DESIGN CRITERIA PACKAGE

CITY OF ATLANTA, GEORGIA

DESIGN-BUILD
Grove Park Recreation Center

RFP-DPR-XXXX-XXXXXXX

March 2026

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1.0 INTRODUCTION

1.1 General Project Description

The City of Atlanta, Georgia is using the Design-Build delivery method for design, permitting and construction of the Grove Park Recreation Center Replacement, (Project). This Design Criteria Package (DCP) presents specific minimum requirements related to the features to be provided by the Design/Builder selected for the Project. This DCP is an Exhibit to the Request for Proposal (RFP) document issued by the City's Department of Procurement (DOP).

1.1.1 Overview

This DCP presents the minimum requirements for design, permitting and construction of the new Recreation Center. The DCP contains Project-specific requirements including minimum design criteria for individual unit operations and processes; general technical requirements for engineering disciplines and architectural requirements; and start-up, training, and commission requirements. Although minimum requirements are established in this DCP, the Design/Builder shall be fully responsible for final design, construction and performance of the Project.

1.2 Project Scope of Work

The successful Design/Builder will design and construct the Project in accordance with the requirements of this RFP, the Design Criteria and technical requirements and all other Exhibits and Appendices and any Addenda to this RFP, including all documents, included therein, site survey, specifications, and other information references in and/or included therein, all of which materials are incorporated into this RFP by reference.

The specific areas of Work for this Project include, but are not limited to, the following:

1. Conduct Community Engagement meetings to review conceptual design prior to completion of the Preliminary Design Phase.
2. Complete detailed design of this Project in accordance with the Design Criteria;
3. Pre-construction engineering, planning, coordination and permitting;
4. Site Inspection and Engineering;
5. Demolition, site preparation, and existing utility relocation;
6. Procurement of all design, engineering, and construction Work and materials;

7. Design Management;
8. Project Management;
9. Subcontractor staging, management; and coordination;
10. Materials staging and management;
11. Site access management and scheduling;
12. Independent special testing and inspection(s);
13. Procurement and management of all subcontractors, vendors, and suppliers;
14. Cost estimation, scheduling, and controls in accordance with City Policy and Procedures regarding Project Controls and reporting;
15. Detailed Design Phase
16. Construction of the Project;
17. Quality assurance and quality control, including inspection and testing; and
18. Turnover of facilities and systems, including warranties, operation instruction, and training.

1. Project Design Phases

It is the City's intentions to support schedule efficiencies throughout the Project. The following design phase reviews are not intended to prohibit activities which could be concurrently executed; rather, are established to identify opportunities for City to observe progress and conformance to criteria established herein. Where possible, the Design/Builder should identify opportunities to gain schedule efficiencies in their project approach. The Design/Builder is permitted to submit specific discipline design drawings for City review to expedite the Project schedule. Any early submittal documents proposed shall be defined by the Design/Builder. The minimum project design phases will include:

2. Preliminary Design Phase
3. Detailed Design Phase
4. Final Design Phase

1.2.2 Preliminary Design Phase

The following deliverables will be developed by the Design/Builder during the preliminary design phase:

+ List of applicable permits and status of permitting processes;
+ Preliminary Drawings

- Preliminary Drawings including demolition plans, site civil plans, architectural, structural, mechanical, plumbing and electrical drawings;

+ Specification Table of Contents and major equipment specifications;

+ Subsurface investigation requirements and/or findings;

+ Geotechnical services and survey work as required;

+ Materials of construction tables, showing locations and materials proposed, for equipment, piping, pipe supports, hardware, structural materials and any other services subject to corrosion;

+ Construction traffic management plan;

+ Description of safety elements included in the facilities;

+ Sustainable Design Plan, substantiating the measures used to design and build the facilities using sustainable design principles;

+ Erosion and sediment control plans and applicable documentation (NOI, etc.)

1.2.3 Detailed Design Phase

During the detailed design phase (between 50%-60% complete), the Basis of Design is refined and all major design decisions are made by the Design/Builder and reviewed by the City. It is anticipated that the Design/Builder will include regular Project progress meetings to foster dialog and communicate Project information.

In general, the Design/Builder team will be expected to finalize all major design decisions. The following are typical deliverables developed during the Detailed Design Phase:

+ Architectural door, window, finish and hardware schedules and details;

+ Landscape details and planting materials lists;

+ Updated drawing and specifications lists;

+ Updated site, grading, drainage, landscaping and electrical site plans;

+ Updated process and support facility general arrangement plans;

+ Site sections and details;

+ Updated electrical single-line drawings;

+ Building and structure foundation plans, floor plans and sections; Concrete mix design(s);

+ Updated architectural plans and elevations (including landscape plans and

- details, at least one full building section, and a representative wall and plan);

+ Updated mechanical systems plans, sections and details;
+ Equipment performance testing plans.

Concepts developed and reviewed during the Detailed Design Phase are considered fixed.

1.4.3 Final Design Phase

At the final design phase, all major decisions have been made and the work of previous phases is considered fixed.

The 100 percent design is a complete construction ready package with sufficient copies for files and Design/Builder use for execution of the Project. In general, during this phase, the Design/Builder shall be expected to prepare final construction drawings and specifications for review and address any outstanding comments from the City, regulatory agencies or other pertinent entities.

The following are typical deliverables developed during this Phase:

+ Final plans, sections and details for civil, architectural, landscaping, structural, mechanical, plumbing and electrical Drawings;
+ Final technical specifications for all work disciplines;
+ Landscaping and planting lists;
- Architectural door, window, finish and hardware schedules and details;
+ Final electrical single-line drawings;
+ Final electrical panel schedules;
+ O&M plans.

Following the appropriate review and incorporation of comments, all drawings shall be sealed and signed by a State-registered professional architect/engineer of the appropriate discipline.

1.5 Drawing Formats and Requirements

Drawings shall be prepared using the following standards:

+ All Drawings shall be prepared on 22-inch by 34-inch paper. The City shall provide the Design/Builder with a standard title block that shall be used for all Drawings.
+ Digital drawing files shall be submitted at the completion of design in AutoCAD Release 2024 format. A unique file name shall be assigned to each Drawing. A

consistent file naming format shall be used throughout the Project.

+ Signature blocks shall be included to show the name of primary individual producing Drawing, the primary designer, the primary reviewer, and the Design/Builder Engineer approving the Drawing. All names in the signature block shall be the first initial and the complete last name.

+ Standard legends and abbreviations shall be used throughout the Project. Standard legend sheets shall be prepared containing all symbols and abbreviations used on the Drawings.

+ Drawings shall include a sequential revision number to allow tracking of the Drawings. Title block shall note Drawings issued for procurement or construction and any subsequent changes including final.

1.6 Submittal Requirements

+ All Design Submittals required under Applicable Laws to be sealed and signed shall be signed and sealed by the Design/Builder's Designer, who shall be a professional engineer or architect currently licensed in Georgia under Applicable Laws.

+ Design submittals shall be delivered in bound sets, indexed, and clearly marked to indicate the date of issuance and stage of development.

+ Specification Requirements: All Specifications shall be consistent with Construction Specifications Institute (CSI) and comply with the Master Format 2020 of 49 Divisions.

+ The City of Atlanta Division 01 Specifications shall be utilized for this project. These documents are included as Exhibit A.

+ Design Submittals:

  - Ten (10) hard copies and pdf copies of Drawings, Specifications, and other design submittals shall be provided for the preliminary, detailed and final design phases.

  - Design/Builder shall submit documents during the design phase that shall be sufficiently complete to:

    - Communicate to the City Representative the design intent.

    - Demonstrate compliance with all requirements of the Contract Documents. Clearly define the Design/Builder's requirements for procurement and construction.

+ As a minimum, the Design/Builder shall prepare and submit the following:

- Final building plans, sections, elevations, and details.
- Site/Civil plans including finished grading.
- Mechanical plans, sections, and details.
- Electrical plans.
- Specifications.
- Electronic files of Drawings, Specifications, and test procedures. Each electronic file shall include an index of its contents.

+ In addition to the above submittals, Design/Builder shall submit updates to any documents submitted as part of its Proposal and incorporated into the Contract.

+ As part of each design submittal, review comments from previous Design Submittal shall be submitted with actions taken to address comments clearly indicated.

+ If requested by the City or City Representative, Design/Builder shall submit an additional design submittal after submittal of Design documents and prior to submittal of Final Design Documents. Such submittal would consist of the latest version of Drawings and Specifications available at the time of request.

2.0 Site Utilities

The proposed area of the new Recreation Center is located on the top of the deconstructed footprint of the existing recreation center. The existing site has water, gas, electrical, communications, sanitary sewer and storm sewer lines available for tie-ins. Design Builder shall be responsible for surveying the existing site to determine the locations and sizes of all existing utilities.

3.0 DESIGN CRITERIA

3.1 General Site/Civil Design Criteria

3.1.1 Detailed Field Surveys

Field surveying and existing topography will be the responsibility of the Design/Builder. If any additional information is required, the Design/Builder shall be responsible for obtaining it.

The Design/Builder shall follow these guidelines:

+ All new field survey data shall be entered in the survey and mapping electronic database.
+ Each new survey shall be assigned a separate file designation so new data can be attached to original electronic files.
+ All final record drawings of utilities and facilities shall be provided after construction has been completed.

3.1.2 Horizontal and Vertical Coordinate System

All new construction on City facilities shall be tied to the Georgia State Plane Coordinates System, North Zone (NAD 83 - 90). Vertical controls shall be referenced to NAVD 1988. Permanent horizontal and vertical controls shall be identified and used in the construction phase.

3.1.3 Design Documentation

3.1.3.1 Site Drawing Organization

The site plans shall be organized as follows:

+ Drawings shall be parallel or perpendicular to the grid system.
+ Unless otherwise specified, the drawing scale for site plans shall be 1"=50' (or larger) with common match lines as required, with 1"=20" for individual sheets to short grade lines.

Site drawings for individual projects shall be organized as follows:

+ Existing conditions.
+ Demolition plans.
+ Finished grading/vertical control plans (Grading and drainage plans):
    - Existing contours.

- Finished grade contours and spot elevations.
- Storm drainage system, profiles and details

+ Erosion and sediment control plans.

+ Temporary facilities during construction:

+ Landscaping and Tree Protection plans.

3.1.3.2 Typical Construction Details

Typical construction details shall be developed for the site improvements.

3.1.3.3 Existing and New Geotechnical Data, Soil Borings, and Explorations

The Design/Builder shall be responsible for interpreting all geotechnical data and performing any additional studies to satisfy their requirements.

3.1.3.4 Site Utilization and Construction Staging Plan

Design/Builder's Work shall not create unnecessary blockage of traffic; shall not create a safety hazard; and shall not create a nuisance. City site location and facilities shall be as-is. Based upon its review of the available, site investigations, investigations and other inquiries made by Design-Builder, which the Design-Builder acknowledges to be sufficient for this purpose, the Design-Builder assumes the risk and understands the existing, "as-is" conditions of the site, as such conditions may affect and impact the ability of the Design-Builder to comply with Applicable Laws in the provision of Work described under the Agreement. The Design-Builder agrees that any latent or patent defect, flaw, error, inoperability, inadequacy or other condition that exists as of the execution of this Agreement or that may be revealed during the Term of the Agreement shall not relieve Design-Builder from performing its obligations under this Agreement.

The Design/Builder prepares the site utilization plan. This drawing indicates authorized staging and laydown areas for the project. Examples of construction support activities shown on this drawing include access roads to the construction site; utilities such as power, water, sanitary, and telephone hookups; transportation logistics; and other common services required to support the construction activity.

A final site survey of the proposed site shall be provided to the Design/Builder Team with coordinates. If additional area is needed for staging, the Design/Builder firm shall identify how much additional area shall be needed. There may be other areas available adjacent to the site; however, additional area may be provided at the discretion of the City.

3.1.4 Demolition Plans

The drawing scale for demolition plans shall be 1:100 or smaller. Demolition of facilities

and improvements shall address the following:

+ Verify existing facility information. Confirm that layout is correct, complete, and up to date.

+ Determine allowable methods of demolition.

+ Identify the limits of demolition requirements, and delineate areas of demolition (e.g., buildings, pavement, and utilities). A separate drawing is required for delineating buried structures and utilities located below surface structure or utilities.

+ Identify the disposition of salvageable materials and equipment.

+ Evaluate the condition of structure, site, and equipment remaining after demolition. The Design/Builder shall delineate areas for disposal or clearly define which materials are to be disposed of, those that shall be removed from the site and disposed of elsewhere, and those that shall be retained by the City, if applicable.

+ Identify buried structures and utilities that will be abandoned in place or plugged and tilled.

+ Indicate the extent of facilities that will be removed or remain, and the facilities that will be protected to maintain continued plant operations.

+ Determine environmental safety issues.

3.1.5 Outside Piping Plans, Profiles, and Sections

The drawing scale for outside piping (site utilities) plans shall be 1"=50'. The Design/Builder must not show contours on this sheet. If additional detail is necessary, the Design/Builder shall use a scale of 1:10. Show the proposed storm drainage system on the grading plans only. The storm drainage system may be depicted in a shaded/ghosted manner to aid in the avoidance of utility conflicts, if applicable.

The outside piping (site utilities) plans, profiles, and sections shall clearly show the following:

+ All grade changes.

+ Coordinates for all manholes, stubs, branches, fittings and interfaces.

+ Invert elevations of all gravity lines and centerline elevations of all non-gravity lines.

+ Elevations of gravity and non-gravity lines at buildings, structures, and interfaces.

+ Each line size, material type, system designation and direction of flow, where applicable.

+ Buried piping and conduits to the outside face of the building or structure.
+ Pipe interfaces with existing utilities.

3.1.5.1 Storm Drainage Design and Analysis

Design Storm Runoff Determination. The Design/Builder shall comply with the City of Atlanta Department of Watershed Management and applicable City Land Development Regulations. Stormwater runoff "Qs" shall be determined by using the Rational Method. The Design/Builder shall follow the Georgia Stormwater Management Manual (latest edition) for runoff coefficients.

3.1.5.2 Rainfall Duration/Intensities

Design storm rainfall intensities shall be determined from the Rainfall Intensity-Duration- Frequency Curves for Georgia (US Weather Bureau, latest edition). Times of concentration (T,) shall be considered for both overland and pipe flow in determining intensities for calculating design Qs.

3.1.5.3 Design Storm Events

The Design/Builder shall follow the Georgia Department of Watershed Management Manual.

3.1.5.4 Sanitary Sewers Design and Analysis

Sanitary sewers shall be designed in accordance with the Georgia Department of Natural Resources EPD criteria.

All gravity pipelines shall be at least 8 inches in diameter and have manholes to grade. Manholes shall be located at all changes in direction. In straight stretches of pipe, the distance between manholes shall be no more than 400 feet for sewers 15 inches or less, and 500 feet for sewers 18 inches to 30 inches in size, except that distances up to 600 feet may be approved in cases where adequate cleaning equipment for such spacing is provided. Smaller pressure lines shall have pressure cleanouts at grade. These cleanouts shall be spaced at appropriate intervals to allow access.

3.1.6 Fire Protection Systems

Fire protection shall meet the requirements established in the latest edition of the NFPA code and City standards.

3.1.7 Traffic Maintenance and Signing Plans

The Design/Builder shall follow GDOT requirements in the preparation of the traffic maintenance and traffic signing plans.

3.1.8 Erosion and Sediment Control Plans

The Design/Builder shall fulfill all requirements for soil erosion and sediment control according to Georgia EPD rule criteria and Georgia Soil and Water Conservation Specifications. All soil erosion and sediment control measures used in the Project shall be detailed in a separate drawing.

3.1.9 Landscape Plans

The Design/Builder shall comply with the Department of Planning and Community Development. On landscaping plans, indicate all proposed landforms, elevations, type of cover (i.e., trees, shrubs, and grasses), finished contours, roadways, sidewalks, and retaining walls. The Design/Builder shall indicate the limit of work. All unpaved areas shall include topsoil and grass. Trees and shrubs shall be limited.

If additional detail is necessary to clarify the landscaping layout adjacent to buildings and structures, the Design/Builder shall coordinate with the Department of Planning and Community Development.

3.2 General Architectural Design Criteria

3.2.1 Codes and Standards

All architectural design must conform to all state, city, and local codes, laws, ordinances, and zoning regulations and design guidelines as provided for by the City, and as mentioned herein.

The pertinent codes for building design are:

- 2018 International Building Code with Georgia Amendments
- 2018 International Mechanical Code with Georgia Amendments
- 2018 International Plumbing Code with Georgia Amendments
- 2018 International Fuel Gas Code with Georgia Amendments
- 2015 International Energy Conservation Code with Georgia Supplements and Amendments
- 2018 International Fire Code with Georgia Amendments
- 2020 National Electrical Code (No Georgia Amendments)

The code data shall be located on the drawing with the first floor plan. The code data may be located elsewhere, provided a note is given on the first floor plan stating the location of the code data by drawing number.

3.2.1.1 Code Data

A code search shall be conducted for this Project, and the building code data shall be provided on the drawings. The code data shall be located on the drawing with the first

floor plan. The code data may be located elsewhere, provided a note is given on the first floor plan stating the location of the code data by drawing number. The code data shall be as follows:

Building Code Data:

The buildings shall be designed to meet the requirements of the International Building Code with Georgia Amendments (latest edition) and the following additional criteria:

Occupancy Group Classification:	List as appropriate, list each separate occupancy group required by the program
Type of Construction:	List as appropriate
Building Height:	List as appropriate
Height Limitation:	
Total Floor Area:	As calculated, list floor area for each identified occupancy
Largest Floor Area:	As calculated
Area Limitation:	List as appropriate
Occupant Load:	List number of total calculated occupants. Also list actual occupants as determined by program if appropriate
Fire Suppression System:	
Fire Alarm System:	

3.2.2 Building Architectural Requirements:

3.2.2.1 Visual Image Policies and Guidelines

Architectural Elements:

The architectural design standards shall provide design unity throughout the Facility. The form or mass, shall be continuous, achieved through the use of scale, color, texture, material, and detail. The following design standards apply:

+ Design architectural elements with crisp, clean lines and reflect the scale proportions and contextual quality of existing buildings.

+ Use architectural building masses to screen the view of unenclosed service functions from public areas of the site.

+ The Design-Builder shall coordinate with Architectural-Landscaping requirements in this document.

Colors:

Exterior color shall provide continuity throughout the facility. Submit proposed color selections to City for review.

Materials:

These guidelines shall be followed for selecting materials:

+ Use steel or concrete as the general material for structural elements.

+ Concrete colors shall be integral to the material itself.

+ Use corrosive-resistant metals in architectural details, such as doors and windows frames, railings, fixtures, and other components.

Interior Room Finishes:

The following information shall provide guidance for the selection of interior finishes. The final finishes shall be determined in accordance to the specific plant criteria.

+ To enhance brightness, interior surfaces shall be light-colored and reflective.

+ Provide a finish surface to all interior spaces; no surface area shall be left untreated, unless noted otherwise.

+ Use nonporous surfaces in wet areas.

+ Paint or seal exposed concrete surfaces as required.

+ Provide acoustical treatment in interior high-noise areas of buildings.

+ Final selection of interior finishes shall be subject to review by City.

3.2.2.2 Architectural-Site

Site coordination involves the following:

+ Develop the layout, circulation, and orientation for the Facility on the site.

+ Review the effects of grading and drainage on the structure, and coordinate the location of roof drainage.

+ Coordinate the location, elevation, and gradient of finish floor slabs, sidewalks, and entrance pads.

+ Coordinate the location of yard hydrants with the layout of yard piping, and the location of outdoor wall hydrants with site water needs.

+ Review site lighting.

+ Review location of grade mounted HVAC equipment

+ Review fire truck circulation.

3.2.2.3 Architectural-Landscaping

+ Landscaping coordination involves these steps:

- Coordinate landscaping and irrigation with site grading and drainage.

- Coordinate landscaping to prevent obstruction of door and window openings and consider the effects of heat and fumes from ventilation exhaust on the plantings.
- Coordinate landscaping to provide visual screening of items identified as objectionable.

3.2.2.4 Architectural-Structural

+ Verify concrete finishes and moisture proofing for walls and slabs; coordinate location and type of construction, expansion, and control joints; coordinate selection of form work and determine if it is compatible with the desired concrete finishes.

+ Establish railing material, type, and detail; determine if railing conforms to codes, accessibility and safety regulations.

+ Establish rise, run, material, and detail of all stairs; verify that the design conforms to codes, accessibility and safety regulations.

+ Coordinate clear room height requirements and ceiling finishes.

+ Coordinate size, detail, and location of all floor, wall, and roof openings.

+ Establish roof and floor slopes and floor-drain elevations for proper drainage; verify need for sloping structure or topping material; Verify need for depressed slab areas.

+ Coordinate selection of roof framing system.

+ Review framing schemes for column locations and size, beam clearances, and their effects on the work of other disciplines.

+ Establish requirements for insulation, vapor retarders, damp proofing, and waterproofing.

+ Establish requirements for termite resistant construction.

3.2.2.5 Architectural-Mechanical

+ Coordinate "U"-factor requirements for walls, fenestration, floors and roof. (U-factors must meet energy code requirements.)

+ Select, coordinate, and detail insulation materials.

+ Coordinate size, location, and types of wall louvers; coordinate required roof penetrations.

Coordinate and determine final size, location, and numbers of wall louvers. Schedule louvers.

+ Verify and coordinate plumbing fixture count, type, layout, and location per Georgia Building Code. Determine and provide plumbing chases.

+ Verify the location of all floor and roof drains.

+ Coordinate size, detail, and location of all floor, wall, and roof openings.

+ Provide up-to-date background floor plans and building sections for use by the designers of heating, ventilation, and air conditioning (HVAC).

+ Coordinate spatial requirements for HVAC, Plumbing and Fire Sprinkler systems in the floor plans.

+ Coordinate roof drainage gutter downspout locations with wall penetrations for HVAC and plumbing.

+ Review air diffuser and grille selection and placement for compatibility with ceiling system.

+ Coordinate NFPA requirements by room and area within each building and structure. Identify fire resistant construction on the plans, and coordinate fire suppression system requirements.

3.2.2.6 Architectural-Electrical

+ Review light fixture selection, and coordinate layout and compatibility with ceiling system and air diffusers and grilles.

+ Coordinate exterior, wall mounted, and special accent site lighting.

+ Provide up-to-date background floor plans for electrical designers' use.

+ Coordinate size, detail, and location of all but small conduit, floor, wall, and roof openings. Conduit shall not be routed in reinforced masonry cells.

+ Verify size, location, and access requirements for all motor control centers, panels, and A&C equipment; ensure that equipment shall fit through openings provided and at locations shown.

+ Coordinate NFPA requirements by room and area.

3.2.2.7 Architectural-Corrosion Control

+ Verify types of exposed metals and painted finishes to be used to resist corrosion. Each environment has its own requirements.

+ Coordinate special chemical resistant coatings for chemical storage.

3.2.2.8 Architectural Finishes

The design of the Rev. James Orange Recreation Center shall utilize architectural

finishes as described below. Finishes not identified in this document may be considered during design/construction, provided that: (a) design integrity is maintained, (b) the alternatives meet all design requirements identified in this document, and (c) the alternatives are acceptable to the City.

3.2.2.9 Interior Partitions

Provide aesthetically pleasing, functional durable finishes appropriate to the buildings function. Acoustic properties of materials as well as durability and ease of maintenance shall be considered during material selection. Maximize the use of sustainable materials.

Provide a wall and floor color design that includes a minimum of two different accent colors throughout the facility. Submit pattern drawings of the accent design with the interior design submittal.

Use CMU for all interior partitions and for mechanical and electrical rooms.

3.2.2.10 Louvers

Where used, louvers shall be heavy duty, drainable blade aluminum with factory-applied polyvinylidene difluoride (PVDF) enamel finish.

3.2.2.11 Ceilings

Ceilings shall be acoustical tile in suspended ceiling grid and where exposed, provide an acoustical treatment.

3.2.2.12 Windows

Use aluminum windows or curtainwall with factory finish. Fit exterior windows with tinted, insulated glazing to comply with Energy Code.

3.2.2.13 Flooring

Seal concrete flooring in all mechanical areas with clear sealer. All other areas to be medium builder's grade broadloom carpet, carpet tiles, VCT or porcelain tiles. Provide rubber flooring in stretching and fitness areas. Provide 3rd grade (natural) Maple strip wood flooring in Gymnasium. Wall base shall be rubber.

3.2.2.14 Architectural Coatings

Ensure that all exposed building surfaces, including all structural steel framing and decking, are properly coated. Suggested architectural coatings are listed below. The Design/Builder shall provide additional coating systems as required.

3.2.3 Life-Cycle Cost Effectiveness

Materials shall be chosen on the basis of long-term performance, not short-term cost. The following factors shall be considered when selecting materials:

+ Life expectancy
+ Suitability
+ Durability
+ Ease of maintenance
+ Compatibility with substrate materials
+ Effect on other disciplines

Each of these factors shall be rated to achieve the maximum life-cycle cost effectiveness.

3.2.4 Maintenance

This section provides information to decrease material variations and to enhance maintenance servicing. Common building features shall include:

+ Door hardware
+ Coating systems
+ Roofing systems
+ Luminaries

3.2.5 Accommodations for the Handicapped

The building and site shall provide full ADA accessibility for the staff and general public.

3.2.6 Exterior Walls

3.2.6.1 Materials

Costs shall be compared for unit masonry and metal panel wall construction for the building. Provide a cavity wall exterior wall systems composed of brick masonry veneer as 50% maximum of the Exterior Closure, or; Provide prefabricated metal panels as 50% of the Exterior Closure and the other 50% of the Exterior closure a glass and window wall system. Provide exterior wall back-up construction system of unit masonry or metal stud wall system with sheathing, continuous insulation, vapor retarder, water - resistive barrier and air barrier to meet or exceed requirements of project's energy savings requirements as indicated by applicable ASHRAE 90.1 calculations called for in the Building Codes.

3.2.6.2 Parapets

Provide parapets for exterior wall construction, where required for low-sloped roofs.

3.2.7 Roofing

3.2.7.1 Materials

Roofing materials shall be pre-finished standing seam metal on sloped roofs and TPO membrane. Roof decks shall be designed to shed water. All roofs must slope per minimum Building Code standards. Roofing systems shall be watertight and compatible with facility function, construction and service conditions. The roof system shall be designed and attached to resist wind uplift pressures calculated in accordance with Building Codes.

3.2.7.2 Gutters and Downspouts

If not drained internally with roof drains and overflows, every roof shall have gutters, gutter guards and downspouts.

3.2.8 Exterior Louvers

Provide exterior louvers, where required, that match the finish of the windows and detailed to integrate with the architecture of the building, as appropriate to the design of the building.

3.2.9 Balcony Walls & Handrails

Balcony walls must match the exterior wall of the building. Provide complete masonry or non-corrosive metal railing systems. Railings must be ornamental to harmonize with the building.

3.2.10 Exterior Soffits

Provide metal exterior soffit or stucco systems.

3.2.11 Exterior Painting and Coatings

Provide field applied high performance exterior coatings for all items that are not prefinished and to prefinished items when required to provide a color other than a standard prefinished color.

3.2.12 Exterior Joint Sealants

Provide exterior application of joint sealants to seal joints and prepare for finish material construction.

3.2.13 Sun Control Devices (Exterior)

Provide fixed, horizontal type. Detail sun control devices to integrate with the architectural wall system.

3.2.14 Screen Walls

Provide screen walls where required to screen mechanical units, electrical substations, loading docks, and trash receptacles. Screen walls must be compatible with the building architecture. Design any rooftop mechanical screens to minimize roofing penetrations.

3.2.15 Exterior Windows

Provide windows in the Senior Center, Muti-purpose Room, Computer Lab, Exercise/Dance Room and Lobby/Lounge areas to enhance the environment with natural daylighting. Exterior windows shall be prefinished aluminum.

3.2.16 Interior Windows

Provide interior windows in aluminum frames as applicable, to enhance the working and recreational environment, without comprising visual acuity and comfort.

3.2.17 Storefronts and Curtain Walls

Storefront and Curtain Walls shall be prefinished aluminum. System shall be a standard architectural type unit and mullion system, with mullions, horizontal rails or integral spandrel panels.

3.2.18 Exterior Glazing

Glazing must be tinted, tempering insulating units. Typical colors are gray, bronze, green or blue. Color selected shall be compatible with the exterior enclosure materials.

3.2.19 Solid Doors

Use steel hollow metal doors assemblies painted for dry non-corrosive areas other than a main storefront/curtainwall entrances including doors with hardware. For wet or corrosive areas and exterior, use aluminum or FRP. Provide vision panels, as appropriate, in every door unless directed otherwise by City. The Design/Builder shall coordinate the size and configuration of the window with the City within the constraints of the applicable code standards. Provide the services of a certified door hardware consultant to prepare the door hardware schedule.

3.2.20 Overhead Coiling Doors

If required, use aluminum, non-insulated overhead coiling doors with a powder coated finish. The minimum clearance shall be 12 inches on each side of the door and 24 inches above the door. Bollards or angles shall be used to protect jambs and door tracks from vehicular damage.

3.2.21 Interior Stairs and Exterior Stairs

Interior stairs shall be constructed of steel with concrete filled pans precast-in-place concrete. All stairways must be a minimum of 3 feet 8 inches wide. Handrails may project no more than 3-1/2 inches into the stair width. Stair landings must be at least as wide as the stairway.

Exterior stairs shall be constructed of galvanized steel or cast-in-place concrete.

3.2.22 Handrails, Guardrails and Accessories

Handrails and guardrails shall be painted steel and comply with height and configuration requirements. Metal ladders and railings complying with OSHA requirements shall be

provided for access and protection to any mechanical mezzanines, lofts or similar spaces.

3.2.23 Specialties

Provide standard commercial toilet accessories meeting ADA Accessibility requirements.

Provide solid-polymer toilet enclosures, entrances and urinal screens requirements meeting ADA Accessibility.

Provide plastic storage bins meeting ADA Accessibility requirements.

3.2.24 Gymnasium Equipment

Provide six (6) telescoping basketball goals suspended from the gym ceiling structure above.

Provide standard interior system automatically operated, ADA Accessible and seating for 100 patrons.

Construct elevated running track with two (2) lane jogging track around the perimeter of the gymnasium.

3.2.25 Passenger Elevator

Provide a minimum of one hydraulic elevator sized to comply with the IBC medical stretcher requirements and also designed to vertically transport the largest movable equipment of furniture used on the project.

3.2.26 Public Address System

Provide a public address system with speakers in all common areas.

3.2.27 Access Control System

Provide an access control system utilizing credential devices to monitor and control personnel movement into the Facility. The ACS shall log and achieve all transactions.

3.2.28 Video Surveillance System

Provide an interior and exterior CCTV system for visual assessment and archiving of parking lot and all perimeter doors of the Facility. Features shall include interface with COA monitoring for control of camera call-up to video monitors and digital video archiving.

3.2.29 Fixture, Furniture and Equipment (FF&E)

The FF&E process must begin approximately with the 50% design submittal. The submittals must include fixtures, furnishings and equipment specifications in accordance with the Activity requirements to produce an optimally functional Facility. Any Audio Visual (A/V) equipment required in the project shall be included and identified as a separate line item.

Include an Allowance of 1.5% of the total construction cost for the FF&E package.

3.3 General Structural Design Criteria

3.3.1 Purpose and Content

This section describes the minimum structural engineering design criteria for the Rev. James Orange Recreation Center. Included in the criteria are required design loads for buildings, miscellaneous structures, and components. Also included are analysis and design methodologies for various materials of construction including concrete (cast-in-place and precast), steel, masonry, aluminum, fiberglass, and stainless steel. Additionally included are minimum material properties and cast-in-place concrete properties and installation requirements.

In case of this document's overlap and conflict with governing codes and standards, the Design/Builder will follow the more strict interpretation or directive. Similarly, where multiple reference standards are cited, the most stringent requirements shall govern.

3.3.2 Applicable Codes, Standards, and References

The design codes, standards and references listed below shall serve as the basis for design for building and non-building structures, including all lateral force resisting systems, components, and claddings:

+ International Building Code (IBC), 2018 Edition including Georgia Amendments local amendments (hereafter called "Building Code" or "Code")

+ ACI 318-11: Building Code Requirements for Reinforced Concrete.

+ ACI 350-06: Code Requirements for Environmental Engineering Concrete Structures and

Commentary ACI 350R-06.

+ ACI 350.4R-04: Design Considerations for Environmental Engineering Concrete Structures.

+ ACI 350.3-06: Seismic Design of Liquid Containing Structures and Commentary ACI 350.3R-06ACI 530-11: Building Code Requirements for Masonry Structures.

+ ADM 1-10: Aluminum Association Design Manual Specification for Aluminum Structures, 2010 Edition.

+ AISC Manual of Steel Construction, 14th Edition.

+ ASCE 7-10: Minimum Design Loads for Buildings and Structures.

3.3.3 Guidelines and Procedures

All structural engineering shall be done in accordance with this DC and applicable codes, specifications, and standards, as well as to reflect the judgment and experience of the responsible professional engineer. Designers will use the guidelines contained herein unless there is an overriding reason not to use them for particular components of the Project. In that event, documentation must be provided in the calculations or by separate memorandum and reviewed by the City.

3.3.4 Loads

3.3.4.1 General

Loads to be considered shall include both lateral and vertical loads. Lateral loads are imposed by wind, seismic, soil and liquid pressures, and surcharge loads adjacent to walls. Vertical loads include dead loads, live loads, snow load, suction and uplift loads imposed by wind, and uplift loads imposed by flood or groundwater. Equipment, large piping, and pipe thrust loads shall be accurately determined and incorporated into the structural design.

The following loads will be used for structural analysis of floor and roof systems in addition to any loading required by the building code:

+ Roof snow loads.
+ Roof dead loads.
+ Roof wind
+ Dead and Live Loads

For dead load, include all permanent or semi-permanent loads. This includes equipment, piping, banks of conduit, electrical trays, floors, supporting members, walls, partitions, chemicals in bins or on storage floors, and liquid contents of piping, containers, and equipment. Dead load also includes weight of soil on soil-covered roofs, if applicable.

Live loads include all loads not defined as dead loads including people, tools, and equipment that may be placed on floors temporarily. Live loads need not be applied to floor areas permanently covered by equipment, unless the live load is higher than the equipment load. Reduction of live loads may be considered only as permitted in the Building Code.

- Wind and Seismic Loads

Refer to the Building Code for complete deviation of loads. Also reference ACI 350.3 Liquid Containing
Concrete Structure. A summary of wind and seismic design information shall be clearly presented on the structural drawings, including basic wind speed, wind importance factor and building category, wind exposure, building enclosure classification and internal pressure coefficient, and a summary of design component/cladding wind pressures.

3.3.5 Foundations

A Report of Subsurface Exploration and Preliminary Geotechnical Engineering Evaluation

are included in other portions of this RFP. Any included subsurface information is only for the Design/Builder's information and is not guaranteed to fully represent all subsurface conditions. The Design/Builder is required to retain a Geotechnical Engineer experienced and licensed in Georgia to interpret the information provided as related to his design concept and develop geotechnical requirements to support design and construction. Foundation must be designed to suit subsurface conditions and must be capable of transmitting all building loads to the ground.

3.3.6 Slab on Grade

As determined by the Design/Builder's Designer of Record to be applicable, provide a standard or structurally supported concreate slab on grade. Where slab on grade is below the existing adjacent exterior grade, provide water/dampproofing and a perimeter drainage system to remove ground water from the area immediately adjacent to the building.

3.3.7 Floor Construction

The floor construction shall include any structural framing system meeting the requirements of the section.

3.3.8 Roof Construction

The roof construction shall include any structural framing system meeting the requirements of this section. The roof construction shall be sized to accommodate possible solar array panels.

3.4 General Building Mechanical Service Design Criteria

3.4.1 General

All design must conform to the local building codes, including the 2018 edition of the International Building Code with GA Amendments and all other codes and standards as contained therein.

3.4.2 HVAC

3.4.2.1 HVAC Systems Functions

The HVAC system shall perform the follow functions:

- Protect equipment and piping from overheating or freezing.
- Provide uninterruptible operation of cooling equipment for electrical through adequate redundant systems.

3.4.2.2 General HVAC Drawing Criteria

In addition to the HVAC design criteria, the following requirements shall apply to HVAC drawings:

+ Ensure the minimum scale for ductwork and piping plans is 1/8 inch = 1 foot for congested areas and equipment rooms; the partial plans shall have a scale of 1-1/4 inch= 1 foot.

+ Provide sections and elevations for all major equipment and multiple layers of piping or ductwork. Sections and elevations shall have a scale of 1-1/4 inch = 1 foot.

+ Indicate the airflow through the various rooms and duct systems on an air-balance diagram as part of the construction documents.

+ In addition, the following shall be provided where applicable:

- Standard construction detail sheets.
- Demolition drawings of all existing equipment to be removed.

Automatic temperature-control systems descriptions and sequence of operation. The air balance diagrams shall, as a minimum, show the following:

+ Each space with space identification.

+ Ventilation air flow in cubic feet per minute (cfm) for each space, with supply, exhaust and transfer identified.

+ Ventilation rate in air changes per hour and design basis.

+ Infiltration or exfiltration rate in cfm.

+ Positive or negative pressurization criteria.

+ All ductwork, fans and air handlers.

+ Fan and air handler identification numbers (IDs).

+ Fan and air handler capacities in cfm.

+ Duct air flows in cfm.

+ Pressure relief dampers.

+ Control dampers.

+ Fire-rated and smoke control dampers.

The following information used by construction field personnel in the construction of the Project shall be on the drawings:

+ Piping details.

+ Air handling units and fans installation details.

+ Fire damper location

3.4.2.3 HVAC Design Procedures

Codes and Standards:

The latest editions of the following codes and standards shall apply:

+ International Building Code, 2018 Edition, with Georgia Amendments

+ International Fire Code, 2018 Edition, with Georgia Amendments

+ International Plumbing Code, 2018 Edition, with Georgia Amendments

+ International Mechanical Code, 2018 Edition, with Georgia Amendments

+ International Fuel Gas Code, 2018Edition, with no Georgia Amendments

+ International Energy Conservation Code, 2015 Edition, with Georgia Supplements and Amendments

+ The National Electrical Code (NEC), 2020 Edition

+ Occupational Safety & Health Administration Regulations.

The HVAC design shall comply with the applicable standards and recommended practices of the following organizations:

+ American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE).

+ Sheet Metal and Air Conditioning Contractors National Association (SMACNA).

+ Air Moving and Conditioning Association (AMCA).

+ Associated Air Balance Council (AABC).

In cases where existing facilities are included in the scope of work and the existing

HVAC systems do not meet current code requirements, the HVAC systems shall be modified to meet these requirements.

Calculations:

Calculations must follow the methodology outlined in the applicable energy codes, ASHRAE Handbook of Fundamentals, and referenced ASHRAE handbooks and publications. If requested by the Owner, calculations shall be submitted.

At a minimum, calculations shall be performed for the following:

- Heat transmission coefficients.
- Space heat gain from internal loads.
- Space heating and cooling loads
- Ductwork pressure loss. Ductwork shall be sized for a friction loss of 0.08" wc/100 ft.
- Fan motor sizing.
- Heating and cooling equipment sizing.
- Condensation control.
- Space supply and exhaust ventilation rates shall be calculated for all applicable criteria, and the highest ventilation rate shall be used for design.

Evaluations:

As part of the design, the following items shall be evaluated:

Design and Layout:

In making layouts, the following requirements shall be observed:

- Provide adequate clearance for equipment installation, operation, and maintainability and mark clearance areas on plans.
- Position air-handling units so filters and coils can be pulled and removed from the building without demolishing permanent walls or structures.
- Mount equipment and panels on housekeeping pads.
- Provide the recommended clearance (no less than 3 feet) between the outermost extremities of adjacent pieces of equipment or between a wall and a piece of equipment. Clearances will be required on sides of equipment in accordance with manufactures

recommendations.

+ When equipment is not mounted on the floor, provide service platforms with suitable access.

+ Provide ladders, catwalks, and hatches for accessing and removing equipment.

+ Rooftop equipment requiring service must be located ten feet from the roof edge or fall protection provided.

+ Provide lifting lugs for removing equipment.

+ Locate piping so it does not create a hazard to workers or prevent access to equipment. Allow a minimum clearance of 5 feet for a walkway.

+ Layout piping close to walls for support, purposes particularly in areas with high ceilings.

+ Verify that equipment can be replaced. Clearance for the largest component is acceptable if removing the assembled unit is not feasible. Where a standby unit is required, replacing one unit shall not require shutting down the standby unit for access or removal.

+ Check alternate supplies when determining space requirements. Consider the need for removing the fan shaft if using externally isolated units.

+ Pipe supports generally are not shown on the layout drawings. For small diameter piping locations and details for anchoring 12" diameter and larger rigid pipe shall be shown. Acceptable types of supports and anchorage details are shown on the standard details.

+ Provide flexible connections so piping can be easily assembled and disassembled.

+ Allow ample space for diaphragm-, cylinder-, and motor-operated valve and gate actuators.

+ Provide adequate clearance for rising-stem valves and gates.

+ Provide ducted air supply and exhaust in open pits requiring regular maintenance.

+ Provide conditioned cool air (direct expansion type) to electrical rooms. Insulate ductwork carrying conditioned air in accordance with the Energy Code.

In addition to the layout information listed above, the following requirements shall be observed on piping drawings:

+ Include provisions for draining above grade gravity lines.

+ Provide unions or flanges where required for disassembling piping and equipment.

+ Piping shall be at least 3/4 inch to provide rigidity. This does not apply to refrigerant lines whose size shall be provided per manufacturer's recommendations.

+ Design sufficient flexibility into piping systems to allow for thermal expansion and contraction without using expansion joints.

+ Provide shut-off valves so the individual equipment can be serviced without shutdowns or other equipment.

HVAC System Types:

The following are basic requirements for the different HVAC systems.

+ Ventilation Systems. Ventilation systems shall provide ventilation to space with supply and exhaust fans. Ductwork shall be installed to increase air movement and to eliminate dead spots.

+ Air Conditioned Systems. Air-conditioned systems shall provide space temperature and/or humidity control utilizing direct expansion refrigeration systems with air handling and ducted air distribution. Electrical and/or instrumentation rooms shall be air- conditioned.

+ Wind Load on HVAC Systems. HVAC equipment located outside buildings shall be designed and installed for the code-prescribed winds loads. HVAC equipment located outside shall be designed according to the manufacturer's design criteria.

+ Indoor Design Conditions. Design conditions shall be selected based upon requirements of the energy code as well as occupancy and equipment requirements. Dehumidification and cooling shall be provided in air-conditioned spaces in accordance with ASHRAE Standard 55. Unless otherwise specified, occupied spaces shall be air conditioned to maintain a minimum of 75°F. Electrical and Instrumentation rooms shall be designed to maintain a maximum of 80°F with equipment operating.

+ Building Envelope Heat-Transmission Coefficients. Buildings, spaces, or rooms that have air-conditioning systems for cooling shall be enclosed in building envelopes that meet the local

building codes.

+ Ventilation Air-Rates. ASHRAE Standard 62-2013, "Ventilation for Acceptable Indoor Air Quality," lists the required ventilation air rates for HVAC systems for occupied areas.

+ Location of Ventilation Air Intake, Air Distribution, and Exhaust Air. Filtered outdoor air, and/or filtered and heated or cooled outdoor air, shall be drawn in by supply air fans and distributed into the buildings. The supply shall then be distributed to work areas and low-odor areas of each building. Additional requirements follow.

  • Locate outdoor air intakes as required by the Mechanical Code to prevent entry of odorous air and vehicle exhaust emissions.

  • Locate exhaust discharge points away from outdoor air intakes and walkways as required by the Mechanical Code and ASHRAE Standards. With the exception of clean ventilation exhaust air, exhaust discharges shall not be located where they shall discharge onto people. Louvers shall not be used over doors for chemical exhaust. Exhaust containing hazardous materials shall be located so the discharge point is inaccessible to people and the exhaust plume shall discharge in a safe location. Vertical upblast discharge from roofs is preferred.

  • Design intake louvers and hoods for low face velocity to prevent rain entrainment.

Shut-off dampers for intakes and exhausts shall be located in the ductwork and not at the fan suction or discharge. Access doors shall be installed to clean out dust and dirt-laden duct systems.

+ Doors shall be 24 inches x 24 inches or the largest door that shall fit into the duct.

+ If there is the potential for moisture carryover or condensation, drains with traps shall be provided at low points in the ductwork.

+ Ductwork shall be inside of buildings whenever possible.

+ Insulate ductwork as required by the Energy Conservation Code and where necessary to prevent condensation.

+ If any of the preceding standards conflict, the most stringent requirements shall

govern.

+ Equipment, Ratings, and Materials. All HVAC equipment shall meet efficiency requirements imposed by the Energy Code. Additional requirements follow:

- Name at least two manufacturers wherever possible (the City must approve any exceptions). Model numbers shall also be stated for the alternate manufacturer, if stated for the design basis manufacturers. If no alternate manufacturer can be determined, the Design/Builder shall write a performance specification, omitting any mention of a specific manufacturer.
- In general, locate all HVAC equipment indoors. Roof-mounted equipment, such as roof exhaust fans and or air handling units, shall be used only with the permission of the City. Suitable access and fall protection is required for all roof- mounted equipment.
- Provide full-height access doors in air-handling units.
- Construct all exhaust-air fans handling odorous air of fiber-reinforced plastic, resin-bonded fiberglass, or 316 stainless steel. Non-sparking blades and explosion- proof motor construction shall be provided where the plant-specific criteria dictate their use.
- Use all other fans and air-handling units made of materials suitable for the air stream and surrounding conditions. For all major fan systems, the designer shall prepare a fan curve of the selected fan with the calculated system curve, at design and both plus and minus 10 percent of flow, to prove stable fan selection.
- Provide fans with a 70 percent or greater efficiency, if possible.
- In general, use equipment in process areas able to withstand wet conditions.
- Use a margin of safety for heating and cooling

loads of 10 percent.

- The following margins of safety for static pressure of fans as recommended by the Associated Air Balance Council shall be provided:

  Low number of zones and balancing dampers: 20 percent Medium number of zones and balancing dampers: 30 percent High number of zones and balancing dampers: 40 percent

- HVAC designers shall use their own discretion in applying a margin of safety to static pressure calculations.

- Use AMCA Publication 201, Fans and Systems reference for non-ideal fan installations. Provisions shall be made for the effects of fan inlet and outlet configuration on static pressure losses, including poor fan inlet and outlet conditions and air acceleration in exhaust fans.

+ Corrosion Control. Corrosion control is required to improve the performance, reduce maintenance, and extend operating life of the HVAC systems.

+ Redundancy and Reliability. The Design/Builder must consider the need for redundant equipment and emergency electrical service. For large systems, consider using two air handling units sized at 50 percent capacity each.

+ Control System. The control system for HVAC equipment shall interface with the Facility control system for alarms and data gathering. Additional HVAC requirements follow:

  - The HVAC control system shall include local control panels for equipment, either provided with packaged equipment or free-standing to serve one or more air handling units. HVAC controls shall provide complete control of the system.

  - Economizer cycles, temperature reset, and other energy-saving features shall be specified

where practical and where those features do not interfere with other design criteria. However, the Energy Code's control requirements shall always be met.

+ Coordination with other Disciplines.

3.4.3 Plumbing

3.4.3.1 Plumbing System Functions

The plumbing system shall perform the following functions:

+ Provide comfortable and odorless condition in buildings and areas intended for human occupancy.

+ Provide sewer and potable water service for sanitary fixtures.

+ Provide potable tempered water services for emergency and eye showers.

3.4.3.2 General Plumbing Drawings Criteria:

In addition to the plumbing design procedures, the following requirements shall apply to the plumbing drawings:

+ Use 1/8" = 1' as the minimum scale for plumbing plans. For enlargement view, the part plans shall have a scale of 1/4" =1'.

Drawings shall include the following plumbing details if required for the building or facility as described in the plant specific criteria:

+ Sanitary-fixture drains.

+ Plumbing-fixture water supplies (hot and cold).

+ Water supply piping to hose faucets and hose valves.

+ Pressure reducing stations or pressure boosting systems.

+ Backflow prevention devices.

+ Vent piping.

+ Floor drains and piping.

+ Isometric or riser diagrams for water supply and drainage systems.

+ Extend the drawing of the building drain and water service for each building or facility 5 feet outside the building line. The drawing of the utility services, beyond 5 feet of the building, shall be shown on the civil site drawings.

3.4.3.3 Plumbing Design Procedures:

Codes and Standards. The latest editions of the following codes and standards shall apply:

+ AAA Rules and Regulations for Design Standards 1984.
+ International Building Code, 2018 Edition, with Georgia Amendments
+ International Fire Code, 2018 Edition, with Georgia Amendments
+ International Plumbing Code, 2018 Edition, with Georgia Amendments (2014)
+ International Mechanical Code, 2018 Edition, with Georgia Amendments (2014)
+ International Fuel Gas Code, 2018 Edition, with no Georgia Amendments
+ International Energy conservation Code, 2015 Edition, with Georgia Supplements and Amendments
+ The National Electrical Code, 2018 Edition
+ Occupational Safety & Health Administration Regulations.

Plumbing design shall comply with the applicable standards and recommended practices of the following organizations:

+ American Society of Plumbing Engineers (ASPE).
+ American Society of Testing Materials (ASTM).
+ American Water Works Associations (AWWA).
+ American National Standards Institute (ANSI).

In cases where existing facilities are included in the scope of work and the existing plumbing systems do not meet current code requirements, the plumbing systems shall be modified to meet these requirements.

Plumbing Calculations. When requested by the Owner, calculations shall be submitted. Calculations of the following

items are required for plumbing:

- Cold- and hot-water-supply pipe sizing and sanitary drainage pipe sizing in accordance with the Georgia Building and Plumbing Codes and the National Standard Plumbing Codes
- Water heaters, in accordance with the guidelines recommended by the American

  Society of Plumbing Engineers (ASPE); for procedure see ASPE Data Book 1989, Volume I - Fundamentals of Plumbing Design, Chapter 4.
- Pipe sizing for other building services such as natural gas, etc.

Other calculations not listed also may be needed for specific facilities or systems.

+ Plumbing Layout. The plumbing drawings shall follow the requirements listed below:

- Locate sumps at depths sufficient for properly draining gravity lines. Inform the structural designer of sump requirements.
- Piping embedded in slabs shall be positioned to avoid interfering with reinforcing bars. Always inform the structural designer if pipes shall be embedded. Pipe joints shall occur at slab joints for embedded pipe.
- Provide unions at joints so piping and equipment can be disassembled.
- Branch connections shall be taken off the top of gas, service-air and instrument-air lines to minimize moisture carryover.
- Insulate hot and tempered water lines, and branch connections for hot-water- system piping to minimize sediment carryover. Insulate cold water piping where condensation drips would cause damage, or be a nuisance or a hazard.
- Water heaters shall be designed with heat traps in the piping or integral to the heater.
- Maintain water mains to a minimum of 3/4-inch diameter in long horizontal runs.
- Locate cleanout in accessible areas for services and no less than 18 inches from any wall.
- Provide a higher invert elevation of any plumbing branch of 18 inches minimum from finish floor elevation.

3.5 General Electrical Design Criteria

The electrical system is intended to continuously and reliably provide power to all equipment. The major functions of the electrical system are as follows:

+ Provide power to all process equipment, instrumentation, and facilities services.
+ Standby power generation to service vital loads.
+ Equipment and personnel protection.
+ Sequential/logic control (discrete equipment control)

3.5.1 Electrical Design Standards

3.5.1.1 Drawings

The following drawings will be prepared in accordance with the instructions prepared for this Project:

Legend:

The standard legend sheet of electrical symbols provided in the section will be used without exception on all design drawings. The legend sheet is a general electrical symbol list and may be edited for individual contract drawing sets. The legend may also include electrical abbreviations if there is no separate, comprehensive abbreviation list. If abbreviations are shown on the electrical legend, the list must be complete and accurate. If special symbols are required, they must be shown on the legend sheet and used throughout the entire Project.

Site and Area Plans:

The electrical site plan will show the location of the facility, major equipment, outdoor site lighting, existing electrical power distribution, duct bank routes, hand hole and manhole locations, (any) outdoor switchgear locations. Existing Georgia Power point of connection shall be shown.

Area plans will show interferences with existing buried pipes, ducts, and other such equipment. In special cases, site and area plans may be needed for plant-wide special systems, such as fire alarms, security, and communications. Electrical site and area plans will be overlays to civil site backgrounds (base sheets).

Facility Plans:

Facility plans will show the location of, and connection to, all equipment and instrumentation that requires raceways or conductors. A separate connection point shall be shown for each of the devices located within an area even if they are all

supplied as part of the same package, unless the specifications clearly require that all of the devices are to be wired to a single panel or terminal junction box (TJB) by the supplier of the equipment. Spare raceways for future equipment will also be shown and clearly labeled, where appropriate.

On the facility plan, show locations of receptacles, lights, lighting panels and lighting transformers, water heaters, HVAC equipment, motorized doors, fire alarm systems, security systems, telephone systems, public address systems and other non-process loads. Facility plans will show lighting fixtures (for normal and emergency lighting), illuminated exit signage, outdoor building-mounted lighting, switch controls, lighting panelboards, and connection assignments for branch circuits. Home runs may be used to indicate the destination of branch circuits to the local lighting panels or to emergency power supplies.

Connection configuration for building systems (e.g., fire alarm, security, and public address systems) will be shown on separate riser diagrams. A separate riser diagram will be provided for each system.

Enlarged plans will be provided for electrical rooms, laboratory spaces, and other similar spaces where the plan scale and the number of devices located in a small area make it impractical to show the required information.

Single-Line Diagrams:

General Requirements. The single-line diagrams will show the entire electrical distribution system associated with the facility and shall include any electrical service entrance equipment, engine-generators and their associated switchgear, all distribution switchgear, distribution circuits, and other components down to 460-volt utilization devices and 208V/120-volt panelboards. Circuiting from 208V/120-volt panelboards to their loads will be shown on the panel schedules and on the plans. Circuiting of 480-volt panelboard loads shall be shown on the panel schedules and on the plans where possible.

For panelboards which are powered from MCC buses through a transfer switch, the interconnection with the two sources shall be shown on the single-line diagram.

Subfeeds from panelboards to transfer switches, both manual and automatic, or to locally mounted motor starters are another special case that shall be shown on the single-line diagram down to the final panel or device.

Information on single-line diagrams will include bus capacity, short circuit ratings, overcurrent device types and ratings, surge protection devices, protective relay types and ratings, instrument transformer connections and ratings, motor starters and their types and ratings, power transformer connections and ratings, motors, metering .and load ratings (horsepower or kilowatt) and other major electrical loads.

Medium Voltage Distribution. The single-line diagram for medium voltage distribution, if used, (e.g., 4160 V) will show the entire medium voltage electrical distribution system within the facility to the primary side of the transformers for 480-volt substations. The information to be included on these single-line diagrams will be bus capacity, short circuit ratings, type of overcurrent device or motor starter, protective relays types and quantities, surge protection devices metering instruments, instrument transformers and their ratings, interconnections and switching

arrangements for all distribution equipment.

Elevations:

Front elevations for switchgear, unit substations, MCCs, and low-voltage switchboards will be provided. The elevations need not be drawn to scale but must show the relative locations of MCC compartments, overcurrent devices, metering, conductor entrances, and depth of assemblies. The size of MCC buckets must allow space for extra relays, and other equipment, as required. The manufacturer of switchboards and switchgears shall review the elevations of this equipment to ensure proper placement of equipment and check the accuracy of the depicted equipment arrangements. The depths of assemblies shall be noted on elevations.

Schedules

Schedules will generally be shown on the drawings except in the rare case where a separate bound volume of 8-1/2 x 11 inch sheets depicts the segments more easily. The luminaire schedule will show the symbol or alpha-numeric designator for the fixture, power rating, voltage, brand name, catalog number, and a brief description of fixture type and use. Fixture mounting method (e.g., wall pendant, pole, etc.) and heights may be listed on the fixture schedule or as noted on plan drawings. The luminaire schedule will be available to all designers at the early stages of design and the same luminaire will be used for all similar applications throughout the facility.

Panel schedules shall be prepared using a computer spreadsheet program, which allows the final product to be imported into a CADD file and placed electronically onto the drawing. Panel schedule shall include estimated circuit loads in volt amperes. The computer spreadsheet shall automatically calculate total loads in amperes and volt-amperes.

A separate panel will be provided within the facility for the power supply to process related instruments and control equipment. This panel shall be powered from a shielded transformer and transfer switch that is separated from the building facility power supply for reliability.

The panel schedules shall be included on the drawings with the buildings or facilities where they are located or with the one-line diagrams or equipment elevation of the related equipment.

Grounding Plans and Details:

The grounding system shall be shown on the drawings. Grounding shall be shown on the site plans, the process facilities plans, or a separate plan. The grounding plans shall show the grounding electrodes, grounding conductors, equipment busses, and grounding requirements for separately derived systems. The size and ratings of the driven electrodes and conductors shall be shown. Grounding plans

shall be supplemented by grounding details. A minimum of one test well per facility shall be provided. Lightning protection system connections to the grounding system shall also be shown.

System Riser Diagrams:

Separate riser diagrams shall be provided for the fire alarm, public address, security, telephone, and communication systems. Riser diagrams shall show all components for each system. The riser shall be arranged to show the relative location of each device or component with respect to the other system devices and components. The name and number of the room or space where the device or component is located shall be noted on the riser diagram. Interconnecting conduits and wiring also shall be shown on the diagrams.

Details:

Standard details have been provided to supplement the master specifications/standard details. Changes to the standard details must be approved before the modified details shall be used. Create unique details as required. Installation details will be grouped together and shown on separate drawings.

3.5.1.2 Calculations

All calculations are to be prepared on 8 ½ inch x 11inch sheets and submitted to the City for review. Calculations shall include loads as well as future loads and include all necessary safety factors. Calculations may be done manually or by computer. Each sheet must show the date the calculations were performed, the Project number, and the signature of the person performing the calculations.

At a minimum, the following calculations will be prepared:

+ Load summaries for each switchgear, substation, MCC, transformer, and panelboard.
+ System short circuit analyses.
+ System coordination analyses.
+ Voltage-drop calculations for feeder and branch circuits that are heavily loaded or over 500 feet long.
+ Lighting calculations.

3.5.2 Design Criteria and Guidelines

3.5.2.1. General Requirements

An electrical engineer registered in Georgia will be responsible for overseeing the

preparation of the electrical design documents. The design will be in accordance with the best professional practices. The final electrical design drawings will be signed and sealed by an electrical engineer licensed in Georgia.

The design of each task must conform to the requirements of these guidelines. The guidelines describe the minimum requirements. Deviations from the guidelines that are in the best interest of the City and demonstrate a better design will be allowed as long as the City approves the deviation in advance. Documentation, including calculations and cost estimates, must be developed in enough detail so the Design/Builder and the City can evaluate the proposed deviations.

3.5.2.2 Standards and Codes

Electrical design shall conform to the latest editions of the following applicable standards and codes:

+ National Electrical Code (NEC) (NFPA 70).
+ National Electrical Safety Code (NESC).
+ Life Safety Code (NFPA-101-HB).

Standards and codes of the following organizations shall also govern where applicable:

+ American National Standards Institute (ANSI).
+ Illuminating Engineers Society (IES).
+ Instrument Society of America (ISA).
+ National Electrical Manufacturers Association (NEMA).
+ Institute of Electrical and Electronic Engineers (IEEE).
+ Insulated Cable Engineers Association (ICEA).
+ Occupational Safety and Health Act (OSHA).
+ American Society for Testing and Materials (ASTM).
+ Underwriters Laboratory (UL).
+ All applicable regulations of the City of Atlanta Building and Fire Departments.

Local codes and standards shall be applied as appropriate. Where the requirements of more than one code or standard are applicable, the more restrictive shall govern. Requirements of applicable codes and standards are not repeated in this section.

Applicable Federal and local codes and UL listing requirements shall be followed for electrical inspection. Exit signs, emergency egress lighting, and emergency lighting power supply shall conform to requirements of the local code authority.