

CONTROLS SCHEDULE			
TAG	DESCRIPTION	CONTROL DESCRIPTION	WWSO
B-1, BRN-1	HYDRONIC BURNER-BOILER #1	CONTROLLED BY INTEGRAL BOILER / BURNER CONTROLS IN SERIES WITH TEKMAR 274 CONTROL. TEKMAR CONTROL TO PROVIDE LEAD - LAG ALTERNATING OPERATION OF BOILERS, BURNERS AND CIRC PUMPS CP-1 & CP-2. TEKMAR 274 CONTROL TO PROVIDE WWSO FUNCTION AND BOILER CONTROL FOR DHW HEATING AND CIRC. PUMPS CP-4. BOILER TO BE OPERATED IN "ON - OFF" MODE.	NO
B-2, BRN-2	HYDRONIC BURNER-BOILER #2	CONTROLLED BY INTEGRAL BOILER / BURNER CONTROLS IN SERIES WITH TEKMAR 274 CONTROL. TEKMAR CONTROL TO PROVIDE LEAD - LAG ALTERNATING OPERATION OF BOILERS, BURNERS AND CIRC PUMPS CP-1 & CP-2. TEKMAR 274 CONTROL TO PROVIDE WWSO FUNCTION AND BOILER CONTROL FOR DHW HEATING AND CIRC. PUMPS CP-4. BOILER TO BE OPERATED IN "ON - OFF" MODE.	NO
GF-1	GLYCOL FEEDER #1	UNIT HAS INTEGRAL CONTROL WHICH SENSES PRESSURE IN HYDRONIC PIPING AND WHEN PRESSURE DROPS BELOW SET POINT STARTS PUMP TO PUMP GLYCOL INTO HYDRONIC PIPING UNTIL PRESSURE IN SYSTEM REACHES SHUT OFF PRESSURE AT WHICH POINT PUMP SHUTS DOWN.	YES
CP-1, CP-2	MAIN BOILER CIRCULATING PUMPS #1 & #2	CONTROLLED BY INTEGRAL BOILER CONTROLS IN SERIES WITH TEKMAR 274 CONTROL. TEKMAR CONTROL TO PROVIDE LEAD - LAG ALTERNATING OPERATION OF BOILERS, BURNERS AND CIRC. PUMPS CP-1 & CP-2. TEKMAR 274 CONTROL TO PROVIDE WWSO FUNCTION AND BOILER CONTROL FOR DHW HEATING.	NO
CP-3	CIRC. PUMP #3 EXISTING DHW THRU HX TO TANK.	AQUASTAT IN TANK PROVIDES SIGNAL TO TEKMAR 274 BOILER CONTROL. TEKMAR 274 CONTROLS CIRCULATOR CP-3 THROUGH THE HIGH LIMIT AQUASTAT SO IF THE HIGH LIMIT IS TRIPPED, PUMP CP-3 DOES NOT START. WWSO FUNCTION PROVIDED BY TEKMAR 274 CONTROL.	NO
CP-4	CIRC. PUMP #4 EXISTING GLYCOL THRU HX FROM BOILERS	AQUASTAT IN TANK PROVIDES SIGNAL TO TEKMAR 274 BOILER CONTROL. TEKMAR 274 CONTROLS CIRCULATOR CP-4 THROUGH THE HIGH LIMIT AQUASTAT SO IF THE HIGH LIMIT IS TRIPPED, PUMP CP-4 DOES NOT START. WWSO FUNCTION PROVIDED BY TEKMAR 274 CONTROL.	NO
CP-5	CIRC. PUMP #5 GLYCOL TO ALL UNIT HEATERS	WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL, OTHERWISE RUNS CONTINUOUSLY.	YES
CP-6	CIRC. PUMP #6 GLYCOL TO FC-1	WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED BY SENSOR IN EXPLOSION PROOF HOUSING MOUNTED TO EXIT DUCTWORK OF FC-1. TEKMAR 361 CONTROL TO ACCEPT SENSOR INPUT AND PROVIDE VARIABLE SPEED OPERATION OF CIRCULATION PUMP.	YES
CP-7	CIRC. PUMP #7 GLYCOL TO FC-2	WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED BY SENSOR MOUNTED TO EXIT DUCTWORK OF FC-2. TEKMAR 361 CONTROL TO ACCEPT SENSOR INPUT AND PROVIDE VARIABLE SPEED OPERATION OF CIRCULATION PUMP.	YES
CP-8, CP-9	CIRC. PUMP #8 & #9 GLYCOL TO FC-3 & FC-4 RESPECTIVELY	CP-8 & CP-9 ARE REDUNDANT CIRCULATORS PROVIDING MAKE UP AIR TO VESTIBULE. UNITS NEED TO BE PROVIDED WITH AIR FLOW AND WATER FLOW SWITCHES AND CONTROLLED SO THAT A FAILURE OF EITHER AIR FLOW OR WATER FLOW OR BOTH IN THE LEAD FAN OR CIRCULATOR CAUSES THE LAG CIRCULATOR AND FAN TO BE ENERGISED. WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED THERMOSTAT MOUNTED IN ROOM. TSTAT SIGNAL TO TEKMAR 361 WHICH PROVIDES VARIABLE SPEED OPERATION OF CIRCULATOR PUMP.	YES
CP-10	CIRC. PUMP #10 GLYCOL TO FC-5	WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL. EXIT AIR TEMPERATURE CONTROLLED BY SENSOR MOUNTED TO EXIT DUCTWORK OF FC-5. TEKMAR 361 CONTROL TO ACCEPT SENSOR INPUT AND TO PROVIDE VARIABLE SPEED OPERATION OF CIRCULATION PUMP.	YES
CP-11	CIRC. PUMP #11 GLYCOL TO ALL BASEBOARD FIN TUBE HEATERS.	WWSO FUNCTION PROVIDED BY TEKMAR 150 CONTROL, OTHERWISE RUNS CONTINUOUSLY. EXIT AIR TEMPERATURE CONTROLLED BY MECHANICAL THERMOSTATS ON EACH BASEBOARD UNIT.	YES
FC-1	FAN COIL #1 FOR PROCESS ROOM EXPLOSION PROOF	TWO SPEED OPERATION PROVIDED BY VFD INSTALLED OUTSIDE CLASSIFIED SPACE. WWSO SIGNAL PROVIDED BY TEKMAR 150 CONTROL AND USED TO CONTROL UNIT SO THAT WHEN WWSO ACTIVE (SUMMERTIME) FAN OPERATES AT HIGH SPEED. WHEN WWSO INACTIVE (WINTERTIME), FAN OPERATES AT LOW SPEED. VFD TO BE ONE OF THE UNITS SUBMITTED BY HTS	YES
FC-2	FAN COIL #2 FOR TRUCK BAY	FAN OPERATES CONTINUOUSLY EXCEPT WHEN BEING SERVICED.	NO
FC-3	FAN COIL #3 FOR VESTIBULE (REDUNDANT WITH FC #4). CONSISTS OF FAN FN-3 AND IN DUCT HYDRONIC HEATING COIL. SEE FAN FN-3 FOR CONTROL DESCRIPTION	SEE FN-3 FOR CONTROL DETAILS.	NO
FC-4	FAN COIL #4 FOR VESTIBULE (REDUNDANT WITH FC #3). CONSISTS OF FAN FN-4 AND IN DUCT HYDRONIC HEATING COIL. SEE FAN FN-4 FOR CONTROL DESCRIPTION	SEE FN-4 FOR CONTROL DETAILS.	NO
FC-5	FAN COIL #5 FOR MAKE UP AIR FOR VARIOUS SPACES.	FAN OPERATES CONTINUOUSLY EXCEPT WHEN BEING SERVICED.	NO
HUH-1	PROCESS ROOM HYDRONIC UNIT HEATER #1 EXPLOSION PROOF.	FAN CONTROLLED ALONG WITH FANS OF HUH-2, -3, -4 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM.	NO
HUH-2	PROCESS ROOM HYDRONIC UNIT HEATER #2 EXPLOSION PROOF.	FAN CONTROLLED ALONG WITH FANS OF HUH-1, -3, -4 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM.	NO
HUH-3	PROCESS ROOM HYDRONIC UNIT HEATER #3 EXPLOSION PROOF.	FAN CONTROLLED ALONG WITH FANS OF HUH-1, -2, -4 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM.	NO
HUH-4	PROCESS ROOM HYDRONIC UNIT HEATER #4 EXPLOSION PROOF.	FAN CONTROLLED ALONG WITH FANS OF HUH-1, -2, -3 BY EXPLOSION PROOF THERMOSTAT INSTALLED IN PROCESS ROOM.	NO
HUH-5	TRUCK BAY HYDRONIC UNIT HEATER #5.	FAN CONTROLLED ALONG WITH FANS OF HUH-6, -7, -8, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY.	NO
HUH-6	TRUCK BAY HYDRONIC UNIT HEATER #6.	FAN CONTROLLED ALONG WITH FANS OF HUH-5, -7, -8, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY.	NO
HUH-7	TRUCK BAY HYDRONIC UNIT HEATER #7.	FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -8, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY.	NO
HUH-8	TRUCK BAY HYDRONIC UNIT HEATER #8.	FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -7, -9 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY.	NO
HUH-9	TRUCK BAY HYDRONIC UNIT HEATER #9.	FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -7, -8 & -13 BY THERMOSTAT INSTALLED IN TRUCK BAY.	NO

CONTROLS SCHEDULE			
TAG	DESCRIPTION	CONTROL DESCRIPTION	WWSO
HUH-10	1ST FLOOR ELECT. ROOM HYDRONIC UNIT HEATER #10. EXISTING.	NEED INFORMATION ON EXISTING CONTROLS. OTHERWISE FAN CONTROLLED BY THERMOSTAT INSTALLED IN ROOM.	NO
HUH-11	2ND FLOOR ELECT. ROOM HYDRONIC UNIT HEATER #11. EXISTING.	NEED INFORMATION ON EXISTING CONTROLS. OTHERWISE FAN CONTROLLED BY THERMOSTAT INSTALLED IN ROOM.	NO
HUH-12	1ST FLOOR MECH. ROOM HYDRONIC UNIT HEATER #12. EXISTING.	NEED INFORMATION ON EXISTING CONTROLS. OTHERWISE FAN CONTROLLED BY THERMOSTAT INSTALLED IN ROOM.	NO
HUH-13	TRUCK BAY HYDRONIC UNIT HEATER #9.	FAN CONTROLLED ALONG WITH FANS OF HUH-5, -6, -7, -8 & -9 BY THERMOSTAT INSTALLED IN TRUCK BAY.	NO
FN-1	HIGH RATE SUPPLY FAN - EXPLOSION PROOF - PROCESS ROOM.	FAN ENERGISED ON DETECTION OF FLAMMABLE / NOXIOUS GASSES BY GAS DETECTORS OR BY SWITCH AT ENTRANCE DOOR TO PROCESS ROOM. IF SPACE TEMPERATURE DROPS BELOW 40°F, FAN SHUT OFF BY EXPLOSION PROOF FREEZESTAT UNTIL SPACE TEMPERATURE IS ABOVE 60°F. IF FLAMMABLE / NOXIOUS GAS STILL DETECTED OR SWITCH AT DOOR STILL "ON", FAN SHOULD RE-ENERGIZE WHEN SPACE TEMPERATURE REACHES 60°F. CYCLE ABOVE TO REPEAT UNTIL FLAMMABLE / NOXIOUS GAS NO LONGER DETECTED, AND SWITCH AT DOOR IS "OFF" WHEN FAN SHOULD BE SWITCHED OFF.	NO
FN-2	WALL MOUNTED EXHAUST FAN - EXPLOSION PROOF. PROCESS ROOM.	FAN IS TO BE INTERLOCKED TO FAN FN-1 SO WHEN FAN FN-1 IS ENERGISED, FAN FN-2 IS ALSO ENERGISED.	NO
FN-3	CABINET CEILING FAN - VESTIBULE ROOM EXHAUST. REDUNDANT WITH FN-4.	FN-3 & FN-4 ARE REDUNDANT FANS EXHAUSTING MAKE UP AIR FROM THE VESTIBULE. UNITS NEED TO BE PROVIDED WITH AIR FLOW AND WATER FLOW SWITCHES AND CONTROLLED SO THAT A FAILURE OF EITHER AIR FLOW OR WATER FLOW OR BOTH IN THE LEAD FAN OR CIRCULATOR CAUSES THE LAG CIRCULATOR AND FAN TO BE ENERGISED AND VICE VERSA. SEE ALSO CP-8 & CP-9.	NO
FN-4	CABINET CEILING FAN - VESTIBULE ROOM EXHAUST. REDUNDANT WITH FN-3.	FN-3 & FN-4 ARE REDUNDANT FANS EXHAUSTING MAKE UP AIR FROM THE VESTIBULE. UNITS NEED TO BE PROVIDED WITH AIR FLOW AND WATER FLOW SWITCHES AND CONTROLLED SO THAT A FAILURE OF EITHER AIR FLOW OR WATER FLOW OR BOTH IN THE LEAD FAN OR CIRCULATOR CAUSES THE LAG CIRCULATOR AND FAN TO BE ENERGISED AND VICE VERSA. SEE ALSO CP-8 & CP-9.	NO
FN-5	CABINET CEILING FAN - 1ST. FLOOR ELECT. ROOM EXHAUST.	FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-5 TO BE ENERGISED.	NO
FN-6	CABINET CEILING FAN - MEZZANINE ROOM EXHAUST.	FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-6 TO BE ENERGISED.	NO
FN-7	CABINET CEILING FAN - MECH. ROOM EXHAUST.	FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-7 TO BE ENERGISED.	NO
FN-8	CABINET CEILING FAN - 2ND. FLOOR ELECT. ROOM EXHAUST.	FAN TO BE INTERLOCKED TO FAN IN FC-5. WHEN FC-5 FAN IS ENERGISED, FN-8 TO BE ENERGISED.	NO
FN-9	WALL MOUNTED EXHAUST FAN - TRUCK BAY.	FAN TO BE INTERLOCKED TO FAN IN FC-2. WHEN FC-2 FAN IS ENERGISED, FN-9 TO BE ENERGISED.	NO
FN-10	DELETED	DELETED	
FN-11	CABINET CEILING FAN - WASHROOM EXHAUST.	FAN TO BE OPERATED BY WALL / LIGHT SWITCH	NO
FN-12	PROCESS EXHAUST FAN, HIGH PRESSURE - EXPLOSION PROOF - PROCESS ROOM.	FAN TO BE OPERATED BY WALL / LIGHT SWITCH	NO
FN-13	TWO SPEED WALL FAN, VFD CONTROLLED - EXPLOSION PROOF - PROCESS ROOM.	TWO SPEED OPERATION PROVIDED BY VFD INSTALLED OUTSIDE CLASSIFIED SPACE. WWSO SIGNAL PROVIDED BY TEKMAR 150 CONTROL AND USED TO CONTROL UNIT SO THAT WHEN WWSO ACTIVE (SUMMERTIME) FAN OPERATES AT HIGH SPEED. WHEN WWSO INACTIVE (WINTERTIME), FAN OPERATES AT LOW SPEED. INTERLOCK TO FAN IN FC-1. WHEN FAN IN FC-1 IS AT LOW SPEED, FAN FN-13 SHOULD BE AT LOW SPEED AND WHEN FAN IN FC-1 IS AT HIGH SPEED, FN-13 SHOULD BE AT HIGH SPEED	YES
FP-1	DUPLEX HEATING OIL PUMPING SYSTEM #1.	DUPLEX OIL PUMPING SYSTEM IS PROVIDED WITH INTEGRAL CONTROL SYSTEM. SYSTEM STARTS AND STOPS PUMPING OF OIL BASED ON LEVEL SENSORS INSTALLED IN THE DAY TANK AND THE OUTDOOR STORAGE TANK. A CALL FOR OIL IS INITIATED BY THE PUMP ON LEVEL SENSOR IN THE DAY TANK. THE CONTROL CHECKS TO ENSURE THAT THE LOW OIL ALARM IS NOT ON IN THE STORAGE TANK AND IF IT IS OFF STARTS THE OIL PUMP USING A LEAD-LAG ROTATION TO DETERMINE WHICH PUMP IS USED. IF THE LOW OIL LEVEL ALARM IS SET, THE PUMP IS LOCKED OUT. IF THE PUMP RUNS, THE DAY TANK IS FILLED UNTIL THE PUMP STOP LEVEL SWITCH CLOSES WHICH STOPS THE PUMP. THE DAY TANK IS ALSO EQUIPPED WITH A LOW LEVEL ALARM AND A HIGH LEVEL ALARM WHICH PROVIDE DRY CONTACT CLOSURES FOR THE SCADA SYSTEM. THE OUTDOOR OIL STORAGE TANK IS ALSO PROVIDED WITH LOW OIL LEVEL AND HIGH OIL LEVEL SENSORS WHICH PROVIDE ALARM OUTPUTS TO THE CONTROL SYSTEM AND TO THE SCADA SYSTEM.	NO

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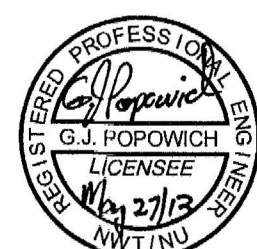
2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.

3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.

4. Do not scale the drawings.

Issue / Revision	Date
1 ISSUED FOR TENDER	FEBRUARY 2013
2 REVISED AS PER ADDENDUM 1 TO 4 AND ISSUED FOR CONSTRUCTION	APRIL 2013

PERMIT TO PRACTICE
Nuna Burnside Engineering and Environmental Ltd.
Signature *[Signature]*
Date *May 27/13*
PERMIT NUMBER: P 535
The Association of Professional Engineers,
Geologists and Geophysicists of NWT/NU



ннн BURNSIDE

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Client
GOVERNMENT OF NUNAVUT
COMMUNITY & GOVERNMENT
SERVICES
RANKIN INLET
SEWAGE TREATMENT PLANT

Drawing Title
MECHANICAL
FUEL OIL SCHEMATIC &
CONTROLS SCHEDULE

Drawn By A.H.	Checked By D.Mack.
Scale AS NOTED	Project No. 300031281

Drawing No.
M-13