

August 31, 2018

Dear Sir:

Attached is Addendum No. 1 dated August 31, 2018 to the Specifications for The Manitoba Water Services Board Contract No. MWSB 1450, Grand Beach Water Treatment Plant Upgrade. Please verify receipt of this Addendum for our records by fax to (204) 726-6290.

ACKNOWLEDGEMENT OF RECEIPT OF ALL ADDENDUMS
MUST BE INCLUDED IN THE TENDER SUBMISSION.**

Failure to include acknowledgement shall cause the tender to be rejected. If Tender is submitted before Addendum is issued, the Board will accept a faxed acknowledgement prior to the tender closing.

Yours truly,

R. Lytle
Construction Manager

The Manitoba Water Services Board
Unit #1A - 2010 Currie Blvd.
Brandon, MB R7B 4E7

Dear Sir:

We have received Addendum No. 1 dated August 31, 2018 to the Specifications for The Manitoba Water Services Board Contract No. MWSB 1450, Grand Beach Water Treatment Plant Upgrade.

Yours truly,

Company

Per

THE MANITOBA WATER SERVICES BOARD

CONTRACT NO. M.W.S.B. 1450

Grand Beach Water Treatment Plant Upgrade

ADDENDUM NO. 1

To the tender documents for:

August 31, 2018

1) PRECEDENCE

This addendum forms an integral part of the specifications describing all aspects of the work and is to be read in conjunction therewith.

2) SCOPE

The purpose of this addendum is to amend the following sections of the Tender Documents:

1. Front End

2.1 MWSB 3A:

- Revise the submission deadline in Tender Form MWSB.3A to read as follows:

Submission
Deadline

Date: September 14, 2018
Time: Before 11:00 a.m. prevailing Brandon time

2. Specifications

- 2.1 Replace Section 11310 - Submersible Vertical Turbine Well Pump with Section 11310 (Revision 1) - Submersible Pump.

3. Drawings

- 3.1 Replace Drawing E-1001 - Electrical Single Line Diagram with the attached Drawing E-1001- Electrical Single Line Diagram (Revision 1).
- Revise Motor description text to “West Well P-1200 Duty/Standby”.
 - On Typical Pump Starter Wiring diagram 4. Revise to show that the Hand-Off-Auto switch (HOA) is for pump P-1200.
 - On Typical General Control Wiring diagram 3. Revise equipment tags.
 - Remove Demolition Note 5.
 - Revise Note 14 as follows: All new electrical equipment in the building shall be category 2 rated (NEMA 4X enclosure) except for transfer switch which shall be NEMA 12 rated.
- 3.2 Replace Drawing E-1002 - Electrical Specifications with the attached Drawing E-1002- Electrical Specifications (Revision 1).
- Add the following to Part 4 Installation:
4.5 After all equipment is installed and normal power is available, perform a 2 hour complete system generator test under full load. This test shall be run in the presence of the Owner’s Representative.

END OF ADDENDUM

SUBMERSIBLE PUMP (ADDENDUM 1)

1. General

1.1 Work Included

- .1 Supply, installation, testing and commissioning of one (1) submersible well pump in the West Well and all related equipment as specified.

1.2 References

- .1 ASTM International (ASTM):
 - .1 A36/A36M: Standard Specification for Structural Steel.
 - .2 A48/A48M: Standard Specification for Gray Iron Castings.
 - .3 A53/A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - .4 A269: Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 - .5 A276: Standard Specification for Stainless Steel Bars and Shapes.
 - .6 A536: Standard Specification for Ductile Iron Castings.
 - .7 A582/A582M: Standard Specification for Free-Machining Stainless Steel Bars.
 - .8 B505/B505M: Standard Specification for Copper Alloy Continuous Castings.
 - .9 B584: Standard Specification for Copper Alloy Sand Castings for General Applications.
- .2 American National Standard Institute/Hydraulic Institute (ANSI/HI):
 - .1 9.8: Pump Intake Design.

1.3 Submittals

- .1 Submit the following in accordance with Section 01300.
- .2 Product Data:
 - .1 Drawings of pump column and spacers if recommended by the manufacturer.
 - .2 Parts list and descriptions including such items as manufacturer, make, model, style, type, weights, materials, coatings, finishes, and references to appropriate standards.
 - .3 Pump manufacturer's certified performance curve showing principal characteristics of pump including:
 - .1 Relation between delivery and head.

SUBMERSIBLE PUMP (ADDENDUM 1)

- .2 Relation between efficiency and delivery.
- .4 Pump manufacturer's statement of overall efficiency guarantee for pumping unit under specified conditions.
- .5 Speed-torque characteristic of pump for pump operation against fully closed discharge valve and speed torque characteristic of pump for pump operation against fully open discharge valve. Submit impeller inertia and include with speed-torque characteristics.
- .6 Installation instructions and drawings showing anchor bolt locations, electrical and piping connections.
- .3 Test Results:
 - .1 Factory Test Data: Submit three (3) certified copies of factory performance test data, including calculations showing losses not included in shop tests, field performance curves, and computations and curves showing power consumption by motor and bhp load on motor.
 - .2 Pump manufacturer's curve in triplicate, showing principal characteristics of proposed pump. The pump curve shall show:
 - .1 Relation between delivery and head from no delivery to maximum delivery of pump.
 - .2 Relation between efficiency and delivery.
 - .3 Horsepower shaft input of pump between limits stated above.
 - .4 Efficiency curve for bowl and motor.
 - .3 Draw curves using a scale which allows values to be read accurately within 1%. Efficiency curves submitted shall constitute a guarantee within 1% at rated capacity.
 - .4 Field demonstration test results.

1.4 Coordination

- .1 Coordinate with other Divisions to ensure that there is no conflict with the work.

1.5 Shipment, Protection, and Storage

- .1 Ship all equipment skid-mounted and pre-assembled, to the degree which is practicable.
- .2 Provide complete storage instructions.

2. PRODUCTS

2.1 Well

- .1 Well pump system to be compatible with well having following characteristics (all measurements from well head):

SUBMERSIBLE PUMP (ADDENDUM 1)

- .1 Depth of well: 63 m.
- .2 Diameter of the casing: 203 mm (8 inch).
- .3 Depth to screen: 44.5 m.
- .4 Static water level: 15 m.
- .5 Pumping level: 25.75 m.

2.2 Submersible Pump

- .1 The pump body, motor casing and impeller shall be AISI type 304 stainless steel, free from blow holes, sand holes and other faults, accurately machined and fitted. All passages shall be designed and finished to reduce friction and the passageways shall be balanced with the impeller to reduce vibration. The impeller shall be statically and dynamically balanced.
- .2 Each pump shall be equipped with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies.
- .3 All exposed nuts or bolts shall be AISI type 316L stainless steel.
- .4 The external finish shall be abrasion and corrosion resistant. Shop apply to all exterior ferrous surfaces and interior of column and discharge head, NSF 61 high solids epoxy.
- .5 The pump shall be furnished with a premium efficiency electric motor rated 600 V, 60 cycle, 3-phase. The motor shall be capable of driving the pump continuously through the entire range of pump operation without increasing the temperature of the windings above the insulation rating. Pump unit shall be supplied with a minimum of 70 m of operating cable. Contractor to confirm on site.
- .6 All units shall include a self cleaning wear plate. The wear plate shall be designed with an inlet incorporating strategically placed cutting grooves and an outward spiral V-shaped groove on the side facing the impeller, to shred and force stringy solids outward from the impeller and through the pump discharge. The wear plate shall be mounted to the volute with three (3) stainless steel securing screws and three (3) stainless steel adjusting screws to permit close tolerance adjustment between the wear plate and impeller for maximum pump efficiency. The wear plate shall be factory mounted to the volute in a fixed position with metal to metal contact on machined surfaces to insure optimal clearance and efficiency at start-up. Adjustment to allow for wear and restore peak pumping performance shall then be accomplished using standard tools, and without requiring disassembly of the pump.
- .7 All units shall be shop finished in accordance with the manufacturer's instructions.

2.3 Detailed Pump Specifications:

- .1 Description: Well Pump (West Well).
- .2 Tag Number: P-1200.
- .3 Commodity: Raw Water.
- .4 Operating Environment: Well.

SUBMERSIBLE PUMP (ADDENDUM 1)

- .5 Area Classification: Unclassified.
- .6 Design Conditions:
 - .1 Liquid: Raw Well Water.
 - .2 Liquid temperature: 1-20°C.
 - .3 NPSHA: 20 m.
 - .4 Atmospheric pressure: 101 kPa.
- .7 Rating Point:
 - .1 Rating Point Design Flow: 8.5 L/sec.
 - .2 Rating Point TDH (excludes losses internal to pump): 67 m.
 - .3 Minimum Pump Efficiency at Design Point: 73%.
 - .4 Minimum Dead head: 97 m.
- .8 Construction:
 - .1 Discharge Connection: 80 mm.
 - .2 Impeller Material: Stainless Steel En 1.4301/AISI 304.
 - .3 Impeller Type: Enclosed.

2.4 Pump Motor

- .1 Motor Type: Electric Motor.
- .2 Motor Diameter: 15 cm (6 inch).
- .3 Power: 600 v, 3 ph, 60 Hz.
- .4 Rated Power: 11.2 kW (15 H.P.)
- .5 Maximum Motor Speed: 3450 RPM.
- .6 Environment: submersible.
- .7 Provide vertical hollow shaft, high thrust capacity with heavy thrust bearings, oil lubricated with visual oil indicator.
- .8 The pump/motor assembly shall have CSA Certified as one unit, per CSA standard C22.2-108.
- .9 Explosion proof motor enclosure rated for a minimum a minimum of 70 m submersion for the raw water well pumps.

SUBMERSIBLE PUMP (ADDENDUM 1)

- .10 Pump power cords and sensor cords shall be potted for submersible rating.

2.5 Epoxy Coating System

- .1 Coating system should be approved for potable water use in accordance with NSF 61.
- .2 Coating Materials:
 - .1 Primer: Tnemec, Epoxy-Polyamide, Series 20-1255, beige primer.
 - .2 Top Coat: Tnemec, Epoxy-Polyamide, Series 20-AA90.
 - .3 Field Touch Up Paint: As recommended by coating system manufacturer.

2.6 Pitless Adaptor

- .1 Provide a pitless adaptor unit to protect against surface water entering the well and contaminating the water source.

2.7 Spare Parts

- .1 Provide spare parts required under normal operation for a two (2) year period.

2.8 Acceptable Manufacturer

- .1 Grundfos Model# 150S150-6 or approved equal.

3. EXECUTION

3.1 Manufacturer's Representative

- .1 Manufacturer's Representative shall be required to attend the site to instruct the Contractor, witness the installation and supervise testing, to ensure the equipment is installed and operated as intended.

3.2 Installation Training

- .1 Instruct the Contractor in the methods and precautions to be followed in the installation of the pumps.
- .2 Provide services of factory-trained Service Technician, specifically trained on type of equipment specified:
 - .1 Service Technician must have a minimum of five (5) years of experience.
 - .2 Service Technician must be present on site for all items listed below.
 - .3 Installation: Inspect grouting, location of anchor bolts; setting, levelling, alignment, field erection; coordination of piping, electrical and miscellaneous utility connection.

SUBMERSIBLE PUMP (ADDENDUM 1)

- .4 Complete testing of the equipment specified shall be conducted to the Engineer's Satisfaction. All equipment and associated appurtenances shall be run continuously for a minimum of three (3) – twenty-four (24) hour days without operational issues. Operational issues will cause the three (3) day run to restart. Refer to Section 01212 and 01650.
- .5 Any additional time required of the factory trained service technician to assist in placing the equipment in operation, or testing or to correct deficiencies in installation, equipment or material shall be provided at no additional cost to the Owner.
- .3 Attest to the Contractor's understanding by completing Form 103 as shown in Section 01650.

3.3 Installation

- .1 Manufacturer's Representative shall cooperate with the Contractor as documented by Form 103 shown in Section 01650.

3.4 Testing

- .1 Ensure that the pump, including all component parts, operates as intended.
- .2 Cooperate with the Contractor to fulfil the requirements for satisfactory performance of the equipment as documented by Form 103, illustrated in Section 01650.
- .3 Conduct pumping test to demonstrate field performance of pumping equipment.
- .4 Duration of tests shall demonstrate equipment performance and obtain operating data, with a minimum duration of one (1) hour.
 - .1 Measure water levels in well.
 - .2 Measure flow rate and pumping water levels at intervals during test period.
 - .3 Record water levels to nearest 3 cm (0.10 ft).
 - .4 Measure pressure in pump discharge piping.
 - .5 Measure rate of electrical consumption.
 - .6 Compute pump operating characteristics and efficiency. Compare with Manufacturer's performance curve data.
- .5 Pump and motor shall operate without excessive vibration, and shall operate at pumping capacity and field efficiency which is consistent with field total dynamic head conditions and accepted performance curve data for pumping equipment.
- .6 After installation and as soon as conditions permit full speed operation, and in the presence of the Engineer, perform the vibration tests on each Pump Unit equipped with vibration sensors to:
 - .1 Prove compliance with specified limitations.

SUBMERSIBLE PUMP (ADDENDUM 1)

- .2 Prove that there are no field installed resonant conditions due to misalignment, the foundation, or the connecting piping and its supports, when operating at any speed within the specified operating range.
- .3 If required, take corrective action and have the Pump Units retested to ensure full compliance with the specified requirements. All costs associated with the field tests or any required corrective actions are to be borne by the Contractor.

3.5 Commissioning

- .1 Attend during commissioning of the process system which includes the pump specified in this section to ensure that the pump functions as intended in the process system.

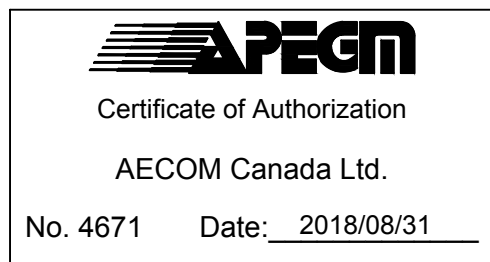
3.6 Factory Acceptance Testing

- .1 Prior to shipping, conduct a factory performance testing in accordance with Section 11300.
- .2 Submit a detailed report to the Engineer on all factory performance testing.
- .3 Testing will include the complete pump assembly.

END OF SECTION

NOTICE:
 AS-CONSTRUCTED DIMENSIONS,
 MEASUREMENTS AND OTHER DETAILS
 CONTAINED IN THIS RECORD DRAWING
 HAVE BEEN OBTAINED BY AECOM CANADA
 LTD. ("AECOM") FROM VARIOUS SOURCES.
 SUCH INFORMATION REPRESENTS THE
 BEST INFORMATION AVAILABLE TO AECOM
 AT THE TIME OF PREPARATION OF THIS
 RECORD DRAWING. AECOM DOES NOT IN
 ANY WAY REPRESENT OR WARRANT THAT
 SUCH INFORMATION IS ACCURATE AND
 ASSUMES NO RESPONSIBILITY FOR ANY
 ERRORS OR OMISSIONS CONTAINED
 THEREIN.

ORIGINAL
 SIGNED BY
 S. A. SADLER
 2018/08/23



ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	2018/08/31	ISSUED FOR ADDENDUM 1
0	2018/08/23	ISSUED FOR TENDER

KEY PLAN

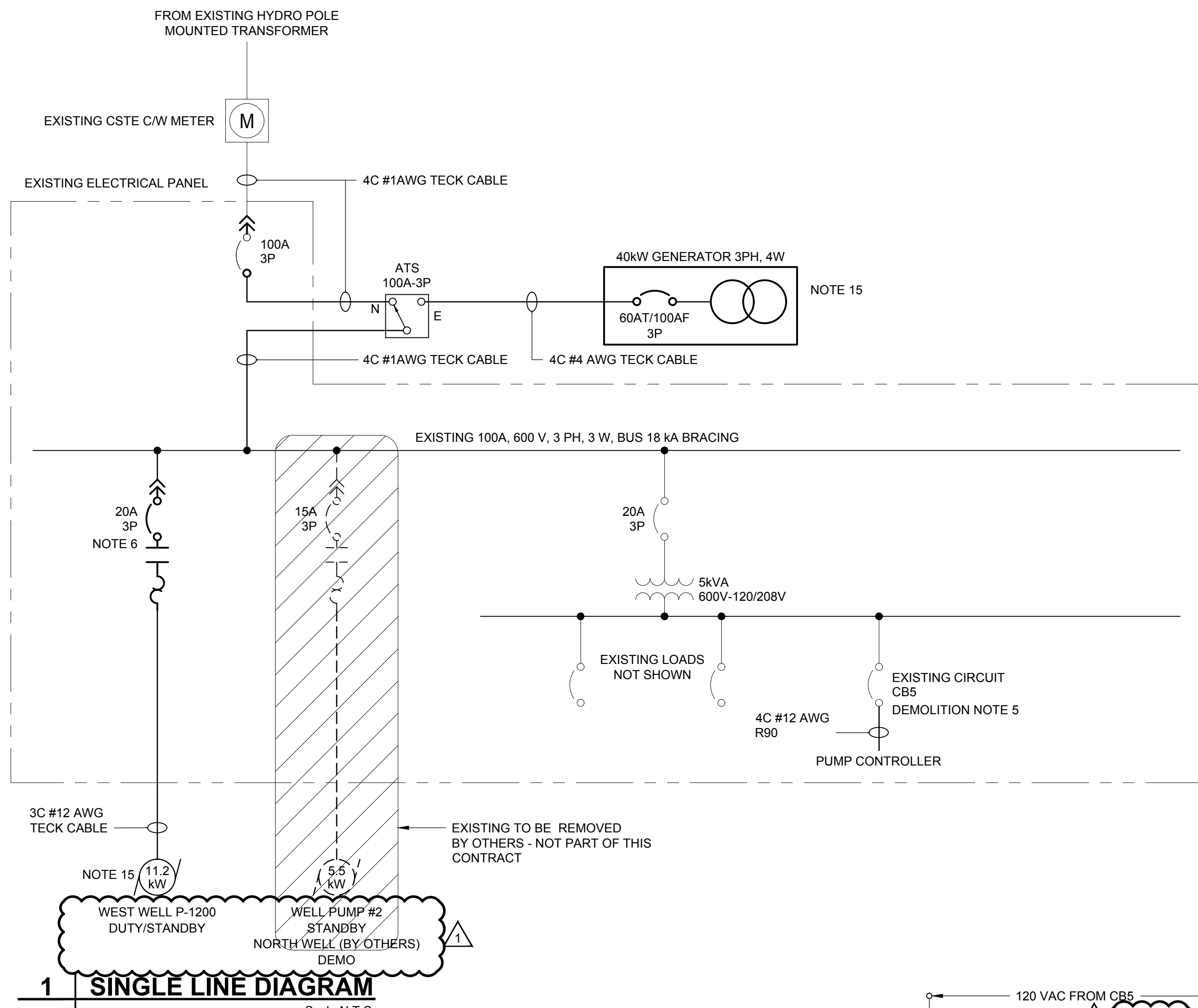
PROJECT NUMBER
60519470

SHEET TITLE
ELECTRICAL SINGLE LINE DIAGRAM

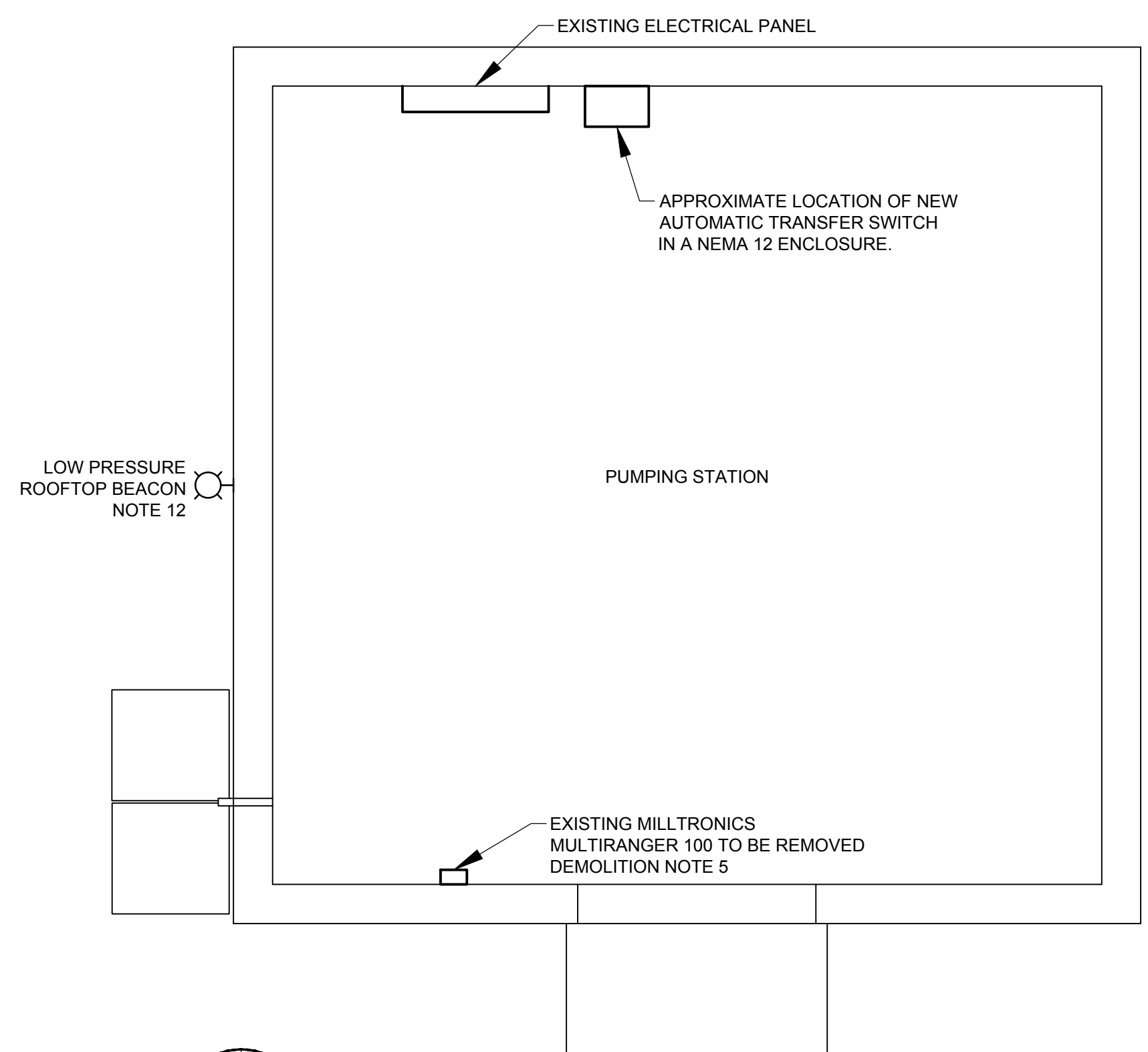
SHEET NUMBER

E-1001

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from stated dimensions.

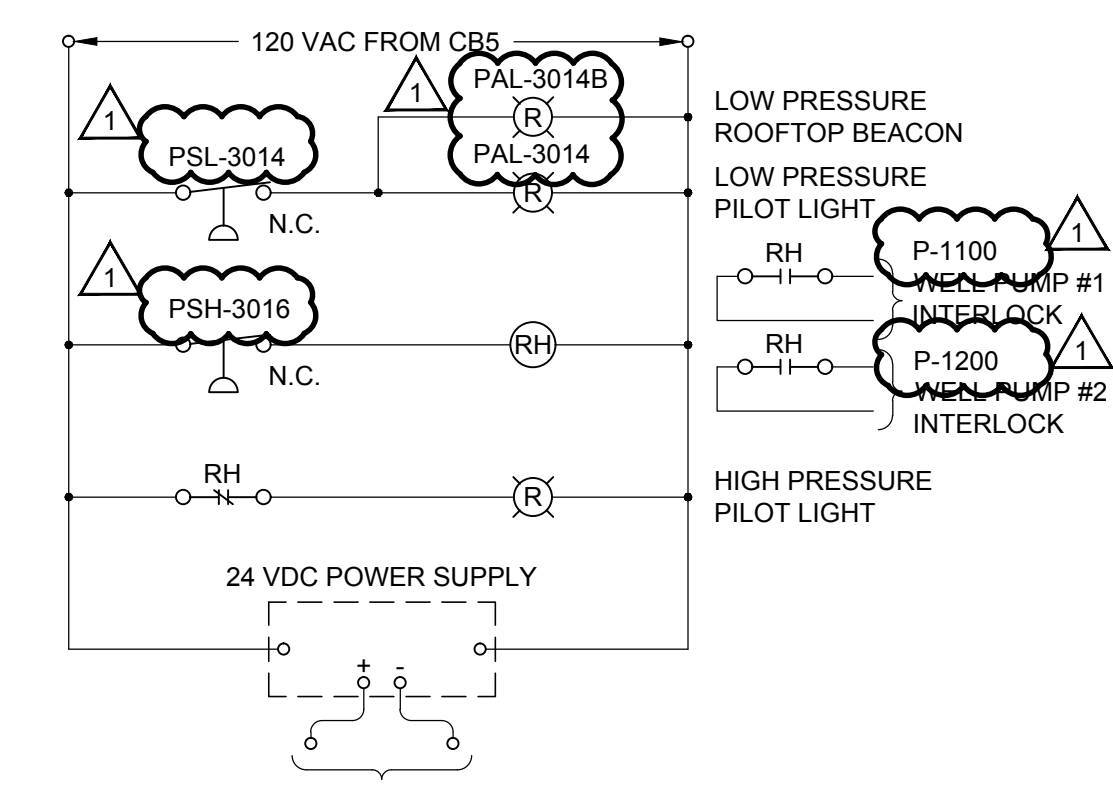


- NOTES:**
- WORK SHALL COMPLY WITH THE LATEST EDITION OF THE CEC AND ALL LOCAL AMENDMENTS.
 - THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE OWNER REPRESENTATIVE FOR THE SCHEDULED SHUTDOWN OF ANY SYSTEMS. ENSURE THAT THE RUNNING DOWNTIME OF THE SYSTEM SHUTDOWN IS MINIMAL.
 - FIRESTOP ALL FIRE RATED WALL AND FLOOR PENETRATIONS.
 - UPDATE PANEL DIRECTORY TO REFLECT NEW WORK. ALL PANEL DIRECTORIES TO MATCH EXISTING IN STYLE.
 - ALL DEVICES SHOWN ARE NEW. CSA APPROVED, AND ARE TO BE PROVIDED, CONNECTED, TESTED AND LEFT IN WORKING ORDER, UNLESS SPECIFICALLY NOTED OTHERWISE.
 - NEW MOTOR STARTER TO MATCH EXISTING SCHNEIDER ELECTRIC STARTER. CATALOG NUMBERS FOR THE STARTER UNIT INCLUDE:
 - LUB32
 - LUCB32FU
 - LUA1C20
 - LUALB1
 - LU9SP0
 - INSTALL PROGRAMMABLE PUMP CONTROLLER IN A NEW WALL MOUNTED NEMA 4X CONTROL CABINET 450W x 600H x 300D LOCATED ADJACENT TO THE EXISTING MILLTRONICS MULTIRANGER 100 AND CONNECT IN ACCORDANCE WITH SPECIFICATIONS, THIS DRAWING AND MANUFACTURER'S INSTRUCTIONS.
 - PROGRAM THE PUMP CONTROLLER TO PERFORM CONTROL STRATEGIES AS DESCRIBED IN THE PROCESS CONTROL NARRATIVE.
 - THE PROGRAMMABLE PUMP CONTROLLER SHALL BE FLYGT MULTISMART CONTROLLER OR APPROVED EQUAL WITH SOFTWARE, FIRMWARE, CT'S AND OTHER ACCESSORIES TO MEET SPECIFIED CONTROL STRATEGIES.
 - PRESSURE TRANSMITTER SHALL BE ROSEMOUNT 3051 GAGE PRESSURE TRANSMITTER OR APPROVED EQUAL WITH 0-690kPa RANGE AND NEMA 4X.
 - PRESSURE SWITCHES SHALL BE ASCO OR APPROVED EQUAL WITH NEMA 4X AND FORM C CONTACTS RATED 5A @ 120 VAC.
 - ALARM BEACON SHALL BE EDWARDS CAT# 48XBRMR120A, OR APPROVED EQUAL. THE BEACON SHALL BE WEATHERPROOF WITH RED LENS AND 120 VAC STROBE LIGHT.
 - NOT USED.
 - ALL NEW ELECTRICAL EQUIPMENT IN THE BUILDING SHALL BE CATEGORY 2 RATED (NEMA 4X ENCLOSURE) EXCEPT FOR TRANSFER SWITCH WHICH SHALL BE NEMA 12 RATED.
 - SEE SITE PLAN, C-1001, FOR EXACT LOCATION.
 - SCHNEIDER ELECTRIC CAT #60129 PROVIDE ANY REQUIRED MOUNTING ACCESSORIES.

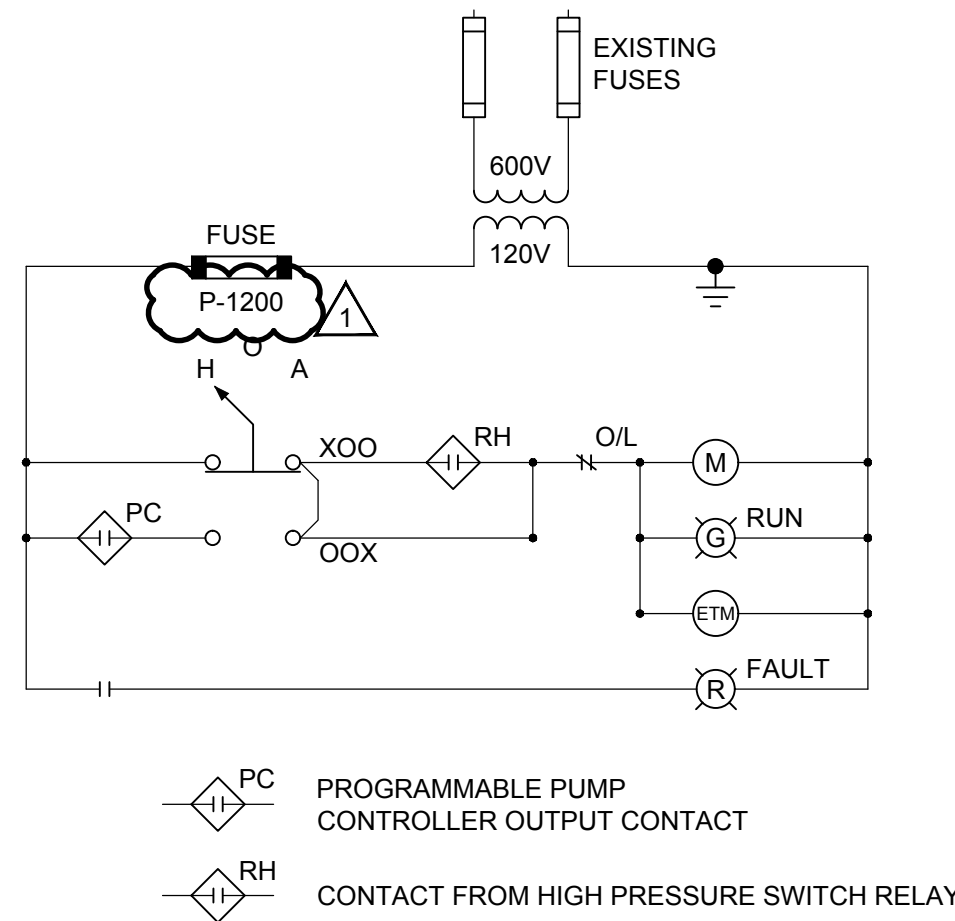


2 MAIN FLOOR PLAN - ELECTRICAL
 Scale N.T.S.

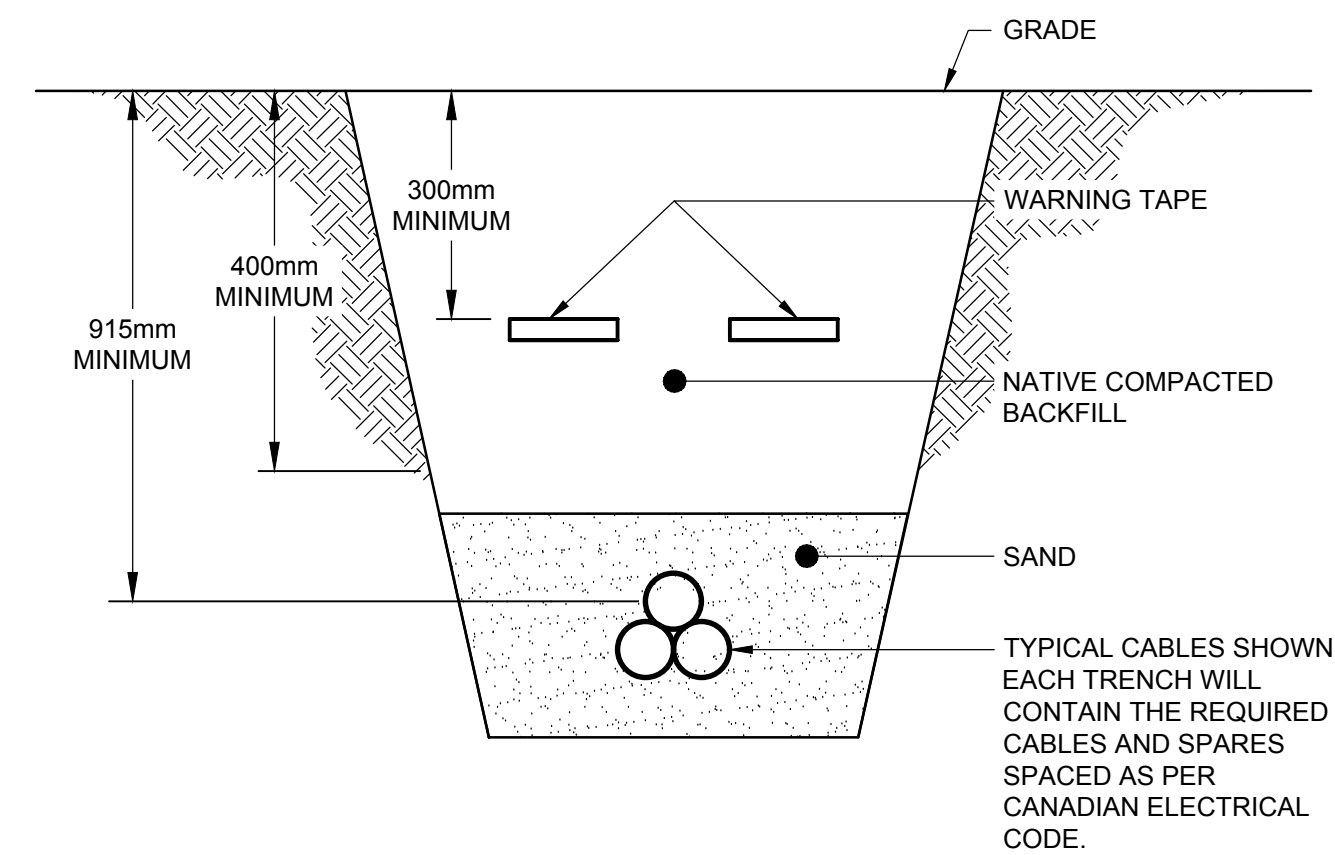
- DEMOLITION NOTES:**
- THE DEMOLITION NOTES DO NOT INCLUDE EVERY ITEM WHICH IS REQUIRED TO BE DEMOLISHED AND REMOVED. ALL ITEMS ASSOCIATED WITH SYSTEMS TO BE REMOVED ARE TO BE INCLUDED AS PART OF THE DEMOLITION WORK. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR (E.C.) TO UNDERSTAND THE SCOPE OF WORK AND EXAMINE THE SITE IN ORDER TO ENSURE THAT ALL ITEMS ARE INCLUDED IN THE TENDER.
 - DEMOLITION WORK INCLUDES REMOVAL AND DISPOSAL OF ALL DEVICES, UNLESS OTHERWISE NOTED BY OWNER REPRESENTATIVE.
 - COORDINATE DEMOLITION WORK WITH ALL OTHER TRADES.
 - THE CONTRACTOR SHALL SITE CONFIRM ALL EXISTING DEVICES AND ALL EXISTING SITE CONDITIONS. EXACT LOCATIONS OF NEW DEVICES ARE NOT SHOWN. CONTRACTOR TO SITE CONFIRM BEST LOCATIONS AND CONFIRM WITH OWNER REPRESENTATIVE BEFORE INSTALLATION.
 - DISCONNECT AND REMOVE MILLTRONICS MULTI RANGER 100 AND ASSOCIATED WIRING, CONDUIT, CONNECTIONS, ETC. CIRCUIT BREAKER CB5 TO BE RE-PURPOSED TO PROTECT THE NEW PUMP CONTROLLER.



3 GENERAL CONTROL WIRING
 Scale N.T.S.



4 TYPICAL PUMP STARTER WIRING
 Scale N.T.S.



5 DIRECT BURIED TRENCH
 Scale N.T.S.

PART 1 GENERAL:

- 1.1 SITE VERIFY EXACT LOCATIONS, ROUTINGS AND ELEVATIONS OF ALL DEVICES PRIOR TO START OF WORK.
- 1.2 CONTRACTOR SHALL BE RESPONSIBILITY FOR LAYING OUT ALL WORK AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING SYSTEMS.
- 1.2 ALL WORK SHALL COMPLY WITH THE LATEST EDITION OF THE CEC AND ALL LOCAL AMENDMENTS.
- 1.3 OBTAIN ALL REQUIRED PERMITS, PAY ALL FEES REQUIRED BY LAW, AND ARRANGE FOR ALL INSPECTIONS RELATED TO THIS WORK.
- 1.4 CONTRACTOR SHALL LEAVE THE OWNER WITH A COMPLETE AND FUNCTIONING SYSTEM.
- 1.5 ALL EQUIPMENT AND MATERIALS SHALL BE NEW AND C.S.A. APPROVED. ALL SIMILAR EQUIPMENT AND OR MATERIALS SHALL BE BY THE SAME MANUFACTURER.
- 1.6 COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
- 1.6 NEATLY STORE ALL MATERIALS, AND CLEAN UP DEBRIS GENERATED AS A RESULT OF THIS WORK ON A REGULAR BASIS. PROTECT AND MAINTAIN ALL WORK UNTIL THE PROJECT HAS BEEN COMPLETED AND TURNED OVER TO THE OWNER.
- 1.7 THE INSTALLATION SHALL BE COMPLETELY TESTED, DEMONSTRATING THAT THE EQUIPMENT AND SYSTEMS INSTALLED ARE PERFORMING IN THE MANNER INTENDED. IF WORK IS DEFECTIVE, CONTRACTOR IS TO CORRECT AT THE CONTRACTOR'S EXPENSE.
- 1.8 AT THE COMPLETION OF THE INSTALLATION, PROVIDE ONE MARKED-UP (IN RED) COPY OF THE OF THE "AS-BUILT" DRAWINGS FOR RECORD PURPOSES, PROVIDE THREE SETS OF OPERATION AND MAINTENANCE MANUALS. SUBMIT THE DOCUMENTS TO THE ENGINEER FOR REVIEW, AND MAKE ANY REQUESTED CHANGES BEFORE DELIVERING THEM TO THE OWNER.
- 1.9 PROVIDE CERTIFICATES CONFIRMING THAT THE WORK HAS BEEN INSTALLED TO THE SATISFACTION OF THE AUTHORITIES HAVING JURISDICTION.
- 1.10 THE CONTRACTOR SHALL PROVIDE A ONE YEAR LABOR AND MATERIAL WARRANTY ON ALL NEW EQUIPMENT AND COMPONENTS, COMMENCING UPON THE DATE OF ACCEPTANCE BY THE OWNER.
- 1.11 REPLACE AT NO CHARGE TO THE OWNER, ALL ITEMS WHICH FAIL OR PROVE DEFECTIVE WITHIN A PERIOD OF ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE BY THE OWNER, PROVIDED THAT THE FAILURE IS NOT DUE TO IMPROPER USAGE BY THE OWNER. REPAIR ALL DAMAGES INCURRED AS A RESULT OF THE FAILURE.

PART 2 ELECTRICAL SPECIFICATIONS

- 2.1 ARRANGE FOR, AND COORDINATE, ROUGH-IN AND FINAL INSPECTIONS WITH INSPECTION AUTHORITIES, ENGINEER AND THE BUILDING OWNER'S REPRESENTATIVE.
- 2.2 PROVIDE SHOP DRAWINGS A MINIMUM OF 7 DAYS BEFORE ANTICIPATED PURCHASE FOR THE FOLLOWING ITEMS:
 1. GENERATOR
 2. AUTOMATIC TRANSFER SWITCH
 3. BREAKERS
 4. CABLES
 5. CONDUIT
 6. LAMICOID LABELS
- 2.3 THE ELECTRICAL CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS - REQUIRING ELECTRICAL CONNECTION - AND COORDINATE VOLTAGE AND SIZES WITH THE DIVISION RESPONSIBLE FOR PROVIDING THE EQUIPMENT AND GENERAL CONTRACTOR.
- 2.4 SHOP DRAWING REVIEW SHALL NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING AND CORRELATING THE DIMENSIONS ON THE JOBSITE, AND FOR INFORMATION THAT PERTAINS TO THE FABRICATION PROCESS, CONSTRUCTION TECHNIQUES, AND INSTALLATION DETAILS, AND FOR COORDINATING ALL WORK OF THE RELATED SUB-TRADES.
- 2.5 SUBMIT A CERTIFICATE OF INSPECTION FROM THE LOCAL INSPECTION AUTHORITY UPON COMPLETION OF WORK AND INCLUDE WITH "AS-BUILT" DRAWINGS.
- 2.6 THE ELECTRICAL INSTALLATION SHALL BE COMPLETELY TESTED DEMONSTRATING THAT THE EQUIPMENT AND SYSTEMS INSTALLED PERFORM IN THE MANNER INTENDED. PROVIDE A RECORD OF ALL INSULATION AND CONTINUITY CHECKS.
- 2.7 REPLACE WORK UNSATISFACTORY TO THE ENGINEER / OWNER WITHOUT EXTRA COST.

PART 3 MATERIALS

- 3.1 ALL MATERIALS INSIDE PUMP HOUSE TO BE RATED FOR USE IN A CATEGORY 2 LOCATION AS SPECIFIED IN THE CANADIAN ELECTRICAL CODE.
- 3.2 DIESEL GENERATOR
 - .1 GENERATING SYSTEM CONSISTS OF:
 - .1 DIESEL ENGINE
 - .2 ALTERNATOR
 - .3 GENERATOR CONTROLLER
 - .4 REMOTE ANNUNCIATOR
 - .5 BATTERY CHARGER AND BATTERIES
 - .6 FUEL SUPPLY SYSTEM COMPLETE WITH HEAVY GAUGE, DOUBLE WALL, SUBBASE FUEL TANK, SIZED FOR AT LEAST EIGHT (8) HOUR OPERATION AT 100% LOAD
 - .7 STEEL MOUNTING BASE
 - .8 ENGINE RADIATOR COOLING
 - .9 WEATHERPROOF ENCLOSURE
 - .10 THE SOUND LEVEL SHALL BE 65 dBA OR LESS AT 7m.
 - .11 AUTOMATIC TRANSFER SWITCH

PART 4 INSTALLATION

- 4.1 CONDUIT AND WIRING SHALL BE GROUPED WHERE POSSIBLE AND SECURED IN A NEAT AND WORKMANLIKE MANNER, PERPENDICULAR OR PARALLEL TO THE BUILDING CORE WALLS.
- 4.2 ALL JUNCTION BOXES WITH POWER CIRCUITS WITHIN, SHALL HAVE CIRCUIT NUMBERS INSCRIBED (USING A BLACK FELT MARKER) ON THE INSIDE OF THE COVERPLATE.
- 4.3 CABLES PENETRATING INTO THE BUILDING SHALL BE ENCLOSED IN WEATHERPROOF CONDUIT COMPLETE WITH WEATHERPROOF COUPLING, FITTINGS, AND CONNECTIONS.
- 4.4 CONTRACTOR TO SEAL BUILDING PENETRATIONS ON EXTERIOR AND INTERIOR WALLS AND INSERT SPRAY FOAM INTO THE CAVITY.

4.5 AFTER ALL EQUIPMENT IS INSTALLED AND NORMAL POWER IS AVAILABLE, PERFORM A 2HR COMPLETE SYSTEM GENERATOR TEST UNDER FULL LOAD. THIS TEST SHALL BE RUN IN THE PRESENCE OF THE OWNER REPRESENTATIVE.



PROJECT

Grand Beach
 Provincial Park
 MWSB No. 1450
 Grand Beach Provincial Park

CLIENT

The Manitoba Water Services Board

2010 Currie Blvd.
 Brandon, MB R7A 6Y9
 204.726.6076 tel 204.726.7196 fax
 E-mail: mwsb@gov.mb.ca
 www.gov.mb.ca/ia/mwsb/mwsb.html

CONSULTANT

AECOM Canada Ltd.
 99 Commerce Dr.
 Winnipeg, MB R3P 0Y7
 204.477.5381 tel 204.284.2040 fax
 www.aecom.com

REGISTRATION

NOTICE:
 AS-CONSTRUCTED DIMENSIONS, MEASUREMENTS AND OTHER DETAILS CONTAINED IN THIS RECORD DRAWING HAVE BEEN OBTAINED BY AECOM CANADA LTD. ("AECOM") FROM VARIOUS SOURCES. SUCH INFORMATION REPRESENTS THE BEST INFORMATION AVAILABLE TO AECOM AT THE TIME OF PREPARATION OF THIS RECORD DRAWING. AECOM DOES NOT IN ANY WAY REPRESENT OR WARRANT THAT SUCH INFORMATION IS ACCURATE AND ASSUMES NO RESPONSIBILITY FOR ANY ERRORS OR OMISSIONS CONTAINED THEREIN.

ORIGINAL
 SIGNED BY
 S. A. SADLER

2018/08/23



ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	2018/08/31	ISSUED FOR ADDENDUM 1
0	2018/08/23	ISSUED FOR TENDER

KEY PLAN

PROJECT NUMBER

60519470

SHEET TITLE

ELECTRICAL
 SPECIFICATIONS

SHEET NUMBER

E-1002

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability, whatsoever, to any party that modifies this drawing without AECOM's express written consent. All measurements must be obtained from stated dimensions.