

MEP NARRATIVE
CARTERSVILLE ELECTRIC RENOVATION
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CARTERSVILLE, GA

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Project Description:

The project consists of the interior renovation of the existing Cartersville Electric building located in Cartersville, Georgia. The total facility size being renovated is approximately 6,630 square feet. The existing facility is a 3-story building with an attached warehouse. The existing 3-story building houses office space, restrooms, meeting rooms, a breakroom, and storage spaces. Only the 3-story building is part of the renovation scope. The existing warehouse and miscellaneous site structures are out of scope.

Assumptions & Exclusions:

This narrative was produced for pricing purposes only and is not intended to serve as a design document substitution for construction. The following assumptions are the baseline for this narrative:

1. Exterior site lighting fixtures are designed and provided by utility company/others. Exterior site lighting is not included in this narrative.
2. Utility connections and site utility infrastructure is not included in this narrative. This narrative covers the electrical utility service entrance and all utility infrastructures inside the building.
3. This narrative is specific to the building mechanical, electrical, and plumbing systems. Other systems, such as, but not limited to, architectural, site infrastructure, and storm drainage are not included in this narrative.
4. Building construction plans were in progress at the time of the generation of this narrative. Criteria established in this narrative assumes that building construction is suitable to support said systems included in this narrative.
5. The available service voltage for the building is a 240/120V, (High-leg) closed delta and will remain for re-use with the renovated facility.
6. HVAC system sizes and capacities have been approximated, and are intended to be used for scope and pricing purposes only. Final heat load calculations will need to be completed prior to installation.
7. The primary means of heating the portion of the facility that is within the scope of this project is electric.
8. Existing Generator and ATS are currently functional and will remain for re-use. No upgrades or replacements to the existing backup system are desired. This narrative and project scope will only cover reconnection of the existing backup system.

Codes & Standards:

The codes and standards which governed this narrative are given below:

1. International Building Code, 2018 Edition, with Georgia Amendments (2020), (2022)
2. International Fire Code, 2018 Edition, with Georgia Amendments (2020)
3. International Plumbing Code, 2018 Edition, with Georgia Amendments (2020), (2022), (2023)

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4. International Mechanical Code, 2018 Edition, with Georgia Amendments (2020)
5. International Fuel Gas Code, 2018 Edition, with Georgia Amendments (2020), (2022)
6. National Electrical Code, 2020 Edition, with Georgia Amendments (2021)
7. International Energy Conservation Code, 2015 Edition, with Georgia Supplements and Amendments (2020), (2022), (2023)
8. NFPA 101 National Life Safety Code (2020)

I. Electrical Systems Description:

Summary Description:

The building electrical system will be fed from an existing pole-mounted, closed-delta (high-leg), transformer bank. This existing bank will feed a new 400 Amp, 240/120 Volt, 3-Phase, 4-Wire (High-Leg) Main Breaker Panel for sub-panel(s), receptacles, lighting, and all other equipment. The panelboard will be located in the Electrical/IT Room. There is an existing Generator and ATS that will remain and be re-used to back up the office spaces, HVAC equipment, and gate operator, at a minimum. The renovated portion of the facility interior and exterior lighting will be provided by various light-emitting diode (LED) fixtures. New low voltage backbone infrastructure (conduit, pull-strings and backboxes) will be installed including telecom, security, and audio-visual systems based on owner requirements. Low voltage equipment and devices will be furnished and installed by owner.

Scope of Demolition:

No work (demolition or new) will be performed in the warehouse portion of the facility. All existing electrical equipment (other than the existing generator & ATS remaining for re-use), associated appurtenances, devices, lighting, and conduit will be demolished in the existing 3-story office building.

A. Lighting:

1. All lighting mounted on the exterior of the building must be rated for wet locations.
2. All lighting will be 120V, single phase unless specifically noted otherwise in this narrative.
3. Facility will have the following fixture types:
 - a. Offices/Workrooms (30-50 FC): 2'x2' Recessed LED Fixtures & 6" LED Recessed Downlights
 - b. Vestibules/Reception (20-30 FC): 6" LED Recessed Downlights
 - c. Corridors (5-10 FC): 6" LED Recessed Downlights
 - d. Electrical/Mechanical/Janitorial Rooms (20-30 FC): 4' Linear Lensed LED Strip Fixtures & 2'x2' Recessed LED Fixtures
 - e. Restrooms (10-30 FC): 6" LED Recessed Downlights
 - f. Storage (5-20 FC): 4' Linear Lensed LED Strip Fixtures
 - g. Exterior Walls: Full Cutoff LED Wall packs

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- h. LED Exit Signs, located to indicate paths of egress
 - i. Emergency batteries integral to fixtures, located along paths of egress
 4. Interior lighting circuits will be controlled based on space type by local occupancy sensors and have automatic shut-off controls with override switches as required by the applicable energy codes. Exterior lighting will be controlled by lighting control panel integral time clock or integral photocell.
 5. Each defined space will have local light switches.
 6. All spaces will have occupancy/vacancy sensors to control lighting as required by the applicable energy codes.
 7. LED exit signs will be provided to meet NFPA 101 requirements.
 8. Emergency lighting will be powered by battery backup.
 9. Elevator cab lighting will have separate 120V, 15-amp lockable disconnect provided in elevator machine room with separate dedicated branch circuit feed.

B. Power:

1. The facility electrical power distribution system will consist of the following equipment.
 - a. Main Breaker Panel – 240/120 volt / 3 Phase / 4 Wire, (High-Leg) 400-Amp fed from existing utility provided pole-mounted transformer bank.
 - i. Distribution Point #1: This will be in the electrical/IT room on the first floor and will house the Main Breaker Panel MBP as well as the following equipment: (1) 240/120V, 225-amp panel (Panel will be fed by the existing ATS/Backup Generator).
 - ii. Distribution Point #2: This will be in a back of house room on the basement floor of the building with the following equipment: (1) 240/120V, 225-amp panel.
 - b. Existing Generator & ATS will remain for re-use with the new facility floor plan. The existing Generator will back up the offices, HVAC, and gate operator, at a minimum.
2. Ground power distribution system for the facility per current 2020 NEC standards.
3. All wiring used will be copper, with THHN/THWN insulation, rated at 75 degrees Celsius (°C).
4. All wiring will be run in electrical metallic tubing (EMT) conduit, unless conduit is exposed and subject to damage. Rigid metal conduit (RMC) will be used in these instances.
5. All wiring and conduits will be sized per NEC 2020 standards. Wiring and conduit will be sized to maintain a maximum 3% branch circuit drop.
6. MC cable will be allowable for runouts to devices, with a maximum runout length of 6’.
7. All exterior electrical equipment will have NEMA 3R enclosures.
8. All exterior receptacles will be GFCI type with waterproof covers.
9. All receptacles in breakrooms and restrooms will be GFCI type.

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10. All receptacles in this facility will be rated at 20A unless specifically noted otherwise.
11. Heavy duty fusible disconnect switches will be provided for all electrical equipment that is rated for 208V or 120V greater than a 20A load.
12. Outlet Boxes
 - a. Outlet boxes in general will be 4 inches square and 1 ½ inches deep and when installed in wall will have a ½ inch plaster ring.
13. 120V NEMA 5-20R duplex receptacles will be provided for this facility as follows:
 - a. (1) GFCI outlet per restroom and lockers.
 - b. (1) wall receptacle per 50 linear feet along corridors.
 - c. (4) wall receptacles per office.
 - d. (1) countertop wall receptacle per 4' linear feet of cabinetry in the breakroom/office areas.
 - e. Floor-box receptacles will be provided for meeting rooms and conference rooms. Quantity will be determined by square footage of space per NEC requirements.
 - f. Receptacles as required for equipment or as required by NEC.
14. Provide power feeders for the following equipment.
 - a. HVAC and plumbing equipment.
 - b. Elevator
15. Conduit and wiring will be provided for all electrical equipment in the building, per the electrical requirements of each piece of equipment. Provide local disconnects and/or switches as well as branch circuit breakers sized to meet load requirements.
 - a. Provide power for the following low voltage systems:
 - i. Fire Alarm Expander Panels
 - ii. CATV
 - iii. Telecom
 - iv. Audio/Visual
 - v. Security
 - b. Provide provisions for new Elevator.
16. Elevator power will be provided from a separate, listed, lockable disconnect sized for elevator operation and located in the elevator machine room. Power will be provided via dedicated branch circuit. Controller/switch will have shunt-trip and fire alarm system monitoring capabilities for shut down and recall functionality. Elevator switch basis of design: Eaton Elevator Control ES Switch.

C. Low Voltage:

1. Fire Alarm System
 - a. An electronically operated, supervised, addressable Fire Alarm system will be provided. Fire Alarm Manufacturer will be sole source, Firelite, no equivalent manufacturer will be acceptable.
 - b. All fire alarm system conductors will be installed in conduit.



- c. System will include, at a minimum, the following:
 - i. Control Panel
 - ii. Remote annunciator
 - iii. Pull Stations
 - iv. Smoke Detectors
 - v. Duct detectors in air handling systems 2000 CFM or greater in size
 - vi. Combination Horn/Strobe Notification Devices
 - vii. Power Supplies
 - viii. Digital Dialer
 - ix. Auxiliary connection to elevator controller for shunt control and recall operations
- d. Fire alarm system will comply with NFPA 101 and Georgia Accessibility Code.
- e. Annunciators will be alphanumeric and located in the Vestibule.

II. Telecom/Data/Security Description:

Summary Description:

The scope of this project will incorporate the requirements of the following Building Systems as outlined in the descriptions below.

- Telecommunications & Data rough-in station outlets with conduit stub-ups and pullstrings. Cabling, equipment, and devices will be provided and installed by owner/owner preferred vendor.
- Access control rough-in locations with conduits and pullstrings. Cabling, equipment, and devices will be provided and installed by owner/owner preferred vendor.
- Raceway with pullstrings for (3) dedicated communications connections to Elevator equipment.

Scope of Demolition:

No work (demolition or new) will be performed in the warehouse portion of the facility. The owner will remove any equipment to be salvaged prior to demolition. All existing low voltage systems will be demolished and replaced/upgraded in the existing 3-story office building.

A. Telecom Room Requirements:

1. A shared space will be provided to house telecom backboard and EIA/TIA standard equipment cabinet/rack. Underground conduits will be routed from the site utility demarcation point to the telecom backboard.
2. The telecom equipment backboard will be provided with (2) standard dedicated circuits, 20A, 120V receptacles for data/telecom equipment.

B. General Requirements:

1. Station outlets will be located throughout the facility in coordination with Owner's requirements and the following guidelines:

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- a. Two voice/data station outlets per office/workroom on opposing walls.
- b. Voice/data station outlets located above accessible ceiling for future Wireless Access Point installation.
2. Access control rough-ins will be located at all exterior entry points and any interior locations based on Owner requirements.
3. Raceway with pullstrings for (3) dedicated telecom connections for various elevator equipment, i.e., elevator controller, elevator cab, etc.

C. Pathways, Conduits and Raceway:

1. In areas without accessible ceiling, EMT conduit or J-hooks tray will be used to protect cables.
2. All Station outlets will be provided with 4" square backbox with single gang trim ring and conduit stub-up to nearest accessible ceiling. Minimum conduit size will be 3/4".
3. Underground pathways will be PVC conduit with pullstring. Minimum size will be 2".
4. Surface mounted raceway will not be used.

III. HVAC Systems Description:

Summary Description:

The HVAC system will consist of six (6) split system heat pumps with electric auxiliary heating, one (1) mini-split heat pump, two (2) exhaust fans, and one (1) electric wall heater. The heat pumps will be installed outside on the ground; the split system indoor units will be installed vertically in the attic and basement, and the mini-split indoor unit will be a wall-mount type in the IT room. The split system heat pumps and mini-split heat pump will be controlled by wall-mounted thermostats. The exhaust fans serving the restrooms/locker rooms will run continuously for ventilation. Supply ductwork and diffusers will be used for the residential heat pumps which will have a plenum return. Air conditioning or ventilation for the new elevator will be provided as needed once an elevator has been selected.

Scope of Demolition:

No work (demolition or new) will be performed in the warehouse portion of the facility. All existing mechanical equipment, associated appurtenances, supports, control wiring, ductwork, and accessories will be demolished in the existing 3-story office building.

A. Heating/Cooling Systems Description:

1. DX Heat Pumps
 - a. One (1) 2-ton split system heat pump with electric auxiliary heat to serve dispatch, reception, and the lobby.

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- b. One (1) 3-ton split system heat pump with electric auxiliary heat to serve the break room, restrooms, office, and corridors.
 - c. One (1) 2-ton split system heat pump with electric auxiliary heat to serve warehouse coordinator, lockers, foreman office, and lead lineman office. **Is it acceptable for this fan coil unit (FC-3) to be located in Storage 201? Refer to zone plan for proposed location.**
 - d. One (1) 2-ton split system heat pump with electric auxiliary heat to serve engineering, conference room, director's office, and assistant director's office.
 - e. One (1) 2.5-ton split system heat pump with electric auxiliary heat to serve conference room, engineering tech, and restrooms.
 - f. One (1) 2-ton split system heat pump with electric auxiliary heat to serve the existing meter shop, corridor, engineering tech, and energy service.
 - g. One (1) 1-ton wall-mounted mini-split to serve the IT room.
2. Wall Heaters
- a. One (1) electric wall heater to serve the entrance vestibule.

B. Ventilation/Exhaust Systems Description:

- 1. Fans
 - a. One (1) 470 CFM exhaust fan to ventilate the restrooms, lockers, and janitor closet on Level 1.
 - b. One (1) 225 CFM exhaust fan to ventilate the restrooms in the Basement.
- 2. Outside Air
 - a. Outside air will be direct-intake for all split systems. A chase will be provided for outside air ducts connected to the two fan coils located in the basement.

C. Air Distribution Systems Description:

- 1. General Requirements
 - a. Ducted Fan Coil Units
 - i. Ductwork - Primarily rectangular ductwork with radius elbows (or mitered elbows with turning vanes, where radius ductwork will not fit) and round take-offs as appropriate for connected diffusers. All ductwork in plenum areas will be insulated.
 - ii. All ductwork will be galvanized steel, fabricated per SMACNA standards, except where specifically noted otherwise.
 - iii. Diffusers:
 - 1. Hard ceilings: linear slot diffusers.
 - 2. ACT ceilings: 24"x24" lay-in diffusers and sight-proof eggcrate return grilles.
 - b. Other Systems
 - i. Exhaust Air Ductwork - Low-pressure rated round ductwork with radius elbows and round take-offs as appropriate. Showers will have welded 304 or 316 stainless steel exhaust sloped towards the diffuser intake point for

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a minimum of 15'-0" upstream of the intake to prevent rust and pitting of ductwork from shower water vapor.

D. HVAC Control Systems Description:

1. System Controls
 - a. Local zone thermostats will be used to control temperature within the spaces served.
 - b. Exhaust fans serving ventilation only will be controlled by a time clock to provide occupied/unoccupied modes of operation.

IV. Plumbing Systems Description:

Summary Description:

The plumbing system will consist of domestic water, sanitary and vent systems to support the fixtures and infrastructure of the building. The domestic water and sanitary systems will serve the facility restrooms, breakroom sink and equipment, drinking fountain, etc. All materials will be new and free of defects. All material, labor, transportation, tools, equipment and supervision will be furnished to completely install and leave ready for operation, complete plumbing systems in accordance with this narrative. The work will include, but not necessarily be limited to, the following general items:

- Domestic cold-water piping system.
- Domestic water heating equipment and piping systems.
- Sanitary waste and vent system.
- Plumbing fixtures and equipment.

Scope of Demolition:

No work (demolition or new) will be performed in the warehouse portion of the facility. All existing plumbing equipment, fixtures, piping (not including the existing water and sanitary services) associated appurtenances, etc. will be demolished in the existing 3-story office building.

A. Piping materials

1. Sanitary Waste & Vent (above and below slab, not in HVAC plenum spaces): Schedule 40 DWV PVC pipe.
2. Sanitary Waste & Vent above slab, in HVAC plenum spaces: Service weight cast iron pipe.
3. Domestic Water above ground: Type "L" copper with sweated socket fittings (threaded fittings may be used at valves, fixtures, and similar) or ProPress joining system.

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B. Piping Systems

1. Domestic Cold Water Piping System
 - a. New domestic water piping will connect to the existing water service piping and will be routed to the new water heater, plumbing fixtures, etc.
2. Domestic Water Heating Equipment and Piping Systems
 - a. The domestic hot water will be supplied by a new electric tank type water heater located in the basement. Water will be stored at 140°F. Hot water will be routed to all applicable plumbing fixtures through a continuous loop of piping.
 - b. Point-of-use thermostatic mixing valves will be provided at lavatories, breakroom sink and showers to prevent scalding. After the last fixture connection, the hot water will be circulated back to the water heater, with piping and a circulating pump, to maintain temperature and to minimize wait time for hot water. The hot water circulating piping supplying the lavatories will be routed down inside the wall or chase behind the lavatories to minimize the distance from the circulated hot water piping to the lavatory connection per the IECC.
3. Sanitary Waste & Vent
 - a. New sanitary piping will be collected below the first floor and connected to an existing to remain sanitary stack that drops to below the basement floor. New sanitary piping from the basement will collect below the basement floor and then be connected to existing to remain underfloor sanitary piping.
 - b. All sanitary waste piping will be sloped at 1/4" per linear foot for piping up to 2-1/2" in diameter, and at 1/8" per linear foot for piping of 3" or greater diameter.
 - c. All vent lines will route up to above the first floor ceiling and will terminate through an existing vent through the roof.
 - d. Cleanouts will be installed at every four 45° turns and at every 90° turn. Cleanouts will be placed in readily accessible locations.
4. Natural Gas
 - a. The natural gas system will not be altered.

C. Fixtures

1. Water closets will be vitreous china, floor mounted, flush valve type operating at 1.28 gallons per flush. The flush valves will be sensor operated.
2. Urinals will be vitreous china, wall mounted, flush valve type operating at 0.125 gallons per flush. The flush valves will be sensor operated.
3. Lavatories will be vitreous china, wall and counter mounted types. Faucets will be sensor operated and have a flow rate of 0.5 gallons per minute.
4. The shower will be pre-fabricated vinyl. Shower valves will be pressure balanced and have a flow rate of 1.5 gallons per minute.
5. The breakroom countertop stainless-steel sink will have a manual faucet with gooseneck type outlet and hose spray.
6. The drinking fountain will be wall mounted, manually operated self-contained electric water cooler with sensor operated bottle filler.

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7. The mop sink will be a 24"x 24" terrazzo type unit with a wall mounted faucet.
8. Handicapped fixtures will be provided where required.

D. Miscellaneous

1. A new sump pump will be provided in the elevator sump pit. The discharge from the pump will be routed to a new hub drain before being connected to the building sanitary piping system.
2. The existing wall hydrant and downspouts at the location of the new Dispatch room will be relocated.
3. Floor drains will be provided in the restrooms, janitor's room and at any piece of equipment requiring drainage.
4. Any existing wall hydrants or hose bibbs on the exterior of the building will be back-fed with new water piping.
5. All water connections to pieces of equipment with the potential for backflow or back-siphonage will be provided with backflow preventers. If a connection is to a potentially hazardous source, it will be protected by a reduced pressure zone backflow preventer. Water supplies to coffee makers, ice makers, etc. will be protected with in-line backflow preventers.
6. All domestic water piping above slab, other than exposed piping to fixtures, will be insulated with jacketed fiberglass insulation. Insulation will run continuously through floors, walls, and partitions. Pipe insulation will be mitered at elbows and tees to ensure complete coverage of piping.
7. Water hammer arrestors will be provided on cold water lines serving flush valve plumbing fixtures.
8. Isolation valves will be provided on all domestic water branches from the mains and at all pieces of equipment.



Appendix A