

Mechanical/Electrical/Plumbing Narrative

Siemens, 99 Bolton Sullivan Rd.

Heber Springs, Arkansas

OUTLINE SPECIFICATION

The following Basis of Design Outline Specification for materials is not intended to mention every particular mechanical or plumbing item that is required for this project, but it is intended to provide a description and basic requirements for the major building components proposed. The Contractor shall submit written requests to the owner for approval of all building materials used on the project whether mentioned in the Outline Specification, or selected during the design phase of the project. Each such submittal shall include a complete description of the proposed product or procedure, including all data necessary to demonstrate acceptability.

I. MECHANICAL AND PLUMBING SYSTEMS

Plumbing Systems

- A. Domestic Water Valves: Domestic water valves shall be brass-bodied ball valves.
- B. Site Storm Sewer: Internal roof drains and overflow drains routed to the site storm drainage system using schedule 40 PVC piping. Overflow drains to be terminated on the north side of the building using brass outlets 18" above grade.
- C. Natural Gas Service: All Additions and HVAC upgrades are to be all electric.
- D. Domestic Water: Above grade domestic water distribution system will consist of ASTM B88 Type L copper, lead-free solder connections, 125-psi brass bodied isolation ball valves and automatic air vents. Building domestic water piping materials will be ASTM B88 Type "K" copper below grade. Domestic water system will be isolated, with ball valves, at all major branches within the building. PEX piping will not be accepted.
- E. Waste and Vent (Above Slab): Shall be schedule 40 PVC above grade and below grade will meet ASTM D2665 requirements and code.
- F. Waste and Vent (Below Slab): Shall be schedule 40 PVC above grade and below grade will meet ASTM D2665 requirements and code.
- G. HVAC Condensate Piping: HVAC condensate piping shall be schedule 40 PVC and shall be installed and routed to the nearest exterior storm drainage piping. Each living unit to be connected to the condensate drain system.
- H. Plumbing Fixtures (Employee Restrooms):
 - 1. Water Closets: Building fixtures shall be commercial Floor Mounted, flush valve, with sensor operated flush valve. ADA fixture shall be provided in all areas where required. Fixture shall be American Standard or approved equal.
 - 2. Lavatories: White vitreous china lavatory with faucet ledge and backsplash. Provide american standard reliant 7385.050 single lever, 0.5 gpm, faucet with extra long handle, base plate, grid drain, wade #520 wall carrier, handilav molded drain & supply insulation

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kit. Mount 34 in. A.F.F. to top of rim. provide watts Ifmmv under counter thermostatic mixing valve. set water temperature at 105 degrees F.

3. Floor Drains: Floor drains and floor sinks shall have cast iron bodies with nickel bronze tops. Floor drains shall be located in restrooms, mechanical rooms and other spaces as required
4. Mop Sink: Fiat MSB2424 24" X 24" Molded Stone Mop Basin with T&S brass faucet with internal check valves and service valves.
5. Electric Water Coolers: Electric Water Coolers: Wall hung combination high/low ADA approved electric coolers rated at 8 gph per ARI standards. Provide all water coolers with a bottle filler. Equal to Elkay Model EZSTL8WSLK Bi-Level.
6. Hose Bibs: Provide hose bids in each restroom.
7. Water Heater: Provide 15Gal Low Boy, electric water heater mounted on rack above the mop sink. Water heater to be a 6kW, 27GPH recovery at 90°F Rise.

I. Plumbing Fixtures (Break Room Expansion):

1. Water Closets: Building fixtures shall be commercial Floor Mounted, flush valve, with sensor operated flush valve. ADA fixture shall be provided in all areas where required. Fixture shall be American Standard or approved equal.
2. Lavatories: White vitreous china lavatory with faucet ledge and backsplash. Provide american standard reliant 7385.050 single lever, 0.5 gpm, faucet with extra long handle, base plate, grid drain, wade #520 wall carrier, handilav molded drain & supply insulation kit. Mount 34 in. A.F.F. to top of rim. provide watts Ifmmv under counter thermostatic mixing valve. set water temperature at 105 degrees F.
3. Floor Drains: Floor drains and floor sinks shall have cast iron bodies with nickel bronze tops. Floor drains shall be located in restrooms, mechanical rooms and other spaces as required
4. Mop Sink: Fiat MSB2424 24" X 24" Molded Stone Mop Basin with T&S brass faucet with internal check valves and service valves.
5. Stainless Steel Sink: Provide 2- two compartment stainless steel sinks with goose neck faucet, grid drain, and garbage disposers in the food preparation/serving area.
6. Vending Area: Provide 4- ice maker wall boxes and floor sinks for ice machines and vending machines.
7. Electric Water Coolers: Electric Water Coolers: Wall hung combination high/low ADA approved electric coolers rated at 8 gph per ARI standards. Provide all water coolers with a bottle filler. Equal to Elkay Model EZSTL8WSLK Bi-Level.

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8. Hose Bibs: Provide hose bids in each restroom.
9. Water Heater: Provide 30Gal Low Boy, electric water heater mounted on rack above the mop sink. Water heater to be a 12kW, 55GPH recovery at 90°F Rise.
- J. Insulation: Exposed domestic hot and cold water pipes shall be insulated with minimum one-inch thick fiberglass pipe insulation with canvas jacket and PVC covering where required. Concealed hot and cold domestic water shall have a minimum of one-inch thick molded fiberglass insulation while the domestic hot and cold water piping located in interior walls shall have a minimum one-half inch molded fiberglass insulation. Condensate piping insulation shall be the same as the concealed cold water piping.

Mechanical Systems

- A. Existing Building HVAC Upgrades:
 - a. Existing Manufacturing Area
 - Provide 3-20 ton package units equal to a Rheem RACGYB240ACF with electric heat. Provide unit with a 2 stage 54 kw electric heat strip.
 - Provide each unit with a 4 way throw diffuser head equal to a AES Industries model ABD-1-20-4
 - Structural framing to be provided to mount the units on the roof. Existing building will not hold the weight of the new equipment.
 - b. Existing Office Area
 - Replace existing package units, splits systems, and mini split units with a new ductless VRF heat pump system with dedicated outside air unit.
 - System to consist of one-12 ton condenser with approximately 14 ductless ceiling mounted cassettes.
 - c. Existing Breakroom and Office.
 - Replace existing HVAC system with new ductless VRF heat pump system with dedicated outside air unit.
 - System to consist of one-8 ton condenser with approximately 5 ductless ceiling mounted cassettes.
 - d. Existing Maintenance Office
 - Replace existing HVAC system with new ducted mini-split heat pump system with ducted outside air unit.
 - System to consist of one-2.5 ton condenser with approximately 1 ducted airhandler.
- B. Machine Shop:
 - a. Existing Machine Shop Area
 - Provide 1-15 ton package unit equal to a Rheem RACGYB240ACF with electric heat. Provide unit with a 2 stage 36 kw electric heat strip.
 - Unit to be ground mounted with exterior ductwork routed up the side of the building to the peak of the roof. Provide two runs of fabric duct routed length of the building in the longest direction.

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C. New Breakroom:

- a. New ductless VRF heat pump system with dedicated outside air unit.
- b. System to consist of one-16 ton condenser with approximately 6 ductless ceiling mounted cassettes and one dedicated outside air unit.

D. New 25,000sqft Warehouse:

- a. Provide 3-20 ton package units equal to a Rheem RACGYB240ACF with electric heat. Provide unit with a 2 stage 54 kw electric heat strip. The building to be divided into two sections, each section will have one chases to the roof vertically traversing all floors. On the roof at the top of each chase will be a booster fan, for a total of 2 fans

GENERAL HVAC INFORMATION:

- A. All thermostats to be standard 7 day programmable .
- B. Exhaust for restrooms and the janitors closets, one for each gange restroom, is to be served individual, inroom, ceiling mounted exhaust fans with duct routed to louvers on the wall.
- A. Filtration: Minimum Merv 8 filters to be provided on all air handling systems.
- B. Insulation: All round ducts shall be externally insulated with two-inch 1.5 pcf fiberglass, foil faced duct wrap. All rectangular ducts shall be internally lined. All spiral duct shall be double-wall spiral. All ducting related to the kitchen area to be externally wrapped.
- C. Air Distribution: All supply, return, fresh air and exhaust duct shall be low-pressure duct construction as recommended by SMACNA. Ductwork shall be acoustically lined for first ten feet or wrapped and sized for low air velocities and sound attenuation. Supply, return and exhaust grilles shall be aluminum.

II. ELECTRICAL SYSTEMS

The following comments are provided based upon our current understanding of the electrical scope of the project.

Power Distribution Systems

- A. The current electrical design approach is to serve the development with one (1) electric service as follows:
 1. Option 1 (Existing Facility Addition): Provide new 277/480VAC, 3-phase, 1200A electric service for the facility. New electric service to be provided from a new pad mount utility transformer. Electric service shall serve an exterior main distribution panel. The service shall include an exterior main circuit breaker, and the electrical contractor shall provide all required trenching, conduit and cabling as required by local electric utility.
 2. Option 2 (New Standalone Industrial Warehouse Building): Provide new 277/480VAC, 3-phase, 600A electric service for the new stand-alone facility. New electric service to be provided from a new pad mount utility transformer. The service shall include an exterior main circuit breaker, and the electrical contractor shall provide all required

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trenching, conduit and cabling as required by local electric utility.

3. Option 2 (Breakroom and Interior Renovations + Site Improvements): Provide new 277/480VAC, 3-phase, 800A electric service for the existing facility. New electric service to be provided from a new pad mount utility transformer. The service shall include an exterior main circuit breaker, and the electrical contractor shall provide all required trenching, conduit and cabling as required by local electric utility.

- B. For each option, the electrical contractor shall provide (3) new 277/480V, 250A electrical panels to serve new all-electric HVAC loads as well as (2) new Level 2 EV charger locations.

Lighting

- A. Light fixture package shall be coordinated with the construction manager to develop a fixture package allowance. It is expected for the light fixture package to be an all LED package. The package should include:
 1. Wall packs – Quantity: 20 – LSI SMW
 2. Flat Panels – Quantity: 50 – Williams BP (Backlit Flat Panel)
 3. 2x2 Interior - Quantity: 50 – Columbia LCAT
 4. High Bay Industrial - Quantity: 50 – Metalux UHBS (with integral occ sensor)
 5. Parking Lot Pole Light Heads - Quantity: 20 – LSI MRM
- B. Light fixtures within interior areas shall be controlled via local occupancy sensors.
- C. Exterior lights and covered parking lights shall be controlled via photocell/timeclock system with manual override.

Receptacle Power

- A. Receptacle power shall be provided throughout the new construction and renovation areas and typical of the type of development.
- B. Receptacles shall be provided outside all exterior doors and near exterior mechanical equipment and shall include weather proof covers.

Mechanical/HVAC Power

- A. Refer to the mechanical narrative for a description of the building HVAC systems. Electrical contractor will be responsible for providing power to all mechanical/HVAC systems.
- B. Conduit and boxes shall be provided for all HVAC system controls.

Low Voltage Utility/Data System

- A. For the Option 2 (New Standalone Industrial Warehouse Building), a low voltage utility service shall be provided by the local serving utility to the main data closet of the new building. Install two (2) empty 2" conduits from the data room to the utility easement.

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- B. Electrical contractor to coordinate with SIEMENS IT to install low voltage cabling throughout the new construction and renovated areas. Fiber cabling from the serving utility shall be provided to the telecom/fiber enclosure in each unit. Installed cabling shall be tested and labeled per owner's requirements.
- C. Wireless access points (WAPs) will be installed by the owner.

Fire Alarm

- A. A fully addressable fire alarm system shall be installed all new construction and renovated areas. An outside monitoring service shall be included.
- B. Electrical contractor to coordinate and provide with local Siemens fire alarm contractor.

Access Control/Security

- A. Electrical contractor shall provide line voltage power (ie security gates), pathways and boxes for site security improvements that are to be installed by Siemens.

Audio/Visual Systems

- A. Electrical contractor shall coordinate with SIEMENS AV to define an allowance for the audio/visual systems that will be installed in the building and in other common areas.