ADDENDUM NO. 1

COUNTY OF ERIE
DEPARTMENT OF ENVIRONMENT AND PLANNING
ERIE COUNTY SEWER DISTRICT NO. 8
CONTRACT NO. 25
EAST AURORA WRRF ELECTRICAL UPGRADES PROJECT

All bidders must **fax** or **e-mail** this sheet to Erie County Department of Environment and Planning/Division of Sewerage Management (Attn: Beth Pfalzer), to fax no. 716-858-6257 or e-mail beth.pfalzer@erie.gov. By signing and dating this sheet bidders are stating that their company has received Addendum No. 1 to the Erie County Sewer District No. 8; Contract No. 25; East Aurora WRRF Electrical Upgrades Project.

Received: _____

By: _____

Phone: _____

Date: _____

All bidders must incorporate Addendum No. 1 including all attachments when submitting bids for this contract. Bidders are also advised to acknowledge Addendum No. 1 in the Receipt of Addenda section 7.03 of the Bid Form and endorse the special notice page attached hereto and made part of Addendum No. 1. This Addendum consists of 43 pages and attachments, if any, listed on the last page.

Erie County Sewer District No. 8
East Aurora WRRF Electrical Upgrades Project
Contract No. 25

ADDENDUM No. 1

Additions and Modifications

BIDDING REQUIREMENTS SPECIFICATIONS:

1. **Section 00 11 13 – "Advertisement"**
   General Notice Change Bid date to "June 25th at 3pm"

CONTRACT REQUIREMENTS:

SPECIFICATIONS

1. **Section 01 21 16 – "Contingency Allowances"**
   Changed text is red color.
   3.1 E Change Allowance D-1 *to include power company service upgrade charges.*

2. **Section 26 32 13 – "Diesel-Engine-Driven Generator Sets"**
   Changed text is red color.
   1.4 A (4)(a) Add Product data required *to include fuel consumption at level required for tank calculation.*
   2.3 D Change *EPSS Class to 72.*
   2.5 F (2) Add *Fuel-tank capacity size and requirements.*
   2.4 G Add *Fuel Maintenance System (fuel polisher) spec requirements.*
   2.6 C (2) Change *ground fault trip to ground fault indication/alarm.*
   2.9 Delete *Load Bank section. Load bank specified in Section 26 32 14 "Resistive Non-Containerized Load Banks".*
   2.10 A (1)(a) Change *sound attenuation level to match 2.4 F (1)(b).*
   2.11 A (7) Add *skirting kit to generator set.*
   ***3.3* H Add** *section describing diesel fuel maintenance system installation requirements.*
   3.3 J Add *section clarifying Contractor is providing fuel and how much fuel is turned over to owner.*

3. **Section 26 32 14 – "Resistive Non-Containerized Load Banks"**
   Changed text is red color.

   2.1 B Delete *reference to non-unity load banks.*

   2.4 A(9) Delete *reference to non-unity load banks.*

DRAWINGS

1. **OVERALL SITE PLAN Drawing No. E050**
   Add General Note D *to clarify ductbanks shall be concrete encased under roadways/driveways or as noted.*
   Add Keyed Note 18 *to call for specific ductbank to be concrete.*
   Add Keyed Note 19 *to call for specific ductbank to be concrete in a specific area.*
   Add Conduit Replacement Note: *quantifies an amount of miscellaneous conduit to include in bid to replace that isn't otherwise called for via keyed notes on the drawings, in order to clarify General Note A on E051.*

2. **SITE PLAN A CHLORINE RESERVOIR Drawing No. E051**
   Change General Note A *to refer to E051 Conduit Replacement to quantify an amount of conduit to include in bid to replace that isn't otherwise called for via keyed notes on the drawings.*

3. **ELECTRICAL DETAILS Drawing No. E500**
   Change Detail 1 *to clarify concrete encased conduit trench detail.*
   Add Detail 8 *to clarify direct buried conduit trench detail.*

4. **ELECTRICAL DETAILS Drawing No. E501**
   Change Detail 2 *to clarify scope delineation between Electrical Contractor and NYSEG. Allowance D-1 includes NYSEG billed costs.*

5. **ELECTRICAL PANEL SCHEDULES Drawing No. E600**
   Change Panelboard Schedule 'LDP5' *to clarify (3) 100A-3P circuit breakers are required in order to eliminate discrepancy with E700.*

6. **ELECTRICAL ONE-LINE DIAGRAMS Drawing No. E700**
   Change Utility Feeder Keyed Note *to correct keyed note from '8' to '21'.*

7. **COMMUNICATIONS BLOCK DIAGRAM Drawing No. E701**
   Delete Detail 4 *detail moved/modified to be on 8/E500.*

ATTACHMENTS

1. Section 00 11 13 – "Advertisement"
2. Section 01 21 16 – "Contingency Allowances"
3. Section 26 32 13 – "Diesel-Engine-Driven Generator Sets"
4. Section 26 32 14 – "Resistive Non-Containerized Load Banks"
5. OVERALL SITE PLAN Drawing No. E050
6. SITE PLAN A CHLORINE RESERVOIR Drawing No. E051

7. ELECTRICAL DETAILS Drawing No. E500
8. ELECTRICAL DETAILS Drawing No. E501
9. ELECTRICAL PANEL SCHEDULES Drawing No. E600
10. ELECTRICAL ONE-LINE DIAGRAMS Drawing No. E700
11. COMMUNICATIONS BLOCK DIAGRAM Drawing No. E701

End of Addendum

ADVERTISEMENT FOR BIDS

ERIE COUNTY DEPARTMENT
of ENVIRONMENT AND PLANNING
ERIE COUNTY, N.Y.

General Notice

The Erie County Department of Environment and Planning on behalf of Erie County Sewer District No. **8** (Owner) is requesting Bids for the construction of **ECSD No. 8 Contract No. 25 East Aurora Water Resource Recovery Facility Electrical Upgrades.**

Separate Bids will be received for the following Contracts:

Contract No.	Description of Contract	
ECSD No. 8 Contract 25-A	**General Construction**	
ECSD No. 8 Contract 25-B	**Mechanical Construction**	
ECSD No. 8 Contract 25-D	**Electrical Construction**	

Bids will be received by the **Commissioner of the Erie County Department of Environment and Planning** located at **95 Franklin Street, Room 1034, Buffalo, New York, 14202**, until **Wednesday**, **June 25, 2025** at 3pm local time. At that time the Bids received will be publicly opened and read aloud **at the Rath Building, 95 Franklin Street, Room 1004, Buffalo, NY 14202.**

The Project includes **new electrical service, emergency power generation, electrical equipment control, power distribution equipment, lighting, and power conductor replacement; construction of a new electrical building, building provisions, outdoor stairs and platform, gates and fencing, concrete, asphalt, and site work; building drain and HVAC replacement; and appurtenant Work at the East Aurora Water Resource Recovery Facility**

Information and Bidding Documents for the Project can be found at https://www3.erie.gov/dsm/form/dsm-bids-on-line-bid-retrieval **.** Bidding Documents must be downloaded from the designated website. Prospective Bidders must register as a plan holder.

Attendance is encouraged at a pre-bid conference on **Thursday, June 5, 2025** at **10 am** at **the East Aurora Water Resource Recovery Facility, 201 Mill Street, East Aurora, NY 14052.**

This Advertisement is issued by:

Owner: **Erie County Department of Environment and Planning**
By: **Joseph L. Fiegl, P.E.**
Title: **Deputy Commissioner**
Date: **May 28, 2025**

SECTION 01 21 16
CONTINGENCY ALLOWANCES

PART 1 GENERAL

1.1 SUMMARY

A. This section includes considerations related to contingent items of work added after the Contract is executed and payment of contingent items.

B. Related Sections:

1. Section 01 20 13 – Lump Sum Measurement
2. Section 01 20 16 – Lump Sum Payment
3. Section 01 22 13 – Unit Price Measurement
4. Section 01 22 16 – Unit Price Payment
5. Section 01 33 10 – Submittal Procedures

1.2 GENERAL

A. Refer to Sections 01 20 13 Lump Sum Measurement, 01 20 16 Lump Sum Payment, Section 01 22 13 Unit Price Measurement, and 01 22 16 Unit Price Payment for the procedures for measurement of the Work and payment limits.

B. Contractor is not entitled to the sums included under contingency allowance items unless work is approved for these items. Work will not be added to the Contract for the sole purpose of allowing full payment to Contractor of the amounts included in these allowances.

C. Any work performed under a contingency allowance item must receive written acceptance and approval before proceeding. Any work performed without written approval will be at Contractor's risk.

D. Engineer may recommend and Owner may allow payment before the final change order. Otherwise additional work will be accounted for in the final change order as stipulated in GC Article 13.02-D.

E. All work performed under contingency allowances shall be included on the red-lined drawings upon completion of the Work.

1.3 SUBMITTALS

A. Contractor shall submit, for approval, all items required to perform the proposed work, regardless if the item(s) was listed in original Bid Form. Refer to Section 01 33 10 Submittal Procedures for detailed information on submittals.

B. If work includes an item already submitted and approved, the proposal shall indicate the item and identify the approved submittal.

C. Contractor shall submit supporting documentation for any estimates related to allowances. This documentation includes, without limitation, estimates from Sub-Contractors, hour and cost worksheets, labor or equipment cost estimate sources, material cost sources, diagrams, or field measurements.

1.4 LUMP SUM ALLOWANCES

A. Engineer will request a proposal for work to be completed under the Contingency Allowance.

B. Any proposal received from Contractor must be include pricing that is in accordance with unit prices or estimates already provided. Pricing must be industry standard for the location, and must be supported in submittals.

C. Contingent items of work can only be performed after Engineer's written recommendation and Owner's written acceptance of the proposal. Owner must approve payment amount in writing.

D. The project schedule will be updated to reflect any work added under the Contingency Allowance, upon acceptance of work.

E. Contingency Allowance will be paid in accordance with Section 01 20 16 Lump Sum Payment.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 SCHEDULE OF ALLOWANCES

A. Allowance No. A-1 (General Contract): Quantity Allowance: Include **50 cu. yd.** of unsatisfactory soil excavation and disposal off-site and replacement with satisfactory soil material from off-site, as specified in Section 312000 "Earth Moving."

1. Coordinate quantity allowance adjustment with unit-price requirements in Section 012213 "Unit Price Measurement" and Section 012216 'Unit Price Payment".

B. Allowance No. A-2 (General Contract): Contingency Allowance: Include a contingency allowance of **$100,000.00** for use according to Owner's written instructions.

C. Allowance No. A-3 (General Contract): Testing and Inspection Allowance: Include the sum of **$1,000.00** for testing concrete to be provided by Owner, as specified in Section 033000 "Cast-in-Place Concrete."

D. Allowance No. B-1 (Mechanical Contract): Contingency Allowance: Include a contingency allowance of **$13,500.00** for use according to Owner's written instructions.

E. Allowance No. D-1 (Electrical Contract): Lump-Sum Allowance: Include the sum of **$50,000.00** for Access control and video surveillance of the gate of the Counties existing vendor, as specified in Section 281300 "Access Control and Video Specification." & Power company charges.

1. This allowance includes costs charged by vendor for vendor's material, receiving, handling, and installation costs, and overhead and profit. All Electrical Contractor costs included within base bid amount.

2. This allowance includes costs charged directly by power company (NYSEG) for utility service upgrades.

F. Allowance No. D-2 (Electrical Contract): Contingency Allowance: Include a contingency allowance of **$200,000.00** for use according to Owner's written instructions.

G. Allowance No. D-3 (Electrical Contract): Contingency Allowance: Include a contingency allowance of **$50,000.00** for Controls Installation and Programming. This will include material and labor associated with modifying existing control and providing necessary programming associated with the electrical upgrade work.

END OF SECTION

SECTION 263213 - DIESEL-ENGINE-DRIVEN GENERATOR SETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Diesel engine.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Generator overcurrent and fault protection.
5. Generator, exciter, and voltage regulator.
6. Load bank.
7. Outdoor engine generator enclosure.
8. Remote radiator motors.
9. Vibration isolation devices.

B. Related Requirements:

1. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

1.3 DEFINITIONS

A. EPS: Emergency power supply.

B. EPSS: Emergency power supply system.

C. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

2. Include thermal damage curve for generator.
3. Include time-current characteristic curves for generator protective device.
4. Include fuel consumption in gallons per hour at 0.8 power factor at 0.5, 0.35, 0.75, and 1.0 times generator capacity.
   a. Show calculation to get to fuel tank size at given load level.
5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
6. Include airflow requirements for cooling and combustion air in cubic feet per minute at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 deg F. Provide Drawings indicating requirements and limitations for location of air intake and exhausts.
7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.
8. Sample Warranty.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified. Indicate access requirements affected by height of subbase fuel tank.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams showing terminal markings for engine generators and functional relationship between all electrical components.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, manufacturer, and testing agency.

B. Seismic Qualification Data: Certificates, for engine generator, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: With engine and generator mounted on rails, identify center of gravity and total weight, including supplied enclosure, subbase-mounted fuel tank, and each piece of equipment not integral to the engine generator, and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Source Quality-Control Reports: Including, but not limited to, the following:

1. Certified summary of prototype-unit test report.
2. Certified summary of factory test report.
3. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
4. Certified Summary of Performance Tests: Certify compliance with specified requirement to meet performance criteria for sensitive loads.
5. Report of factory test on units to be shipped for this Project, showing evidence of compliance with specified requirements.
6. Report of sound generation.
7. Report of exhaust emissions showing compliance with applicable regulations.
8. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

D. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

   a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
   b. Operating instructions laminated and mounted adjacent to generator location.
   c. Training plan.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
4. Tools: Each tool listed by part number in operations and maintenance manual.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

B. Testing Agency Qualifications: Accredited by NETA.

1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.9 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: two years from date of successful generator field startup, signed off by manufacturers authorized representative.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Caterpillar

B. Cummins

C. Basis of Design: MTU Rolls-Royce Group

D. No substitutions allowed.

E. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Engine generator housing, subbase fuel tank, engine generator, batteries, battery racks, silencers, load banks, sound attenuating equipment, accessories, and components shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
2. Shake-table testing shall comply with ICC-ES AC156. Testing shall be performed with all fluids at worst-case normal levels.
3. Component Importance Factor: 1.5.

B. B11 Compliance: Comply with B11.19.

C. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 110 requirements for Level 1 EPSS.

D. UL Compliance: Comply with UL 2200.

E. Engine Exhaust Emissions: Comply with EPA Tier 2 requirements and applicable state and local government requirements.

F. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

G. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: 4 to 86 deg F.
2. Altitude: Sea level to 1000 feet.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Power Rating: Standby.

D. EPSS Class: Engine generator shall be classified as a Class 72 according to NFPA 110.

E. Service Load: 750 kVA.

F. Power Factor: 0.8, lagging.

G. Frequency: 60 Hz.

H. Voltage: 480 V ac.

I. Phase: Three-phase, four wire, wye.

J. Induction Method: Turbocharged.

K. Governor: Adjustable isochronous, with speed sensing.

L. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and engine generator center of gravity.

M. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries.
2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

N. Engine Generator Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 250 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time:
   a. Comply with NFPA 110, Type 10 system requirements.
   b. 10 seconds.

2.4 DIESEL ENGINE

A. Fuel: ASTM D975, diesel fuel oil, Grade 2-D S15.

1. Winter blend.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: Engine or skid-mounted.

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with UL 499 and with NFPA 110 requirements for Level 1 equipment for heater capacity.

E. Integral Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gage glass and petcock.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
5. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.

    a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and noncollapsible under vacuum.
    b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

F. Muffler/Silencer:

1. Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

    a. Minimum sound attenuation of 25 dB at 500 Hz.
    b. Sound level measured at a distance of 25 feet from exhaust discharge after installation is complete shall be 78 dBA or less.

G. Air-Intake Filter: Standard-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

H. Starting System: 24 V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least twice without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.

6. Battery Stand: Factory-fabricated, two-tier metal with acid-resistant finish designed to hold the quantity of battery cells required and to maintain the arrangement to minimize lengths of battery interconnections.
7. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
8. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for lead-acid batteries. Unit shall comply with UL 1236 and include the following features:

    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 to 140 deg F to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    d. Ammeter and Voltmeter: Flush mounted indoor. Meters shall indicate charging rates.
    e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.5 DIESEL FUEL-OIL SYSTEM

A. Comply with NFPA 37.

B. Piping: Fuel-oil piping shall be Schedule 40 black steel, complying with requirements in Section 231113 "Facility Fuel-Oil Piping." Cast iron, aluminum, copper, and galvanized steel shall not be used in the fuel-oil system.

C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.

D. Fuel Filtering: Remove water and contaminants larger than 1 micron.

E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Subbase-Mounted, Double-Wall, Fuel-Oil Tank: Factory installed and piped, complying with UL 142 fuel-oil tank. Features include the following:

1. Tank level indicator.

2. Fuel-Tank Capacity: Sized for 133% of 72 hours at 260KVA run load. Minimum 133 percent of total fuel required per code for planned operation plus fuel for periodic maintenance operations between fuel refills. Fuel tank footprint shall not exceed 250" long by 72" wide. Show calculation in product data.
   a. For example, a calculation could show (in the example numbers are made up): a 750KVA genset has a fuel consumption of 40 gal/hr at full load. At 35% load (260KVA) the fuel consumption is 14 gal/hr. 14 gal/hr x 72 hours = 1008 gallons, 1008 gallons x 133% = 1341 gallons. Round up to next tank size if necessary. Use actual product data furnished by manufacturer for calculations.
3. Leak detection in interstitial space.
4. Vandal-resistant fill cap.
5. Containment Provisions: Comply with requirements of authorities having jurisdiction.

G. Fuel Maintenance System:
1. Manufacturers:
   a. Earth Safe Systems; M30 Series as basis of design.
   b. Fuel Technologies International; FTI-20A Automated Diesel Fuel Maintenance System
   c. Simplex – Smart Filter Compact Series SFG10C-A
2. Description: Packaged, automated fuel filtration system with pump, filters, and controls for removing particulates and water from stored diesel fuel from subbase tank.
   a. System Capacity: 10 gpm.
   b. Pump: 120 VAC, single phase, 60 Hz, TEFC.
   c. Filtration: Multistage filter 25-micron particulate filter, 1-micron secondary particulate filter, and 15ppm water coalescer & separator and collection.
   d. Controls: Microprocessor-based; field programmable; Modbus network communications interface; touch-screen or keypad operator interface; system shutoff with audible and visual alarms for plugged filters, full water-separator, low flow, pump overload, and oil leak.
   e. System Enclosure: Cabinet Enclosure: NEMA 3R, powder-coated, lockable. Provide enclosure heater. Panel Mounting: Powder-coated aluminum or steel backplate with drip tray.
   f. System Accessories:
      1) System inlet and outlet isolation valves.
      2) Priming tee.
      3) Pump flow meter.
      4) Pump balancing valve.
      5) High Pressure differential gauges and alarms.
      6) Hand-Off-Auto Selector Switch
      7) Pilot lights for: Power ON, Pump Run, Pump Alarm.

2.6 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of

same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts engine generator. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

C. Provide minimum run time control set for 30 minutes with override only by operation of a remote emergency-stop switch.

D. Comply with UL 508A.

E. Configuration:

1. Operating and safety indications, protective devices, basic system controls, and engine gages shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method shall isolate the control panel from engine generator vibration. Panel shall be powered from the engine generator battery.

F. Control and Monitoring Panel:

1. Digital engine generator controller with integrated LCD display, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
2. Instruments: Located on the control and monitoring panel and viewable during operation.

    a. Engine lubricating-oil pressure gage.
    b. Engine-coolant temperature gage.
    c. DC voltmeter (alternator battery charging).
    d. Running-time meter.
    e. AC voltmeter, connected to a phase selector switch.
    f. AC ammeter, connected to a phase selector switch.
    g. AC frequency meter.
    h. Generator-voltage adjusting rheostat.

3. Controls and Protective Devices: Controls, shutdown devices, and common alarm indication, including the following:

    a. Cranking control equipment.
    b. Run-Off-Auto switch.
    c. Control switch not in automatic position alarm.
    d. Overcrank alarm.
    e. Overcrank shutdown device.
    f. Low-water temperature alarm.
    g. High engine temperature prealarm.
    h. High engine temperature.
    i. High engine temperature shutdown device.

j. Overspeed alarm.
k. Overspeed shutdown device.
l. Low fuel main tank.

1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for duration required for the indicated EPSS class.

m. Coolant low-level alarm.
n. Coolant low-level shutdown device.
o. EPS load indicator.
p. Battery high-voltage alarm.
q. Low cranking voltage alarm.
r. Battery-charger malfunction alarm.
s. Battery low-voltage alarm.
t. Lamp test.
u. Contacts for local and remote common alarm.
v. Low-starting hydraulic pressure alarm.
w. Remote manual stop shutdown device.
x. Air shutdown damper alarm when used.
y. Air shutdown damper shutdown device when used.
z. Generator overcurrent-protective-device not-closed alarm.
aa. Hours of operation.
bb. Engine generator metering, including voltage, current, hertz, kilowatt, kilovolt ampere, and power factor.

G. Connection to Datalink:

1. A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication.
2. Provide connections for datalink transmission of indications to remote data terminals via ModBus and Ethernet.

H. Common Remote Panel with Common Audible Alarm: Include necessary contacts and terminals in control and monitoring panel. Remote panel shall be powered from the engine generator battery.

I. Remote Alarm Annunciator: An LED indicator light labeled with proper alarm conditions shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

1. Overcrank alarm.
2. Low water-temperature alarm.
3. High engine temperature prealarm.
4. High engine temperature alarm.
5. Low lube oil pressure alarm.
6. Overspeed alarm.

7. Low fuel main tank alarm.
8. Low coolant level alarm.
9. Low cranking voltage alarm.
10. Contacts for local and remote common alarm.
11. Audible-alarm silencing switch.
12. Air shutdown damper when used.
13. Run-Off-Auto switch.
14. Control switch not in automatic position alarm.
15. Low-cranking voltage alarm.
16. Generator overcurrent-protective-device not-closed alarm.

J. Supporting Items: Include sensors, transducers, terminals, relays, and other devices and include wiring required to support specified items. Locate sensors and other supporting items on engine or generator unless otherwise indicated.

K. Remote Emergency-Stop Switch: Flush; wall mounted unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Overcurrent protective devices shall be coordinated to optimize selective tripping when a short circuit occurs.

1. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.

2. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.

B. Generator Overcurrent Protective Device:

1. Molded-case circuit breaker, electronic-trip type; 100 percent rated; complying with UL 489:

a. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
b. Trip Settings: Selected to coordinate with generator thermal damage curve.
c. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
d. Mounting: Adjacent to, or integrated with, control and monitoring panel.

C. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground fault.

1. Indicate ground fault with other engine generator alarm indications.
2. Provide indication alarm on generator protective device ground fault.

2.8 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide six-lead alternator.

E. Range: Provide limited range of output voltage by adjusting the excitation level.

F. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

G. Enclosure: Dripproof.

H. Instrument Transformers: Mounted within generator enclosure.

I. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.

1. Adjusting Rheostat on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
2. Maintain voltage within 15 percent on one step, full load.
3. Provide anti-hunt provision to stabilize voltage.
4. Maintain frequency within 5 percent and stabilize at rated frequency within 2 seconds.

J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

K. Subtransient Reactance: 12 percent, maximum.

~~2.9 LOAD BANK~~

~~A. Description:~~

~~1. Permanent, outdoor, weatherproof, remote-controlled, forced-air-cooled, resistive unit capable of providing a balanced three-phase, delta-connected load to engine generator at 350KW.~~
~~2. Unit shall be capable of selective control of load in 50KW steps.~~

~~B. Resistive Load Elements: Corrosion-resistant chromium alloy with ceramic and stainless-steel supports. Elements shall be double insulated and designed for repetitive on-off cycling. Elements shall be mounted in removable aluminized-steel heater cases. Galvanized steel is~~

~~prohibited. Element's maximum resistance shall be between 100 and 105 percent of rated resistance.~~

~~C. Load-Bank Heat Dissipation: Integral fan with totally enclosed motor shall provide uniform cooling airflow through load elements. Airflow and coil operating current shall be such that, at maximum load, with ambient temperature at the upper end of specified range, load-bank elements operate at not more than 50 percent of maximum continuous temperature rating of resistance elements.~~

~~D. Load Element Switching: Remote-controlled contactors switch groups of load elements. Contactor coils are rated 120 V. Contactors shall be located in a separate NEMA 250, Type 3R enclosure within load bank enclosure, accessible from exterior through hinged doors with tumbler locks.~~

~~E. Contactor Enclosures: Heated by thermostatically controlled strip heaters to prevent condensation.~~

~~F. Load Bank Enclosures: NEMA 250, Type 3R, aluminized steel complying with NEMA ICS 6. Louvers at cooling air intake and discharge openings shall prevent entry of rain and snow. Openings for airflow shall be screened with 1/2 inch square, galvanized steel mesh. Reactive load bank shall include automatic shutters at air intake and discharge. Components other than resistive elements shall receive exterior epoxy coating with compatible primer.~~

~~G. Protective Devices: Power input circuits to load banks shall be fused, and fuses shall be selected to coordinate with generator circuit breaker. Fuse blocks shall be located in contactor enclosure. Cooling airflow and overtemperature sensors shall automatically shut down and lock out load bank until manually reset. Safety interlocks on access panels and doors shall disconnect load power, control, and heater circuits. Fan motor shall be separately protected by overload and short-circuit devices. Short-circuit devices shall be noninterchangeable fuses with 200,000-A interrupting capacity.~~

~~H. Load-Bank Remote Control Panel: Separate from load bank in NEMA 250, Type 1 enclosure with a control power switch and pilot light, and switches controlling groups of load elements.~~

~~I. Control Sequence: Control panel may be preset for adjustable single-step loading of generator during automatic exercising.~~

2.10 OUTDOOR ENGINE GENERATOR ENCLOSURE

A. Description:

1. Vandal-resistant, sound-attenuating, weatherproof steel housing; wind resistant up to 130 mph. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Panels shall be removable by one person without tools. Instruments and control shall be mounted within enclosure.

a. Sound Attenuation Level: 78 dB measured at 25 feet.

B. Structural Design and Anchorage: Comply with ASCE/SEI 7 for wind loads up to 130 mph.

C. Seismic Design: Comply with seismic requirements in Section 260548.16 "Seismic Controls for Electrical Systems."

D. Rodent Barriers.

E. Hinged Doors: With padlocking provisions.

F. Space Heater: Thermostatically controlled and sized to prevent condensation.

G. Lighting: Provide weather-resistant LED lighting with 30 fc average maintained.

H. Thermal Insulation: Manufacturer's standard materials and thickness selected in coordination with space heater to maintain winter interior temperature within operating limits required by engine generator components.

I. Muffler Location: Within enclosure.

J. Engine-Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.

1. Automatic Dampers: At engine cooling-air inlet and discharge. Dampers shall be closed to reduce enclosure heat loss in cold weather when unit is not operating.
2. Ventilation: Provide temperature-controlled exhaust fan interlocked to prevent operation when engine is running.

K. Interior Lights with Switch: Factory-wired, vapor-proof luminaires within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.

1. AC lighting system and connection point for operation when remote source is available.

L. Convenience Outlets: Factory-wired, GFCI. Arrange for external electrical connection.

2.11 VIBRATION ISOLATION DEVICES

A. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment-mounting and -leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.

5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Minimum Deflection: 1 inch.
7. Provide skirting kit to keep out debris, rodents, and wind.

B. Vibration isolation devices shall not be used to accommodate misalignments or to make bends.

2.12 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

2.13 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with IEEE 115 and with NFPA 110, Level 1 Energy Converters.

B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Test generator, exciter, and voltage regulator as a unit.
3. Full load run.
4. Maximum power.
5. Voltage regulation.
6. Transient and steady-state governing.
7. Single-step load pickup.
8. Safety shutdown.
9. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
10. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.

B. Examine roughing-in for piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Construction Manager no fewer than two working days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Construction Manager's written permission.

3.3 INSTALLATION

A. Comply with NECA 1 and NECA 404.

B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110.

C. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases for packaged engine generators, load bank, and generator docking station mounted on grade. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

E. Exhaust System: Install Schedule 40 black steel piping with welded joints and connect to engine muffler. Install thimble at wall. Piping shall be same diameter as muffler outlet.

1. Piping materials and installation requirements are specified in Section 232113 "Hydronic Piping."
2. Install flexible connectors and steel piping materials according to requirements in Section 232116 "Hydronic Piping Specialties."
3. Insulate muffler/silencer and exhaust system components according to requirements in Section 230719 "HVAC Piping Insulation."

F. Drain Piping: Install condensate drain piping to muffler drain outlet full size of drain connection with a shutoff valve, stainless-steel flexible connector, and Schedule 40 black steel pipe with welded joints.

1. Piping materials and installation requirements are specified in Section 232113 "Hydronic Piping."
2. Drain piping valves, connectors, and installation requirements are specified in Section 232116 "Hydronic Piping Specialties."

G. Fuel Piping:

1. Diesel storage subbase tanks, tank accessories, piping, valves, and specialties for fuel systems.
2. Copper and galvanized steel shall not be used in the fuel-oil piping system.

H. Install diesel fuel maintenance system in accordance with manufacturer's instructions.
1. Position fuel intake and fuel return within tanks to maximize fuel circulation.
2. Do not exceed lift capabilities of circulating pump.
3. Provide isolation valves, foot valves, priming tees, relief valves, and check valves where called for by manufacturer.
4. Install interconnecting fuel oil piping

I. Install electrical devices furnished by equipment manufacturers but not specified to be factory mounted.

J. Provide all fuel required for testing & startup. At end of testing/start up, provide full tank of fuel for generator.

3.4 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.

B. Connect fuel, cooling-system, and exhaust-system piping adjacent to packaged engine generator to allow space for service and maintenance.

C. Connect engine exhaust pipe to engine with flexible connector.

D. Connect fuel piping to engines with a gate valve and union and flexible connector.

E. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

F. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables." Provide a minimum of one 90-degree bend in flexible conduit routed to the engine generator from a stationary element.

G. Balance single-phase loads to obtain a maximum of 10 percent unbalance between any two phases.

3.5 IDENTIFICATION

A. Identify system components according to Section 230553 "Identification for HVAC Piping and Equipment" and Section 260553 "Identification for Electrical Systems."

3.6 FIELD QUALITY CONTROL

A. Testing Agency:

1. Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.

B. Tests and Inspections:

1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in first two subparagraphs below, as specified in NETA ATS. Certify compliance with test parameters.

a. Visual and Mechanical Inspection:

1) Compare equipment nameplate data with Drawings and the Specifications.
2) Inspect physical and mechanical condition.
3) Inspect anchorage, alignment, and grounding.
4) Verify that the unit is clean.

b. Electrical and Mechanical Tests:

1) Perform insulation-resistance tests according to IEEE 43.

a) Machines Larger Than 200 hp: Test duration shall be 10 minutes. Calculate polarization index.

2) Test protective relay devices.
3) Verify phase rotation, phasing, and synchronized operation as required by the application.
4) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
5) Perform vibration test for each main bearing cap.
6) Verify correct functioning of the governor and regulator.

2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.

3. Load Bank Testing:

a. One half hour at 25% followed by one half hour at 50% followed by one hour at 75% followed by 2 hours at 100%. May be concurrent with NFPA 110 testing but this is the minimum required.

4. Battery Tests: Equalize charging of battery cells according to manufacturer's written instructions. Record individual cell voltages.

   a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
   b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
   c. Verify acceptance of charge for each element of the battery after discharge.
   d. Verify that measurements are within manufacturer's specifications.

5. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
6. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Harmonic-Content Tests: Measure harmonic content of output voltage at 25 and 100 percent of rated linear load. Verify that harmonic content is within specified limits.
10. Noise Level Tests: Measure A-weighted level of noise emanating from engine generator installation, including engine exhaust and cooling-air intake and discharge, at four locations 25 feet from edge of the generator enclosure, and compare measured levels with required values.

C. Coordinate tests with tests for transfer switches and run them concurrently.

D. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.

E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.

G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

H. Remove and replace malfunctioning units and retest as specified above.

I. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.

J. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

K. Infrared Scanning: After Substantial Completion, but not more than 60 days after final acceptance, perform an infrared scan of each power wiring termination and each bus connection while running with maximum load. Remove all access panels so terminations and connections are accessible to portable scanner.

1. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan 11 months after date of Substantial Completion.
2. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
3. Record of Infrared Scanning: Prepare a certified report that identifies terminations and connections checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

3.7 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at date of successful generator field startup, signed off by manufacturers authorized representative, maintenance service shall include two years full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies. Service may exceed, but at minimum must cover:

1. Major Maintenance once Per Year:
   a. Lube oil and filters change; parts included.
   b. Replace fuel filter (diesel engines), parts included
   c. Ignition system including points, condenser, cap, rotor, coil, and wiring - Inspection only.
   d. Verify fuel supply.
   e. Check air filter.
   f. Visual check for oil, water, or fuel leaks.
   g. Inspect hoses and clamps.
   h. Test Coolant with Test Strips, measures Freeze point and dilution.
   i. Inspection of belt condition and tension.
   j. Check engine heater operation.
   k. Check for oil moisture, dirt; clean as necessary.
   l. Check battery charger operation and charge rate.
   m. Battery inspection, check specific gravity, and clean connections.
   n. Check emergency system operation without load.
   o. Check frequency and governor operation; adjust as necessary.
   p. Check engine alternator and charge rate.

q. Check gauges and meters for proper operation and reading levels.
r. Check generator set auto shutdown system and alarms.
s. Emergency system operation with load transfer during normal business hours. (With customer's permission only).
t. Check generator output voltage and adjust as necessary.
u. All Parts Included in Annual Maintenance

2. Minor Maintenance three times Per Year:
a. Verify all Fluid levels are at proper levels
b. Ignition system including points, condenser, cap, rotor, coil, and wiring - Inspection only. to be quoted if needed.
c. Verify fuel supply.
d. Check air filter, to be quoted if needed.
e. Visual check for oil, water, or fuel leaks.
f. Inspect hoses and clamps.
g. Test Coolant with Test Strips, measures Freeze point and dilution.
h. Inspection of belt condition and tension.
i. Check engine heater operation.
j. Check for oil moisture, dirt; clean as necessary.
k. Check battery charger operation and charge rate.
l. Battery inspection, check specific gravity, and clean connections.
m. Check emergency system operation without load.
n. Check frequency and governor operation; adjust as necessary.
o. Check engine alternator and charge rate.
p. Check gauges and meters for proper operation and reading levels.
q. Check generator set auto shutdown system and alarms.
r. Emergency system operation with load transfer during normal business hours. (With customer's permission only)
s. Check generator output voltage and adjust as necessary.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION 263213

SECTION 263214 - RESISTIVE NON-CONTAINERIZED LOAD BANKS

PART 1 - GENERAL

1.1 SCOPE

A. Furnish and install non-containerized resistive load bank. Each load bank shall be CE approved, air-cooled, weatherproof construction and a microprocessor controller to provide automatic operation. All load banks and control shall be the products of the same manufacturer.

1.2 Codes and Standards

The load banks and controls shall conform to the requirements of:

A. A.EN 60204: Part 1: 2006 + AI: 2009 - Safety of Machinery. Electrical Equipment of Machines.

B. B.EN 61000: Part 6-3:2001 - Electromagnetic Compatibility. Generic Emission Standard.

C. C.EN 61000: Part 6-2:2001 - Electromagnetic Compatibility. Generic Immunity Standards.

1.3 Acceptable Manufacturers

A. Non-containerized resistive load banks shall be Avtron 3000 Series. Any alternative shall be submitted for approval to the consulting engineer at least 10 days prior to bid. Alternate bids must list any deviations from this specification.

PART 2 - PRODUCTS

2.1 Resistive Load Bank

A. The load bank shall be electrically operated.

~~B. The load bank shall be resistive and inductive for load testing to customizable non-unity lagging power factors.~~

C. The load bank shall be enclosed in a CE approved, air-cooled, weatherproof enclosure.

2.2 Electrical Specification

A. The resistive load bank shall be 350KW.

B. The load step resolution shall be 50KW.

C. The resistive load tolerance of the load bank shall be within 2.5% of total capacity.

D. Short-term tests with fluctuations of up to 10% above rated voltage shall be permitted.

E. Measurement System accuracy:

1. Voltage ± 0.5% plus ± 0.2% of full scale. Resolution 0.1V
2. Current ± 0.5% plus ± 0.2% of full scale. Resolution 0.1A
3. Hertz ± 0.2% Resolution 0.1Hz

2.3 Environment

The load bank shall be designed for continuous duty cycle operation in the following conditions:

A. Ambient temperature of -10C to +50C.

B. A maximum humidity of 90% (non-condensing).

C. Altitudes up to 1000m above sea level.

2.4 Construction

A. Load Bank Enclosure:

1. The load bank shall be designed for outdoor operation and be completely self-contained.
2. All painted surfaces shall use high quality two-pack industrial acrylic paint system applied to an electro-plated zinc base and low-bake finish.
3. The enclosure shall have four integral lifting points and forklift pockets for movability.
4. The frame shall be constructed from 2mm ‘zintec’ steel, folded and welded to form a monocoque construction.
5. All electrical enclosures must have an ingress protection rating of IP 55 or greater.
6. Main power terminations, control equipment, switch gear and load element connections shall be separated into individual compartments.
7. Internally all live parts inside the control equipment and switch gear compartments shall be protected from accidental contact (IP1X) by the provision of polycarbonate screens.
8. To aid serviceability, all fuses and contactors shall be individually identified. Control wiring shall be identified by wire numbers at every break (i.e. Terminal strips and control devices).
9. ~~To maintain a lower center of gravity all inductive elements shall be located at the bottom of the enclosure.~~
10. Air inlet to the load elements shall be via side and bottom that give protection to IP1X.

11. The airflow duct shall be a double wall construction to thermally isolate the exterior surfaces of the load bank from the hot airflow.

B. Resistive elements:

1. Resistive load elements shall be totally weatherproof with an electrically grounded outer sheath to prevent electrical short circuits by an external foreign object and to protect personnel against accidental electrical shock.
2. Elements shall be constructed using resistance wire embedded in compacted magnesium oxide powder with the outer sheath constructed from stainless steel to provide corrosion resistance.
3. Elements shall be individually serviceable in the field without disturbance to other elements.
4. The change in resistance due to temperature shall be minimized by maintaining conservative watt densities.
5. To avoid reliability issues due to hot spots caused by trapped debris, elements shall not be fitted with cooling fins.
6. Open wire type elements where the live conductors are exposed, and which can be short circuited to each other or to ground by foreign objects or by the breakage of an element or an element support shall not be permitted.
7. Element chambers shall be surrounded by aluminized steel heat shields reducing heat gains to the outer surface.

C. Protective devices:

1. Over-temperature switches shall be provided to protect against overheating in the resistive duct, each inductor and switchgear compartment. The switches shall be interlocked with the load application controls to prevent load from being applied in the event of an over temperature condition.
2. To provide for major fault protection, each element group shall have HRC fuse protection on each phase. Fuses shall be electric shock protected and mounted to the bus bar.
3. The exterior of the load bank shall have appropriate warning/caution statements on access panels.
4. An integral control power transformer shall be provided to supply 110V, to the load banks control and motor starter circuitry. Transformer primary and secondary control circuits shall be fuse protected.
5. The load bank shall incorporate a lockable power isolator switch within the construction.
6. Switchgear enclosures shall have polycarbonate screens to protect all live parts from accidental contact.
7. Load contactors shall be interlocked with the fan to ensure that load can only be applied when the fan is running.

D. Airflow and noise level

1. Hot exhaust air shall be discharged either vertically or horizontally depending on required location.
2. For movable load banks the control system shall contain phase sequence detection and automatic switching to ensure that the fan always exhausts in the correct direction.

3. The load bank shall be cooled by integral totally enclosed fan cooled motors that are directly coupled to aluminum bladed aerofoil fans.
4. The fan motor must be electrically protected against short circuit and from overload using a motor overload device.
5. The fan motor shall be rigidly supported by formed steel or structural members that attach to the frame of the load bank.
6. The maximum noise level when measured 3 meters away from the load bank at 90 degrees to the airflow shall be less than a nominal:
   a. 79 dBA @ 50Hz

2.5 Microprocessor Control

A. The system shall be controlled by a microprocessor based module with non- volatile memory, specifically developed for load bank control and protection. Generic type PLC's shall not be used.

B. All instrumentation measurements shall be made from high accuracy voltage and current transformers located within the load bank.

C. To compensate for the voltage drop between supply and load bank, provision shall be made for remote voltage sensing via terminals.

D. Load bank calibration and configuration shall be software controlled.

E. The system shall have full three phase true RMS instrumentation.

F. A load correction facility shall compensate for any voltage variation to ensure that the correct load is always applied.

G. The system shall be capable of controlling up to 14 load banks including a mixture of resistive/ reactive units with proportional load sharing from one hand held controller or a single PC.

H. Control shall provide three phase instrumentation to class 0.5 accuracy.

I. Control system shall provide 1kW load step resolution.

PART 3 - OPERATION

3.1 Control hardware

A. The load bank shall have start stop/ reset buttons to enable to load bank control system. The button shall reset any error conditions including over-voltage and over-temperature.

B. Moveable load banks shall have a supply-on-test status indicator to provide information about the status of the supply-on-test.

C. The load bank shall have ACB status indicators that will illuminate when contacts on the associated ACB are closed. (Only applicable if optional air circuit breakers are fitted).

D. The load bank shall have Voltage metering source selector for voltage metering.

E. Moveable load banks shall be provided with a number switch, allowing each to be assigned a unique ID when multiple units are used together.

F. The load bank shall have a control in/out socket to control the load bank via PC software or a hand-held device.

G. The load bank shall have a power outlet and RCD to power laptops or test gear.

H. The load bank shall have a lighting changeover switch to select whether the lighting circuit will be provided from an external supply or from the fan & control supply.

I. The Fan and control circuit can be powered from either an external supply or via the supply-on-test, using the fan & controls selector switch.

PART 4 - ADDITIONAL REQUIREMENTS

4.1 Tests and certification

A. The complete load bank shall be factory tested to ensure efficient operation of the individual components and correct overall sequence of operation and to ensure that the operating voltage, frequency, capacity and control settings are in compliance with the specification requirements.

B. The load bank manufacturer shall be certified to ISO 9001:2008 International quality standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001:2008.

4.2 Service representation

A. The load bank manufacturer shall maintain a national service organization of company-employed personnel. The service center’s personnel must be factory trained and must be on call when required.

B. The manufacturer shall maintain records of each load bank, by serial number, for a minimum of 20 years.

PART 5 - OPTIONAL FEATURES

5.1 Control

A. Modbus

1. Modbus connection point shall be directly accessible from a RS232 serial port from the internal module.
2. Conversion from RS232 to RS485 RTU or over Ethernet TCP/IP shall be available.

B. Sigma PC Software

1. WindowsTM based load bank control system shall be provided with the load bank.
2. Supply-on-test properties shall be configurable including: alternator, engine, loading, panel and radiator, test criteria and customer details.
3. The following test modes shall be available within the software: automatic tests, transient response tests and heat runs tests.
4. Data shall be captured at up to 50 readings per second to Voltage and Frequency data.
5. Transient data shall be analyzed to calculate voltage and frequency recovery times and maximum deviations according to ISO8528 G1, G2, G3 or G4 (user defined).
6. Graphical displays of up to 1 second per division and automatic trigger on load change shall be available.
7. Load test data shall be captured and saved as a PDF report.
8. In built help files shall be included into the software program.
9. Software shall include load test support (wizard).
10. Software shall include M load feature.
11. Software shall save and recall adaptive load correction mapping.

C. Sigma Instrumentation System (SIS)

1. A Sigma instrumentation system shall be utilized for Medium or High voltage testing in conjunction with an external transformer.
2. The SIS shall monitor three phase electrical supplies including power, voltage current and frequency.
3. The SIS shall be housed in equipment case to IP67 certification.
4. The SIS shall be used in conjunction with the Sigma PC software to control and monitor the load test.

5.2 Remote Station

A. The load bank shall have a remote control station that duplicates load bank control.

B. The remote station shall be equipped with an emergency stop button, reset button, start button and a control location selector.

END OF SECTION 263214

GENERAL NOTES:

A. ALL EXTERIOR ABOVE GRADE CONDUIT SHALL BE PVC COATED RIGID GALVANIZED CONDUIT.

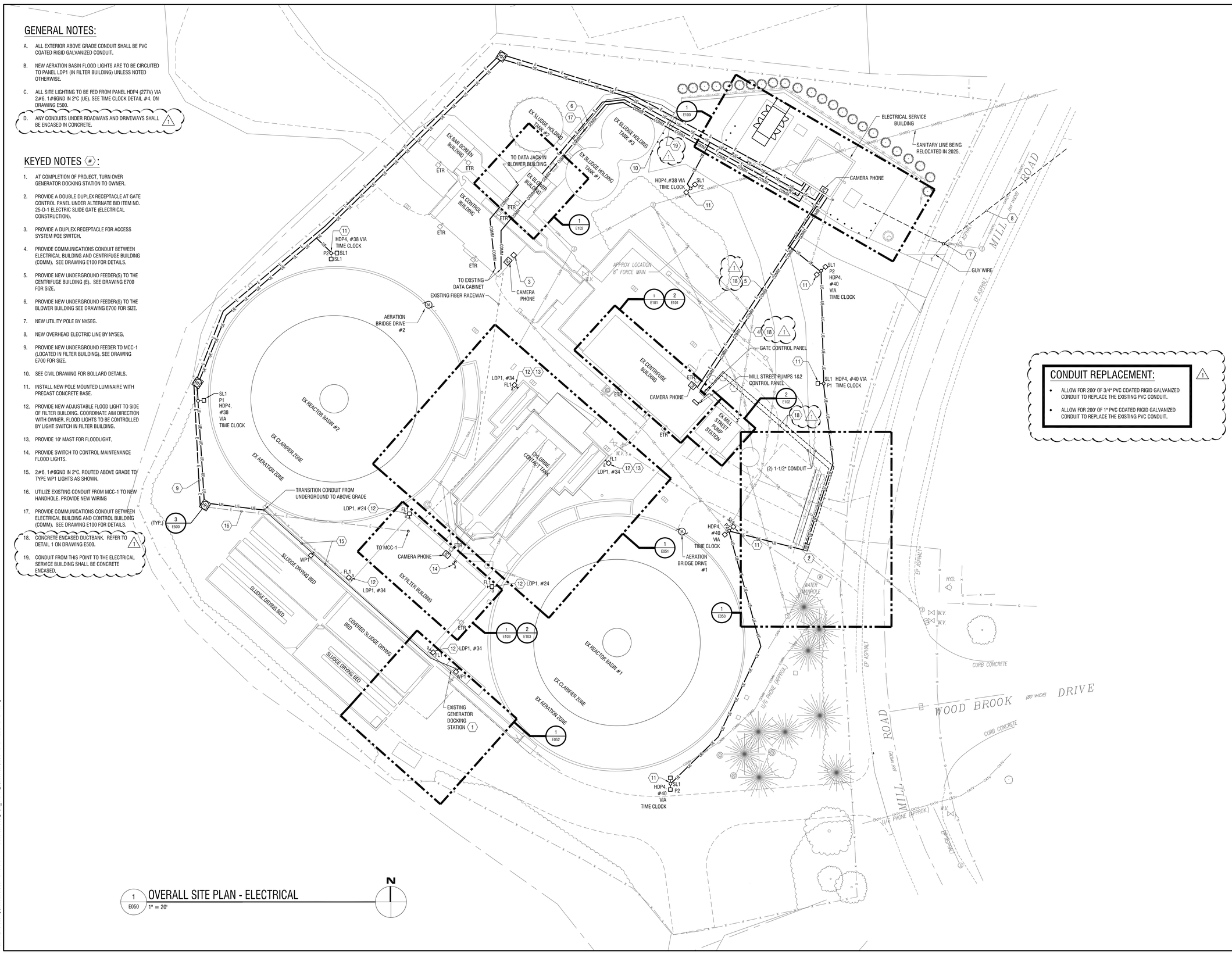
B. NEW AERATION BASIN FLOOD LIGHTS ARE TO BE CIRCUITED TO PANEL LDP1 (IN FILTER BUILDING) UNLESS NOTED OTHERWISE.

C. ALL SITE LIGHTING TO BE FED FROM PANEL HDP4 (277V) VIA 2#6, 1#6GND IN 2"C (UE). SEE TIME CLOCK DETAIL #4, ON DRAWING E500.

D. ANY CONDUITS UNDER ROADWAYS AND DRIVEWAYS SHALL BE ENCASED IN CONCRETE. (1)

KEYED NOTES (#):

1. AT COMPLETION OF PROJECT, TURN OVER GENERATOR DOCKING STATION TO OWNER.
2. PROVIDE A DOUBLE DUPLEX RECEPTACLE AT GATE CONTROL PANEL UNDER ALTERNATE BID ITEM NO. 25-D-1 ELECTRIC SLIDE GATE (ELECTRICAL CONSTRUCTION).
3. PROVIDE A DUPLEX RECEPTACLE FOR ACCESS SYSTEM POE SWITCH.
4. PROVIDE COMMUNICATIONS CONDUIT BETWEEN ELECTRICAL BUILDING AND CENTRIFUGE BUILDING (COMM). SEE DRAWING E100 FOR DETAILS.
5. PROVIDE NEW UNDERGROUND FEEDER(S) TO THE CENTRIFUGE BUILDING (E). SEE DRAWING E700 FOR SIZE.
6. PROVIDE NEW UNDERGROUND FEEDER(S) TO THE BLOWER BUILDING SEE DRAWING E700 FOR SIZE.
7. NEW UTILITY POLE BY NYSEG.
8. NEW OVERHEAD ELECTRIC LINE BY NYSEG.
9. PROVIDE NEW UNDERGROUND FEEDER TO MCC-1 (LOCATED IN FILTER BUILDING). SEE DRAWING E700 FOR SIZE.
10. SEE CIVIL DRAWING FOR BOLLARD DETAILS.
11. INSTALL NEW POLE MOUNTED LUMINAIRE WITH PRECAST CONCRETE BASE.
12. PROVIDE NEW ADJUSTABLE FLOOD LIGHT TO SIDE OF FILTER BUILDING. COORDINATE AIM DIRECTION WITH OWNER. FLOOD LIGHTS TO BE CONTROLLED BY LIGHT SWITCH IN FILTER BUILDING.
13. PROVIDE 10' MAST FOR FLOODLIGHT.
14. PROVIDE SWITCH TO CONTROL MAINTENANCE FLOOD LIGHTS.
15. 2#6, 1#6GND IN 2"C. ROUTED ABOVE GRADE TO TYPE WP1 LIGHTS AS SHOWN.
16. UTILIZE EXISTING CONDUIT FROM MCC-1 TO NEW HANDHOLE. PROVIDE NEW WIRING
17. PROVIDE COMMUNICATIONS CONDUIT BETWEEN ELECTRICAL BUILDING AND CONTROL BUILDING (COMM). SEE DRAWING E100 FOR DETAILS.
18. CONCRETE ENCASED DUCTBANK. REFER TO DETAIL 1 ON DRAWING E500. (1)
19. CONDUIT FROM THIS POINT TO THE ELECTRICAL SERVICE BUILDING SHALL BE CONCRETE ENCASED.



1 E050 OVERALL SITE PLAN - ELECTRICAL
1" = 20'

N

CONDUIT REPLACEMENT: (1)

- ALLOW FOR 200' OF 3/4" PVC COATED RIGID GALVANIZED CONDUIT TO REPLACE THE EXISTING PVC CONDUIT.
- ALLOW FOR 200' OF 1" PVC COATED RIGID GALVANIZED CONDUIT TO REPLACE THE EXISTING PVC CONDUIT.

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95 FRANKLIN STREET, ROOM 1034
BUFFALO, NEW YORK 14202

EAST AURORA WATER RESOURCE RECOVERY FACILITY
ELECTRICAL UPGRADES
ECSD NO. 8, CONTRACT 25

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

NO:	DATE:	DESCRIPTION:
1	2025-06-11	ADD NOTES FOR CLARIFICATION
REVISIONS		

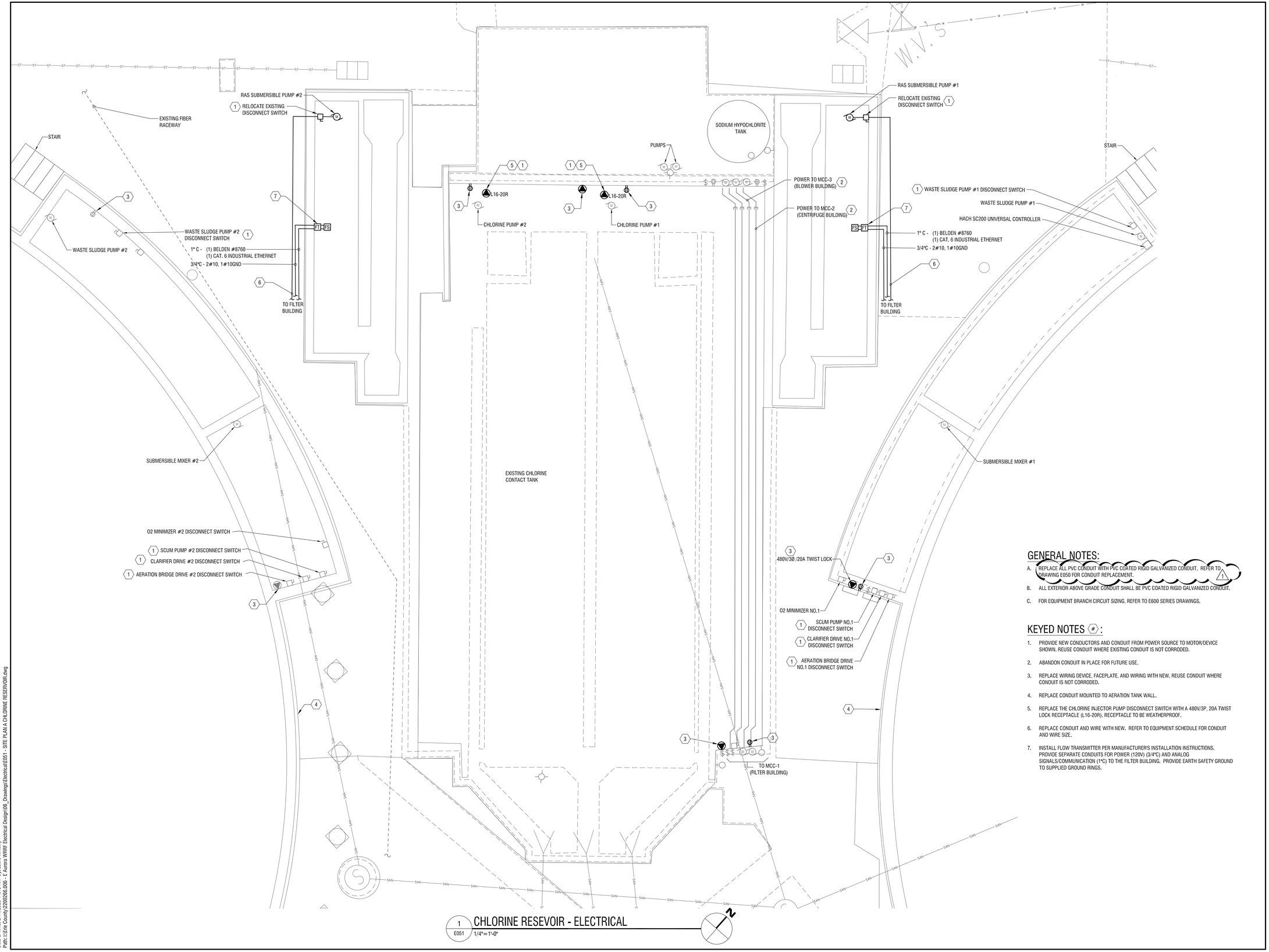
PROJECT NUMBER: 2200266.008
DRAWN BY: BTM
REVIEWED BY: APL
ISSUED FOR: BID DOCUMENTS
DATE: MAY 2025
DRAWING NAME:

OVERALL SITE PLAN-ELECTRICAL

DRAWING NUMBER:

E050

Date & Time: 6/11/2025 11:02 AM By: Zuch, Timothy
Path: L:\Erie County\2200266.008 - E Aurora WWTP Electrical Design\06_Drawings\Electrical\E050 - OVERALL SITE PLAN.dwg



1 E051 CHLORINE RESEVOIR - ELECTRICAL
1/4"= 1'-0"

GENERAL NOTES:

A. REPLACE ALL PVC CONDUIT WITH PVC COATED RIGID GALVANIZED CONDUIT. REFER TO DRAWING E050 FOR CONDUIT REPLACEMENT.

B. ALL EXTERIOR ABOVE GRADE CONDUIT SHALL BE PVC COATED RIGID GALVANIZED CONDUIT.

C. FOR EQUIPMENT BRANCH CIRCUIT SIZING, REFER TO E600 SERIES DRAWINGS.

KEYED NOTES (#):

1. PROVIDE NEW CONDUCTORS AND CONDUIT FROM POWER SOURCE TO MOTOR/DEVICE SHOWN. REUSE CONDUIT WHERE EXISTING CONDUIT IS NOT CORRODED.
2. ABANDON CONDUIT IN PLACE FOR FUTURE USE.
3. REPLACE WIRING DEVICE, FACEPLATE, AND WIRING WITH NEW. REUSE CONDUIT WHERE CONDUIT IS NOT CORRODED.
4. REPLACE CONDUIT MOUNTED TO AERATION TANK WALL.
5. REPLACE THE CHLORINE INJECTOR PUMP DISCONNECT SWITCH WITH A 480V/3P, 20A TWIST LOCK RECEPTACLE (L16-20R). RECEPTACLE TO BE WEATHERPROOF.
6. REPLACE CONDUIT AND WIRE WITH NEW. REFER TO EQUIPMENT SCHEDULE FOR CONDUIT AND WIRE SIZE.
7. INSTALL FLOW TRANSMITTER PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE SEPARATE CONDUITS FOR POWER (120V) (3/4"C) AND ANALOG SIGNALS/COMMUNICATION (1"C) TO THE FILTER BUILDING. PROVIDE EARTH SAFETY GROUND TO SUPPLIED GROUND RINGS.

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EAST AURORA WATER RESOURCE RECOVERY FACILITY ELECTRICAL UPGRADES ECSD NO. 8, CONTRACT 25

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

NO:	DATE:	DESCRIPTION:
1	2025-06-11	ADD NOTES FOR CLARIFICATION

REVISIONS

PROJECT NUMBER: 2200266.008

DRAWN BY: BTM

REVIEWED BY: APL

ISSUED FOR: BID DOCUMENTS

DATE: MAY 2025

DRAWING NAME:

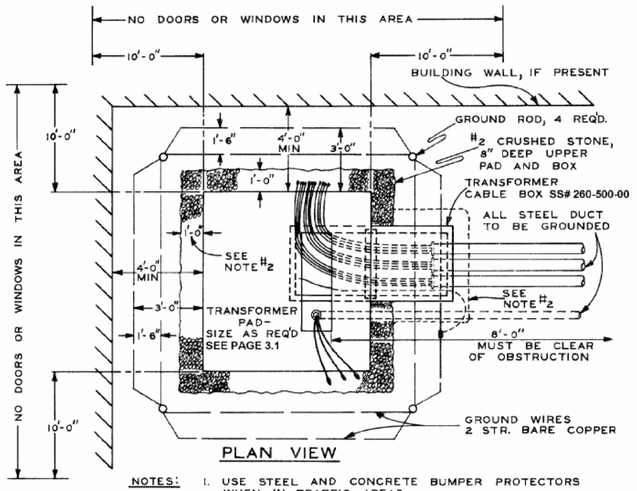
SITE PLAN A - CHLORINE CONTANCT TANK - ELECTRICAL

DRAWING NUMBER:

E051

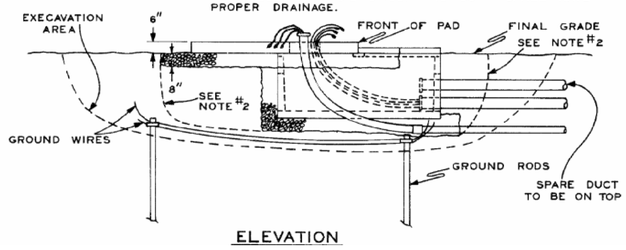
Date & Time: 6/11/2025 11:18 AM By: Zoch, Timothy
Path: I:\Erie County\2200266.008 - E Aurora WWP Electrical Design\06_Drawings\Electrical\E051 - SITE PLAN A CHLORINE RESERVOIR.dwg

INSTALLATION FOR 3Ø TRANSFORMERS WITH SECONDARY CABLE BOX

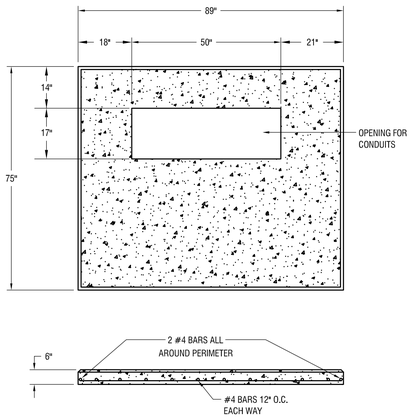


PLAN VIEW

NOTES:
1. USE STEEL AND CONCRETE BUMPER PROTECTORS WHEN IN TRAFFIC AREAS.
2. IF PAD LOCATION IS 4' TO 10' FROM BUILDING, THE #2 STONE SHALL BE INSTALLED 3' DEEP, AS A SUMP TO COLLECT AN OIL SPILL. THIS SUMP SHALL HAVE PROPER DRAINAGE.



ELEVATION



NOTES:

A. CONCRETE 3500 PSI @ 28 DAYS.

B. DEFORMED BARS - ASTM A-615, GRADE 40.

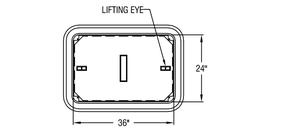
C. TOP SURFACE SHALL BE TROWEL FINISHED.

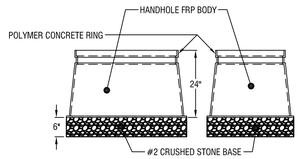
D. 3/4 " CHAMFER ALL EXPOSED EDGES, INCLUDING OPENING.

E. REFER TO NYSEG DISTRIBUTION STANDARDS FOR TRANSFORMER PAD INSTALLATION AND GROUNDING DETAILS.

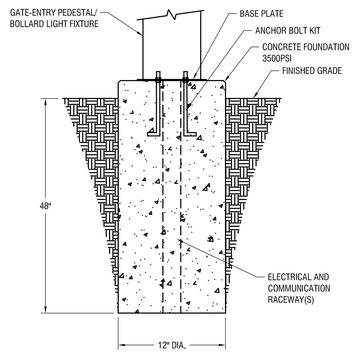
REINFORCING SCHEDULE	
#4 BARS @ 12" O.C.	APPROX. WT.
	61 LBS.
CONCRETE VOLUME	.83 CU. YARDS

6 / E500 — 750KVA TRANSFORMER PAD DETAIL
NOT TO SCALE



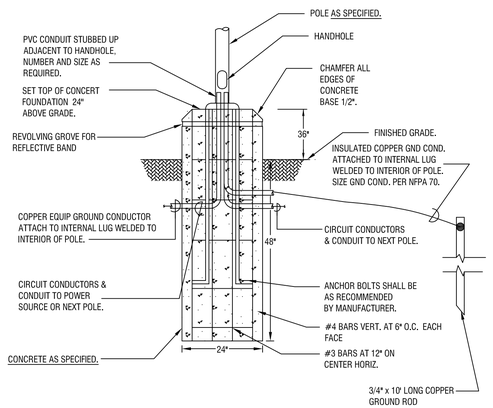


3 / E500 — TYPICAL HANDHOLE
NOT TO SCALE

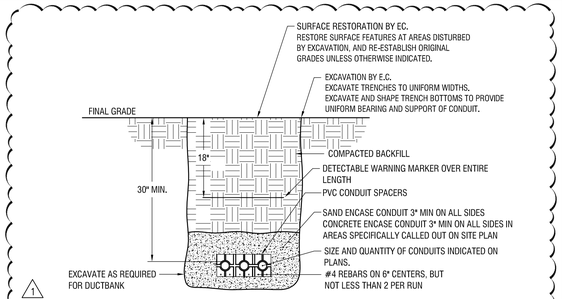


FOUNDATION

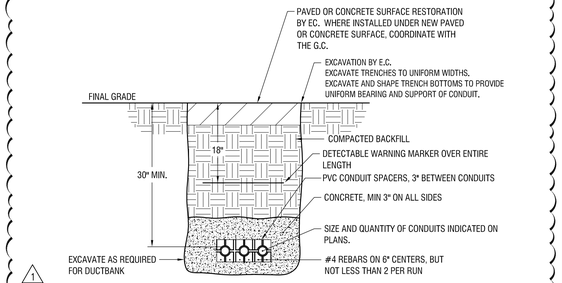
7 / E500 — GATE-ENTRY PEDESTAL/BOLLARD LIGHT FIXTURE BASE DETAIL
NOT TO SCALE



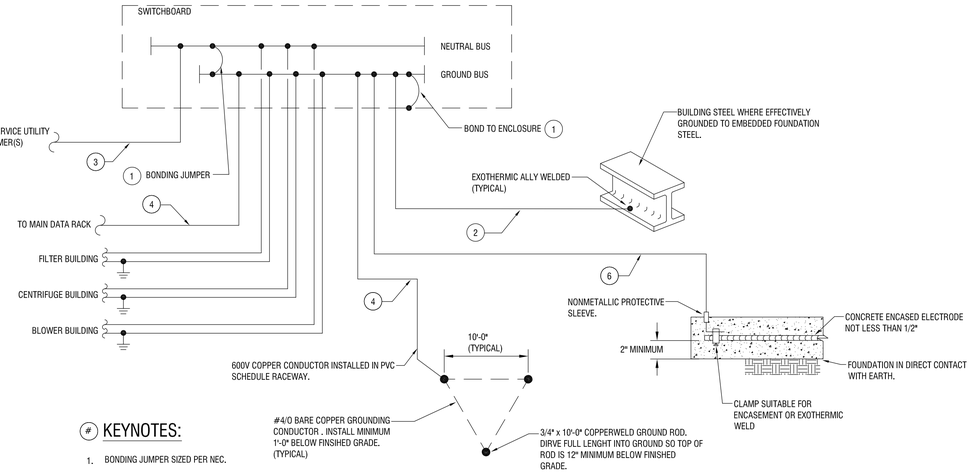
2 / E500 — PRECAST BASE WITH REFLECTIVE BAND LIGHT POLE DETAIL
NOT TO SCALE



8 / E500 — DIRECT BURIED CONDUIT TRENCH DETAIL (UNPAVED AREAS)
NOT TO SCALE



1 / E500 — CONCRETE ENCASED CONDUIT TRENCH DETAIL (PAVED AREAS)
NOT TO SCALE



KEYNOTES:

1. BONDING JUMPER SIZED PER NEC.
2. GROUND ELECTRODE SYSTEM BONDING JUMPER CONDUCTOR #4/0 AWG.
3. GROUNDED (NEUTRAL) CONDUCTOR (REFER TO ONE LINE DIAGRAM FOR SIZE)
4. GROUNDING ELECTRODE SYSTEM BONDING JUMPER CONDUCTOR #4/0 AWG.
5. GROUNDING ELECTRODE SYSTEM BONDING JUMPER CONDUCTOR #4 AWG.
6. GROUNDING ELECTRODE SYSTEM BONDING JUMPER CONDUCTOR #4 AWG. COPPER WIRE.

GROUNDING NOTES:

A. ALL CONNECTIONS TO GROUNDING SYSTEM BELOW GRADE SHALL BE EXOTHERMIC TYPE(CADWELD) OR EQUAL.

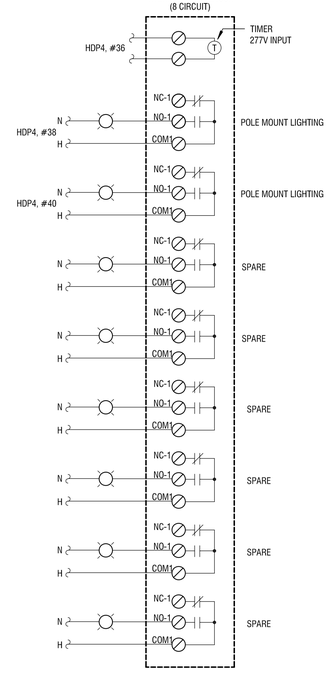
B. ALL CONNECTIONS TO NEW EQUIPMENT STEEL ABOVE GRADE SHALL BE BOLTED TYPE WITH COMPRESSION TYPE LUG. (CLEAN SURFACE TO REMOVE PAINT,SCALE,DIRT,ETC.)

C. TEST THE GROUND SYSTEM(S) IN ACCORDANCE WITH I.E.E.E. 81 STANDARDS SYSTEM(S) SHALL NOT EXCEED 5 OHMS RESISTANCE TO GROUND. CONTRACTOR TO PROVIDE CERTIFICATION DOCUMENTS WITH TEST RESULTS.

D. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ALL PENETRATIONS AND/OR OPENINGS IN WALLS, FOUNDATIONS, STRUCTURE, ETC., TO MAKE WATER TIGHT.

E. DO NOT BOND NEUTRAL TO GROUND AT REMOTE BUILDINGS.

5 / E500 — MAIN SERVICE GROUNDING DETAIL
NOT TO SCALE



NOTES:
REFER TO PANEL SCHEDULES FOR CIRCUIT NUMBERING.

4 / E500 — LIGHTING TIME CLOCK DETAIL
NOT TO SCALE

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BUFFALO, NEW YORK 14202

EAST AURORA WATER RESOURCE RECOVERY FACILITY ELECTRICAL UPGRADES ECSD NO. 8, CONTRACT 25

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

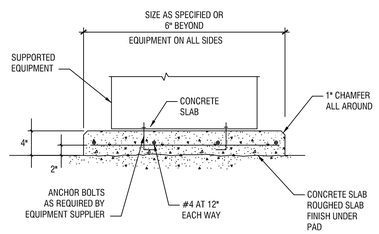
NO:	DATE:	DESCRIPTION:
1	2025-06-11	REVISE DETAIL 1, ADD DETAIL 8
REVISIONS		

PROJECT NUMBER: 2200266.008
DRAWN BY: BTM
REVIEWED BY: APL
ISSUED FOR: BID DOCUMENTS
DATE: MAY 2025
DRAWING NAME:

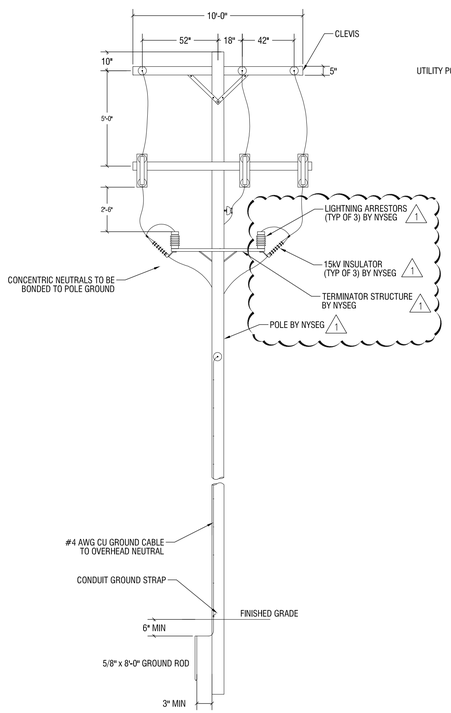
ELECTRICAL DETAILS

DRAWING NUMBER:

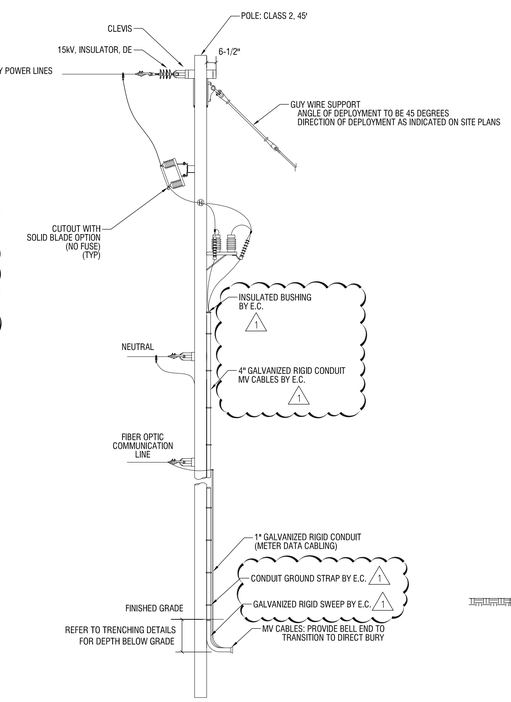
E500



3 E501 HOUSEKEEPING PAD DETAIL
NOT TO SCALE



2 E501 POLE RISER DETAIL
NOT TO SCALE



GENERAL NOTES

A. DETAILS SHOWN ARE PROVIDED FOR INFORMATION ONLY. EQUIPMENT CLEARANCES AND CONFIGURATION WILL VARY BASED ON EQUIPMENT SELECTION. FINAL DESIGN TO COMPLY WITH NATIONAL ELECTRIC CODE AND NATIONAL ELECTRIC SAFETY CODE. CLEARANCES ARE TO MEET NATIONAL ELECTRIC SAFETY CODE TABLE 232-1.

B. LOCATION OF NEUTRAL CONDUCTOR SHOWN FOR REFERENCE ONLY. MATCH INSTALLATION HEIGHTS EXISTING LINE FOR ANY INSTALLATION OF NEW NEUTRAL CONDUCTOR(S).

C. ALL CABLES AND EQUIPMENT INSTALLED ON POLE TO MEET RATINGS AS CALLED FOR ON 3-LINE DIAGRAM.

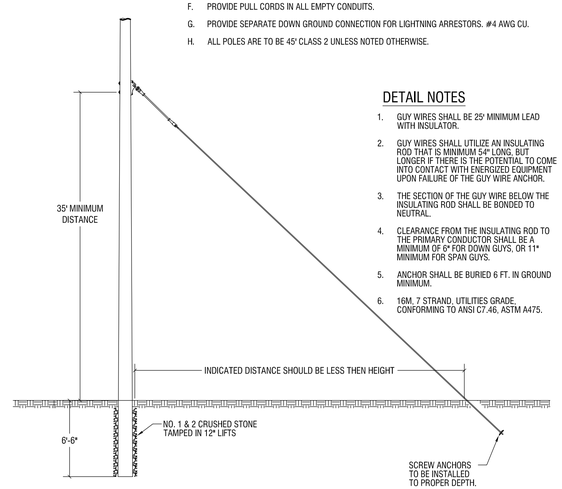
D. PROVIDE GROUND CONNECTION FOR POLE MOUNTED EQUIPMENT INCLUDING BUT NOT LIMITED TO; GROUP OPERTATED DISCONNECT SWITCH HARDWARE, METERING TRANSFORMER MOUNTING BRACKET, METER ENCLOSURE AND EXPOSED RIGID METALLIC CONDUITS.

E. RECLOSER TO BE PROVIDED WITH TRANSFORMER OPTION FOR SUPPLY OF 120V SINGLE PHASE POWER TO CONTROL BOX.

F. PROVIDE PULL CORDS IN ALL EMPTY CONDUITS.

G. PROVIDE SEPARATE DOWN GROUND CONNECTION FOR LIGHTNING ARRESTORS. #4 AWG CU.

H. ALL POLES ARE TO BE 45' CLASS 2 UNLESS NOTED OTHERWISE.



DETAIL NOTES

1. GUY WIRES SHALL BE 25' MINIMUM LEAD WITH INSULATOR.
2. GUY WIRES SHALL UTILIZE AN INSULATING ROD THAT IS MINIMUM 54" LONG, BUT LONGER IF THERE IS THE POTENTIAL TO COME INTO CONTACT WITH ENERGIZED EQUIPMENT UPON FAILURE OF THE GUY WIRE ANCHOR.
3. THE SECTION OF THE GUY WIRE BELOW THE INSULATING ROD SHALL BE BONDED TO NEUTRAL.
4. CLEARANCE FROM THE INSULATING ROD TO THE PRIMARY CONDUCTOR SHALL BE A MINIMUM OF 6" FOR DOWN GUYS, OR 11" MINIMUM FOR SPAN GUYS.
5. ANCHOR SHALL BE BURIED 6 FT. IN GROUND MINIMUM.
6. 16M, 7 STRAND, UTILITIES GRADE, CONFORMING TO ANSI C7.46, ASTM A475.

1 E501 GUY WIRE DETAIL
NOT TO SCALE

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SEWERAGE MANAGEMENT**

**95 FRANKLIN STREET, ROOM 1034
BUFFALO, NEW YORK 14202**

**EAST AURORA WATER RESOURCE
RECOVERY FACILITY
ELECTRICAL UPGRADES
ECSD NO. 8, CONTRACT 25**

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

NO:	DATE:	DESCRIPTION:
1	2025-06-11	ADDED CLARIFICATION NOTES

REVISIONS

PROJECT NUMBER: 2200266.008

DRAWN BY: BTM

REVIEWED BY: APL

ISSUED FOR: BID DOCUMENTS

DATE: MAY 2025

DRAWING NAME:

ELECTRICAL DETAILS

DRAWING NUMBER:

E501

DESIGN BASE: EXISTING
LOCATION: FILTER BUILDING
BUS RATING: 225 Amps
MAIN: 225 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP1' (DEMO)

FULLY RATED AIC: EXISTING Amps RMS SYM.
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM: MCC-1
ENCLOSURE TYPE: NEMA 1

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	GENERATOR HEATER/CHARGER	20A/1P	-	-		20A/1P	BISULFITE PUMP, HYPO PUMP	2
3	FILTER VENT	20A/1P			-	20A/1P	BATTERY CHARGER OMNISITE	4
5	FILTER LIGHTS	20A/1P			-	20A/2P	CL2 BOOSTER PUMP	6
7	FILTER LIGHTS	20A/1P	-	-				8
9	COMPUTER	20A/1P			-	20A/1P	FILTER ROOM RECEPT.	10
11	EMERGENCY LIGHTS	20A/1P			-	20A/2P	WATER JACKET GENERATOR	12
13	CL2 FAN	20A/1P	-	-				14
15	ELECTRICAL ROOM LIGHTS	20A/1P		-	-	20A/1P	FILTER BASEMENT LIGHTS	16
17	ELECTRICAL ROOM RECEPT.	20A/1P			-	20A/1P	FILTER BASEMENT RECEPT.	18
19	ELECTRICAL ROOM HEATER	30A/2P	-	-		15A/1P	FILTER BUILDING LIGHTS	20
21				-	-	15A/1P	EXTERIOR RECEPT.	22
23	O2 METER & EFFLUENT FLOW METER	20A/1P			-	20A/1P	WALL LIGHT OUTSIDE	24
25	OUTLET ON DECK	20A/1P	-	-		100A/3P	PANEL MAIN BREAKER	26
27	EXTERIOR FLOOD LIGHTS	20A/1P		-	-			28
29	HYPO PUMPS	15A/1P			-			30
TOTAL CONNECTED VA/LEG			###	###	###			
TOTAL CONNECTED KVA			####					
TOTAL CONNECTED AMPS								

DESIGN BASE: EXISTING
LOCATION: CENTRIFUGE BUILDING
BUS RATING:225 Amps
MAIN: 225 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP2' (DEMO)

FULLY RATED AIC: EXISTING Amps RMS SYM.
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM:MCC-2
ENCLOSURE TYPE: NEMA 1

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	SPARE	20A/1P	-	-		20A/1P	CENTRIFUGE LIGHTS	2
3	MCP-2	20A/1P			-	20A/1P	CENTRIFUGE LIGHTS	4
5	POLYBLEND	20A/1P			-	20A/1P	CENTRIFUGE LIGHTS	6
7	REZNOR MAN DOOR HEATER	20A/1P	-	-		20A/1P	CENTRIFUGE VENTS	8
9	MILL ST PANEL	30A/2P			-	20A/1P	CENTRIFUGE PLUGS, LIGHT OVER WORKBENCH,GFCI PLUG BY GARAGE DOOR	10
11					-	20A/2P	OUTSIDE LIGHTING	12
13	BASEMENT HEATER	20A/1P	-	-				14
15	ELECTRIC ROOM HVAC	20A/2P			-	20A/1P	ELECTRIC ROOM RECEPT.	16
17					-	20A/1P	OUTSIDE WALL LIGHTS	18
19		20A/1P	-	-		15A/1P	FeCl3 PUMPS AND SCALE LEVEL INDICATORS	20
21	DOOR OPENER	20A/1P		-	-	100A/2P	BASEMENT LIGHTS (CONFIRM IN FIELD)	22
23	BASEMENT RECEPT.	20A/1P			-			24
25	EMERGENCY LIGHT	20A/1P	-	-		100A/3P	PANEL MAIN BREAKER	26
27	HEAT TAPE	20A/1P		-	-			28
29		20A/1P			-			30
TOTAL CONNECTED VA/LEG			###	###	###			
TOTAL CONNECTED KVA			####					
TOTAL CONNECTED AMPS								

DESIGN BASE: EXISTING
LOCATION: BLOWER BUILDING
BUS RATING: 225 Amps
MAIN: 225 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP3' (DEMO)

FULLY RATED AIC: EXISTING Amps RMS SYM.
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM: MCC-3
ENCLOSURE TYPE: NEMA 1

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	SPARE	60A/2P	-	-		20A/1P	SCREENING LIGHTS AND GFCI PLUG	2
3				-	-	20A/1P	SCREENING VENT	4
5	SPARE	20A/2P			-	20A/1P	BLOWER LIGHTS	6
7			-	-		20A/1P	CL2 CYLINDER ROOM VENT	8
9	SPARE	20A/1P		-	-	20A/1P	SULFUNATION	10
11	SPARE	20A/1P			-	20A/1P	HOLDING TANK PANEL	12
13	SPARE	20A/1P	-	-		100A/3P	NEW PANEL LAB	14
15	SPARE	20A/1P		-	-			16
17	SPARE	20A/1P			-			18
19	SPACE	-	-	-		20A/1P	SCREENING PLUG	20
21	SPACE	-		-	-	-	SPACE	22
23	SPACE	-			-	-	SPACE	24
25	SPACE	-	-	-		100A/3P	PANEL MAIN BREAKER	26
27	SPACE	-		-	-			28
29	MCP-3	20A/1P			-			30
TOTAL CONNECTED VA/LEG			###	###	###			
TOTAL CONNECTED KVA			####					
TOTAL CONNECTED AMPS								

DESIGN BASE: EATON PRL1X
LOCATION: FILTER BUILDING
BUS RATING: 225 Amps
MAIN: 225 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP1' (NEW)

FULLY RATED AIC: 10 KAIC
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM:T-LDP1
ENCLOSURE TYPE: NEMA 12/3R

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	SPARE	20A/1P	-	-		20A/1P	SPARE	2
3	FILTER VENT	20A/1P		-	-	20A/1P	BATTERY CHARGER OMNISITE	4
5	FILTER LIGHTS	20A/1P			-	20A/2P	CL2 CONTACT TANK RECEPTACLE	6
7	FILTER LIGHTS	20A/1P	-	-				8
9	COMPUTER	20A/1P		-	-	20A/1P	FILTER ROOM RECEPT.	10
11	EMERGENCY LIGHTS	20A/1P			-	20A/2P	WATER JACKET GENERATOR	12
13	CL2 FAN	20A/1P	-	-				14
15	ELECTRICAL ROOM LIGHTS	20A/1P		216		20A/1P	FILTER BASEMENT LIGHTS	16
17	ELECTRICAL ROOM RECEPT.	20A/1P			360	20A/1P	FILTER BASEMENT RECEPT.	18
19	ELECTRICAL ROOM HEATER	30A/2P	729			20A/1P	FILTER BUILDING LIGHTS	20
21				360		20A/1P	OUTSIDE RECEPT.	22
23	O2 METER & EFFLUENT FLOW METER	20A/1P			-	20A/1P	WALL LIGHT OUTSIDE	24
25	OUTLET ON DECK	20A/1P	1080			20A/1P	FILTER BUILDING RECEPTACLES	26
27	EXTERIOR FLOOD LIGHTS	20A/1P		-	-	20A/1P	HOISTWAY RECEPTACLES	28
29	HYPO PUMPS	15A/1P			-	20A/1P	SPARE	30
31	RAS FLOW METER(S)	20A/1P	-	-		20A/1P	EFFLUENT STAIR LIGHTING	32
33	SPARE	20A/1P		-	-	20A/1P	AERATION TANK FLOOD LIGHT	34
35	SPARE	20A/1P			-	20A/1P	DRYING BED BOLLARD RECEPT.	36
37	SURGE PROTECTION DEVICE	30A/3P	-	-		100A/3P	SPARE	38
39				-	-			40
41					-			42
TOTAL CONNECTED VA/LEG			###	###	###			
TOTAL CONNECTED KVA			####					
TOTAL CONNECTED AMPS								

DESIGN BASE: EATON PRL1X
LOCATION: CENTRIFUGE BUILDING
BUS RATING:225 Amps
MAIN: 100 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP2' (NEW)

FULLY RATED AIC: 10 KAIC
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM: LDP5
ENCLOSURE TYPE: NEMA 12/3R

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	SPARE	20A/1P	-	648		20A/1P	CENTRIFUGE LIGHTS	2
3	MCP-2	20A/1P		-	189	20A/1P	CENTRIFUGE LIGHTS	4
5	POLYBLEND	20A/1P			-	20A/1P	CENTRIFUGE LIGHTS	6
7	REZNOR MAN DOOR HEATER	20A/1P	-	-		20A/1P	CENTRIFUGE VENTS	8
9	SPARE	30A/2P		-	-	20A/1P	CENTRIFUGE PLUGS, LIGHT OVER WORKBENCH,GFCI RECEPT. BY GARAGE DOOR	10
11					-	20A/2P	OUTSIDE LIGHTING	12
13	BASEMENT RECEPT.	20A/1P	-	-				14
15	ELEC. RM. HVAC	20A/2P		-	-	20A/1P	ELECTRIC ROOM RECEPTACLE	16
17					-	20A/1P	OUTSIDE WALL LIGHTS	18
19	SPARE	20A/1P	-	-		15A/1P	FeCl3 PUMPS AND SCALE LEVEL INDICATORS	20
21	DOOR OPENER	20A/1P		-	-	100A/2P	BASEMENT LIGHTS (CONFIRM IN FIELD)	22
23	BASEMENT RECEPT.	20A/1P			-			24
25	EMERGENCY LIGHT	20A/1P	-	-		20A/1P	SPARE	26
27	HEAT TAPE	20A/1P		-	360	20A/1P	RECEPTACLES AT SLIDING GATE	28
29	EXTERIOR RECEPTACLE	20A/1P			180	-	20A/1P	GUH-1 & GUH-2	30
31	SPARE	30A/3P	-	-		20A/1P	GUH-3 & GUH-4	32
33				-	-	30A/2P	IU-1/OU-1	34
35					-			36
37	SURGE PROTECTION DEVICE	30A/3P	-	720		20A/3P	SLIDING GATE	38
39					-	720		40
41						-	720	42
TOTAL CONNECTED VA/LEG			###	###	###			
TOTAL CONNECTED KVA			####					
TOTAL CONNECTED AMPS								

DESIGN BASE: EATON PRL1X
LOCATION: BLOWER BUILDING
BUS RATING: 225 Amps
MAIN: 100 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP3' (NEW)

FULLY RATED AIC: 10 KAIC
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM: LDP5
ENCLOSURE TYPE: NEMA 12/3R

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	SPARE	60A/2P	-	-		20A/1P	SCREENING LIGHTS AND GFCI RECEPT.	2
3				-	-	20A/1P	SCREENING VENT	4
5	SPARE	20A/2P			-	108	20A/1P	BLOWER LIGHTS	6
7			-	-			20A/1P	GARAGE VENT	8
9	SPARE	20A/1P		-	-	20A/1P	SULFUNATION	10
11	SPARE	20A/1P			-	20A/1P	HOLDING TANK PANEL	12
13	SPARE	20A/1P	-	-		20A/1P	RECPTACLE	14
15	SPARE	20A/1P		-	-	20A/1P	SPARE	16
17	SPARE	20A/1P			-	20A/1P	SPARE	18
19	SPARE	20A/1P	-	-		20A/1P	SCREENING RECEPT.	20
21	SPARE	20A/1P		-	-	20A/1P	SPARE	22
23	SPARE	20A/1P			-	20A/1P	SPARE	24
25	SPARE	20A/1P	-	-		20A/1P	SPARE	26
27	SPARE	20A/1P		-	-	20A/1P	SPARE	28
29	MCP-3	20A/1P			-	20A/1P	SPARE	30
31	-	20A/1P	-	-		60A/3P	SPARE	32
33	-	20A/1P		-	-			34
35	-	20A/1P			-			36
37	SURGE PROTECTION DEVICE	30A/3P	-	-		100A/3P	SPARE	38
39				-	-			40
41					-			42
TOTAL CONNECTED VA/LEG			###	###	###			
TOTAL CONNECTED KVA			####					
TOTAL CONNECTED AMPS								

DESIGN BASE: EATON PRL1X
LOCATION: ELECTRICAL BLDG.
BUS RATING: 225 Amps
MAIN: 225 Amp MCB
SERVICE ENTRANCE LABEL: NO

PANEL SCHEDULE

PANEL 'LDP5' (NEW)

FULLY RATED AIC: 22 KAIC
SERVICE: 208/120V, 3Ø, 4W
MOUNTING: SURFACE
FED FROM: T-LDP5
ENCLOSURE TYPE: NEMA 12/3R

CKT.	LOAD DESIGNATION	BREAKER	L1 (VA)	L2 (VA)	L3 (VA)	BREAKER	LOAD DESIGNATION	CKT.
1	ELECTRICAL BLDG. INDOOR RECEPT.	20A/1P	360	5865		60A/2P	GENERATOR LOAD CENTER	2
3	ELECTRICAL BLDG. OUTDOOR RECEPT.	20A/1P		180	5865			4
5	ELEC. BLDG. INDOOR LIGHTS	20A/1P			162	1650	30A/2P	EUH-1	6
7	ELEC. BLDG. OUTDOOR LIGHTS	20A/1P	60	1650				8
9	DOCKING STATION BATTERY CHARGER RECEPTACLE	20A/1P		1200	1650		30A/2P	EUH-2	10
11	DOCKING STATION BLOCK HEATER RECEPTACLE	30A/1P			2500	1650			12
13	LOAD BANK CONTROL CIRCUIT	20A/1P	600	-			20A/1P	FUEL POLISHER	14
15	DATA RACK CABINET RECEPTACLES	20A/1P		360	-		20A/1P	SPARE	16
17	SPARE	20A/1P				-	-	30A/2P	SPARE	18
19	SPARE	20A/1P	-	-					20
21	SPARE	20A/1P		-	1176		20A/1P	EF-1 AND L-1	22
23	SPARE	20A/1P			-	-	20A/1P	SPARE	24
25	SPARE	20A/1P	-	-			60A/3P	SPARE	26
27	SPARE	20A/1P		-	-				28
29	SPARE	20A/1P			-	-			30
31	LDP2	100A/3P	-	-			100A/3P	LDP3	32
33				-	-				34
35					-	-			36
37	SURGE PROTECTION DEVICE	30A/3P	-	-			100A/3P	LDP4	38
39				-	-				40
41					-	-			42
TOTAL CONNECTED VA/LEG			8535	###	###				
TOTAL CONNECTED KVA			8.535000						
TOTAL CONNECTED AMPS									

1 LDP2

PANEL SCHEDULES

LDP1 (DEMO)	LDP2 (DEMO)	LDP3 (DEMO)
LDP1 (NEW)	LDP2 (NEW)	LDP3 (NEW)
	LDP5 (NEW)	

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DISTRICT NO. 8,
ERIE COUNTY DIVISION OF SEWERAGE MANAGEMENT

95 FRANKLIN STREET, ROOM 1034
BUFFALO, NEW YORK 14202

EAST AURORA WATER RESOURCE RECOVERY FACILITY
ELECTRICAL UPGRADES
ECSD NO. 8, CONTRACT 25

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

NO:	DATE:	DESCRIPTION:
1	2025-06-11	ADD 100A-3P BREAKER TO LDP5

REVISIONS

PROJECT NUMBER: 2200266.008

DRAWN BY: BTM

REVIEWED BY: APL

ISSUED FOR: BID DOCUMENTS

DATE: MAY 2025

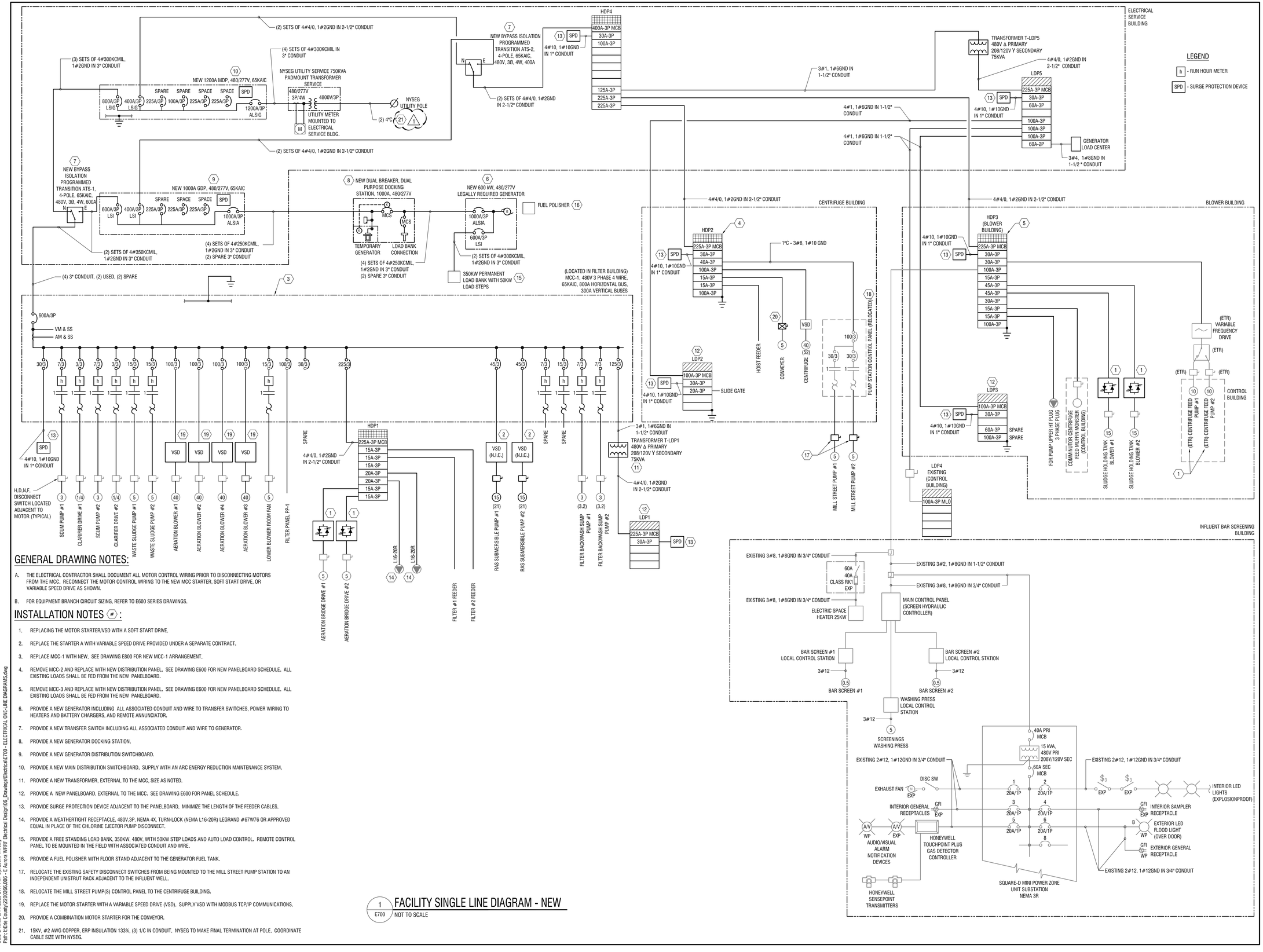
DRAWING NAME:

ELECTRICAL PANEL SCHEDULES

DRAWING NUMBER:

E600

Date & Time: 6/10/2025 3:18 PM By: Zurch, Timothy
Path: I:\Erie County\2200266.008 - E Aurora WRRF Electrical Design\06_Drawings\Electrical\E600 - ELECTRICAL PANEL SCHEDULES.dwg



GENERAL DRAWING NOTES:

A. THE ELECTRICAL CONTRACTOR SHALL DOCUMENT ALL MOTOR CONTROL WIRING PRIOR TO DISCONNECTING MOTORS FROM THE MCC. RECONNECT THE MOTOR CONTROL WIRING TO THE NEW MCC STARTER, SOFT START DRIVE, OR VARIABLE SPEED DRIVE AS SHOWN.

B. FOR EQUIPMENT BRANCH CIRCUIT SIZING, REFER TO E600 SERIES DRAWINGS.

INSTALLATION NOTES ⟨#⟩:

1. REPLACING THE MOTOR STARTER/VSD WITH A SOFT START DRIVE.
2. REPLACE THE STARTER A WITH VARIABLE SPEED DRIVE PROVIDED UNDER A SEPARATE CONTRACT.
3. REPLACE MCC-1 WITH NEW. SEE DRAWING E800 FOR NEW MCC-1 ARRANGEMENT.
4. REMOVE MCC-2 AND REPLACE WITH NEW DISTRIBUTION PANEL. SEE DRAWING E600 FOR NEW PANELBOARD SCHEDULE. ALL EXISTING LOADS SHALL BE FED FROM THE NEW PANELBOARD.
5. REMOVE MCC-3 AND REPLACE WITH NEW DISTRIBUTION PANEL. SEE DRAWING E600 FOR NEW PANELBOARD SCHEDULE. ALL EXISTING LOADS SHALL BE FED FROM THE NEW PANELBOARD.
6. PROVIDE A NEW GENERATOR INCLUDING ALL ASSOCIATED CONDUIT AND WIRE TO TRANSFER SWITCHES, POWER WIRING TO HEATERS AND BATTERY CHARGERS, AND REMOTE ANNUNCIATOR.
7. PROVIDE A NEW TRANSFER SWITCH INCLUDING ALL ASSOCIATED CONDUIT AND WIRE TO GENERATOR.
8. PROVIDE A NEW GENERATOR DOCKING STATION.
9. PROVIDE A NEW GENERATOR DISTRIBUTION SWITCHBOARD.
10. PROVIDE A NEW MAIN DISTRIBUTION SWITCHBOARD. SUPPLY WITH AN ARC ENERGY REDUCTION MAINTENANCE SYSTEM.
11. PROVIDE A NEW TRANSFORMER, EXTERNAL TO THE MCC, SIZE AS NOTED.
12. PROVIDE A NEW PANELBOARD, EXTERNAL TO THE MCC. SEE DRAWING E600 FOR PANEL SCHEDULE.
13. PROVIDE SURGE PROTECTION DEVICE ADJACENT TO THE PANELBOARD. MINIMIZE THE LENGTH OF THE FEEDER CABLES.
14. PROVIDE A WEATHERTIGHT RECEPTACLE, 480V,3P, NEMA 4X, TURN-LOCK (NEMA L16-20R) LEGRAND #67W76 OR APPROVED EQUAL IN PLACE OF THE CHLORINE EJECTOR PUMP DISCONNECT.
15. PROVIDE A FREE STANDING LOAD BANK, 350KW, 480V, WITH 50KW STEP LOADS AND AUTO LOAD CONTROL. REMOTE CONTROL PANEL TO BE MOUNTED IN THE FIELD WITH ASSOCIATED CONDUIT AND WIRE.
16. PROVIDE A FUEL POLISHER WITH FLOOR STAND ADJACENT TO THE GENERATOR FUEL TANK.
17. RELOCATE THE EXISTING SAFETY DISCONNECT SWITCHES FROM BEING MOUNTED TO THE MILL STREET PUMP STATION TO AN INDEPENDENT UNISTRUT RACK ADJACENT TO THE INFLUENT WELL.
18. RELOCATE THE MILL STREET PUMP(S) CONTROL PANEL TO THE CENTRIFUGE BUILDING.
19. REPLACE THE MOTOR STARTER WITH A VARIABLE SPEED DRIVE (VSD). SUPPLY VSD WITH MODBUS TCP/IP COMMUNICATIONS.
20. PROVIDE A COMBINATION MOTOR STARTER FOR THE CONVEYOR.
21. 15KV, #2 AWG COPPER, ERP INSULATION 133%, (3) 1/C IN CONDUIT. NYSEG TO MAKE FINAL TERMINATION AT POLE. COORDINATE CABLE SIZE WITH NYSEG.

1 E700 — FACILITY SINGLE LINE DIAGRAM - NEW
NOT TO SCALE

Date & Time: 6/11/2025 2:41 PM By: Zuch, Timothy
Path: L:\Erie County\2200266.008 - E Aurora WRRF Electrical Design\05_Drawings\Electrical\E700 - ELECTRICAL ONE-LINE DIAGRAMS.dwg

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95 FRANKLIN STREET, ROOM 1034
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EAST AURORA WATER RESOURCE RECOVERY FACILITY ELECTRICAL UPGRADES ECSD NO. 8, CONTRACT 25

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

NO:	DATE:	DESCRIPTION:
1	2025-06-11	CHANGE KEYNOTE AT UTILITY POLE

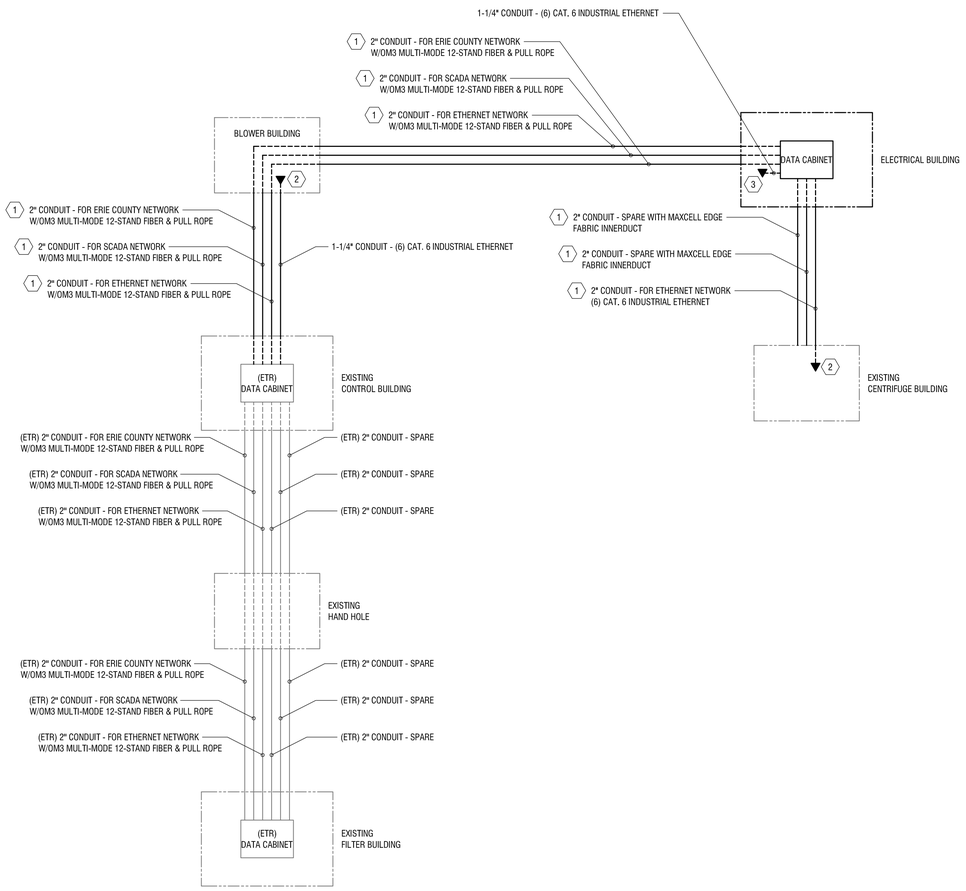
REVISIONS

PROJECT NUMBER: 2200266.008
DRAWN BY: BTM
REVIEWED BY: APL
ISSUED FOR: BID DOCUMENTS
DATE: MAY 2025
DRAWING NAME:

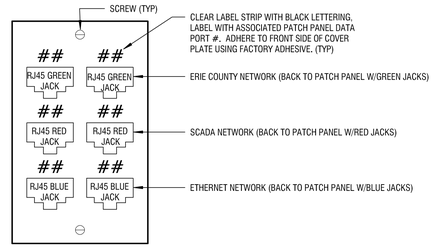
ELECTRICAL ONE-LINE DIAGRAM

DRAWING NUMBER:

E700

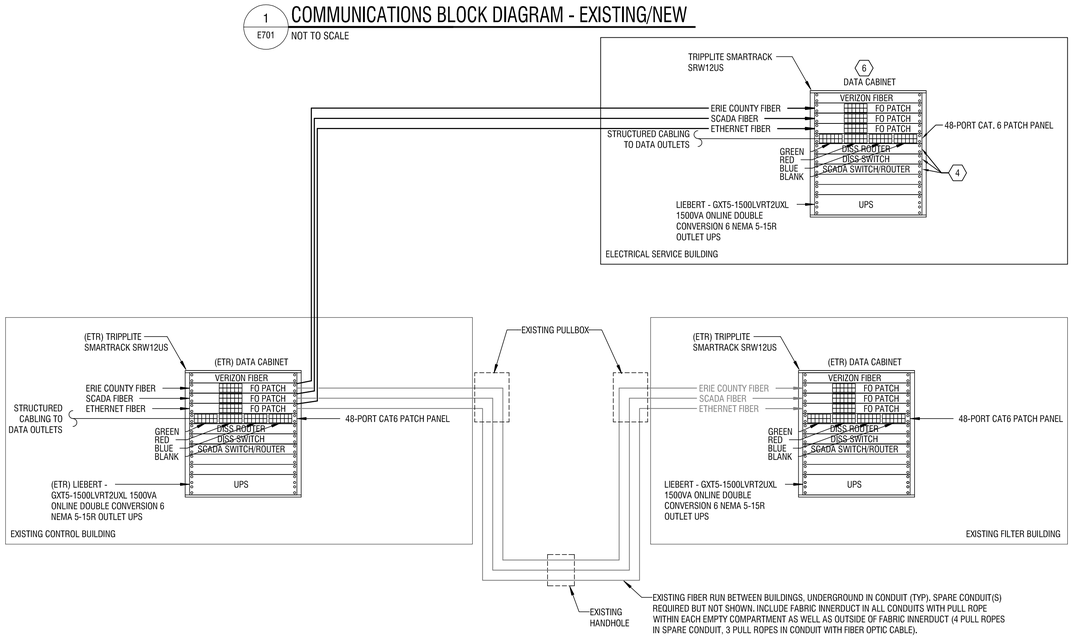


1 E701 **COMMUNICATIONS BLOCK DIAGRAM - EXISTING/NEW**
NOT TO SCALE



3 E701 **TYPICAL DATA PORT IDENTIFICATION**
NOT TO SCALE

1



2 E701 **DATA CABINET RISER DETAIL - NEW**
NOT TO SCALE

GENERAL DRAWING NOTES:

A. INSTALL AN UNDERGROUND-LINE WARNING TAPE 12" MINIMUM ABOVE BURIED CONDUIT. THE WARING TAPE SHALL BE REINFORCED, DETECTABLE THREE-LAYER LAMINATE, CONSISTING OF A PRINTED PIGMENTED WOVEN SCRIM, A SOLID ALUMINUM-FOIL CORE, AND A CLEAR PROTECTIVE FILM THAT ALLOWS INSPECTION OF THE CONTINUITY OF THE CONDUCTIVE CORE, BRIGHT-COLORED, CONTINUOUS-PRINTED ON ONE SIDE WITH THE INSCRIPTION OF THE UTILITY. INSCRIPTIONS FOR ORANGE-COLORED TAPES: COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

INSTALLATION NOTES (#):

1. PROVIDE A 2" CONDUIT WITH MAXCELL EDGE FABRIC INNERDUCT , 2", 3-CELL (MXE52223), FOR FIBER OPTIC, ETHERNET, AND COMMUNICATIONS CABLE. USE A SWIVAL TO INSTALL THE MAXCELL INNERDUCT. REFER TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR INSTALLATION.
2. PROVIDE DATA JACK ADJACENT TO EXISTING OPTO 22 SCADA PANEL.
3. PROVIDE DATA JACK ADJACENT TO NEW DATA RACK. COORDINATE WITH LOCATION OF NEW INTERCOM PHONE.
4. FURNISHED AND INSTALLED BY OTHERS (THE COUNTY AND/OR A SEPARATE COUNTY CONTRACTOR.
5. PROVIDE (10) GREEN DATA JACKS FOR ERIE COUNTY NETWORK, (10) RED DATA JACKS FOR SCADA NETWORK, (10) BLUE DATA JACKS FOR ETHERNET NETWORK. THE REST OF THE PATCH PANEL SHALL BE SPACES.
6. PROVIDE PATCH CABLES (FIBER OPTIC & CAT6) PER SPECIFICATIONS.

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EAST AURORA WATER RESOURCE RECOVERY FACILITY
ELECTRICAL UPGRADES
ECSD NO. 8, CONTRACT 25

201 MILL ROAD,
EAST AURORA,
NEW YORK 14052

NO:	DATE:	DESCRIPTION:
1	2025-06-11	REMOVE DETAIL 4

REVISIONS

PROJECT NUMBER: 2200266.008
DRAWN BY: BTM
REVIEWED BY: APL
ISSUED FOR: BID DOCUMENTS
DATE: MAY 2025
DRAWING NAME: COMMUNICATIONS BLOCK DIAGRAM
DRAWING NUMBER: E701

Date & Time: 6/11/2025 2:02 PM By: Zuch, Timothy
Path: I:\Erie County\2200266.005 - E. Aurora WRRF Electrical Design\06_Drawings\Electrical\E701 - COMMUNICATIONS BLOCK DIAGRAM.dwg