Oak Creek Water and Sewer Utility
Oak Creek, Wisconsin
Water Treatment Plant and Low Lift Pump Station
Standby Power

Generator Equipment Purchase Package

OAK CREEK

WATER and SEWER UTILITY

WISCONSIN
CHARLES E.
CRADDOCK
E-31555
CHAMPAIGN
IL.
PROFESSIONAL ENGINEER

EXPIRES JULY 31, 2012

SIGNATURE

12/17/10
DATE

WISCONSIN
KENDRICK R.
PAYNE
27939
PROFESSIONAL ENGINEER

EXPIRES JULY 31, 2012

SIGNATURE

12/17/10
DATE

December 17, 2010

Clark Dietz Project No. O0130014

Clark Dietz
ENGINEERS

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FOR

OAK CREEK WATER AND SEWER UTILITY
OAK CREEK, WISCONSIN
WATER TREATMENT PLANT AND LOW LIFT PUMP STATION STANDBY POWER

GENERATOR EQUIPMENT PURCHASE PACKAGE

SPECIFICATION SECTIONS

DRAWINGS

END OF SECTION

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NOTICE TO BIDDERS

OWNER: The Oak Creek Water & Sewer Utility Commission hereby gives notice that sealed proposals will be received at the Oak Creek Water and Sewer, 170 W. Drexel Avenue, Oak Creek, WI 53154.

PROJECT: The work, officially known as Generator Equipment Purchase Package, consists of supplying the following approximate quantities:

ITEM DESCRIPTION	QUANTITY
1,040 KW Engine Generator	2 EA
Engine Accessories and Coolant	2 EA
Heat Exchanger and Expansion Tank	4 EA
Exhaust Silencer and Fitting	2 EA
Battery and Charger	2 EA

TIME: Proposals must be received by the Utility Engineer at 170 W. Drexel Avenue, Oak Creek, WI 53154, no later than 10:00 a.m., January 21, 2010, at which time and place the proposals will be publicly opened and read aloud.

CONTRACT DOCUMENTS: Plans, specifications, and bidding documents may be obtained at www.water.oak-creek.wi.us in the public contracts section.

BID REJECTION: The Utility Commission reserves the right to reject any and all bids, waive any informalities in bidding, or to accept the bid or bids, which best serves the interest of Oak Creek Water & Sewer Utility.

BID WITHDRAWAL: No bid shall be withdrawn for a period of 30 days after the scheduled opening of the bids without the consent of the Utility Commission.

BIDDING DOCUMENTS AVAILABILITY: Plans, specifications and bidding documents shall be available on December 30, 2010.

Published by the authority of the Utility Commission this 14th day of December 2010.

SECTION 00 41 13

BID FORM

BID TO: Oak Creek Water and Sewer Utility

BID FOR:

1. Engine Generators GEN-101 and GEN-102 consisting of the following equipment as indicated in the specifications.
   a. 1,040 KW Engine Generator – 2 EA
   b. Engine accessories and coolant – 2 EA
   c. Heat exchangers and expansion tanks – 4 EA.
   d. Exhaust silencers and fittings – 2 EA.
   e. Battery and charge – 2 EA.

PROJECT TITLE: Oak Creek Water and Sewer Utility
Oak Creek, Wisconsin
Water Treatment Plant and Low Lift Pump Station Standby Power Generator Equipment Purchase Package

EACH BID SHALL INCLUDE:

A. THE BID FORM.

B. PRELIMINARY EQUIPMENT/PRODUCT SHOP DRAWINGS.

C. MANUFACTURER'S EXTENDED EQUIPMENT/PRODUCT WARRANTY VALID THROUGH DECEMBER 31, 2016.

BID. THE BIDDER AGREES TO SUPPLY AND HAVE READY FOR DELIVERY TO A BONDED WAREHOUSE THE EQUIPMENT/PRODUCTS LISTED ABOVE NO LATER THAN AUGUST 31, 2011 FOR THE SUM OF:

1. _____ Dollars

($_____).

THE BIDDER AGREES TO:

1. Hold this bid open for 30 calendar days after bid opening date or as required in the project manual.

2. Enter into and execute a contract with Oak Creek Water and Sewer Utility if awarded on the basis of this bid. The purchase of the equipment will be awarded on February 8, 2011.

3. Comply with the Bid Documents in respect to required delivery date.

THE BIDDER ACKNOWLEDGES ADDENDA _____ HAS BEEN RECEIVED AND ALL COSTS THERETO ARE INCLUDED IN THE BID SUM.

THE BIDDER MAKES THE FOLLOWING REPRESENTATIONS AND CERTIFICATIONS:

A. The Bidder is not barred from contracting with any unit of state or local government as a result of violating the bid rigging or bid rotating provisions.

B. The Bidder is not barred from contracting with the State of Wisconsin as a result of a bribery conviction.

BIDDER:

Firm Name:
_____

_____

Address:
_____

_____

_____

FEIN:
_____

Telephone:
_____

FAX:
_____

Date: _____

SIGNATURE:

_____

TITLE: _____

For Corporations only, Attested By:

_____

Corporate Secretary

SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Description of Work.

B. Work by Others.

C. Payment Procedures.

D. Liquidated Damages.

E. Submittal Procedures.

F. Product Delivery, Storage, and Handling Requirements.

G. Manufacturer's Field Services.

H. Starting of Systems.

I. Demonstration and Instructions.

J. Testing, Adjusting and Balancing.

K. Operation and Maintenance Data.

L. Spare Parts and Maintenance Products.

M. Product Warranties and Product Bonds.

N. Maintenance Service.

1.2 DESCRIPTION OF WORK

A. Work of the Project includes providing the following.
   1. Engine generators GEN-101 and GEN-102 and associated equipment as indicated in the specifications.
   2. Bonded off-site storage and protection for equipment within 100 mile radius of project site.
   3. Delivery of equipment to Oak Creek Water & Sewer Utility and unloading of equipment to designated locations as determined by the Owner. Accept equipment on site in factory packaging and inspect for damage.
   4. Spare parts and accessories as indicated.
   5. Shop drawings, Operating and Maintenance Manuals as indicated.
   6. Extended warranty as indicated.

7. Startup and training services for engine generators and associated equipment as indicated (startup and training will not occur until equipment is installed).
8. Field services including load bank testing and testing under load the engine generators as indicated.
9. Filters, coolant, oil, etc. as required to startup the generators.
10. Factory test information as indicated.

B. All questions about the meaning or intent of the Bidding Documents are to be directed to Clark Dietz, Inc., 125 West Church Street, Champaign, IL 61820. All questions shall be in writing either faxed to 217.373.8923 to the attention of Steven Myers or emailed to steve.myers@clarkdietz.com.

C. Bidder shall provide contact information for the main point of contact responsible for the equipment.

1.3 WORK BY OTHERS

A. Installation of equipment will be by Others under separate contract.

B. Programming modifications to the plant SCADA system will be by Owner.

1.4 PAYMENT PROCEDURES

A. Requests for Payments for the equipment shall be submitted to Oak Creek Water & Sewer Utility under the following payment terms.
1. 10% of contract amount after final approval of shop drawings and confirmation that products are being fabricated.
2. Additional 75% of contract amount after products are delivered to bonded off-site storage facility and inspected by the Owner's representative.
3. Final 15% of contract amount after products are installed and startup and training have been completed.

1.5 LIQUIDATED DAMAGES

A. The Bidder shall pay Oak Creek Water & Sewer Utility liquidated damages of $1,000/per calendar day if the engine generators and associated equipment are not ready for delivery by August 31, 2011.

1.6 SUBMITTAL PROCEDURES

A. All submittals shall be submitted to the Engineer with cover transmittal. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

B. Preliminary Shop Drawings (to be submitted with Bid Form): Submit 2 copies of the following information.
1. Bill of Materials for all products.
2. Manufacturer's product data sheets for all major components (e.g. generator set, silencer, heat exchangers, expansion tanks, generator control panel, communications module).

3. Generator equipment layout drawings that include plans and elevation views with overall dimensions. Include written confirmation that the equipment will properly fit in the designated space with proper clearances.
4. Generator sizing calculations and transient analysis as indicated in the specifications.
5. Manufacturer's certification indicating that generator set meets requirements of latest applicable EPA Standards for Emissions.
6. Equipment/product extended warranty.

C. Final Shop Drawings: Submit 4 copies of the following information.
1. Specific submittal information as indicated in the equipment specifications.
2. Bill of Materials for all products including maintenance materials.
3. Product data sheets for all components.
4. Equipment layout drawings.
5. Generator sizing calculations as indicated in the specifications.
6. Equipment/product extended warranty.

D. Test Reports: When specified in the individual specification sections, submit manufacturer test reports as indicated.

E. Certificates: When specified in the individual specification sections, submit manufacturer certificates as indicated. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

F. Manufacturer's Instructions (to be submitted 14 days prior to delivery of equipment): When specified in the individual specification sections, submit 4 copies of manufacturer's instructions as indicated. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

G. Manufacturer's Field Reports: When specified in the individual specification sections, submit manufacturer test reports as indicated.

H. Operation and Maintenance Manuals (to be submitted 14 days prior to delivery of equipment): When specified in the individual specification sections, submit 6 copies of operation and maintenance manuals as indicated.

1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

D. Store and protect products in accordance with manufacturer's instructions.

E. Store with seals and labels intact and legible.

F. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

G. Provide bonded off-site storage and protection (including insurance for products) for equipment within 100 mile radius of project site. Equipment shall be stored inside building unless otherwise approved by the Owner. Arrange storage of products to permit access for inspection of equipment by Owner's representative. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

H. Provide additional delivery of equipment to site and unloading of equipment to designated locations as determined by the Owner. Accept equipment on site in factory packaging and inspect for damage.

1.8 MANUFACTURERS' FIELD SERVICES

A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to approval of Engineer.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

1.9 STARTING OF SYSTEMS

A. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

B. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.

C. Verify wiring and support components for equipment are complete and tested.

D. Execute start-up under supervision of applicable manufacturer's representative in accordance with manufacturers' instructions.

E. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.10 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel.

B. Demonstrate Project equipment and instructed by manufacturer's representative who is knowledgeable about the Project.

C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

F. Required instruction time for each item of equipment and system is specified in individual sections.

1.11 TESTING, ADJUSTING AND BALANCING

A. Reports will be submitted to Engineer indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents.

1.12 OPERATION AND MAINTENANCE DATA

A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring binders with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

g. Service and lubrication schedule.

3. Part 3: Project documents and certificates, including the following:
   a. Shop drawings and product data.
   b. Certificates.
   c. Originals of warranties.

F. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

G. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.

H. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

I. Include servicing and lubrication schedule, and list of lubricants required.

J. Include manufacturer's printed operation and maintenance instructions.

K. Include sequence of operation by controls manufacturer.

L. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

M. Include control and wiring diagrams.

N. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Additional Requirements: As specified in individual product specification sections.

1.13 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.

1.14 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible suppliers and manufacturers.

B. Execute and assemble transferable warranty documents and bonds from suppliers and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

1.15 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in specification sections for one year from December 31, 2011.

B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.

D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 26 32 13

ENGINE GENERATORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Engine generator set.

B. Heat exchanger and expansion tanks.

C. Exhaust silencer and fittings.

D. Battery and charger.

E. Accessories.

1.2 REFERENCES

A. National Electrical Manufacturers Association:
   1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
   2. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
   3. NEMA ICS 10 - Industrial Control and Systems: AC Transfer Switch Equipment.
   4. NEMA MG 1 - Motors and Generators.

B. International Electrical Testing Association:
   1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

C. National Fire Protection Association:
   1. NFPA 30 - Flammable and Combustible Liquids Code.
   2. NFPA 110 - Standard for Emergency and Standby Power Systems.

1.3 SYSTEM DESCRIPTION

A. Description: Engine generator assembly and accessories to provide source of power for Level 2 applications in accordance with NFPA 110. Generator set shall meet requirements of the latest applicable EPA Standards.

B. Generator Set Design: The basis for design is the Caterpillar G3516 gas generator set. Other listed manufacturer's generator set must be equivalent and meet the same equipment standards pertaining to specifications, performance, and fit in the designated space shown on the drawings with proper working space clearances as required.

C. Capacity: Generator sets shall be sized to provide standby power for the Water Treatment Plant and the Low Lift Pump Station as follows.
   1. Water Treatment Plant – 12 MGD pumping capacity and backwash capabilities. Minimum size of 1,040 kW, 2300Y/1328 volts, 60 Hz at 1800 rpm for the following loads and steps:
      a. Step 1: 600 amp load for 500 KVA, 480Y/277 volt transformer (lighting, controls, miscellaneous pumps, process equipment, etc.).
      b. Step 2: High Lift Pump #7 - 250 HP motor on single speed, full voltage, 2300 volt controller.
      c. Step 3: High Lift Pump #8 – 250 HP motor on single speed, full voltage, 2300 volt controller.
      d. Step 4: Backwash Pump – 200 HP motor on single speed, full voltage, 2300 volt controller.

   2. Low Lift Pump Station – 24 MGD pumping capacity. Minimum size of 1,040 kW, 480Y/277 volts, 60 Hz at 1800 rpm for the following loads and steps:
      a. Step 1: 150 amp load fed from MCC-2 (lighting, controls, process equipment, etc.).
      b. Step 2: Low Lift Pump #4 – 300 HP on 480 volt soft start controller.
      c. Step 3: Low Lift Pump #2 – 200 HP on 480 volt VFD.
      d. Step 4: Low Lift Pump #1 – 200 HP on 480 volt soft start controller.
      e. Step 5: Low Lift Pump #3 – 100 HP on 480 volt soft start controller.

1.4 SUBMITTALS

A. Shop Drawings: Indicate electrical characteristics and connection requirements. Include plan and elevation views with overall and interconnection point dimensions, fuel consumption rate curves at various loads, ventilation and combustion air requirements, electrical diagrams including schematic and interconnection diagrams.

B. Product Data: Submit data showing dimensions, weights, ratings, interconnection points, and internal wiring diagrams for engine, generator, control panel, battery, battery rack, battery charger, exhaust silencer, vibration isolators, and heat exchangers.

C. Generator Sizing Calculations: Submit generator sizing calculations and transient analysis indicating the generator set will properly start and operate the loads and steps listed in this specification.

D. Cooling System Calculations: Submit cooling calculations indicating the heat exchangers and cooling water will properly cool the engine generator.

E. Test Reports: Indicate results of performance testing.

F. Certifications: Submit manufacturer certification indicating that generator set meets requirements of latest applicable EPA Standards for Emissions.

G. Manufacturer's Field Reports: Indicate inspections, findings, and recommendations.

H. Operation and Maintenance Data: Submit instructions and service manuals for normal operation, routine maintenance, oil sampling and analysis for engine wear, and emergency maintenance procedures.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience, and with service facilities within 100 miles of project.

B. Supplier: Authorized distributor of specified manufacturer with minimum three years documented experience.

1.6 WARRANTY

A. Furnish manufacturer's extended warranty as indicated in contract documents.

1.7 MAINTENANCE SERVICE

A. Furnish service and maintenance of engine generator for one year from December 31, 2011.

1.8 MAINTENANCE MATERIALS

A. Furnish one set of tools required for preventative maintenance of engine generator system. Package tools in adequately sized metal tool box.

B. Furnish two of each oil and air filter element.

PART 2 PRODUCTS

2.1 SERVICE CONDITIONS

A. Temperature: 40 degrees F.

B. Altitude: 3,300 feet.

2.2 ENGINE

A. Manufacturers:
   1. Caterpillar.
   2. Cummins Onan.
   3. Kohler.

B. Product Description: Water-cooled in-line or V-type, four-stroke cycle, electric ignition internal combustion engine.

C. Rating: Sufficient to operate in ambient of 90 degrees F at elevation of 3,300 feet.

D. Fuel System: Natural gas.

E. Engine speed: 1800 rpm.

F. Safety Devices: Engine shutdown on high water temperature, low oil pressure, overspeed, and engine overcrank. Limits as selected by manufacturer.

G. Engine Starting: DC starting system with positive engagement, number and voltage of starter motors in accordance with manufacturer's instructions. Furnish remote starting control circuit, with MANUAL-OFF-REMOTE selector switch on engine-generator control panel.

H. Engine Jacket Heater: Thermal circulation type water heater with integral thermostatic control, sized to maintain engine jacket water at 90 degrees F, and suitable for operation on 208 volts AC, 1 phase.

I. Engine Accessories: Lube oil filter, intake air filter, lube oil cooler, gear-driven water pump. Furnish water temperature gage and lube oil pressure gage on engine/generator control panel.

J. Mounting: Furnish unit with suitable spring-type vibration isolators to be mounted under structural steel frame.

K. Coolant: Furnish 50/50 water/propylene glycol engine jacket coolant as required to maintain proper operating level.

2.3 GENERATOR

A. Manufacturers:
1. Caterpillar.
2. Cummins Onan.
3. Kohler.

B. Product Description: NEMA MG1, three phase, six pole, reconnectable brushless synchronous generator with brushless exciter.

C. Insulation Class: F.

D. Temperature Rise: 105 degrees C Continuous.

E. Enclosure: NEMA MG1, open drip proof.

F. Voltage Regulation: Furnish generator mounted volts per hertz exciter-regulator to match engine and generator characteristics, with voltage regulation plus or minus 1 percent from no load to full load. Furnish manual controls to adjust voltage droop, voltage level (plus or minus 5 percent) and voltage gain.

2.4 GOVERNOR

A. Product Description: Isochronous governor to maintain engine speed within 0.5 percent, steady state, and 5 percent, no load to full load, with recovery to steady state within 2 seconds following sudden load changes. Equip governor with means for manual operation and adjustment.

2.5 HEAT EXCHANGER

A. Product Description: Provide (2) remote mounted heat exchangers and expansion tanks per generator, one for engine after cooler and one for engine jacket water. Type and capacity shall be as recommended by engine manufacturer. Heat exchangers shall use domestic water supply to provide cooling and be provided with leak shields. Control valves on domestic water shall be provided and installed by Others and shall modulate on a control signal from the engine manufacturer to maintain water temperature.

B. Heat exchanger for after cooler shall be selected using 70 degrees F cooling water not to exceed 60 gallons per minute.

C. Heat exchanger for engine jacket cooler shall be selected using 70 degree F cooling water not to exceed 135 gallons per minute.

2.6 ACCESSORIES

A. Exhaust Silencer: Residential type silencer (19-25 dBA), with muffler companion flanges and flexible stainless steel exhaust fitting, sized in accordance with engine manufacturer's instructions.

B. Flexible Utility Connectors: Manufacturer's standard flexible connectors, minimum of 12" in length, for all connections to genset (including coolant piping, natural gas piping, exhaust piping, crankcase fumes, drain, etc). Provide non-ASME flanges if required to make connection to generator.

C. Batteries: Heavy duty, diesel starting type lead-acid storage batteries, 170 ampere-hours minimum capacity. Match battery voltage to starting system. Furnish cables and clamps.

D. Battery Tray: Treated for electrolyte resistance, constructed to contain spillage.

E. Battery Charger: Current limiting type designed to float at 2.17 volts for each cell and equalize at 2.33 volts for each cell. Furnish overload protection, full wave rectifier, DC voltmeter and ammeter, and 120 volts AC fused input. Furnish wall mounted enclosure to meet NEMA 250, Type 1 requirements.

F. Line Circuit Breaker (for Low Lift Pump Station generator): NEMA AB 1, molded case circuit breaker on generator output with integral thermal and instantaneous magnetic trip in each pole. Furnish battery voltage operated shunt trip, connected to open circuit breaker on engine failure. Unit mount in enclosure to meet NEMA 250, Type 1 requirements.

G. Engine-Generator Control Panel: NEMA 250, Type 1 generator-mounted control panel enclosure with engine and generator controls and indicators. Control panel shall be Caterpillar EMCP II+, or other manufacturer's equivalent. Furnish provision for padlock and the following equipment and features:
   1. Frequency Meter: 45-65 Hz. range, 3.5 inch dial.
   2. AC Output Voltmeter: 3.5 inch dial, 2 percent accuracy, with phase selector switch.
   3. AC Output Ammeter: 3.5 inch dial, 2 percent accuracy, with phase selector switch.
   4. Output voltage adjustment.

5. Push-to-test indicator lamps, one each for low oil pressure, high water temperature, overspeed, and overcrank.
6. Engine start/stop selector switch.
7. Engine running time meter.
8. Oil pressure gage.
9. Water temperature gage.
10. Auxiliary Relay: 3PDT, operates when engine runs, with contact terminals prewired to terminal strip.
11. Additional visual indicators and alarms in accordance with by NFPA 110.
12. Remote Alarm Contacts: Factory wire SPDT contacts to terminal strip for remote alarm functions in accordance with NFPA 110.
13. High battery voltage (alarm).
14. Low battery voltage (alarm).
15. Anticipatory-high water temperature.
16. Anticipatory-low oil pressure.
17. Low coolant temperature.
18. Switch not in automatic position (alarm).
19. Overcrank (alarm).
20. Emergency stop (alarm).
21. High water temperature (alarm).
22. Overspeed (alarm).
23. Low oil pressure (alarm).
24. Lamp test and horn silence switch.

H. Communications Module: Communications module capable of 2-way communicating via Ethernet connection to provide all control, monitoring, and programming capabilities from the generator control panel to the plant SCADA network. Provide software as required that is compatible with the plant SCADA operating system. Communications Module shall be Caterpillar PL1000, or other manufacturer's equivalent.

2.7 SOURCE QUALITY CONTROL

A. Provide shop inspection and testing of completed assembly.

B. Make completed engine-generator assembly available for inspection at manufacturer's factory prior to packaging for shipment. Notify Engineer at least seven days before inspection is allowed.

PART 3 EXECUTION

3.1 INSTALLATION

A. Installation of equipment shall be by Others.

3.2 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NFPA 110 requirements.

B. The generator set shall be tested at full load for one hour prior to shipment to the job site. The generator set shall be tested at full load for four hours, using resistive load bank, after installation at the job site. After the load bank test the generator set shall be tested at job site by simulating a normal utility power outage with the loads brought on line as indicated in the contract documents for two hours. Owner's representative shall be present for the job site testing.

3.3 MANUFACTURER'S FIELD SERVICES

A. Section 01 00 00 - Manufacturer's field services.

B. Prepare and start up engine-generator assembly.

3.4 ADJUSTING

A. Section 01 00 00 - Testing, adjusting, and balancing.

B. Adjust generator output voltage and engine speed to meet specified ratings.

3.5 DEMONSTRATION AND TRAINING

A. Section 01 00 00 – Demonstration and Instructions.

B. Furnish 8 hours of instruction each for six persons, to be conducted at project site with manufacturer's representative.

C. Describe loads connected to standby system and restrictions for future load additions.

D. Simulate power outage by interrupting normal source, and demonstrate system operates to provide standby power.

E. Provide training of generator set remote control and monitoring capabilities on the plant SCADA operating station.

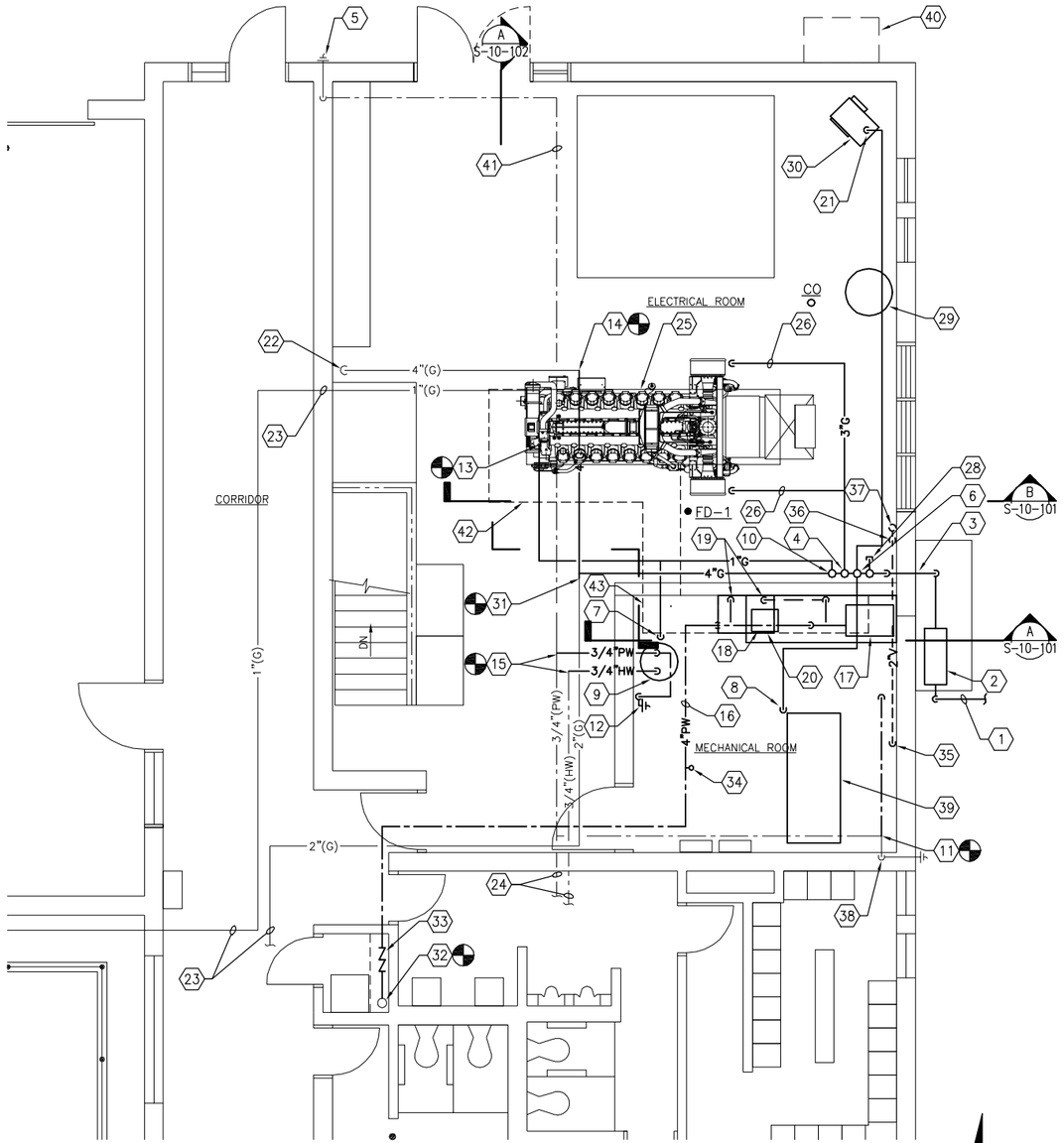
END OF SECTION

NOTES

1. SEE DRAWING P-00-101 FOR GENERAL NOTES, LEGENDS, AND ABBREVIATIONS.
2. ALL PIPING IN ELECTRICAL ROOM AND IN MECHANICAL ROOM ARE EXPOSED AT CEILING, UNLESS OTHERWISE INDICATED.

KEYNOTES

1. WE ENERGIES GAS SERVICE. CONTRACTOR SHALL COORDINATE LOCATION AND SERVICE WITH WE ENERGIES AS REQUIRED.
2. GAS METER PROVIDED BY WE ENERGIES. THE METER SHALL BE RATED FOR 30,000 CFH AT 5 PSI. THE METER SHALL BE INSTALLED ON THE WALL. CONTRACTOR SHALL PROVIDE CONCRETE PAD BELOW METER. SEE DRAWING A-10-201 FOR ADDITIONAL INFORMATION.
3. PROVIDE GAS PIPING FROM METER MANIFOLD INTO BUILDING. PROVIDE SLEEVE THROUGH WALL AND SEAL OPENING WATER TIGHT. SEE DETAIL 1/P-30-201.
4. PROVIDE 3" GAS PIPING FOR GAS GENERATOR GEN-101. SEE DETAIL 1/P-30-201.
5. EXISTING HOSE BIBB.



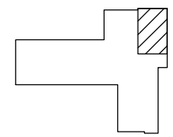
1 ENLARGED FIRST FLOOR PLUMBING PLAN
(ELEV. 99.0)
0 1' 2' 4' 8'

KEYNOTES (CONT.)

6. PROVIDE 1 1/2" GAS PIPING INTO MECHANICAL ROOM. PROVIDE GAS REGULATOR TO ADJUST PRESSURE DOWN TO 14" WC FOR BOILER. TRANSITION PIPING TO 2 1/2" GAS.
7. PROVIDE 3/4" GAS PIPING DOWN TO RELOCATED WATER HEATER. SEE DETAIL 3/P-30-201.
8. PROVIDE 2 1/2" GAS PIPING DOWN TO HEATING HOT WATER BOILER B-101. SEE DETAIL 3/P-30-201.
9. RELOCATED WATER HEATER. PROVIDE 3/4" POTABLE WATER AND HOT WATER PIPING TO WATER HEATER.
10. PROVIDE 1" GAS PIPING. PROVIDE GAS REGULATOR TO ADJUST PRESSURE DOWN TO 1 PSI. TRANSITION PIPING TO 1 1/2" GAS.
11. PROVIDE 3/4" POTABLE WATER PIPING DOWN TO HEATING HOT WATER BOILER B-101. PROVIDE RPZ TYPE BACKFLOW PREVENTER IN HORIZONTAL PIPING.
12. PROVIDE 1/2" POTABLE WATER PIPING DOWN TO WALL MOUNTED HOSE BIBB HB-1. CONNECT TO EXISTING PIPING AS REQUIRED.
13. PROVIDE 1" GAS PIPING TO REFEED EXISTING 1" GAS PIPING FOR BUILDING SERVICES.
14. PROVIDE 4" GAS PIPING TO REFEED EXISTING 4" GAS PIPING FOR HORIZONTAL SHAFT PUMP.
15. PROVIDE 3/4" POTABLE WATER AND HOT WATER PIPING TO/FROM RELOCATED HOT WATER HEATER, CONNECT TO EXISTING PIPING.
16. PROVIDE 4" POTABLE WATER PIPING TO GENERATOR COOLING HEAT EXCHANGERS.
17. JACKET WATER HEAT EXCHANGER HX-101A. PROVIDE 3" POTABLE WATER AND 3" DRAIN PIPING TO HEAT EXCHANGER. SEE DETAIL 10/P-30-201.
18. AFTER COOLER HEAT EXCHANGER HX-101B. PROVIDE 2" POTABLE WATER AND 2" DRAIN PIPING TO HEAT EXCHANGER. SEE DETAIL 10/P-30-201.
19. PROVIDE DRAIN PIPING FROM HEAT EXCHANGERS. ROUTE PIPING DOWN TO SUMP PIT.
20. SUMP PIT. PROVIDE 6" SANITARY PIPING DOWN THRU SLAB.
21. PROVIDE 3/4" GAS PIPING DOWN TO GAS FIRED UNIT HEATER. SEE DETAIL 3/P-30-201.
22. EXISTING 4" GAS PIPING DOWN TO LOWER LEVEL.
23. EXISTING 1" GAS PIPING TO BUILDING SERVICES.
24. EXISTING POTABLE WATER AND HOT WATER PIPING.
25. NATURAL GAS STANDBY GENERATOR GEN-101.
26. PROVIDE 3" GAS PIPING DOWN TO GENERATOR GEN-101. SEE DETAIL 3/P-30-201.
27. PROVIDE 3/4" POTABLE WATER PIPING TO BOILER FEED. CONNECT TO EXISTING COLD WATER PIPING.
28. PROVIDE 3" GAS PIPING FOR FUTURE GENERATOR. PROVIDE CAP AND ISOLATION VALVE.
29. PROVIDE AIR COMPRESSOR AC-101. RECONNECT AND EXTEND EXISTING PIPING AS REQUIRED.
30. GAS UNIT HEATER GUH-1.
31. PROVIDE 2" GAS PIPING TO REFEED EXISTING 2" GAS PIPING FOR BUILDING SERVICES.
32. PROVIDE 4" POTABLE WATER PIPING CONNECTION TO EXISTING 6" POTABLE WATER RISER FROM LOWER LEVEL.
33. PROVIDE 4" POTABLE WATER PIPING TO GENERATOR COOLING HEAT EXCHANGERS. PROVIDE RPZ TYPE BACKFLOW PREVENTER. SEE DETAIL 9/P-30-201.
34. PROVIDE WATER FLOW SWITCH INTERCONNECTED WITH GENERATOR CONTROL PANEL.
35. PROVIDE 2" VENT PIPING UP THRU SLAB. EXTEND PIPING TO BELOW CEILING.
36. PROVIDE 2" VENT PIPING UP THRU SLAB. EXTEND PIPING UP TO BELOW CEILING. CONNECT TO 3" VENT PIPING AT CEILING.
37. PROVIDE 2" VENT PIPING UP THRU SLAB. CONNECT TO 3" VENT PIPING AND EXTEND THRU ROOF. SEE DETAIL 4/P-30-201.
38. EXISTING WATER ISOLATION VALVE IN WALL FOR EXTERIOR HOSE BIBB.
39. GAS FIRED BOILER B-101.
40. SAWCUT AND REMOVE ASPHALT SURFACE FOR INSTALLATION OF SANITARY PIPING. PATCH ASPHALT SURFACE TO MATCH EXISTING.
41. EXISTING POTABLE WATER PIPING.
42. PIPE TRENCH FOR COOLANT PIPING.
43. PIPE TRENCH FOR COOLANT PIPING AND HEAT EXCHANGER DRAIN PIPING.

GENERATOR EQUIPMENT PURCHASE PACKAGE

DRAWING SHALL BE USED FOR REFERENCE ONLY FOR DETERMINING EQUIPMENT CLEARANCES AND LAYOUT OF GENERATOR AND ASSOCIATED EQUIPMENT FOR PURCHASING. DRAWING SHALL NOT BE USED FOR INSTALLATION OF THE EQUIPMENT.



KEY PLAN
NO SCALE

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Partners in Design ARCHITECTS

OAK CREEK
WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT AND LOW LIFT PUMP STATION STANDBY POWER

DESIGNED BY: NTP
DRAWN BY: NTP
CHECKED BY: KRP
DATE CHECKED: 12/10

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

DATE	REVISION
12/17/10	ISSUED FOR BID

DRAWING TITLE
ADMINISTRATION AND FILTRATION FACILITY ENLARGED FIRST FLOOR PLUMBING PLAN

PROJECT No.
O0130014

DRAWING No.
P-10-201

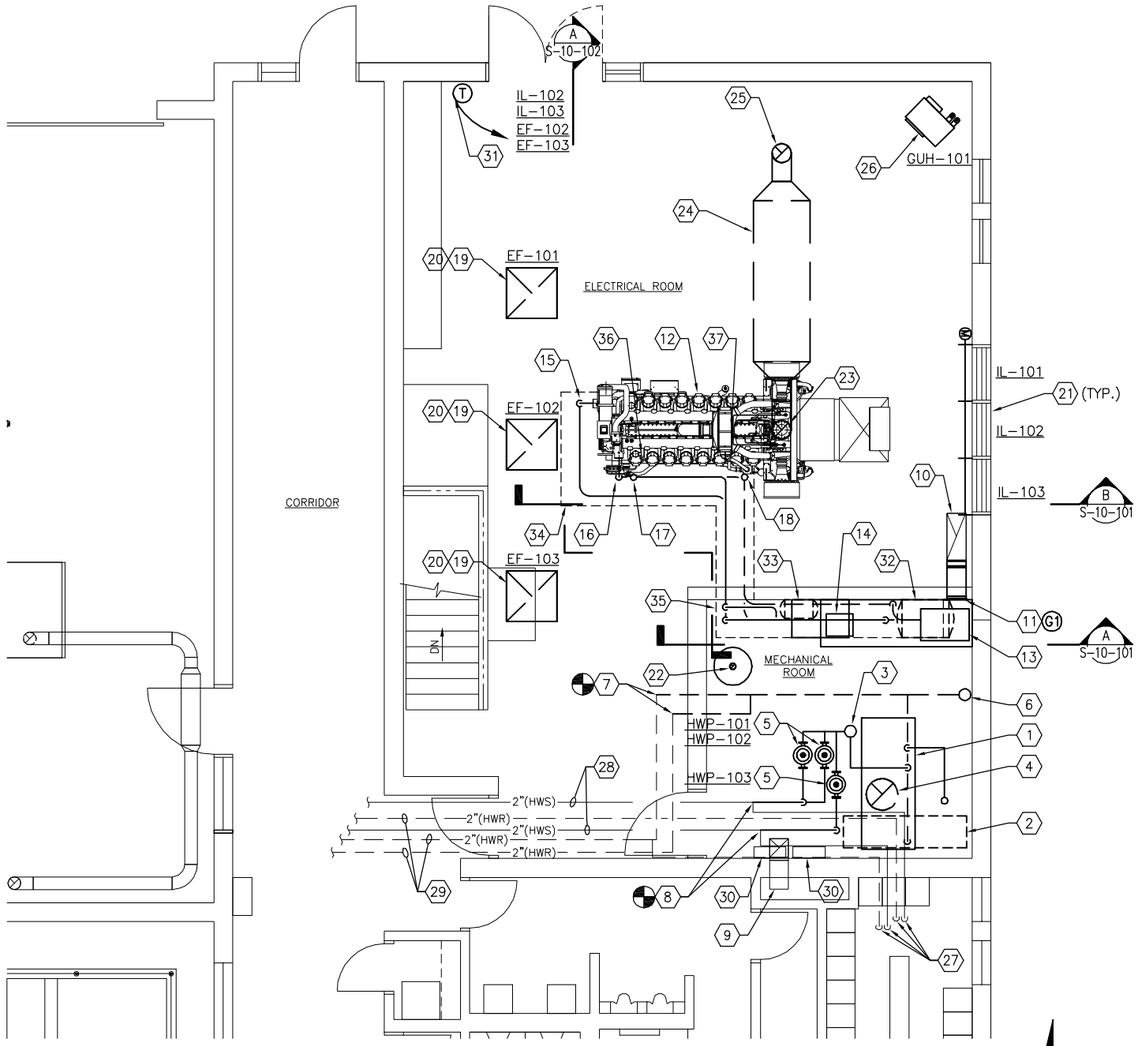
SHEET 1 OF 11 SHEETS

NOTES

1. SEE DRAWING HV-00-101 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
2. ALL EQUIPMENT ASSOCIATED WITH GENERATOR (e.g. HEAT EXCHANGERS, EXPANSION TANKS, SILENCER, COOLANT PIPING, EXHAUST PIPING, ETC.) SHALL BE INSTALLED PER GENERATOR MANUFACTURER INSTALLATION INSTRUCTIONS. HEAT EXCHANGERS, SILENCER, EXPANSION TANK ASSOCIATED WITH GENERATOR SHALL BE PROVIDED BY GENERATOR MANUFACTURER.

(#) KEYNOTES

1. PROVIDE GAS FIRED HEATING HOT WATER BOILER B-101. CONNECT 3" HEATING HOT WATER SUPPLY AND RETURN PIPING. INSTALL BOILER ON 4" THICK CONCRETE PAD. SEE DETAIL 3/HV-30-201.
2. PROVIDE HEATING HOT WATER EXPANSION TANK EX-101. SUPPORT FROM STRUCTURE/WALL AS REQUIRED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SEE DETAIL 3/HV-30-202.
3. PROVIDE 3" AIR SEPARATOR AS-101. INSTALL AIR SEPARATOR ABOVE BOILER. SUPPORT FROM STRUCTURE. SEE DETAIL 3/HV-30-202.
4. PROVIDE COMBUSTION AIR AND FLUE UP FROM BOILER. PROVIDE MANUFACTURER'S RAIN CAP/TERMINATION KIT. ROUTE DUCTWORK UP THROUGH ROOF. SEAL OPENING WATER TIGHT. SEE DETAIL 8/HV-30-201.
5. PROVIDE INLINE HEATING HOT WATER PUMP HWP-#. CONNECT TO HEATING HOT WATER SUPPLY PIPING. SUPPORT FROM FLOOR AS REQUIRED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. SEE DETAIL 1/HV-30-202 AND 2/HV-30-202.
6. PROVIDE CHEMICAL FEED SYSTEM. MOUNT FEEDER ON WALL. PROVIDE NECESSARY CLEARANCE FOR MAINTENANCE ACCESS.
7. PROVIDE 2-2" HEATING HOT WATER RETURN PIPING TO BOILER. CONNECT TO EXISTING HEATING HOT WATER RETURN PIPING.
8. PROVIDE 2-2" HEATING HOT WATER SUPPLY PIPING FROM BOILER. CONNECT TO EXISTING HEATING HOT WATER SUPPLY PIPING AS REQUIRED.
9. EXISTING 14"x12" EXHAUST DUCTWORK FROM LOWER LEVEL.
10. EXISTING 12"x30" EXHAUST DUCTWORK THROUGH ROOF.
11. WALL MOUNTED EXHAUST GRILLE. EXTEND/MODIFY DUCTWORK TO FACILITATE INSTALLATION OF NEW GRILLE.
12. NATURAL GAS GENERATOR GEN-101.
13. PROVIDE JACKET WATER HEAT EXCHANGER HX-101A. SEE DRAWING P-10-201 FOR WATER SUPPLY AND DRAIN PIPING. SEE DETAIL 5/HV-30-202.
14. PROVIDE AFTER COOLER HEAT EXCHANGER HX-101B. SEE DRAWING P-10-201 FOR WATER SUPPLY AND DRAIN PIPING. SEE DETAIL 5/HV-30-202.
15. PROVIDE 6" JACKET WATER COOLANT SUPPLY PIPING FROM HEAT EXCHANGER TO GENERATOR.
16. PROVIDE 6" JACKET WATER COOLANT RETURN PIPING FROM GENERATOR TO HEAT EXCHANGER.
17. PROVIDE 3" AFTER COOLER COOLANT SUPPLY PIPING FROM HEAT EXCHANGER TO GENERATOR.
18. PROVIDE 3" AFTER COOLER COOLANT RETURN PIPING FROM GENERATOR TO HEAT EXCHANGER.
19. PROVIDE 32"x32" EXHAUST DUCTWORK UP THROUGH ROOF. TERMINATE DUCTWORK 12" BELOW BOTTOM OF ROOF DECK. PROVIDE 1/2"X1/2" MESH SCREEN OVER OPENING.
20. PROVIDE ROOF MOUNTED EXHAUST FAN EF-#. PROVIDE GRAVITY DAMPER BELOW ROOF DECK. SEE DETAIL 6/HV-30-201. SEE ELECTRICAL DRAWINGS FOR CONTROLS AND OPERATION.
21. PROVIDE INTAKE AIR LOUVER IL-#. PROVIDE REMOVABLE LOUVERS. COORDINATE LOCATION AND ELEVATION WITH ARCHITECTURAL DRAWINGS. PROVIDE SECTIONAL MOTORIZED DAMPERS IN WALL OPENING. SEE ELECTRICAL DRAWINGS FOR CONTROLS AND OPERATION.
22. PROVIDE 3" FLUE UP FROM RELOCATED WATER HEATER. COORDINATE LOCATION WITH PLUMBING DRAWINGS. ROUTE FLUE UP THROUGH ROOF. PROVIDE MANUFACTURER'S TERMINATION KIT. SEAL OPENING WATER TIGHT. TERMINATE FLUE PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
23. PROVIDE INSULATED 12" GENERATOR EXHAUST PIPING UP FROM NATURAL GAS GENERATOR. ROUTE PIPE UP THROUGH ROOF. SEAL OPENING WATER TIGHT.
24. PROVIDE GENERATOR SILENCER ON ROOF ABOVE. TRANSITION EXHAUST PIPE TO/FROM SILENCER AS REQUIRED. MOUNT SILENCER ON 6" SUPPORT STAND ABOVE ROOF.
25. PROVIDE 12" EXHAUST PIPING FROM SILENCER. CONNECT TO SILENCER. PROVIDE 90° ELBOW AND TERMINATE WITH RAIN CAP.
26. PROVIDE GAS FIRED UNIT HEATER GUH-101. PROVIDE MANUFACTURER'S WALL/CEILING MOUNTED SUPPORT KIT. CONNECT COMBUSTION AIR INTAKE AND FLUE TO UNIT HEATER. PROVIDE MANUFACTURER'S CONCENTRIC VENT KIT. ROUTE DUCTWORK UP THROUGH ROOF. SEAL OPENING WATER TIGHT. SEE DETAIL 10/HV-30-201.
27. EXISTING HEATING HOT WATER SUPPLY AND RETURN PIPING DOWN TO LOWER LEVEL.
28. EXISTING HEATING HOT WATER SUPPLY PIPING.
29. EXISTING HEATING HOT WATER RETURN PIPING.
30. EXISTING TEMPERATURE CONTROL PANELS.
31. PROVIDE THERMOSTAT ON INSULATED BASE. SEE ELECTRICAL DRAWINGS FOR CONTROLS AND OPERATION.
32. PROVIDE EXPANSION TANK FOR JACKET WATER LOOP.
33. PROVIDE EXPANSION TANK FOR AFTER COOLER LOOP.
34. PIPE TRENCH FOR COOLANT PIPING.
35. PIPE TRENCH FOR COOLANT PIPING AND HEAT EXCHANGER DRAIN PIPING.
36. PROVIDE 2" PIPING FOR CRANKCASE FUME DISPOSAL AND DRIP COLLECTOR.
37. PROVIDE AUTOMATIC BREATHER VALVE FOR AIR BLEED.



1 ENLARGED FIRST FLOOR HEATING/VENTILATION PLAN

0 1' 2' 4' 8'

GENERATOR EQUIPMENT PURCHASE PACKAGE

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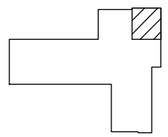

KEY PLAN
NO SCALE

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Partners in Design ARCHITECTS

OAK CREEK
WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT
AND LOW LIFT PUMP STATION
STANDBY POWER

DESIGNED BY:	NTP
DRAWN BY:	NTP
CHECKED BY:	KRP
DATE CHECKED:	12/10

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

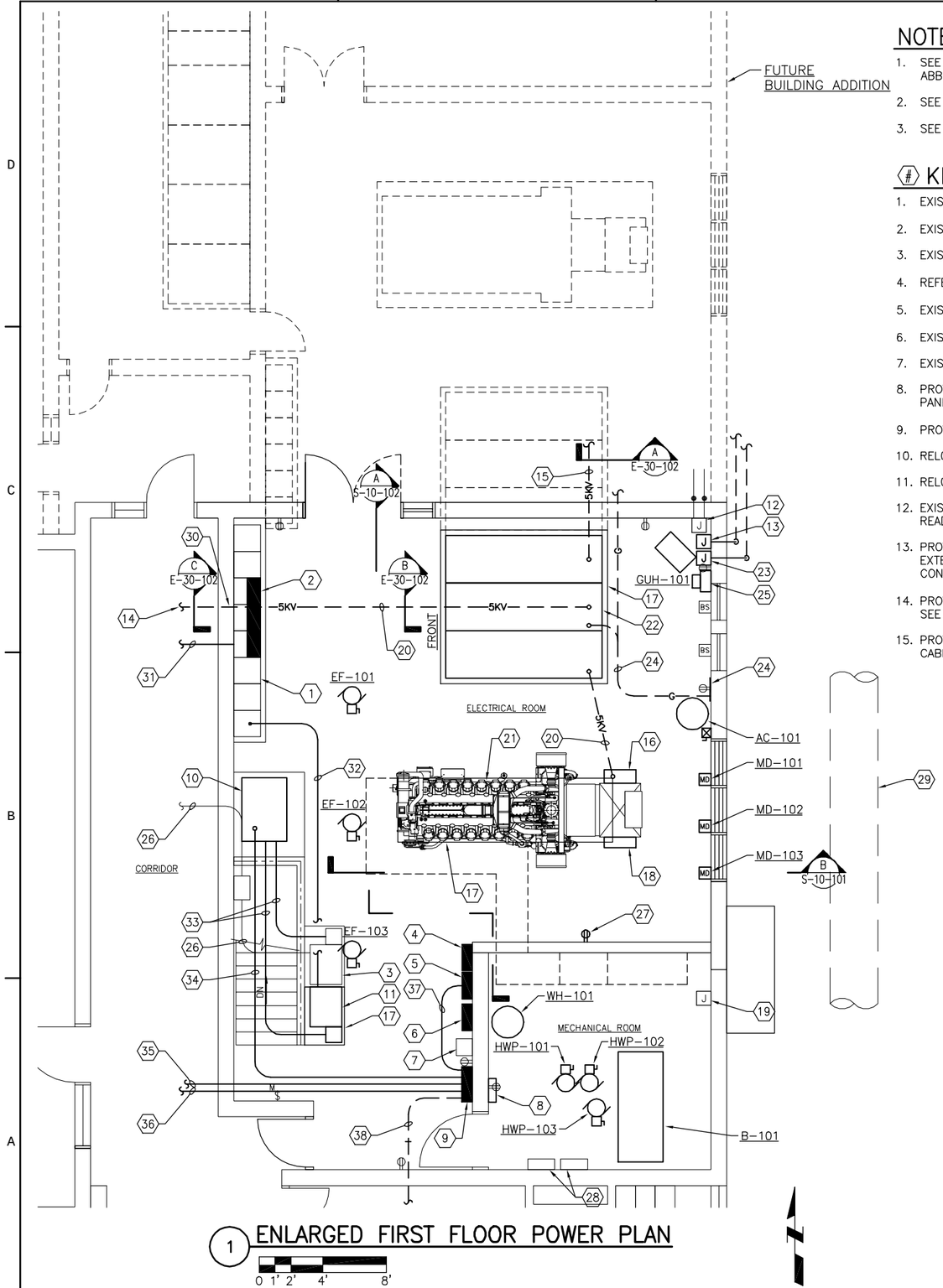
DATE	REVISION
12/17/10	ISSUED FOR BID

DRAWING TITLE
ADMINISTRATION AND
FILTRATION FACILITY
ENLARGED FIRST FLOOR
HEATING/VENTILATION PLAN

PROJECT No.
O0130014

DRAWING No.
HV-10-201

SHEET 2 OF 11 SHEETS



1 ENLARGED FIRST FLOOR POWER PLAN

0 1' 2' 4' 8'

NOTES

1. SEE DRAWING E-00-101 FOR ELECTRICAL GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
2. SEE DRAWING E-30-101 FOR EQUIPMENT CONNECTION SCHEDULE.
3. SEE DRAWING E-10-601 AND E-10-602 FOR POWER ONE-LINE DIAGRAMS.

KEYNOTES

1. EXISTING MOTOR CONTROL CENTER MCC-4.
2. EXISTING 208Y/120V PANEL E.
3. EXISTING TRANSFORMER XFMR-T4A.
4. REFEED EXISTING 208Y/120V PANEL B-LEFT.
5. EXISTING 208Y/120V PANEL B-RIGHT.
6. EXISTING 240/120V PANEL Z AND TRANSFORMER XFMR-T4B.
7. EXISTING COMPRESSED AIR DRYER FOR AIR COMPRESSOR.
8. PROVIDE ELECTRICAL CONNECTION TO RELOCATED AUTOCON METER PIT PANEL.
9. PROVIDE 208Y/120V PANEL PA.
10. RELOCATED BYPASS ISOLATION SWITCH.
11. RELOCATED TRANSFORMER XFMR-T4.
12. EXISTING JUNCTION BOX, CONDUIT, AND WIRE FOR NORTH GATE CARD READER.
13. PROVIDE JUNCTION BOX FOR NORTH GATE OPENER POWER WIRING. EXTEND CONDUIT AND WIRE AS REQUIRED. PROVIDE NEW UNDERGROUND CONDUIT OUT TO GATE OPENER.
14. PROVIDE CONDUITS WITH 5KV CABLES (LOCATED BELOW IN LOWER LEVEL). SEE DRAWING E-10-404 FOR CONTINUATION.
15. PROVIDE CONCRETE ENCASED DUCTBANK WITH 5KV SERVICE LATERAL CABLES. SEE DRAWING E-10-401 FOR CONTINUATION.

KEYNOTES (CONT.)

16. GEN-101 5KV TERMINATION BOX.
17. 4" CONCRETE EQUIPMENT PAD.
18. GEN-101 GENERATOR CONTROL PANEL.
19. EXISTING JUNCTION BOX AND CONDUIT FOR POWER TO FOUNTAIN.
20. PROVIDE UNDERGROUND CONDUITS WITH 5KV CABLES.
21. PROVIDE NATURAL GAS STANDBY GENERATOR GEN-101.
22. PROVIDE ATS-101 AND WE ENERGIES METERING SECTION.
23. PROVIDE JUNCTION BOX FOR NORTH GATE OPENER CONTROL WIRING. EXTEND CONDUIT AND WIRE AS REQUIRED. PROVIDE NEW UNDERGROUND CONDUIT OUT TO GATE OPENER.
24. PROVIDE 4" x 36" x 1/4" COPPER GROUND BAR (WALL MOUNT AT 8' AFF) FOR TERMINATING BUILDING GROUND. PROVIDE 1" UNDERGROUND CONDUIT WITH GROUNDING ELECTRODE CONDUCTOR TO ATS-101 AND TO GROUND GRID OUTSIDE OF THE BUILDING.
25. PROVIDE METER CABINET AND SOCKET AS REQUIRED FOR WE ENERGIES METER (PROVIDE 1" CONDUIT WITH CONTROL WIRING TO METERING SECTION IN ATS-101 AS REQUIRED PER WE ENERGIES STANDARDS).
26. EXISTING 480 VOLT FEEDER FROM USS NO. 1 TO XFMR-T4.
27. USE EXISTING 120 VOLT CIRCUIT FEEDING EXISTING RECEPTACLES BEING REMOVED FOR NEW DUPLEX RECEPTACLE.
28. EXISTING TEMPERATURE CONTROL PANELS.
29. EXISTING 30" RAW WATER PIPE.
30. CORE THRU LOWER LEVEL WALL AND PROVIDE WATERTIGHT SEAL AROUND CONDUITS.
31. REPLACE 480 VOLT FEEDER CONDUCTORS IN EXISTING OVERHEAD CONDUIT FROM MCC-4 TO USS NO. 1.
32. PROVIDE OVERHEAD CONDUIT WITH 480 VOLT FEEDER CONDUCTORS FROM MCC-4 TO XFMR-T4.
33. PROVIDE OVERHEAD CONDUIT WITH 208 VOLT FEEDER CONDUCTORS FROM XFMR-T4 AND XFMR-T4A TO BYPASS ISOLATION SWITCH.
34. PROVIDE OVERHEAD CONDUIT WITH 208 VOLT FEEDER CONDUCTORS FROM BYPASS ISOLATION SWITCH TO PA.
35. PROVIDE OVERHEAD CONDUIT TO CONNECT TO EXISTING CONDUIT ABOVE DROP CEILING FOR 208 VOLT FEEDER CONDUCTORS FROM PANEL PA TO H.
36. PROVIDE OVERHEAD CONDUIT TO CONNECT TO EXISTING CONDUIT ABOVE DROP CEILING FOR 208 VOLT FEEDER CONDUCTORS FROM PANEL PA TO D-LEFT.
37. PROVIDE OVERHEAD CONDUIT WITH 208 VOLT FEEDER CONDUCTORS FROM PANEL PA TO B-LEFT.
38. PROVIDE UNDERGROUND CONDUIT TO CONNECT TO EXISTING CONDUIT BELOW SLAB FOR 208 VOLT FEEDER CONDUCTORS FROM PANEL PA TO C.

GENERATOR EQUIPMENT PURCHASE PACKAGE

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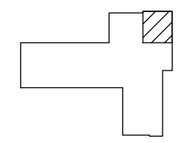

KEY PLAN
NO SCALE

Clark Dietz ENGINEERS
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Partners in Design ARCHITECTS

OAK CREEK WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT AND LOW LIFT PUMP STATION STANDBY POWER

DESIGNED BY:	SEM
DRAWN BY:	JRF
CHECKED BY:	CEC
DATE CHECKED:	12/10

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

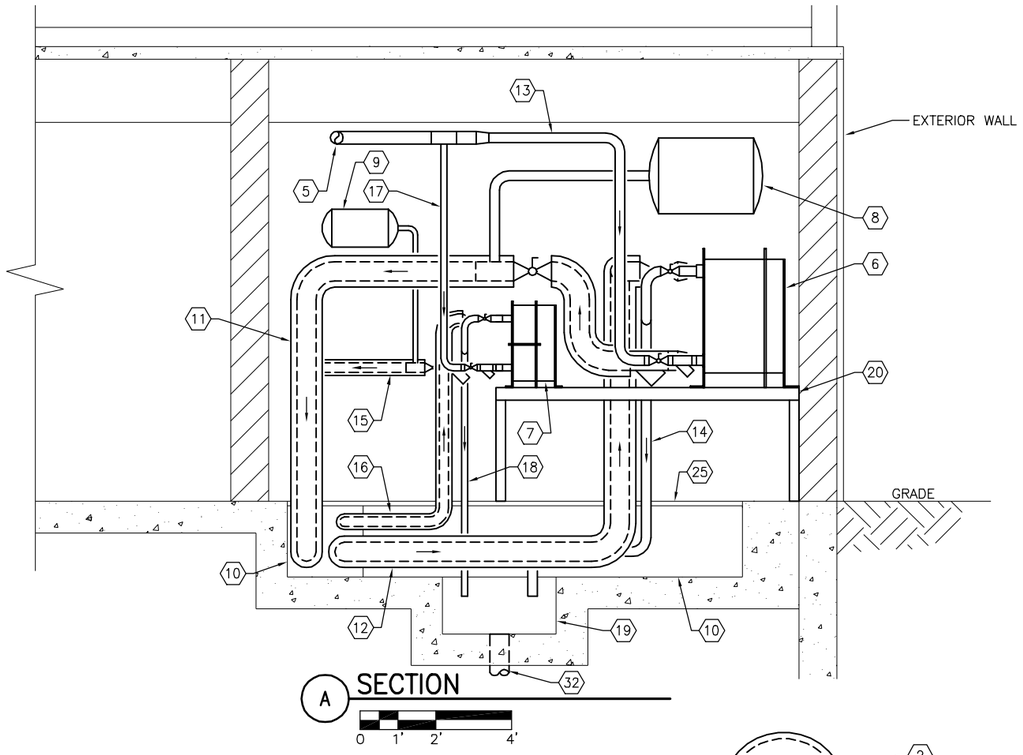
DATE	REVISION
12/17/10	ISSUED FOR BID

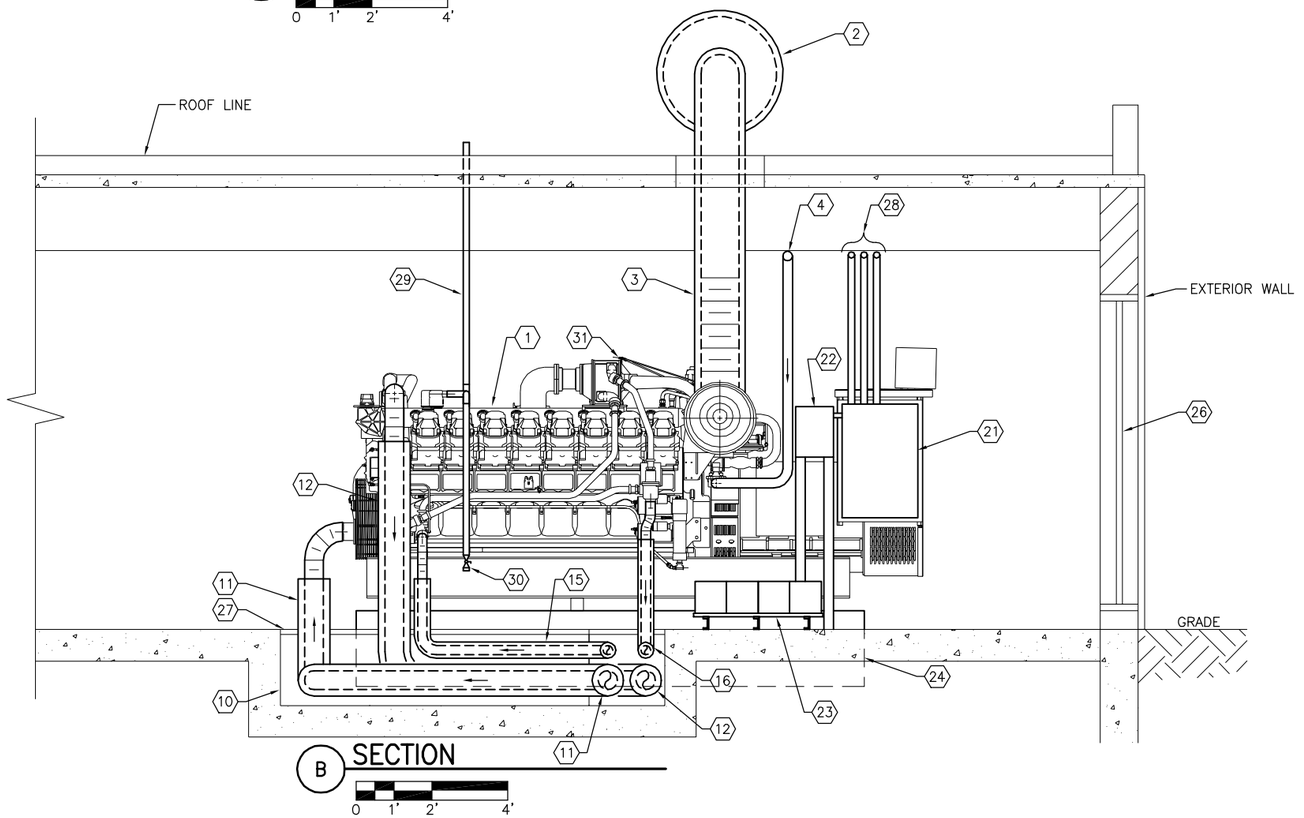
DRAWING TITLE
ADMINISTRATION AND FILTRATION FACILITY ENLARGED FIRST FLOOR POWER PLAN

PROJECT No.
O0130014

DRAWING No.
E-10-402

SHEET 3 OF 11 SHEETS





NOTES

1. SEE DRAWINGS E-00-101, P-00-101, AND HV-00-101 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

KEYNOTES

1. GENERATOR GEN-101.
2. GENERATOR SILENCER.
3. INSULATED 12" DIAMETER EXHAUST PIPING.
4. 3" GAS PIPING TO GENERATOR.
5. 4" POTABLE WATER PIPING.
6. JACKET WATER HEAT EXCHANGER HX-101A.
7. AFTER COOLER HEAT EXCHANGER HX-101B.
8. JACKET WATER LOOP EXPANSION TANK.
9. AFTER COOLER LOOP EXPANSION TANK.
10. PIPE TRENCH.
11. INSULATED 6" JACKET WATER COOLANT SUPPLY PIPING.
12. INSULATED 6" JACKET WATER COOLANT RETURN PIPING.
13. 3" POTABLE WATER PIPING FOR JACKET WATER HEAT EXCHANGER.
14. 3" DRAIN PIPING FOR JACKET WATER HEAT EXCHANGER.
15. INSULATED 3" AFTER COOLER COOLANT SUPPLY PIPING.
16. INSULATED 3" AFTER COOLER COOLANT RETURN PIPING.
17. 2" POTABLE WATER PIPING FOR AFTER COOLER HEAT EXCHANGER.
18. 2" DRAIN PIPING FOR AFTER COOLER HEAT EXCHANGER.
19. SUMP PIT.
20. ALUMINUM GRATING ON STAINLESS STEEL SUPPORT RACK.
21. GENERATOR CONTROL PANEL.
22. BATTERY CHARGER.
23. BATTERY RACK.
24. GENERATOR EQUIPMENT PAD.
25. ALUMINUM GRATING OVER PIPE TRENCH.
26. INTAKE AIR LOUVER AND MOTORIZED DAMPER.
27. PAINTED STEEL PLATE OVER PIPE TRENCH.
28. CONDUITS FOR 120 VOLT POWER AND CONTROL WIRING.
29. 2" PIPING FOR CRANKCASE FUME DISPOSAL.
30. 2" PIPING WITH VALVE FOR CRANKCASE DRIP COLLECTOR.
31. AUTOMATIC BREATHER VALVE FOR AIR BLEED.
32. 6" SANITARY PIPING.

GENERATOR EQUIPMENT PURCHASE PACKAGE

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Partners in Design ARCHITECTS

OAK CREEK
WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT
AND LOW LIFT PUMP STATION
STANDBY POWER

DESIGNED BY:	SEM
DRAWN BY:	JRF
CHECKED BY:	CEC
DATE CHECKED:	12/10

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

DATE	REVISION
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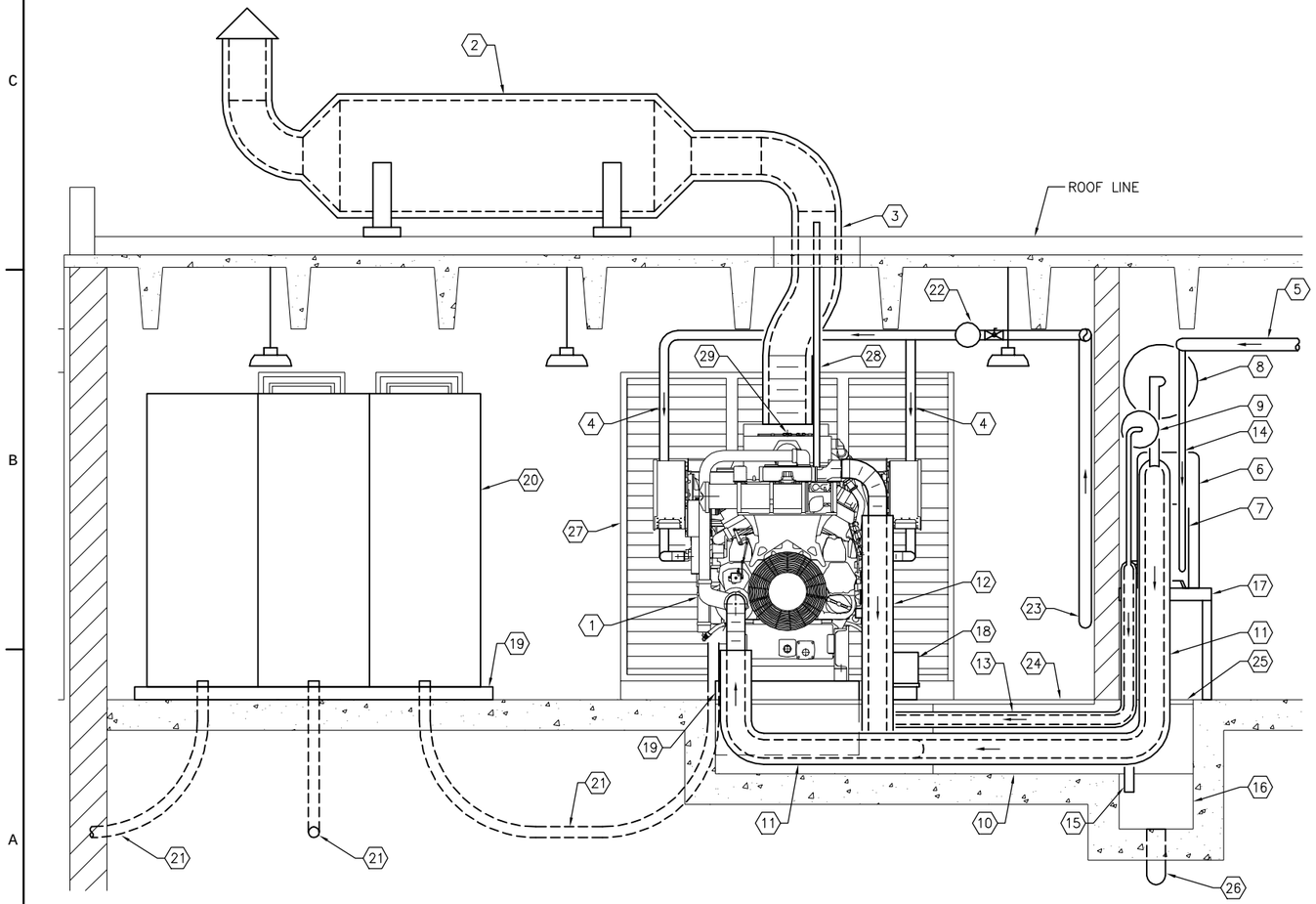
DRAWING TITLE
ADMINISTRATION AND
FILTRATION FACILITY
BUILDING SECTIONS

PROJECT No.
O0130014

DRAWING No.
S-10-101



A SECTION

0 1' 2' 4'

NOTES

1. SEE DRAWINGS E-00-101, P-00-101, AND HV-00-101 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

(#) KEYNOTES

1. GENERATOR GEN-101.
2. GENERATOR SILENCER.
3. INSULATED 12" DIAMETER EXHAUST PIPING.
4. 3" GAS PIPING TO GENERATOR.
5. 4" POTABLE WATER PIPING.
6. JACKET WATER HEAT EXCHANGER HX-101A.
7. AFTER COOLER HEAT EXCHANGER HX-101B.
8. JACKET WATER LOOP EXPANSION TANK.
9. AFTER COOLER LOOP EXPANSION TANK.
10. PIPE TRENCH.
11. INSULATED 6" JACKET WATER COOLANT SUPPLY PIPING.
12. INSULATED 6" JACKET WATER COOLANT RETURN PIPING.
13. INSULATED 3" AFTER COOLER COOLANT SUPPLY PIPING.
14. 2" POTABLE WATER PIPING FOR AFTER COOLER HEAT EXCHANGER.
15. 2" DRAIN PIPING FOR AFTER COOLER HEAT EXCHANGER.
16. SUMP PIT.
17. ALUMINUM GRATING ON STAINLESS STEEL SUPPORT RACK.
18. BATTERY RACK.
19. EQUIPMENT PAD.
20. ATS-101 AND WE ENERGIES METERING SECTION.
21. UNDERGROUND CONDUITS WITH 5KV CABLES.
22. GAS VALVE AND REGULATOR.
23. 4" GAS PIPING TO GAS METER.
24. PAINTED STEEL PLATE OVER PIPE TRENCH.
25. ALUMINUM GRATING OVER PIPE TRENCH.
26. 6" SANITARY PIPING.
27. MOTORIZED DAMPERS.
28. 2" PIPING FOR CRANKCASE FUME DISPOSAL.
29. AUTOMATIC BREATHER VALVE FOR AIR BLEED.

GENERATOR EQUIPMENT PURCHASE PACKAGE

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Clark Dietz ENGINEERS

DESIGN FIRM REGISTRATION No. 184-000450

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CHAMPAIGN, IL 61820
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Partners in Design ARCHITECTS

OAK CREEK
WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT
AND LOW LIFT PUMP STATION
STANDBY POWER

DESIGNED BY:	SEM
DRAWN BY:	JRF
CHECKED BY:	CEC
DATE CHECKED:	12/10

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

DATE	REVISION
12/17/10	ISSUED FOR BID

DRAWING TITLE
ADMINISTRATION AND
FILTRATION FACILITY
BUILDING SECTION

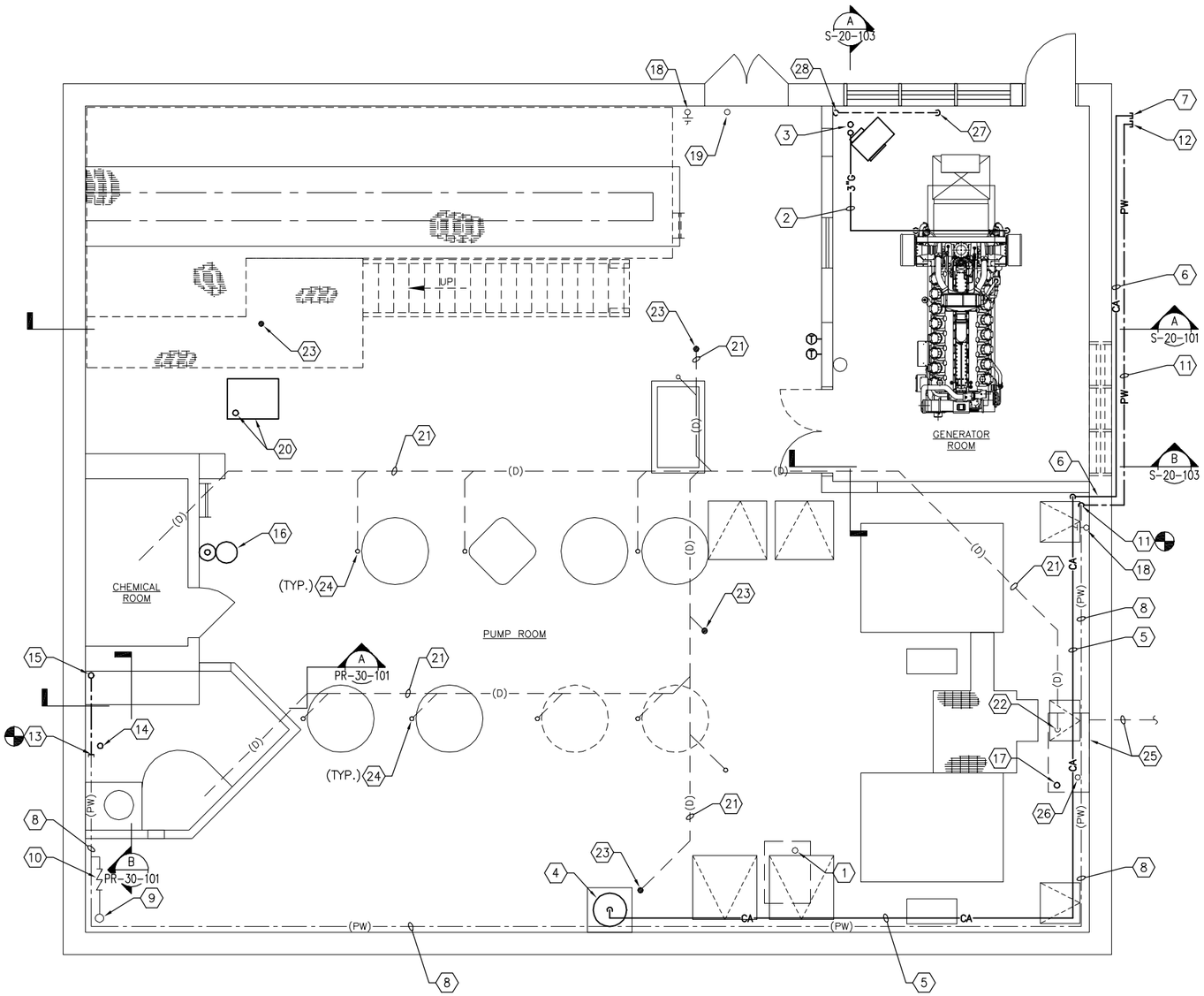
PROJECT No.
O0130014

DRAWING No.
S-10-102

SHEET 5 OF 11 SHEETS

NOTES

1. SEE DRAWING P-00-101 FOR GENERAL NOTES, LEGENDS AND ABBREVIATIONS.



1 FIRST FLOOR PLUMBING PLAN (ELEV. 592.5)

0 1' 2' 4' 8'

KEYNOTES

1. EXISTING 1/2" GAS PIPING TO GAS FIRED UNIT HEATER TO REMAIN.
2. PROVIDE 3" GAS PIPING DOWN TO NATURAL GAS GENERATOR GEN-102, FROM ABOVE. SEE DETAIL 3/P-30-201.
3. PROVIDE 3/4" GAS PIPING DOWN TO GAS FIRED UNIT HEATER GUH-102, FROM ABOVE. SEE DETAIL 3/P-30-201.
4. RELOCATED AIR COMPRESSOR. INSTALL COMPRESSOR ON 4" CONCRETE PAD. PROVIDE 1" COMPRESSED AIR PIPING TO AIR COMPRESSOR AS REQUIRED. PROVIDE COMPRESSED AIR VALVE, PRESSURE REGULATOR, FITTINGS, AND ACCESSORIES.
5. PROVIDE 3/4" COMPRESSED AIR PIPING TO CARBON FEEDER CONNECTION. ROUTE PIPING ALONG WALL WITH EXISTING POTABLE WATER PIPING AND USE EXISTING PIPE SUPPORTS.
6. PROVIDE 3/4" COMPRESSED AIR PIPING THRU EXTERIOR WALL. ROUTE PIPING ALONG EXTERIOR WALL. PROVIDE SLEEVE THRU WALL. SEE DETAIL 1/P-30-201. PROVIDE STAINLESS STEEL UNISTRUT SUPPORTS.
7. PROVIDE COMPRESSED AIR QUICK CONNECT FITTING FOR CONNECTION TO CARBON FEEDER CF-101. MOUNT 24" ABOVE GRADE.
8. EXISTING 1 1/2" POTABLE WATER PIPING. INSULATE UNINSULATED EXISTING PIPING PER SPECIFICATIONS.
9. EXISTING 4" POTABLE WATER RISER.
10. EXISTING POTABLE WATER BACKFLOW PREVENTER ASSEMBLY.
11. PROVIDE 1 1/2" POTABLE WATER PIPING TO CARBON FEEDER CF-101 CONNECTION. CONNECT TO EXISTING PIPING AS REQUIRED. ROUTE PIPING THRU EXTERIOR WALL AND ROUTE ALONG EXTERIOR WALL (PROVIDE ISOLATION VALVE ON PIPING PRIOR TO WALL PENETRATION). SEE DETAIL 5/P-30-201. PROVIDE STAINLESS STEEL UNISTRUT SUPPORTS AS REQUIRED.
12. PROVIDE 1 1/2" POTABLE WATER PIPING FOR CONNECTION TO CARBON FEEDER (PROVIDE COUPLING AS REQUIRED TO CONNECT TO CARBON FEEDER PIPING).
13. PROVIDE 1 1/2" POTABLE WATER PIPING TO HOT WATER HEATER. CONNECT TO EXISTING PIPING AS REQUIRED.
14. PROVIDE 2" POTABLE WATER PIPING DOWN TO POTASSIUM PERMANGANATE SYSTEM.
15. PROVIDE 1 1/2" POTABLE WATER PIPING UP TO HOT WATER HEATER AND THERMOSTATIC MIXING VALVE ASSEMBLY.
16. PROVIDE FLOOR MOUNTED EMERGENCY SHOWER/EYEWASH ASSEMBLY ESEW-1. PROVIDE 1 1/4" TEMPERED WATER PIPING DOWN TO EMERGENCY SHOWER. CONNECT PIPING TO SHOWER AS REQUIRED.
17. PROVIDE 6" DRAIN PIPING DOWN FROM HEAT EXCHANGERS INTO SUMP PIT. CORE HOLE THRU CONCRETE FLOOR INTO SUMP PIT AS REQUIRED. SEAL OPENING WATER TIGHT.
18. EXISTING NON-POTABLE WATER PIPING DOWN TO HOSE BIBB.
19. EXISTING NON-POTABLE WATER PIPING FROM ABOVE.
20. RELOCATED GAS UNIT HEATER. EXTEND 3/4" GAS PIPING TO UNIT HEATER AS REQUIRED. REPLACE CONDENSATE DRAIN PIPING FROM UNIT HEATER TO EXISTING FLOOR DRAIN.
21. EXISTING DRAIN PIPING BELOW SLAB.
22. EXISTING DRAIN PIPING BELOW SLAB INTO SUMP PIT.
23. EXISTING FLOOR DRAIN.
24. EXISTING DRAIN CONNECTION FOR DISCHARGE WATER FROM SEAL WATER PIPING.
25. EXISTING SUMP PIT AND 14" DIP DISCHARGE FROM SUMP PIT.
26. EXISTING 4" STORM DRAIN PIPING DOWN FROM ROOF DRAIN INTO SUMP PIT.
27. EXISTING 2" DRAIN VENT PIPING FROM BELOW SLAB. ROUTE PIPING OVER TO WALL ALONG FLOOR.
28. PROVIDE 2" VENT PIPING UP TO ABOVE. ROUTE PIPING ALONG WALL.

GENERATOR EQUIPMENT PURCHASE PACKAGE

DRAWING SHALL BE USED FOR REFERENCE ONLY FOR DETERMINING EQUIPMENT CLEARANCES AND LAYOUT OF GENERATOR AND ASSOCIATED EQUIPMENT FOR PURCHASING. DRAWING SHALL NOT BE USED FOR INSTALLATION OF THE EQUIPMENT.

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OAK CREEK WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT AND LOW LIFT PUMP STATION STANDBY POWER

DESIGNED BY:	NTP
DRAWN BY:	NTP
CHECKED BY:	KRP
DATE CHECKED:	12/10

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DRAWING TITLE
LOW LIFT PUMP STATION
FIRST FLOOR
PLUMBING PLAN

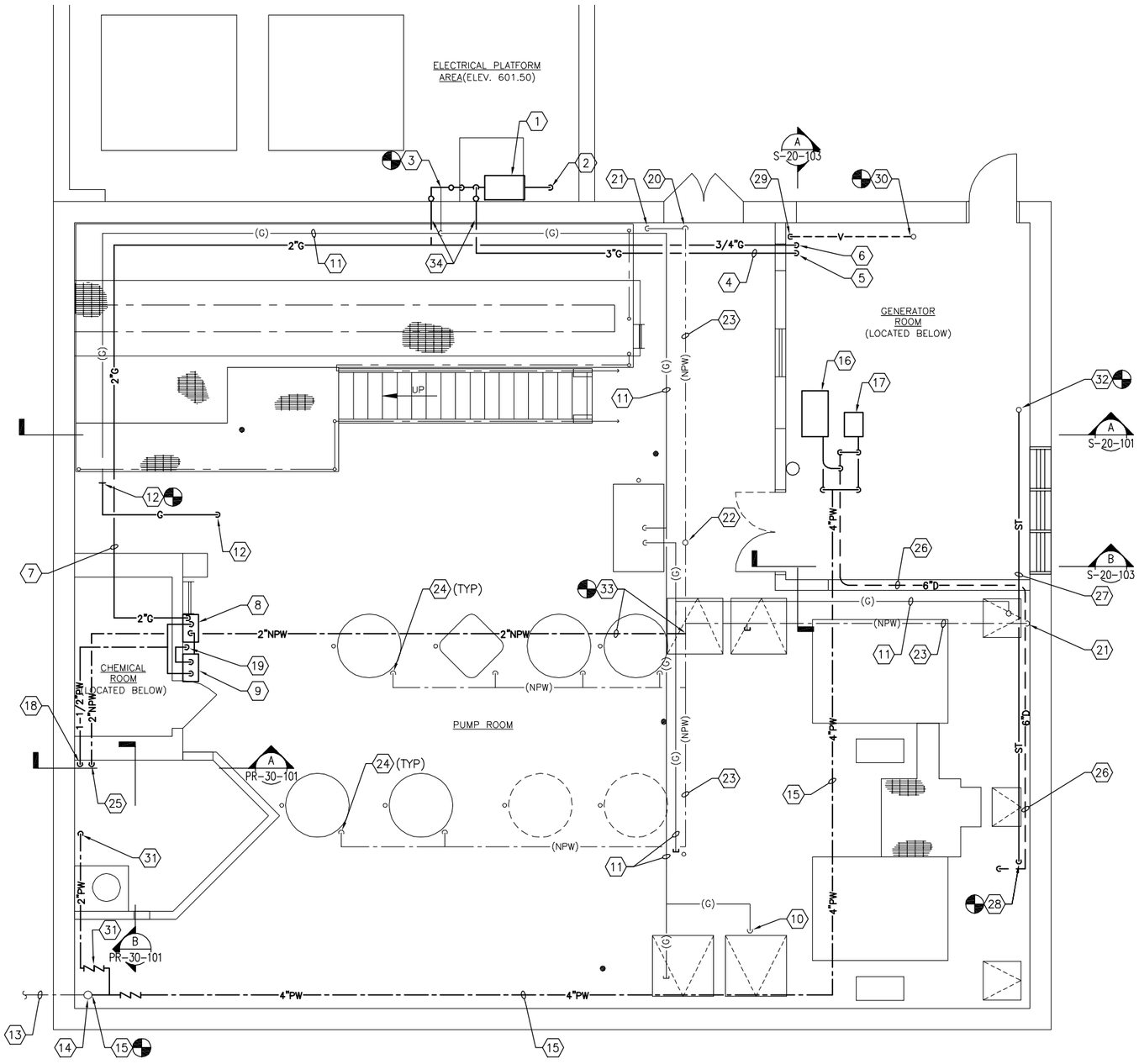
PROJECT No.
O0130014

DRAWING No.
P-20-201

SHEET 6 OF 11 SHEETS

NOTES

1. SEE DRAWING P-00-101 FOR GENERAL NOTES, LEGENDS AND ABBREVIATIONS.



1 MEZZANINE PLUMBING PLAN (ELEV. 602.5)

0 1' 2' 4' 8'

KEYNOTES

1. GAS SERVICE AND METER PROVIDED BY WE ENERGIES. THE METER SHALL BE RATED FOR 13,000 CFH AT 5PSI. CONTRACTOR SHALL COORDINATE LOCATION AND SERVICE WITH WE ENERGIES AS REQUIRED.
2. EXISTING 3" GAS SERVICE UP TO GAS METER TO REMAIN AND BE REUSED.
3. PROVIDE 4" GAS PIPING FROM GAS METER/MANIFOLD ASSEMBLY TO EXISTING BUILDING SERVICES. CONNECT TO EXISTING PIPING AS REQUIRED.
4. PROVIDE 3" GAS PIPING TO NATURAL GAS GENERATOR. ROUTE GAS PIPING ALONG EXTERIOR WALL.
5. PROVIDE 3" GAS PIPING DOWN TO NATURAL GAS GENERATOR GEN-102, (LOCATED IN GENERATOR ROOM).
6. PROVIDE 3/4" GAS PIPING DOWN TO GAS FIRED UNIT HEATER (LOCATED IN GENERATOR ROOM).
7. PROVIDE 2" GAS PIPING TO WATER HEATER.
8. PROVIDE WATER HEATER WH-102. INSTALL WATER HEATER ON SUPPORT RACK MOUNTED UP HIGH. PROVIDE 1 1/4" POTABLE WATER, 1 1/4" HOT WATER, AND 1 1/2" GAS PIPING TO HOT WATER HEATER AS REQUIRED. SEE DETAIL 8/P-30-201.
9. PROVIDE THERMOSTATIC MIXING VALVE ASSEMBLY TMV-1. PROVIDE 1 1/4" POTABLE WATER, 1 1/4" HOT WATER, AND 1 1/4" TEMPERED WATER PIPING TO MIXING VALVE AS REQUIRED. SEE DETAIL 7/P-30-201.
10. EXISTING GAS PIPING TO GAS FIRED UNIT HEATER BELOW.
11. EXISTING GAS PIPING.
12. PROVIDE 3/4" GAS PIPING DOWN TO RELOCATED GAS FIRED UNIT HEATER (LOCATED BELOW).
13. EXISTING 4" INCOMING POTABLE WATER SERVICE INTO BUILDING.
14. EXISTING 4" POTABLE WATER RISER.
15. PROVIDE 4" POTABLE WATER PIPING TO GENERATOR HEAT EXCHANGERS. CONNECT TO EXISTING PIPING AS REQUIRED. PROVIDE RPZ TYPE BACKFLOW PREVENTER. SEE DETAIL 9/P-30-201.
16. JACKET WATER HEAT EXCHANGER HX-102A. PROVIDE 3" POTABLE WATER AND 3" DRAIN PIPING TO HEAT EXCHANGER. SEE DETAIL 10/P-30-201.
17. AFTER COOLER HEAT EXCHANGER HX-102B. PROVIDE 2" POTABLE WATER AND 2" DRAIN PIPING TO HEAT EXCHANGER. SEE DETAIL 10/P-30-201.
18. PROVIDE 1 1/2" POTABLE WATER PIPING UP FROM BELOW TO HOT WATER HEATER AND THERMOSTATIC MIXING VALVE ASSEMBLY.
19. PROVIDE 1 1/4" TEMPERED WATER PIPING FROM THERMOSTATIC MIXING VALVE ASSEMBLY DOWN TO EMERGENCY SHOWER/EYEWASH ASSEMBLY (LOCATED BELOW).
20. EXISTING NON-POTABLE WATER PIPING DOWN TO BELOW MEZZANINE LEVEL.
21. EXISTING NON-POTABLE WATER PIPING DOWN TO HOSE BIBB.
22. EXISTING 4" NON-POTABLE WATER PIPING CONNECTION TO RAW WATER PIPING.
23. EXISTING NON-POTABLE WATER PIPING ALONG CEILING.
24. EXISTING NON-POTABLE WATER PIPING DOWN TO SEAL WATER VALVE ON LOW LIFT PUMP.
25. PROVIDE 2" NON-POTABLE WATER PIPING DOWN TO POTASSIUM PERMANGANATE SYSTEM (LOCATED BELOW).
26. PROVIDE 6" DRAIN PIPING FROM HEAT EXCHANGERS. ROUTE PIPING ALONG GENERATOR ROOM CEILING DOWN TO BELOW.
27. RELOCATE EXISTING 4" STORM DRAIN PIPING ALONG CEILING TO AVOID NEW EXHAUST LOUVER PLENUM.
28. TRANSITION EXISTING 4" STORM DRAIN PIPING DOWN FROM ROOF DRAIN AND DOWN INTO SUMP PIT (LOCATED BELOW) TO RELOCATED 4" STORM DRAIN.
29. PROVIDE 2" VENT PIPING FROM BELOW. ROUTE PIPING ALONG GENERATOR ROOM CEILING TO EXISTING SANITARY VENT THRU ROOF.
30. PROVIDE 2" SANITARY VENT PIPING UP TO EXISTING VENT THRU ROOF. TRANSITION TO EXISTING 4" VENT.
31. PROVIDE 2" POTABLE WATER PIPING DOWN TO POTASSIUM PERMANGANATE SYSTEM. PROVIDE RPZ TYPE BACKFLOW PREVENTER. SEE DETAIL 9/P-30-201.
32. TRANSITION EXISTING 4" PIPING DOWN FROM ROOF DRAIN TO RELOCATED 4" STORM DRAIN.
33. PROVIDE 2" NON-POTABLE WATER PIPING CONNNECTED TO EXISTING NON-POTABLE WATER PIPING. PROVIDE SUPPORT BRACKET TO MOUNT OFF SIDE OF OVERHEAD MONORAIL.

GENERATOR EQUIPMENT PURCHASE PACKAGE

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OAK CREEK WATER and SEWER UTILITY
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PROJECT TITLE

WATER TREATMENT PLANT
AND LOW LIFT PUMP STATION
STANDBY POWER

DESIGNED BY:	NTP
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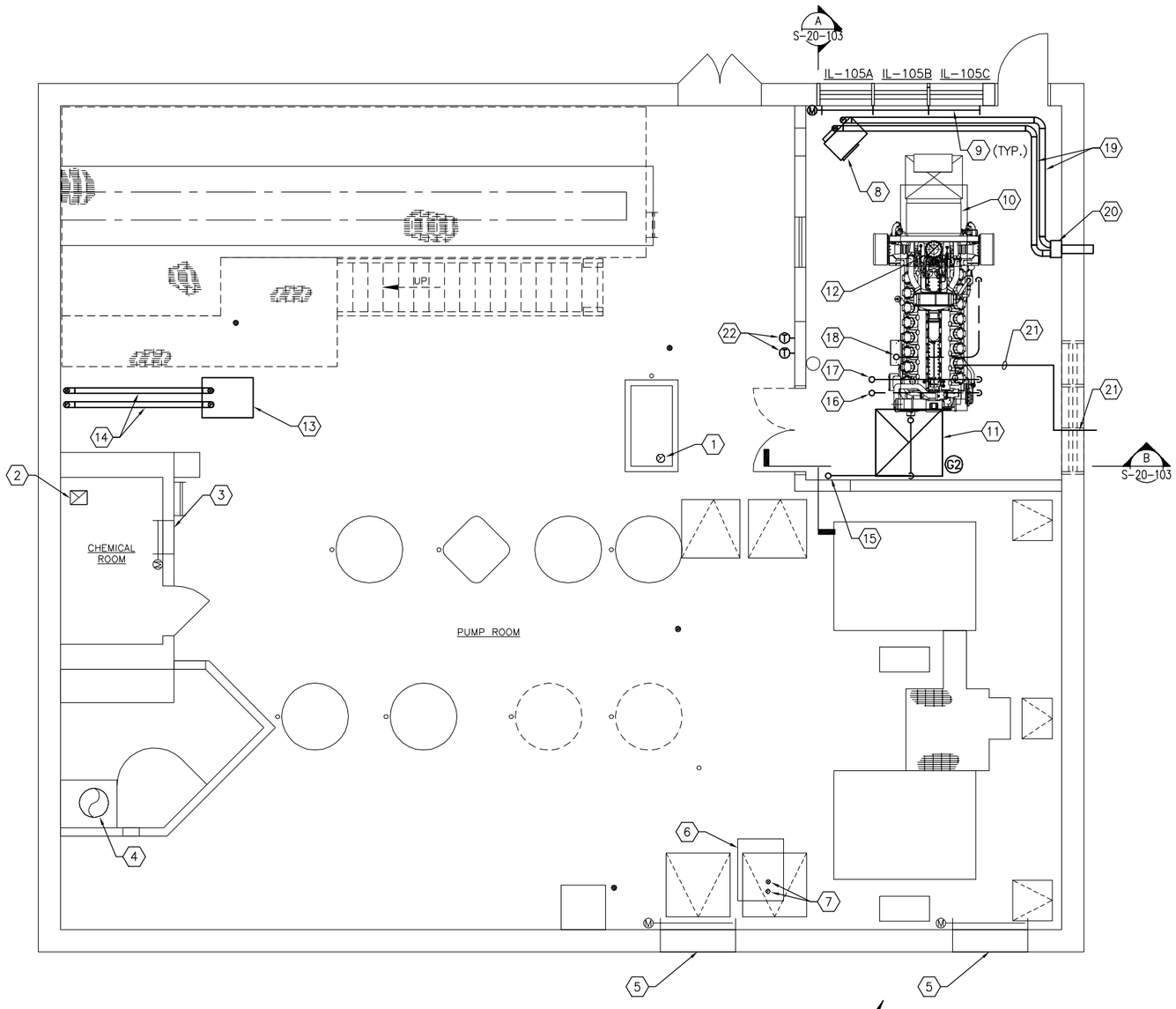
DRAWING TITLE

LOW LIFT PUMP STATION
MEZZANINE
PLUMBING PLAN

PROJECT No.
O0130014

DRAWING No.
P-20-202

SHEET 7 OF 11 SHEETS



1 FIRST FLOOR HEATING/VENTILATION PLAN

(ELEV. 592.50)

0 1' 2' 4' 8'

NOTES

1. SEE DRAWING HV-00-101 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL EQUIPMENT ASSOCIATED WITH GENERATOR (e.g. HEAT EXCHANGERS, EXPANSION TANKS, SILENCER, COOLANT PIPING, EXHAUST PIPING, ETC.) SHALL BE INSTALLED PER GENERATOR MANUFACTURER INSTALLATION INSTRUCTIONS. HEAT EXCHANGERS, SILENCER, EXPANSION TANK ASSOCIATED WITH GENERATOR SHALL BE PROVIDED BY GENERATOR MANUFACTURER.

KEYNOTES

1. EXISTING 6" EXHAUST PIPE FROM GAS FIRED HORIZONTAL SHAFT PUMP UP TO ABOVE.
2. EXISTING 10"x12" EXHAUST DUCTWORK IN CHEMICAL ROOM UP TO ABOVE.
3. EXISTING 12"x24" WALL MOUNTED GRILLE AND MOTORIZED DAMPER ASSEMBLY.
4. EXISTING 16" VENT PIPING FROM WET WELL UP THROUGH EXTERIOR WALL.
5. EXISTING 54"X60" INTAKE AIR LOUVER AND MOTORIZED DAMPER ASSEMBLY.
6. EXISTING GAS FIRED UNIT HEATER.
7. EXISTING COMBUSTION AIR AND FLUE PIPING FROM GAS FIRED UNIT HEATER UP TO ABOVE.
8. GAS FIRED UNIT HEATER GUH-102. PROVIDE MANUFACTURER'S WALL/CEILING MOUNTED SUPPORT KIT. CONNECT COMBUSTION AIR INTAKE AND FLUE VENT TO UNIT HEATER AS REQUIRED.
9. INTAKE AIR LOUVER IL-105#. PROVIDE REMOVABLE LOUVERS. COORDINATE LOCATION AND ELEVATION WITH ARCHITECTURAL DRAWINGS. PROVIDE SECTIONAL MOTORIZED DAMPERS IN WALL OPENING. SEE ELECTRICAL DRAWINGS FOR CONTROLS AND OPERATION.
10. NATURAL GAS GENERATOR GEN-102.
11. 48"x48" EXHAUST DUCTWORK UP THROUGH GENERATOR ROOM CONCRETE CEILING. TERMINATE DUCTWORK BELOW BOTTOM OF CEILING. PROVIDE EXHAUST GRILLE ON OPENING AS INDICATED. SEE DETAIL 1/HV-30-201.
12. PROVIDE INSULATED 12" GENERATOR EXHAUST PIPING UP FROM NATURAL GAS GENERATOR THROUGH GENERATOR ROOM CONCRETE CEILING. SEAL OPENING WATER TIGHT.
13. RELOCATED GAS FIRED UNIT HEATER. CONNECT COMBUSTION AIR AND FLUE TO UNIT HEATER. SUPPORT UNIT FROM PLATFORM STRUCTURE ABOVE.
14. EXTEND EXISTING 3" COMBUSTION AIR AND 3" FLUE PIPE. CONNECT TO EXISTING COMBUSTION AIR AND FLUE PIPE.
15. PROVIDE INSULATED 6" JACKET WATER COOLANT SUPPLY PIPING FROM HEAT EXCHANGER (LOCATED ABOVE) TO GENERATOR.
16. PROVIDE INSULATED 6" JACKET WATER COOLANT RETURN PIPING FROM GENERATOR TO HEAT EXCHANGER (LOCATED ABOVE).
17. PROVIDE INSULATED 3" AFTER COOLER COOLANT SUPPLY PIPING FROM HEAT EXCHANGER (LOCATED ABOVE) TO GENERATOR.
18. PROVIDE INSULATED 3" AFTER COOLER COOLANT RETURN PIPING FROM GENERATOR TO HEAT EXCHANGER (LOCATED ABOVE).
19. PROVIDE 4" COMBUSTION AIR INTAKE AND 4" FLUE FROM GAS FIRED UNIT HEATER.
20. PROVIDE GAS FIRED UNIT HEATER MANUFACTURER'S CONCENTRIC VENT KIT. USE AND MODIFY EXISTING EXTERIOR WALL PENETRATION FOR KIT INSTALLATION AS REQUIRED. SEE DETAIL 5/HV-30-201.
21. PROVIDE 2" PIPING FOR CRANKCASE FUME DISPOSAL AND DRIP COLLECTOR. USE AND MODIFY EXISTING EXTERIOR WALL PENETRATION FOR FUME DISPOSAL PIPING AS REQUIRED. SEAL OPENING WATER TIGHT.
22. PROVIDE THERMOSTATS FOR EAST UNIT HEATER AND AXIVANE FAN.

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STANDBY POWER

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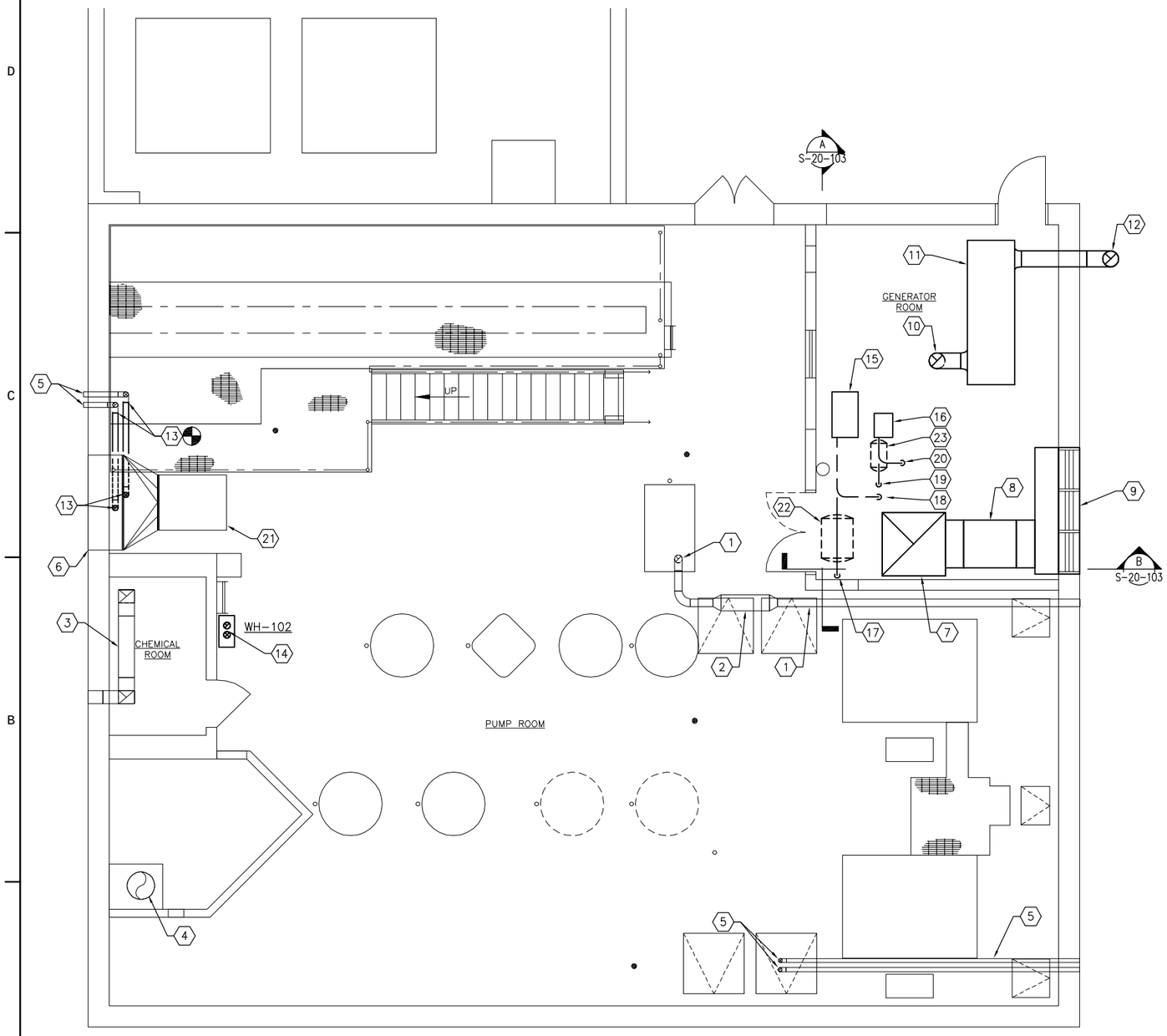
LOW LIFT PUMP STATION
FIRST FLOOR
HEATING/VENTILATION PLAN

PROJECT No.
O0130014

DRAWING No.
HV-20-201

SHEET 8 OF 11 SHEETS



NOTES

1. SEE DRAWING HV-00-101 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.
2. ALL EQUIPMENT ASSOCIATED WITH GENERATOR (e.g. HEAT EXCHANGERS, EXPANSION TANKS, SILENCER, COOLANT PIPING, EXHAUST PIPING, ETC.) SHALL BE INSTALLED PER GENERATOR MANUFACTURER INSTALLATION INSTRUCTIONS. HEAT EXCHANGERS, SILENCER, EXPANSION TANK ASSOCIATED WITH GENERATOR SHALL BE PROVIDED BY GENERATOR MANUFACTURER.

⟨#⟩ KEYNOTES

1. EXISTING 6" EXHAUST PIPE FROM GAS FIRED HORIZONTAL SHAFT PUMP (LOCATED BELOW).
2. EXISTING EXHAUST SILENCER FOR GAS FIRED HORIZONTAL SHAFT PUMP.
3. EXISTING 10"x12" EXHAUST DUCTWORK FROM CHEMICAL ROOM.
4. EXISTING 16"ø VENT PIPING FROM WET WELL UP THROUGH EXTERIOR WALL.
5. EXISTING COMBUSTION AIR AND FLUE VENT PIPING FROM GAS FIRED UNIT HEATER (LOCATED BELOW).
6. EXISTING 72"x72" EXHAUST LOUVER.
7. PROVIDE 48"x48" EXHAUST DUCTWORK UP FROM GENERATOR ROOM BELOW. BUILD DUCTWORK TO USE AS A PLENUM. CONNECT DUCTWORK FROM FAN TO PLENUM. SEE DETAIL 1/HV-30-201.
8. PROVIDE EXHAUST FAN EF-105. CONNECT DUCTWORK TO/FROM FAN. SEE DETAIL 9/HV-30-201.
9. PROVIDE EXHAUST LOUVER EL-101. SEE DRAWING A-20-201. COORDINATE LOCATION AND ELEVATION WITH ARCHITECTURAL DRAWINGS. PROVIDE 18" DEEP PLENUM OF SAME SIZE BEHIND LOUVER. CONNECT DUCTWORK FROM EF-105.
10. PROVIDE INSULATED 12"ø EXHAUST PIPE UP FROM NATURAL GAS GENERATOR (LOCATED BELOW IN GENERATOR ROOM).
11. PROVIDE GENERATOR SILENCER. TRANSITION EXHAUST PIPE TO/FROM SILENCER AS REQUIRED. MOUNT SILENCER ON 6" SUPPORT STAND ON CEILING.
12. PROVIDE INSULATED 12"ø EXHAUST PIPE FROM SILENCER. CONNECT TO SILENCER. PROVIDE 90° ELBOW AND TERMINATE WITH RAIN CAP. SEAL OPENING IN WALL WATER TIGHT.
13. PROVIDE 3" COMBUSTION AIR AND 3" FLUE VENT PIPE FROM RELOCATED GAS FIRED UNIT HEATER. CONNECT TO EXISTING COMBUSTION AIR AND FLUE PIPE AS REQUIRED.
14. PROVIDE 5" FLUE AND 5" COMBUSTION AIR UP FROM WATER HEATER WH-102. ROUTE DUCTWORK UP THROUGH EXTERIOR WALL. PROVIDE MANUFACTURER'S TERMINATION KIT. SEAL OPENING WATER TIGHT.
15. PROVIDE JACKET WATER HEAT EXCHANGER HX-102A. INSTALL HEAT EXCHANGER ON 6" HIGH SUPPORT STAND ON GENERATOR ROOM CEILING. SEE DRAWING P-20-202 FOR WATER SUPPLY AND DRAIN PIPING. SEE DETAIL 5/HV-30-202.
16. PROVIDE AFTER COOLER HEAT EXCHANGER HX-102B. INSTALL HEAT EXCHANGER ON 6" HIGH SUPPORT STAND ON GENERATOR ROOM CEILING. SEE DRAWING P-20-202 FOR WATER SUPPLY AND DRAIN PIPING. SEE DETAIL 5/HV-30-202.
17. PROVIDE INSULATED 6" JACKET WATER COOLANT SUPPLY PIPING DOWN FROM HEAT EXCHANGER TO GENERATOR (LOCATED BELOW IN GENERATOR ROOM). SEAL OPENING IN GENERATOR ROOM CONCRETE CEILING WATER TIGHT. SEE DETAIL 4/HV-30-201.
18. PROVIDE INSULATED 6" JACKET WATER COOLANT RETURN PIPING UP FROM GENERATOR (LOCATED BELOW IN GENERATOR ROOM) TO HEAT EXCHANGER. SEAL OPENING IN GENERATOR ROOM CONCRETE CEILING WATER TIGHT. SEE DETAIL 4/HV-30-201.
19. PROVIDE INSULATED 3" AFTER COOLER COOLANT SUPPLY PIPING DOWN FROM HEAT EXCHANGER TO GENERATOR (LOCATED BELOW IN GENERATOR ROOM). SEAL OPENING IN GENERATOR ROOM CONCRETE CEILING WATER TIGHT. SEE DETAIL 4/HV-30-201.
20. PROVIDE INSULATED 3" AFTER COOLER COOLANT RETURN PIPING UP FROM GENERATOR (LOCATED BELOW IN GENERATOR ROOM) TO HEAT EXCHANGER. SEAL OPENING IN GENERATOR ROOM CONCRETE CEILING WATER TIGHT. SEE DETAIL 4/HV-30-201.
21. EXISTING EXHAUST FAN ON PLATFORM.
22. PROVIDE EXPANSION TANK FOR JACKET WATER LOOP.
23. PROVIDE EXPANSION TANK FOR AFTER COOLER LOOP.

1 MEZZANINE HEATING/VENTILATION PLAN

(ELEV. 602.5)

0 1' 2' 4' 8'

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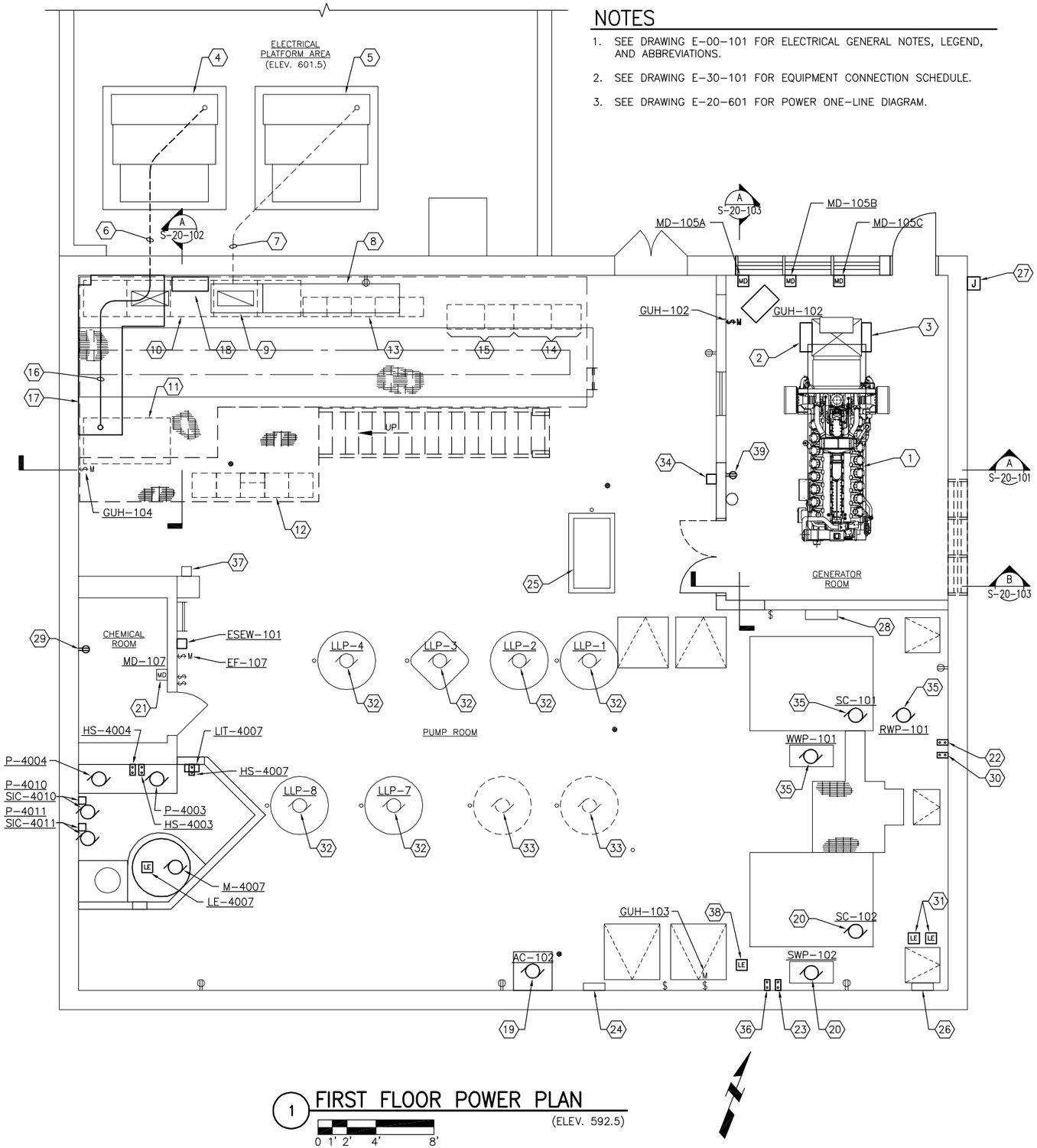
SHEET 9 OF 11 SHEETS



NOTES

1. SEE DRAWING E-00-101 FOR ELECTRICAL GENERAL NOTES, LEGEND, AND ABBREVIATIONS.
2. SEE DRAWING E-30-101 FOR EQUIPMENT CONNECTION SCHEDULE.
3. SEE DRAWING E-20-601 FOR POWER ONE-LINE DIAGRAM.

KEYNOTES

1. PROVIDE NATURAL GAS STANDBY GENERATOR GEN-102.
2. GEN-102 MAIN CIRCUIT BREAKER.
3. GEN-102 CONTROL PANEL.
4. EXISTING TRANSFORMER XFMR-1B (LOCATED ABOVE ON ELECTRICAL PLATFORM AREA). DISCONNECT EXISTING AND RECONNECT NEW SERVICE LATERAL CABLES.
5. EXISTING TRANSFORMER XFMR-1A (LOCATED ABOVE ON ELECTRICAL PLATFORM AREA).
6. REPLACE EXISTING 480 VOLT SERVICE LATERAL CABLES FROM XFMR-1B IN EXISTING UNDERGROUND CONDUITS.
7. EXISTING UNDERGROUND CONDUITS WITH 480 VOLT SERVICE LATERAL CABLES TO MSWB-1A.
8. EXISTING PULLBOX WITH 480 VOLT FEEDER CABLES.
9. EXISTING PULLBOX WITH 480 VOLT SERVICE LATERAL CONDUCTORS TO MSWB-1A.
10. EXISTING MSWB-1A AND MSWB-1B (LOCATED ABOVE ON MEZZANINE).
11. ATS-102 (LOCATED ABOVE ON MEZZANINE).
12. MCC-2 (LOCATED ABOVE ON MEZZANINE).
13. EXISTING MCC-1A AND MCC-1B (LOCATED ABOVE ON MEZZANINE).
14. EXISTING LOW LIFT PUMP NO. 7 VFD (LOCATED ABOVE ON MEZZANINE).
15. EXISTING LOW LIFT PUMP NO. 2 VFD (LOCATED ABOVE ON MEZZANINE).
16. PROVIDE CONDUITS WITH 480 VOLT SERVICE LATERAL CABLES FROM XFMR-1B TO ATS-102. MOUNT CONDUITS UP HIGH BELOW MEZZANINE STEEL FRAMING.
17. CONCRETE ENCASEMENT FOR CONDUITS WITH 480 VOLT SERVICE LATERAL CABLES FROM EXISTING FLOOR TO MEZZANINE STRUCTURE. SEE DRAWING A-20-401 FOR DETAILS.
18. PROVIDE PLC-G ENCLOSURE.
19. PROVIDE CONDUIT AND WIRE TO FEED RELOCATED EQUIPMENT.
20. REPLACE WIRING FOR 480 VOLT POWER FEED TO EXISTING EQUIPMENT (REUSE EXISTING CONDUIT AND EXTEND AS REQUIRED).
21. REPLACE CONTROL WIRING FOR EXISTING EQUIPMENT (REUSE EXISTING CONDUIT AND EXTEND AS REQUIRED).
22. REPLACE LOCAL CONTROL STATION, CONDUIT, AND CONTROL WIRING FOR RWP-101.
23. REPLACE LOCAL CONTROL STATION, CONDUIT, AND CONTROL WIRING FOR SWP-102.
24. EXISTING HORIZONTAL SHAFT NATURAL GAS PUMP AUTOMATIC CONTROL PANEL. REPLACE CONTROL WIRING TO CONTROL PANEL (REUSE EXISTING CONDUIT AND EXTEND AS REQUIRED). CONTRACTOR SHALL VERIFY CONTROL WIRING FROM PANEL TO EXISTING AUTOCON PANEL AND MCC-2 (BEING REMOVED) AND REPLACE WIRING AS REQUIRED TO MAKE SYSTEM OPERATIONAL.
25. EXISTING HORIZONTAL SHAFT NATURAL GAS PUMP.
26. REPLACE WIRING FOR 480 VOLT POWER FEED TO TRAVELING SCREEN SC-102 CONTROL PANEL (REUSE EXISTING CONDUIT AND EXTEND AS REQUIRED). PROVIDE CONDUIT AND CONTROL WIRING TO PLC-G.
27. PROVIDE 12"x12"x4" NEMA 4X JUNCTION BOX WITH INSULATED TERMINAL STRIPS FOR CONNECTION TO CARBON FEEDER CF-101 (MOUNT JUNCTION BOX AT 24" ABOVE GRADE). PROVIDE REMOVABLE KNOCKOUT ON BOTTOM OF ENCLOSURE FOR CONNECTION OF SEALTIGHT CONDUIT TO CF-101.
28. EXISTING WATER LEVEL DIFFERENTIAL CONTROLLER.
29. PROVIDE 120 VOLT DUPLEX RECEPTACLE FOR WIT-4006 (MOUNT AT 48" AFF)
30. PROVIDE LOCAL CONTROL STATION, CONDUIT, AND CONTROL WIRING FOR WWP-101.
31. REPLACE ANALOG CONTROL WIRING FROM EXISTING SHORE WELL BEFORE SCREEN LEVEL TRANSMITTER RAW WATER TEMPERATURE SENSOR TO PLC-G VIA SC-102 CONTROL PANEL (REUSE EXISTING CONDUIT AND EXTEND AS REQUIRED).
32. EXISTING LOW LIFT PUMP.
33. FUTURE LOW LIFT PUMP.
34. PROVIDE LOW TEMPERATURE SENSOR FOR PUMP ROOM.
35. PROVIDE NEW OVERHEAD CONDUIT WITH WIRES TO REFEED EQUIPMENT (ABANDON EXISTING UNDERGROUND CONDUIT IN PLACE).
36. REPLACE LOCAL CONTROL STATION, CONDUIT, AND CONTROL WIRING FOR SC-102.
37. EXISTING RAW WATER TEMPERATURE SENSOR.
38. REPLACE ANALOG CONTROL WIRING FROM EXISTING SHORE WELL AFTER SCREEN LEVEL TRANSMITTER TO PLC-G VIA SC-102 CONTROL PANEL (REUSE EXISTING CONDUIT AND EXTEND AS REQUIRED).
39. PROVIDE 120 VOLT DUPLEX RECEPTACLE (CONNECT TO EXISTING RECEPTACLE BRANCH CIRCUIT).

1 FIRST FLOOR POWER PLAN

(ELEV. 592.5)

0 1' 2' 4' 8'

GENERATOR EQUIPMENT PURCHASE PACKAGE

DRAWING SHALL BE USED FOR REFERENCE ONLY FOR DETERMINING EQUIPMENT CLEARANCES AND LAYOUT OF GENERATOR AND ASSOCIATED EQUIPMENT FOR PURCHASING. DRAWING SHALL NOT BE USED FOR INSTALLATION OF THE EQUIPMENT.

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Partners in Design ARCHITECTS

OAK CREEK WATER and SEWER UTILITY
A COMMITMENT TO WATER QUALITY

PROJECT TITLE
WATER TREATMENT PLANT AND LOW LIFT PUMP STATION STANDBY POWER

DESIGNED BY:	SEM
DRAWN BY:	JRF
CHECKED BY:	CEC
DATE CHECKED:	12/10

NOTE: DIMENSIONAL DATA IS NOT TO BE OBTAINED BY SCALING ANY PORTION OF THIS DRAWING.

DATE	REVISION
12/17/10	ISSUED FOR BID

DRAWING TITLE
LOW LIFT PUMP STATION FIRST FLOOR POWER PLAN

PROJECT No.
00130014

DRAWING No.
E-20-401

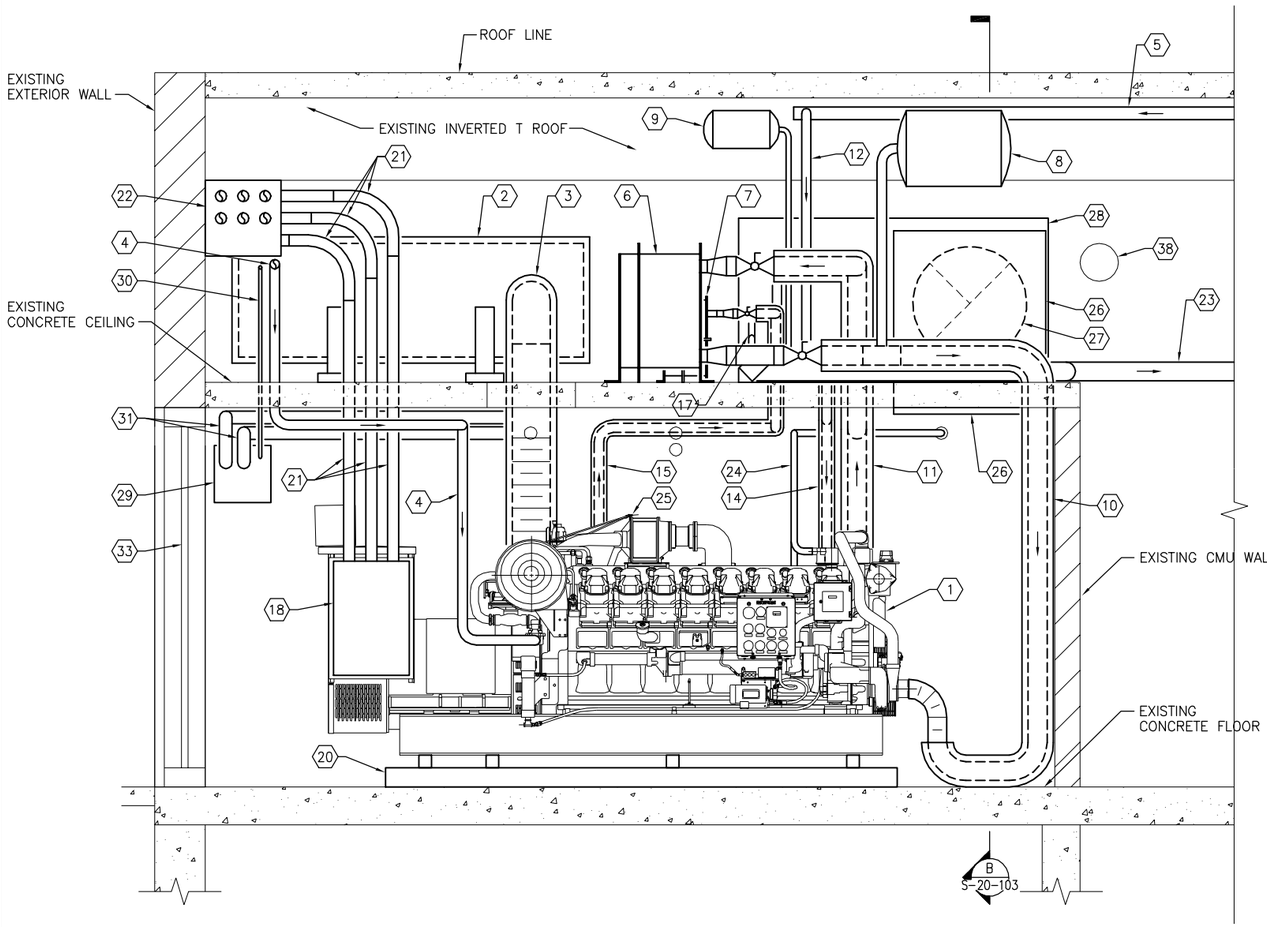
SHEET 10 OF 11 SHEETS

NOTES

1. SEE DRAWING E-00-101, P-00-101, AND HV-00-101 FOR GENERAL NOTES, LEGEND, AND ABBREVIATIONS.

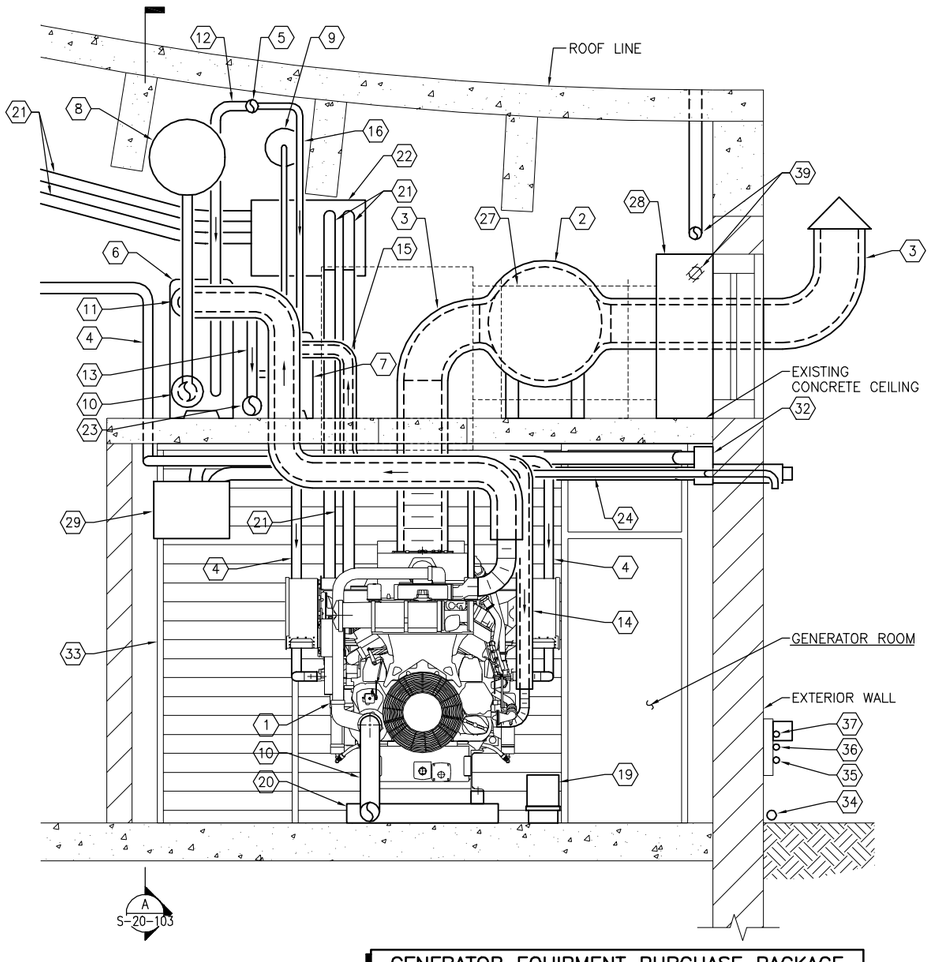
⟨#⟩ KEYNOTES

1. GENERATOR GEN-102.
2. GENERATOR SILENCER.
3. INSULATED 12" DIAMETER EXHAUST PIPING.
4. 3" GAS PIPING TO GENERATOR.
5. 4" POTABLE WATER PIPING.
6. JACKET WATER HEAT EXCHANGER HX-102A.
7. AFTER COOLER HEAT EXCHANGER HX-102B.
8. JACKET WATER LOOP EXPANSION TANK.
9. AFTER COOLER LOOP EXPANSION TANK.
10. INSULATED 6" JACKET WATER COOLANT SUPPLY PIPING.
11. INSULATED 6" JACKET WATER COOLANT RETURN PIPING.
12. 3" POTABLE WATER PIPING FOR JACKET WATER HEAT EXCHANGER.
13. 3" DRAIN PIPING FOR JACKET WATER HEAT EXCHANGER.
14. INSULATED 3" AFTER COOLER COOLANT SUPPLY PIPING.
15. INSULATED 3" AFTER COOLER COOLANT RETURN PIPING.
16. 2" POTABLE WATER PIPING FOR AFTER COOLER HEAT EXCHANGER.
17. 2" DRAIN PIPING FOR AFTER COOLER HEAT EXCHANGER.
18. GENERATOR MAIN CIRCUIT BREAKER.
19. BATTERY RACK.
20. CONCRETE EQUIPMENT PAD.
21. CONDUITS WITH 480 VOLT FEEDER CABLES.
22. PULLBOX.
23. 6" DRAIN PIPING FROM HEAT EXCHANGERS.
24. 2" PIPING FOR CRANKCASE FUME DISPOSAL.
25. AUTOMATIC BREATHER VALVE FOR AIR BLEED.
26. 48"x48" EXHAUST DUCTWORK WITH EXHAUST GRILLE.
27. EXHAUST FAN EF-105.
28. EXHAUST LOUVER EL-101 WITH 18" DEEP PLENUM.
29. GAS FIRED UNIT HEATER GUH-102.
30. 3/4" GAS PIPING TO GAS FIRED UNIT HEATER.
31. COMBUSTION AIR INTAKE AND FLUE VENT FOR GAS FIRED UNIT HEATER.
32. CONCENTRIC VENT KIT FOR GAS FIRED UNIT HEATER.
33. MOTORIZED DAMPERS.
34. FLEXIBLE CARBON FEED PIPING.
35. 3/4" COMPRESSED AIR PIPING.
36. 1 1/2" INSULATED POTABLE WATER PIPING.
37. (3) 3/4" CONDUITS FEEDING CARBON FEEDER JUNCTION BOX.
38. EXISTING 6" EXHAUST PIPE.
39. RELOCATE EXISTING 4" STORM DRAIN PIPING.



A SECTION

0 1' 2' 4'



B SECTION

0 1' 2' 4'

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DRAWING TITLE
LOW LIFT PUMP STATION
BUILDING SECTIONS

PROJECT No.
O0130014

DRAWING No.
S-20-103

SHEET 11 OF 11 SHEETS