Operation & Maintenance Plan for Naujaat Municipal Water Licence: Water Supply Facilities

2022

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1.0 Site Description

Date this plan was prepared: December 13, 2022

1.1 Location of the Water Supply Facility (WSF)

Municipality: Chesterfield Inlet
Latitude: 66°33’50” N
Longitude: 86°15’10” W
Proximity to Town: 4.5km N

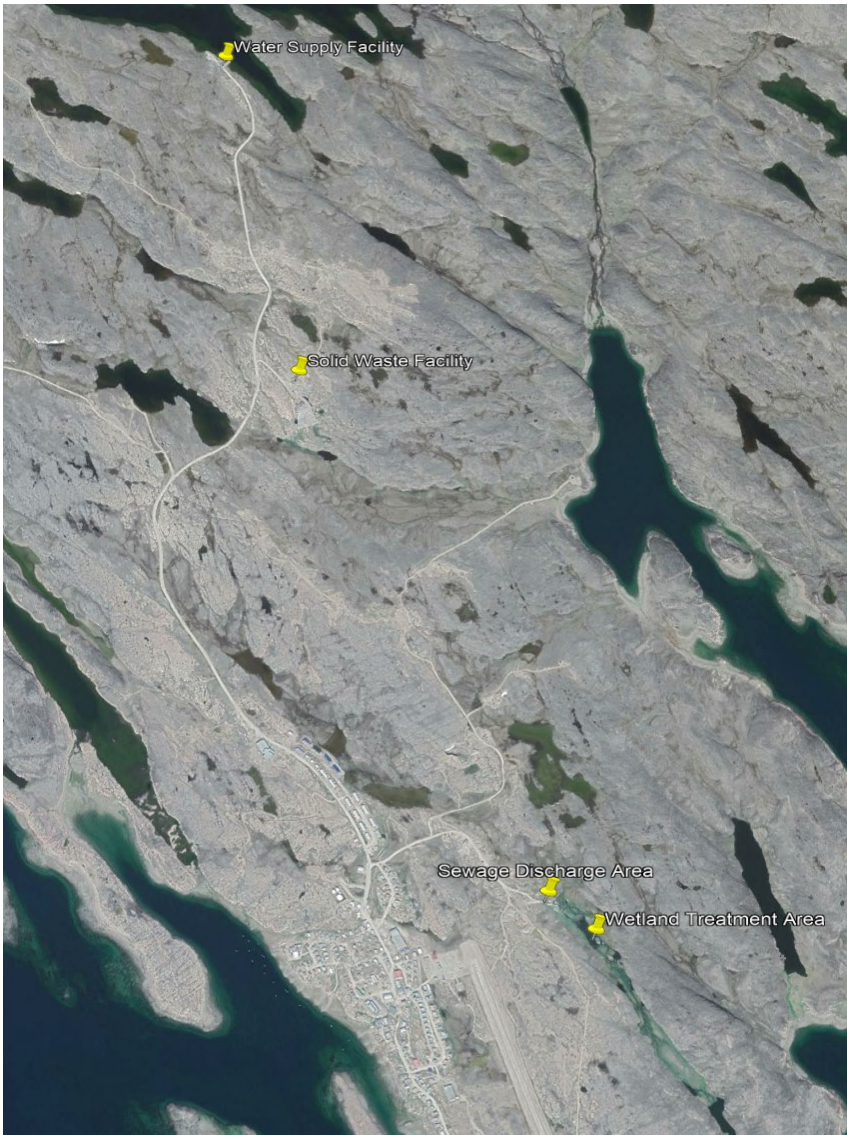


Figure 1 Naujaat Water Supply Facility Infrastructure

1.2 WSF Site Summary

Year of commissioning the WSF: 2016
Design life of the WSF: 2033

Site History:

The Naujaat community water system obtains water from an intake on Nuviq Luktujuq Lake, located approximately 4.5 kilometers north of the community. The watershed for Nuviq Luktujuq Lake is primarily located in undeveloped area, with no significant activities identified that would pose a risk to source water quality. Water is treated at the intake using cartridge filters and chlorine for disinfection. The treated water passes through a contact chamber for chlorine contact prior to truck fill and subsequent community deliveries. Trucked water delivery to water cisterns at homes and other buildings is the only method for water distribution used in Naujaat.

2.0 Staff

2.1 Staff

Role:	Senior Administrative Officer	**Name:**	Sandra Clark
Phone:	867-462-9952	**Email:**	saonaujaat@qiniq.com

Responsibilities: The SAO manages the municipal staff to ensure that:

- proper operation of the water supply system is carried out
- sampling and inspections are completed
- annual reporting to the Nunavut Water Board (NWB) is prepared by the Government of Nunavut Department of Community and Government Services (GN-CGS)

Role:	Trades Helper	**Name:**	Leo Itturiligak
Phone:	867-462-4093	**Email:**	litturiligak1@gov.nu.ca

Responsibilities: The foreman is responsible for:

- daily operations and maintenance of the WSF
- the sampling program at the monitoring stations
- maintaining signage at the WSF and monitoring stations
- annual decanting of the lagoon effluent into the adjacent wetland treatment area

Role:	Water Truck Drivers	**Name:**	Various
Phone:	N/A	**Email:**	N/A

Responsibilities: The water truck drivers fill truck for distribution of drinking water to the municipality. They also record and report the quantities of delivered water.

2.2 Training

Training records were last updated: 2020

Table 1 List of trainings obtained by staff

Staff member	GN Small Systems Course	GN Class I Systems Course	Other:
Adam Milorotok	☒	☐	☐
Cyril Kusugak	☒	☐	☐
Jeremy Itkilik	☒	☐	☐

3.0 Health and Safety

All personnel working within the WSF must follow the *Nunavut Safety Act* and be made aware of potential health hazards. This is imperative so individuals make a conscious effort to perform all necessary safety procedures to protect themselves, their co-workers and family members at home.

4.0 Security and Control

Access Control of to the facility:

- Locks on doors

- Signage
- 450 m restricted land use development setback surrounding the WSF

5.0 Raw Water Sources

5.1 Raw Water Source

Raw water source fill system type: Direct from lake

Alterations to the natural water source have occurred due to the WTP:

None.

5.1.1 Primary Source

Name of primary raw water source:	Nuvik Laktujuq Lake
Type of raw water source:	Lake
Watershed Side:	2590 ha
Average annual quantity of water drawn:	44,152 m^3/year
Maximum allowable withdrawal:	60,000 m^3/year
Ice formation on the water source:	September
Ice breakup on the water source:	June or July

5.2 Operations

Overview of the operations process:

The following procedure is followed:

1. Untreated water from the lake is transferred by submersible pump to the water distribution vehicles through the truckfill station, at a rate of approximately 1,000 L/min (minimum recommended for fire protection)

2. All controls necessary for water withdrawal and truck filling are located in a control panel accessible to the truck driver from the outside of the building.

3. The pumphouse is powered by fuel from an onsite storage tank and has a standby generator. Both must be monitored daily.

5.3 Maintenance

Overview of the maintenance process:

1. The roadway and truck pad shall be maintained by snow clearing in the winter and grading in the summer and repaired as necessary.

2. Ditches and drainage channels at the Water Supply Facility shall be inspected during the summer for erosion and repaired as necessary.

3. The truckfill station, signage, and berms shall be inspected regularly and repaired or replaced as necessary.

4. This facility is owned and operated by the GN-CGS, and any issues should be reported to the Kivalliq municipal engineer immediately.

5. The water delivery program is managed by the Municipality and issues identified by truck drivers should be reported to the SAO immediately.

6.0 Water Treatment Process

A brief overview of the water treatment process:

Water is drawn in from the raw water reservoir adjacent to the WTP where it undergoes:

- Pre-chlorination: Chlorine is injected prior to the filtration process.

- Cartridge Filtration: The sequence of filters is 20-micron, followed by 5-micron, followed by 1-micron cartridges.

- Chlorine Disinfection: This is accomplished using the CT concept through a chlorine contact pipe.

Total annual water usage:	46,687 m^3
Water distribution method:	Trucked
Treated water storage:	None
Rate of truck-fill:	1000 L/min

7.0 Monitoring

Regulatory Inspection: The annual Crown Indigenous Relations and Affairs Canada (CIRNAC) inspection will take place accompanied by the licensee and/or with a licensee representative from GN-CGS. The inspection will be reviewed by a GN-CGS municipal engineer and submitted with the annual report.

Table 2 Licence requirements related to O&M of the water supply facilities

Requirements	**Reported**
Monthly and annual quantities of fresh water obtained from all sources	Annual report submitted to NWB
A summary of modifications and/or major maintenance work carried out on the WSF	Annual report submitted to NWB
A list of spills and unauthorized discharges related to the WSF.	Annual report submitted to NWB
A summary of any studies requested for the WTP and future planned studies planned	Annual report submitted to NWB
Volume of Potable Water Supply at Post River Monitoring Program Station WHA-1	Annual report submitted to NWB

Modifications or upgrades needed for the WSF:

None

Planned modifications or upgrades:

None

Additional Comments or Notes

None

Appendix A: As-built WTP Drawings

PLUMBING AND HEATING

- PIPE BOTTOM TAKE-OFF
- SIMPLE CONNECTION
- PIPE CAP
- PIPE CONTINUATION
- DRAIN ABOVE SLAB
- DRAIN BELOW SLAB
- SAN — SANITARY DRAIN
- CHECK VALVE
- UNION TYPE JOINT
- FLEXIBLE JOINT
- STRAINER
- BALL VALVE (OPEN)
- BALL VALVE (CLOSE)
- GATE VALVE (OPEN)
- GATE VALVE (CLOSE)
- FV — FIRE VALVE
- BUTTERFLY VALVE (NORMALLY OPEN)
- BUTTERFLY VALVE (NORMALLY CLOSED)
- SAFETY VALVE
- PUMP
- AUTOMATIC AIR ELIMINATOR / VENT
- TWO WAY MOTORIZED VALVE
- TWO WAY MOTORIZED VALVE
- PRESSURE GAUGE
- M — WATER METER
- FM — FLOW METER
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- VENT
- FO-S — FUEL OIL, SUPPLY
- FO-R — FUEL OIL, RETURN
- FO-V — FUEL OIL, VENT
- CF-N — CHEMICAL FEED, NORMAL OPERATION
- CF-F — CHEMICAL FEED, FIRE OPERATION
- EW — EMERGENCY EYE WASH STATION
- FE — FIRE EXTINGUISHER
- CC — CHLORINE CONTROLLER
- T — ELECTRIC THERMOSTAT

HVAC

- UPWARD AND DOWNWARD SUPPLY DUCT
- UPWARD AND DOWNWARD RETURN OR EXHAUST DUST
- SUPPLY DUCT UPWARD
- SUPPLY DUCT DOWNWARD
- RETURN OR EXHAUST DUCT UPWARD
- RETURN OR EXHAUST DUCT DOWNWARD
- MANUAL DAMPER (WITH ACCESS DOOR)
- M — MOTORIZED DAMPER (WITH ACCESS DOOR)

AA-200
300x300

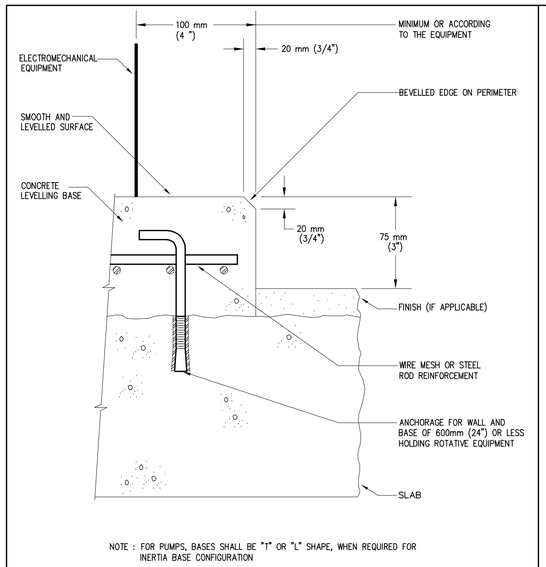
- GRILLES AND DIFFUSERS IDETFICATION
- TYPE (SEE SPECIFICATION)
- CAPACITY
- SIZE

L/s — LITRES PER SECOND

DRAWING LIST

GENERAL

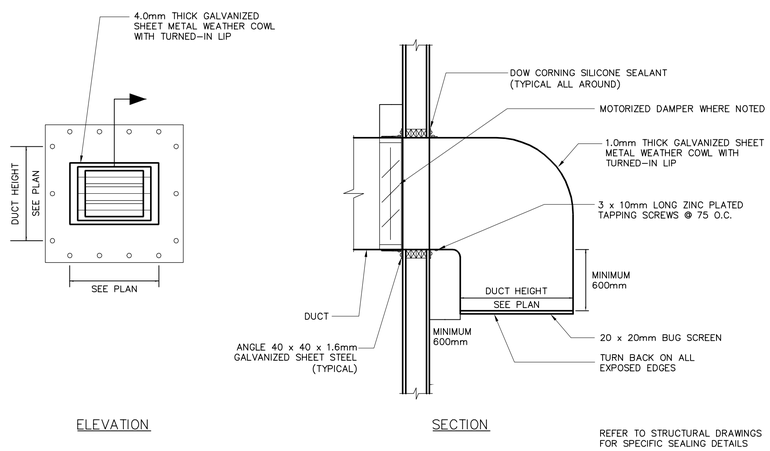
- UPWARD
- DOWNWARD
- TO REMAIN
- TO REMOVE
- DISMANTLING POINT
- CONNECTION POINT TO EXISTING
- CAPPED FOR FUTURE CONNECTION



NOTE : FOR PUMPS, BASES SHALL BE "I" OR "L" SHAPE, WHEN REQUIRED FOR INERTIA BASE CONFIGURATION

LEVELLING BASE (TYPE I)
(NTS)

DET-M8001.DWG
99/10

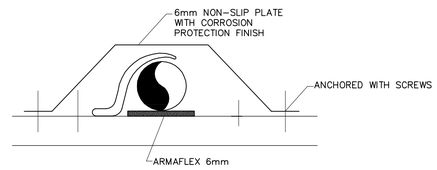


ELEVATION

SECTION

REFER TO STRUCTURAL DRAWINGS FOR SPECIFIC SEALING DETAILS

TYPICAL WEATHER COWL DETAIL
(NTS)



INSTALLATION OF FLOOR MOUNTED PIPES
(NTS)

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LICENSEE
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NEW PUMPING STATION

TITLE
MECHANICAL
LEGEND AND DRAWING LIST

design by	P.C.	project no.	8012–099
drawn by	Y.G.	drawing no.	M100
checked by	P.S.O.		
date	DECEMBER 2014		
	N.T.S.		

MECÉLEC INC
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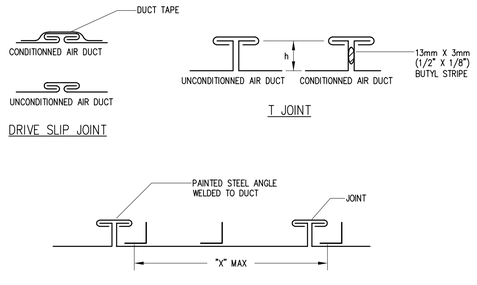
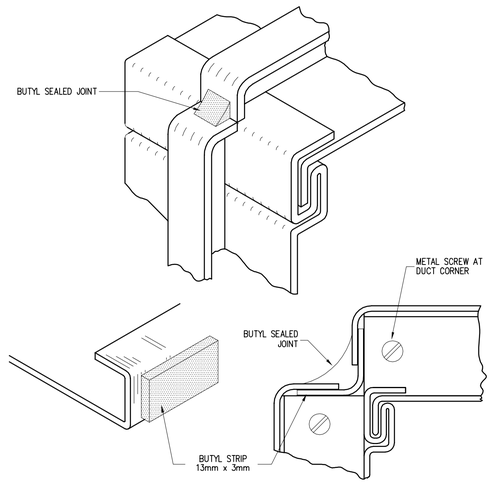
DATE: DEC. 2016

2015/May/19

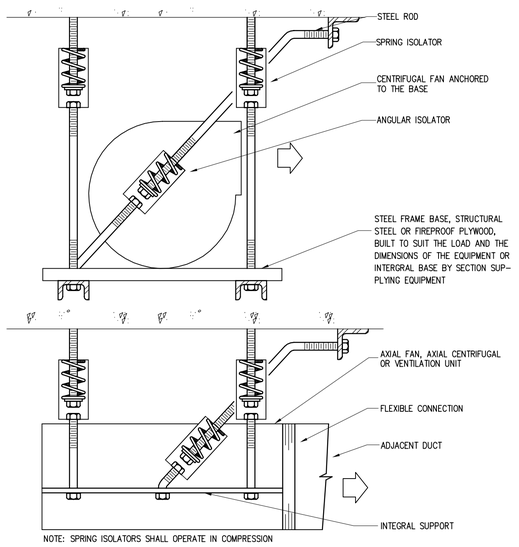


DIMENSIONS mm (In)	SHEET THICKNESS mm (CAL. US)	JOINT TYPE	"h" mm (In)	"X" mm (In)	STEEL ANGLE mm	
					CENTER	END
≤ 300 (≤ 12)	0.551 (26)	"DRIVE SLIP"	–	2400 (94)	–	–
350 A 750 (14 A 30)	0.701 (24)	" T "	25 (1)	1170 (46)	–	–
800 A 1350 (32 A 54)	0.853 (22)	" T "	35 (1–1/2)	1170 (46)	–	–
1400 A 1500 (56 A 60)	1.006 (20)	" T "	35 (1–1/2)	1140 (45)	35 X 35 X 3	–
1550 A 2150 (62 A 84)	1.006 (20)	" T "	35 (1–1/2)	1140 (45)	35 X 35 X 3	35 X 35 X 3
2200 ET PLUS (86 ET PLUS)	1.311 (18)	" T "	35 (1–1/2)	1140 (45)	55 X 55 X 3	35 X 35 X 3

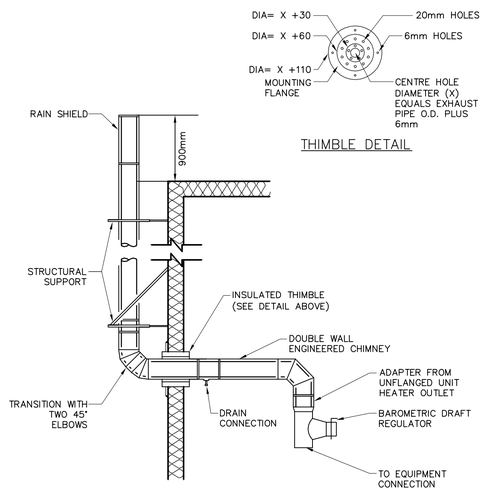
CROSS JOINT AND REINFORCEMENT FOR LOW PRESSURE RECTANGULAR DUCT
(NTS)



SEALED JOINT FOR LOW PRESSURE RECTANGULAR DUCT
(NTS)



SUSPENDED EQUIPMENT (TYPE VI)
(NTS)



UNIT HEATER CHIMNEY DETAIL
(NTS)

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design by	P.C.	project no.	8012–099
drawn by	Y.G.	drawing no.	M101
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	N.T.S.		

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DATE: DEC. 2016

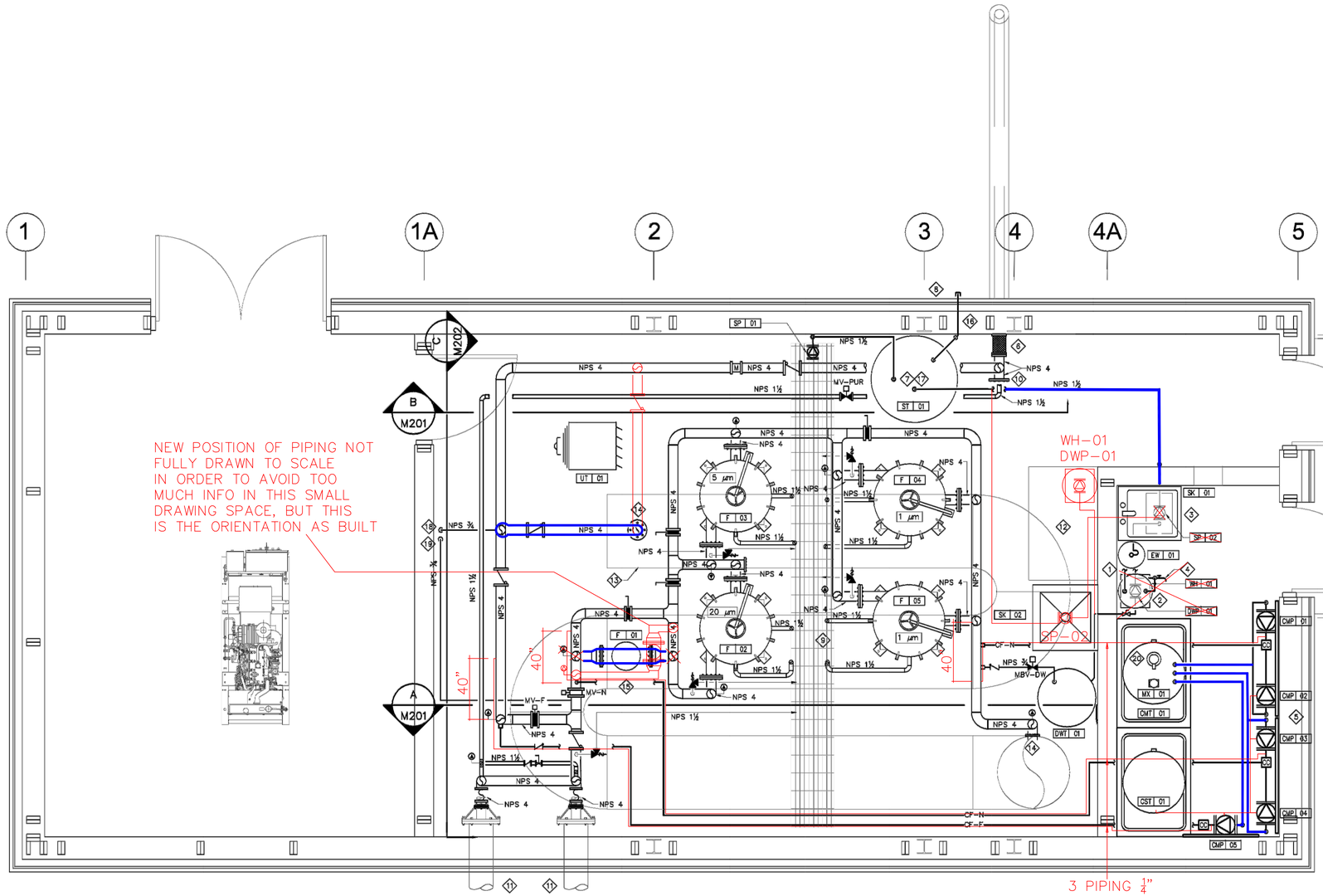
2016/May/19

GENERAL NOTES:

1. LAYOUT OF CHEMICAL FEED PIPING (CF-N) IS SHOWN SCHEMATICALLY FOR CLARITY. COORDINATE FINAL LAYOUT ON SITE.
2. THE PLAN VIEW, ELEVATION VIEWS AND SCHEMATIC DIAGRAM ON DRAWING M201 AND M202 ARE COMPLEMENTARY AND COVER ALL COMPONENTS AND ACCESSORIES REQUIRED.
3. THE CONTRACTOR SHALL PRODUCE PIPE FABRICATION AND ERECTION DRAWINGS, COMPLETE WITH LIST OF EQUIPEMENT FOR REVIEW BY ENGINEER PRIOR TO ANY CONSTRUCTION.

DRAWING NOTES:

1. PROVIDE NPS ½ DCW AND DHW PIPING TO EW-01, SK-01, & SK-02 C/W THERMOSTATIC MIXING VALVE NEAR OUTLET OF WH-01.
2. WH-01 SUSPENDED AT 2000MM ABOVE FLOOR PLATE. DWP-01 INSTALLED BELOW ON FLOOR PLATE. REFER TO SUSPENDED EQUIPMENT DETAIL M101.
3. INSTALL SP-02 DIRECTLY BENEATH SERVICE SINK SK-01. PROVIDE TRAP AND DRAIN SK-01, SK-02 AND EW-01 DIRECTLY INTO SP-02 TANK.
4. PROVIDE NPS ¼ HOSE BIB CONNECTION NEAR OUTLET OF DWP-01.
5. PIPE NPS ½ DRAIN FROM CC-01, CC-02 & CC-03 BACK TO SUMP PIT CONTAINING THE SUMP PUMP SP-02.
6. CONNECT PIPE TO TRUCK FILL ARM WITH FLEXIBLE JOINT. SEE DETAIL ON STRUCTURAL DRAWING S4.
7. SUPPLY AND INSTALL HIGH LEVEL INDICATOR SWITCH COMPLETE WITH RED LIGHT FOR EXTERIOR INSTALLATION. INSTALL SWITCH IN SEWAGE TANK.
8. LOCATION FOR THE INSTALLATION OF SEWAGE TANK LEVEL INDICATOR LIGHT.
9. TRENCH DRAIN
10. NPS 4 CAPPED FLANGE CONNECTION FOR FUTURE USE.
11. INTAKE SHAFT TO MAIN WATER PUMPS WP-01 & WP-02 FROM FLANGE.
12. SPACE AVAILABLE FOR FUTURE CARBON FILTRATION SYSTEM. CARBON FILTRATION SYSTEM MUST NOT PRECEDE CHLORINE ADDITION AFTER FILTRATION.
13. CHLORINE CONTACT PIPE.
14. FLANGED CONNECTION POINT TO CHLORINE CONTACT PIPE. REFER TO DETAIL A ON DRAWING M201 AND DETAIL C ON DRAWING M202.
15. PROVIDE ADEQUATE SUPPORT FOR THE BASKET FILTER. FILTER TO BE ANCHORED TO THE FLOOR USING A SUPPORT STAND.
16. NPS 3 SEWAGE TANK DRAIN LINE WITH CAMLOCK CONNECTION.
17. VENT CAP TO BE REMOVED (FOR SEWAGE TANK VENTING PURPOSE).
18. NPS ¾ PIPING TOWARDS THE SAMPLE COLLECTING STATION; TREATED WATER STATION. REFER TO DETAIL 1 ON DRAWING M202.
19. NPS ¾ PIPING TOWARDS THE SAMPLE COLLECTING STATION; RAW WATER STATION. REFER TO DETAIL 1 ON DRAWING M202.
20. FLOAT SWITCH



M200 DOMESTIC WATER DELIVERY SYSTEM

SCALE 1:25

PREVIOUS PIPING PATH

MECÉLEC Plomberie Chauffage

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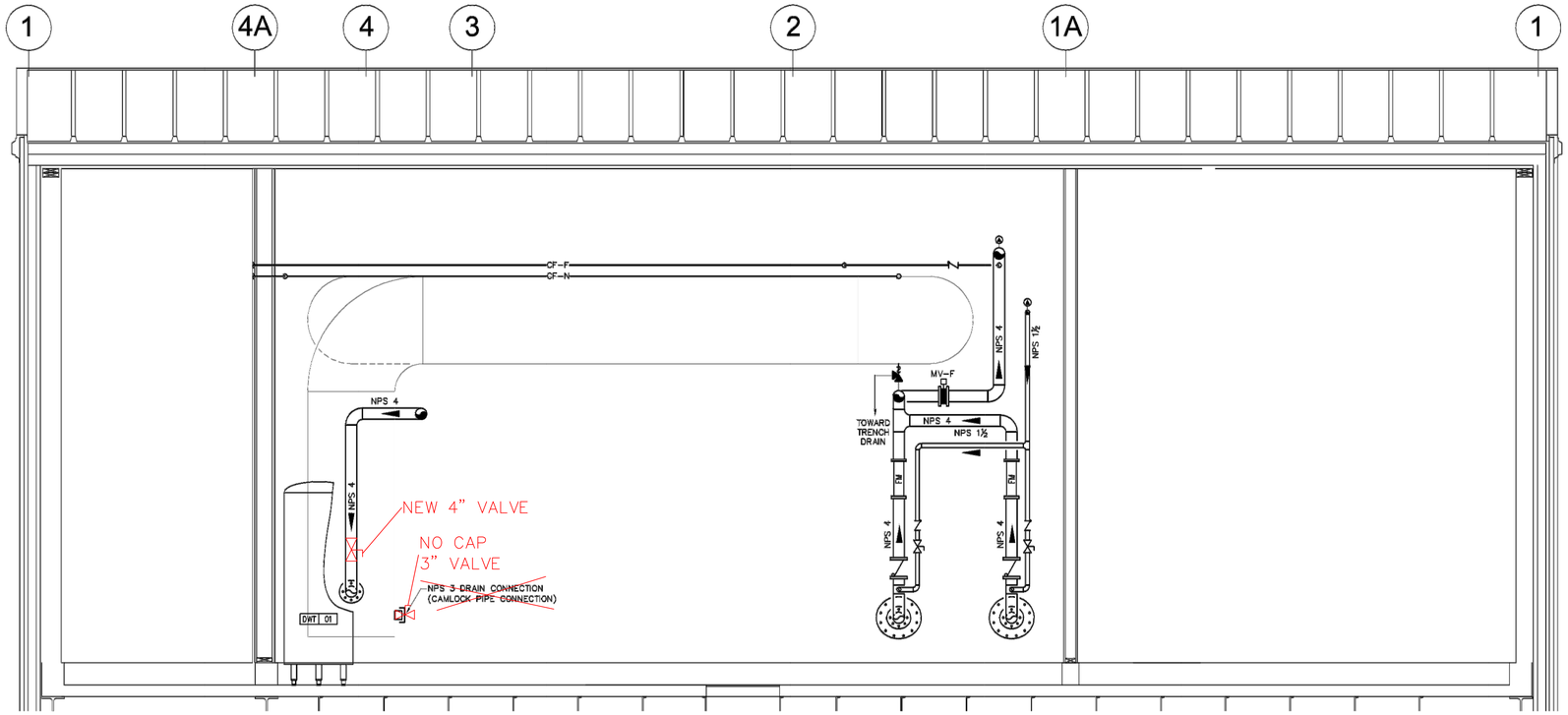
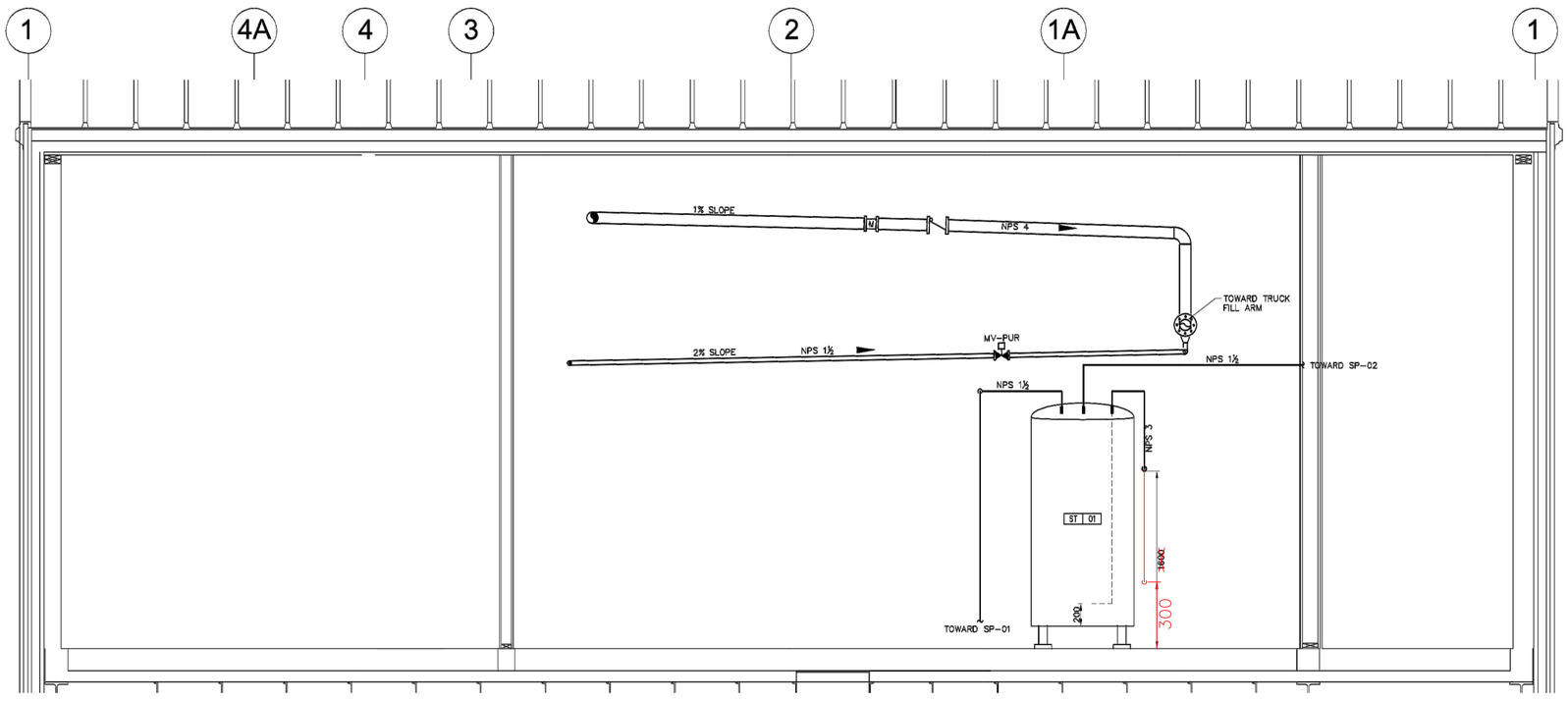


A M201 DETAIL ELEVATION – DOMESTIC WATER DELIVERY SYSTEM

0 1 2

1 SCALE 1:25



B M201 SECTION DETAIL – DOMESTIC WATER DELIVERY SYSTEM

0 1 2

1 SCALE 1:25

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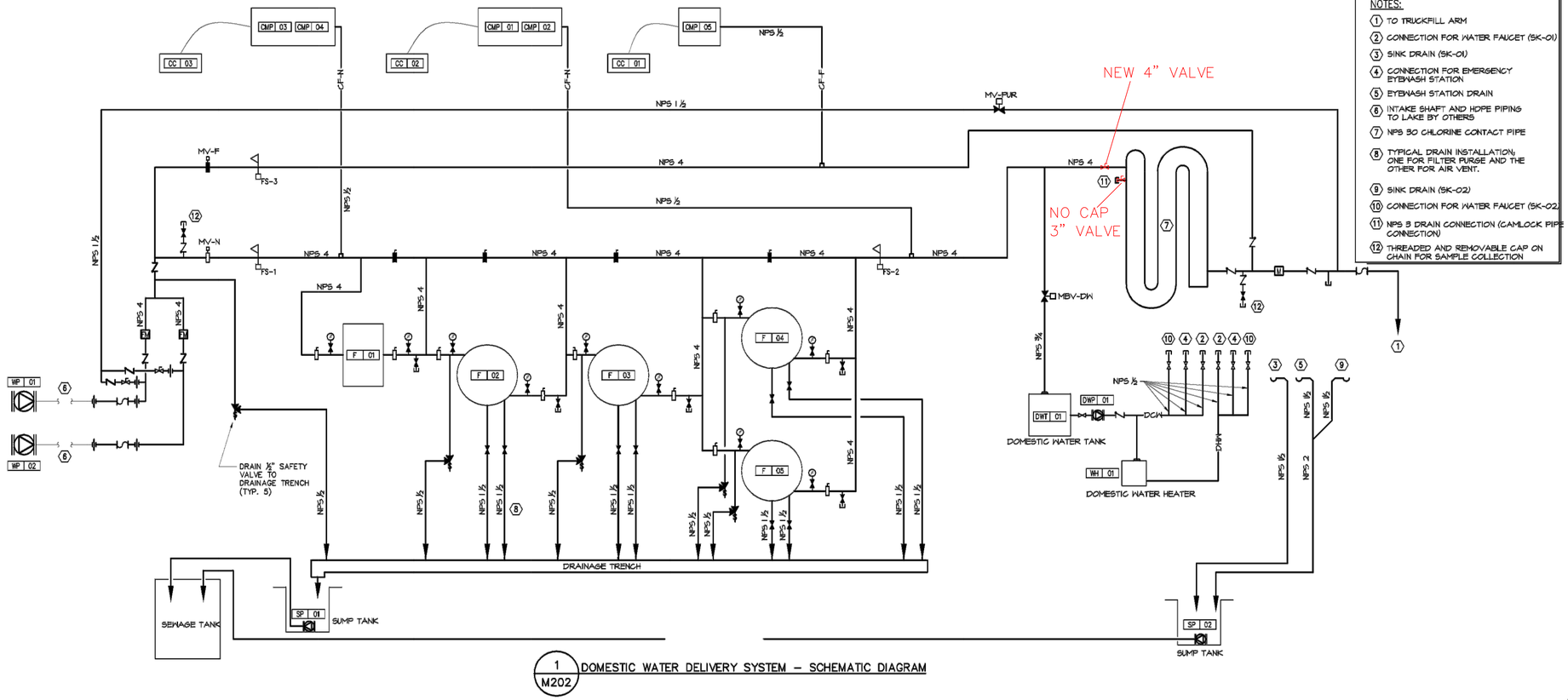
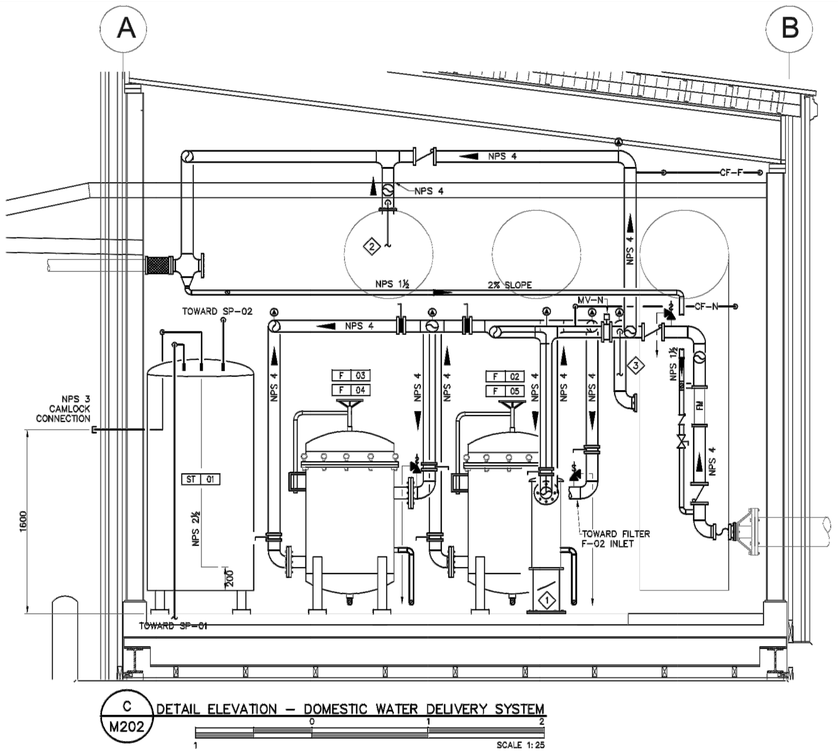
WATER SYSTEM
HYDRAULIC DIAGRAM



NOTES:
1. TO TRUCKFILL ARM
2. CONNECTION FOR WATER FAUCET (SK-01)
3. SINK DRAIN (SK-01)
4. CONNECTION FOR EMERGENCY EYEWASH STATION
5. EYEWASH STATION DRAIN
6. INTAKE SHAFT AND HDPE PIPING TO LAKE BY OTHERS
7. NPS 30 CHLORINE CONTACT PIPE
8. TYPICAL DRAIN INSTALLATION; ONE FOR FILTER PURGE AND THE OTHER FOR AIR VENT.
9. SINK DRAIN (SK-02)
10. CONNECTION FOR WATER FAUCET (SK-02)
11. NPS 3 DRAIN CONNECTION (CAMLOCK PIPE CONNECTION)
12. THREADED AND REMOVABLE CAP ON CHAIN FOR SAMPLE COLLECTION

1 / M202 DOMESTIC WATER DELIVERY SYSTEM – SCHEMATIC DIAGRAM



C / M202 DETAIL ELEVATION – DOMESTIC WATER DELIVERY SYSTEM

SCALE 1:25

DRAWING NOTES:
1. FLANGED SUPPORT STRUCTURE FOR THE SUPPORT OF F-01
2. NPS ¾ PIPING TOWARDS THE SAMPLE COLLECTING STATION; TREATED WATER STATION.
3. NPS ¾ PIPING TOWARDS THE SAMPLE COLLECTING STATION; RAW WATER STATION.

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CLIENT
GOVERNMENT OF NUNAVUT
DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

TITLE
MECHANICAL
PLUMBING SCHEMATIC
& ELEVATION DETAIL

design by	P.C.	project no.	8012-099
drawn by	Y.G.	drawing no.	M202
checked by	P.S.O.		
date	DECEMBER 2014		
	AS SHOWN		

MECÉLEC INC Plomberie Chauffage
DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

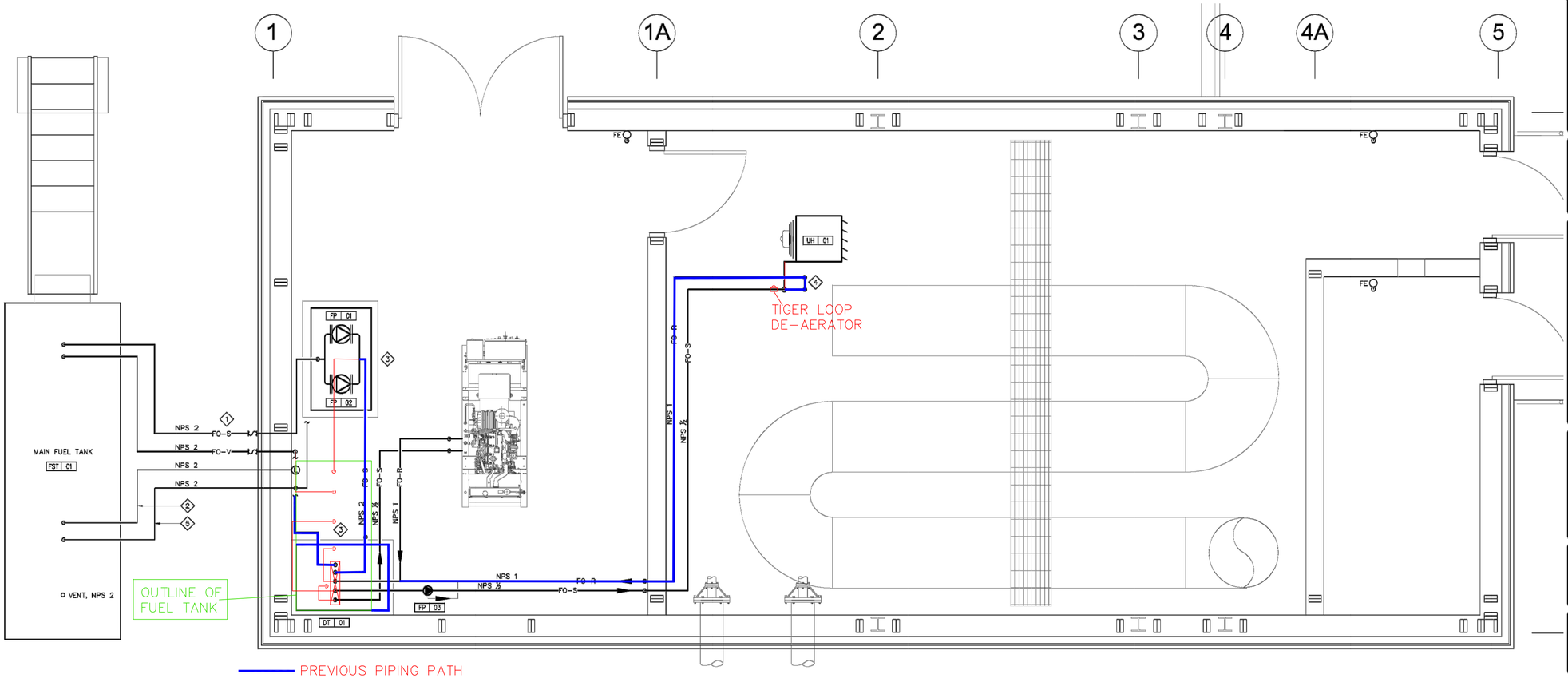
2015/May/19

GENERAL NOTES:

1. REFER TO FUEL SYSTEM SCHEMATIC ON DRAWING M-301, FOR ALL OIL ACCESSORIES.
2. REFER TO ELEVATION DETAIL ON DRAWING M-301, FOR THE MAIN FUEL TANK PIPING LAYOUT.
3. GATHER NEXT TO EACH OTHER ALL PIPING PENETRATING THE EXTERIOR WALL IN ORDER TO REDUCE THE WALL OPENING. REFER TO STRUCTURAL PLANS FOR DETAIL.

DRAWING NOTES:

1. REFER TO STRUCTURAL PLANS FOR EXTERIOR PIPE SUPPORT STRUCTURE. ALL SUPPORT RINGS, HANGERS AND ACCESSORIES TO BE PROVIDED BY PRESENT SECTION.
2. INSTALL EXTERIOR LEVELOMETER WIRING INSIDE A NPS 2 BLACK STEEL PIPE.
3. CONCRETE SLAB TO BE PROVIDED BY PRESENT SECTION. REFER TO DETAIL ON DRAWING M100.
4. VACCUM BREAKER / VENT AS REQUIRED BY MANUFACTURER.
5. INSTALL EXTERIOR CONTROL WIRING INSIDE A NPS 2 BLACK STEEL PIPE. INSIDE TO BE EMT ALL THE WAY TO CONTROL ALARM PANEL.



1 M300 FUEL PIPING – NEW LAYOUT

SCALE 1:25

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BOUTHILLETTE PARIZEAU INC.
Signature:
Date: 2016-05-18
PERMIT NUMBER: P717
NWT/NU Association of Professional Engineers and Geoscientists

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DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

TITLE
MECHANICAL
FUEL SYSTEM LAYOUT

design by	P.C.	project no.	8012-089
drawn by	Y.G.	drawing no.	M300
checked by	P.S.O.		
date	DECEMBER 2014		
	1:25		

MECÉLEC Plomberie Chauffage

DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

2016/May/19

FUEL SYSTEM SCHEMATICS

PIPING AND CONTROLS SCHEMATICS

NOTES:

1. DOUBLE WALL MAIN FUEL STORAGE TANK
2. FST-01 FILL/VENT CONNECTION C/W LOCKING CAP (NPS-2)
3. FST-01 INSPECTION PORT
4. FUEL SUPPLY LINE TO GENERATOR'S DAY TANK (ALL NPS-1)
5. FUEL TANK VENT C/W VENT WHISTLE (NPS-2)
6. FUEL VENT LINE FROM GENERATOR'S DAY TANK (ALL NPS-2)
7. DAY TANK
8. STAINLESS STEEL FLEXIBLE CONNECTION. CONNECT TO FUEL SUPPLY AND RETURN CONNECTIONS ON ENGINE.
9. REFER TO MANUFACTURER INSTRUCTIONS FOR THE SUPPLY OF OIL TO THE UNIT HEATER.

GENERAL NOTE:

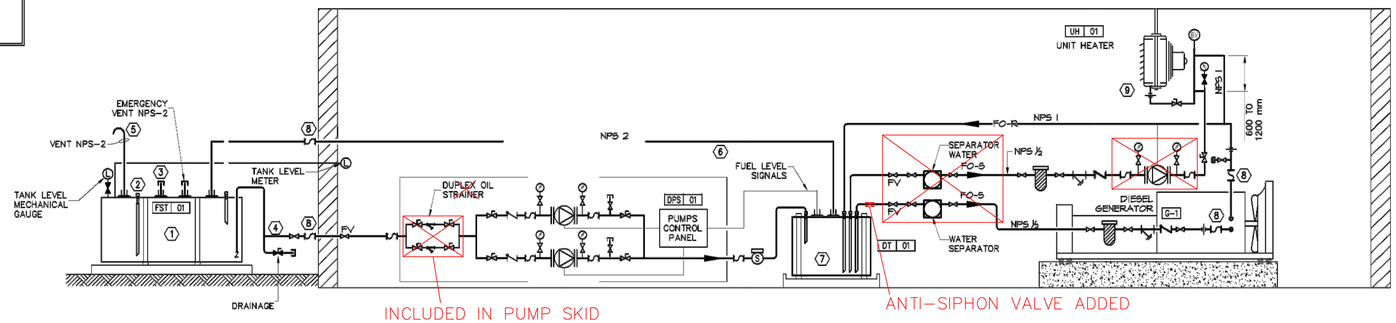
THE SCHEMATIC DRAWING SHOWS DETAILS OF THE CONTROLS LAYOUT, EQUIPMENT CONNECTIONS AND PIPING COMPONENTS OF THE SYSTEM. REFER TO DRAWING M-300 FOR DETAILS ON THE PIPING LAYOUT AND LOCATION OF EQUIPMENT.

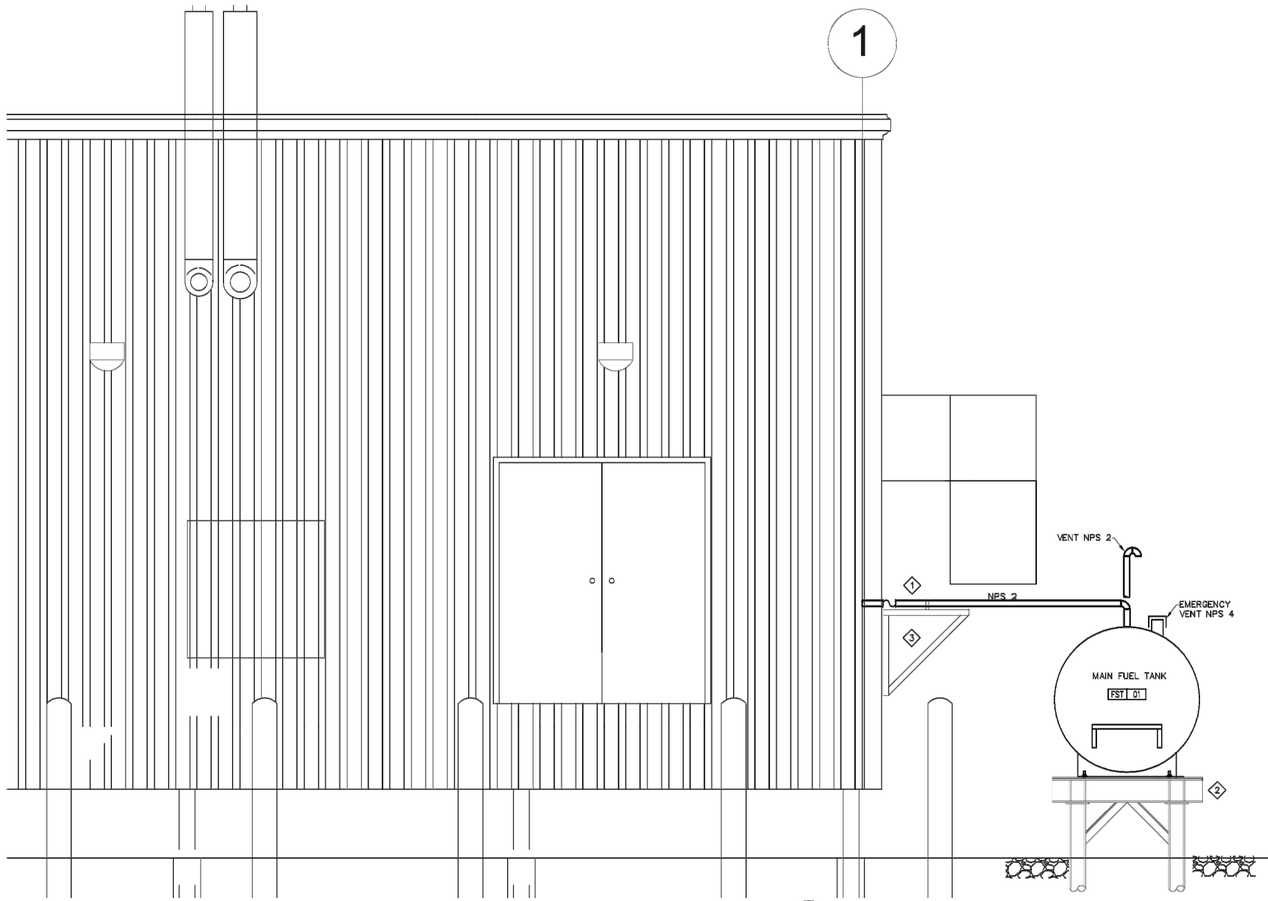
FST-01 CONTROLS

AI FST-01 LEVEL SENSOR
DI HIGH LEVEL SENSOR
DI LOW LEVEL SENSOR
DI LEAK DETECTION
→ TO DPS-01 PUMPS CONTROL PANEL

DAY TANK CONTROLS

DI HIGH LEVEL SENSOR
DI LOW LEVEL SENSOR
DI LEAK DETECTION
→ TO DPS-01 PUMPS CONTROL PANEL





1 / M301 NORTH ELEVATION – MAIN FUEL TANK

SCALE 1:25

DRAWING NOTES:

1. REFER TO DRAWING M-300 FOR PIPING LAYOUT. ALL PIPING INSTALLED AT SAME HEIGHT. PROVIDE NECESSARY STEEL CLAMPS TO SECURE PIPING TO THE SUPPORT STRUCTURE PROVIDED BY STRUCTURAL.
2. STAIRS AND STEEL STRUCTURE FOR FUEL TANK PROVIDED BY STRUCTURE.
3. REFER TO STRUCTURAL PLANS FOR THE PIPE SUPPORT STRUCTURE.

MECÉLEC INC. Plomberie Chauffage
DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

Nunavut

PERMIT TO PRACTICE
BOUTHILLETTE PARIZEAU INC.
Signature:
Date: 2016-05-18
PERMIT NUMBER: P717
NWT/NU Association of Professional Engineers and Geoscientists

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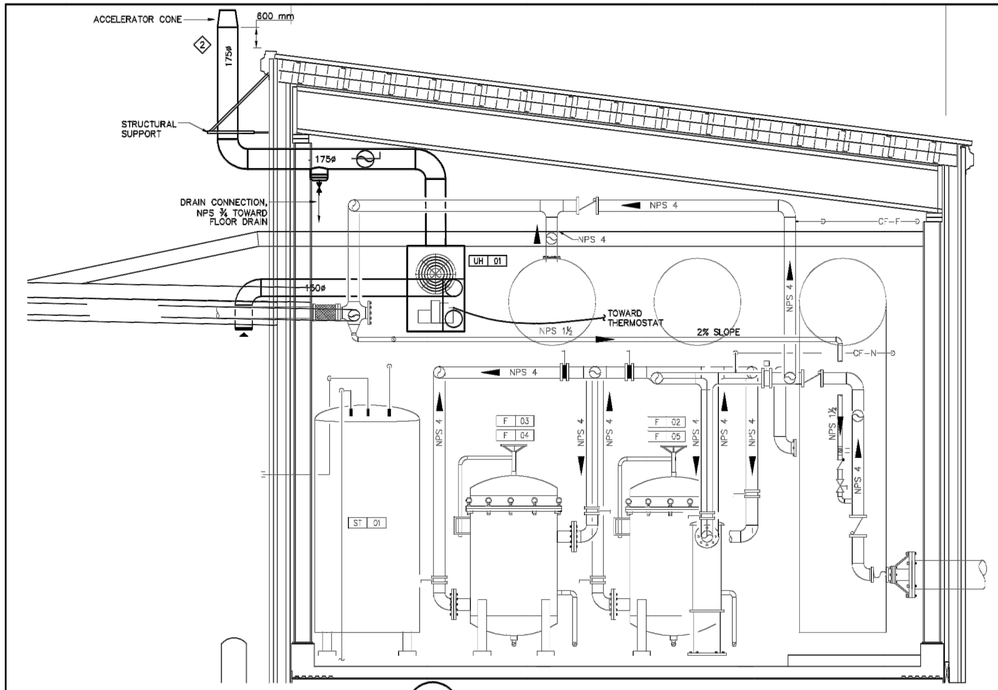
DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

TITLE
MECHANICAL
PLUMBING SCHEMATIC
& NORTH ELEVATION

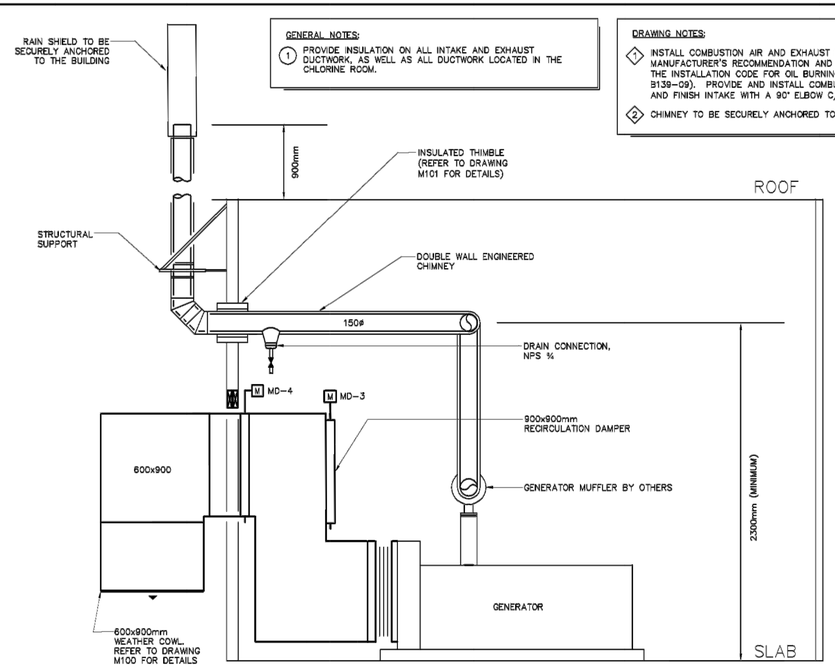
design by	P.C.	project no.	8012-099
drawn by	Y.G.	drawing no.	M301
checked by	P.S.O.		
date	DECEMBER 2014		
	AS SHOWN		

2015/May/19



B — SECTION DETAIL – UNIT HEATER INSTALLATION

SCALE 1:25



GENERAL NOTES:

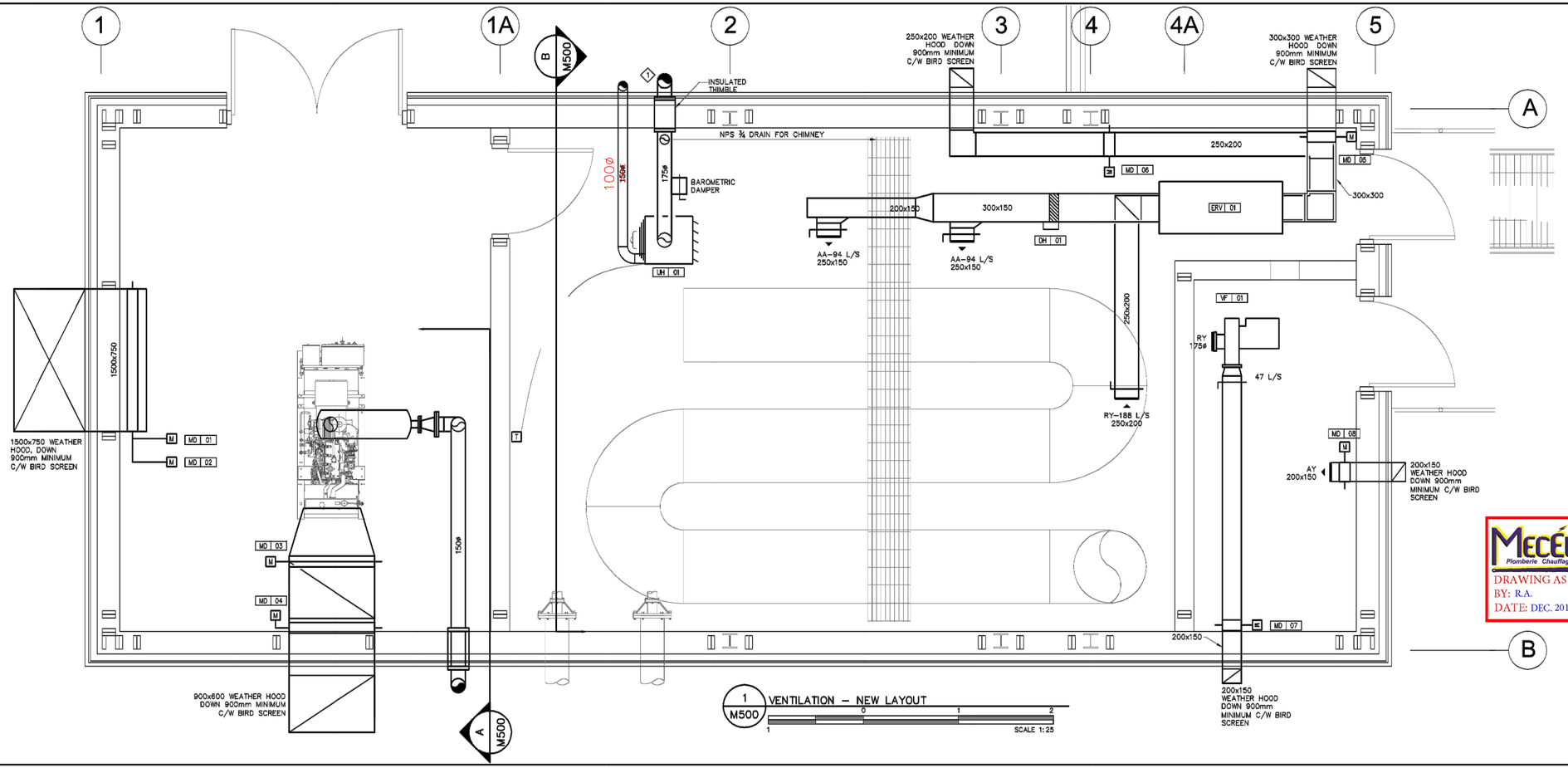
1. PROVIDE INSULATION ON ALL INTAKE AND EXHAUST DUCTWORK, AS WELL AS ALL DUCTWORK LOCATED IN THE CHLORINE ROOM.

DRAWING NOTES:

1. INSTALL COMBUSTION AIR AND EXHAUST CONDUITS AS PER MANUFACTURER'S RECOMMENDATION AND IN COMPLIANCE WITH THE INSTALLATION CODE FOR OIL BURNING EQUIPEMENT (CSA B139-09). PROVIDE AND INSTALL COMBUSTION AIR ADAPTOR AND FINISH INTAKE WITH A 90° ELBOW C/W A SCREEN.
2. CHIMNEY TO BE SECURELY ANCHORED TO THE BUILDING.

A — VENTILATION – GENERATOR ELEVATION VIEW

NTS



1 M500 — VENTILATION – NEW LAYOUT

SCALE 1:25

2016/Nov/18

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BOUTHILLETTE PARIZEAU INC.
Signature:
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PERMIT NUMBER: P717
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MECÉLEC INC Plomberie Chauffage
DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

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DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

TITLE
MECHANICAL VENTILATION LAYOUT

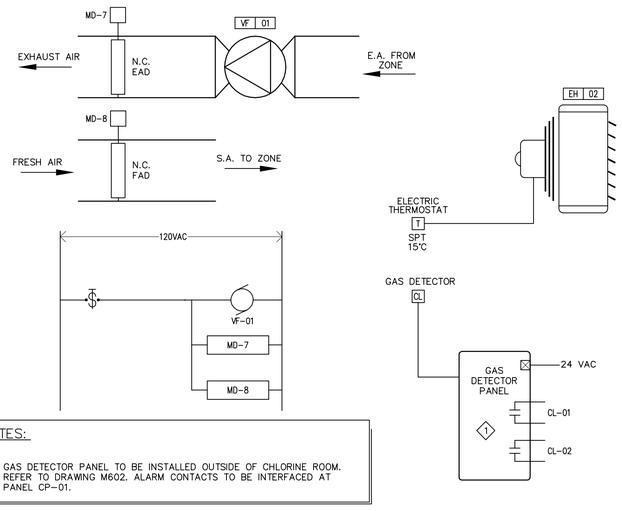
design by	P.C.	project no.	8012-099
drawn by	Y.G.	drawing no.	M500
checked by	P.S.O.		
date	DECEMBER 2014		
	AS SHOWN		

CONTROLS

CL	CHLORINE
N.C.	NORMALLY CLOSE
N.O.	NORMALLY OPEN
AL	ALARM
MD	DAMPER MOTOR – ELECTRIC
EAD	EXHAUST AIR DAMPER
FAD	FRESH AIR DAMPER
RAD	RETURN AIR DAMPER
AUX.C	AUXILIARY CONTACT
LL	LOW LEVEL
HL	HIGH LEVEL
SPT	SET POINT
	FAN
	PUMP
	PUMP VARIABLE FLOW
M	MOTORIZED DAMPER
	ELECTRICAL DUCT HEATER
	ELECTRICITY – CONTROLS
	ELECTRICITY – ELECTRICAL DIVISION
575V / 120V	TRANSFORMER W/ FUSE AND GROUND ON SECONDARY
	NORMALLY OPEN CONTACT
	NORMALLY CLOSED CONTACT
O/R	OVERLOAD RELAYS
	MANUAL SWITCH
	PUSH–BUTTON, MAINTAINED CONTACT

H O A	" HAND–OFF–AUTO " SELECTOR
G	PILOT LIGHT G GREEN R RED B BLUE C CLEAR Y YELLOW
1R	ELECTRICAL RELAY
RC–1	CURRENT RELAY
	ELECTRICAL MOTOR
XX–XXX–XX	MAGNETIC STARTER COIL
DPS	DIFFERENTIAL PRESSURE SWITCH
PS–1	PRESSURE SWITCH
T	ROOM THERMOSTAT
T	ELECTRICAL THERMOSTAT
RT–T	RUNTIME TOTALIZER
	TEMPERATURE SENSOR
	FLOAT SWITCH
	MOTORIZED BUTTERFLY VALVE – 2 WAY N.O.
	MOTORIZED BUTTERFLY VALVE – 2 WAY N.C.
	MOTORIZED VALVE – 2 WAY NORMALLY OPEN
	MOTORIZED VALVE – 2 WAY NORMALLY CLOSED
PT–	PRESSURE TRANSMITTER
	DEVICE SUPPLIED BY OTHERS INSTALLED & WIRED BY CONTROLS

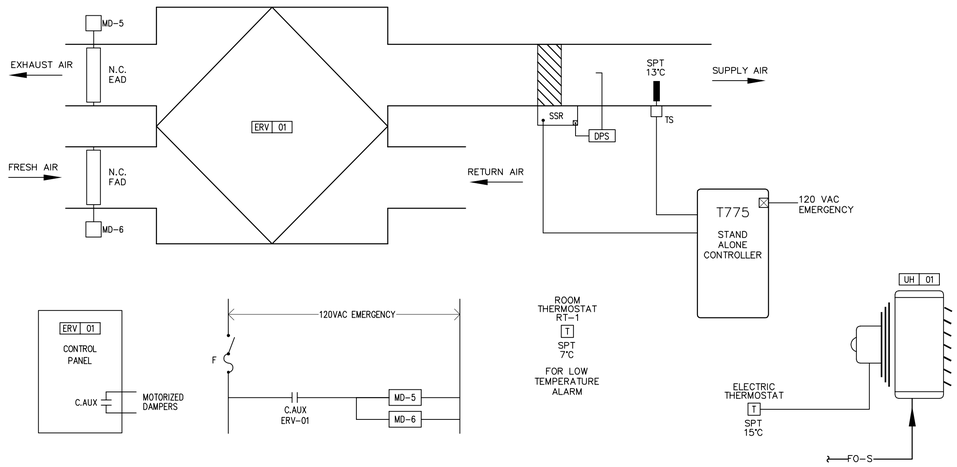
CHLORINE ROOM – VENTILATION



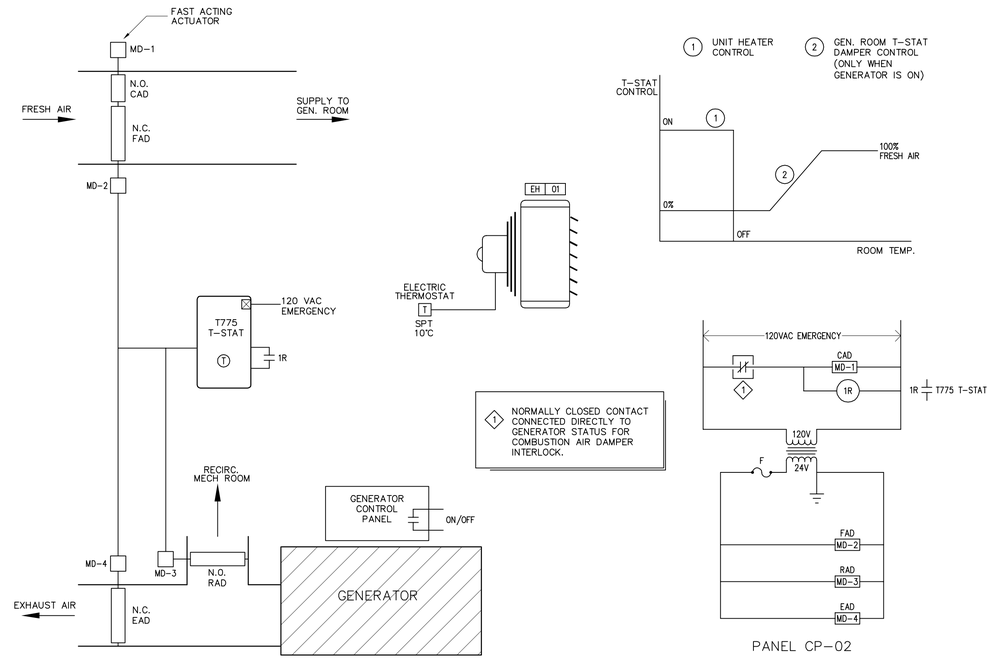
NOTES:

1. GAS DETECTOR PANEL TO BE INSTALLED OUTSIDE OF CHLORINE ROOM. REFER TO DRAWING M602. ALARM CONTACTS TO BE INTERFACED AT PANEL CP–01.

MECHANICAL ROOM – VENTILATION



GENERATOR ROOM – VENTILATION



1. NORMALLY CLOSED CONTACT CONNECTED DIRECTLY TO GENERATOR STATUS FOR COMBUSTION AIR DAMPER INTERLOCK.

SEE MORE DETAILS ON ATTACHED ASP DIAGRAM

MECÉLEC INC. Plomberie Chauffage
DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

Nunavut

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BOUTHILLETTE PARIZEAU INC.
Signature:
Date: 2016-05-18
PERMIT NUMBER: P717
NWT/NU Association of Professional Engineers and Geoscientists

NORTH
PROJECT NORTH

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REGISTERED PROFESSIONAL ENGINEER
NWT / NU
2016-05-19

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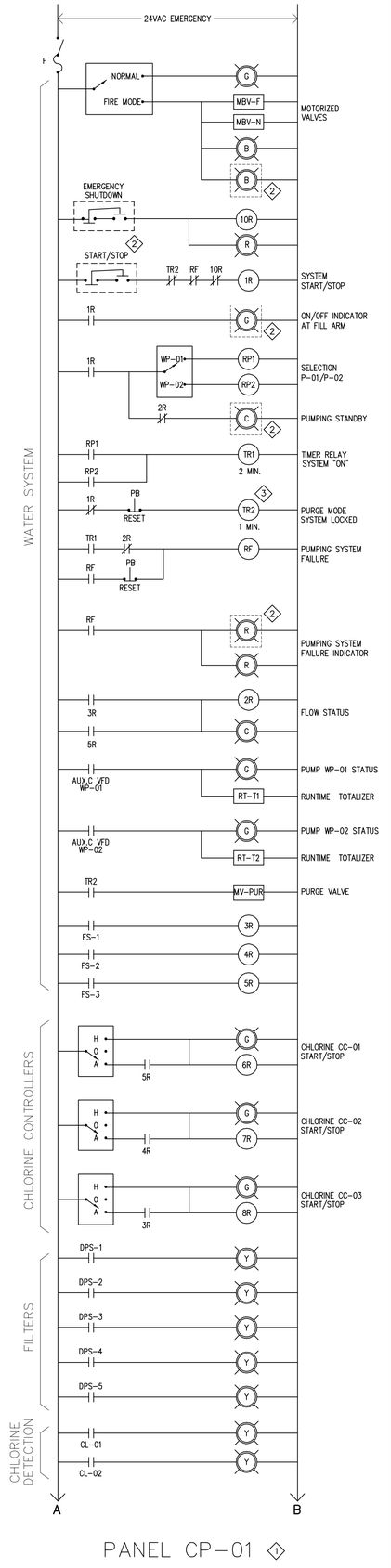
PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

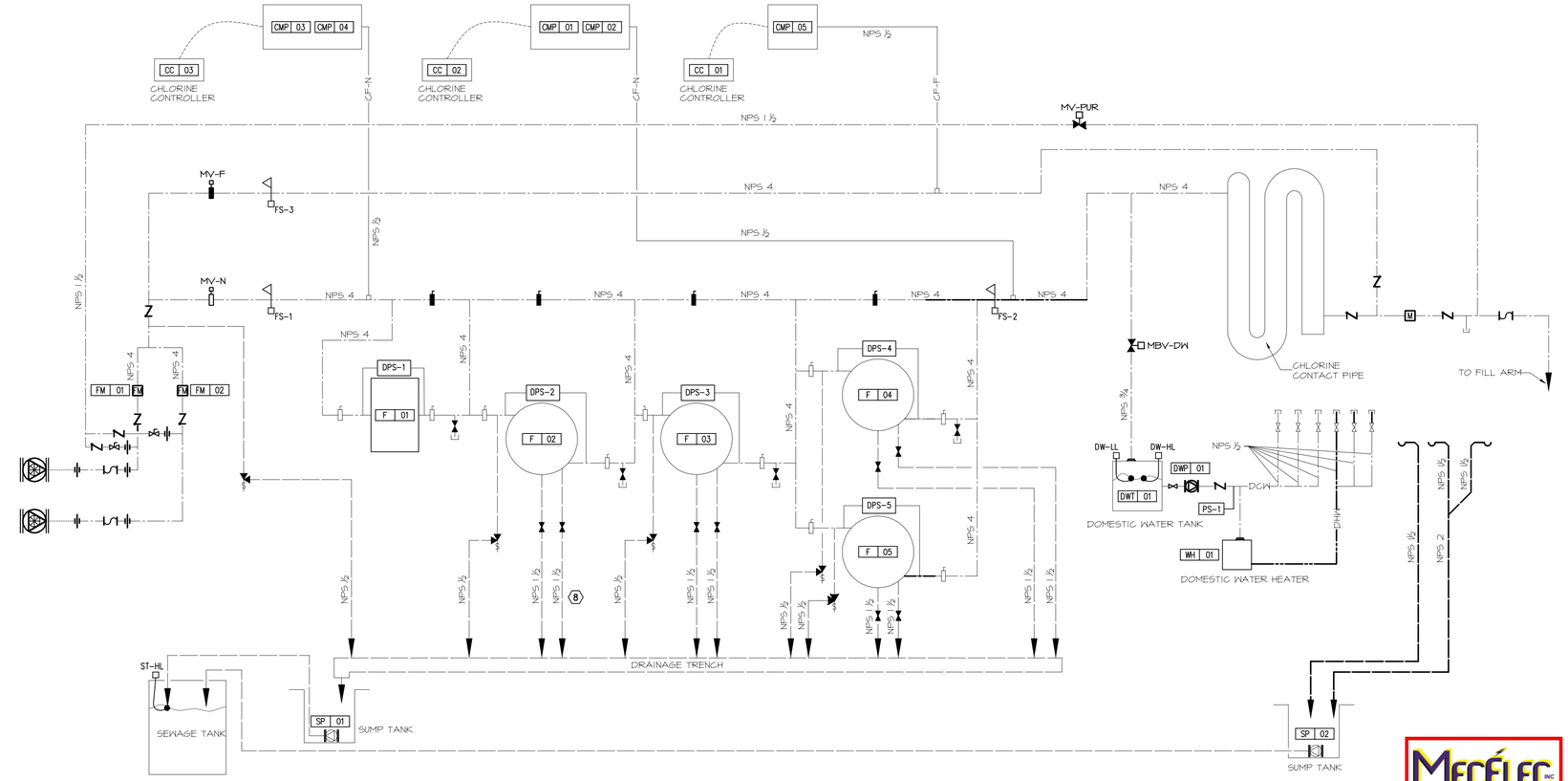
TITLE
MECHANICAL CONTROLS SCHEMATICS

design by	L.P.	project no.	8012–099
drawn by	L.P.	drawing no.	M600
checked by	P.S.O.		
date	DECEMBER 2014		
	N.T.S.		

2016/May/19

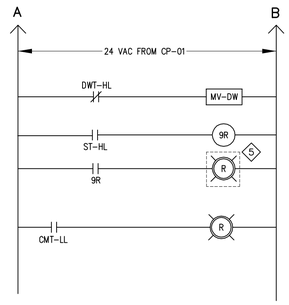


PANEL CP-01 ◇1



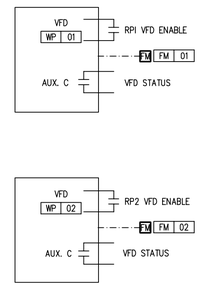
WATER SYSTEM – CONTROLS DIAGRAM

CHLORINE DETECTION

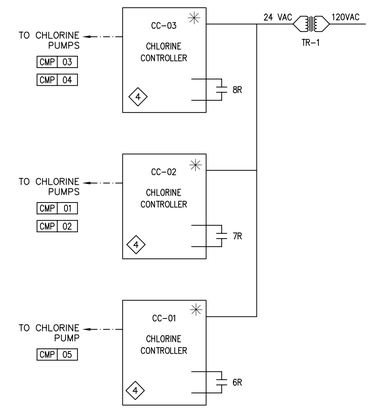


WATER SYSTEM –PUMPS

WP-01 AND WP-02



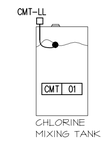
CHLORINE CONTROLLERS



NOTES:

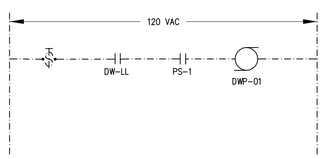
1. NEW CONTROL PANEL CP-01, MOUNT ALL SELECTOR SWITCHES, PUSH– BUTTONS AND PILOT–LIGHTS ON THE PANEL FRONT DOOR. REFER TO SPECS FOR DETAILS.
2. CONTROL DEVICE (PUSH–BUTTON, PILOT LIGHT) TO BE MOUNTED ON NEW FILL ARM OPERATOR STATION RS–01. REFER TO SPECS FOR DETAILS.
3. PURGE MODE TO LOCK PUMPING SYSTEM IN SHUTDOWN AFTER FILL. ADJUST TIME DELAY TO ALLOW WATER TO FLUSH OUT OF THE PUMP DISCHARGE PIPING. REFER TO SEQUENCE OF OPERATION.
4. CHLORINE CONTROLLER BY DIVISION 23. PROVIDE 24V POWER SUPPLY AND START/STOP CONTACT TO CONTROLLER.
5. EXTERIOR LIGHT (RED) FOR SEWAGE TANK HIGH–LEVEL ALARM TO BE MOUNTED OUTSIDE ON THE EXTERIOR WALL OF THE PUMP HOUSE. REFER TO SPECIFICATIONS FOR DETAILS.
6. EXTERIOR LIGHTS FOR CHLORINE DETECTION ALARM TO BE MOUNTED OUTSIDE. REFER TO 2–M602.

CHLORINE MIXING TANK LOW LEVEL



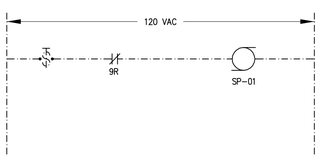
DOMESTIC WATER PUMP

DWP-01



SUMP PUMP – TYPICAL

SP-01 AND SP-02



CONTROL VALVE SCHEDULE

ID	DESCRIPTION	FLOW RATE (gpm)	CV	VALVE SIZE (in)	PRESS. DROP (psi)	VALVE CHARACTERISTIS				REMARKS
						TYPE	2 WAY	3 WAY	N.O.	N.C.	
MV–N	NORMAL MODE	–	–	4	–	BUTTERFLY	●		●		
MV–F	FIRE MODE – BYPASS	–	–	4	–	BUTTERFLY	●			●	
MV–PUR	SYSTEM PURGE VALVE	–	–	1½	–	BALL, FULL–PORT	●			●	
MV–DW	DW TANK FILL	–	–	3/4	–	BALL, FULL–PORT	●			●	

SEE MORE DETAILS ON ATTACHED ASP DIAGRAM

MECÉLEC INC. Plomberie Chauffage

DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

Nunavut

PERMIT TO PRACTICE
BOUTHILLETTE PARIZEAU INC.
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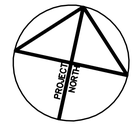

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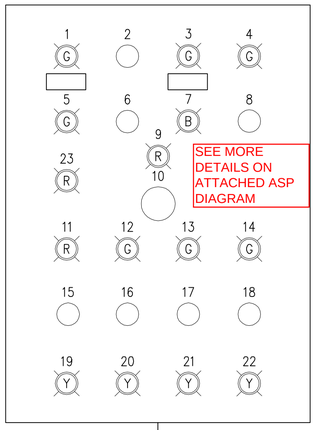
PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

TITLE
MECHANICAL
CONTROLS SCHEMATICS

design by	L.P.
drawn by	L.P.
checked by	P.S.O.
date	DECEMBER 2014
	N.T.S.
project no.	8012–099
drawing no.	M601

2016/May/19

CP-01



MAIN CONTROL PANEL CP-01 TO BE INSTALLED INSIDE PUMP HOUSE. REFER TO RELAY LOGIC AND SPECS FOR PANEL DETAILS.

CP-01 NOTES:

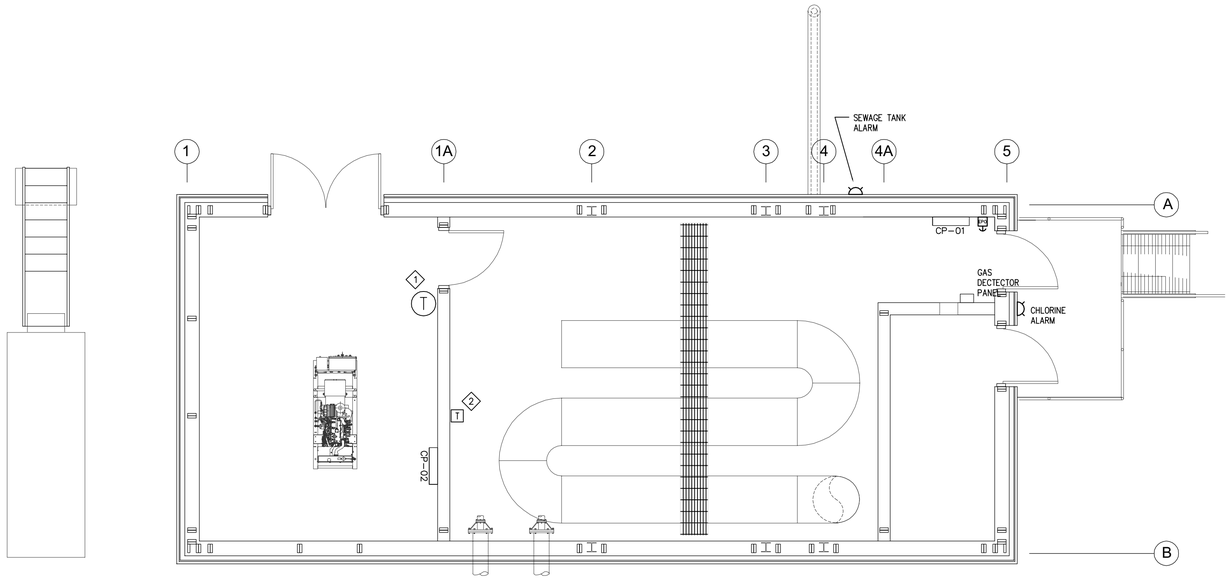
1. P1 STATUS
2. LEAD PUMP P1/P2 SELECTOR
3. P2 STATUS
4. FLOW STATUS
5. NORMAL MODE
6. NORMAL MODE/FIRE SELECTOR
7. FIRE MODE
8. MANUAL PURGE P.B.
9. EMERGENCY SHUTDOWN STATUS
10. EMERGENCY SHUTDOWN P.B.
11. PUMPING FAILURE ALARM
12. CC-01 STATUS
13. CC-02 STATUS
14. CC-03 STATUS
15. PUMPING FAILURE RESET P.B.
16. CC-01 H/O/A SELECTOR
17. CC-02 H/O/A SELECTOR
18. CC-03 H/O/A SELECTOR
19. FILTER 2 ALARM
20. FILTER 3 ALARM
21. FILTER 4 ALARM
22. FILTER 5 ALARM
23. CHLORINE MIXING TANK LOW LEVEL ALARM

SEE MORE DETAILS ON ATTACHED ASP DIAGRAM

RS-01

REMOTE OPERATOR STATION RS-01 TO BE INSTALLED ON THE FILL ARM OUTSIDE. REFER TO RELAY LOGIC AND SPECS FOR STATION DETAILS.

1 / — CP-01 PANEL LAYOUT



NOTES:

1. T-775 THERMOSTAT/CONTROLLER
2. THERMOSTAT FOR ROOM LOW TEMPERATURE ALARM.

2 / — SYSTEM LAYOUT

SCALE 1:50

DRAWING AS BUILT
BY: R.A.
DATE: DEC. 2016

2015/May/19

PERMIT TO PRACTICE
BOUTHILLETTE PARIZEAU INC.
Signature:
Date: 2016-05-18
PERMIT NUMBER: P717
NWT/NU Association of Professional Engineers and Geoscientists

NORTH

PROJECT NORTH

STAMP

REGISTERED PROFESSIONAL ENGINEER
P. J. M. ST-ONGE
LICENSEE
NWT / NU
2016-05-19

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.

No.	DESCRIPTION	DATE	BY	APP'D
1	ISSUED FOR CONSTRUCTION	2016/05/18	BPA	P.S.O.

R E V I S I O N S

Ottawa :
100-1960 Robertson Road, Suite 100, K2H 5B9
T.(613) 596.6454 F.(613) 596.3346
www.bpa.ca
Gatineau :
430 de l'hôpital bld, suite 210, J8V 1T7
T.(819) 778.2448 F.(819) 778.5031
Consulting Engineers

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GOVERNMENT OF NUNAVUT
DEPARTMENT OF COMMUNITY AND GOVERNMENT SERVICES

PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

TITLE
MECHANICAL
CONTROLS SCHEMATICS

design by	L.P.	project no.	8012-099
drawn by	L.P.	drawing no.	M602
checked by	P.S.O.		
date	DECEMBER 2014		
	N.T.S.		

REPULSE BAY
NEW WATER PUMP HOUSE

ASP AUTOMATISATION
Service conseil et soutien technique

STAMP

NO.	DATE	REVISION	BY

ASP AUTOMATISATION
Service conseil et soutien technique

1670 Route 169
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Québec, Canada, G8G 1B1

418–478–6099

support@asp–a.ca

www.asp–a.ca

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GOVERNMENT OF NUNAVUT
DEPARTMENT OF COMMUNITY
AND GOVERNMENT SERVICES

PROJECT
REPULSE BAY, NUNAVUT
NEW PUMPING STATION

DWG TITLE
ELECTRICAL
CONTROLS SCHEMATICS

ENGINEER	CHECKED BY
PROJECT NO: ASP16324	DRAWN BY: J–M BERGERON
SCALE: No Scale	DATE: 20/06/2016

DWG NO
ASP16324–01

SHEET NO
1 OF 4

PART LIST

PR	IDENTITY	DESCRIPTION	QUANTITY	MANUFACTURER
8017607		METAL ENCLOSURE 30X24X8 NEMA 4X	1	RITTAL
8018691		L-HANDLE WITH LOCK	1	RITTAL
2920683		SURGE PROTECTOR/FILTER	1	PHOENIX CONTACT
MD500A		OPEN 500VA TRANSFORMER 120/240-12/24 VAC	1	MARCUS
MY2N-AC24(S)	#R, RP#, TR#	DPDT RELAY	15	OMRON
PYF08A-E		2 POLES MY2 RELAY BASE	15	OMRON
MY4N-AC24(S)	#R, RP#, TR#	4PDT RELAY	5	OMRON
PYF14A-E		4 POLES MY4 RELAY BASE	5	OMRON
H3CR-A		SOLID STATE TIMER	2	OMRON
PC2-F11		11 PIN TIMER BASE	2	OMRON
H7ET-NFV-B		LCD HOUR METER	2	OMRON
800T2TZ	Rs-1	BOX 2G 30MM CEMA	1	ALLEN BRADLEY
800TCP416	Rs-1	PILOT LIGHT MULTI 24VAC	1	ALLEN BRADLEY
800TFA22A	Rs-1	PB MAINT NOIR 1NO/1NC	1	ALLEN BRADLEY
9001KA2		CONTACT BLOCK WITH PROTECTED TERMINALS	20	SCHNEIDER
9001KR16H2		RED EMERGENCY PUSHBUTTON TURN TO RELEASE	2	SCHNEIDER
9001KS46FB		3 POSITIONS SELECTOR SWITCH	6	SCHNEIDER
9001KR1BH5		BLACK PUSHBUTTON	3	SCHNEIDER
9001KP35R31		RED PILOT LIGHT	4	SCHNEIDER
9001KP35G31		GREEN PILOT LIGHT	8	SCHNEIDER
9001KP35L31		BLUE PILOT LIGHT	2	SCHNEIDER
9001KP35A31		AMBER PILOT LIGHT	5	SCHNEIDER
9001KN323		RESET TAG FOR 30MM BUTTONS	3	SCHNEIDER

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STEEVE MAILLOUX
114454
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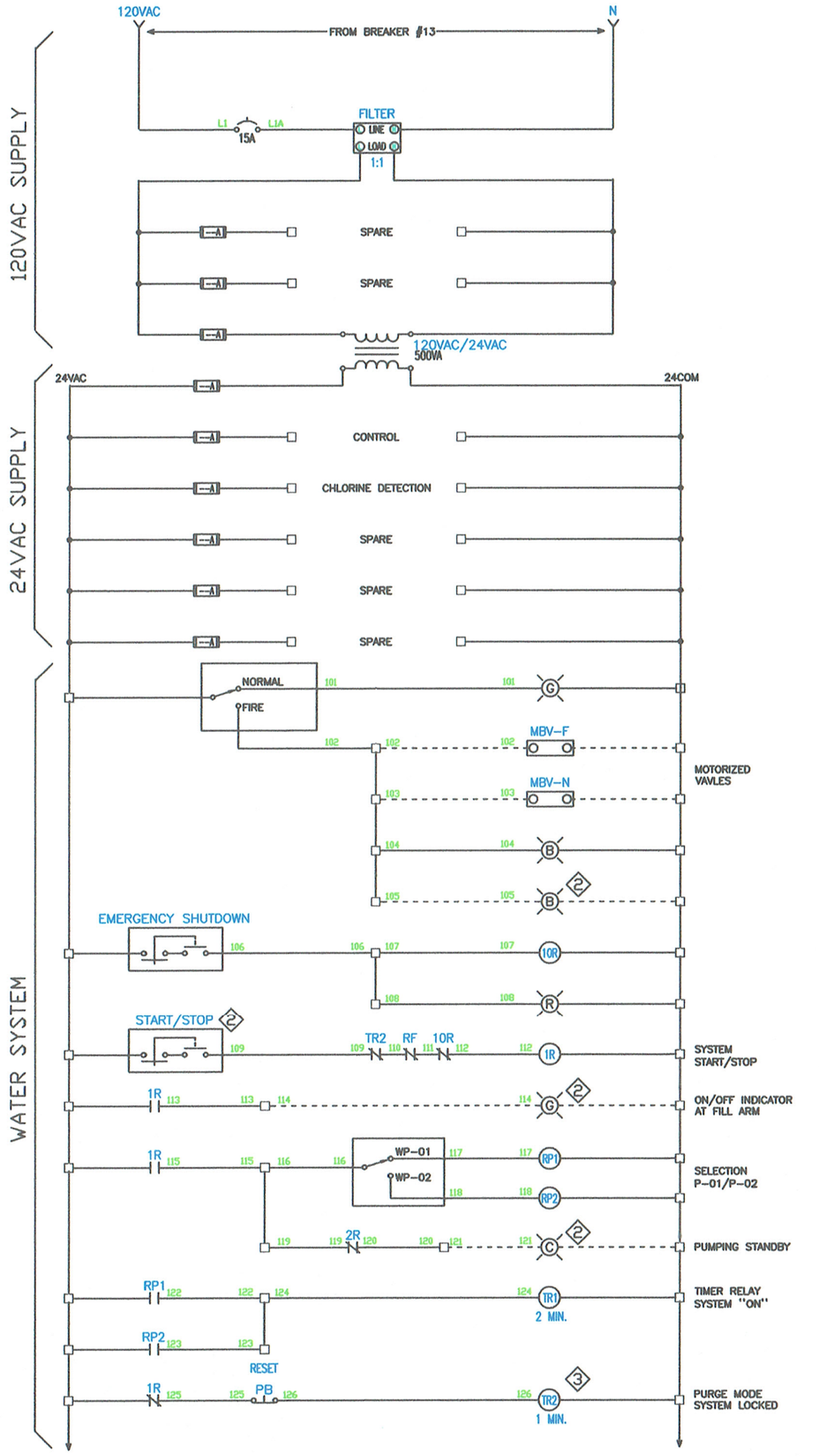
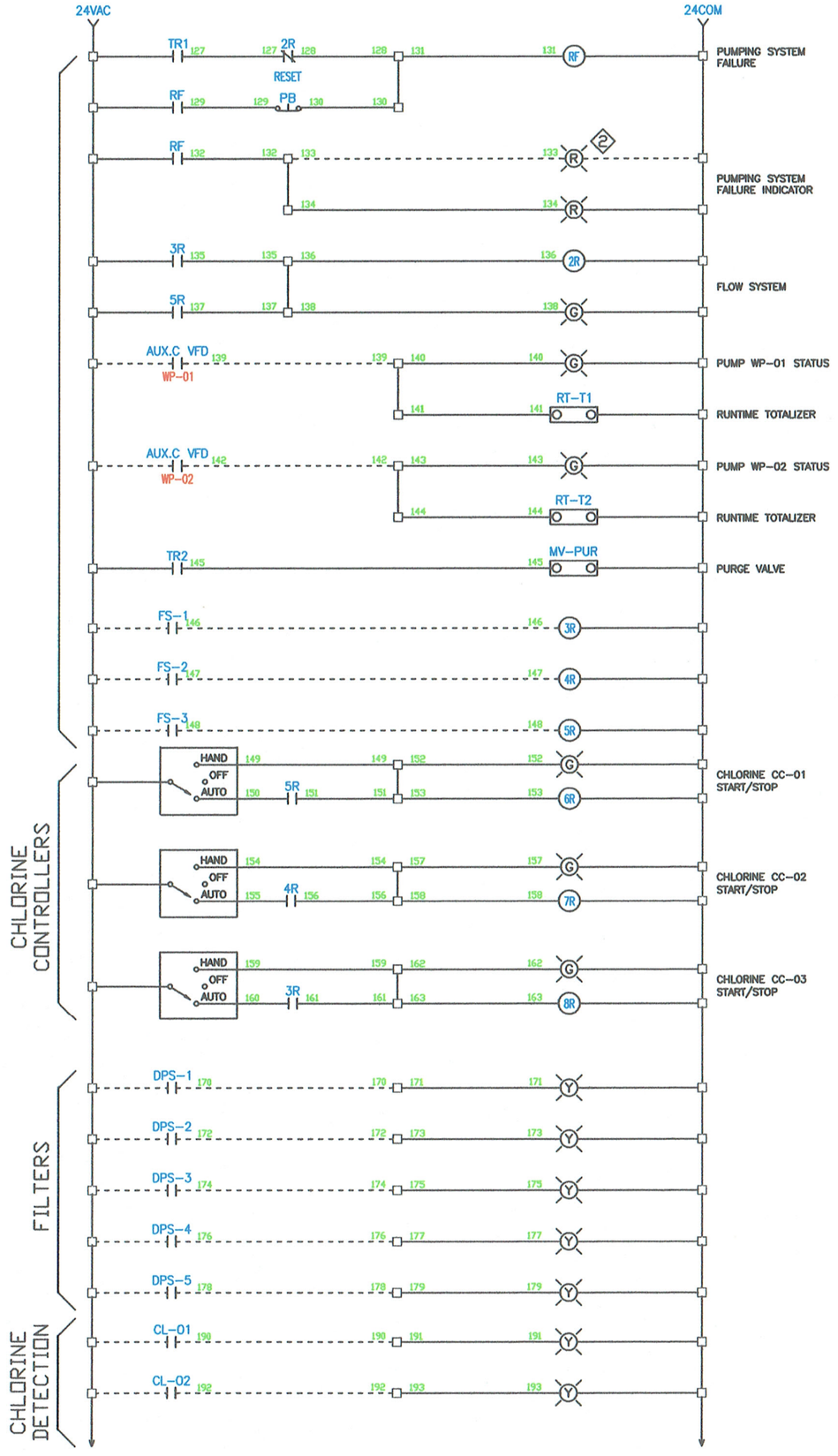
ASP16324-01

SHEET NO
2 OF 4





NOTES

2. CONTROL DEVICE (PUSH-BUTTON, PILOT-LIGHT) MOUNTED ON FILL ARM OPERATOR STATION RS-01. REFER TO SPECS FOR DETAILS.
3. PURGE MODE LOCKS PUMPING SYSTEM IN SHUTDOWN AFTER FILL. ADJUST TIME DELAY TO ALLOW WATER TO FLUSH OUT OF THE PUMP DISCHARGE PIPING. REFER TO SEQUENCE OF OPERATION.
4. CHLORINE CONTROLLER BY DIVISION 23. PROVIDE 24V POWER SUPPLY AND START/STOP CONTACT TO CONTROLLER.
5. EXTERIOR LIGHT (RED) FOR SEWAGE TANK HIGH-LEVEL ALARM MOUNTED OUTSIDE ON THE EXTERIOR WALL OF THE PUMP HOUSE.

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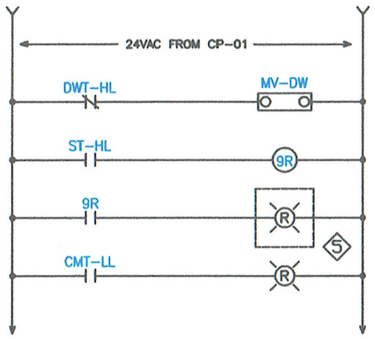
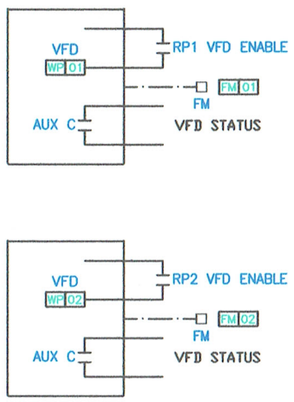
DWG NO
ASP16324-01

SHEET NO
3 OF 4

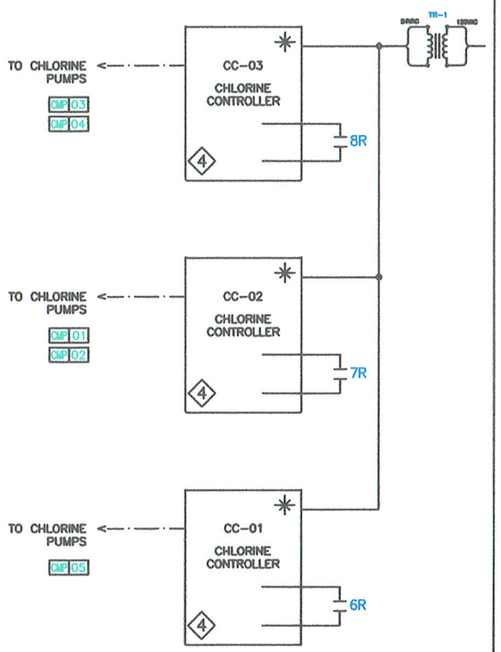
CHLORINE DETECTION



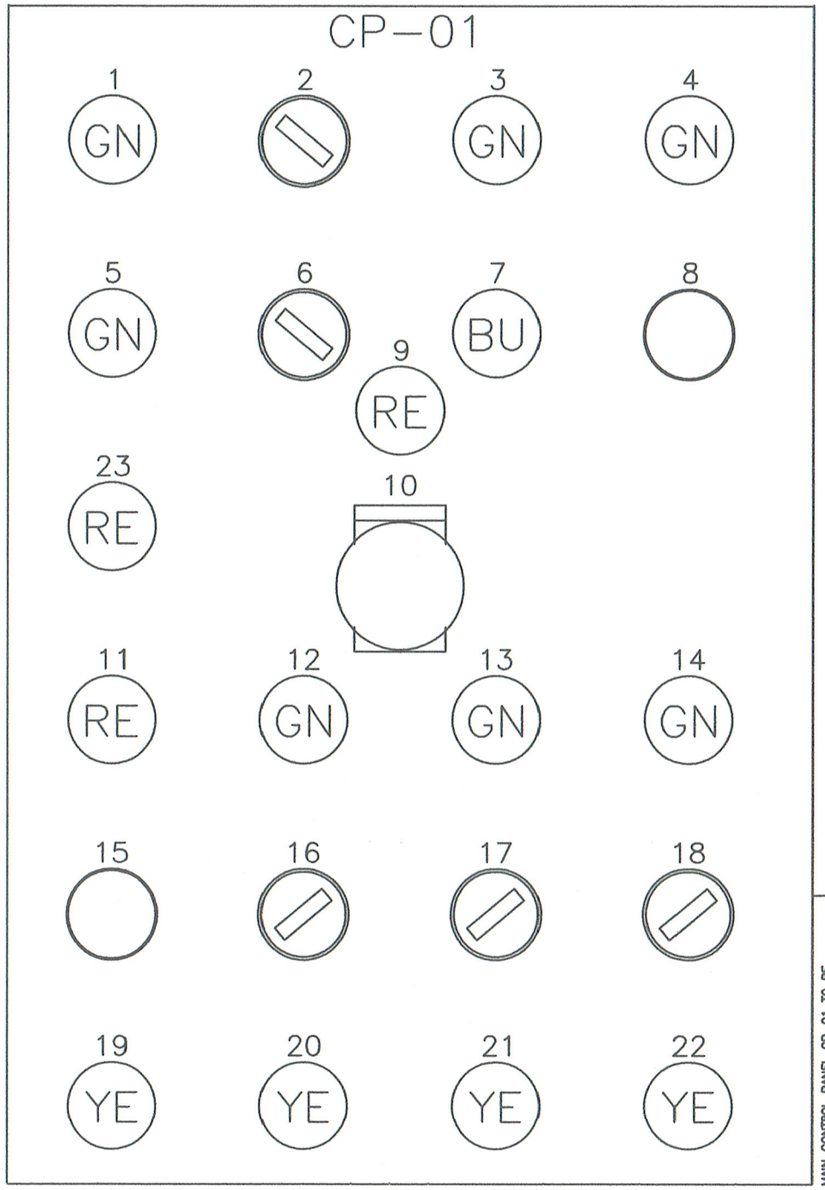
WATER SYSTEM - PUMPS
WP-01 AND WP-02



CHLORINE CONTROLLERS

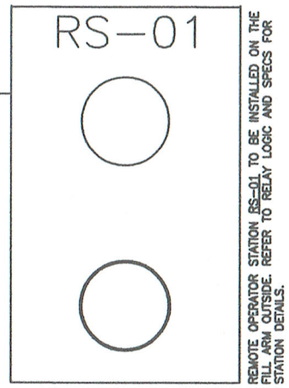


CP-01 PANEL LAYOUT



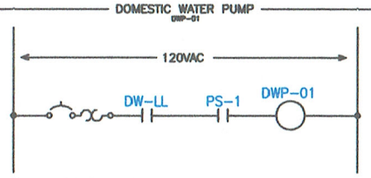
MAIN CONTROL PANEL CP-01 TO BE INSTALLED INSIDE PUMP HOUSE. REFER TO RELAY LOGIC AND SPECS FOR PANEL DETAILS.

CP-01 NOTES	
#	COMPONENT
1	P1 STATUS LIGHT
2	LEAD PUMP P1/P2 SELECTOR
3	P2 STATUS LIGHT
4	FLOW STATUS LIGHT
5	NORMAL MODE LIGHT
6	NORMAL MODE/FIRE SELECTOR
7	FIRE MODE LIGHT
8	MANUAL PURGE PUSH BUTTON
9	EMERGENCY SHUTDOWN STATUS LIGHT
10	EMERGENCY SHUTDOWN PUSH BUTTON
11	PUMPING FAILURE ALARM LIGHT
12	CC-01 STATUS LIGHT
13	CC-02 STATUS LIGHT
14	CC-03 STATUS LIGHT
15	PUMPING FAILURE RESET PUSH BUTTON
16	CC-01 HAND/OFF/AUTO SELECTOR
17	CC-02 HAND/OFF/AUTO SELECTOR
18	CC-03 HAND/OFF/AUTO SELECTOR
19	FILTER 2 ALARM LIGHT
20	FILTER 3 ALARM LIGHT
21	FILTER 4 ALARM LIGHT
22	FILTER 5 ALARM LIGHT
23	CHLORINE MIXING TANK LOW LEVEL ALARM LIGHT

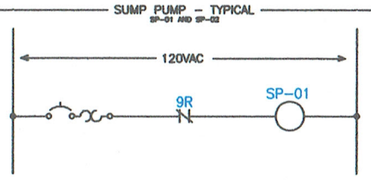


REMOTE OPERATOR STATION RS-01 TO BE INSTALLED ON THE FILL ARM OUTSIDE. REFER TO RELAY LOGIC AND SPECS FOR STATION DETAILS.

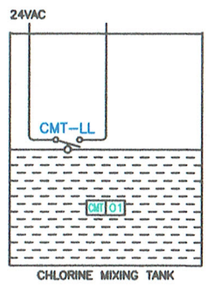
DOMESTIC WATER PUMP
DWP-01



SUMP PUMP - TYPICAL
SP-01 AND SP-02



CHLORINE MIXING TANK LOW LEVEL



NOTES

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SHEET NO: 4 OF 4