To: All Plan Holders of Record

From: Verdantas LLC
For the Owner

Re: ***Addendum No. 1***
Conneaut Township Park Sanitary Sewer Improvements
Conneaut Township Park Board of Commissioners

Date: April 23, 2025

This Addendum forms a part of the contract documents and modifies the original bidding documents dated April 2025 and all previous addenda, if any. Acknowledge receipt of this addendum in the space provided in the bid forms. Failure to do so may subject the bidder to disqualification.

SPECIFICATIONS

Replace
Specification Section 011100 - Summary of Work with the enclosed Revised Section.
Specification Section 013216 - Construction Project Schedule with the enclosed Revised Section.
Specification Section 330533.23 - High Density Polyethylene (HDPE) Pipe and Fittings with the enclosed Revised Section.
Specification Section 432139 – Submersible Pumps with the enclosed Revised Section.

PLANS

Replace
Plan sheet 9 of 14 with the enclosed Revised plan sheet 9 of 14.
Plan sheets 11 - 14 of 14 with the enclosed Stamped plan sheets 11 - 14 of 14.

CK/MB:ajh

Enclosures

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SECTION 011100 - SUMMARY OF WORK

PART 1 - GENERAL

1.1 LOCATION OF THE PROJECT

A. The project is located at 480 Lake Rd. Conneaut Township Park, in Ashtabula County, OH 44030.

1.2 PROJECT DESCRIPTION

A. The project consists of constructing a new 3" sanitary forcemain and a new automatic duplex sanitary pump station to replace an existing simplex sanitary pump station and forcemain. The existing system is old and has had operational problems in the past.

This project is entirely on the property of the Conneaut Township Park. The Park's existing sanitary sewer connects to the City of Conneaut's existing wastewater collection system located on Pearl Street as illustrated on the plans.

The existing forcemain will be capped, and abandoned in-place after the new sanitary forcemain startup is successful. This new forcemain is planned to be installed using the horizontal directional drilling method for the alignment illustrated on the plans. The existing and new forcemains are in primarily a lawn area of the Park. There are trees, buried utilities, and a walking path in this general area of the project.

The existing simplex sanitary pump system located inside the existing wood-framed shed building on the Park's site will be abandoned in-place also after the new sanitary pump station startup is successful. The abandonment procedure inside the existing building is specified on the plans.

The wastewater flow from the Township Park's adjacent buildings entering the existing pump station will be intercepted immediately upstream of the existing pump station and re-routed through the specified new gravity sanitary sewer and connect to the new pump station as illustrated on the plans.

The new duplex pump station and pump controls shall be the package pump station with appurtenances and surrounding site improvements as specified on the plans for a complete ready-to-use turnkey system.

All surface disturbances (paved and non-paved) will be immediately restored following installation of the new pump station and forcemain to preconstruction conditions or better.

The Contractor will be required to locate all existing utilities in the work area in advance of starting his construction site work to avoid any conflicts with existing buried utility lines. And since the project is located in an active public park setting, the contractor will be required to keep his work areas neat and orderly and cordon off his work areas to keep the public safe from the active construction and the elements being installed. The Contractor will also be required to obtain his own building permit for the specified improvements.

1.3 SPECIFICATIONS

A. In general, these Specifications describe the work to be performed by the various trades, other than work specifically excluded. It shall be the responsibility of the Contractor and Subcontractors to perform all work incidental to their trade, whether or not specific mention is made of each item, unless such incidentals are included under another Item.

B. It is advised that the Contractor and all Subcontractors familiarize themselves with the contents of the complete Specifications, particularly for the trades preceding, following, related or adjacent to their work.

1.4 DRAWING SCHEDULE

A. The work to be done under this Contract is shown on the following Drawings:

Title	Sheet No.
Cover Sheet	1
General Notes	2
Index & Symbology	3
Existing Conditions	4
Site Improvements	5 - 7
Construction Details	8 - 10
Electrical	11 - 14

END OF SECTION 011100

SECTION 013216 – CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 PROGRESS SCHEDULE

A. Immediately after signing the Contract, the General Construction Contractor shall prepare a graphic progress schedule, indicating the work to be executed during each month and the rate of expected progress to secure completion on the agreed-upon completion date. The progress schedule shall be approved by the Engineer and Owner prior to starting work on the site. Copies of such graphic progress charts, upon which has been indicated the actual progress, shall be furnished to the Engineer with each requisition for payment.

B. Should the rate of progress fall materially behind the scheduled rate of progress, and unless the delay is authorized by the Engineer, each offending Contractor shall furnish additional labor, work overtime, or take other necessary means required for completion of the work on the scheduled date. No additional compensation beyond the set Contract price shall be paid for action taken or overtime expense incurred in maintaining scheduled progress.

END OF SECTION 013216

SECTION 330533.23 - HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The work covered by this Section includes but is not limited to Ductile Iron Pipe Size (DIPS) high-density polyethylene pipe intended for the transportation of potable water.

B. It is the intent of this Contract that the final installation be complete in all respects and the Contractor shall be responsible for minor or specific details; coordination with trades, equipment manufacturing, installation and manufacturers start-up representatives; and any necessary special construction not specifically included in the Drawings or Specifications.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Supplementary Conditions and Division-1 Specifications sections apply to work of this section.

1.3 QUALITY ASSURANCE

A. The named equipment in addition to the detailed specifications, establishes the minimum acceptable standards of material and workmanship. In addition to requirements of these Specifications, all work performed shall be in accordance with approved trade practices and manufacturers recommendations. All equipment shall perform as specified and accessories shall be provided as required for satisfactory operation.

B. The Contractor shall coordinate and verify that the material furnished meets the Specification, intentions and design criteria prior to equipment submittals and shipment from the manufacturer to the project site.

C. Material References:

Reference		Title
1.	AWWA C906	Polyethylene (PE) pressure Pipe & Fittings 4-inch through 63-inch for water dist.
2.	ASTM D3261	Butt Heat Fusion PE Fittings for PE Pipe and Tubing
3.	ASTM D3350	Standard Specification for PE Pipe & Fittings Materials
4.	ASTM D1238	Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
5.	ASTM D1505	Density of Plastics
6.	ASTM D2837	Hydrostatic Design Basis
7.	NSF Std. #14	Plastic Piping Components &Y Related Materials
8.	ASTM F714	Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

9.	ASTM F905	Standard Practice for Qualification of Polyethylene Saddle-Fused Joints
10.	ASTM F 1055	Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and application instructions. Include the following:
   1. Melt Flow Index ASTM D1238
   2. Density ASTM D1505

B. Shop Drawings: The Contractor shall submit complete shop drawings of all materials furnished for this project.

PART 2 - PRODUCT

2.1 GENERAL

A. Manufacturer
   1. All HDPE pipe and fittings shall be from a single manufacturer, who is fully experienced, reputable and qualified in the manufacture of the HDPE Pipe to be furnished. The pipe shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these Specifications.
   2. Qualified manufacturers shall be: PLEXCO Division of Chevron Chemical Company, DRISCOPIPE as manufactured by Phillips Products Co., Inc. SCLAIRPIPE as manufactured by Dupont of Canada, or equal as approved by the Engineer.

B. Quality Control
   1. Production staff shall check each length of pipe produced for the items listed below. The results of all measurements shall be recorded on production sheets, which become part of the manufacturer's permanent records.

      a. Pipe in process shall be checked visually, inside and out for cosmetic defects (grooves, pits, hollows, etc.)
      b. Pipe outside diameter shall be measured using a suitable periphery tape to ensure conformance with ASTM F714 or ASTM D3035, whichever is applicable.
      c. Pipe wall thickness shall be measured at 12 equally spaced locations around the circumference at both ends of the pipe to ensure conformance with ASTM F714 or ASSTM D3035, whichever is applicable.
      d. Pipe length shall be measured.
      e. Pipe marking shall be examined and checked for accuracy.
      f. Pipe ends shall be checked to ensure they are cut square and clean.
      g. Subject inside surface to a "reverse bend test" to ensure the pipe is free of oxidation (brittleness).

C. Testing
   1. The polyethylene pipe manufacturer shall provide certification that stress regression testing has been performed on the specific polyethylene resin being utilized in the manufacture of this product. This stress regression testing shall have been done in accordance with ASTM D2837 and the manufacturer shall provide a product supplying a minimum Hydrostatic Design Basis (HDB) of 1,600 psi as determined in accordance with ASTM D2837.

D. Compatibility
   1. Contractor is responsible for compatibility between pipe materials, fittings and appurtenances.

2.2 MATERIALS FOR PIPE SIZES 4-INCH DIAMETER AND LARGER

A. Materials used for the manufacture of polyethylene pipe and fittings shall be made from a PE 3408 high density polyethylene resin compound meeting cell classification 345434C per ASTM D3350; and meeting Type III, Class C, Category 5, Grade P34 per ASTM D1238.

B. High Density Polyethylene (HDPE) pipe shall comply with AWWA Specifications C906.

C. If rework compounds are required, only those generated in the Manufacturer's own plant from resin compounds of the same class and type from the same raw material supplier shall be used.

D. Dimensions and workmanship shall be as specified by ASTM F714. HDPE fittings and transitions shall meet ASTM D3261. HDPE pipe shall have a minimum density of 9.955 grams per cubic centimeter. All HDPE pipe and fittings shall have a Hydrostatic Design Basis (HDB) of 1,600 psi.

E. HDPE pipe and accessories shall be 200 psi at 73.4°F meeting the requirements of Dimension Ratio (DR) 11 as MINIMUM STRENGTH.

F. HDPE pipe used for waterlines shall be black with exterior blue striping.

G. The pipe Manufacturer must certify compliance with the above requirements.

2.3 FITTINGS

A. All molded fittings and fabricated fittings shall be fully pressure rated to match the pipe SDR pressure rating to which they are made. All fittings shall be molded or fabricated by the manufacturer. No Contractor fabricated fittings shall be used unless approved by the Engineer.

B. The manufacturer of the HDPE pipe shall supply all HDPE fittings and accessories as well as any adapters and/or specials required to perform the work as shown on the Drawings and specified herein.

C. All fittings shall be installed using butt-fused fittings, thermo-fused fittings/couplings, or flanged adapters and must be approved by the Engineer. No size on size wet taps shall be permitted.

D. Electrofusion Fittings shall be made of HDPE material with a minimum material designation code of PE 3608 and with a minimum Cell Classification as noted in 3.2.A. Electrofusion Fittings shall comply with ASTM F1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. All electrofusion fittings shall be suitable for use as pressure conduits, and have nominal burst values of four times the Working Pressure Rating (WPR) of the fitting. Markings shall be according to ASTM F 1055.

E. Service connections shall be electrofusion saddles with a brass or stainless steel threaded outlet. The size of the outlet shall be as shown on the plans.

F. All transition from HDPE pipe to PVC shall be made per the approval of the Engineer and per the HDPE pipe manufacturer's recommendations and specifications. A molded flange connector adapter within a back-up ring assembly shall be used for pipe type transitions. Back up rings shall be stainless steel.
   1. A harness restraint or concrete anchor is required at all mechanical couplings to prevent pullout.
   2. No solid sleeves shall be allowed between such material transitions.
   3. Fittings and transitions shall be as manufactured by Phillips Driscopipe, Inc., 1000 Series Pressure Pipe, Chevron Chemical Company Plexco/Spiralite pipe, or equal.
   4. The pipe supplier must certify compliance with the above requirements.

2.4 PIPE IDENTIFICATION

A. The following shall be continuously indent printed on the pipe or spaced at intervals not exceeding 5 feet:
   1. Name and/or trademark of the pipe manufacturer.
   2. Nominal pipe size.
   3. Dimension ratio.
   4. The letters PE followed by the polyethylene grade in accordance with ASTM D1248 followed by the hydrostatic design basis in 160's of psi, e.g., PE 3408.
   5. Manufacturing standard reference, e.g., ASTM F714 or D-3035, as required.
   6. A production code from which the date and place of manufacture can be determined.
   7. Color identification, either stripped by co-extruding longitudinal identifiable color markings or shall be solid in color and as follows:
      a. BLUE – Potable Water
      b. GREEN- Wastewater

PART 3 - EXECUTION

3.1 JOINTING METHOD

A. The pipe shall be joined with butt, heat fusion joints as outlined in ASTM D2657. All joints shall be made in strict compliance with the manufacturer's recommendations. A factory qualified joining technician as designated by pipe manufacturer or experienced, trained technician shall perform all heat fusion joints in the present of the inspector.

B. Lengths of pipe shall be assembled into suitable installation lengths by the butt-fusion process. All pipe so joined shall be made from the same class and type of raw material made by the same raw material supplier. Pipe shall be furnished in standard laying lengths not to exceed 50 feet and no shorter than 20 feet.

C. On days butt fusions are to be made, the first fusion shall be a trial fusion in the presence of an inspector. The following shall apply:
   1. Heating plates shall be inspected for cuts and scrapes. The plate temperature shall be measured at various locations to ensure proper heating/melting per manufacturer's recommendations and approval by the inspector.
   2. The fusion or test section shall be cut out after cooling completely for inspection.
   3. The test section shall be 12' or 30 times (minimum) the wall thickness in length and 1" or 1.5 times the wall thickness in width (minimum).
   4. The joint shall be visually inspected as to continuity of "beads" from the melted material, and for assurance of "cold joint" prevention (i.e., -joint shall have visible molded material between walls of pipe). Joint spacing between the walls of the two ends shall be a minimum of 1/16" to a maximum of 3/16".

D. Saddle fusion: Saddle fusion shall be done in accordance with ASTM F 2620 or TR-41 or the fitting manufacturer’s recommendations and PPI TR-41. Saddle fusion joints shall be made by qualified fusion technicians. Qualification of the fusion technician shall be demonstrated by evidence of fusion training within the past year on the equipment to be utilized on this project.

E. The polyethylene flange adapters at pipe material transitions shall be backed up by stainless steel flanges conforming to ANSI B16.1 and shaped as necessary to suit the outside dimensions of the pipe. The flange adapter assemblies shall be connected with corrosion resisting bolts and nuts of Type 316 Stainless Steel as specified in ASTM A726 and ASTM A307. All bolts shall be tightened to the manufacturer's specified torques. Bolts shall be tightened alternatively and evenly. After installation apply a bitumastic coating to bolts and nuts.

3.2 INSTALLATION

A. High Density Polyethylene (HDPE) Pipe shall be installed in accordance with the manufacturer recommendations. A factory qualified joining technician as designated by the pipe manufacturer shall perform all heat fusion joints.

B. HDPE shall be installed by Directional Bore Method.

C. Care shall be taken in loading, transporting and unloading to prevent injury to pipe. Pipe or fitting shall not be dropped. All pipe or fitting shall be examined before installation, and no piece shall be installed which is found to be defective. Any damage to the pipe shall be repaired as directed by the Engineer. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner by the contractor, at his own expense.

D. Under no circumstances shall the pipe or accessories be dropped into the trench or forced through a directional bore upon "pull-back".

E. Care shall be taken during transportation of the pipe such that it will not be cut, kinked or otherwise damaged.

F. Ropes, fabric or rubber protected slings and straps shall be used when handling pipes. Chains, cables or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe.

G. Pipes shall be stored on level ground, preferably turf or sand, free of sharp objects, which could damage the pipe. Stacking of the polyethylene pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions. Where necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.

H. Pipe shall be stored on clean level ground to prevent undue scratching or gouging. The handling of the pipe shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. The maximum allowable depth of cuts, scratches or gouges on the exterior of the pipe is 5 percent of wall thickness. The interior pipe surface shall be free of cuts, gouges or scratches.

I. Pipe shall be laid to lines and grade shown on the Drawings with bedding and backfill as shown on the Drawings.

J. When laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by fabricated plugs, or by other approved means.

K. Sections of pipe with cuts, scratches or gouges exceeding 5 percent of the pipe wall thickness shall be removed completely and the ends of the pipeline rejoined.

L. The pipe shall be joined by the method of thermal butt fusion, as outlined in PART 3 – Execution, Section 3.1 Joining Method. All joints shall be made in strict compliance with the manufacturer's recommendations.

M. Mechanical connections of the polyethylene pipe to auxiliary equipment such as valves, pumps and tanks shall be through flanged connections which shall consist of the following.
   1. A polyethylene flange shall be thermally butt-fused to the stub end of the pipe.
   2. A 316 stainless steel back-up ring shall mate with a 316 stainless steel flange.
   3. 316 stainless steel bolts and nuts shall be used.

N. Flange connections shall be provided with a full-face neoprene gasket.

O. All HDPE pipe must be at the temperature of the surrounding soil at the time of backfilling and compactions.

P. If a defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner. All pipe and fittings shall be thoroughly cleaned before installation, shall be kept clean until they are used in the work and when laid, shall conform to the lines and grades required.

3.3 RECORD KEEPING AND RECORD DRAWINGS

A. The Contractor shall maintain a daily record of the drilling operations and a guidance system log with a copy given to Engineer at completion of boring.

B. The MGS data shall be recorded during the actual crossing operation. The Contractor shall furnish as-built plan and profile drawing based on these recordings showing the actual location horizontally and vertically of the installation, and all utility facilities found during the installation. The MGS data shall be certified accurate by the Contractor to the capability of the MGS System.

C. Record drawings shall be completed and reviewed by the Engineer and prepared at the Contractor's expense. The as-built drawings shall be certified by the Contractor for accuracy.

3.4 CLEANING

A. At the conclusion of the work, thoroughly clean all of the new pipe lines to remove all dirt, stones, pieces of wood or other material which may have entered during the construction period by forcing a cleaning swab through all mains 6" or greater. Flushing velocities shall be a minimum of 2.5 feet per second. All flushing shall be coordinated with the inspector. Debris cleaned from the lines shall be removed from the job site.

3.5 PIPE TESTING

A. Following the successful pullback of the pipe, the Contractor shall hydro-test pipe from end to end.

END OF SECTION 330533.23

SECTION 432139 - SUBMERSIBLE PUMPS

PART 1 - GENERAL

1.1 SUMMARY

A. The Work covered by this Section shall include the furnishing all labor, materials, transportation, tools, supplies, equipment and appurtenances, unless hereinafter specifically excepted, necessary for the complete and satisfactory installation of submersible pumps.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specifications Sections, apply to work of this section.

1.3 REFERENCES

A. ASTM A-48 Standard Specification for Gray Iron Castings

B. IEEE Std 112 Standard Test Procedure for Polyphase Induction Motors and Generators

C. NEC Article 500 Hazardous (Classified) Locations

D. NEMA MG-1 Motors and Generators

E. SSPC SP-1 Solvent Cleaning

F. SSPC SP-10 Near-White Blast Cleaning

1.4 SUBMITTALS

A. Product Data: Submit a one-page summary listing the following information.
   1. Manufacturer: pump and motor
   2. Pump: weight
   3. Casing: material
   4. Motor jacket: material
   5. Casing bolts and nuts: material
   6. Impeller: material, design, coating
   7. Shaft: material, diameter, length
   8. Mechanical Seals: type, upper and lower seal material, spring material, O-ring material, other material of construction
   9. Motor: type, NEC Article 500 rating, insulation class, service factor, continuous duty ambient temperature, starts per hour
   10. Thermal switches: number, temperature setting
   11. Float switch: type, material

13. Coatings: primer type, finish type, number of coats, total dry film thickness, suitability for media being pumped
14. Guide system: type, size, material
15. Pressure gauges, if applicable
16. Minimum submergence and NPSH required at all design points, if applicable
17. Spare parts: number and type
18. Motor controls including enclosure, circuit protection, disconnects, starters, transformers, phase monitor, switches, relays and contacts, lights, meters, timers, alternators, strip heater, alarms, and fuses.

B. Shop Drawings
1. Dimensions of pump, discharge, and guide system.
2. Plan view of pump indicating clearances required for hatch openings.
3. Pump layout, spacing requirements.
4. Motor control ladder diagram.

C. Quality Control Submittals
1. Design Data
   a. Pump performance curves showing head, capacity, speed, amps, and watts.
2. Test Reports
   a. Five (5) certified copies of all performance tests on both pump and motor.
3. Installation Report
   a. The equipment manufacturer shall also submit a written report stating the equipment:
      1. Is properly installed.
      2. Is in accurate alignment.
      3. Is properly lubricated.
      4. Has been tested and operated satisfactorily.

PART 2 – PRODUCTS

2.1 GENERAL

A. Submersible pumps shall comply with the requirements for NEC Article 500, Class I, Division 1, groups C and D, hazardous location, explosion proof.

B. Manufacturer:

a. Pentair Hydromatic
b. Or Approved Equal

C. Contractor to provide two 48” Duplex TLPRO with junction box.

2.2 PUMP CASING

A. The pump casing shall be close-grained gray cast iron ASTM A-48, Class 35B free from blowholes, sand holes, or other faults. The casing interior shall be smooth and free of surface defects, which might cause undesirable turbulence. Filling of interior casting imperfections shall not be allowed.

B. All exposed bolts and nuts shall be of type 304 stainless steel.

2.3 IMPELLER

A. The impeller shall be type 316 stainless steel dynamically balanced, smooth all over and free from blowholes, sand holes, and other faults. The design of the impeller shall be semi-open multi-vaned. The maximum operating liquid temperature pumped by the impeller shall be 104°F to 140°F.

2.4 GRINDER CUTTERS

A. The combination centrifugal pump and grinder unit shall be attached to the common motor and pump shaft made of 416 stainless steel. The grinder unit shall be on the suction side of the pump impeller and discharge directly into the impeller inlet. The grinder shall consist of two stages. The grinder shall be capable of grinding normal domestic sewage. Both stationery and rotating cutters shall be made of 440C stainless steel hardened to Rockwell 55-60C.

B. The upper axial cutter and stationary cutter ring shall be reversible. The stationary cutter ring shall be slip-fit into the suction opening of the volute and held in place with stainless steel screws and a retaining ring. The lower radial cutter shall macerate the solids against the ID of the cutter ring and extrude them through the slots of the cutter ring.

2.5 SHAFT

A. The shaft shall be solid and machined from a 400 series stainless steel. The pump/motor shaft shall be designed to minimize deflection over the entire operating range of the pump.

2.6 BEARINGS

A. The pump motor shaft shall rotate on at least two sets of permanently lubricated by di-electric oil anti-friction bearings. The upper and lower motor bearings shall be designed in accordance with the Anti-Friction Bearing Manufacturing Association (AFBMA) and the Annular Bearing Engineers Committee (ABEC) standards.

B. Each bearing shall be designed to have a B-10 service life of at least 50,000 hours based on the axial and radial loads calculated at the shut off point of the certified pump curve.

2.7 MECHANICAL SEALS

A. Each pump shall be furnished with two sets of carbon ceramic mechanical seals mounted in a rotating tandem configuration. Type 21, duplex mechanical seals are acceptable in lieu of rotating tandem type. The lower seal set shall be immersed in the pumpage. The upper mechanical seal set shall operate in an oil bath. The oil bath shall be designed to be easily drained and flushed of particulate matter without disassembly of impeller and casing. The oil sump shall be designed to prevent vortexing in the sump and overfilling. A vent space shall be provided above the oil bath.

B. The O-ring elastomers shall be compatible with the pumped liquid. The selected O-ring elastomer shall have a service life equal to or greater than the predicted service life of the wearing surface.

C. Acceptable seal materials:
   1. All metal parts shall be 316 stainless steel.
   2. Upper or secondary seal rotating and stationary faces shall be combinations of carbon vs. ceramic.
   3. The lower or main seal rotating and stationary faces shall be carbon vs. ceramic.

2.8 MOTOR

A. The motor shall be non-overloading over the entire published pump curve and be able to operate at full load with the motor partly or fully submerged.

B. The pump motor shall be inverter duty rated, explosion proof, NEC Article 500 Class 1, Division 1, Groups C and D.

C. The stator, rotor, and bearings shall be mounted in an oil filled sealed submersible housing.

D. Stator windings shall be copper, insulated with Class F or Class H insulation and dielectric oil-filled motor, NEMA L-design.

E. The motor service factor shall be 1.2 minimum, and capable of up to 10 starts per hour.

F. The motor and pump shall be designed and assembled by the same manufacturer.

G. The motor shall be designed for continuous duty pumping at a maximum ambient temperature of 104°F.

2.9 SENSORS

A. Motor over temperature protection shall be provided by thermal switches embedded in the stator lead coils. The thermal switches shall monitor the

temperature of each phase winding and shall be set to open at 120°C and automatically reset at 30-35°C differential.

2.10 CABLE/CABLE ENTRY

A. The cable and cable entry seal system shall ensure a watertight seal for a submergence depth equal to the depth of the wet well plus five (5) feet. There shall be a minimum of two watertight and submersible seals in series between the environment and the motor interior.

B. Elastomer grommets, epoxy, and sealed terminal boards are acceptable components of a cable entry system.

C. The electrical power cable shall be extra hard usage type suitable for Class I, Division 1, groups C and D, hazardous location, explosion proof.

2.11 MOTOR CONTROLS

A. The Contractor shall furnish all labor, equipment and materials to install pump control centers as shown on the Drawings. For each pump motor, there shall be included: a combination circuit breaker/overload unit providing overload protection, short circuit protection, manual reset and individual disconnect for all phases; across-the-line magnetic contactor; a 120 volt control circuit transformer with disconnect and overload protection.

B. If a motor is disabled, e.g. overload, overtemp, or in “off” position. it shall shut down and lock out. If the faulted motor is lead, an induced alternation shall occur. If the faulted motor is lag, the next motor shall automatically substitute. Overload and disconnect functions shall be provided by a single magnetic-hydraulic, temperature-insensitive component.

C. Units shall be precalibrated to match motor and control characteristics and factory sealed to insure trip setting is tamper-proof; hand/off/automatic pump operation selector switch; provide all necessary auxiliary isolated contacts for alarms and computer interface; pump running pilot lights on operator control plate; running time meters mounted on operator control plate; a minimum 100 watt strip heater to provide condensation protection, lightning arrestor and high level alarm with weatherproof alarm light with guard. A delayed start feature shall be incorporated into the control panel preventing simultaneous starting of both pumps upon restoration of power following an outage.

D. Terminal strips shall be provided, prewired to the pump motor controls, for wet well level float control wiring.

E. The pump manufacturer shall provide the pump control center.

2.12 DISCHARGE COUPLING

A. Each pump shall be connected to the discharge line by means of a quick-disconnect sealed flange mounted on the pump and the outlet line. Fittings shall be such that sealing is accomplished by a metal-to-metal watertight contact without bolts, fasteners, or extreme force.

B. The base elbow shall be manufactured of the same materials as the pump casing. All cast materials shall have smooth surfaces, free from blowholes, sand holes, and other faults.

C. The discharge base elbow shall be anchored to the floor of the wet well with type 304 stainless steel anchor bolts. Anchor bolt type, style, and size shall be as recommended by the pump manufacturer for the type of foundation specified or shown on the drawings.

2.13 GUIDE SYSTEM

A. The pumps shall come complete with sliding brackets, adequately braced type 304L stainless steel schedule 40 pipe guide rail, stainless steel pull chain reaching ground level with lifting rings.

2.14 PAINTING

A. All surfaces shall be cleaned of dirt, grease, oil, rust, scale or other injurious substances. All ferrous metal surfaces shall be prepared in accordance with SSPC-SP-10. Non-ferrous metal surfaces shall be prepared in accordance with SSPC-SP-1.

B. All metal surfaces that will be partially or wholly submerged shall receive a factory (shop) applied finish paint system. The paint system shall be applied in accordance with the manufacturers recommendations, be applied in at least two coats and have a total dry film thickness not less than 10 mills. Paint systems shall be specifically suited and designed for use in the media being pumped.

2.15 ACCESSORIES

A. The manufacturer shall supply one (1) liquid filled pressure gauge with snubber diaphragm seals. Liquid shall be silicone, capable of withstanding a temperature range of -30ºF to +150ºF. Gauge casings shall have a 4½ inch minimum diameter. The gauges shall be stem mounted and shall operate over a pressure range of 0 to 100 psig.

B. Gauges shall be a product of H.O. Trerice, Ashcroft, or equal.

C. Diaphragm seal shall be a threaded Ametek M&G type, ¼ inch NPT flushing port or approved equivalent.

PART 3 – EXECUTION

3.2 EQUIPMENT SCHEDULE

A. Pumps:
   a. Number Required: 2
   b. Pumped Liquid: Sanitary
   c. Design Capacity, each: 55 gpm
   d. TDH: 56.5 ft.
   e. Minimum Efficiency: 67%
   f. Discharge size: 2”
   g. VFD: No
   h. Motor Hp: 5 HP
   i. Motor Speed: 3450 rpm.
   j. Power Requirements: 230 volt, 1 phase, 60 Hz
   k. Model: Hydromatic HPGHX500CD or Engineered Approved Equivalent.

3.1 INSTALLATION

A. Prior to installation, carefully inspect the fabricated and installed work of all other trades and verify that all such work is completed to the point that this installation may properly commence.

B. Inspect all parts of the furnished equipment and verify the system may be installed in strict accordance with all pertinent codes and regulations, original drawings, referenced standards, and the manufacturer’s recommendations.

C. Install equipment in accordance with approved shop drawings and manufacturer’s recommendations, and as shown on the Drawings and specified herein.

D. Notify the Engineer immediately of all unsatisfactory conditions or discrepancies. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

E. The Contractor shall be responsible for furnishing and placing all anchorage systems including bolts, nuts, washers, gaskets, and any other items necessary for the proper installation of the equipment. The Contractor shall coordinate with the manufacturer in identifying proper size and locations of all anchorage.

3.2 MANUFACTURER’S FIELD SERVICE

A. After installation of the equipment has been completed, a field service mechanic from the pump manufacturer shall inspect and approve the installation, be present at start-up, and instruct the Owner’s personnel in the operation and maintenance of the equipment.

3.3 LUBRICATION

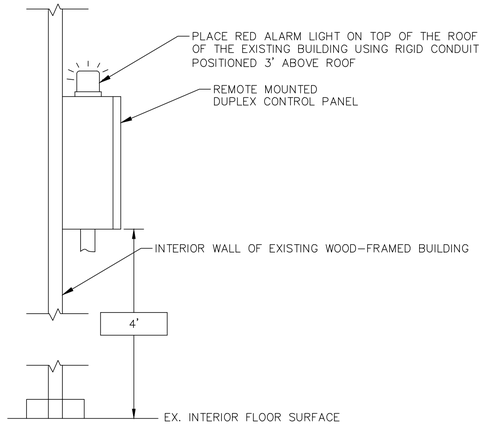
A. As part of the equipment start-up and testing procedures, the Contractor shall service and lubricate the equipment for continuous duty in accordance with the manufacturer’s recommendations.

3.4 OPERATION DEMONSTRATION

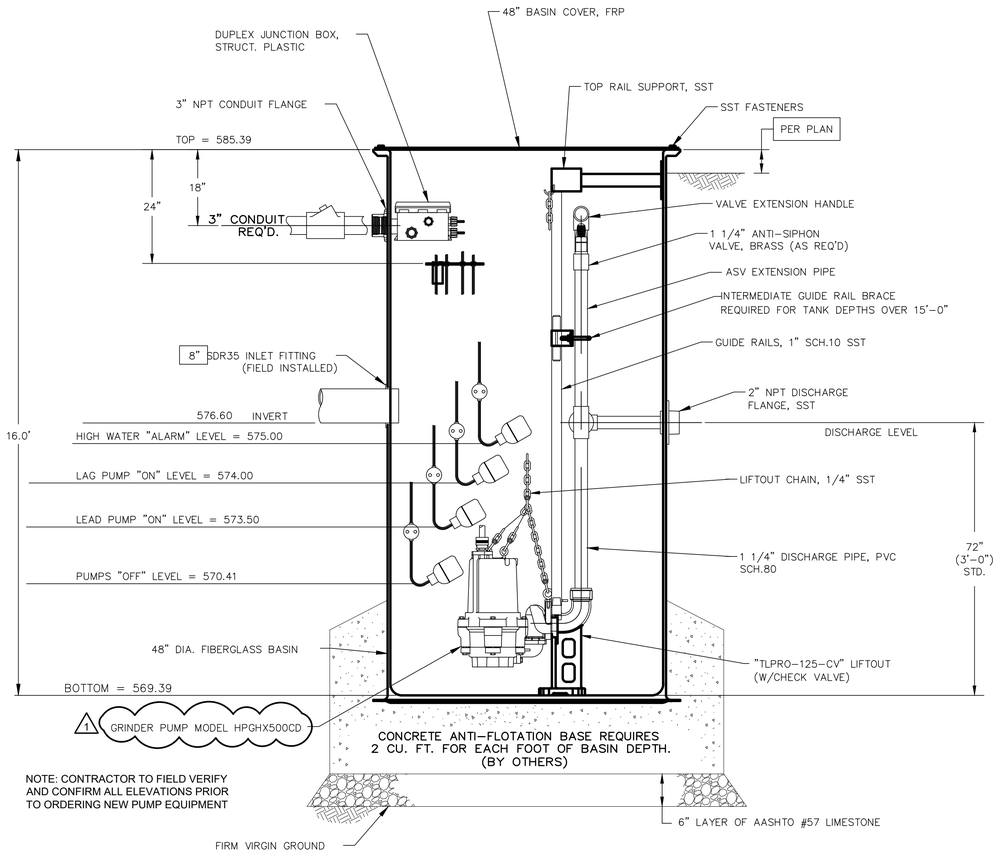
A. The Contractor shall make arrangements to demonstrate continuous operation of each pump under normal operating conditions for a period of eight (8) hours as a final condition of Owner's acceptance and initiation of the correction period. The Contractor shall be responsible for providing temporary recycle piping, pressure gauges, and sufficient sewage and/or water to operate each pump for the prerequisite demonstration period.

B. After the pumps have been started and placed in operation, amperage readings shall be taken to check for an unbalanced stator winding. If there is a significant difference in the readings, the stator windings shall be checked with a bridge to determine if an unbalanced resistance exists. If so, the stator shall be replaced at no additional cost to the Owner.

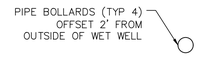
END OF SECTION 432139

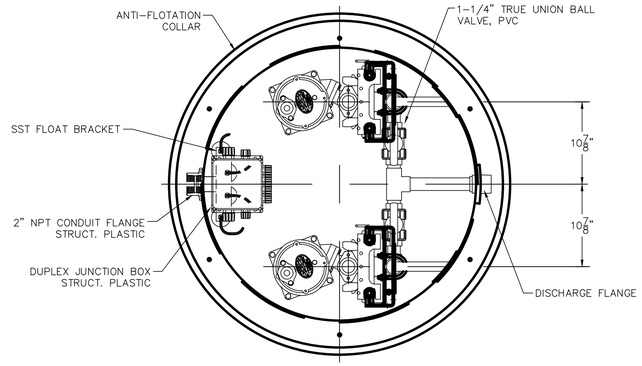


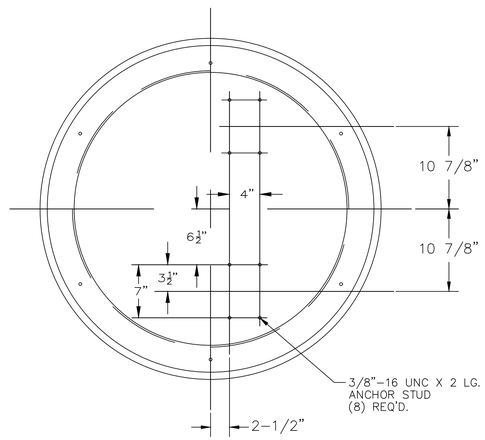
QUANTITY	DECRIPTION
2	HYDROMATIC HPGHX500CD, 5HP, 230/1/60, 35FT CORD, GRINDER PUMP
1	HYDROMATIC PRE-PLUMBED DUPLEX PUMP STATION INCLUDES: -48" X 192" FIBERGLASS BASIN -48" SOLID FIBERGLASS COVER -TLPROCV LIFT-OUT SYSTEM -SST RAILS, BRACKETS, LIFTING CHAIN -SCH 80 PVC DISCHARGE PIPING, SHUT OFF VALVES -SST DISCHARGE HUB, NPT -ANTI-SIPHON VALVES -(4) FLOATS -THERMOPLASTIC DUPLEX JUNCTION BOX -8" SDR35 INLET GROMMET (SHIPPED LOOSE)
1	DUPLEX CONTROL PANEL, 230/1/60 -NEMA 4X FG ENCLOSURE (24"X20"X8") -ALUMINUM BACK PANEL AND ALUMINUM INNER DOOR -MOTOR & CONTROL CIRCUIT BREAKERS -START COMPONENTS -IEC STARTERS -LIGHTS AND SWITCHES TO BE 22MM -HAND-OFF-AUTO SELECTOR SWITCH -RUN LIGHTS -SEAL FAIL CIRCUITRY AND LIGHTS -HEAT SENSOR TERMINALS -ALARM TEST SWITCH -FLASHING ALARM LIGHT -ALARM BUZZER W/ SILENCE CIRCUITRY -REQUIRED CONTROL RELAYS -ALTERNATOR W/ SELECTOR SWITCH -ELAPSED TIME METERS -UL 508A LABELED AND LISTED -4 FLOAT DUPLEX CONTROL
1	PUMP START UP SERVICE OF DUPLEX LIFT STATION



ELEVATION VIEW







PLAN VIEW

REV.	LOG NO.	DATE	REVISION DESCRIPTION	BY
B	-----	8-1-18	ADDED H/H/HVS TO PRINT	WRM
A	EC008-154 03-13-08		NEW DRAWING	WRM

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES
● DECIMAL ● 2 PLACE .XX ± .010" 3 PLACE .XXX ± .005" ANGLES ± 0° 30' FINISH = 125 RMS
● FRACTIONAL ● UP TO 12" ± 1/32" 12" & UP ± 1/16" ANGLES ± 2°
DO NOT SCALE DRAWING
PLOT SCALE 1=8

MATERIAL: ----
Pentair Pump Group

INSTALLATION-TYPICAL 48"DUPLEX TLPRO w/J-BOX

DRAWN BY	DATE	CHECKED BY	SHEET
WRM	03-13-08		1 OF 1

PART NUMBER	SIZE	DRAWING NUMBER	REV.
----	D	15181-002-M	B

CHRISTOPHER MICHAEL KOGELNIK E-70964 REGISTERED PROFESSIONAL ENGINEER
STATE OF OHIO

verdantas

NO	REVISION	DATE
1	ISSUED VIA ADDENDUM 01	04/23/25

ISSUED FOR: Addendum 01
ISSUE DATE: 04/23/2025
SCALE: AS NOTED
DESIGNED BY: LMM
DRAWN BY: LMM
CHECKED BY: CMK

CONNEAUT TOWNSHIP
CONNEAUT TOWNSHIP PARK
SANITARY SEWER IMPROVEMENTS
ASHTABULA COUNTY, OHIO
CONNEAUT TOWNSHIP
CIVIL - 10 SERIES
CONSTRUCTION DETAILS - 2

PROJECT NO. 242421
DISCIPLINE CIVIL
SHEET NAME 20C-02
SHEET 9 OF 14

ELECTRICAL SYMBOLS - PLAN:

- HOME RUN TO PANEL
- MOTOR
- MOTOR CONTROLLER
- FUSIBLE SAFETY SWITCH
- NON-FUSIBLE DISCONNECT SWITCH
- SIMPLEX RECEPTACLE, EXPLOSION PROOF
- DUPLEX RECEPTACLE
- QUADPLEX RECEPTACLE
- DATA PORT, RJ45
- SPECIAL RECEPTACLE, NEMA TYPE NOTED
- SINGLE-POLE SWITCH, "3" INDICATES 3-WAY, "OS" INDICATES OCCUPANCY SENSING
- DRY-TYPE TRANSFORMER
- PUSHBUTTON STATION
- LOUVER OPERATOR
- JB — JUNCTION BOX
- SV — SOLENOID VALVE
- ZS — LIMIT SWITCH
- FS FE FIT — FLOW: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
- LS LE LIT — LEVEL: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
- PS PE PIT — PRESSURE: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
- TS TE TIT — TEMPERATURE: SWITCH, SENSOR, TRANSMITTER W / DISPLAY
- AE AIT — OTHER SENSOR / INDICATING TRANSMITTER AS NOTED
- A — HAZARDOUS AREA LIGHT FIXTURE
- B — OUTDOOR CANOPY LIGHT FIXTURE
- C — EXTERIOR WALL-PACK LIGHT FIXTURE
- D — HIGH BAY LIGHT FIXTURE
- E — LINEAR LED LIGHT FIXTURE
- EXIT SIGN
- EMERGENCY REMOTE HEAD
- EMERGENCY WALL-PACK
- F F F — FIRE ALARM PULL STATION, STROBE, HORN-STROBE
- SD — FIRE ALARM AREA SMOKE DETECTOR

ELECTRIC SYMBOLS - UTILITIES:

EX:	PR:	
AC	AC	AIR CONDITIONING UNIT
CB	CB	ELECTRIC CONTROL BOX
JB	JB	ELECTRIC JUNCTION BOX
PB	PB	ELECTRIC PULL BOX
RI	RI	ELECTRIC RISER BOX
VLT	VLT	ELECTRIC VAULT BOX
		ELECTRIC LIGHT - GROUND
		ELECTRIC LIGHT - POST
E	E	ELECTRIC MARKER POST
EM	EM	ELECTRIC METER
E	E	ELECTRIC MANHOLE - 48"
E		ELECTRIC MANHOLE - 48" - ADJUST
E	E	ELECTRIC MANHOLE - LID
E		ELECTRIC PAINT MARK
EP	EP	ELECTRIC PEDESTAL
TR	TR	ELECTRIC TRANSFORMER

SINGLE LINE, ELEMENTARY, & INTERCONNECTION DIAGRAMS (ONLY) SYMBOLOGY:

- 30A 3P — DISCONNECT SWITCH - AMP RATING
- 30A 3P — FUSE - AMP RATING
- 30A [S] — CIRCUIT BREAKER - AMP RATING
- 30A 3P — CIRCUIT BREAKER - AMP RATING
- 40 — MOTOR W / HORSEPOWER INDICATED
- AM — AMMETER
- VM — VOLT METER
- PF — POWER FACTOR METER
- GF — GROUND FAULT RELAY
- TRANSFORMER
- CR — RELAY COIL
- TR — TIMING RELAY COIL
- MS — MOTOR STARTER COIL
- ETM — ELAPSED TIME TOTALIZER
- G — GROUNDING BUS
- SPD — TRANSIENT VOLTAGE SURGE SUPPRESSOR
- N.O. LIMIT SWITCH
- DESC N.O. FLOW SWITCH
- N.O. LEVEL SWITCH
- N.O. PRESSURE SWITCH
- N.O. TEMPERATURE SWITCH
- N.O. TIME DELAY AFTER ENERGIZATION
- N.C. TIME DELAY AFTER ENERGIZATION
- N.C. TIME DELAY AFTER DE-ENERGIZATION
- N.O. TIME DELAY AFTER DE-ENERGIZATION
- N.O. SWITCH (GENERAL)
- START PUSHBUTTON NORMALLY OPEN
- STOP PUSHBUTTON NORMALLY CLOSED
- CONTACT - NORMALLY OPEN
- CONTACT - NORMALLY CLOSED
- SOLENOID COIL
- G — PILOT LIGHT - PUSH TO TEST (COLOR)
- GROUND
- CAPACITOR
- X0 0X — 2 POSITION SELECTOR SWITCH
- X00 00X — 3 POSITION SELECTOR SWITCH
- EQUIPMENT FIELD TERMINAL
- LOCAL PANEL / BLDG WIRING
- EXTERNAL / FIELD WIRING

ELECTRICAL LINE SYMBOLOGY:

PROPOSED:

- CONDUIT AND WIRE RUN EXPOSED
- CONDUIT AND WIRE BELOW GRADE
- ELEC — ELEC — ELECTRIC LINE
- ELEC-OH — ELEC-OH — ELECTRIC LINE - OVERHEAD
- ELEC-UG — ELEC-UG — ELECTRIC LINE - UNDERGROUND
- ELEC — ELEC — ELEC — ELEC SERVICE
- ELEC-OH — ELEC-OH — ELEC-OH — ELEC SERVICE - OVERHEAD
- ELEC-UG — ELEC-UG — ELEC-UG — ELEC SERVICE - UNDERGROUND
- LIGHT-OH — LIGHT-OH — LIGHT-OH — ELEC LIGHTING - OVERHEAD
- LIGHT-UG — LIGHT-UG — LIGHT-UG — ELEC LIGHTING - UNDERGROUND

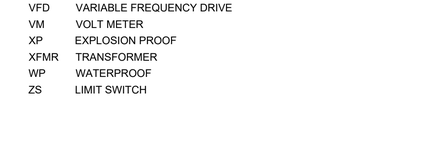
EXISTING:

- *ELEC — ELEC — ELECTRIC LINE*
- *ELEC-ABAN — ELEC-ABAN — ELEC-ABAN — ELECTRIC LINE - ABANDONED*
- *ELEC-OH — ELEC-OH — ELECTRIC LINE - OVERHEAD*
- *ELEC-UG — ELEC-UG — ELECTRIC LINE - UNDERGROUND*
- *ELEC — ELEC — ELEC — ELEC — ELECTRIC SERVICE*
- *ELEC-OH — ELEC-OH — ELEC-OH — ELECTRIC SERVICE - OVERHEAD*
- *ELEC-UG — ELEC-UG — ELEC-UG — ELECTRIC SERVICE - UNDERGROUND*
- *LIGHT-OH — LIGHT-OH — LIGHT-OH — ELECTRIC LIGHTING - OVERHEAD*
- *LIGHT-UG — LIGHT-UG — LIGHT-UG — ELECTRIC LIGHTING - UNDERGROUND*
- *ELECTRIC DUCT*

ELECTRICAL CODED NOTES:

1 NEW WORK - NOTE 1	1 DEMOLITION - NOTE 1	1 REVISION - NOTE 1
2 NEW WORK - NOTE 1	2 DEMOLITION - NOTE 2	2 REVISION - NOTE 2
3 NEW WORK - NOTE 1	3 DEMOLITION - NOTE 3	3 REVISION - NOTE 3

ELECTRICAL DETAIL REFERENCE:



ABBREVIATIONS:

x-CSC	x-CONDUCTOR SHIELDED CABLE
A	AMPS
AF	AMPERE FRAME
AI	ANALOG INPUT (PLC)
AL	ALUMINUM
AM	AMMETER
AO	ANALOG OUTPUT (PLC)
AP	ALARM PANEL
AT	AMPERE TRIP
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CJB	CONTROL JUNCTION BOX
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CORROSION RESISTANT
CS	CONTROL STATION
CT	CURRENT TRANSFORMER
CU	COPPER
DB	DUCT BANK
DI	DIGITAL INPUT (PLC)
DO	DIGITAL OUTPUT (PLC)
EAG	ELECTRICALLY ACTIVATED GATE
EAV	ELECTRICALLY ACTIVATED VALVE
EF	EXHAUST FAN
ESPB	EMERGENCY STOP PUSHBUTTON (MAINTAINED)
ETT	ELAPSED TIME TOTALIZER
EWD	ELEMENTARY WIRING DIAGRAM
FDS	FUSED DISCONNECT SWITCH
FLA	FULL LOAD AMPERES
FS	FLOW SWITCH
FVC	FULL VOLTAGE CONTACTOR
FVNR-1	FULL VOLTAGE NON-REVERSING STARTER SIZE 1
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GFR	GROUND FAULT RELAY
HOA	HAND/OFF/AUTO SELECTOR SWITCH
HP	HORSEPOWER
HT	HIGH TORQUE SWITCH
HTR	HEATER
Hz	HERTZ
IAW	IN ACCORDANCE WITH
ICP	INSTRUMENTATION & CONTROL PANEL
IPP	INSTRUMENT POWER PANEL
JB	JUNCTION BOX
JBC	JUNCTION BOX-CONTROL
JBM	JUNCTION BOX-METERING
JBP	JUNCTION BOX-POWER
kCM	KILO (1000) CIRCULAR MILL
kVA	KILOVOLT AMPERES
kVAR	KILOVOLT AMPERES-REACTIVE
kW	KILOWATT
LA	LIGHTING ARRESTOR
LGT	LIGHT
LOR	LOCAL/OFF/REMOTE SELECTOR SWITCH
LP	LIGHTING PANEL
LS	LEVEL SWITCH
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANEL
MJB	METERING JUNCTION BOX
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MFR ASSOC.
NEU	NEUTRAL
NFDS	NON-FUSED DISCONNECT SWITCH
OCSS	OPEN/CLOSE SELECTOR SWITCH
OL	OVERLOAD
OOSS	ON/OFF SELECTOR SWITCH
OS	OCCUPANCY SENSING
OT	OVER TORQUE SWITCH
P	POLE
PB	PUSHBUTTON
PBC	PULLBOX-CONTROL
PBM	PULLBOX-METERING
PBP	PULLBOX-POWER
PC	PHOTO CONTROL
PF	POWER FACTOR
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PJB	POWER JUNCTION BOX
PP	POWER PANEL
PRI	PRIMARY
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
R	RELAY
RCP	REINFORCED CONCRETE PIPE
RL	RUN LIGHT
SCP	SURGE CONTROL PANEL
SCR	SILICON-CONTROLLED RECTIFIER
SEC	SECONDARY
SF	SUPPLY FAN
SHLD	SHIELDED
SP	SHEAR PIN SWITCH
SPK	SPEAKER
SS	SELECTOR SWITCH OR STAINLESS STEEL
SSOR	SOLID STATE OVERLOAD RELAY
SSPB	START/STOP PUSHBUTTON
SSS	SOLID STATE STARTER
STD	STANDARD
STP	SHIELDED TWISTED PAIR
STR	STARTER
SV	SOLENOID VALVE
SW	SWITCH
T	TELEPHONE
TB	TERMINAL BOARD
TC	TIME CLOCK
TD	TRENCH DUCT
TEB	TELEPHONE EQUIPMENT BACKBOARD
TEMP	TEMPERATURE
TOR	THERMAL OVERLOAD RELAY
TR	TIMING RELAY
TSP	TWISTED SHIELDED PAIR
TSTAT	THERMOSTAT
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTP	UNSHIELDED TWISTED PAIR
V	VOLTS
VC	VOLUME CONTROL
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLT METER
XP	EXPLOSION PROOF
XFMR	TRANSFORMER
WP	WATERPROOF
ZS	LIMIT SWITCH

ELECTRICAL SPECIFICATIONS

1. THE ELECTRICAL CONTRACTOR SHALL APPLY FOR AND SECURE ALL COSTS AND CHARGES FOR PERMITS, CONSTRUCTION, AND MISCELLANEOUS WORK ASSOCIATED WITH AND REQUIRED FOR THE COMPLETION OF THE PROJECT ELECTRICAL WORK.
2. THE ELECTRICAL CONTRACTOR SHALL ARRANGE FOR ALL INSPECTIONS OF ELECTRICAL WORK BY ALL INSPECTION AUTHORITIES HAVING JURISDICTION. COPIES OF INSPECTION REPORTS SHALL BE MADE AVAILABLE TO THE OWNER UPON REQUEST, AND THREE (3) COPIES OF THE APPROVED FINAL INSPECTION REPORT SHALL ACCOMPANY THE REQUEST FOR FINAL PAYMENT.
3. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, OHIO BUILDING CODE, LOCAL CODES AND ORDINANCES WHERE APPLICABLE, AND REQUIREMENTS OF O.S.H.A.
4. ALL MATERIALS AND EQUIPMENT FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE NEW, U.L. LISTED OR LABELED, AND CONFORM TO NEMA AND ANSI STANDARD WHERE APPLICABLE.
5. THE CONTRACTOR SHALL VISIT THE SITE AND FULLY FAMILIARIZE HIMSELF WITH ALL CONDITIONS WHICH AFFECT HIS WORK PRIOR TO BID. COORDINATE AND SCHEDULE WORK WITH OTHER TRADES TO ENSURE SATISFACTORY PERFORMANCE, AVOID DELAYS AND DUPLICATIONS AND MEET THE OWNER'S COMPLETION SCHEDULE FOR THE USE OF THE BUILDING.
6. ALL WORK SHALL BE INSTALLED BY WORKMEN FULLY SKILLED IN THE WORK TO BE PERFORMED. REPAIR OR REPLACE EXISTING EQUIPMENT OR PROPERTY OF THE OWNER DAMAGED BY ELECTRICAL TRADES WORKMEN.
7. THE ELECTRICAL CONTRACTOR SHALL GUARANTEE MATERIALS AND WORKMANSHIP PROVIDED BY HIM FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF OWNER'S FINAL ACCEPTANCE. REPAIR OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER WITHIN THE GUARANTEE PERIOD.
8. ALL ELECTRICAL WIRING SHALL BE INSTALLED IN CONDUIT. CONDUIT SHALL BE EMT, INTERMEDIATE, OR RIGID GALVANIZED IN ACCORDANCE WITH AND AS PERMITTED BY THE NATIONAL ELECTRICAL CODE OR LOCAL/STATE CODES AS APPLICABLE. UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC, 1" MINIMUM.
9. FURNISH AND INSTALL PULL BOXES, JUNCTION, AND DEVICE BOXES OF SUITABLE CODE GAUGE AND SIZE. ALL TERMINATIONS IN IN-GROUND PULL BOXES SHALL BE LIQUID-TIGHT.
10. ELECTRICAL WIRES SHALL BE MINIMUM #12 AWG, COPPER, 600 V RATED. #14 AWG COPPER SHALL BE PERMISSIBLE FOR CONTROL CIRCUITRY. AMPACITY RATINGS SHALL BE BASED UPON 75°C RATINGS.
    A. #14, #12, AND #10 AWG CONDUCTORS SHALL BE "THHN/THWN".
    B. #8 AND LARGER SHALL BE STRANDED "THHN/THWN".
11. FLEXIBLE METAL CONDUIT INCLUDING LIQUIDTIGHT SHALL BE PERMITTED WHERE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND LOCAL CODE PROVISIONS. FLEXIBLE METAL CONDUIT SHALL CONTAIN A SEPARATE GROUNDING CONDUCTOR AND BE TERMINATED WITH APPROPRIATE FITTINGS.
12. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO DESCRIBE THE WORK REQUIRED. THE ELECTRICAL CONTRACTOR SHALL ACCURATELY FIELD MEASURE AND LAY OUT HIS WORK TO EFFECTIVELY ACHIEVE A STRUCTURALLY COORDINATED INSTALLATION WITH THE BUILDING LAYOUT AND OTHER TRADES.
13. COORDINATE ALL SERVICE ENTRANCE REQUIREMENTS WITH THE LOCAL ELECTRIC UTILITY COMPANY TO ENSURE COMPLIANCE TO UTILITY COMPANY REQUIREMENTS. PROVIDE A COMPLETE GROUNDING SYSTEM.
14. DISCONNECTION, RECONNECTION, AND RELOCATION OF EQUIPMENT SHALL BE COORDINATED SO AS TO CAUSE MINIMAL DISRUPTION OF SERVICE.
15. RECEPTACLES SHALL BE 20A, 125 VAC RATED, HUBBELL #5362, LEVITON, PASS & SEYMOUR, OR APPROVED EQUAL EQUIPMENT.
16. SWITCHES SHALL BE 20A, 120/277 VAC RATED, SINGLE, DOUBLE POLE, THREE OR FOUR WAY AS INDICATED ON THE PLANS; HUBBELL SERIES 1220, LEVITON, PASS & SEYMOUR, OR APPROVED EQUAL.
17. DEVICE COVER PLATES SHALL BE STAINLESS STEEL OF A TYPE TO SUIT DEVICE. MULTIPLE GANGED PLATES SHALL BE USED WHERE DEVICES ARE ADJACENT TO EACH OTHER. WEATHERPROOF RECEPTACLES SHALL BE EQUIPPED WITH SPRING TYPE CAP COVER PLATES.
18. ELECTRICAL DISTRIBUTION PANELS SHALL BE SURFACE MOUNTED DEAD FRONT, WITH CODE GAUGE BACKBOX, LOCKABLE HINGED DOOR, U.L. LISTED AND CONFORMING TO NEMA STANDARDS, SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT. PANEL SHALL BE EQUIPPED WITH SINGLE POLE OR DOUBLE POLE BOLTED BRANCH CIRCUIT BREAKERS AS INDICATED. CIRCUIT BREAKERS SHALL BE RATED 10,000 A.I.C. SYMMETRICAL. PANELBOARDS SHALL BE BY SQUARE-D OR APPROVED EQUAL. MULTI-POLE CIRCUIT BREAKERS SHALL BE COMMON TRIP. PROVIDE MOTOR FEEDER BREAKERS WITH LOCK-OUT PROVISIONS.
19. PROVIDE TYPEWRITTEN PANELBOARD CIRCUIT DIRECTORY IN PANELBOARD DOOR IDENTIFYING ALL ACTIVE CIRCUITS AND SPARES. ACTIVE CIRCUITS SHALL DESIGNATE EQUIPMENT SERVED.
20. IDENTIFY PANELBOARDS AND USAGE OF PANELBOARD CIRCUIT BREAKERS WITH PLASTIC LAMICOID NAMEPLATES. NAMEPLATES SHALL INDICATE PANEL DESIGNATION, VOLTAGE, AND USE.
21. BALANCE ALL LOADS IN PANELBOARDS.
22. FLOAT SWITCHES
    A. THE LEVEL DETECTING DEVICES SHALL BE AT LEAST 5-1/2 INCH IN DIAMETER OR BETTER, PVC OR POLYPROPYLENE FLOAT THAT DOES NOT USE A MERCURY SWITCH INSIDE AND FLEXIBLY SUPPORTED BY A PVC JACKETED HEAVY-DUTY CABLE.
    B. THE FLOAT SWITCH SHALL HAVE A 20 AMP RATING AT 120 VAC. THE FLOAT SWITCH SHALL CLOSE ON RISING LEVEL. EACH FLOAT SWITCH SHALL HAVE A NORMALLY OPEN AND NORMALLY CLOSED CONTACT.
    C. CABLE SHALL BE LONG ENOUGH TO TERMINATE IN A FIELD-MOUNTED JUNCTION BOX WITH TERMINAL STRIPS PROVIDED FOR POWER AND FLOAT SWITCH CONNECTIONS.
    D. THE FLOATS SHALL BE MOUNTED ON TWO (2) INCH STAINLESS STEEL PIPE USING 316 STAINLESS STEEL CLAMPS OR PLASTIC ZIP TIES. THE PIPE SHALL BE CLAMPED TO THE WALL USING 316 STAINLESS STEEL CLAMPS. THE LENGTH OF THE PIPE AND FLOAT CABLE SHALL BE SIZED BY THE CONTRACTOR.
    E. THE FLOATS SHALL BE MANUFACTURED BY ANCHOR SCIENTIFIC COMPANY, DRYDEN AQUA, PEPPERL + FUCHS, OR APPROVED EQUAL.

STATE OF OHIO
TROY DELZER
PE.93271
REGISTERED
PROFESSIONAL ENGINEER
7-22-25

verdantas

NO	REVISION	DATE
1	ISSUED VIA ADDENDUM 01	04/23/25

ISSUED FOR:	---
ISSUE DATE:	04/23/2025
SCALE:	NONE
DESIGNED BY:	JPB
DRAWN BY:	JPB
CHECKED BY:	JPB

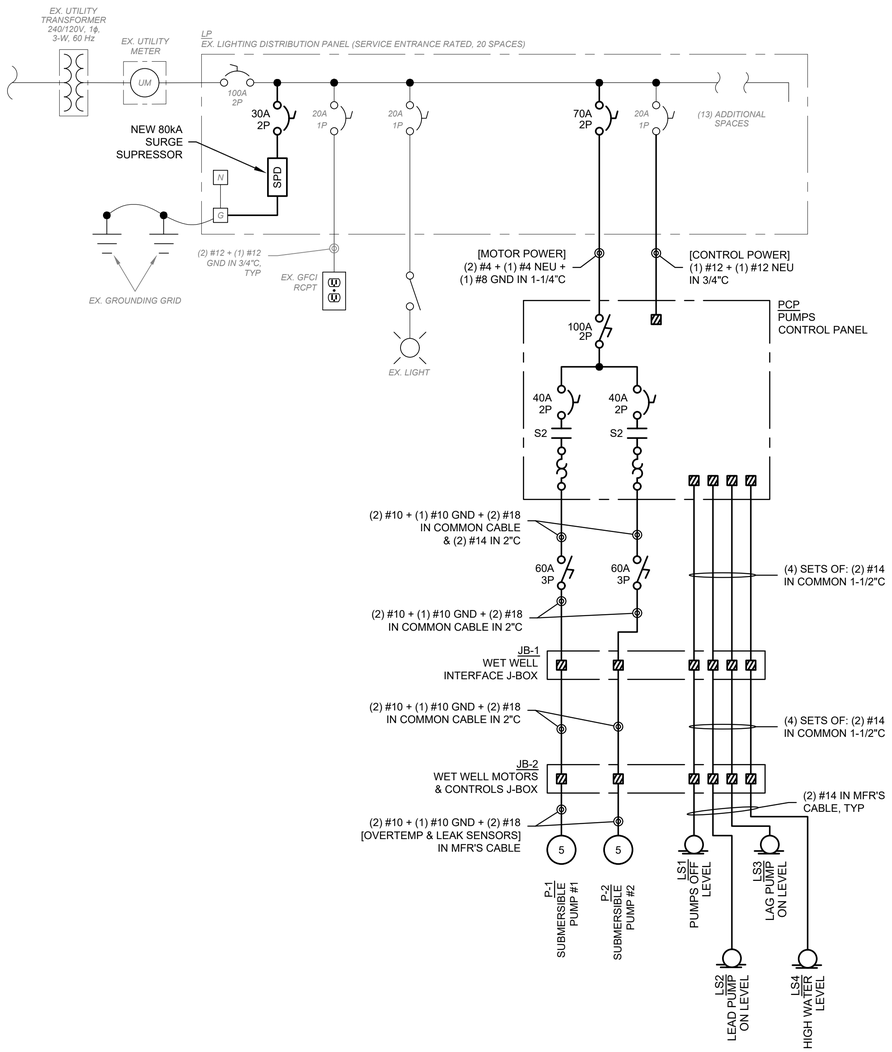
CONNEAUT TOWNSHIP
CONNEAUT TOWNSHIP PARK
SANITARY SEWER IMPROVEMENTS
CONNEAUT TOWNSHIP ASHTABULA COUNTY, OHIO

ELECTRICAL - E-SERIES

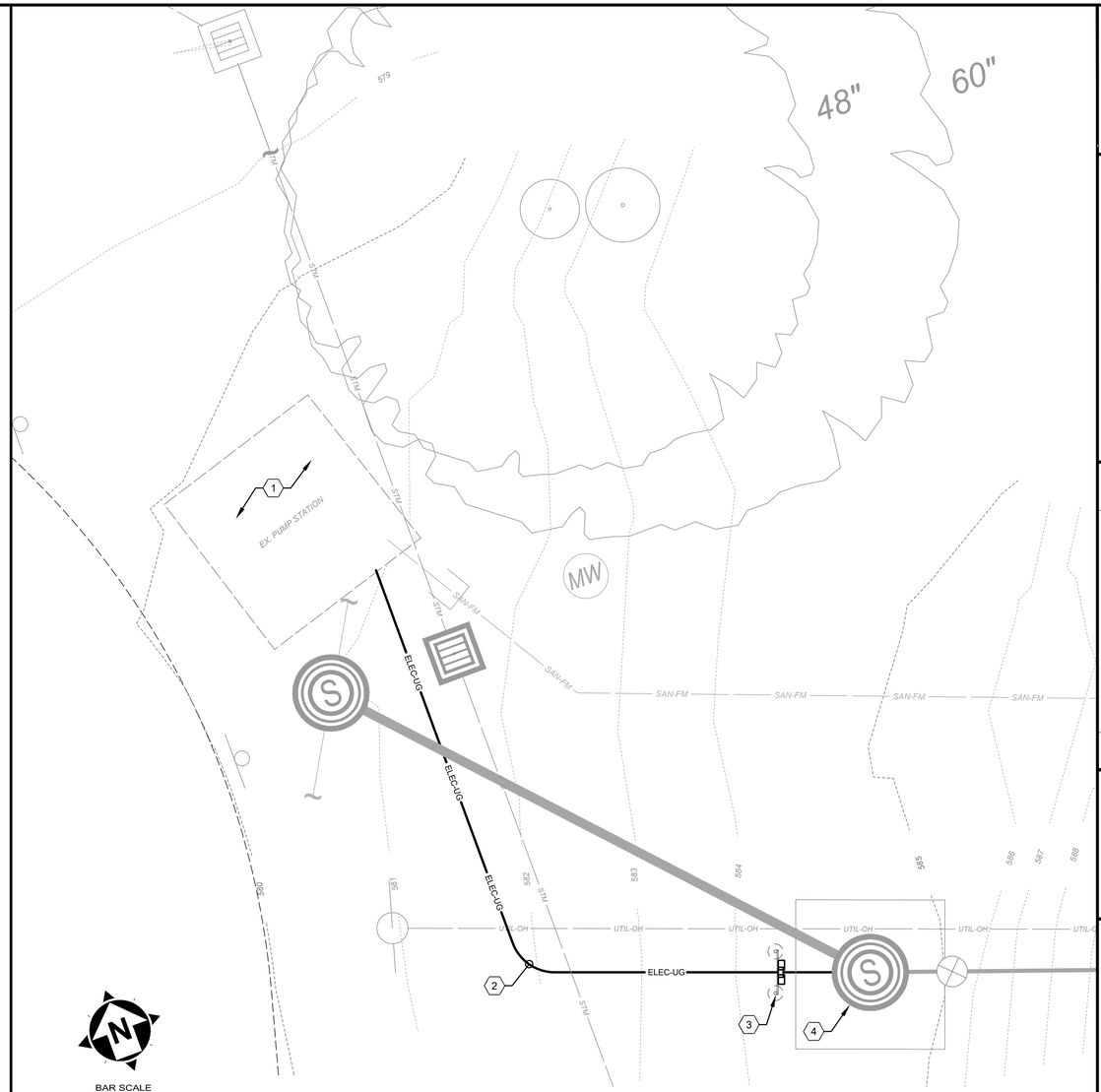
ELECTRICAL LEGEND & SPECIFICATIONS

PROJECT NO.
CTC.0024242100
DISCIPLINE
ELECTRICAL
SHEET NAME
E-01
SHEET 11 OF 14

C:\CT\CAD_DRIVES_H\2024\242421\DWG\SHEETS\E_242421 - ELECTRICAL LEGEND, SPECIFICATIONS & DETAILS.DWG - LEGEND - 4/23/2025 11:48:18 - JEFFREY BOES



PUMP STATION PROPOSED CONNECTION DIAGRAM



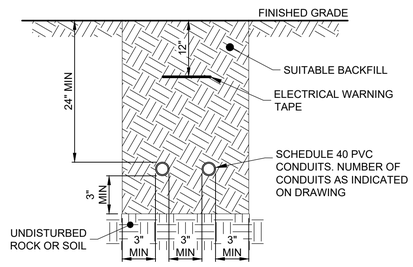
PUMP STATION ELECTRICAL SITE PLAN

GENERAL NOTES:

1. ALL PROPOSED UNDERGROUND DUCT BANKS TO UTILIZE SCH-40 PVC WITH 36" SWEEPS, MINIMUM.

(X) CODED NOTES:

1. EXISTING PUMP STATION AND ENCLOSURE STRUCTURE WITH EXISTING ELECTRICAL DISTRIBUTION AND CONTROL EQUIPMENT, SEE SHEET E-03 FOR INTERNAL DETAILS.
2. PUMP STATION WET WELL POWER & CONTROL DUCT BANK, TRANSITION TO UNDERGROUND JUST OUTSIDE OF ENCLOSURE STRUCTURE. SEE SHEET E-05 FOR CONSTRUCTION DETAILS. CONTAINS THE FOLLOWING RUNS:
   - 2.1. PUMP #1 POWER & CONTROL: (2) #10 + (1) #10 GND + (2) #18 IN COMMON CABLE & (2) #14 IN 2"C
   - 2.2. PUMP #2 POWER & CONTROL: (2) #10 + (1) #10 GND + (2) #18 IN COMMON CABLE & (2) #14 IN 2"C
   - 2.3. WET WELL LEVEL SWITCHES: (4) SETS OF: (2) #14 IN COMMON 1-1/2"C
3. PUMP STATION WET WELL EQUIPMENT RACK, CONTAINS PUMP MOTOR DISCONNECT SWITCHES AND WET WELL INTERFACE JUNCTION BOX, SEE SHEET E-03 FOR DETAILS.
4. NEW PUMP STATION WET WELL, CONTAINS (2) 5 HP SUBMERSIBLE PUMPS, (4) FLOATING LEVEL SWITCHES, CABLE RACK & JUNCTION BOX. SEE PROCESS SERIES FOR PHYSICAL ARRANGEMENT DETAILS, SEE SHEET E-03 FOR ELECTRICAL DETAILS.



ELECTRICAL TRENCH DETAIL

NOT TO SCALE

STATE OF OHIO
TROY DELZER
PE.93271
REGISTERED
PROFESSIONAL ENGINEER
verdantas

NO	REVISION	DATE
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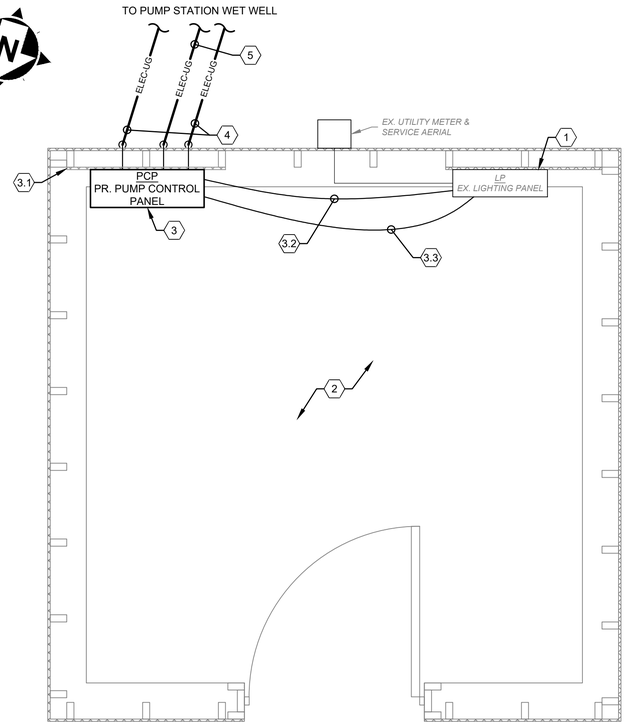
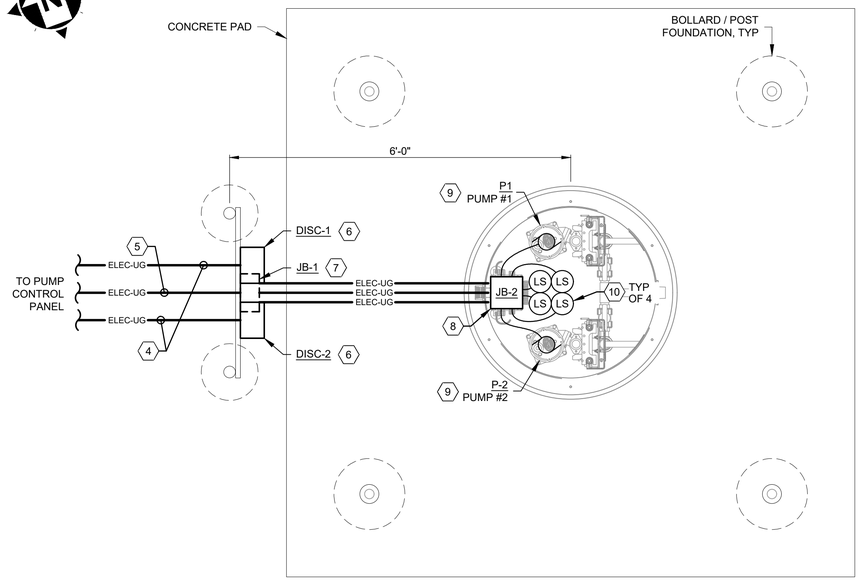
CONNEAUT TOWNSHIP
CONNEAUT TOWNSHIP PARK
SANITARY SEWER IMPROVEMENTS
CONNEAUT TOWNSHIP — ASHTABULA COUNTY, OHIO
ELECTRICAL - E-SERIES
ELECTRICAL SITE PLAN & CONNECTION DIAGRAM

PROJECT NO.	
CTC.0024242100	
DISCIPLINE	
ELECTRICAL	
SHEET NAME	
E-02	
SHEET	OF
12	14



STORAGE BUILDING ELECTRICAL LAYOUT

SCALE: 3/4" = 1'-0"



PUMP STATION WET WELL ELECTRICAL LAYOUT

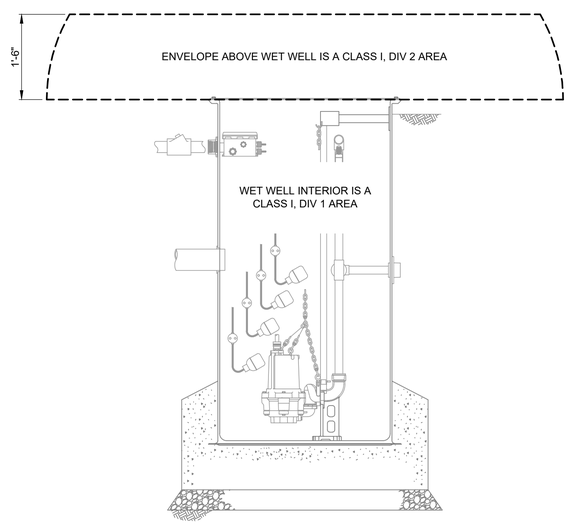
SCALE: 3/4" = 1'-0"

GENERAL NOTES:

1. EXISTING PUMP STATION BUILDING INTERNAL ARRANGEMENT REPRODUCED FROM PHOTOS. VERIFY ALL EXISTING CONDITIONS BEFORE STARTING CONSTRUCTION.
2. ALL PROPOSED UNDERGROUND DUCT BANKS TO UTILIZE 1-1/2" SCH-40 PVC WITH 36" SWEEPS, MINIMUM.
3. DEMOLISH ALL EXISTING EQUIPMENT SLATED FOR REPLACEMENT INCLUDING CONDUIT WITHIN PUMP STATION.
4. ALL CIRCUITS TO CONSIST OF (2) #12 + (1) #12 GND IN 3/4" CONDUIT, UNO.

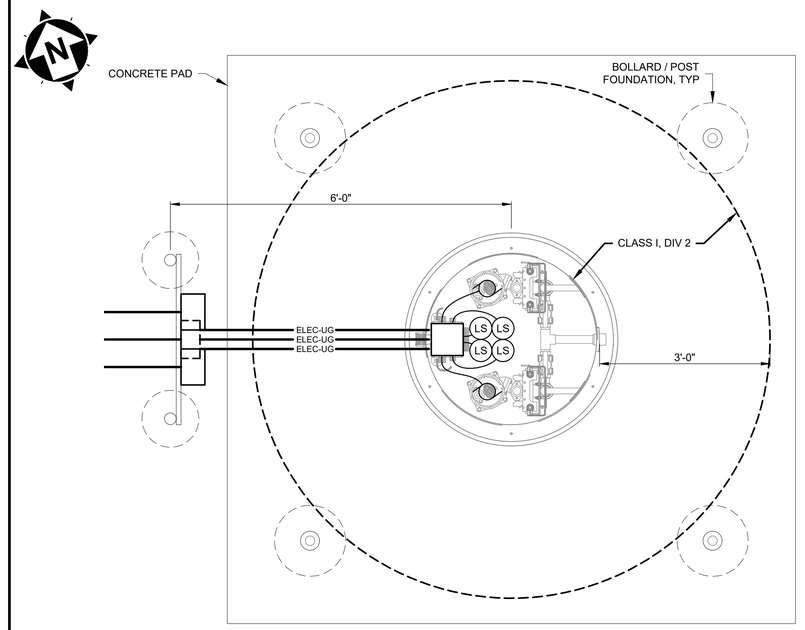
(X) CODED NOTES:

1. EXISTING LIGHTING PANEL, SURFACE MOUNT ENCLOSURE, 240/120V, 1ϕ, 3-W, 100A MCB, 20 SPACES. REPLACE EXISTING 50A BREAKER FEEDING EXISTING PUMP PANEL WITH A 70A, 2-POLE UNIT TO FEED NEW CONTROL PANEL. SEE SHEET E-04 FOR FULL SCHEDULE WITH CHANGES.
2. DEMOLISH EXISTING PUMP POWER & CONTROL DEVICES AND CONDUIT & CONDUCTORS. REMOVE CONDUIT ALL THE WAY BACK TO EXISTING LIGHTING PANEL.
3. NEW PUMP STATION CONTROL PANEL PER VENDOR QUOTATION, SUPPLIED BY VENDOR, INSTALLED BY CONTRACTOR, APPROXIMATE SIZE 24" X 24" X 8"
   - 3.1. MOUNT ON NEW PLYWOOD BACKBOARD IN LOCATION SHOWN
   - 3.2. FEED 240V, 1ϕ, 3-W, POWER FROM NEW 2-POLE BREAKER IN EXISTING LIGHTING PANEL (NOTE #1) WITH (2) #4 + (1) #4 NEU + (1) #8 GND IN 1-1/4"C.
   - 3.3. FEED CONTROL CIRCUIT FROM EXISTING 1-POLE BREAKER WITH (1) #12 + (1) #12 NEU IN 3/4"C.
   - 3.4. TERMINATE REMOTE WET WELL POWER & SIGNAL WIRES PER VENDOR SHOP DRAWINGS. SEE DIAGRAM ON SHEET E-02 FOR ESTIMATED RUNS.
   - 3.5. INSTALL ALARM PILOT LIGHT ABOVE STRUCTURE ROOF BY EXTENDING RGC VERTICALLY FROM PANEL THROUGH CEILING AND SEAL AS APPROPRIATE, SUPPORT CONDUIT PER NEC.
4. SUBMERSIBLE PUMP UNDERGROUND FEEDER, (2) #10 + (1) #10 GND + (2) #18 IN COMMON CABLE & (2) #14 IN 2"C, TYP OF (2)
5. FLOAT SWITCH SIGNAL WIRES UNDERGROUND FEEDER, (8) #14 IN 1-1/2"C
6. HEAVY DUTY LOCAL DISCONNECT SWITCH, 60A, 3-POLE W/ GROUND, NEMA 4X ENCLOSURE. UTILIZE 3RD POLE FOR POSITION MONITORING SIGNAL WIRES (SEE DIAGRAM ON SHEET E-04 FOR DETAILS). SQUARE D CAT# VHU362DSGL & GTK03 OR APPROVED EQUALS.
7. WET WELL INTERFACE JUNCTION BOX "JB-1", NEMA 4X, CONTAINS (20) 300V TERMINALS, MIN. FOR PUMP POWER, SENSORS, AND FLOAT SWITCH CONDUCTORS. UTILIZE EXPLOSION-PROOF SEALS FOR ALL CONDUIT & CONDUCTORS RUNNING TO WET WELL.
8. WET WELL CABLE JUNCTION BOX "JB-2", INSTALLED BY VENDOR. TERMINATE ALL WET WELL CABLES FOR PUMPS & SWITCHES INSIDE BOX AFTER SECURING 5', MIN. SERVICE LOOPS TO SS CABLE HANGING RACK.
9. SANITARY WET WELL SUBMERSIBLE PUMP, 240V, 1ϕ, 60 Hz, 5 HP WITH FACTORY INSTALLED POWER & SENSOR CABLE TERMINATED IN JB-2 PER NOTE #8. SUPPLIED BY VENDOR, INSTALLED BY CONTRACTOR.
10. SANITARY WET WELL FLOATING LEVEL SWITCHES, SUPPLIED BY VENDOR, INSTALLED BY CONTRACTOR AT LEVELS SHOWN ON PROCESS SHEETS AND TERMINATED PER NOTE #8.



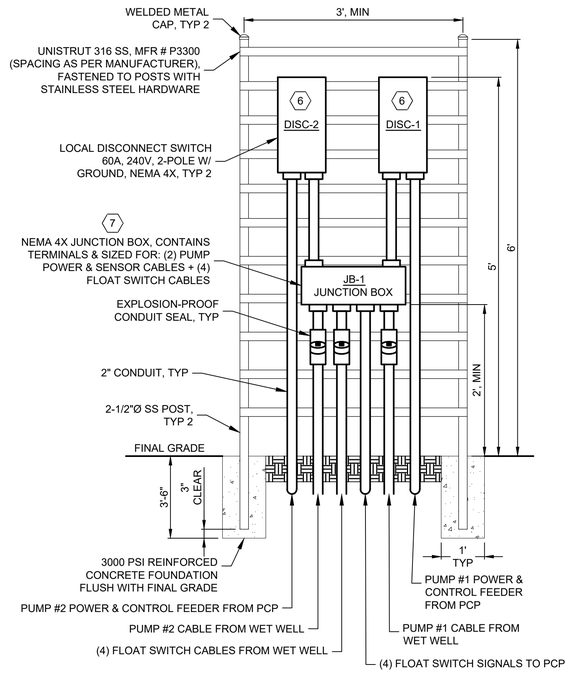
HAZARDOUS AREA CLASSIFICATIONS - PUMP STATION ELEVATION

SCALE: 3/4" = 1'-0"



HAZARDOUS AREA CLASSIFICATIONS - PUMP STATION WET WELLPLAN

SCALE: 3/4" = 1'-0"



PUMP STATION WET WELL EQUIPMENT RACK DETAIL SOUTHEAST ELEVATION

NOT TO SCALE

STATE OF OHIO
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CONNEAUT TOWNSHIP
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CONNEAUT TOWNSHIP ASHTABULA COUNTY, OHIO
ELECTRICAL - E-SERIES
ELECTRICAL LAYOUT & DETAILS

PROJECT NO.	
CTC.0024242100	
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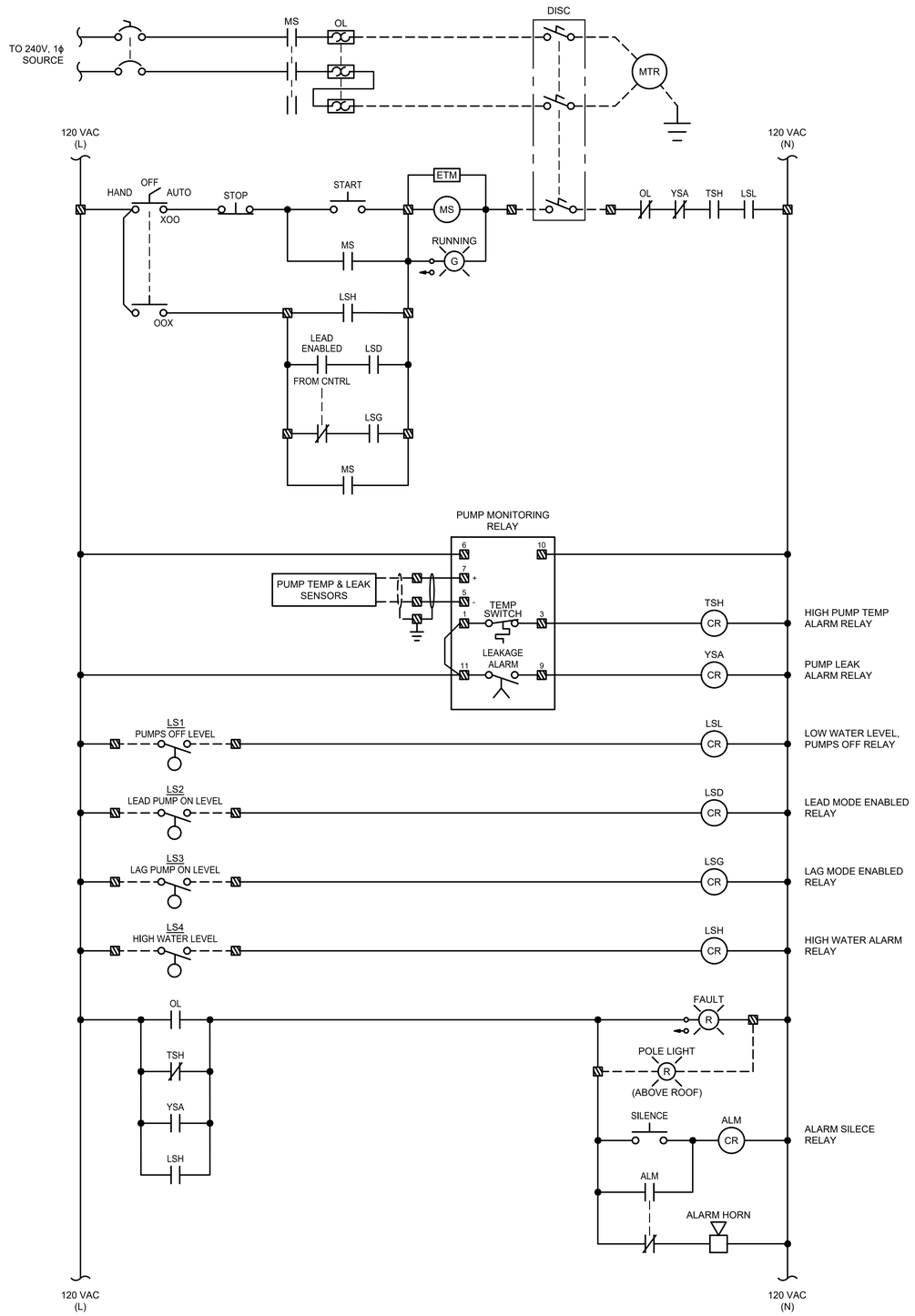
ELECTRICAL	
SHEET NAME	
E-03	
SHEET	OF
13	14



TYPICAL SUBMERSIBLE PUMP CONTROL DIAGRAM

NOTE: INCLUDES CONTROLS COMMON TO (2) PUMPS

PANELBOARD	*LP*		
PANEL TYPE	*EXISTING*		
NEMA TYPE	*NEMA 1*		
VOLTAGE	*240V/120V*	PHASE	*1*
OCPD	*100A*	WIRE	*3*
MOUNTING	*SURFACE*	BUSS	*100A*

LOAD DESCRIPTION	LOAD	BKR.	CKT. NO.	PHASE	CKT. NO.	BKR.	LOAD	LOAD DESCRIPTION
SURGE PROTECTION DEVICE, SPD	0	30/2	1	A	2	*20/1*	*180*	*SHELTER RECEPTACLE*
			3	B	4	*20/1*	*125*	*SHELTER LIGHTS*
			5	A	6	*20/1*	200	*PUMP CONTROL POWER*
			7	B	8	70/2	12880	*PUMP MOTOR POWER*
			9	A	10			
			11	B	12			
			13	A	14			
			15	B	16			
			17	A	18			
			19	B	20			

13385 VA CONNECTED
14995 VA DEMAND
62.48 A @ 240/120V, 1P, 3W

EXISTING LIGHTING PANEL "LP" SCHEDULE

GENERAL NOTES:

1. PUMP CONTROL PANEL INCLUDES CONTROL DEVICES COMMON TO BOTH PUMPS. MOTOR CONTROL DIAGRAM SHOWS ONLY THOSE NEEDED FOR ONE PUMP.
2. ALL ITEMS SHOW IN *ITALICS* ON LIGHTING PANEL SCHEDULE ARE EXISTING. NORMAL TEXT INDICATES MODIFICATIONS MADE BY CONTRACTOR.

STATE OF OHIO
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CONNEAUT TOWNSHIP ASHTABULA COUNTY, OHIO

ELECTRICAL - E-SERIES

MOTOR CONTROL DIAGRAM & PANEL SCHEDULE

PROJECT NO.
CTC.0024242100

DISCIPLINE
ELECTRICAL

SHEET NAME
E-04

SHEET	OF
14	14