

## MOSHER ENGINEERING LTD.

**Document Transmittal 186-70**

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**Date Submitted :**

December 23, 2010

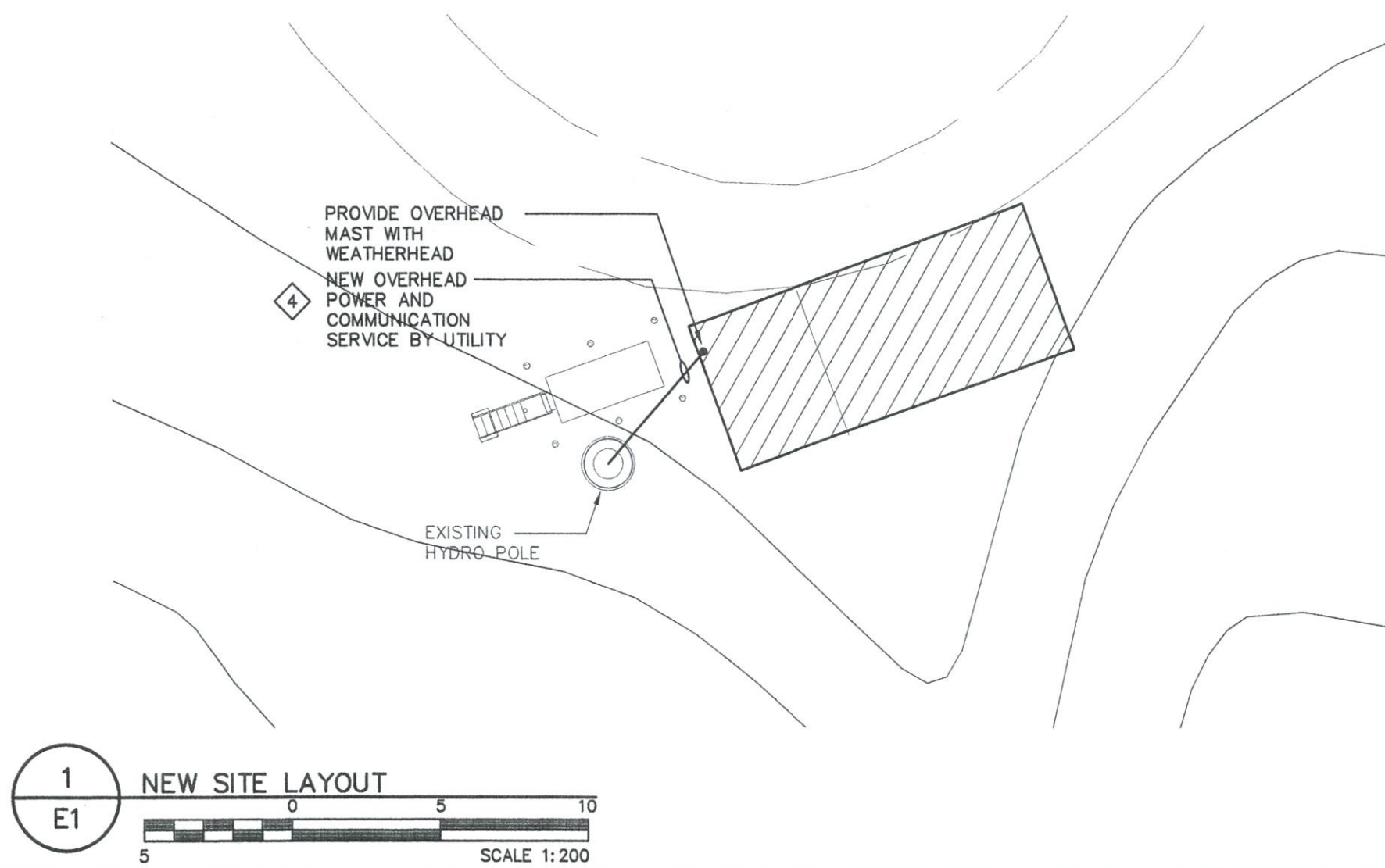
**Project Title :**

Sanikiluaq New Water Truck Fill Station

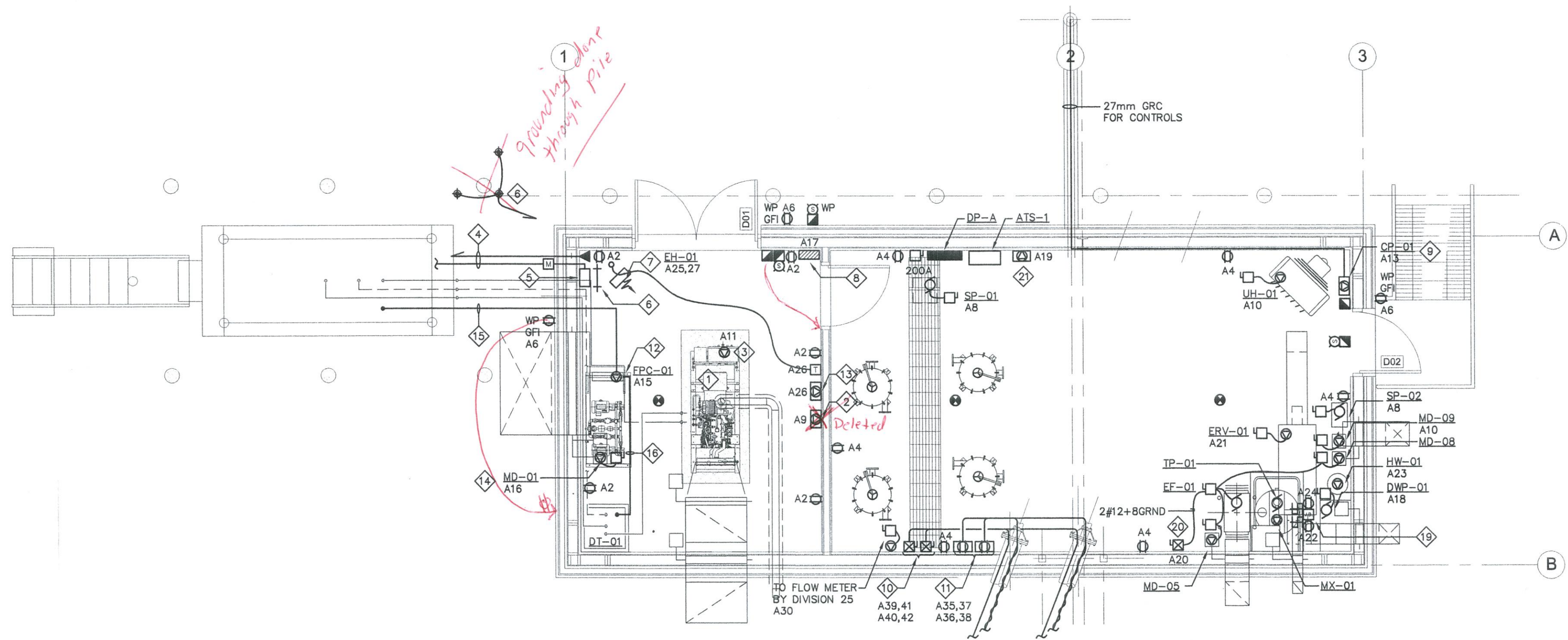
DESCRIPTION	Section or Drawing	# of Sheets
Record Drawing Electrical		2

**Comments:**





LEGEND			
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FIRE ALARM PULL STATION		METER
	FIRE ALARM HEAT DETECTOR		JUNCTION BOX
	FIRE ALARM HORN AND STROBE		PHOTOCELL
	FIRE ALARM CONTROL PANEL		BREAKER PANEL
	LIGHT SWITCH ( 3 INDICATES 3-WAY)		WALL MOUNTED TELEPHONE OUTLET
	DOUBLE-GANG LIGHT SWITCH		
	1' x 4' FLUORESCENT FIXTURE		GROUND ROD
	WALL MOUNTED HID FIXTURE		GROUND
	CEILING MOUNTED BILINGUAL EXIT SIGNS		CIRCUIT BREAKER
	EMERGENCY BATTERY UNIT C/W HEADS		REFER TO NOTE 1
	EMERGENCY REMOTE HEADS - WALL MOUNTED		FIXTURE TYPE 'A'
	DUPLEX RECEPTACLE		DENOTES GROUND FAULT INTERRUPT
	DIRECT CONNECTION		DENOTES WEATHER PROOF
	MAGNETIC STARTER		
	DISCONNECT SWITCH		



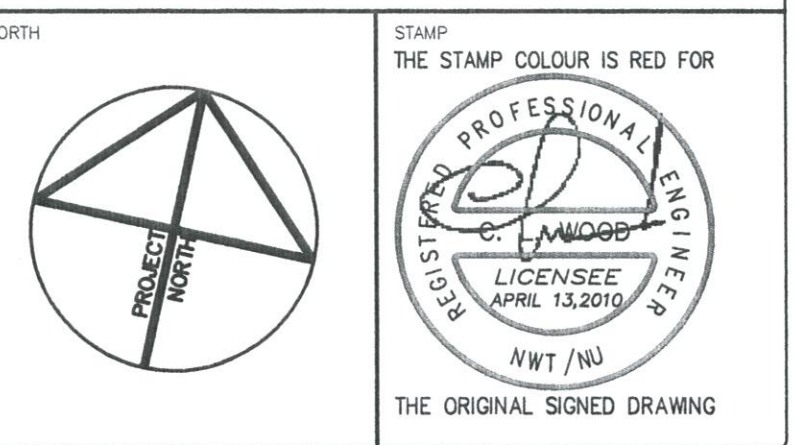
FIXTURE SCHEDULE		
SYMBOL	TYPE	DESCRIPTION
	A	1321mm x 194mm VAPOUR PROOF FLUORESCENT 2 x 32W T-8 LAMPS - FIBREGLASS REINFORCED POLYESTER HOUSING - SMOOTH VIRGIN ACRYLIC LENS WITH MOLDED CAM ACTION LATCHES AND SILICONE GASKETS - 120V ELECTRONIC BALLAST - SURFACE MOUNTED - WIRE GUARD AND CHAIN SUPPORTS
	B	WALL MOUNTED FLUORESCENT DOWNLIGHT 1 x 70W, HIGH PRESSURE SODIUM - 120V ELECTRONIC BALLAST - WEATHER RESISTANT DIE CAST ALUMINUM ALUMINUM HOUSING - SPECULAR ALZAK ALUMINUM - BOROSILICATE GLASS LENS - C/W VANDAL SHIELD
	C	100mm VAPOURLIGHT FIXTURE - 1 x 100W, INCANDESCENT LAMP - 120V ELECTRONIC BALLAST - VAPOURLIGHT, FULLY ENCLOSED AND GASKETED - WEATHERPROOF, IN DIE-CAST ALUMINUM - CLEAR GLASS PENDANT GLOBE - C/W CAST ALUMINUM GUARD - COORDINATE SUPPORT HARDWARE /W ARCHITECT

- GENERAL NOTES:**
- PERFORM COMPLETE INSTALLATION OF EQUIPMENT IN STRICT ACCORDANCE, AND SHALL MEET THE STRINGENT MOST REQUIREMENTS OF THE FOLLOWING STANDARDS:
    - CSA C22.1-09 - 21ST EDITION OF THE CANADIAN ELECTRICAL CODE 2009.
    - GOVERNMENT OF NUNAVUT'S GOOD BUILDING PRACTICES GUIDELINES - SECOND EDITION DECEMBER, 2005
    - DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES - PROTECTION SERVICES DIVISION - GN ELECTRICAL BULLETINS OFFICE OF THE NUNAVUT FIRE MARSHALL TECHNICAL BULLETINS.
  - VERIFY WITH THE ELECTRICAL INSPECTION DEPARTMENT THE ACCEPTABILITY OF ANY PRE-WIRING DONE OUTSIDE THE PROVINCE OF NUNAVUT AND ENSURE THAT A PERMIT IS ACQUIRED.

- NOTES:**
- 25kW EMERGENCY GENERATOR G1 SUPPLIED BY OTHERS, INSTALLED BY DIVISION 26 AS INDICATED. REMOVE ALL REMOVABLE PANELS TO EXPOSE GENERATOR FROM WITHIN EXISTING ENCLOSURE.
  - PROVIDE AND INSTALL BATTERY CHARGER AS INDICATED. COMPLETE CONNECTION FROM CHARGER TO BATTERIES AT GENERATOR.
  - FEED BLOCK HEATER TERMINAL BOX FROM PANEL DP-A AS INDICATED. REFER TO PANEL SCHEDULE.
  - OVERHEAD INCOMING POWER AND COMMUNICATION SERVICE. PROVIDE ONE (1) 38mm RIGID GALVANIZED CONDUIT STUB TO EXTERIOR OF BUILDING FOR SERVICE ENTRANCE AND SEAL.
  - PROVIDE MAIN INCOMING FEEDER BREAKER AS INDICATED. REFER TO SINGLE LINE DIAGRAM FOR DETAILS.
  - PROVIDE GROUND BUS IN NEW GENERATOR ROOM AS INDICATED. PROVIDE THREE (3) GROUND RODS AS INDICATED. CONNECT GROUND RODS TO GROUND BUS WITH #6 COPPER CONDUCTOR IN PVC CONDUIT.
  - PROVIDE 3kW, 120/240V, 1Ø ELECTRIC UNIT HEATER EH-01 EQUIPPED WITH RELAY BASE AS INDICATED. PROVIDE CONDUIT AND WIRE TO THERMOSTAT AS INDICATED. COORDINATE CONNECTION WITH MECHANICAL. REFER TO PANEL SCHEDULE FOR CIRCUIT DETAILS.
  - PROVIDE FIRE ALARM CONTROL PANEL AND ASSOCIATED FIRE DETECTING DEVICES AND ALARMS AS INDICATED.
  - PROVIDE POWER FROM PANEL DP-A TO CONTROL PANEL CP-01 PROVIDED BY DIVISION 23. PROVIDE TWO (2) 27mm RIGID PVC CONDUIT FROM CONTROL PANEL TO WATER PUMP STARTERS TO CONTROL THEIR OPERATION. COORDINATE CONNECTION WITH MECHANICAL.
  - PROVIDE TWO (2) 60A HAND-OFF-AUTO MAGNETIC STARTERS COMPLETE WITH 50m of 3 x 10 AWG TECK CABLE FED FROM PANEL DP-A TO FEED WATER PUMPS WP-01 AND WP-02 AS INDICATED. COORDINATE CONNECTION WITH MECHANICAL.
  - PROVIDE MECHANICAL THERMOSTAT CONTROLLER AND 20A-240V RECEPTACLE TO MATCH THE HEAT TRACE CABLE'S PLUG. PROVIDE GFI BREAKERS ON ASSOCIATED CIRCUITS. REFER TO DETAIL 1/E2.
  - PROVIDE POWER FROM PANEL DP-A TO FUEL CONTROL PANEL EPC-01 AS INDICATED. TWO (2) DUPLEX FUEL TRANSFER PUMPS AND ONE (1) CONTROL PANEL PROVIDED BY DIVISION 23. FEED EACH PUMP WITH SEPARATE FEEDER FROM CONTROL PANEL TO INDIVIDUAL PUMP IN LIQUID TIGHT FLEX. COORDINATE CONNECTIONS WITH DIVISION 23.
  - PROVIDE 120V CIRCUIT TO LOW VOLTAGE TRANSFORMER FOR CONTROL CONNECTIONS PROVIDED BY DIVISION 23. COORDINATE CONNECTIONS WITH MECHANICAL.
  - PROVIDE COMPLETE 120V CONNECTION FROM PANEL DP-A TO DAMPER MOTORS AS INDICATED. TYPICAL FOR ALL DAMPER MOTOR CONNECTIONS. MOTORIZED DAMPERS SUPPLIED AND INSTALLED BY DIVISION 23.
  - PROVIDE ONE (1) 27mm RIGID PVC CONDUIT FOR CONTROL WIRING FROM FUEL CONTROL PANEL TO MAIN TANK AS INDICATED. COORDINATE CONDUIT RUN WITH MECHANICAL.
  - PROVIDE ONE (1) 27mm RIGID PVC CONDUIT FOR CONTROL WIRING FROM FUEL CONTROL PANEL TO DAYTANK DT-01 AS INDICATED. COORDINATE CONDUIT RUN WITH MECHANICAL.
  - PROVIDE PHOTOCELL AS INDICATED TO CONTROL TYPE B EXTERIOR LIGHTS.
  - PROVIDE LIGHTING CONTROL CONTACTOR COMPLETE WITH HAND-OFF-AUTO CONTROL. CONNECT TO PHOTOCELL.
  - PROVIDE UNISTRUT CHANNEL COMPLETE WITH TWO (2) 20A OUTLETS AND TWO (2) HP RATED TOGGLE SWITCHES AS INDICATED, TO POWER AND CONTROL THE OPERATION OF MIXER MX-01 AND PUMP TP-01 PROVIDED BY OTHERS. LABEL CIRCUITS ACCORDINGLY.
  - PROVIDE ONE (1) HAND-OFF-AUTO MAGNETIC STARTER COMPLETE WITH WIRE AND CONDUIT AS INDICATED, TO FEED ASSOCIATED EXHAUST FAN EF-01 AND DAMPERS MD-03 AND MD-08. CONNECT TO REMOTE SIGNAL PROVIDED BY DIVISION 23.
  - PROVIDE FOUR (4) CHANNEL AUTO-DIALER COMMUNICATION MODULE AS INDICATED INCLUDING SIGNAL WIRING IN 21mm CONDUIT, AND DRY CONTACTS TO DIAL OUT MAJOR ALARMS AS FOLLOWS:
    - ONE PAIR: 3 #14 TO SIGNAL GENERATOR ON
    - ONE PAIR: 3 #14 TO SIGNAL GENERATOR TROUBLE/FAILURE
    - ONE PAIR: 3 #14 TO SIGNAL LOW BUILDING TEMP
    - ONE PAIR: 3 #14 TO SIGNAL FIRE ALARM ACTIVATION



**PERMIT TO PRACTICE**  
WOOD BANAH-SOUTHERN PARIZAU INC.  
Signature: [Signature]  
Date: 13-APR-2010  
**PERMIT NUMBER: P657**  
The Association of Professional Engineers, Geologists and Geophysicists of the NWT/NU



NOTES: GENERAL CONTRACTOR TO VERIFY ALL DIMENSIONS WITH FINAL ARCHITECTURAL AND MECHANICAL DRAWINGS. NOTIFY THE ENGINEERS OF ANY ERRORS AND/OR OMISSIONS PRIOR TO CONSTRUCTION FOR DIRECTION. DO NOT SCALE THIS DRAWING.

REVISIONS				
No.	DESCRIPTION	DATE	BY	APP'D
0	ISSUED FOR TENDER	13/04/2010	J.K.	C.W.

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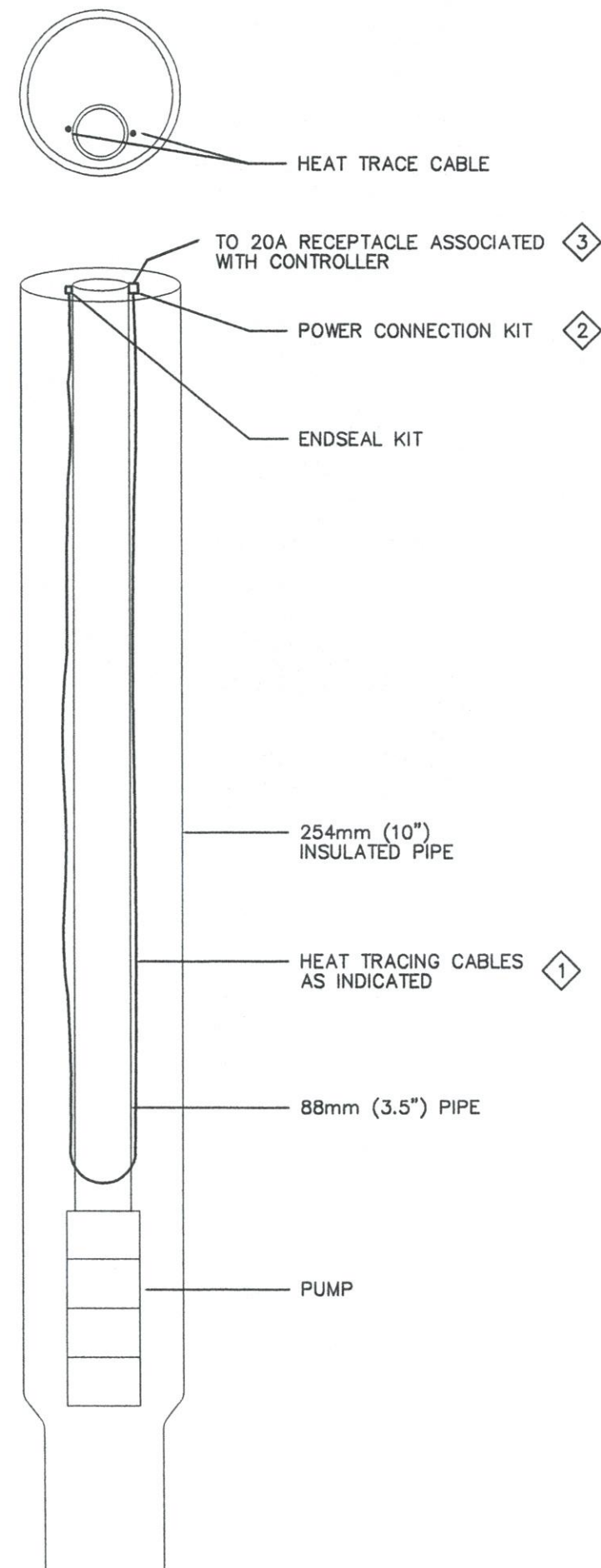
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Fax:(613)225-7337

CLIENT: **GOVERNMENT OF NUNAVUT  
DEPARTMENT OF COMMUNITY  
AND GOVERNMENT SERVICES**

PROJECT: **SANIKILUAQ, NUNAVUT  
WATER TRUCK FILL STATION**

TITLE		
ELECTRICAL NEW POWER AND LIGHTING LAYOUT		
design by: J.KIANFAR	project no.: 08-2019	E1
drawn by: J.KIANFAR	drawing no.:	
checked by: A.MIKHAEI		
date: FEBRUARY 2010		
scale: AS SHOWN		





1  
E2  
HEAT TRACE CABLE DETAIL  
N.T.S.

MOTOR NO.	SERVICE DESCRIPTION	MOTOR LOCATION	MOTOR CHARACTERISTICS				SOURCE	FEEDER	MOTOR BREAKER SIZE	MAGNETIC STARTERS										REMOTE CONTR.	INTERLOCK TO:	REMARKS
			H.P.	F.L.A.	VOLT.	PH.				THROTTLE	STOP	START	STOP	START	STOP	START	STOP	START	STOP			
WP-01	WATER PUMP 01	PUMP RM	5	—	240V	1Ø	BP-A	2 #10 + 8GRD	30A-2P													
WP-02	WATER PUMP 02	PUMP RM	5	—	240V	1Ø	BP-A	2 #10 + 8GRD	30A-2P													
TP-01	TRANSFER PUMP 01	PUMP RM	0.5	—	120V	1Ø	BP-A	2 #12 + 8GRD	20A-1P													
MX-01	CHEMICAL MIXER 01	PUMP RM	0.05	—	120V	1Ø	BP-A	2 #12 + 8GRD	20A-1P													
SP-01	SUMP PUMP 01	PUMP RM	0.5	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
SP-02	SUMP PUMP 02	PUMP RM	0.4	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
DWP-01	DOMESTIC WATER PUMP	PUMP RM	—	0.9	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
ERV-01	ENERGY RECOVERY UNIT	PUMP RM	0.5	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
HW-01	HOT WATER TANK 01	PUMP RM	1.5kW	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
EF-01	EXHAUST FAN 01	PUMP RM	—	3.7	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
UH-01	UNIT HEATER 01	PUMP RM	0.25	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
EH-01	ELECTRIC HEATER 01	GEN RM	3kW	—	240V	1Ø	BP-A	2 #12 + 8GRD	30A-2P													
MD-01	MOTORIZED DAMPER 01	GEN RM	—	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
MD-05	MOTORIZED DAMPER 05	GEN RM	—	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
MD-08	MOTORIZED DAMPER 08	GEN RM	—	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													
MD-09	MOTORIZED DAMPER 09	GEN RM	—	—	120V	1Ø	BP-A	2 #12 + 8GRD	15A-1P													

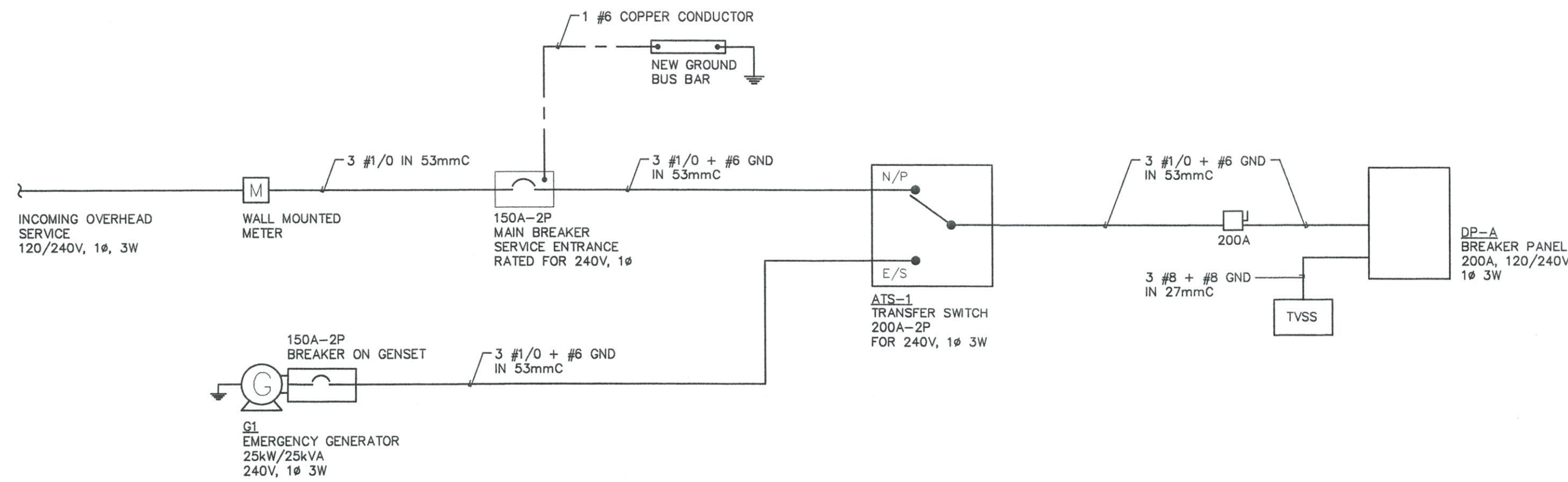
2  
E2  
MOTOR SCHEDULE  
N.T.S.

PANEL DESIGNATION..... DP-A				PANEL LOCATION..... ELECT. RM.				
NUMBER OF POLES..... 42				MOUNTING..... SURFACE				
SYSTEM VOLTAGE..... 120/240V 1PH, 3W				SHORT CIRCUIT CAPACITY: 10kA				
MAINS CAPACITY..... 100A								
DESCRIPTION	LOAD	BRKR AMP POLE	CCT NO.	PHASE	CCT NO.	BRKR AMP POLE	LOAD	DESCRIPTION
GENERATOR ROOM LIGHTING		15A 1P	1	A	2	15A 1P		OUTLETS GENERATOR ROOM
PUMP ROOM LIGHTING		15A 1P	3	B	4	15A 1P		OUTLETS PUMP ROOM
EXTERIOR LIGHTING		15A 1P	5	A	6	15A 1P		EXTERIOR GFI OUTLETS
SPARE		15A 1P	7	B	8	15A 1P		SUMP PUMP SP-01 & SP-02
BATTERY CHARGER		15A 1P	9	A	10	15A 1P		UNIT HEATER UH-01
GENERATOR BLOCK HEATER		15A 1P	11	B	12	15A 1P		EMERGENCY EBU-1
CONTROL PANEL Q2-01		15A 1P	13	A	14	15A 1P		EXIT LIGHTING
FUEL CONTROLLER FPC-01		15A 1P	15	B	16	15A 1P		MOTORIZED DAMPERS
FIRE ALARM PANEL		15A 1P	17	A	18	15A 1P		DOMESTIC WATER PUMP DWP-01
AUTO-DIALER		15A 1P	19	B	20	15A 1P		EXHAUST EF-01 & DAMPERS
ENERGY RECOVERY ERV-1	Ex Fan	15A 1P	21	A	22	20A 1P		ELECTRIC MIXER MX-01
HOT WATER TANK HW-01		15A 1P	23	B	24	20A 1P		TRANSFER PUMP TP-01
ELECTRIC HEATER EH-01		30A 2P	25	A	26	15A 1P		THERMOSTAT & CONTROLS
SPARE		15A 1P	27	B	28	15A 1P		EXTERIOR WATER ARM LIGHT
TVSS UNIT		40A 2P	29	A	30	15A 1P		FLOW METER
		20A 2P	31	B	32	15A 1P		SPARE
HEAT TRACE FOR WP-01 (GFI)		20A 2P	33	A	34	15A 1P		SPARE
		20A 2P	35	B	36	20A 2P		HEAT TRACE FOR WP-02 (GFI)
		30A 2P	37	A	38	*		
		30A 2P	39	B	40	30A 2P		
			41	A	42	*		
WATER PUMP WP-01		30A 2P	41	B	40	30A 2P		WATER PUMP WP-02

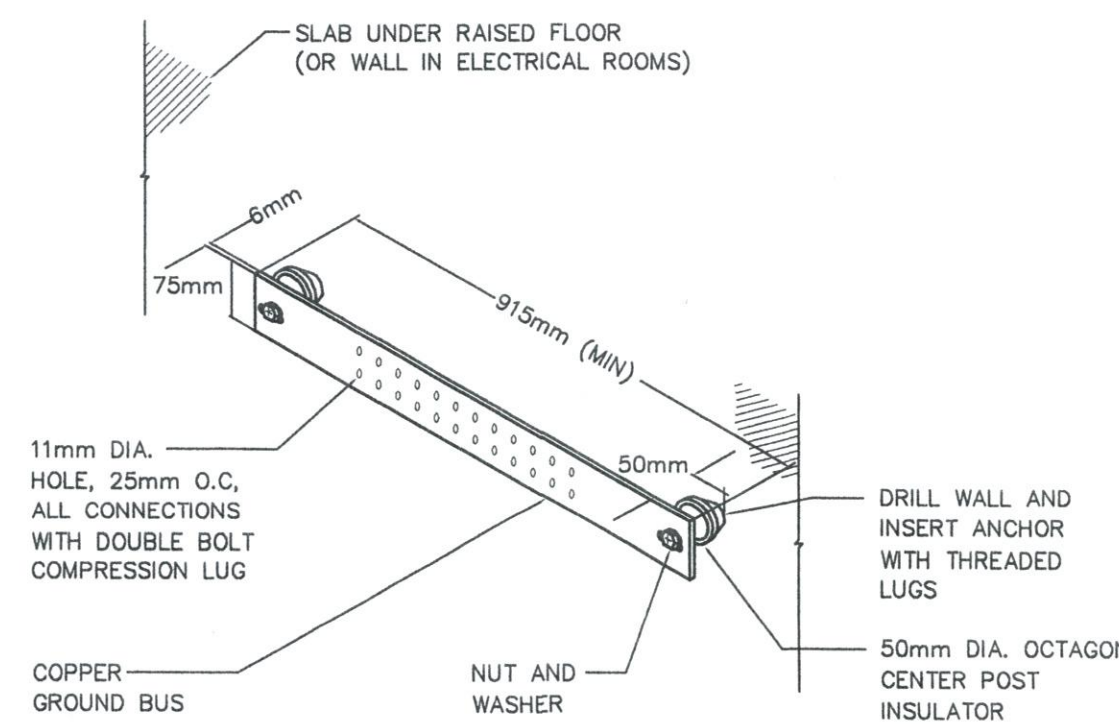
3  
E2  
PANEL SCHEDULE  
N.T.S.

PUMP STATION LOAD SUMMARY	
TOTAL AREA..... 60m2	
DESCRIPTION	WATTS
GENERAL RECEPTACLES AND LIGHTING (25W/m2)	1500
WATER PUMPS (2 @ 5HP = 4000Watts/ea.)	8000
TRANSFER PUMP (1 @ 0.5HP)	400
CHEMICAL MIXER (1 @ 0.05HP)	100
SUMP PUMP (2 @ 0.4HP = 300Watts/ea.)	600
DOMESTIC WATER PUMP	400
ENERGY RECOVERY UNIT (1 @ 0.5HP)	400
HOT WATER TANK	1500
EXHAUST FAN	1000
UNIT HEATER (1 @ 0.25HP)	200
ELECTRIC HEATER	3000
MOTORIZED DAMPERS (x4)	200
<b>17300</b>	<b>TOTAL WATTS</b>

4  
E2  
LOAD SUMMARY  
N.T.S.



5  
E2  
SINGLE LINE DIAGRAM  
N.T.S.

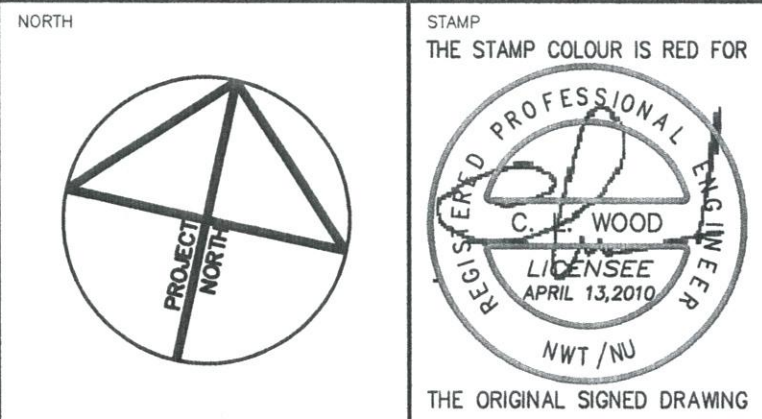


6  
E2  
GROUND BUS DETAIL  
N.T.S.

- NOTES:
- 1 PROVIDE 97.5M (320') HEAT TRACE CABLE, RACHEM PART #SBTV2-C1. THE CABLE MUST LOOP ON BOTH SIDES OF THE 88mm (3.5") PIPE. PROVIDE ADHESIVE TAPE AS PER THE MANUFACTURERS RECOMMENDATIONS TO FIX THE HEAT TRACE CABLE TO THE PIPE. PROVIDE LOW PROFILE ENDSEAL KIT, RACHEM PART #E-150, ENSURE THAT THE ENDSEAL KIT IS LOCATED AT THE TOP OF THE 254mm (10") PIPE.
  - 2 PROVIDE POWER CONNECTION KIT, RACHEM PART #BBS100LA, WITH JUNCTION BOX AND POWER CORD WITH 20A, 240V, SINGLE PHASE PLUG.
  - 3 PROVIDE MECHANICAL THERMOSTAT CONTROLLER COMPLETE WITH 20A-2P GROUND FAULT PROTECTION BREAKER, RACHEM PART #AMC-2B-2 COMPLETE WITH 3.1m (10') CAPILLARY SENSOR. CONNECT THE CONTROLLER TO A 220V SINGLE PHASE CIRCUIT AS INDICATED ON PANEL SCHEDULE. PROVIDE FIBRE GLASS TAPE TO FASTEN THE HEAT TRACE CABLE AS INDICATED.
  - 4 PROVIDE HAND-OFF-AUTO, MAGNETIC STARTER WITH PILOT LIGHT AS INDICATED, COMPLETE WITH DRY CONTACT AND CONTROL WIRING TO ATS-1 THAT WILL OPEN SWITCH WHEN GENERATOR IS SUPPLYING POWER TO PUMPS.



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CLIENT  
GOVERNMENT OF NUNAVUT  
DEPARTMENT OF COMMUNITY  
AND GOVERNMENT SERVICES

PROJECT  
SANIKILUAQ, NUNAVUT  
WATER TRUCK FILL STATION

TITLE  
ELECTRICAL  
SCHEDULES AND DETAILS

design by	J.KIANFAR	project no.	08-2019
drawn by	J.KIANFAR	drawing no.	
checked by	A.MIKHAIEL		
date	FEBRUARY 2010		
scale	AS SHOWN		

E2