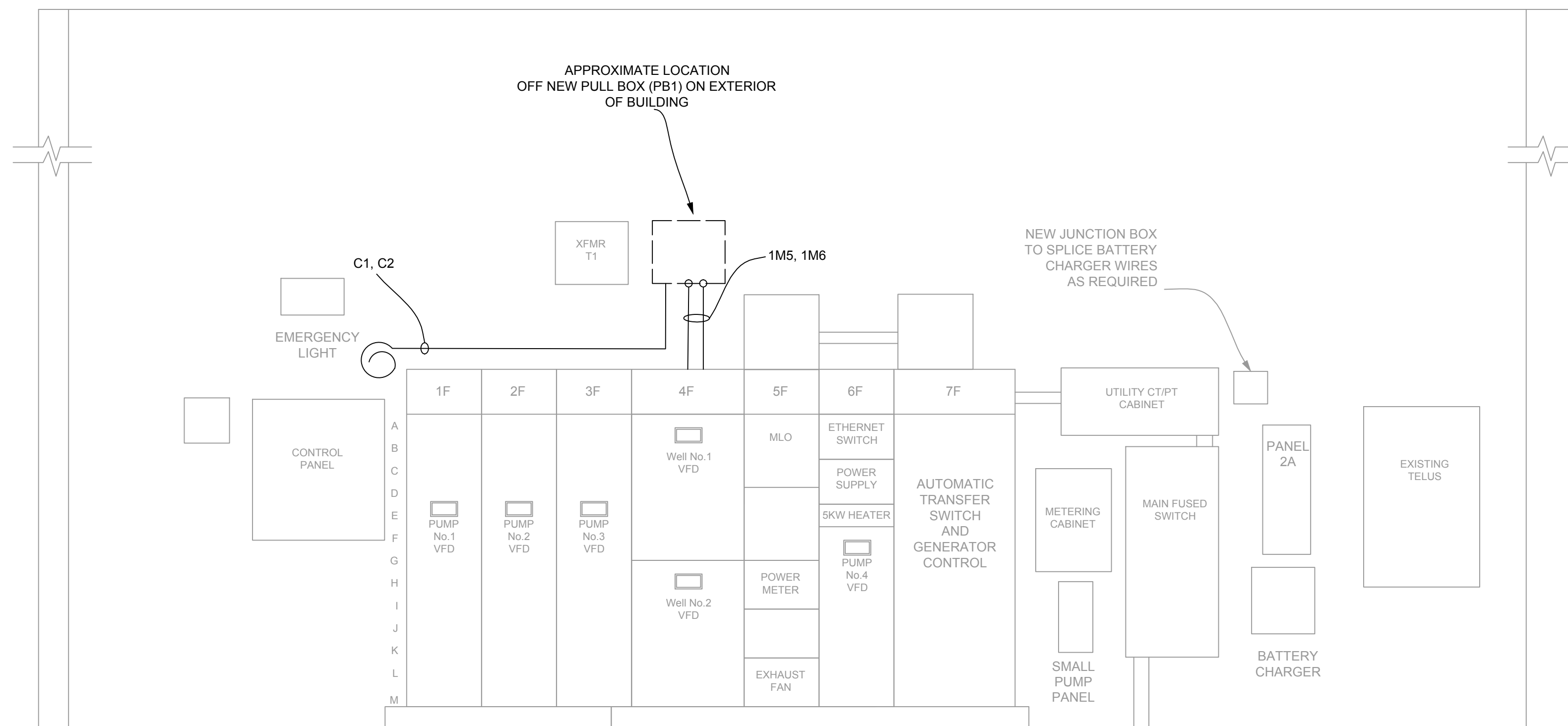
SCALE	AS NOTED
DATE	11/08/16
DRAWING NUMBER	31-16-932
REVISION	1

DWG. NO.	DRAWING REFERENCES	NOTES	NO.	DATE	REVISIONS
			1	04/25/17	IFT- PUMPS AND FLOW METER-CHANGE WELL PUMP HP
			0	11/18/16	ISSUED FOR TENDER



EXISTING WALL ELEVATION
SCALE: NTS

NOTES
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PROPOSED WALL ELEVATION
SCALE: NTS

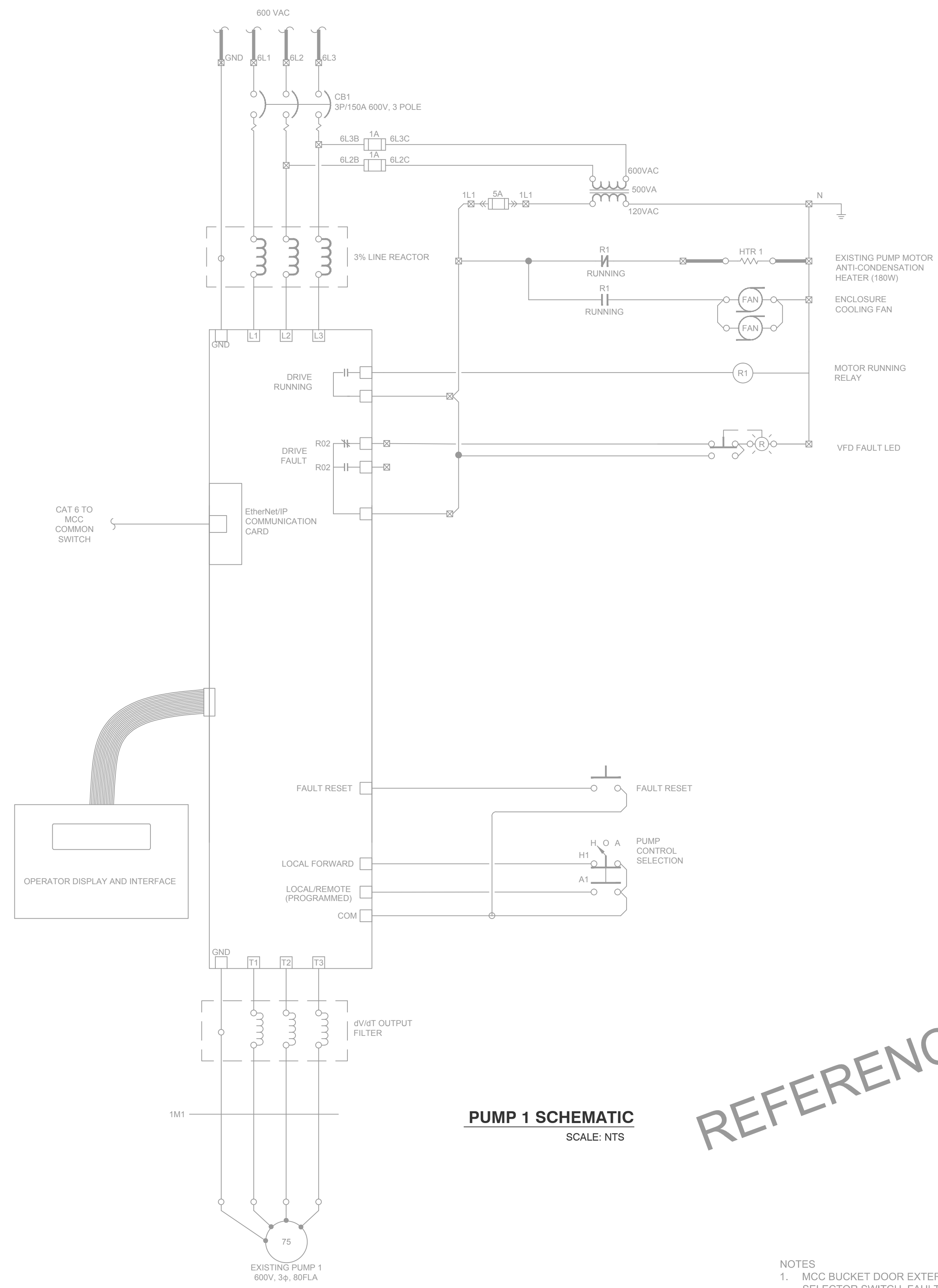


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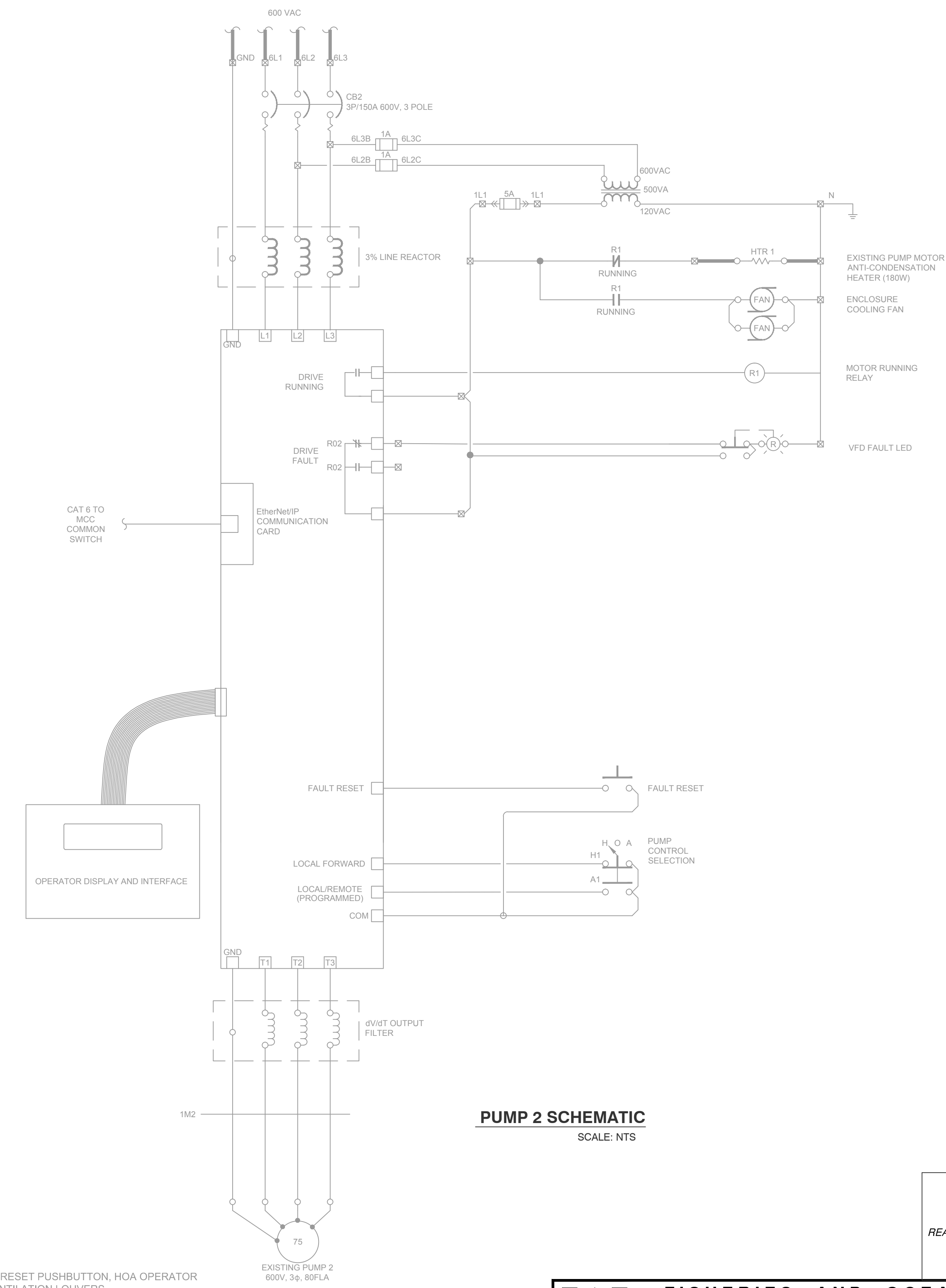
FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY		SCALE	AS NOTED
		DATE	11/08/16
ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS WALL ELEVATIONS		DRAWING NUMBER	31-16-933
		REVISION	1

DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS
			1	04/25/17	ISSUED FOR TENDER - PUMPS AND FLOW METER
			0	11/18/16	ISSUED FOR TENDER

DESIGNED	LCR
DRAWN	LCR
CHECKED	DJM
RECOMMENDED	DN
APPROVED	
APPROVED	



PUMP 1 SCHEMATIC
SCALE: NTS



PUMP 2 SCHEMATIC
SCALE: NTS

REFERENCE ONLY

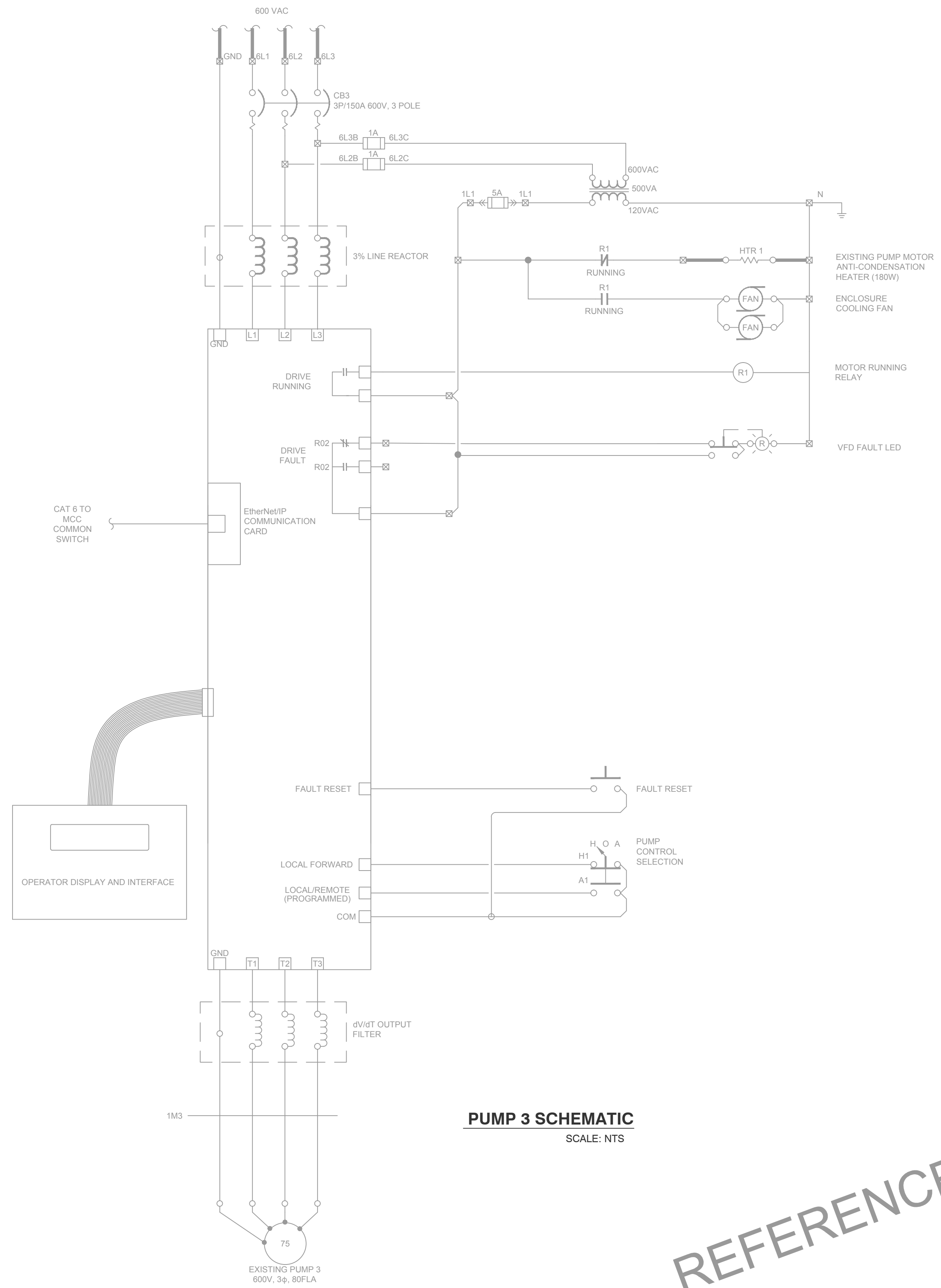
- NOTES
- MCC BUCKET DOOR EXTERNAL TO HAVE VFD DISPLAY/OPERATOR INTERFACE, RESET PUSHBUTTON, HOA OPERATOR SELECTOR SWITCH, FAULTED LED (PUSH TO TEST), BREAKER HANDLE, AND VENTILATION LOUVERS.
 - ALL VFDS TO COMMUNICATE OVER ETHERNET/IP. MCC TO BE WIRED BY THE MANUFACTURER WITH A COMMON ETHERNET SWITCH FOR ALL DEVICES AND A SINGLE ACCESS POINT FOR DFO CONNECTION



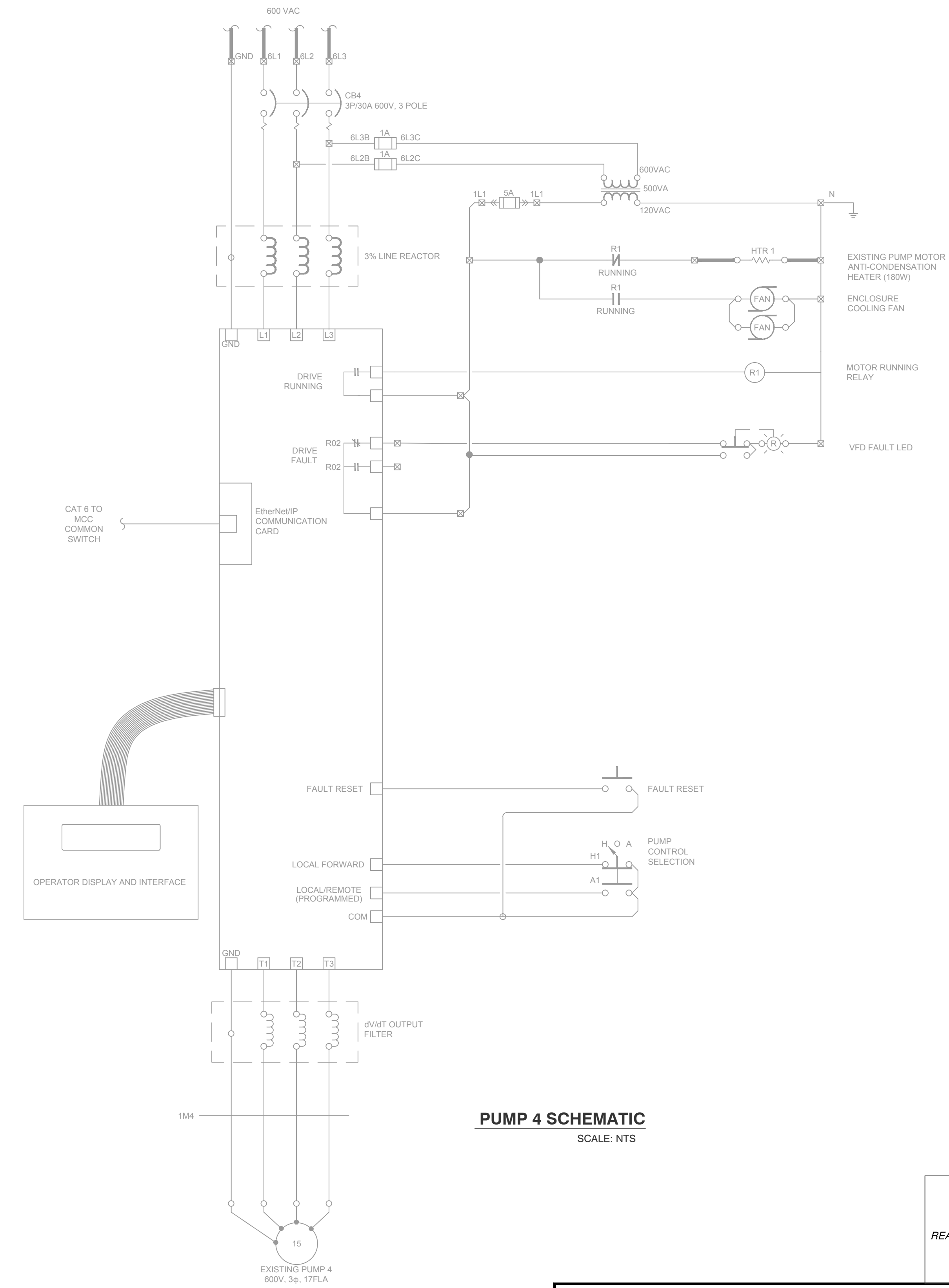
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<p>FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY</p>	<p>ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS PUMPS 1 AND 2</p>		SCALE AS NOTED
			DATE 11/08/16
			DRAWING NUMBER 31-16-934
			REVISION 1

DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS	DESIGNED LCR	DRAWN LCR	CHECKED DJM	RECOMMENDED DN	APPROVED
			1	04/25/17	ISSUED FOR TENDER - PUMPS AND FLOW METER					
			0	11/18/16	ISSUED FOR TENDER					



PUMP 3 SCHEMATIC
SCALE: NTS



PUMP 4 SCHEMATIC
SCALE: NTS

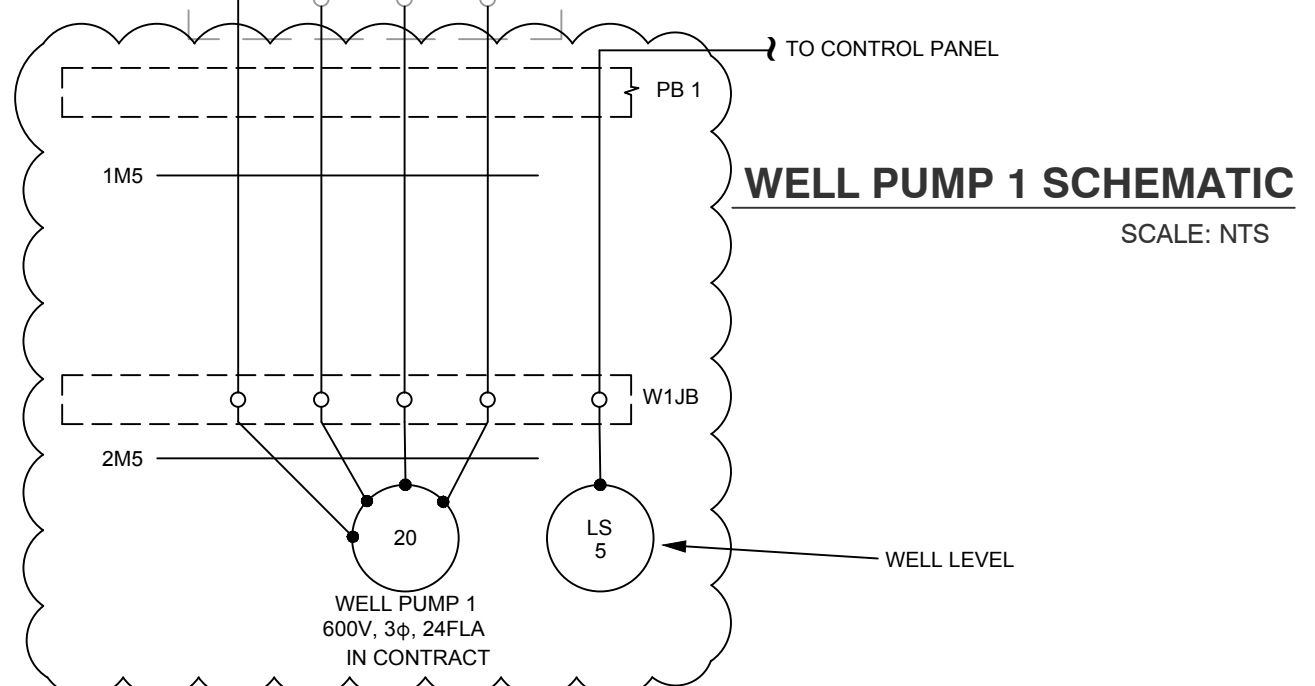
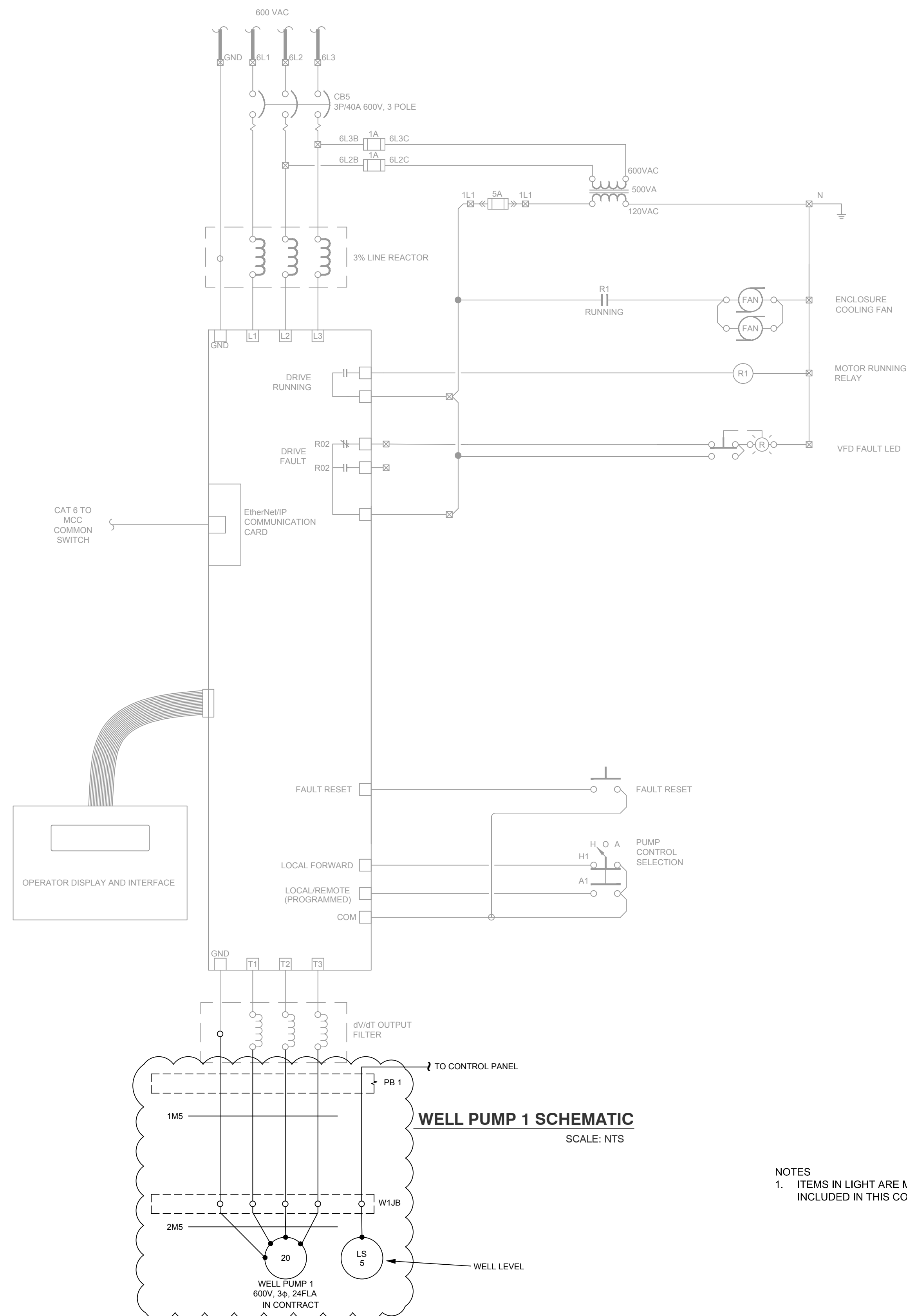
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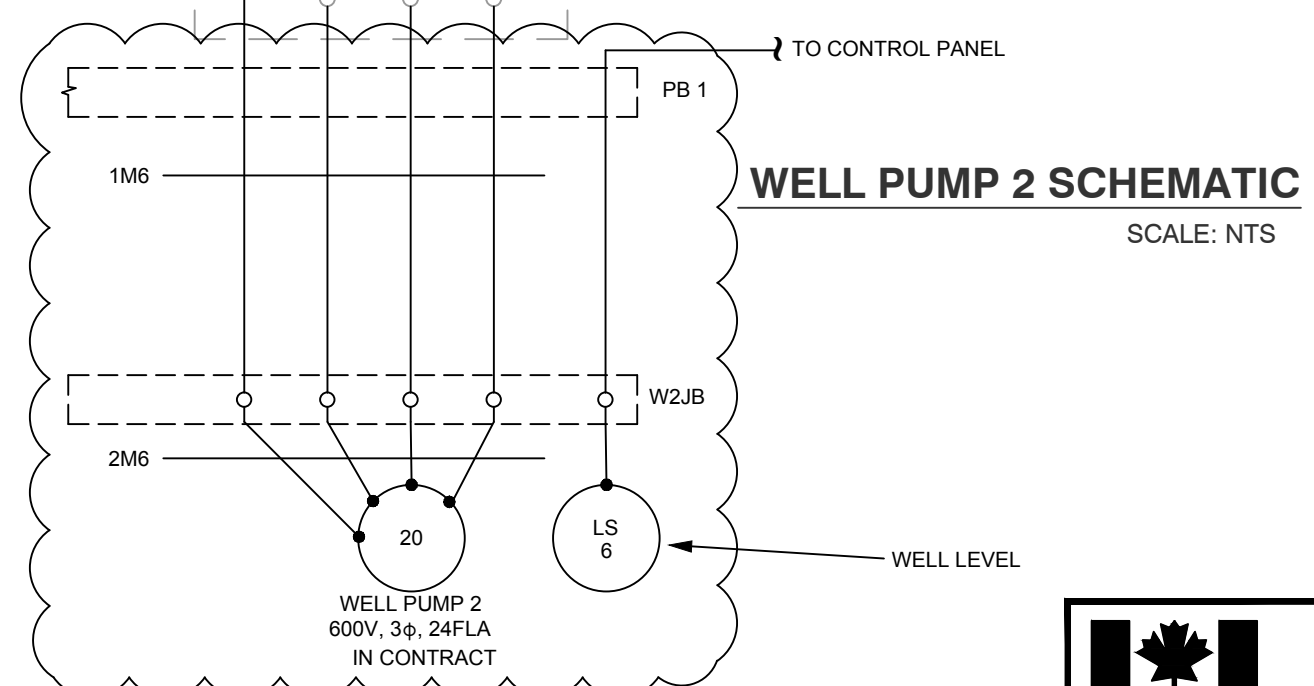
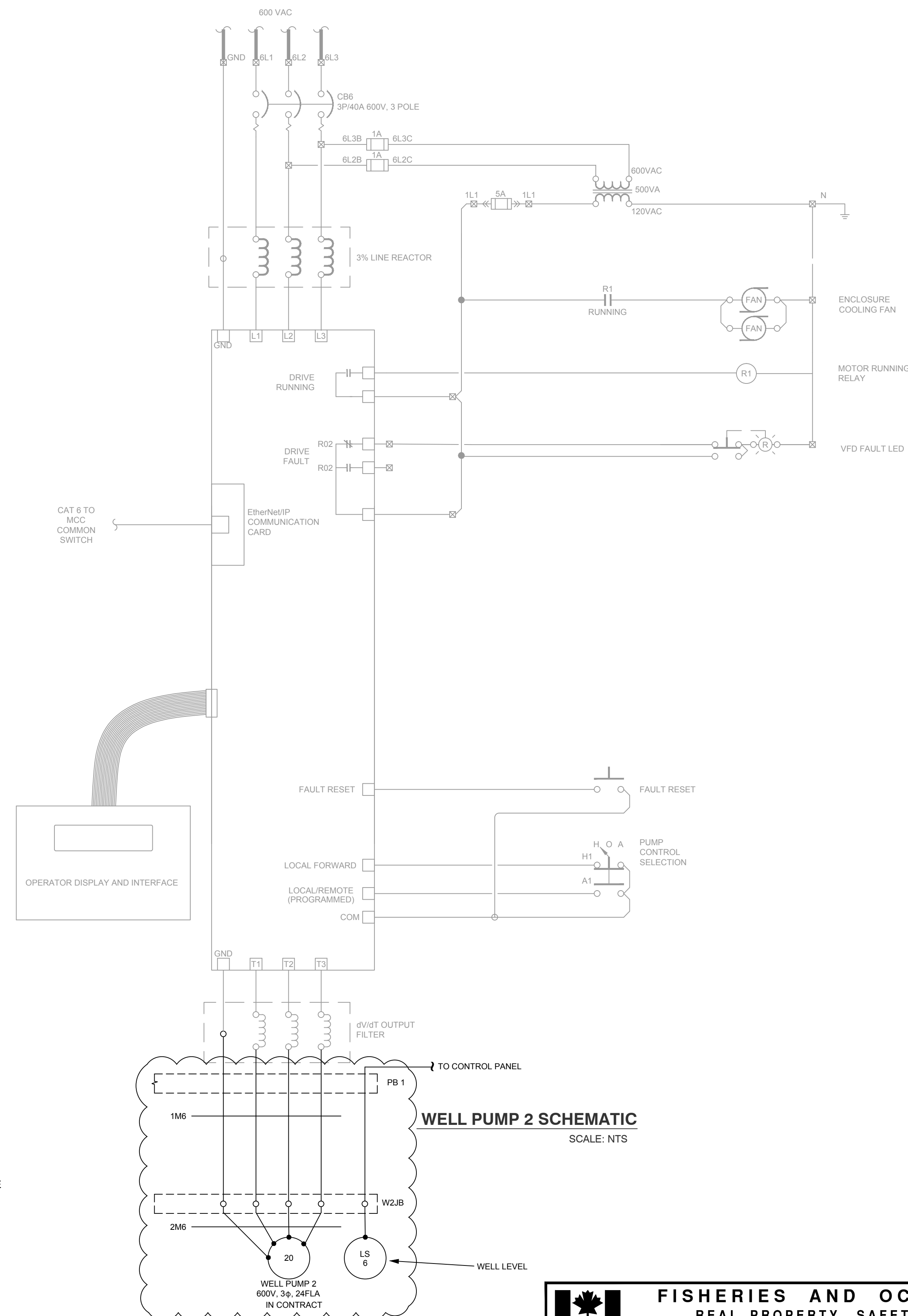
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FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY		SCALE	AS NOTED
		DATE	11/08/16
ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS PUMPS 3 AND 4		DRAWING NUMBER	31-16-935
		REVISION	1

DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS	DESIGNED LCR	DRAWN LCR	CHECKED DJM	RECOMMENDED DN	APPROVED
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			0	11/18/16	ISSUED FOR TENDER					

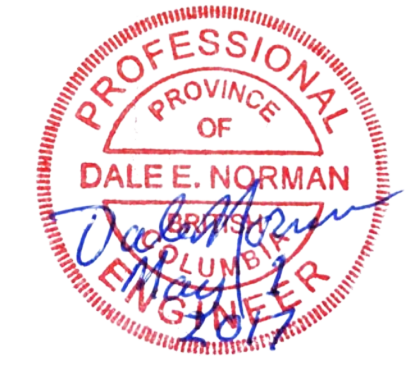


WELL PUMP 1 SCHEMATIC
SCALE: NTS



WELL PUMP 2 SCHEMATIC
SCALE: NTS

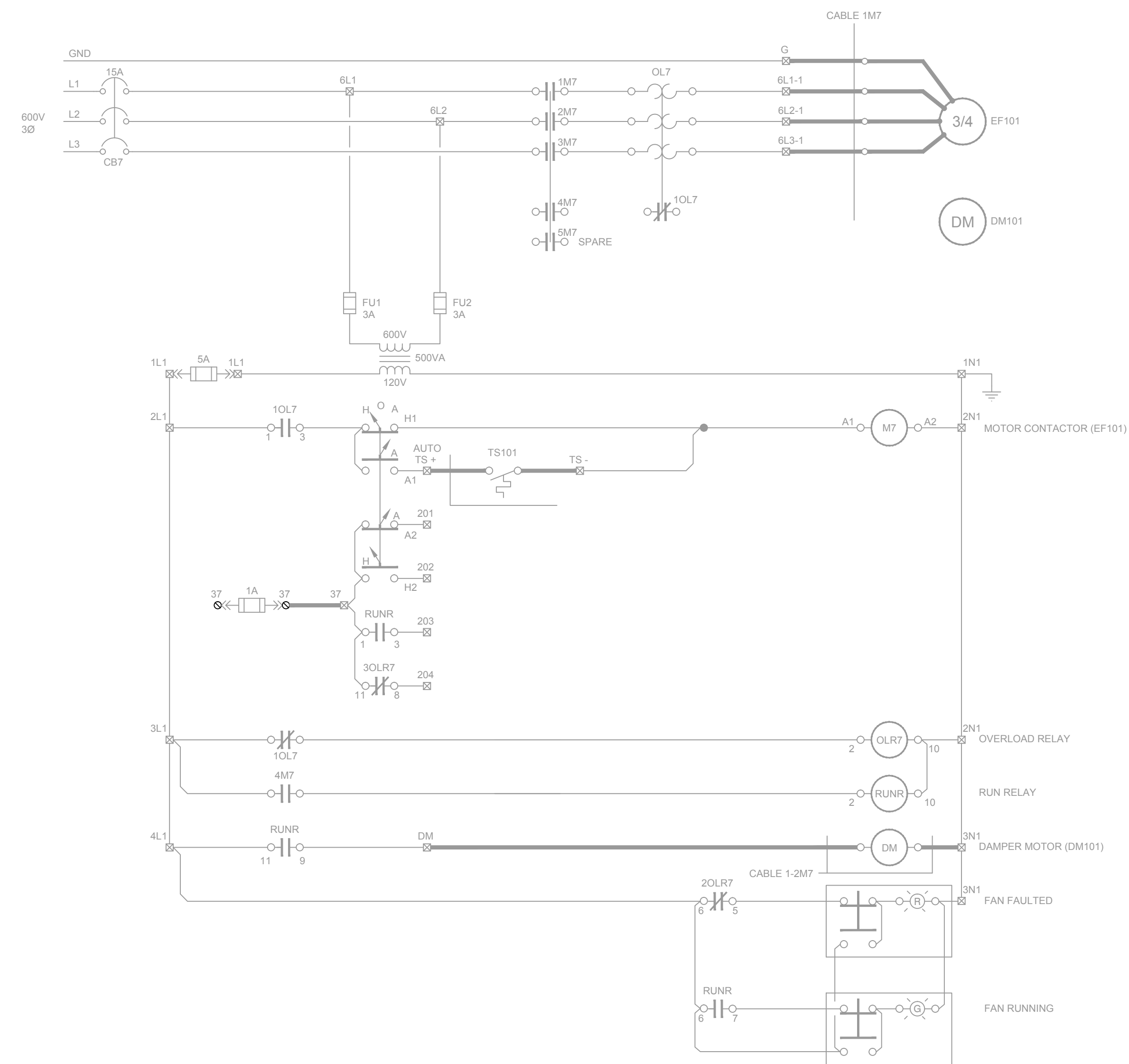
NOTES
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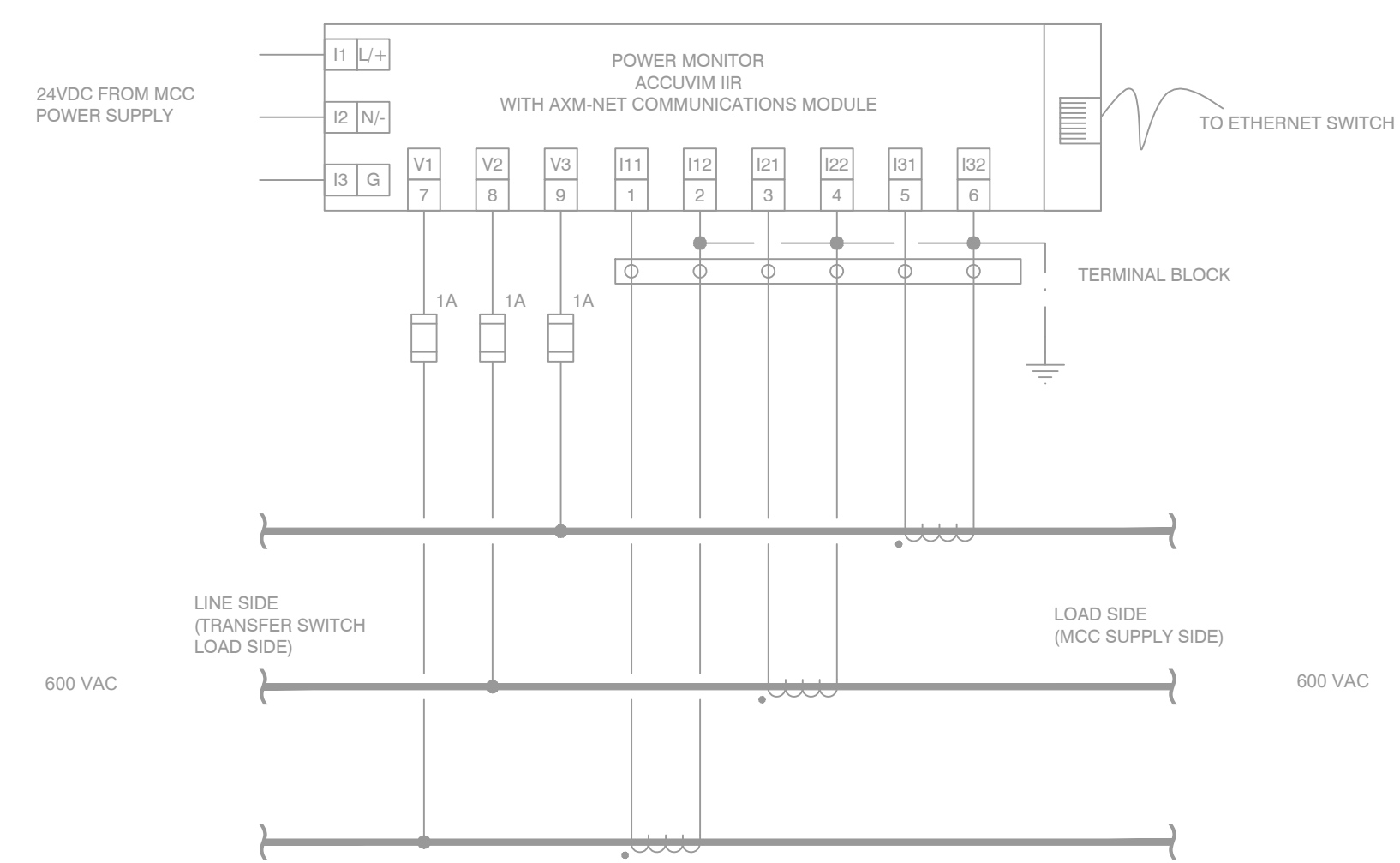
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FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY	ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS WELL PUMPS 1 AND 2	SCALE AS NOTED
	DATE 11/08/16	DRAWING NUMBER 31-16-936
REVISION 1		

DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS	DESIGNED LCR	DRAWN LCR	CHECKED DJM	RECOMMENDED DN	APPROVED
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			0	11/18/16	ISSUED FOR TENDER					



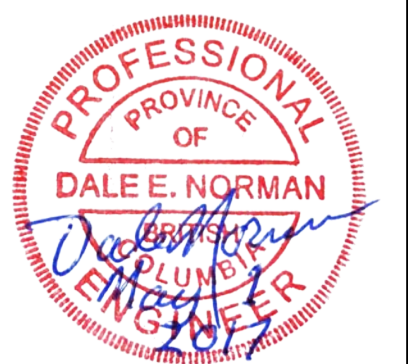
EXHAUST FAN SCHEMATIC
SCALE: NTS



POWER MONITOR SCHEMATIC
SCALE: NTS

NOTES
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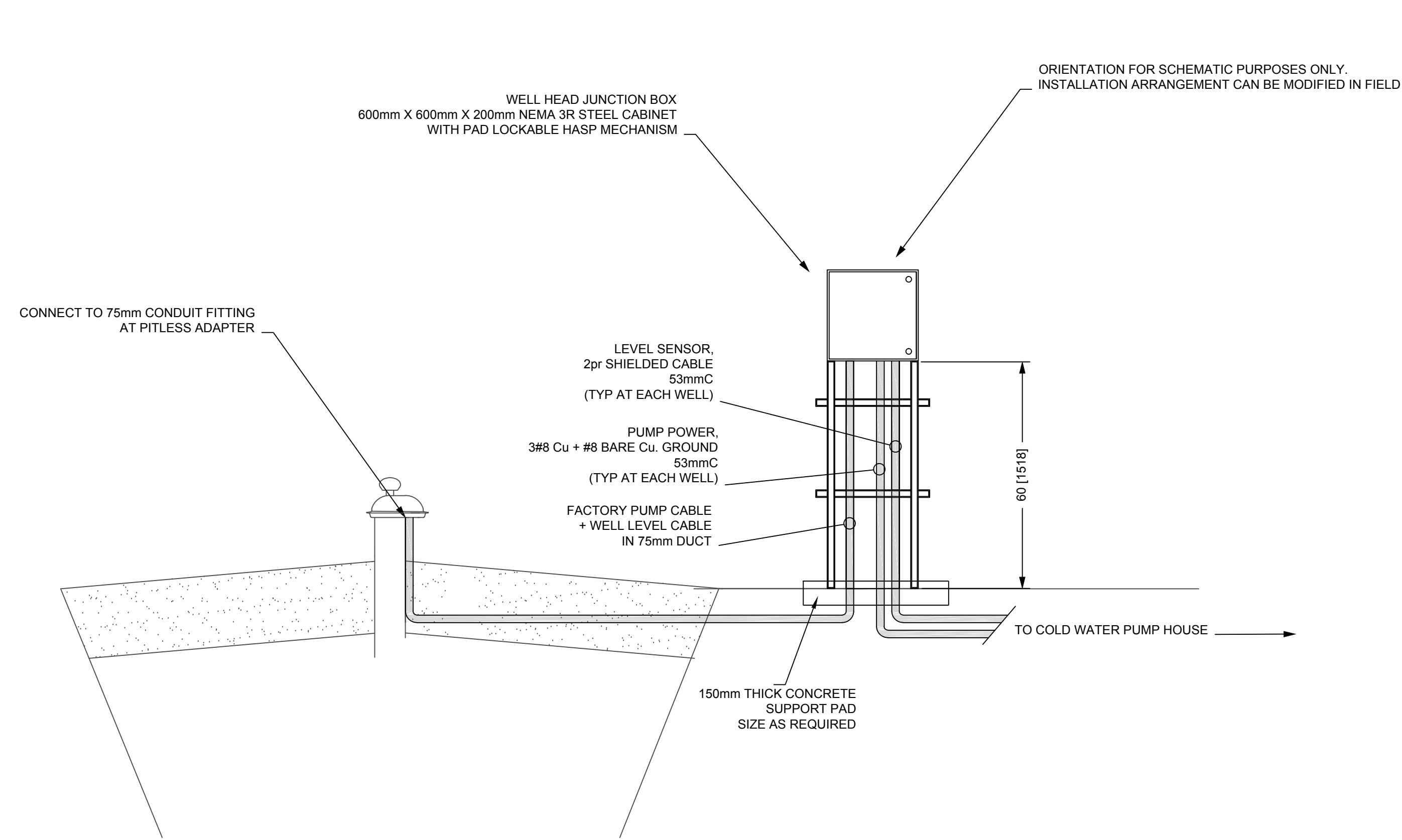
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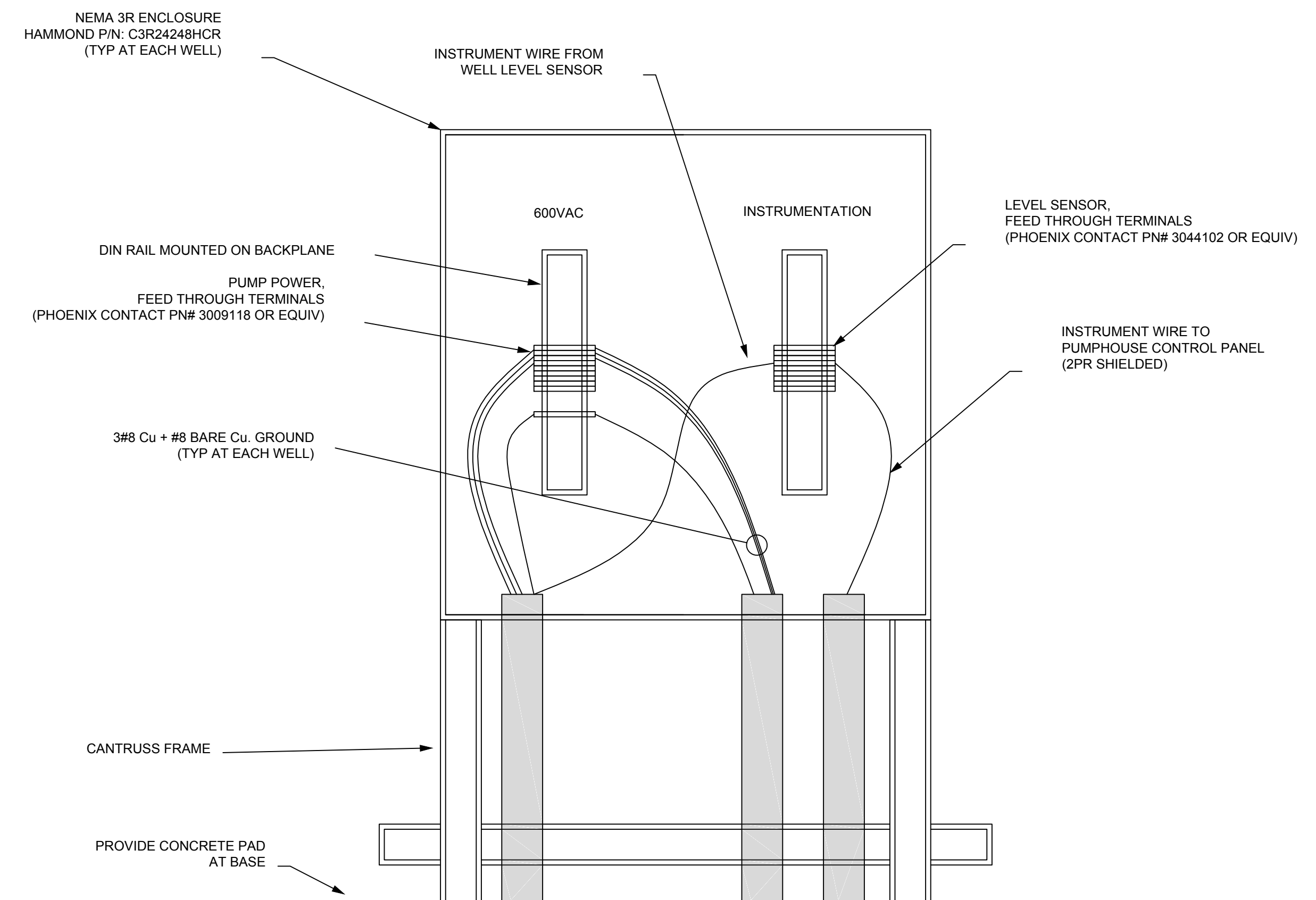
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FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY	
ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS EXHAUST FAN AND POWER MONITOR	
SCALE AS NOTED	DATE 11/08/16
DRAWING NUMBER 31-16-937	REVISION 1

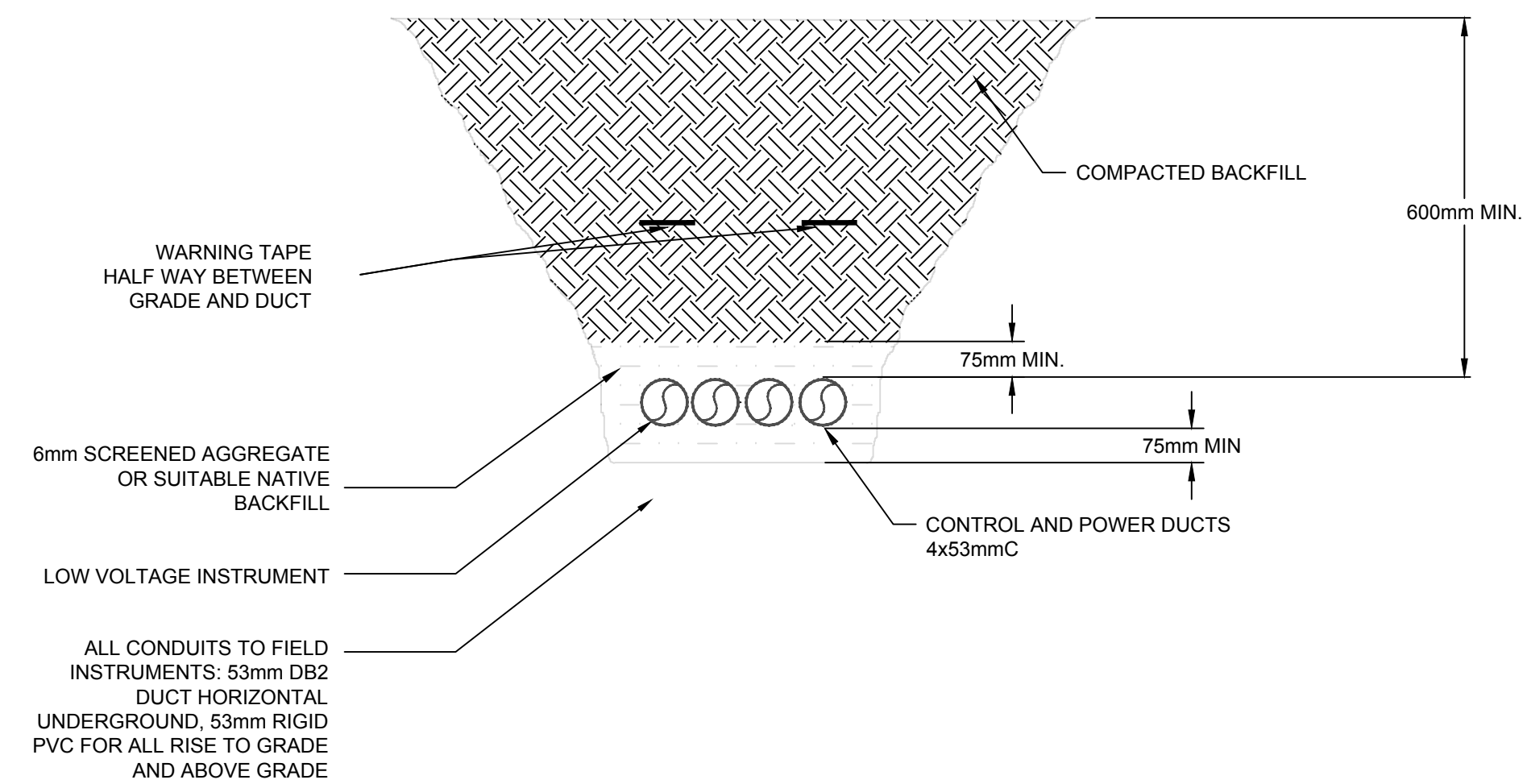
DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS	DESIGNED LCR	DRAWN LCR	CHECKED DJM	RECOMMENDED DN	APPROVED	APPROVED
			1	04/25/17	ISSUED FOR TENDER - PUMPS AND FLOW METER						
			0	11/18/16	ISSUED FOR TENDER						



WELL PUMP JUNCTION BOX ARRANGMENT
SCALE: NTS



WELL PUMP JUNCTION BOX ARRANGMENT
SCALE: NTS



TRENCHING DETAIL
SCALE: NTS



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FISHERIES AND OCEANS CANADA REAL PROPERTY, SAFETY AND SECURITY	
ROBERTSON CREEK HATCHERY COLD WATER PUMP STATION GROUNDWATER WELLS No. 1 AND No. 2 ELECTRICAL DRAWINGS WELL HEAD DETAILS	
DESIGNED LCR	SCALE AS NOTED
DRAWN LCR	DATE 11/08/16
CHECKED DJM	DRAWING NUMBER 31-16-938
RECOMMENDED DN	REVISION 1
APPROVED	
APPROVED	

DWG. NO.	DRAWING REFERENCES	NOTES	N.O.	DATE	REVISIONS
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			0	11/18/16	ISSUED FOR TENDER