



Newton County Water & Sewerage Authority Office Addition

30% Engineering Narrative

January 26, 2026

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Project Description

- 1) This project consists of an approximate 9,000 SF two-story addition to the existing Newton County Water and Sewer Authority Office and the required modifications and replacement of the existing building electrical systems.
- 2) The building's name and location are stated below:

Newton County Water and Sewer Authority Office
11325 Brown Bridge Road
Covington, Georgia 30016

Applicable Codes and Standards

Codes:

- 2023 National Electrical Code (NFPA 70) with Georgia Amendments
- 2022 National Fire Alarm Code (NFPA 72) with Georgia Amendments
- 2024 Life Safety Code 101
- 2024 International Building Code (IBC) with Georgia Amendments
- 2015 International Energy Conservation Code (IECC) with Georgia Amendments

Guidelines/Standards:

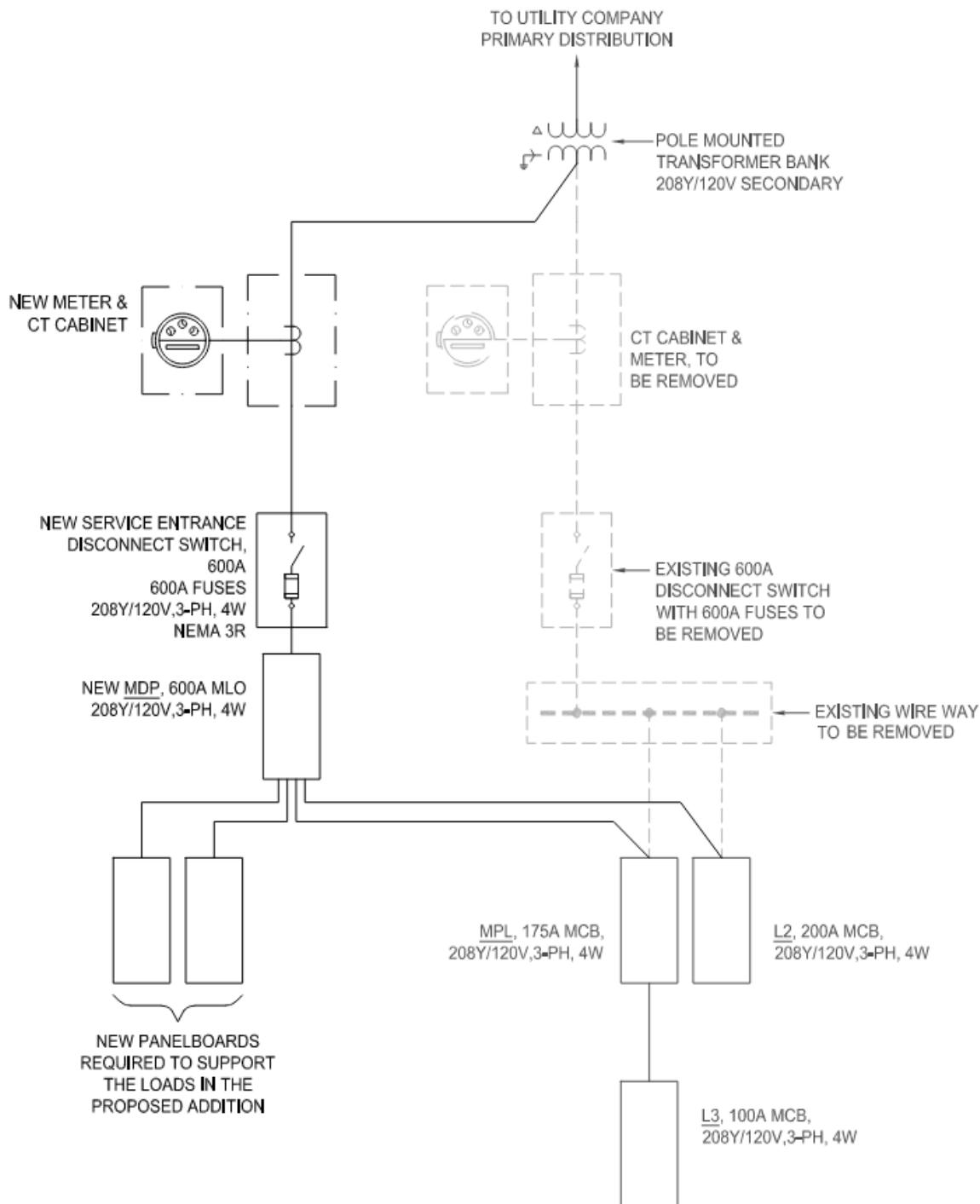
- Newton County Water Authority design guidelines and standards
- IESNA applicable standards.
- Utility Company design/installation standards

Electrical Systems Description

1. Normal Power:

- The existing electrical utility service will require modification. The current service feeder is located beneath the area designated for the proposed building addition. As part of the project, the existing service will be rerouted to a new service-entrance disconnect switch installed on the exterior of the addition. From this location, a new feeder will be installed underground to a new 600A distribution panelboard, which will in turn be used to supply the existing panelboards, scheduled to remain the existing electrical room
- The service will remain a 600A, 208Y/120VAC, 3-phase, 4-wire. Service modifications will be coordinated with the utility company.
- The new distribution panelboard will provide power to the mechanical systems required for the building addition. In addition, the panelboard will supply branch panelboards

supporting general power, lighting, receptacle loads, specialized equipment, and any ancillary systems required to serve the new addition.



Proposed Single Line Diagram

- Panelboards:
 - Provided with copper buses and fully rated to withstand available short circuit currents.
 - 42kAIC fully rated panelboards
 - Panelboard circuit breakers will be bolt-on type.
 - Panelboards will be designed to accommodate roughly 20% spare capacity, including spare circuit breakers and bussed spaces.
 - NEMA 1 enclosures for interior applications and NEMA 3R or better for exterior installation.
- Raceways:
 - Separate raceways systems will be provided for lighting, power, fire alarm, and other low voltage systems.
 - The wiring method for feeders and branch circuits will be copper conductors in conduits, EMT for interior raceways, RMC for exterior applications and/or where subject to physical damage exposure, PVC schedule 40 or 80, where installed in concrete.
 - Minimum raceways size will be 3/4", fittings shall be compression type or threaded.
 - In finished spaces all raceways shall be concealed above ceilings, in walls or floor slabs.
 - Flexible metal conduit (type MC) will be used in short lengths for making final connection to vibrating equipment in lengths up to 6 feet. Type MC wiring methods shall also be used in finished walls, where allowed by the NEC. Liquid tight Flexible Metallic Conduit (LFMC) type raceways shall be used in wet locations type applications.
- Conductors:
 - Interior wires and cables will be copper with type THHN/THWN insulation rated for 600V at 90°C. Minimum conductor size will be #12AWG for power and #14AWG for controls wiring.
 - Conductors size #10AWG and smaller can be solid, conductors #8 and larger shall be stranded.
 - Exterior conductors, underground, or under slab shall be XHHW-2 insulation rated for 600V at 90°C.
- Wiring Devices:
 - Duplex receptacles will be 20A, 125V, 3-wire, grounding type, specification grade, and will be NEMA 5-20R configuration.
 - USB Charger receptacle, 20A, 125V, 3-wire, grounding type, specification grade, NEMA 5-20R configuration, 5A (1) USB-C and (1) USB-A ports.
 - GFCI receptacles will be 20A, 125V, 3-wire, grounding type, specification grade, NEMA 5-20R configuration, self-test. For exterior applications GFCI receptacles shall be WR rated.
- Receptacles will be conveniently located for computers, office equipment, task lighting, etc. At least one duplex receptacle per wall will be provided in offices and other similar areas. Receptacle layout will be coordinated with furniture and workstations as facility design progresses.

- Ground Fault Circuit Interrupter (GFCI) type receptacles will be provided in all restrooms, mechanical and electrical rooms, any receptacles provided within 6 feet of sinks. GFCI receptacles will also be provided around the perimeter of the building addition about 24 inches above finished grade.
- A new grounding and bonding system for safety and communications will be provided including driven ground rods, connection to the incoming metallic water service pipe and bonding to building structural steel. Wall mounted ground bus will be provided in the new main electrical room, distribution electrical rooms (existing electrical room), and telecom rooms. New branch circuits, feeders will be provided with equipment grounding conductors.

2. Interior Lighting:

- Typically, lighting fixtures will utilize light emitting diode (LED) sources with a correlated color temperature (CCT) of 3500K and a minimum color rendering index (CRI) of 90.
- Rooms with finished suspended ceilings will utilize 2'x2' and 2'x4' recessed troffers. Offices, meeting, and other similar use rooms will be provided with architectural low glare variety luminaires and all other spaces such as corridors, passageways and similar spaces will be provided with lensed troffers. Utility spaces such as mechanical, electrical, and similar use rooms will utilize industrial linear 2ft, 4ft, or 8ft lensed strip fixtures that will be wall mounted or suspended from structure.
- Lighting will be designed to provide the following average light levels:
 - Small Offices – 40-50fc
 - Corridors/Halls – 10-20fc
 - Restrooms – 20-25fc
 - Conference/Meeting Rooms – 40-50fc
 - Utility Rooms – 20fc
- Manual and automatic lighting controls will be provided throughout per the following:
 - Small Offices – Vacancy sensors (Manual On/OFF), dimmers
 - Corridors/Halls – Occupancy sensors (Auto ON/Auto OFF), 3-way switching
 - Restrooms – Occupancy sensors
 - Conference/Meeting – Vacancy sensors, multi zone dimmers
 - Utility Rooms – Manual switches in electrical and similar spaces, vacancy sensors in janitor and similar utility spaces

3. Emergency Lighting

- Battery powered emergency lighting will be provided throughout where code required for illuminating the egress pathways, mostly in corridors or similar areas used for passageways. Integrated battery packs will be installed in the normal fixtures. They will be wired for switched operation. Dedicated emergency fixtures will be provided in areas where integral battery packs are not possible. Emergency illumination will be designed to provide an average of 1fc and a minimum of 0.1fc in all affected areas.
- Self-powered EXIT signs will be provided where required. EXIT signs will be wired to a dedicated branch circuit, grouped as much as practical. For example, Ground floor EXIT signs will be on a circuit separate from Second Floor EXIT signs.

4. Exterior Lighting

- Existing parking lot and building illumination will largely remain as is.
- For the addition new exterior rated lighting will be provided as needed to match lighting scheme of the existing office building.
- All exterior lighting will be photocell controlled.

5. Fire Alarm

- The existing building's fire alarm system has exceeded its useful life, and we recommend that it be replaced as part of this project. The owner is planning significant renovations in the near future, and we do not believe the current system can adequately support the planned modifications to the facility.
- A new fire alarm control panel will be installed in the proposed building addition, and the existing building will be retrofitted with new devices. The design will account for future system expansion and scalability.
- Digital addressable fire alarm system will be designed in accordance with NFPA 72 (National Fire Alarm Code), NFPA 101 (Life Safety Code), the ADA Accessibility Guidelines as they apply to building and facilities. The system will consist of the main Fire Alarm Control Unit (FACU) located in the main electrical room, remote annunciator located in the main vestibule coordinated with the AHJ, and field devices located throughout. The FACU will report fire alarm, supervisory, and trouble signals to monitoring station via telephone lines or other method approved/required by AHJ. Since the building will be fully sprinklered only a minimal automatic detection system will be required. The fire alarm system devices will generally be provided as follows:
 - Manual fire alarm pull stations will be installed within 5' of each exit doorway, and additional pull stations throughout corridors and exits such that distance of travel to any station is less than 200 feet on the same floor. Units will be installed 48" above finished floor to operating handle.
 - Sprinkler system flow and tamper switches will be monitored by the Fire Alarm Control Unit (FACU).
 - Smoke detector will be provided in the room with the main fire alarm control panel within 5ft of the equipment.
 - Duct smoke detectors will be provided in each air-handling unit ductwork with an air capacity of 2000cfm and greater. Fire alarm wiring will be provided to each equipment controller to facilitate unit shutdown in case of fire alarm.
 - Signaling line circuits will be Class B, Style 4. Notification appliance circuits will be Class B, Style Y and will emanate from the main FACU. All fire alarm wiring will be provided in conduits when installed concealed within walls and accessible walls or ceiling

6. Telecommunication/Data:

- Layout of voice and data outlets will be provided by architect/engineer, with owners input, each outlet shall be provided with two Category 6 data cables back to data rack for termination at a patch panel. All terminations at the patch panel and at jack will be by contractor.
- As a starting point, dual jack data outlets will be located on 2 of 4 walls in offices, at all desks, high volume copy machines, and at other equipment requiring data connection.
- Data cables will be run to existing free standing data rack(s) with patch panels located in the IT room. Data and telephone cables will be Cat 6. Where required POE switches will be provided as well.
- Wireless access points will be provided throughout the building. Locations and desired coverage will be coordinated with the owner.

7. Security Systems/CCTV/Cable TV:

- Infrastructure only (raceways and junction boxes) will be provided as part of this project. Locations of hardware and junction boxes will be coordinated with Owner's IT vendors. Hardware procurement and installation will be provided by others. In addition to raceways and junction boxes, Electrical contractor will provide any 120V power required for controls hardware for this system.
- All system design and wiring shall be provided by the Owner under separate contract(s). This project will provide infrastructure (conduit, boxes, and wiring) only. The rough-in requirements will be coordinated with the Owner and their IT/security systems representative.
- Power for all head end equipment will be coordinated and provided where required by owner supplied systems.
- Video surveillance cameras will be provided at selected locations both inside and outside the building.

8. Audio/Visual Systems:

- System design will be coordinated with owner under separate contract and meet needs of the space.
- Infrastructure only (raceways and junction boxes) will be provided as part of this project. Locations of hardware and junction boxes will be coordinated with Owner's IT vendors. Hardware procurement and installation will be provided by others. In addition to raceways and junction boxes, Electrical contractor will provide any 120V power required for controls hardware for this system.

Project Description

- 1) This project consists of an approximate 9000 SF addition to the existing Newton County Water and Sewer Authority Office and the required modifications to the existing building where the buildings are adjoined.
- 2) The building's name and location are stated below:
 - a. Newton County Water and Sewer Authority Office, 11325 Brown Bridge Road Covington, Georgia 30016

Applicable Codes and Standards

Codes:

- 2024 International Building Code with Georgia Amendments
- 2024 International Fuel Gas Code with Georgia Amendments
- 2015 International Energy Conservation Code with Georgia Amendments
- 2024 International Mechanical Code with Georgia Amendments
- 2024 International Plumbing Code with Georgia Amendments

Guidelines/Standards:

- Newton County Water Authority design guidelines and standards
- Utility Company design/installation standards

Existing Building Conditioning Systems

- 1) Six split system heat pumps units provide heating, cooling and ventilation to the existing office space. Three units serve the first floor, and three units serve the second floor. The units deliver conditioned air through insulated sheet metal ductwork to each space. Return air is transferred from room to room through transfer air ducts to a central point and ducted back to the unit.
- 2) The existing main restrooms are served with a rooftop exhaust fan ducted down to each bathroom group. The singular restroom in the lobby is served by an individual ceiling fan ducted through the wall.
- 3) In general, the existing HVAC equipment, duct work, and air terminals will remain as is to continue serving the existing building. In areas of the existing building where there are modifications to room layout or reflected ceiling plans, the HVAC ductwork and air terminals will be modified to provide appropriate conditioning to the reworked spaces. The exhaust fan in the lobby restroom being demolished will be removed.

New Building Conditioning Systems

- 1) Packaged rooftop heat pumps will provide heating, cooling, and ventilation to the new addition. The rooftop heat pump unit will be provided with an electric heating coil for supplementary heat, when necessary. Each rooftop unit will serve a main zone, which consists of similar space types. The packaged rooftop units will deliver conditioned air through insulated sheet metal ductwork to each space. The anticipated sizes for the packaged rooftop units are:
 - a. Zone 1: 7.5 tons
 - b. Zone 2: 7.5 tons
 - c. Zone 3: 7.5 tons
- 2) The main zones will be further broken down into control zones using variable volume terminal units as indicated on the included zoning plan. Each space or grouping of similar spaces within a zone will be provided with a terminal unit and a space temperature sensor for temperature control. The terminal units will have an electric resistance coil to provide additional temperature control to each zone for added thermal comfort.
- 3) The packaged rooftop heat pump units will provide continuous ventilation of the spaces per the requirements of the International Mechanical Code. The units will be equipped with an economizer section and power exhaust as required by the International Mechanical Code. The economizer section will allow full outside air to utilize free cooling whenever the system(s) are in cooling, and the outside air conditions allow.
- 4) Each packaged rooftop heat pump unit will be provided with MERV-8 pre-filters and MERV-13 final filters to filter the air at a level currently recommended by the CDC.
- 5) Supply ductwork will be provided throughout and sized to accommodate heating, cooling and ventilation requirements. Ductwork system will be insulated in accordance with the International Energy Conservation Code. A return air plenum will be utilized in lieu of ducted return to deliver air back to the packaged rooftop units. Lined transfer openings will be utilized where required to move air between spaces where full height walls are constructed. All materials above the ceiling, such as data cabling and plumbing piping, will be plenum rated.
- 6) General exhaust will be provided as required for the building per the requirements of the International Mechanical Code. Generally, dedicated rooftop exhaust fans will be utilized for spaces such as toilet rooms, janitor's closets, kitchen areas, and other areas where odor control is necessary.

Controls

- 1) Each packaged rooftop heat pump unit will be provided with local electronic controls to operate the unit. The controller will allow temperature control monitoring and adjustments as well as unit alarm. The controller will have an on-board user interface (IU).
- 2) Temperature sensors will be provided for all control zones. Sensors in private areas will allow occupant temperature set point adjustment within a set range. Sensors in public spaces will not be provided with local temperature adjustment. Wall sensors in the meeting rooms, training rooms, and other large occupancy spaces will also lack local temperature adjustment.
- 3) CO₂ Sensors will be provided for demand control ventilation (DCV) in Board Room-143. DCV is used to optimize HVAC operation in spaces where occupancy load varies significantly by monitoring CO₂ levels in the space and adjusting outside air percentage.
- 4) An Occupancy/Vacancy schedule will be used in all spaces as an optimized HVAC operation by providing different temperature setpoints and ventilation requirements to the space at varying building occupancy conditions.

Alternate 1: Existing HVAC Rework

- 1) Remove the existing 6 split system heat pump and fit out existing office building with two new packaged rooftop heat pump units on the new addition roof. Each rooftop to serve a single floor further broken out with terminal units (Three terminal units per unit to match existing zoning). The anticipated sizes for the packaged rooftop heat pump units are:
 - a. First Floor: 5400 CFM, 15-ton unit
 - b. Second Floor: 4750 CFM, 10-ton unit
- 2) Remove and replace all existing ductwork.
 - a. Supply ductwork will be provided throughout and sized to accommodate heating, cooling and ventilation requirements. Ductwork system will be insulated in accordance with the International Energy Conservation Code. A return air plenum will be utilized in lieu of ducted return to deliver air back to the packaged rooftop units. Transfer openings will be required to move air between spaces where full height walls are constructed. All materials above the ceiling, such as data cabling and plumbing piping, will be plenum rated.
 - b. All drop ceilings will need to be removed for the duration of the construction of the ductwork and then replaced after the work is complete.

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Applicable Codes and Standards

Codes:

- 2024 International Building Code with Georgia Amendments
- 2024 International Fuel Gas Code with Georgia Amendments
- 2015 International Energy Conservation Code with Georgia Amendments
- 2024 International Mechanical Code with Georgia Amendments
- 2024 International Plumbing Code with Georgia Amendments
- 2025 NFPA 13 with Georgia Amendments

Guidelines/Standards:

- Newton County Water Authority design guidelines and standards
- Utility Company design/installation standards

Fire Protection System Description

- 1) The existing building has a 6" fire-water service brought into the building through the existing first floor mechanical room floor. The service then reduces to a 4" check valve and again reduces to a 3" that serves the existing building.
- 2) Based on a preliminary assessment the 6" fire water main service line will be adequate for providing an fire protection system to the new addition. This will be confirmed as system design is developed, hydraulic calculations performed and receive the hydrant flow test information.
- 3) The fire protection system for the addition will be designed to the requirements of the currently adopted version of NFPA 13.

- 4) The Addition will be served by one sprinkler zone. Zone 1 will be a wet pipe sprinkler system serving the first floor. For this zone, piping will be schedule 40 galvanized steel with grooved or threaded fittings. Sprinkler heads will be quick response, semi recessed heads with a k-factor of 5.6 and provided with an electroless nickel type corrosion resistant finish. These spaces will be a mix of light hazard and ordinary hazard occupancies. Most of this area will require 0.10 to 0.15 GPM/SF across a 1500 SF design area.
- 5) An inspector's test and drain valve will be integral to each zone riser for system testing.

Plumbing System Description

- 1) The state plumbing code provides minimum requirements based on occupancy, space type and the site's climatic location to determine fixture counts, hot/cold water demand, building drainage, sanitary and vent system requirements.
- 2) The town's water and sewer authority will be consulted for specific water service requirements.
- 3) Based on a preliminary assessment the existing 2" domestic water service is believed to be adequate to supply the existing building in addition to the new fixtures provided in this project. Final confirmation of this will come after coordination with the water authority regarding pressure and flow requirements for entire building. Piping will be extended from the existing building to the addition to supply domestic water to new fixtures.
- 4) Plumbing fixtures shall include wall mounted vitreous china lavatories, stainless-steel sinks throughout all other spaces, floor mounted water closets with hard wired flush valves, and stainless-steel water fountains with bottle filler where required. Where appropriate dedicated ADA fixtures will be provided for the facility. Toilets shall use sensor operated flush valves and lavatories shall use hard wired, sensor faucets. Faucets on all other sinks and fixtures shall be manually operated.
- 5) Domestic water heating will be provided with a heat pump water heater and associated storage tank, with a system wide thermostatic mixing valve. All lavatories will be provided with individual thermostatic mixing valves. The hot water system will have a hot water return piping system, expansion tank, and hot water return pump to meet current energy codes.
- 6) Piping associated with the domestic water system will be copper with soldered joints.
- 7) Piping associated with below grade Sanitary and Vent system will be DWV PVC. Above grade piping will be based on fire rating of the enclosures. Where required, the sanitary and vent piping located in plenum ceilings will be cast iron or copper soil pipe.

- 8) Based on preliminary calculations, it is believed that the existing 4" building drain will be adequate to tie in new sanitary drains from the new addition. The existing sanitary piping serving the building will be extended to new fixtures in the addition.
- 9) All flat areas of the roof will be provided with roof drains and storm piping routed down through the building to the storm drain system. Where the roof has a parapet, secondary roof drains will be provided via scuppers through the parapet wall.
- 10) Piping associated with storm system will be insulated DWV PVC below grade and cast iron soil pipe for all piping above grade.

General Design Criteria

Description: Two-story, 9,500 square-foot office building addition and renovation. The two-story addition consists of a steel frame with a steel composite floor and steel roof while the one-story additions consist of wood construction with wood walls and wood roof trusses.

Address: 11325 Brown Ridge Road, Covington, GA 30016

- Applicable Codes:
 - 2024 International Building Code with Georgia Amendments
 - Applicable design standards to the extent referenced by Chapter 35 of the Building Code.

Loading Criteria

All loading shown here is in addition to the self-weight of the structure including decking or slabs.

- Risk Category: II
- Snow Load Criteria
 - Ground Snow Load: 15 psf
 - Importance Factor: 1.00
- Seismic Load Criteria
 - Design Acceleration Parameters:
 - S_{D5} : 0.20
 - S_{D1} : 0.13
 - Site Class: Default
 - Importance Factor: 1.00
 - Seismic Design Category: B
 - *Values noted here shall be verified or updated by a qualified geotechnical engineer following geotechnical exploration and investigation*
- Wind Load Criteria
 - Basic Wind Speed: 105 mph
 - Exposure Category: C
- Slab-on-Ground:
 - Live Load: 125 psf
- Elevated Floors:
 - Superimposed Dead Load: 20 psf
 - Partition Load: 15 psf
 - Office: 50 psf

- Assembly: 100 psf
- Storage/Equipment Load: 125 psf
- Egress: 100 psf
- Roof:
 - Superimposed Dead Load: 20 psf
 - Live Load: 20 psf
 - MEP Misc. Superimposed Load: 60 psf
 - Rain Load:
 - Design Rainfall (100-year, 15-min): 6.8 in/hr
 - Design Rainfall (100-year, 1-hour): 3.2 in/hr

Material Definitions

- Concrete:
 - Foundations: 3000 psi
 - Slab-on-Ground: 3000 psi
 - Elevated Conventional Framing: 4000 psi
- Concrete Reinforcing:
 - Rebar: ASTM A615, Grade 60
- Steel:
 - Wide Flange: ASTM A992
 - Tube Shapes:
 - HSS Rectangular: ASTM A500, Grade C
 - Other (unless noted otherwise): ASTM A36
- Wood:
 - Studs wall and floor framing: SPF #2
 - Beams and Headers LVL or SPF #2
 - See *structural system description* for additional information regarding FRT, PT, or other requirements.

Special Inspections

Special inspections and material testing will be in accordance with Chapter 17 of the Building Code. PES will develop detailed inspection requirements applicable to this project. The Owner will engage a qualified testing agency to perform the required inspections and testing.

Structural System Description

Structural sizes indicated below are preliminary in nature and provided as an aid to the General Contractor for schematic level pricing. Sizes and structural systems are subject to change and/or refinement as the design develops. It is recommended that the contractor supplement any schematic level pricing based on the knowledge and experience with this construction type and the level of completeness of a schematic level design.

- Shallow Foundations:
 - Spread footings with a bearing pressure of 3000 psf
 - Minimum bearing depth shall be 12 in below grade
- Slab-on-Ground:
 - 4 in thick concrete slab reinforced with 3 PCY of macro-synthetic fibers over a 10 mil vapor retarder. Sub-grade (including aggregate where required) prepared according to the recommendations of a qualified geotechnical engineer. Control joints cut in at approximately 12'-0" on center with box outs at all columns and pre-molded joint filler between slab and structure where noted.
 - Turndown with brick ledge around exterior of all slabs.
- Cold-Formed Steel / Wood Stud Walls:
 - At two-story steel building:
 - 6" non-load bearing cold-formed steel stud walls with studs at 16" on center
 - At one-story wood additions:
 - 2x6 stud walls at exterior and 2x4 stud walls at interior
- Floor Framing:
 - At two-story steel building:
 - 3 1/2" normal weight concrete reinforced with 4 PCY of macro-synthetic fibers over 2" steel composite deck and WF beams at 9'-0" on center (max).

- Roof Framing:
 - At two-story steel building:
 - 1 1/2" steel deck over wide flange steel girder and K-series steel joists at 6'-0" (max) with overbuilt pre-engineered wood roof mansard trusses along perimeter of roof with 5/8" exterior-rated OSB roof sheathing
 - At one-story wood additions:
 - 5/8" exterior-rated OSB roof sheathing over pre-engineered wood roof gabled trusses at 2'-0" on center
- Lateral Load Resisting System:
 - At two-story steel building:
 - Two-story steel moment frames in each direction.
 - At one-story wood additions:
 - Wood shear walls sheathed with 7/16" OSB wall sheathing.
- Façade:
 - Brick façade along exterior backed by exterior 6" CFS studs or 2x6 wood studs with steel angles supporting brick at openings or to relieve brick above.

Additional Criteria

- Deflection Criteria
 - At two-story steel building:
 - L/240 (Live) & L/180 (Total) at roof
 - L/360 (Live) & L/240 (Total) at floor
 - L/600 at exterior walls and beams supporting brick.
 - At one-story wood additions:
 - L/360 (Live) & L/240 (Total) at roof
 - L/600 at exterior walls and beams supporting brick.

Additional Delegated Design Criteria

The design of components delegated to the contractor shall be performed by a registered design professional licensed in the jurisdiction where the project is located. Submit signed and sealed drawings and calculations for design team review prior to construction. Delegated design items include:

- Steel connections
- Open web steel joists
- Cold-formed steel framing
- Seismic design and anchorage of non-structural components
- Aluminum canopies

- Anchorage of rooftop equipment for wind and seismic forces
- Pre-engineered wood trusses
- Glazing systems