

REQUEST FOR PROPOSALS

FOR

DESIGN BUILD GRANT PARK PARKING GARAGE

FC-9254



ATLANTA, GEORGIA

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EXHIBIT B-1

DESIGN CRITERIA PACKAGE

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CITY OF ATLANTA, GEORGIA



DESIGN-BUILD
GRANT PARK PARKING GARAGE

FC-9254

October 2016

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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 and construction of a new Multi-level Parking Garage with a “Green” roof and 1,000 +/- parking spaces (Project) located at the Boulevard Avenue surface parking lot in Grant Park/Zoo Atlanta to accommodate current and future parking demand, reduce traffic congestion and improve safety. The building’s “green” roof will utilize planted vegetation to reduce stormwater run-off, improve air quality and create an attractive outdoor green space for the neighborhood. 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 and construction of the Grant Park Parking Garage. 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, conceptual drawings, 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. Complete detailed design of this Project in accordance with the Design Criteria;
2. Pre-construction engineering, planning, coordination and permitting;
3. Site Inspection and Engineering;
4. Demolition, site preparation, and existing utility relocation;
5. Procurement of all design, engineering, and construction Work and

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

1.3 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:

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

1.3.1 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 facility using sustainable design principles.
- + Erosion and sediment control plans and applicable documentation (NOI, etc.)

1.3.2 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, 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 (including site lighting provided by the Design/Builder and coordinated with Georgia Power Company);
- + Updated 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;.
- + Concepts developed and reviewed during the Detailed Design Phase are considered fixed.

1.3.3 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, 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.

1.4 Drawing Formats and Requirements

Drawings shall be prepared using the following standards:

- + All Drawings shall be prepared on minimum 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 2016 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.

1.5 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 2004 of 17 Divisions.
- + The City of Atlanta Division 01 Specifications shall be utilized for this project. These documents are included as Exhibit B.
- + 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.
 - Plumbing plans.
 - Structural 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 existing eight (8) acre surface parking lot is located on the east side of Grant Park/Zoo Atlanta bound by Boulevard Avenue and accommodates 480 parking spaces. There are two (2) entrance/exit driveways on to Boulevard Avenue at the north and south end of the lot. There is existing underground power feeding pole light fixtures and curb inlets that empty into the underground stormwater system.

There presently are overhead electrical and communications lines mounted on poles along the east and west of Boulevard Avenue. Also in the street are underground power, domestic water, sanitary sewer and curb inlets that empty into the underground stormwater system. (Refer to Exhibit B-3, Drawings C2.2, C3.2 & C4.2, prepared by W.L. Jordan & Co., Inc. dated July 8, 1999).

3.0 DESIGN CRITERIA

3.1 General Site/Civil Design Criteria

3.1.1 Detailed Field Surveys

Field surveying and existing topography will be supplied to 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:

1. Drawings shall be parallel or perpendicular to the grid system.
2. 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:

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

- Finished grade contours and spot elevations.
 - Storm drainage system, profiles and details
4. Erosion and sediment control plans.
 5. Temporary facilities during construction:
 6. 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 will be provided to the Design/Builder Team with coordinates. The site is approximately 8.0 acres that can be used for construction staging and construction. 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"=50' or larger. Demolition of facilities

and improvements shall address the following:

1. Verify existing facility information. Confirm that layout is correct, complete, and up to date.
2. Determine allowable methods of demolition.
3. 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.
4. Identify the disposition of salvageable materials and equipment.
5. 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.
6. Identify buried structures and utilities that will be abandoned in place or plugged and tilled.
7. Indicate the extent of facilities that will be removed or remain, and the facilities that will be protected.
8. 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:

1. All grade changes.
2. Coordinates for all manholes, stubs, branches, fittings and interfaces.
3. Invert elevations of all gravity lines and centerline elevations of all non-gravity lines.
4. Elevations of gravity and non-gravity lines at buildings, structures, and interfaces.
5. Each line size, material type, system designation and direction of flow, where applicable.
6. Buried piping and conduits to the outside face of the building or structure.

7. 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.

Location	Frequency of Occurrence
Mainline pipes	25 years
Catch basins/curb inlets	25 years
Catch basins/curb inlet pipe connections	25 years
Roof-drain pipe connections	10 years
External areas draining through the site	100 years
Stormwater pumping systems	50 years
Areas subject to flooding without overland flow relief	100 years

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 Traffic Maintenance and Signing Plans

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

3.1.7 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.

3.1.8 Landscape Plans

The Design/Builder shall comply with the Department of Parks & Recreation. 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, shrubs, wildflowers, ground cover and grasses shall be appropriate for the "Green" roof design and layout. The design shall combine passive irrigation with active rainwater harvesting components.

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

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:

- + 2012 International Building Code with Georgia Amendments
- + 2012 International Mechanical Code with Georgia Amendments
- + 2012 International Plumbing Code with Georgia Amendments
- + 2012 International Fuel Gas Code with Georgia Amendments
- + 2009 International Energy Conservation Code with Georgia Supplements and Amendments
- + 2012 International Fire Code with Georgia Amendments
- + 2014 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 Design Criteria Package
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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

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:

1. Design architectural elements with crisp, clean lines and reflect the scale proportions and contextural quality of modern architecture.
2. Use architectural building masses to screen the view of unenclosed service functions from public areas of the site.
3. The Design-Builder shall coordinate with Architectural-Landscaping requirements in this document.

Colors:

SECTION 3

DESIGN CRITERIA

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:

1. Use steel or concrete as the general material for structural elements.
2. Concrete colors shall be integral to the material itself.
3. 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 building criteria.

1. To enhance brightness, interior surfaces shall be light-colored and reflective.
2. Provide a finish surface to all interior spaces; no surface area shall be left untreated, unless noted otherwise.
3. Use nonporous surfaces in wet areas.
4. Paint or seal exposed concrete surfaces as required.
5. Provide acoustical treatment in interior high-noise areas of buildings.
6. Final selection of interior finishes shall be subject to review by City.

3.2.2.1 Architectural-Site

Site coordination involves the following:

1. Develop the layout, circulation, and orientation for the Facility on the site.
2. Review the effects of grading and drainage on the structure, and coordinate the location of roof drainage.
3. Coordinate the location, elevation, and gradient of finish floor slabs, sidewalks, and entrance pads.
4. Coordinate the location of yard hydrants with the layout of yard piping, and the location of outdoor wall hydrants with site water needs.
5. Review site lighting and coordinate with requirements of Georgia Power Company.
6. Review location of grade mounted HVAC equipment

7. Review fire truck circulation.

3.2.2.2 Architectural-Landscaping

1. 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.

3.2.2.3 Architectural-Structural

1. 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.
2. Establish railing material, type, and detail; determine if railing conforms to codes, accessibility and safety regulations.
3. Establish rise, run, material, and detail of all stairs; verify that the design conforms to codes, accessibility and safety regulations.
4. Coordinate clear room height requirements and ceiling finishes.
5. Coordinate size, detail, and location of all floor, wall, and roof openings.
6. 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.
7. Coordinate selection of roof framing system.
8. Review framing schemes for column locations and size, beam clearances, and their effects on the work of other disciplines.
9. Establish requirements for insulation, vapor retarders, damp proofing, and waterproofing.
- 10 Establish requirements for termite resistant construction.

3.2.2.4 Architectural-Mechanical

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

2. Select, coordinate, and detail insulation materials.
3. 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.
4. Verify and coordinate plumbing fixture count, type, layout, and location per Georgia Building Code. Determine and provide plumbing chases.
5. Verify the location of all floor and roof drains.
6. Coordinate size, detail, and location of all floor, wall, and roof openings.
7. Provide up-to-date background floor plans and building sections for use by the designers of heating, ventilation, and air conditioning (HVAC).
8. Coordinate spatial requirements for HVAC, Plumbing and Fire Sprinkler systems in the floor plans.
9. Coordinate roof drainage gutter downspout locations with wall penetrations for HVAC and plumbing.
10. Review air diffuser and grille selection and placement for compatibility with ceiling system.
11. 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.

3.2.2.5 Architectural-Electrical

1. Review light fixture selection, and coordinate layout and compatibility with ceiling system and air diffusers and grilles.
2. Coordinate exterior, wall mounted, and special accent site lighting.
3. Provide up-to-date background floor plans for electrical designers' use.
4. Coordinate size, detail, and location of all but small conduit, floor, wall, and roof openings. Conduit shall not be routed in reinforced masonry cells.
5. 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.
6. Coordinate NFPA requirements by room and area.

3.2.2.6 Architectural-Corrosion Control

1. Verify types of exposed metals and painted finishes to be used to resist

corrosion. Each environment has its own requirements.

2. Coordinate special chemical resistant coatings for chemical storage.

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:

1. Life expectancy
2. Suitability
3. Durability
4. Ease of maintenance
5. Compatibility with substrate materials
6. 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:

1. Door hardware
2. Coating systems
3. Waterproofing systems
4. Luminaries

3.2.5 Accessible Parking Requirements

Provide accessible parking spaces per 2010 Standards for Accessible Design, Table 203.2 Parking Spaces. All accessible spaces shall be eight (8) feet wide with either a five (5) feet or eight (8) wide access aisle. All accessible spaces and access aisles shall not exceed a running or cross slope greater than 1:50 (2%).

All accessible spaces must have an accessible route to public streets or sidewalks and accessible elevators. It is recommended to cross hatch all accessible aisles and accessible routes.

3.2.6 Pedestrian Requirements

Provide safe, secure and well signed pedestrian traffic paths throughout the parking structure.

Pedestrian access at the grade level should be separated from vehicular ingress and egress. Place dedicated pedestrian aisles adjacent to vehicle entry/exit openings. Restrict access locations to increase security.

3.2.7 Parking Layout Efficiency

Parking efficiency shall be calculated considering the total parking structure non-parking structure size including stairs, elevators and non-parking ramps. Any retail space that is incorporated within the structure shall be included in the calculation. Maintain a range of 300-340 square feet per parking space. Non-parking speed ramps are discouraged.

3.2.8 Exterior Improvements

Provide site lighting, sidewalks, entry plaza/ramps, garden planting and seating areas in accordance with Grant Park/Zoo Atlanta Parking Design Concepts prepared by Atlanta City Studio dated August 30, 2016. (Refer to Exhibit B-4).

3.2.9 Masonry

Utility, mechanical and elevator rooms shall be of concrete block masonry units. Joints on the exterior sides of these rooms shall be tooled both vertically and horizontally as concave joints. Masonry walls shall be grout filled to a height of 36" above the parking deck for impact resistance.

3.2.10 Metals

Provide and install any and all miscellaneous metal items including, but not limited to, all loose metals, lintels, bollards, pipe guards, miscellaneous angles and plates and other miscellaneous fasteners, anchors and inserts. ADA compliant galvanized steel tube railings and handrails shall be utilized.

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.

3.2.11 Thermal & Moisture Protection

Caulk and seal joints with the appropriate backer material and caulk to provide a positive barrier against passage of moisture. Caulk color shall match the concrete color, both inside and outside if different, as closely as possible.

3.2.12 Openings

Provide 18 gauge hollow metal doors and hollow metal frames, fire rated as required by Code, complete with panic hardware and vision glazing at all stairwell and machine room doors. Frames shall be grout filled and secured to the surrounding structure for maximum durability.

At the top deck, provide a rain protected lobby incorporated into the structure to interface

A storefront enclosed lobby would be a desirable feature.

All hardware shall be US32D – Dull Stainless, commercial heavy duty and lock sets shall be Best with interchangeable cores.

3.2.13 Interior Finishes

Flooring in all areas shall be concrete, broom finished as appropriate to a garage.

All non-galvanized miscellaneous metal shall be primed with an appropriate primer and painted with a standard color finish coat to match the color scheme of the garage.

All fire lines will be painted red or the color required by local code.

All field applied paint will be single coat epoxy or urethane with a minimum of 3 mils dry film thickness. Provide (2) coats of primer / sealer to all concrete and exposed masonry.

Layout and stripe all parking stalls, provide handicap signs, stripe all islands and install concrete wheel stops for all stalls.

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.

3.2.14 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.

3.2.15 Stairs

Provide a minimum of two (2) stairs to meet Code-required means of egress for fire exits. It is recommended that stairs are open or glass enclosed for security.

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.

3.2.16 Signage & Wayfinding

Provide a well-designed graphics and signage system that will effectively communicate necessary information to patrons, reduce confusion, improve safety and enhance the overall user experience. Include wayfinding signs both inside and outside the facility to direct traffic to facility elevator lobby, entrances and exits.

3.2.17 Passenger Elevators

The elevator system shall be designed and installed per code. Elevators shall be located so as not to be subject to flooding.

Elevator cabs shall be constructed of satin stainless steel materials. It is highly recommended that elevators have glass backs for security. Enclosed lobbies are recommended for protection from the elements at the top level.

Elevators shall be 3,500 lb. Capacity and 5'-0" x 7'-0".

All elevator design, permitting and inspection fees shall be included in the Lump Sum Cost. Elevator cost in the Lump Sum Cost shall include a one year maintenance and service agreement during the warranty period.

3.2.18 Parking Control Equipment

Provide an Intelligent Parking System for the parking garage with clear LED lamps and information guidance display boards and ultrasonic detectors to gather vacancy information for guiding drivers to find vacant parking spaces. All conduits, wiring, and other equipment needed to make a complete and operable system shall be included in the Lump Sum Cost.

Entrance controllers shall be capable of issuing timed parking entrance passes or operating by proximity card reader.

Payment kiosks shall be on each floor of the garage in the area of the elevators and stairwells. Payment kiosks shall be capable of accepting cash, credit/debit cards or tokens. Payment kiosks will issue timed exit tokens after insertion of the parking pass and payment of the fee or of a validated parking pass. Payment kiosks shall be networked to allow for real time accounting.

Exit controllers shall be capable of operating by payment of timed exit token or by proximity card reader.

3.2.19 Fire Suppression System

The parking garage shall incorporate a complete fire suppression system meeting code requirements for this type of facility. The City's preference would be a non-sprinkled system consisting of a dry standpipe system with an FDC on each floor.

Provide Fire Department Connections (FDC's) outside the garage as required by Code.

Provide wall mounted fire extinguishers in secure cabinets.

All design, permitting and inspection fees for the fire suppression system shall be included in the Lump Sum Cost.

3.2.20 HVAC System

The facility shall be designed to meet natural ventilation requirements in accordance with the applicable code. If necessary, utility and elevator rooms may be cooled by independent split

3.2.21 Plumbing System

Provide a complete plumbing system including sanitary and storm risers, drains and piping for all roof levels and parking levels and potable water supply to all fixtures and to hose bibbs at each parking level.

Incorporate a rainwater harvesting system for the capture, diversion and storage of rainwater for the purpose of stormwater abatement and landscape irrigation. Rainwater system shall be configured with below ground and/or above ground storage tanks and indoor controls. Include Municipal make-up supply to supplement storage capacity. Rainwater harvesting system shall be designed in accordance with Georgia Rainwater Harvesting Guidelines.

3.2.22 Electrical System

Provide complete electrical system to include all conductors, conduits, wiring devices, surge suppression and power per Code.

The parking garage shall incorporate lightning protection and grounding systems.

All fixtures in the parking garage shall be LED's controlled by day light sensors.

All Site Lighting shall be provided by the Design/Builder in coordination with Georgia Power Company.

3.2.23 Communications

Provide Ring Down Emergency Telephones at each payment kiosk

3.2.24 Electronic & Security System

Provide an interior and exterior CCTV system for visual assessment and archiving of parking garage 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.

The parking garage shall incorporate complete stand-alone fire detection and alarm systems meeting code requirements for this type of facility.

3.2.25 Noise Abatement/Mitigation Plans

Provide and plan for temporary noise abatement/mitigation measures during the construction process. Analyze and coordinate with Zoo Atlanta personnel to determine appropriate measures to be taken during construction to minimize the effects of noise, dust, lights and vibration on zoo animals. Construction deliveries shall be staged to minimize adverse effects on wildlife habitat.

3.3 General Structural Design Criteria

3.3.1 Purpose and Content

This section describes the minimum structural engineering design criteria for the Grant Park Parking Garage. 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), 2012 Edition including 2014 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-06
- + ACI 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:

1. Roof snow loads.
2. Roof dead loads.
3. Roof wind
4. 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. 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

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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 concrete 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 construction shall be designed to support Add Alternate No.1 and/or No.2 in addition to the green roof elements.

3.4 General Building Mechanical Service Design Criteria

3.4.1 General

All design must conform to the local building codes, including the 2012 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:

1. Protect equipment and piping from overheating or freezing.
2. 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:

1. 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.

2. 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.
 1. Indicate the airflow through the various rooms and duct systems on an air-balance diagram as part of the construction documents.
 2. 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:

1. Each space with space identification.
2. Ventilation air flow in cubic feet per minute (cfm) for each space, with supply, exhaust and transfer identified.
3. Ventilation rate in air changes per hour and design basis.
4. Infiltration or exfiltration rate in cfm.
5. Positive or negative pressurization criteria.
6. All ductwork, fans and air handlers.
7. Fan and air handler identification numbers (IDs).
8. Fan and air handler capacities in cfm.
9. Duct air flows in cfm.
10. Pressure relief dampers.
11. Control dampers.
12. 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:

13. Piping details.
14. Air handling units and fans installation details.
15. Fire damper location

Codes and Standards:

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

- + International Building Code, 2012 Edition, with Georgia Amendments (2014)
- + International Fire Code, 2012 Edition, with Georgia Amendments (2014)
- + International Plumbing Code, 2012 Edition, with Georgia Amendments (2014)
- + International Mechanical Code, 2012 Edition, with Georgia Amendments (2014)
- + International Fuel Gas Code, 2011 Edition, with no Georgia Amendments
- + International Energy Conservation Code, 2009 Edition, with Georgia Supplements and Amendments (2011) (2012).
- + The National Electrical Code (NEC).
- + 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,

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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:

1. Heat transmission coefficients.
2. Space heat gain from internal loads.
3. Space heating and cooling loads
4. Ductwork pressure loss. Ductwork shall be sized for a friction loss of 0.08" wc/100 ft.
5. Fan motor sizing.
6. Heating and cooling equipment sizing.
7. Condensation control.
8. 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:

1. Provide adequate clearance for equipment installation, operation, and maintainability and mark clearance areas on plans.
2. Position air-handling units so filters and coils can be pulled and removed from the building without demolishing permanent walls or structures.
3. Mount equipment and panels on housekeeping pads.
4. 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.

5. When equipment is not mounted on the floor, provide service platforms with suitable access.
6. Provide ladders, catwalks, and hatches for accessing and removing equipment.
7. Rooftop equipment requiring service must be located ten feet from the roof edge or fall protection provided.
8. Provide lifting lugs for removing equipment.
9. 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.
10. Layout piping close to walls for support, purposes particularly in areas with high ceilings.
11. 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.
12. Check alternate supplies when determining space requirements. Consider the need for removing the fan shaft if using externally isolated units.
13. 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.
14. Provide flexible connections so piping can be easily assembled and disassembled.
15. Allow ample space for diaphragm-, cylinder-, and motor-operated valve and gate actuators.
16. Provide adequate clearance for rising-stem valves and gates.
17. Provide ducted air supply and exhaust in open pits requiring regular maintenance.
18. 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:

19. Include provisions for draining above grade gravity lines.
20. Provide unions or flanges where required for disassembling piping and equipment.
21. 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.
22. Design sufficient flexibility into piping systems to allow for thermal expansion and contraction without using expansion joints.
23. 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.

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.

6. 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.
7. 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

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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.
- 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.

- a. 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.
- b. Coordination with other Disciplines.

3.4.3 Plumbing

3.4.3.1 Plumbing System Functions

The plumbing system shall perform the following functions:

1. Provide comfortable and odorless condition in buildings and areas intended for human occupancy.
2. Provide sewer and potable water service for sanitary fixtures.
3. 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:

1. 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:

1. Sanitary-fixture drains.
2. Plumbing-fixture water supplies (hot and cold).
3. Water supply piping to hose faucets and hose valves.
4. Pressure reducing stations or pressure boosting systems.
5. Backflow prevention devices.
6. Vent piping.
7. Floor drains and piping.
8. Isometric or riser diagrams for water supply and drainage systems.

9. 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, 2012 Edition, with Georgia Amendments (2014)
- + International Fire Code, 2012 Edition, with Georgia Amendments (2014)
- + International Plumbing Code, 2012 Edition, with Georgia Amendments (2014)
- + International Mechanical Code, 2012 Edition, with Georgia Amendments (2014)
- + International Fuel Gas Code, 2011 Edition, with no Georgia Amendments
- + International Energy conservation Code, 2009 Edition, with Georgia Supplements and Amendments (2011) (2012).
- + The National Electrical Code.
- + 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.

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Plumbing Calculations: When requested by the Owner, calculations shall be submitted. Calculations of the following items are required for plumbing:

- ii. 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
- iii. 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.
- iv. 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:

- ii. Locate sumps at depths sufficient for properly draining gravity lines. Inform the structural designer of sump requirements.
- iii. 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.
- iv. 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.
- v. 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.
- vi. Water heaters shall be designed with heat traps in the piping or integral to the heater.
- vii. Maintain water mains to a minimum of 3/4-inch diameter in long horizontal runs.
- viii. Locate cleanout in accessible areas for services and no less than 18 inches from any wall.
- ix. 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:

1. Provide power to all equipment and facilities services.
2. Standby power generation to service vital loads.
3. Equipment and personnel protection.
4. 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 Sheet:

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

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:

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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 11 inch 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:

1. Load summaries for each switchgear, substation, MCC, transformer, and panelboard.
2. System short circuit analyses.
3. System coordination analyses.
4. Voltage-drop calculations for feeder and branch circuits that are heavily loaded or over 500 feet long.
5. 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.

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4.1 Project Meetings

The City's Representative shall schedule weekly progress meetings. The progress meetings will be held at least weekly and may be scheduled at a more frequent interval by the City's Representative if necessary. Progress meetings shall be held at a location designated by the City's Representative.

Progress meetings shall be attended by the City and Design/Builder as appropriate to the agenda, suppliers as appropriate to the agenda and others as required.

The meeting agenda shall generally include review and approval of minutes of previous meeting, review of work progress since previous meeting, field observations, problems, and conflicts, problems which impede Construction Schedule, review of off-site fabrication and delivery schedules, corrective measures and procedures to regain project schedule, revisions to Construction Schedule, progress and schedule of the preceding work period, coordination of schedules, review of submittal schedules and status, status of requests for information, maintenance of quality standards, pending changes and substitutions, and other business.

4.2 Cooperation with Other Contractors and Forces

During progress of work under this Agreement, it will be necessary for other contractors and persons employed by the City to work in or about the Project. The City reserves the right to put such other contractors to work and to afford such access to the Site of the work to be performed hereunder at such times as the City deems proper. The Design/Builder shall not impede or interfere with the work for such other contractors engaged in or about the Services and shall so arrange and conduct their work that such other contractors may complete their work at the earliest date possible.

The City's Representative will decide any disputed questions regarding the performance of the Services, access and cleaning up of the site, and priority in all relations between the Design/Builder and other contractors in utility companies, and maintenance crews.

The Design/Builder shall cooperate with all other contractors requiring access to the Services for the purpose of maintenance of security, temporary facilities, cleaning of the site, and like matters requiring common effort.

4.3 Working Drawings, Shop Drawings, Data on Material And Equipment, Samples, and Licenses

4.3.1 General

Design/Builder shall submit to the City for review and exception, if any, such working Drawings, Shop Drawings, test reports and data on Materials, licenses, and Equipment (hereinafter in this article called data), and material samples (hereinafter in this article called samples) as are required for the proper control of Work, including but not limited to, those working Drawings, Shop Drawings, data and samples specifically required elsewhere in the Specifications and Agreement Documents. Submittals are required for any product that becomes a part of, or affects, the permanent Work.

If requested by the City the Design/Builder will submit engineering calculations at no additional cost to the Contract.

Data on Materials and Equipment include, without limitation, Materials and Equipment lists, catalog data sheets, cuts, diagrams and similar descriptive material. Materials and Equipment lists shall give, for each item thereon, the name and location of the Supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.

It is the duty of Design/Builder to check all Drawings, data and samples prepared by or for it before submitting them for review. Drawings and schedules shall also be checked and coordinated with the Work of all trades involved. Drawings and other submittals originating from Subcontractors will be reviewed and checked similarly by Design/Builder. Pursuant to this required review, Design/Builder shall indicate its approval, before they are submitted for review by the City, by affixing its stamp of approval, properly initialed and dated. All submittals shall be referenced to the applicable item, section or division of the Specifications.

The City's review of Drawings, data and samples submitted by Design/Builder will cover only general conformity to the Specifications, external connections, and dimensions which affect the installation. The City's review and exception, if any, will not constitute an approval of dimensions, quantities, and details of the Material, Equipment, device, or item shown.

Design/Builder shall not begin any of the Work covered by a Drawing, data, or a sample returned for correction until a revision or connection thereof has been reviewed and returned to it.

The CPM Schedule shall include respective dates for the submission of shop and work Drawings, the beginning of manufacture, testing, and installation of Materials, Supplies, and Equipment.

4.3.2 Submittal Review

The Design/Builder shall provide Project Document Tracking and Control Systems.

Acceptable submittals will be marked "No Exceptions Taken." Submittals requiring minor connections before the Material or Equipment is acceptable will be marked "Make Corrections Noted." Design/Builder may order, fabricate, or ship the items included in the submittal, provided the indicated connections are made. Drawings must be resubmitted for review prior to installation of Equipment or use of Materials, unless otherwise directed in writing by the City.

Submittals marked "Amend and Resubmit" must be revised to reflect required changes, and the initial review procedure repeated.

The "Rejected- See Remarks" notation is used to indicate Materials or Equipment that are not acceptable. Upon return of a submittal so marked, Design/Builder shall repeat the initial review procedure utilizing acceptable Materials or Equipment.

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Drawings on other submittals not bearing the City's "No Exceptions Taken" notation shall not be issued to Subcontractors or utilized for construction purposes. No Work shall be done or equipment installed without a drawing or submittal bearing the "No Exceptions Taken" notation. Design/Builder shall maintain at the job site a complete set of Drawings and other submittals bearing the City's stamp.

In the event Design/Builder obtains the City's approval for the use of equipment other than that which is called for in the Agreement Documents, Design/Builder shall, at its own expense and using methods approved by the City, make any changes to structures, piping and electrical work that may be necessary to accommodate this equipment. If Design/Builder substitutes any specified item of Material or Equipment with another item of Design/Builder's choosing as an "or equal" item, Design/Builder warrants the accuracy and adequacy of the design and performance of the substituted item and further warrants that it has exercised due diligence to ensure that the substituted item will function properly as a component into the integrated Project of which it is a part. Design/Builder shall submit all Drawings and schedules sufficiently in advance of construction requirements to provide no less than thirty (30) calendar days for checking and appropriate action. The review of Drawings and schedules will be general, and shall not be construed: (a) as permitting any departure from the Agreement requirements; (b) as relieving Design/Builder of responsibility for any errors, including details, dimensions, and Materials; and (c) as approving departures from details furnished by the City, except as otherwise provided herein.

4.3.3 Shop Drawings

When used in the Agreement Documents, the term "Shop Drawings" shall be considered to mean fabrication drawings, wiring and control diagrams, cuts, or entire catalogs, pamphlets, descriptive literature, and performance and test data. The Drawings shall be submitted using standard transmittal forms in accordance with detailed instructions furnished by the City. A separate transmittal sheet shall be used for reference to each item, section or division of the Specifications. Design/Builder shall submit six (6) sets of each Shop Drawing for review. On electrical and instrumentation and control submittals Design/Builder shall submit seven (7) copies of each for review.

Each Shop Drawing shall include the following:

- (1) Number and title of the submittal;
- (2) Date of Drawing or revision;
- (3) Name of Project;
- (4) Name of Design/Builder and/or Subcontractor submitting Drawing and with its seal of approval
- (5) Specifications title and number; and
- (6) Clear identification of contents and location of the Work.

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Drawings for Work on utility facilities, streets and other facilities, which are constructed for owners other than the City, shall be coordinated so that information required by these owners is included on the Shop Drawings for their facilities.

If Drawings show variations from Agreement requirements, Design/Builder shall describe such variations in its letter of transmittal. If acceptable, proper adjustment in the Agreement shall be implemented where appropriate. If Design/Builder fails to describe such variations, it shall not be relieved of the responsibility for executing the Work in accordance with Agreement, even though such Drawings have been reviewed.

If the Drawings or schedules as submitted describe variations and show a departure from the Agreement requirements which the City finds to be in the interest of the City and to be so minor as not to involve a change in Agreement Price or Time, the City may return the reviewed Drawings without noting an exception.

If no exceptions are taken by the City, each of the Shop Drawings will be identified by being so stamped and dated. Shop Drawings stamped "Rejected- See Remarks" and with required connections shown, will be returned to Design/Builder for correction and re-submittal. On re-submittals, Design/Builder shall direct specific attention, in writing or on resubmitted Drawings, to revisions other than the corrections requested by the City on previous submissions. Design/Builder shall make any corrections required by the City. At least two (2) copies of Drawings or data submittals will be returned to Design/Builder.

When the Drawings or data submittals have been completed to the satisfaction of the City, Design/Builder shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the City.

After final review in which there are no exceptions noted or referenced, and before final payment is made, Design/Builder shall furnish to the City two (2) sets of record Shop Drawings, all clearly revised and completed and brought up to date, showing the permanent construction as actually made and marked FINAL/AS- BUILTS. One (1) set of such Shop Drawings shall be submitted electronically in pdf format on CD. The other set shall be a complete paper print.

Design/Builder shall be responsible for and bear all cost of damages which may result from the ordering of any Material or from proceeding with any part of Work prior to the review, without exception, by the City of the necessary Shop Drawings.

4.3.4 Working Drawings

When used in the Agreement Documents, the term "Working Drawings" shall be considered to mean Design/Builder's plans, including a detailed narrative, for temporary structures such as temporary bulkheads, support of open cut excavation, support of

utilities, ground water control systems, forming and false work; for underpinning; and for such other work as may be required for construction but does not become an integral part of the Project.

Copies of Working Drawings shall be submitted to the City where required by the

Agreement Documents or requested by the City and shall be submitted at least thirty (30) calendar days in advance of their being required for Work.

Working Drawings shall be signed and sealed by an engineer licensed to practice in the State of Georgia and shall convey, or be accompanied by, calculation of other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior to commencing such Work, Working Drawings must have been reviewed to the satisfaction of the City, and each Working Drawing identified by the City with the stamp of "No Exception Taken." Review of the Working Drawings by the City will not relieve Design/Builder in any way from its responsibility with regard to the fulfillment of the terms of Agreement. All risks of error are assumed by Design/Builder. The City and the City's representative shall have no responsibility therefor.

4.3.5 Record Agreement Drawings

Design/Builder shall keep at least one (1) record copy of all Agreement Documents, reference documents, and all technical submittals at the Site in good order and annotated to show all changes made during the construction process. Record drawings shall be updated and kept current on a monthly basis by Design/Builder. The record drawings will be reviewed monthly by the City prior to approval of Design/Builder's monthly Payment Application. Final "as-built" plans of the Work, shall be satisfactory to the City, and will be provided at Design/Builder's expense within thirty (30) days following Substantial Completion of the Work or any portion thereof. The provision of such as-built documents satisfactory to the City shall be an express condition precedent to final payment. Upon request, the City will provide one (1) set of reproducible of the original Agreement Drawings, at no cost, to Design/Builder within two weeks subsequent to the execution of this Agreement.

4.3.6 Samples

Design/Builder shall furnish at no additional cost, for the review of the City, samples required by the Agreement Documents or requested by the City. Samples shall be delivered to the City as specified or directed. Design/Builder shall prepay all shipping charges on samples. Materials or Equipment for which samples are required shall not be used in Work until approved by the City.

Each sample shall have a label indicating:

- (1) Name of Project;
- (2) Name of Design/Builder and Subcontractor;
- (3) Material or Equipment Represented;
- (4) Place of Origin;
- (5) Name of Producer and Brand (if any); and

(6) Location in Project.

Design/Builder shall prepare a transmittal letter for each shipment of samples containing the information required above. It shall enclose a copy of this letter with the shipment and send a copy of this letter to the City. Review of a sample shall be only for the characteristics or use named in such review and shall not be construed to change or modify any Agreement requirement. Substitutions will not be permitted unless they are considered to be to the City's best interest.

Approved samples not destroyed in testing shall be sent to the City or stored at the Site of the Work. Approved samples of the hardware in good condition will be marked for identification and may be used in the Work. Materials and Equipment incorporated in the Work shall match the approved samples. Samples which failed testing or were not approved will be returned to Design/Builder at its expense if so requested at time of submission.

Design/Builder will provide architectural samples to the City in a composite color board format for review and color coordination. These samples shall be of the precise Material and color specified and of sufficient size for comparison to other material samples.

Custom colors and coatings may be required to complete the Project within acceptable architectural standards. Design/Builder shall comply with the Architect's selection and provide Materials that precisely match the approved samples.

4.3.7 Operation and Maintenance Data

Manuals for equipment and systems shall be prepared by equipment manufacturer or system supplier. Manuals for system operation and maintenance shall be prepared by the Design/Builder. Five (5) copies of the manuals shall be provided.

4.3.7.1 Sequencing and Scheduling

Final manuals shall be submitted through the following procedure:

1. Manuals: Submit prior to shipment date for equipment, system, subsystem, or component.
Include copy of warranties, Bonds, and service agreements if specified.
2. Final Manuals: Submit not less than 30 days prior to equipment or system field testing or startup.

Manuals for Materials and Finishes shall be submitted through the following procedure:

1. Manuals: Submit at least 15 days prior to request for final inspection.
2. Final Manuals: Submit within 10 days after final inspection.

System Operation and Maintenance Manuals shall be submitted through the following procedure:

1. Manuals: Submit not less than 60 days prior to facility startup.
2. Final Manuals: Submit not less than 30 days prior to facility startup.

4.3.7.2 Major Equipment O&M Manuals

This section describes the equipment operation and maintenance manuals and the treatment plant operation and maintenance manual. Five (5) copies of the manual(s) shall be provided.

For each item of equipment or system included in the Project, a list of proposed manuals shall be submitted to the City. The manuals shall follow the following format.

1. Size: 8-1/2 by 11 inches.
2. Manufacturer's printed data, or neatly type written.
3. Three-hole punch data for binding and composition; arrange printing so that punched holes do not cover data.
4. Provide separator for each product or piece of equipment with typed description of product and major component parts.
5. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE MANUAL, VOLUME NO. _ OF _," if applicable, and list:
 - A. Project title.
 - B. Designate the system or equipment for which it is intended.
 - C. Identity of separate structure as applicable.
 - D. Identity of general subject matter covered in manual.
6. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs.
7. Table of contents neatly typewritten, arranged in a systematic order:
 - A. Design/Builder, name of responsible principal, address, and telephone number.
 - B. List of each product required to be included, indexed to content of each volume.
 - C. List with each product: name, address, and telephone number of subcontractor, supplier, installer, and maintenance Design/Builder, as appropriate.
 - D. Identify area of responsibility of each.
8. Provide local source of supply for parts and replacement. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.

4.4 Extended Shift, Weekend and Holiday Work

The City observes the following holidays:

New Year's Day, Martin Luther King's Birthday, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day and following Friday, and Christmas Day. Should the Design/Builder deem it necessary to work on Saturdays, Sundays, holidays or longer than eight hours (8) per shift in order to comply with the

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construction schedule, or because of any emergency, the Design/Builder shall request permission of the City's Representative to do so at least seven (7) calendar days in advance.

4.5 Construction Facilities and Temporary Controls

4.5.1 Shop Drawings

Administrative submittals consisting of copies of permits and approvals for construction shall be submitted as required by laws and regulations and governing agencies.

Shop Drawings of temporary utility submittals shall include:

1. Electric power supply and distribution plans.
2. Water supply and distribution plans.
3. Sanitary facilities.
4. Drainage plans.

Shop Drawings of temporary construction submittals shall include:

1. Access Roads: Routes, cross-sections, and drainage facilities.
2. Parking area plans.
3. Design/Builder's field office, storage yard, and storage building plans including gravel surfaced area.
4. Fencing and protective barrier locations and details.
5. The City Representative field office plans.
6. Staging area location plan.
7. Traffic Control and Routing Plans: As specified herein, and proposed revisions thereto.
8. Plan for maintenance of existing plant operations.

Shop Drawings of temporary control submittals shall include:

1. Noise control plan.
2. Plan for disposal of waste materials and intended haul routes.

4.5.2 Mobilization

Mobilization shall include, but not be limited to, these principal items:

1. Obtaining required permits.
2. Moving Design/Builder's field office and equipment required for first month operations onto site.
3. Installing temporary construction power, wiring, and lighting facilities.
4. Providing on-site communication facilities, including telephones.
5. Providing on-site sanitary facilities and potable water facilities as specified and as required by laws and regulations and governing agencies.

6. Arranging for and erection of Design/Builder's work and storage yard.
7. Posting OSHA required notices and establishing safety programs and procedures.

4.5.3 Design/Builder's Use of Premises

Lands owned by which Design/Builder shall perform the work are as shown on the Drawings.

4.5.4 Temporary Utilities

4.5.4.1 Power

1. The Design/Builder shall be responsible for obtaining temporary electric power service, providing metering equipment, and paying all costs for the electric power used during the Contract period.
2. Cost of electric power used in performance and acceptance testing will be borne by the Design/Builder

4.5.4.2 Lighting

1. Provide temporary lighting at least to meet all applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the work.

4.5.4.3 Cooling and Ventilating

1. Provide as required to maintain adequate environmental conditions to facilitate progress of the work, to meet specified minimum conditions for the installation of materials, and to protect materials, equipment, and finishes from damage due to temperature or humidity.
2. Provide adequate forced air ventilation of enclosed areas to cure installed materials, to dispense humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.
3. Pay all costs of installation, maintenance, operation, removal, and fuel consumed.

4.5.4.4 Water

1. Design/Builder shall be responsible for obtaining construction water at the site
2. Temporary facilities and piping required to bring water to the point of use shall be provided and shall be removed when no longer needed.
3. Necessary water required for testing, equipment, tanks or basins, and piping shall be provided.
4. The City shall locate utilities on plans but the Design/Builder shall be responsible for all associated costs.

4.5.4.5 Sanitary and Personnel Facilities

1. Facilities for the City Representative, Design/Builder's employees, subcontractors, and all other on-site employer's employees shall be provided and maintained.

4.5.4.6 Protection

1. Adequate firefighting equipment capable of extinguishing incipient fires shall be provided and maintained on site. All fire protection equipment shall be in accordance with National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).

4.6 Protection of Work and Property

1. The Design/Builder shall maintain continuous service of all existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and all other utilities encountered along the line of work, unless other arrangements satisfactory to owners of said utilities have been made.
2. Where completion of Work requires temporary or permanent removal and/or relocation of an existing utility, the Design/Builder shall coordinate all activities with owner of said utility and perform all work to their satisfaction.
3. The Design/Builder shall protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
4. The Design/Builder shall keep fire hydrants and water control valves free from obstruction and available for use at all times.
5. The Design/Builder shall provide and maintain temporary security fences to protect the work and products not yet installed.

4.6.1 Barricades and Lights

1. The Design/Builder shall furnish and erect such barricades, fences, lights and danger signals and shall provide such other precautionary measures for the protection of persons or property and of the work as necessary. Barricades shall be painted in a color that will be visible at night. From sunset to sunrise, the Design/Builder shall furnish and maintain at least one light at each barricade and sufficient numbers of barricades shall be erected to keep vehicles from being driven on or into any work under construction.
2. The Design/Builder shall provide barricades and lights as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of Design/Builder's employees, other employer's employees, and others who may be affected by the work.
3. The Design/Builder shall provide barricades and lights to protect existing facilities and adjacent properties from potential damage.
4. The Design/Builder shall locate barricades and lights to enable access by facility operators and property owners.
5. The Design/Builder shall provide barricades and lights to protect streets, roads, highways, and other public thoroughfares that are closed to traffic by

effective barricades with acceptable warning signs.

4.6.2 Trees and Plantings

1. The Design/Builder shall protect from damage and preserve trees, shrubs, and other plants outside the limits of the work and within the limits of the work which are designated to remain undisturbed.
2. The Design/Builder shall employ hand excavation as necessary to prevent tree injury.
3. The Design/Builder shall not stockpile materials or permit traffic within drip lines of trees.
4. The Design/Builder shall provide and maintain temporary barricades around trees.
5. The Design/Builder shall water vegetation as necessary to maintain health.
6. The Design/Builder shall cover temporarily exposed roots with wet burlap, and keep the burlap moist until soil is replaced mound the roots.
7. The Design/Builder shall dispose of removed trees in a legal manner off the site, unless approved by the City.
8. In the event of damage to bark, trunks, limbs, or roots of plants that are not designated for removal, the Design/Builder shall treat damage by corrective pruning, back tracing, application of a heavy coating of tree paint, and other accepted horticultural and tree surgery practices.
9. The Design/Builder shall replace each plant that dies as a result of construction activities.

4.6.3 Finished Construction

1. The Design/Builder shall protect finished floors and concrete floors exposed as well as those covered with composition tile or other applied surfacing.

4.6.4 Waterways

1. The Design/Builder shall keep ditches, culverts, and natural drainage continuously free of construction materials and debris.

4.6.5 Dewatering

1. The Design/Builder shall construct, maintain, and operate cofferdams, channels, flume drains, sumps, pumps, or other temporary diversion and protection works.
2. The Design/Builder shall furnish materials required, install, maintain, and operate necessary pumping and other equipment for the environmentally safe removal and disposal of water from the various parts of the work. Maintain the foundations and parts of the work free from water. Construction dewatering shall be performed and maintained to provide stable subgrades, excavation slopes, and protection of existing structures and utilities and all ongoing new construction. Dewatering systems shall have adequate backup capacity and power to prevent loss of dewatering critical to the protection and stability of the above listed items.

4.6.6 Temporary Controls

4.6.6.1 Air Pollution Control

Air pollution from construction operations shall be minimized.

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1. Burning of waste materials, rubbish, or other debris shall not be permitted on or adjacent to the site unless approved by the City.
2. Operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust shall be conducted. Give unpaved streets, roads, detours, or haul roads used in the Construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
3. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as the need no longer exists.

4.6.6.2 Noise Control

The Design/Builder shall take every action possible to minimize the noise caused by their operation.

When required by agencies having jurisdiction, noise-producing work shall be performed in less sensitive hours of the day or week as directed by the City's Representative.

The Design/Builder shall provide equipment that operates with the least possible noise. The use of noisy equipment is prohibited. Hoists and compressor plants shall be electrically operated unless otherwise permitted. The air intake of compressors shall be equipped with silencers, and machinery operated by gearing shall be provided with a type of gearing designed to reduce noise to a minimum. Internal combustion engines shall be equipped with mufflers in good order.

Noise generated by mobile construction equipment, stationary construction equipment, other equipment involved in the construction of the work shall not exceed the decibel levels indicated below. Noise generated by mobile and stationary construction equipment will be measured three to 6 feet from building lines, and on the A weighing network of Type-2 general purpose sound level meter set at fast response.

	Combined Residential and Commercial
Allowable Sound Levels of Mobile Construction Equipment: From 7 a.m. to 10 p.m., Monday thru Saturday, Except Legal Holidays	85 Design/Builder A
- At times other than those listed above	70 Design/Builder A

<p>Allowable Sound Levels of Stationary Construction Equipment:</p> <p>-From 7 a.m. to 10 p.m., Monday thru Saturday, Except Legal Holidays</p> <p>- At times other than those noted above</p>	<p>70 Design/Builder A</p> <p>60 Design/Builder A</p>
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Design/Builder shall assure compliance by measuring noise levels as may be required.

4.6.6.3 Water Pollution Control

1. Sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers shall be diverted. Necessary actions shall be taken to prevent overflow to an existing waterway.
2. Prior to commencing excavation and construction, the Design/Builder shall obtain the City Representative's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and stormwater flow, including dewatering pump discharges.
3. Volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains shall not be disposed. Disposal of wastes into streams or waterways shall be prohibited. Acceptable containers for collection and disposal of waste materials, debris, and rubbish shall be provided.

4.6.6.4 Erosion, Sediment, Dust, and Flood Control

1. The Design/Builder shall provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect work and existing facilities from flooding during construction period.
2. The Design/Builder shall at all times control the generation of dust by their operations. Control of dust shall be accomplished by water sprinkling or by other methods approved by the City's Representative.
3. Erosion and sediment controls shall be designed to handle peak runoff resulting from 25- year, 24-hour storm event.
4. Temporary stormwater conveyances shall be sized based on procedures presented in U.S. Department of Agriculture "Urban Hydrology for Small Watersheds," Soil Conservation Service Engineering Technical Release No. 55, 1986.

4.6.6.5 Temporary Storage Yards

1. Temporary storage yards shall be constructed for storage of products that are not subject to damage by weather conditions.

4.6.6.6 Access Roads and Detours

1. Access roads shall be constructed, as required, within Project limits and as shown on the Drawings. Alignments for new routes must be approved by the City.
2. All existing roads and access routes shall be maintained during construction.

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3. Drainage ways shall be maintained. Culverts shall be constructed to allow water to flow beneath access roads. Corrosion-resistant culvert pipe of adequate strength to resist construction loads shall be provided.
4. Gravel, crushed rock, or other stabilization material shall be provided to permit access by all motor vehicles at all times.
5. Road grade and crown shall be maintained to eliminate potholes, rutting, and other irregularities that restrict access.
6. Detours and other operations affecting traffic and access shall be coordinated with the City. At least 72-hour notice of operations that will alter access to the site shall be given to the City.
7. Where access roads cross existing fences, gates shall be installed and maintained.
8. Upon completion of construction, ground surface disturbed by access road construction shall be restored to original grade. Damaged or broken culverts shall be replaced with new culvert pipe of same diameter and material.

4.6.6.7 Parking Areas

Vehicular parking shall be controlled to preclude interference with public traffic or parking, access by emergency vehicles, or construction operations. Parking facilities for personnel working on the Project shall be provided. No employee or equipment parking shall be permitted on existing roads.

4.6.6.8 Cleaning During Construction

All floors (basins, tunnels, platforms, walkways, roof surfaces) shall be swept weekly and debris shall be disposed.

Approved containers for collection and disposal of waste materials, debris, and rubbish shall be provided. At least at weekly intervals, such waste materials, debris, and rubbish shall be disposed offsite.

At least weekly, the entry drive and roadways shall be brush swept, and all other streets and walkways affected by work and where adjacent to work.

4.6.6.9 Burning

No burning of waste shall be allowed.

4.7 Existing Utilities

4.7.1 Verification of the Location of the Existing Utilities

Representations of existing utilities, facilities, and structures in the Contract Documents are based upon the best available information. The City and the City's Representative will not be responsible for the completeness or accuracy thereof nor for any deductions, interpretations, or conclusions drawn therefrom.

The Design/Builder shall verify to their own satisfaction by test pit or other means, the actual location of existing utilities prior to construction in their vicinity.

1. Should the Design/Builder in the course of their operations encounter any underground utilities the presence of which was

not previously known, or a different type than shown, he shall immediately notify the City's Representative and take all necessary precautions to protect the utility and maintain continuance of service until said utilities can be adjusted by the appropriate owners.

2. Design/Builder will notify all public utility corporations, jurisdictional agencies, or other owners to make all necessary adjustments to public utility fixtures and appurtenances within or adjacent to the limits of construction. Delays and additional cost resulting from a failure of the Design/Builder to notify the utility or to provide adequate notice to the utility shall be at no additional cost to the City.
3. Damage caused to utilities either directly or indirectly by the Design/Builder shall be repaired and the facilities restored to their original condition to the satisfaction of the City's Representative and the utility owner, at no additional cost to the City.
4. The existing piping and utilities that interfere with new construction shall be rerouted as required. Before any piping and utilities not shown on the Drawings are disturbed, the

Design/Builder shall notify the City's Representative of the location of the pipeline or utility and shall reroute or relocate the pipeline or utility.

4.7.2 Work in Vicinity of Existing Utilities

At least three (3) working days prior to starting work in the vicinity of utility structures and appurtenances, Design/Builder shall notify City's Representative and appropriate utility companies and jurisdictional agencies. Design/Builder shall support and protect all utility structures and appurtenances in accordance with the requirements of the Agreement Documents and the utility companies, and shall take any other steps necessary to protect the structures from disturbance or damage.

A substitute City of Atlanta Ordinance adopted March 13, 1978 requires Design/Builder to contact each gas company maintaining underground gas pipes or facilities within the city limits prior to the start of excavation work by blasting or mechanized excavating equipment.

4.7.3 Access to Utilities Facilities

The Design/Builder shall at all times permit free and clear access to the various affected facilities by personnel of the utility owners or operators who are working within the limits of work for the purpose of inspection, maintenance, or providing additional service requirements, and the construction of new facilities. When personnel of the utility owners or operators are working within the limits of work to be performed by the Design/Builder, the Design/Builder will not be relieved of their responsibility for the maintenance and protection of such facilities.

4.8 Construction Schedule

Timely performance is of the essence on this Project. The Design/Builder may complete the Project or any part of the Project earlier than is stipulated in the Contract requirements. The Design/Builder may schedule their work to complete earlier than required by the Contract or stipulated in the approved schedule,

However, under no circumstances shall the Design/Builder be entitled to added compensation for delays, which occur during the originally stipulated contract period.

The City has purchased the entire scheduled time period by virtue of this Contract and further stipulates that only those delays which are approved by the City will be considered for adjustment and only to the extent that they delay the work past the originally contractually stipulated milestones.

4.8.1 Procedures

The Work under this Contract shall be planned, scheduled, executed, reported and accomplished using the Precedence Diagramming Critical Path Method (hereinafter referred to as CPM). The work required by this section includes the requirement to prepare, maintain, and update all detailed schedules as described in this section. The CPM Schedules shall be prepared in such a manner as to permit the orderly planning, organization, and execution of the Work and be sufficiently detailed to accurately depict all the Work required by the Contract. Design/Builder shall resource (labor, material and equipment) and cost load its Schedule as specified herein.

Design/Builder hereby agrees that in the process of preparing its baseline schedule and monthly updates, it will consult with all key Subcontractors and suppliers to assure concurrence with the feasibility and achievability of Design/Builder's planned start dates, sequencing, durations, and completion dates. A copy of the computer input files, XER format shall be submitted on CD-R with each submittal. The procedures, technical details and Design/Builder's participation and responsibilities shall be as hereinafter described.

Design/Builder is responsible for determining the sequence of activities, the time estimates for the detailed construction activities and the means, methods, techniques and procedures to be employed. The Schedules identified herein shall represent the Design/Builder's best judgment of how it will prosecute the Work in compliance with the Contract requirements. Design/Builder shall ensure that the Schedule is current and accurate and is properly and timely monitored, updated and revised as Project conditions may require and as required by the Contract Documents.

Design/Builder's construction schedule shall be prepared using the latest version of Primavera Project Planner (P6) for Windows. Any and all costs incurred by the Design/Builder in researching, training and/or educating its personnel in CPM and/or P6 (or the utilization of outside consultants) shall be part of the Design/Builder's cost proposal and not reimbursed separately by the City

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1. The Project Network Schedule Diagram, mathematical analysis, written narrative and monthly updates will be reviewed by either the City's Representative or an independent consultant selected by the City's Representative. Items will be reviewed for compliance with these Specifications and accurate reporting by the Design/Builder of work in place, resource loading and work activity durations.
2. Submit to the City's Representative an accepted final CPM Construction Schedule and Final Schedule of Values including Allowance Items, allocated to the CPM Schedule activities within 45 days of the Notice to Proceed. Requirements for the final CPM Construction and Final Schedule of Values are further described hereinafter. Design/Builder's Application for Payment will not be approved until the final CPM Schedule and Schedule of Values have been accepted. The contract Baseline Schedule submittal shall not show any progress until it is accepted by City's Representative

4.8.2 Standards

Definition: CPM, as required by this Section, shall comply with the standards outlined in the Associated General Design/Builders' publication, "Construction Planning and Scheduling" unless specifically changed by this Section.

CPM Construction Schedule: The Design/Builder's CPM Construction Schedule shall include a graphic time scaled logic network, computerized tabular reports and resource loading as described below. To be acceptable, the schedule must demonstrate the following:

1. A logical succession of Work from start to finish. This logical succession, when accepted, is the Design/Builder's work plan and, contrary to normal CPM standards, is designated as early start/early finish solely to accommodate the Primavera software.
2. Clear definition of each activity including cost, manpower, equipment and material quantities as resources. The assigned dollar value (cost loading) of each activity shall cumulatively equal the contract price.
3. Proper interfacing of related activities including submittals, major material and equipment deliveries, procurement, required permits and other constraints such as equipment or manpower/crew availability. Submittal dates must include review periods and permit schedules must include agency review and issue dates. The narrative shall explain the rationale for all constraints, lags and unusual relationships.
4. Agreement with the interim milestones, schedule coordination requirements, and completion dates indicated in the Contract Documents.

CPM Graphic Logic Network

1. The CPM graphic logic network or diagram shall be in the form of a time-scaled diagram of the customary precedence diagram and may be divided into a number of separate pages with suitable notation relating the interface points among the pages. Individual pages shall not exceed 34-inch by 44-inch. Notation on each activity line shall include activity descriptions, total float, and durations as a minimum.
2. All construction activities and procurement shall be indicated in a time-scaled format, and a calendar shall be shown on all sheets along the entire sheet length.

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Each activity shall be plotted so the beginning and completion dates of said activity can be determined graphically by comparison with the calendar scale. A legend shall be included clearly distinguishing between critical and non-critical path activities and progress to date.

Duration: The duration indicated for each activity shall be in units of whole working days and shall represent the single best time considering the scope of the Work and resources planned for the activity including time for holidays and inclement weather. The calendar for the network shall be in calendar days. Except for certain non-labor activities, such as submittal preparation and review, curing concrete, delivering and fabrication of materials, or other activities described specifically in the Contract, activity durations shall not exceed 14 Days, be less than one Day, nor exceed \$50,000 in value unless otherwise accepted by the City's Representative.

For all equipment and materials to be fabricated or supplied for the Project, the Contract Baseline Schedule shall show a sequence of activities including: (a) preparation of shop drawings and sample submissions; (b) thirty (30) calendar days for review of shop drawings and samples (c) shop fabrication, delivery and storage, (d) erection or installation; and, (e) testing of equipment and materials.

The Interim Schedule and Contract Baseline Schedule shall show dependencies (or relationships) between each activity. Each activity must have a successor and predecessor, except for the Project Start and Finish Milestone. The use of date constraints shall be limited to Contract Milestones and Contract Completion dates only, unless approved by the City's Representative.

Contract Baseline Schedule shall contain or be able to demonstrate that the following items have been addressed: (a) the Project's name; (b) the Design/Builder's name; (c) revision or edition number; (d) activities of completed work, (e) activities relating to different areas of responsibility, such as subcontracted Work which is distinctly separated from that being done by the Design/Builder directly; (f) labor resources distinguished by craft or crew requirements; (g) equipment and material resources distinguished by equipment and material requirements; (h) distinct and identifiable subdivisions of work such as structural slabs, beams, columns; (i) locations of work within the contract limit lines that necessitates different times or crews to perform; (j) outage schedules for existing utility services that will be interrupted during the performance of the Work; (k) acquisition and installation of equipment and materials supplied and/or installed by the City or its separate Design/Builder; (l) material to be stored on site; (m) Phases; and (n) Interim Milestones and the Contract Completion dates.

Computerized Tabular Reports: Reports shall include the following for each activity depicted in the schedule.

1. Activity ID
2. Activity Description
3. Duration (original and remaining)
4. Early Start Date
5. Early Finish Date
6. Total Float
7. Percent Complete

8. Activity Cost and Resources
9. Actual Start Date
10. Actual Finish Date

Project Information: Each report shall be prefaced with the following summary data.

1. Project Name
2. Design-Builder
3. Type of Tabulation (Initial or Updated)
4. Project Duration
5. Project Scheduled Completion Date
6. Projected Completion Date

The Contract Baseline Schedule shall include coding (both activity and project coding) to allow additional grouping and sorting means. The City's Representative shall provide the coding dictionary. Coding shall include (but shall not be limited to) the following:

1. Area
2. Department
3. Phase
4. CSI Code
5. Responsibility
6. Crew/ Craft

4.8.3 Acceptance

The finalized CPM Construction Schedule will be acceptable to the City's Representative when it provides an orderly progression of the Work from Notice to Proceed to Final Completion in accordance with the Contract requirements, adequately defines the Design/Builder's Work plan, provides a workable arrangement for processing submittals in accordance with the requirements, and properly allocates resource values for manpower, major materials, equipment and costs to each activity (free of unbalances in resources) as determined by the City's Representative. Manpower may be represented as composite crews in the CPM Construction Schedule. The network diagram and tabular reports when accepted by the City's Representative shall constitute the CPM Construction Schedule until revised and re-accepted.

When the CPM Construction Schedule has been accepted, the Design/Builder shall submit to the City's Representative:

1. six (6) copies of the CPM graphic logic network,
2. six (6) copies of a computerized, tabular report in which activities have been sequenced by early starting date,
3. two (2) copies of the schedule on CD
4. six (6) copies of the narrative.

The City's Representative's review and acceptance of the Design/Builder's CPM Construction Schedule is for conformance to the requirements of the Contract Documents only. Review and acceptance by the City's Representative of the Design/Builder's CPM

Construction Schedule does not relieve the Design/Builder of any of its responsibility whatsoever for the accuracy or feasibility of the CPM Construction Schedule, or of the Design/Builder's ability to meet interim milestone dates and the Contract completion date, nor does such review and acceptance expressly or impliedly warrant, acknowledge, or admit the reasonableness of the logic, durations, and resource value loading of the Design/Builder's CPM Construction Schedule.

The Design/Builder shall participate in a conference with the City's Representative to review the City's Representative's comments on the schedule and evaluation of the proposed network diagram, mathematical analysis and monetary value of activities. The intent is to reach a clearer understanding of the CPM and reach consensus on any revisions to be made. Any revisions necessary as a result of this review shall be resubmitted to the City's Representative within 10 calendar days after the conference. The accepted schedule shall then be used by the Design/Builder for planning, organizing and directing the work and for reporting progress. If the Design/Builder desires to make changes in their method of performing the Work, they shall notify the City's Representative in writing stating the reason for the changes and receive written acceptance of the change prior to putting the change into the accepted schedule.

4.8.4 Qualifications

The Design/Builder shall demonstrate competence in the use of CPM scheduling through the submission of a fully compliant CPM Construction Schedule with the initial CPM submission. In the event the Design/Builder fails to so demonstrate competence in the CPM scheduling, the City's Representative may direct the Design/Builder to employ the services of a Scheduling Firm that can demonstrate competence. The Design/Builder shall comply with such directive.

The Design/Builder shall use the services of scheduler who has verifiable training and credentials in preparing and maintaining a computerized CPM Construction Schedule using Primavera software as specified herein. The scheduler must qualify within the planning period.

1. Required Experience: Performed CPM scheduling on at least 2 completed construction projects of value at least 75 percent as large as this one and having at least 75 percent as many schedule items as this one. Scheduling of both projects shall have been done using Primavera software (P6 for Windows) or equal.

A. Submit the following:

1. Descriptions of at least 2 projects of the value and complexity above.
- ii. Copy of a CPM schedule from one of the previous projects.
- iii. Names and telephone numbers of facility owner representative, design engineer, and construction manager for each project.
- iv. Evidence supporting the above qualifications shall be submitted to the

City's Representative.

4.8.5 Submittal Requirements

Initial submittal, revisions and monthly updates of the network diagram, mathematical analysis, and written narrative shall be submitted in six hard copies and two data copies on CD. Submittals will not be accepted unless they are complete as described herein.

The Design/Builder shall submit the following:

1. A CPM time scaled logic network, computer generated using Primavera Project Planner software (The latest version of P6 for Windows).
2. Computerized Tabular Reports.
 - i. Activity sort by early start, organized by facility or area.
 - ii. Predecessor/successor listing.
 - iii. Activity code dictionary.
 - iv. Resource code dictionary.
3. Basis of schedule narrative describing the logic and reasoning of the schedule. The narrative shall summarize the overall approach to construction sequencing, including but not limited to 1) anticipated lost days due to weather. 2) the rationale for all constraints, lags and unusual relationships. 3) the definition of labor and crews. 4) a list and durations for all major pieces of equipment and resources, and 5) work proposed to be performed on a other than single shift 5 day workweek basis
4. Resource value allocation by activity.
5. Breakdown of specific cost amount for each component of multi-component activities in the CPM Schedule in spreadsheet format (using Microsoft Excel) showing component unit quantities as well as costs. Such breakdown, when accepted by the City's Representative shall constitute the Schedule of Values for the Project.
6. CD copy of entire schedule, narrative and spreadsheet.

4.8.6 Schedule Orientation Session

Design/Builder shall, upon notification from the City's Representative, attend a Schedule Orientation Session relating to the Schedules and Reports requirements for this Contract. The Schedule Orientation Session is designed to review in detail, the objectives of the Schedules and Reports requirements and the requirements. Design/Builder shall arrange for its Project Manager, Superintendent, and Scheduler to attend the Schedule Orientation Session.

The following items shall be discussed during the Schedule Orientation Session: (a) The procedures and requirements for the preparation of the Contract Baseline Schedule, and monthly updates by Design/Builder. (b) how the requirements of the Contract Documents will be monitored and enforced by the City's Representative. (c) long-lead items and time requirements for the Work by Subcontractors will be identified and included in the Contract Baseline Schedule. (d) testing and startup. (e) coding and logic for the Contract Baseline Schedule, and (f) identification and scheduling of shop drawings and other submittals.

4.8.7 Schedule of Values Submittals

Design/Builder shall allocate a dollar value for each activity on the Contract Baseline Schedule. The dollar value for the activity shall be the cost of the Work including labor, materials and equipment. Allowances shall be loaded on activities specifically included for this purpose. No activity on the Contract Baseline Schedule shall exceed a value of \$50,000, unless approved by the City's Representative. The sum of all activity costs shall equal the Contract Price. Design/Builder shall revise the resource and value loading as necessary to gain the acceptance of the City's Representative.

1. The Final Schedule of Values shall incorporate all comments associated with the Design/Builder's Schedule/Schedule of Values submittals.
2. Submit documentation to support the values with data, which will substantiate correctness, as requested by the City's Representative.
3. The Schedule of Values, when accepted by the City's Representative, shall be used as the only basis for the Design/Builder's Applications for Payment. The total price paid for mobilization shall be as approved by the City's Representative, but in no case shall it exceed two per-cent (2%) of the lump sum amount and shall be substantiated with invoices and other backup documentation.
 3. The Schedule of Values shall be derived from the assigned Progress Schedule Activity Values and identified by Activity ID.

Form and Content of Schedule of Values

1. Identify the Schedule of Values submittal with:
 1. Title of Contract and location.
 2. Contract Number.
 3. Name and address of Design/Builder.
 4. Date of submission.
2. The Design/Builder's Schedule of Values shall list the installed value of the component parts of the Work in sufficient detail to serve as the basis for computing values for progress payments during construction.
3. Identify accounts with the location code and area code as defined in the Primavera Schedule format and list the number and title of the respective major Section of the Specifications.
4. All accounts in the Schedule of Values shall be derived from the activities in the Progress Schedule. Account data pertaining to the Schedule of Values shall, at a minimum, include the following for each Account:
 - A. CPM Activity number.
 - B. City of Atlanta Standard Code listed on the Cost Proposal.
 - C. Account representative quantities (cubic yards of concrete, tons of steel, etc.), unit costs, person-hours, item and account dollar value.
 - D. WBS code (as used Primavera Project Planner scheduling software), including location, responsibility and area codes.
 - E. CSI Specification Section Number.

F. Account Type: Lump Sum (LS), Unit Price (UP),
Allowance (AL), or Change Order (CO)

5. The Schedule of Values must be developed separately from the baseline schedule in a tabular electronic format (i.e. a Microsoft Excel Spreadsheet). Upon approval of the Schedule of Values and the Project Baseline Schedule, the Schedule of Values will be merged with the Project Baseline Schedule in P6.

Lump Sum Accounts (LS):

1. The Lump Sum Items established in the Design/builder's Cost Proposal shall be further divided into pay and progress items by the Design/Builder and submitted to the City's Representative for approval, and as specified in Paragraph E.1 above. Payment for Lump Sum (LS) Accounts will be based upon physical progress (percent complete) for each related activity in the Progress Schedule.
2. The dollar value allocated to Lump Sum Accounts shall be representative of the Design/Builder's actual costs for performing the work including overhead and profit, and shall be balanced to ensure that sufficient funds are allocated for each portion of the work and shall be subject to acceptance by the City's Representative.
3. In the event account values cannot be agreed to between the City's Representative and the Design/Builder, the City's Representative shall have the exclusive right to determine the account dollar amounts contained in the Schedule of Values.
4. Mobilization costs shall be specifically identified in the Schedule of Values. All Mobilization sub-accounts contained in the Schedule of Values must have a corresponding CPM Schedule activity. Payments for mobilization sub-accounts will be based upon lump sum (LS) values as accepted by the City's Representative.

Unit Price Accounts (UP): Payment for Unit Price Accounts shall be based upon actual quantities of Work performed in compliance with the Contract Documents, as verified and accepted by the City's Representative. Whenever the actual quantity differs from the estimated quantity on the Unit Price Accounts, the Design/Builder shall notify the City's Representative in writing. Quantity overruns and under runs will be tracked on the Schedule of Values.

Allowance Accounts (AL): Payment for Allowance Accounts will be based upon invoices submitted by the Design/Builder subject to conditions and limitations of the Contract Documents. Refer to Section 01200, Measurement and Payment, for requirements. The Allowance shall be adjusted to the actual amount paid for such services, and adjusted by Change Order either at the end of that phase of the Work or at the completion of the Work. The City will have sole discretion on determining when to make adjustments to the Allowance.

Cost of materials shall be assigned to the appropriate item of work, and allocated to a

materials Sub-account. All materials items contained in the Schedule of Values must have a corresponding CPM Schedule activity, for various portions of the Work:

1. Each account shall include a directly proportional amount of the Design/Builder's overhead and profit.
2. For accounts on which progress payments will be requested for materials suitably stored on site, break down the value into:
 - A. The cost of each material delivered and unloaded.
 - B. Paid invoices will be required for materials.

The Design/Builder shall include in the Schedule of Values items for site maintenance, and compliance with the terms of permit stipulations, as appropriate. These items will be monitored on a monthly basis. Non-compliance will result in monies being deducted from the appropriate items. A new account will be added to the Schedule of Values for approved Change Order work. Payment for Time and Expense Change Order work (CO) shall be based upon the General and Supplementary Conditions of these Specifications.

The sum of all Account Values listed in the Schedule of Values shall equal the total Contract Price, excluding Allowance Items.

4.8.7.1 Sub-Accounts

Include a breakdown of major accounts into sub-accounts on which progress payments will be requested. The sub-account breakdown shall include elements for pay items/progress items as appropriate, and show the weight of each sub-account; e.g., fabrication, installation, etc., with the total weight of the sub-accounts equal to 100 percent of the major account.

The form of the submittal shall be consistent with the Schedule of Values, with each account identified the same as the line item in the Schedule of Values.

The Design/Builder's Schedule of Values shall list the delivered value of the products, manuals and services provided under the various Specification Sections. The lists shall be sufficiently detailed to serve as a basis for computing values for progress payments during the construction period.

The unit quantity for bulk materials shall include an allowance for waste. The unit values for the materials shall be broken down into:

1. Cost of the material delivered and unloaded at the site.
2. Copies of paid invoices for component material shall be included with the payment request in which the material first appears.

The installed unit value multiplied by the quantity listed shall equal the cost of that account in the Schedule of Values.

Quantities and unit values identified in the Component Materials sub-accounts shall be used for determining progress payments only, and are not considered to be unit price pay items.

4.8.8 Monthly Application for Payment

Monthly Application for Payment: Design/Builder shall provide monthly Schedule Update, monthly Payment Report and monthly Narrative Report as the monthly Application for Payment package. Failure to submit all of the aforementioned submittals will result in the cessation of the pay application process until all documents are received.

Monthly Schedule Update: The Design/Builder shall submit, at intervals of 30 calendar days, an update of all activities in the as-planned CPM schedule. The Period-Ending Date shall be the 25th of each month. Update shall be created by updating the mathematical analysis and the corresponding computerized network diagram of the Schedule.

1. The schedule shall be updated by entering the following: Actual start and completion dates of completed activities and the actual start date and remaining duration of activities in progress.
2. The schedule update shall include an update of the cash flow projections in the same format as the original approved submittal.
3. The schedule update will state the percentage of the work actually completed and scheduled as of the report date.

The Monthly Payment Report shall show the activities or portions of activities completed, during the reporting period, the total monetary values and the monetary values earned as a basis for the Design/Builder's Application for Payment. A mutually agreed upon percent complete will be assigned to each completed and partially completed activity to be used for calculating the monetary value earned to date. For activities underway, the percent complete shall not be related to the remaining duration.

A monthly narrative report shall be submitted including, but not limited to the following:

1. Description of work accomplished.
2. Summary of safety and quality issues occurring during the month and corrective actions taken.
3. Design/Builder evaluation of actual progress versus progress planned.
4. If the project is behind schedule, progress along all paths with negative float shall be reported along with the reasons for the delay.
5. A description of all revisions made to the schedule including: all accepted added, deleted, and revised activities; all logic revisions; and all duration revisions.
6. A description of the problem areas, current and anticipated delaying factors and the impact, and an explanation of connective actions taken or proposed.

If the Design/Builder fails to submit any of the required components of the Application for Payment, the City's Representative will withhold approval of the Application for Payment until such time as the Design/Builder submits the required components.

4.8.9 Progress Meetings and Look-Ahead Schedules

For the weekly progress meetings, the Design/Builder shall submit a four week Look-

SECTION 4

COORDINATION

Ahead Schedule. This schedule will cover four weeks: the immediate past week, the current week, and the forthcoming two weeks. This schedule will include all activities which are complete, started, are incomplete or underway, or scheduled to be worked during this four week time frame. This schedule shall list all activities from the accepted CPM Construction Schedule which are complete, are scheduled for Work during the period, are currently planned to be worked, even if out of sequence, and Work which is unfinished but scheduled to be finished. Actual start and completion dates shall be provided for the Work that has been completed the prior week; forecast start and finish dates shall be provided for the Work that is in-process or upcoming.

Each activity noted above shall be identified by activity number corresponding to the accepted CPM Construction Schedule and detailed description of the activity.

The Look-Ahead Schedule shall be delivered to the City's Representative twenty-four (24) hours prior to the weekly progress meeting.

The Look-Ahead Schedule shall be in a format approved by the City's Representative.

Tabular reports for manpower and equipment resources shall be provided for and with each Look-Ahead Schedule.

4.8.10 CPM Construction Schedule Revisions

The City's Representative may direct and, if so directed, the Design/Builder shall propose, revisions to the CPM Construction Schedule upon occurrence of any of the following instances:

1. The actual physical progress of the Work falls more than five percent (5%) behind the accepted CPM Construction Schedule, as demonstrated by comparison to the accepted
2. monthly CPM Construction Schedule updates or as determined by the City's Representative if a current accepted CPM Construction Schedule does not exist.
3. The City's Representative considers milestone or completion dates to be in jeopardy because of "activities behind schedule". "Activities behind schedule" are all activities that have not or cannot be started or completed by the dates shown in the CPM Construction Schedule, regardless of the existence of positive float on the activity.
4. A Change Order has been issued that changes, adds or deletes scheduled activities or affects the time for completion of scheduled activities.

When the instances requiring revision to the CPM Construction Schedule occur, the Design/Builder shall submit the proposed revised CPM Construction Schedule within ten (10) working days after receiving direction from the City's Representative to provide such Schedule. No additional payment will be made to the Design/Builder for preparation and submittal of proposed revised CPM Construction Schedules. However, if the City's

Representative accepts the proposed revised CPM Construction Schedule, it shall replace and supersede all previous CPM Construction Schedules and substitute for the next monthly CPM Construction Schedule update that would otherwise be required.

Revisions to the CPM Construction Schedule shall comply with all of the same requirements applicable to the original schedule.

4.8.11 Schedule Recovery

If a revised CPM Construction Schedule accepted by the City's Representative requires the Design/Builder to employ additional manpower, equipment, hours of work or work shifts, or to accelerate procurement of materials or equipment, or any combination thereof, as schedule recovery measures to meet Contract milestones, the Design/Builder shall implement such schedule recovery measures without additional change to the City. All schedules containing negative float shall mandate the submission of a recovery schedule.

Furthermore, if efforts to recover are not deemed effective as determined by the City's Representative, or if prior to submittal of the recovery schedule, the City's Representative determines that critical milestones are in jeopardy, the City's Representative may direct the Design/Builder to implement the above or any other recovery efforts at no additional costs to the City.

4.8.12 Time Impact Analysis Requirement

When delays are experienced by the Design/Builder and a time extension is requested, the Design/Builder shall submit to the City's Representative a written Time Impact Analysis illustrating the influence of all changes or all delays on the current Project completion date.

The time impact analysis shall be constructed on an As-Built Schedule Analysis approach. The As-Built Schedule that is created will incorporate all actual start and finish dates, actual durations of activities, actual sequences of construction (referred to as the As-Built Logic) current as of the time the Time Impact Analysis is performed. This Time Impact Analysis shall incorporate all delays (including City's Representative, Design/Builder and third party delays without exception) in the time frame that they actually occurred with actual logic ties. The As-Built Schedule data shall be obtained from the most recent approved monthly schedule update. The As-Built Schedule shall be created as an early start schedule with the actual start and finish dates coinciding with the early start and finish dates from the most recent approved monthly schedule update. The As-Built Schedule shall show the original activity durations equal to the actual duration and the actual logic driving all activities. The City's Representative will validate this As-Built Schedule. All requests for time extension shall be based upon an analysis of this As-Built Schedule. The critical path will be established and all City's Representative caused delays on the critical path will be identified. The time extension will be based solely upon the cumulative duration of all City and third party caused delays that are on the critical path. Any time extensions to the project's Interim Milestone Dates, if any, shall be non-compensable time extensions only. Each Time Impact Analysis shall demonstrate the estimated time impact

based on the events of delay, the status of construction at that point in time, and the event time computation of all activities affected by the change or delay. The event times used in the analysis shall be those included in the latest approved update of the project schedule, in effect at the time the change or delay was encountered.

4.9 Material and Equipment

Material and equipment shall be identified as new items for incorporation in the work, whether purchased by Design/Builder or the City for the Project, or taken from previously purchased stock, and may also include existing materials or components required for reuse. Material and equipment can also include equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change the meaning of such other terms used in the Contract Documents, as those terms are self-explanatory and have well recognized meanings in the construction industry. Material and equipment can also be identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature,

that is current as of the date of the Contract Documents.

4.9.1 Submittals

4.9.1.1 Administrative Submittals

- + List of all proposed substitute or "or-equal" items/methods shall be provided.
- + Schedule of factory tests required by Contract Documents and/or the design shall be provided.

4.9.1.2 Quality Control Submittals

- + Factory tests shall be as specified in the Contract Documents and/or the design.
- + Procedures shall be submitted prior to start of factory testing.
- + Test documentation with results of successful testing, including certification of procedures and results, shall be provided.

4.9.2 Preparation for Shipment

When practical, products shall be factory assembled. Separate parts and assemblies shall be matched and marked to facilitate field assembly. Machined and unpainted parts that may be damaged by the elements shall be covered with a strippable protective coating.

Products shall be packed to facilitate handling and protect from damage during shipping, handling, and storage. Outside of each package or crate shall be marked and matched to indicate its purchase order number, bill of lading number, contents by name, name of Project and Design/Builder, equipment number, and approximate weight. Complete packing lists and bills of materials shall be included with each shipment.

Spare parts, special tools, test equipment, expendables, and maintenance materials shall comply with the following requirements:

1. Shall be furnished prior to (i) starting functional testing, (ii) operation of the equipment by the City, or (iii) 75 percent Project completion, whichever occurs first.
2. Shall be properly packaged to avoid damage, in original cartons insofar as possible. Damaged parts shall be replaced or otherwise inoperable.
3. On each package there shall be affixed a minimum 3-inch by 6-inch manila shipping tag with the following information printed clearly:
 - Manufacturer's part description and number.
 - Applicable equipment description.
 - Quantity of parts in package.
 - Equipment manufacturer.
 - Applicable Specification section.
 - Name of Design/Builder.
 - Project name.
4. Materials shall be delivered to the site.
5. The City shall be notified upon arrival.

Equipment shall be protected from exposure to the elements and kept thoroughly dry and dust free at all times. Painted surfaces shall be protected against impact, abrasion, discoloration, or other damage. All bearings and similar items shall be greased or oiled.

Factory test results shall be reviewed and accepted by licensed design professional before product shipment.

4.9.3 Delivery and Inspection

Products shall be delivered in accordance with the accepted current progress schedule and coordinated to avoid conflict with work and conditions at the site. Anchor bolts and templates shall be delivered sufficiently early to permit setting prior to placement of structural concrete.

Products shall be delivered in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Date of manufacture and shelf life shall be included on the label, where applicable. UL labels shall be included on products so specified.

Products shall be unloaded in accordance with manufacturer's instructions for unloading, or as specified. The receipt of products shall be delivered at the site. All shipments shall be inspected for completeness and evidence of damage during shipment.

Damaged products shall be removed from the site and delivery of identical new undamaged products and remedy incomplete or lost products shall be expedited, so as not to delay the progress of the work.

4.9.4 Handling, Storage and Protection

Products shall be handled in accordance with the manufacturer's written instructions, and in a manner to prevent damage. Products shall be stored upon delivery, in accordance with manufacturer's instructions, with labels intact and legible, in approved storage yards

SECTION 4

COORDINATION

or sheds provided. Manufacturer's recommended maintenance shall be provided during storage, installation, and until products are accepted for use by the City.

Storage shall be arranged in a manner to provide easy access for inspection. Periodic inspections of stored products shall be made to assure that products are maintained under specified conditions, and free from damage or deterioration. There shall be a running account of products in storage to facilitate inspection and to estimate progress payments for products delivered but not installed in the work.

Electrical, instrumentation, and control products and equipment with bearings shall be stored in weather-tight structures maintained above 60 degrees F. Electrical, instrumentation, and control products, and insulation shall be protected against moisture, water, and dust damage. All space heaters furnished in electrical equipment shall be connected and operated continuously.

Fabricated products shall be stored above ground, on blocking or skids, over a gravel base, to prevent soiling or staining. Loose granular materials shall be stored in a well-drained area on solid surfaces to prevent mixing with foreign matter. Products that are subject to deterioration shall be covered with impervious sheet coverings; adequate ventilation shall be provided to avoid condensation.

Finished products that are ready for installation shall be stored in dry and well-ventilated areas. Finished products shall not be subjected to extreme changes in temperature or humidity.

Contamination of personnel, the storage building, and the site with hazardous materials shall be prevented. The Design/Builder shall comply with the requirements of the product specifications, codes, and manufacturer's instructions.

4.9.5 Substitute and "Or-Equal" Products

The Design/Builder shall meet the requirements of the General Conditions and as set forth herein.

If the Design/Builder proposes to replace a product specified in the Contract Documents and/or design with a substitute product, or, where allowed in the Contract Documents and/or design, proposes an "or-equal" product, the Design/Builder shall submit the request to the City for acceptance. The Design/Builder shall include licensed design professional's approval of the proposed substitute or "or-equal" product.

With consideration of the additional evaluation time necessary for the City's review of such items, for each item the review status (either substitute or "or-equal") and estimated submission date shall be indicated.

The City may return un-reviewed those submissions (i) not shown on the current accepted schedule, (ii) for which the review status differs from that indicated on the accepted list unless previously approved in writing by the City Representative, (iii) not as specified herein, (iv) which are incomplete, or (v) which are un-certified, in which case the

Design/Builder shall provide the specified product.

Six copies of proposed substitute or "or-equal" item/method shall be submitted, to include all supporting data to allow the City Representative's review. Complete, sign, and transmit with each proposed substitute or "or-equal" item/method submission.

1. Accepted: The City Representative shall evidence such acceptance by recommendation of a Change Order for Design/Builder and City execution. Such Change Order will accompany the City evaluation and acceptance of Design/Builder's proposed substitute.
2. Rejected:
 - One copy shall be retained by the City Representative.
 - One copy shall be returned to Design/Builder with a commentary by the City Representative.
 - Remaining copies shall be destroyed.
3. Design/Builder shall provide item specified in Contract Documents.

4.9.6 Materials

Manufacturer's standard materials suitable for service conditions shall be provided unless otherwise specified in the individual Specifications.

"Or-Equal" Items shall be handled in accordance with Shop Drawings and Samples, or as follows:

1. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance specifications.
2. Like items of products furnished and installed in the work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, and manufacturer's services and implement same or similar instrumentation and control functions in same or similar manner.
3. Materials and equipment removed from existing premises shall not be used, except as specifically permitted by the Contract Documents.
4. Interchangeable components of the same manufacturer shall be provided for similar components, unless otherwise specified.
5. Equipment, components, systems, subsystems shall be designed and manufactured with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA and local health and safety regulations.
6. Coating materials shall meet federal and local requirements and shall limit the emission of volatile organic compounds and for worker exposure.

7. Care shall be provided for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Rotating part shall be covered on all sides and shall be designed for easy installation and removal. 16-gauge or heavier galvanized steel, aluminum coated steel, or galvanized or aluminum coated 1/2-inch mesh expanded steel shall be used. Galvanized steel accessories and supports, including bolts, shall be provided. For outdoors application, entrance of rain and chipping water shall be prevented.
8. Materials and equipment listed by UL shall be provided wherever standards have been established by that agency.
9. Upon acceptance of equipment, all accessories required to place each item of equipment in full operation shall be furnished. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, hand wheels, chain operators, special tools, and other spare parts as required for maintenance.
10. Provide written certification from manufacturers that spare parts provided are in accordance with the manufacturer's recommendations. Supply spare parts for each piece of equipment named in the Specifications. Spare parts shall consist of the following:
 - All materials, including filters, seals, bearings, and other wearing parts that are recommended by the manufacturer to be changed during the first year of service or may reasonably be expected to need replacing during the first year of service.
 - In addition to spare parts, which may be required during the first year of service of the following spare parts shall be supplied for each piece of equipment:
 - A complete set of bearings.
 - A complete set of seals.
 - Two complete sets of belts for belt-driven equipment.
 - A dozen shear pins if appropriate for the equipment.
 - A dozen air or oil filters if appropriate for the equipment.

Spare parts furnished for each ventilating and cooling equipment unit shall include a year's supply of air filters and two complete sets of belts for belt-driven equipment.

- One dozen fuses of each size and type for all equipment, including electrical, and ventilating and cooling.
 - One dozen replacement lamps of each size and type for all equipment, including electrical, ventilating and cooling, and lighting fixtures. One half dozen ballasts for each type of fluorescent lighting equipment.
11. Lubricant: Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during

testing, startup, and operation until final acceptance by the City. Supply one year's supply of lubricant of the manufacturer's recommended type and grade for all process equipment. If shipping lubricant is different than operating lubricant, drain shipping lubricant and fill with operating lubricant just prior to startup. Supply complete lubricant specifications for each lubricant supplied.

4.9.7 Fabrication and Manufacture

1. Parts shall be manufactured to U.S.A. standard sizes and gauges.
2. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
3. Structural members shall be designed for anticipated shock and vibratory loads. 1/4-inch minimum thickness shall be used for steel that will be submerged, wholly or partially, during normal operation.
4. Standard products shall be modified as necessary to meet performance Specifications.
5. Lubrication system shall comply with the following requirements:
 - Lubrication system shall require no more than weekly attention during continuous operation.
 - Lubrication system shall be convenient and accessible. Oil drains with bronze or stainless steel valves and fill plugs easily accessible from the normal operating area or platform. Drains shall be located to allow convenient collection of oil during oil changes without removing equipment from its installed position.
 - Constant-level oilers or oil level indicators shall be provided for oil lubrication systems.
 - For grease type bearings, which are not easily accessible, stainless steel tubing shall be provided and installed; protect and extend tubing to convenient location with suitable grease fitting.

4.9.8 Source Quality Control

1. Calibration instruments shall bear the seal of a reputable laboratory certifying that instrument has been calibrated within the previous 12 months to a standard endorsed by the National Institute of Standards and Technology (NIST).
2. Factory tests shall be performed in accordance with accepted test procedures and document successful completion.
3. Materials and equipment shall be inspected for signs of pitting, rust decay, or other deleterious effects of storage. No material or equipment showing such effects shall be installed. Damaged material or equipment shall be removed from the site and delivery of identical new material or equipment shall be arranged. Delays to the work resulting from material or equipment damage that necessitates procurement of new products shall be considered delays within Design/Builder's control.
4. No shimming between machined surfaces shall be allowed.

5. Work shall be installed in accordance with NECA Standard of Installation, unless otherwise specified.
6. Painted surfaces that are damaged prior to equipment acceptance shall be repainted. Products shall be handled, installed, connected, cleaned, conditioned, and adjusted in accordance with manufacturer's instructions and as may be specified. A copy of manufacturers' instruction shall be retained at site and shall be available for review at all times.
7. Unless indicated otherwise, manufacturer's recommended factory-finish for the specific application shall be provided.
8. Field finishes shall be in accordance with the Contract Documents and design.
9. Required adjustments, tests, operation checks, and other startup activities shall be performed.
10. Lubricant reservoirs shall be filled and replaced consumption during testing, startup, and operation prior to acceptance of equipment by the City.

4.10 Partnering Statement

The City intends to encourage the foundation of a cohesive partnership with the Design/Builder. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient Agreement performance, intended to achieve completion within budget, on schedule, and in accordance with plans and specifications.

This partnership will be bilateral in makeup, and participation will be totally -voluntary. Any costs associated with effectuating this partnership will be agreed to by both parties and will be shared equally with no change in Agreement price. To implement this partnership initiative, it is anticipated that within sixty (60) days of Notice to Proceed, the Design/Builder's on-site project manager and the City's on-site representative will attend a partnership development seminar followed by a team-building workshop, attended by key on-site staff from the Design/Builder's forces and City's personnel. Follow-up workshops will be held periodically through the duration of the Agreement as agreed by the Design/Builder and City. The City and Design/Builder shall mutually agree on a partnering facilitator and off-site facilities for the partnering sessions.

An integral aspect of partnering is the resolution of disputes in a 'timely, professional, and non-adversarial manner. Alternative dispute resolution methods win be encouraged to promote and maintain amicable working relationships at all levels of the project and to strengthen the partnership.

The mutual goals and objectives of the stakeholders from the Partnering Charter. The charter for each project, then, will be unique to that project. The charter may be a simple statement about communication and cooperation in all matters and resolution of conflicts at the lowest level. The following provides an idea of objectives, which might be included in the chatter:

1. We are a team dedicated to providing a quality project in accordance with the Agreement. We are committed to both employee and public safety, protection of the environment, and minimizing inconvenience to the public.
2. Communication Objectives: We intend to deal with each other in a fair, reasonable, testing and professional manner including:
 - Communicate and resolve problems within the terms of the Agreement;
 - Decision making at the lowest possible level;
 - Open, honest communication;
 - Treat each other with mutual respect, resolve conflicts immediately, and avoid personal attacks;
 - Timely notification of future meetings; and
 - Do not allow personal antagonism to interfere with professionalism.
 - + Conflict Resolution System:
 - Step 1: It is preferred that conflict be discussed and resolved at the level on which it originates;
 - Step 2: When conflict is not resolved at the originating level, it is taken to the next level of supervision;
 - Step 3: When conflict is not resolved at the immediate supervisory level, it is taken to the project manager and City's Representative; and
 - Step 4: When conflict is not resolved by the project manager and City's Representative, it is submitted to the Disputes Review Board for adjudication.
3. Performance Objectives:
 - Complete the project without litigation;
 - Utilize cost reduction incentive proposals;
 - Finish the project on time;
 - No delays to project;
 - No lost time injuries;
 - Promote positive public relations;
 - Make the project enjoyable to work on;

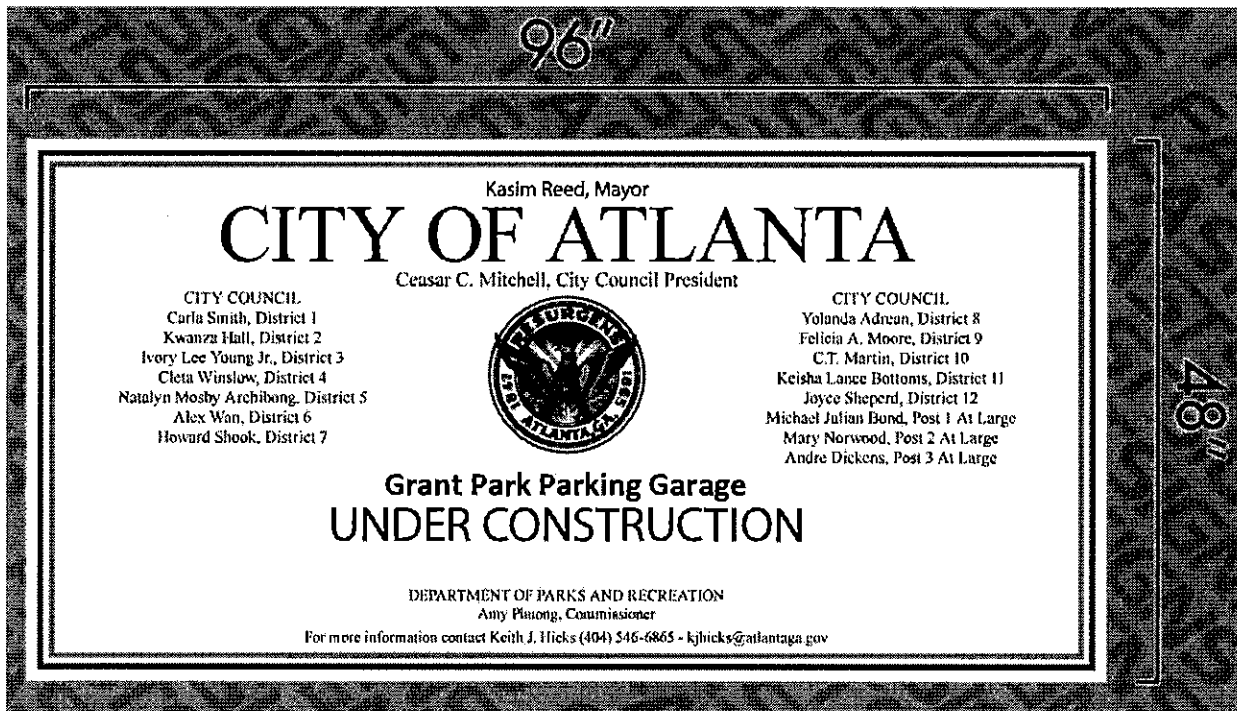
4. Render a finished product everyone can be proud of; and
5. Construct and administer the Agreement so that all parties treated fairly.

4.11 City of Atlanta Project Sign

The basic design of the Project sign shall conform to Attachment 1 herein including the names of all current Council Members, the Mayor and the Commissioner, Department of Parks & Recreation. The City seal portion of the sign must be shaded, such that it is visible from fifty (50) yards. A full color shop drawing submittal is required before fabrication. The Project sign will be no less than 4'-0" x 8'-0" and the City requires a Project sign at the designated entrance to the Project.

In addition to the Project sign, there is to be adequate temporary signage for identifying the Project areas, offices, delivery areas and any other designations the City and/or the Design/Builder feel are needed. These signs will designate which Phase of the Agreement that they pertain to as part of the Project coordination.

Attachment 1



5.0 Alternative Summary

At present or a future date, the City will consider the potential build out of some additional items listed in the Parking Garage Design Criteria Package (DCP) which are considered as additive alternates. Design/Builder shall evaluate the alternates and develop lump sum amounts to be included in the Cost Proposal.

Alternates to the DCP are as follows:

- 1. Provide a Lump Sum Amount for a fully equipped 8,500 s.f. +/-, two-story dine-in regional-cuisine restaurant space on the Green roof level of the parking garage construction. The restaurant shall include, but not be limited to the following features:
 - A. Two-story window wall element with primary views to the southwest & west exposures overlooking Zoo Atlanta.
 - B. Casual dining atmosphere on the first level and fine dining atmosphere on the upper level. Include a balcony at upper level overlooking green roof elements below.
 - C. General space planning guidelines to include the Kitchen (pre-preparation and preparation), storage area (cold, dry & liquor stores), staff facilities (dining area, lockers, toilets), pot-wash and office space.
 - D. Dining area to back-of-the-house operations ratio is 60:40.
 - E. Dining hall area of eight (8) to twelve (12) square feet per cover.
 - F. Back end break-up:

Kitchen	50%
Stores	20%
Pot-wash	15%
Staff area	10%
Office	5%

- G. Service and deliveries to be accommodated on the lowest level of the parking garage and access via service elevator to top restaurant level.

- 2. Provide a Lump Sum Amount for a 14,000 s.f. restaurant as described in Alternate

SECTION 5

ADDITIVE ALTERNATES

No.1.

3. Provide a Lump Sum Amount for elevators of the type not requiring a machine room.
4. Provide a Lump Sum Amount for color impregnated concrete incorporated into the design of the “Green” roof gardens.
5. Provide a Lump Sum Amount for automated motorized sun screening system on the western facing glazing system.
6. Provide a Lump Sum Amount for thermoplastic striping at parking spaces.
7. Provide a Lump Sum Amount for twelve (12) electric vehicle charging stations included on the ground floor. If the charging station alternate is not selected, provide conduit for stations back to the Electric Room. Ensure design has sufficient power provisions for future installation.
8. Provide a Lump Sum Amount for LEED/Parksmart Certification Process.

EXHIBIT B-2

SUB-SURFACE REPORT



Scale:	NTS
Prepared:	AJR
Checked:	ACE
Project No.:	2015.1250.01

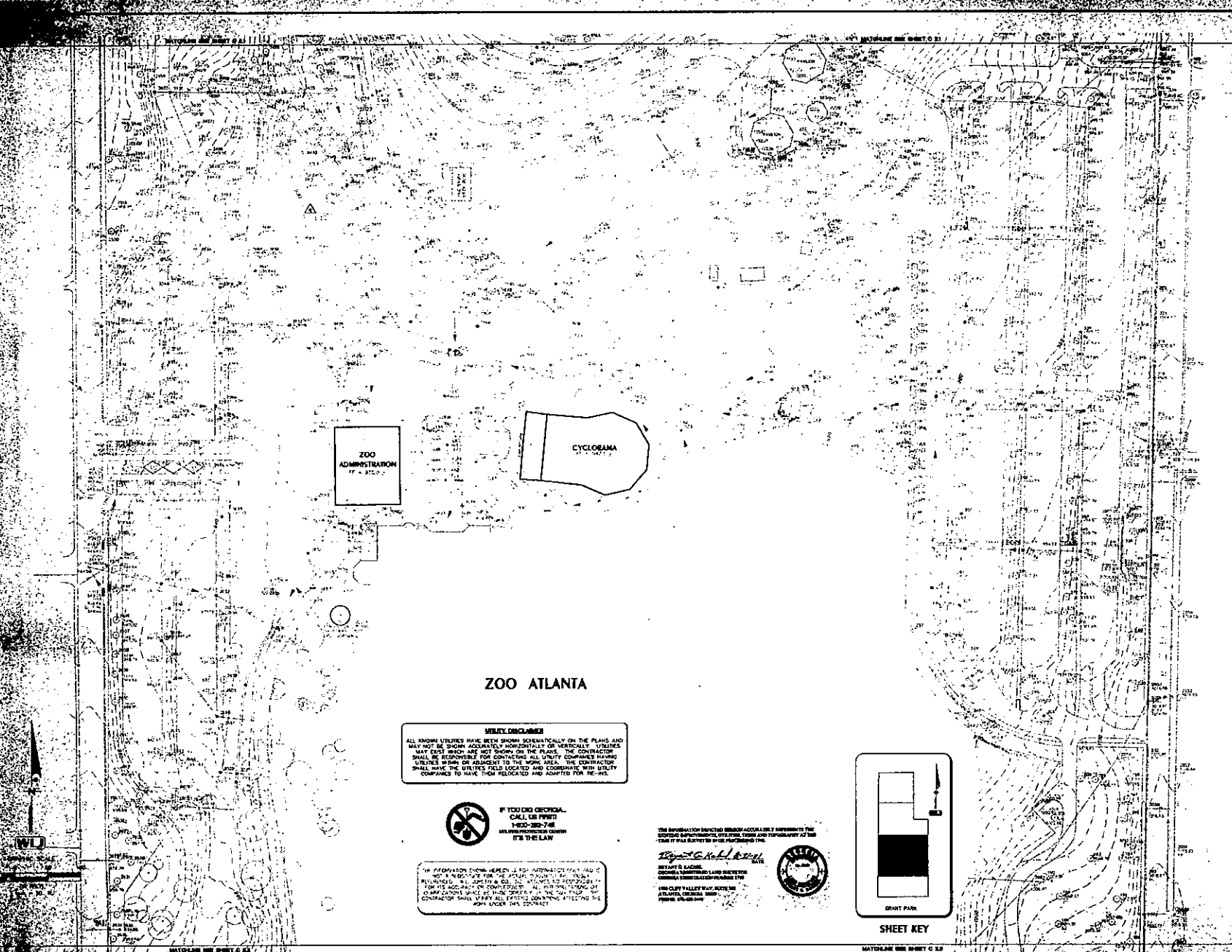
Notes:

Client:	CITY OF ATLANTA
Site:	CITY OF ATLANTA/ GRANT PARK MOBILITY SOLUTION STUDY
Title:	Borings Location Plan

FIG. 1

EXHIBIT B-3

EXISTING SITE CONDITIONS



ZOO
ADMINISTRATION

CYCLOPAMA

ZOO ATLANTA

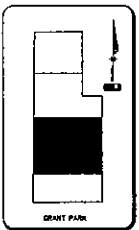
UTILITY DISCLAIMER
 ALL KNOWN UTILITIES HAVE BEEN SHOWN SCHEMATICALLY ON THE PLANS AND MAY NOT BE SHOWN ACCURATELY HORIZONTALLY OR VERTICALLY. UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUING ALL UTILITY COMPANIES HAVING UTILITIES IN THE OR ADJACENT TO THE WORKING AREA. THE CONTRACTOR SHALL MAKE THE UTILITIES FIELD LOCATED AND COORDINATE WITH UTILITY COMPANIES TO HAVE THEM RELOCATED AND ADAPTED FOR RE-USE.

IF YOU DO ORIGINAL CALL OR FINDER
 YOU MUST HAVE A PROFESSIONAL DESIGN FOR THE LAW

THE INFORMATION SHOWN HEREON IS FOR INFORMATION ONLY AND IS NOT A WARRANTY FOR THE ACCURACY OF THE DATA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA. ALL INFORMATION IS FOR INFORMATION ONLY AND IS NOT A WARRANTY FOR THE ACCURACY OF THE DATA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA.

THE INFORMATION SHOWN HEREON ACCURATELY REPRESENTS THE EXISTING SURFACE CONDITIONS, UTILITIES AND TOPOGRAPHY AT THE TIME IT WAS SURVEYED BY THE SURVEYOR.

W.L. Jordan & Co., Inc.
 SURVEYOR'S SEAL



SHEET KEY

W.L. JORDAN & CO., INC.
 100 NORTH COMMERCE STREET
 ATLANTA, GEORGIA 30308
 ENGINEERING & SURVEYING PROFESSIONAL CORPORATION

EXISTING CONDITIONS
 GRANT PARK EROSION & FLOOD CONTROL, E.C. 47761-97
 PHASE II IMPROVEMENTS
 CITY OF ATLANTA PUBLIC IMPROVEMENTS PROGRAM

DATE: 11/11/97
 SHEET: 10 OF 10

MATCHLINE SEE SHEET C 3.1

MATCHLINE SEE SHEET C 3.1

CHEROKEE AVENUE

BOULEVARD

ZOO ADMINISTRATION
AREA = 5300 ±

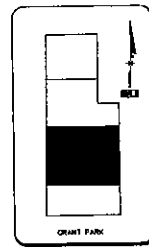
CYCLOPAMA
AREA = 5100 ±

ZOO ATLANTA

UTILITY DISCLAIMER
 ALL KNOWN UTILITIES HAVE BEEN SHOWN SCHEMATICALLY ON THE PLANS AND MAY NOT BE SHOWN ACCURATELY HORIZONTALLY OR VERTICALLY. UTILITIES MAY EXIST WHERE ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES HAVING UTILITIES WITHIN OR ADJACENT TO THE WORK AREA. THE CONTRACTOR SHALL HAVE THE UTILITIES FIELD LOCATED AND COORDINATE WITH UTILITY COMPANIES TO HAVE THEM RELOCATED AND ADAPTED FOR THE WORK.



IF YOU DO GEORGIA,
 CALL US FIRST!
 1-800-282-7441
 UTILITIES PROTECTION DIVISION
 IT'S THE LAW



SHEET KEY



MATCHLINE SEE SHEET C 3.3

MATCHLINE SEE SHEET C 3.3

<p>RECORDED BY DATE SHEET C 32 OF 13</p>	<p>FILE NO. 97-030</p>	<p>DEMOLITION PLAN GRANT PARK EROSION & FLOOD CONTROL, P.C. #7452-99 PHASE II IMPROVEMENTS CITY OF ATLANTA PUBLIC IMPROVEMENTS PROGRAM</p>	<p> W.L. JORDEN & CO., INC. 300 NORTH COBB PARKWAY ALPHARETTA, GEORGIA 30201 ENGINEERING • SURVEYING • PLANNERS PHONE 404-251-1111 FAX 404-251-1112</p>
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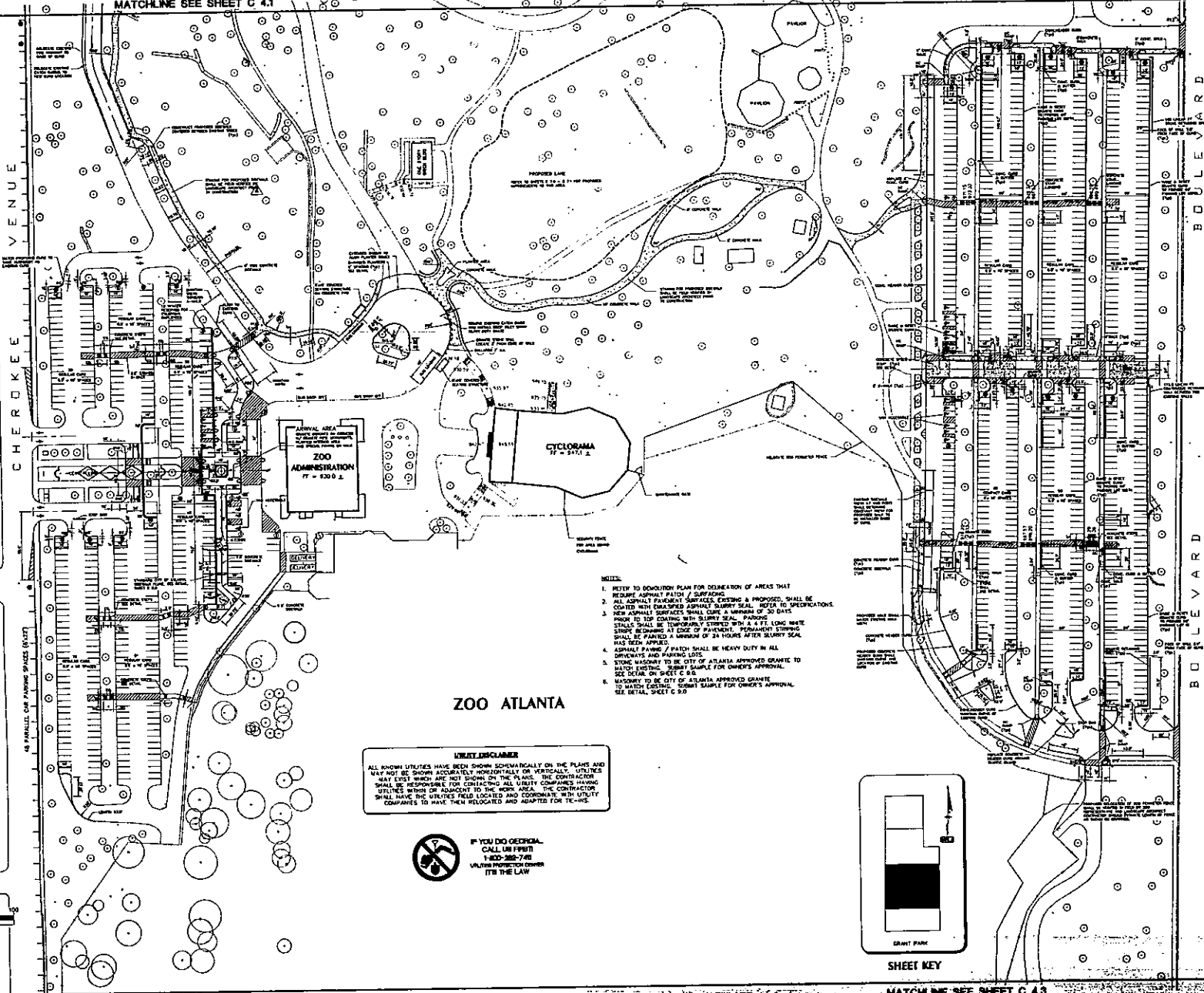
MATCHLINE SEE SHEET C 4.1

MATCHLINE SEE SHEET C 4.1

CHEROKEE VENUE

BOULEVARD

18 PARALLEL CAR PARKING SPACES (EXIST)



ZOO ATLANTA

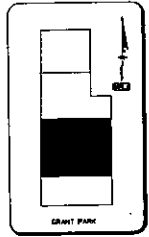
UTILITY DISCLAIMER

ALL KNOWN UTILITIES HAVE BEEN SHOWN SCHEMATICALLY ON THE PLANS AND MAY NOT BE SHOWN ACCURATELY HORIZONTALLY OR VERTICALLY. UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL UTILITY COMPANIES HAVING UTILITIES WHICH OR ADJACENT TO THE WORK AREA. THE CONTRACTOR SHALL HAVE THE UTILITIES FIELD LOCATED AND COORDINATE WITH UTILITY COMPANIES TO HAVE THEM RELOCATED AND ADAPTED FOR THE WORK.



IF YOU DO OFFEND
CALL US FIRST!
1-800-282-7488
WALTER PETERSON OWNER
IT'S THE LAW

- NOTES:**
1. REFER TO DEMOLITION PLAN FOR DEMARCATION OF AREAS THAT REQUIRE ASPHALT PATCH / SURFINGS
 2. ALL ASPHALT PAVEMENT SURFACES EXISTING & PROPOSED, SHALL BE COATED WITH ENHANCED ASPHALT SLURRY SEAL. REFER TO SPECIFICATIONS.
 3. NEW ASPHALT SURFACES SHALL CURB A MINIMUM OF 30 DAYS PRIOR TO TOP COATING WITH SLURRY SEAL. PARKING STALLS SHALL BE TEMPORARILY STRENGTHENED WITH A 4 FT. LONG WHITE STRIP BEHIND EACH EDGE OF PAVEMENT. PERMANENT STRIPING SHALL BE PAINTED A MINIMUM OF 24 HOURS AFTER SLURRY SEAL HAS BEEN APPLIED.
 4. ASPHALT PAVING / PATCH SHALL BE HEAVY DUTY IN ALL DRIVEWAYS AND PARKING LOTS.
 5. STONE MASONRY TO BE CITY OF ATLANTA APPROVED GRANITE TO MATCH EXISTING. SUBMIT SAMPLE FOR OWNER'S APPROVAL. SEE DETAIL ON SHEET C 8.8.
 6. MASONRY TO BE CITY OF ATLANTA APPROVED GRANITE TO MATCH EXISTING. SUBMIT SAMPLE FOR OWNER'S APPROVAL. SEE DETAIL SHEET C 2.0.



SHEET KEY



W.L.J.

GRAPHIC SCALE

(IN FEET)
1" = 30' S.F.

MATCHLINE SEE SHEET C 4.3

MATCHLINE SEE SHEET C 4.3

W.L. JORDEN & CO., INC.
300 NORTH DODD AVENUE
MARIETTA, GA 30067
TEL: 770-426-1100
FAX: 770-426-1101
WWW.WLJORDEN.COM



SITE LAYOUT PLAN
GRANT PARK EROSION & FLOOD CONTROL, FC. #745-99
PHASE II IMPROVEMENTS
CITY OF ATLANTA PUBLIC IMPROVEMENTS PROGRAM

DATE	DESIGNED BY	CHECKED BY
11/11/09	W.L.J.	W.L.J.
11/11/09	W.L.J.	W.L.J.
11/11/09	W.L.J.	W.L.J.
11/11/09	W.L.J.	W.L.J.
11/11/09	W.L.J.	W.L.J.

EXHIBIT B-4

CONCEPT GRAPHICS
(For Illustrative Purposes Only)

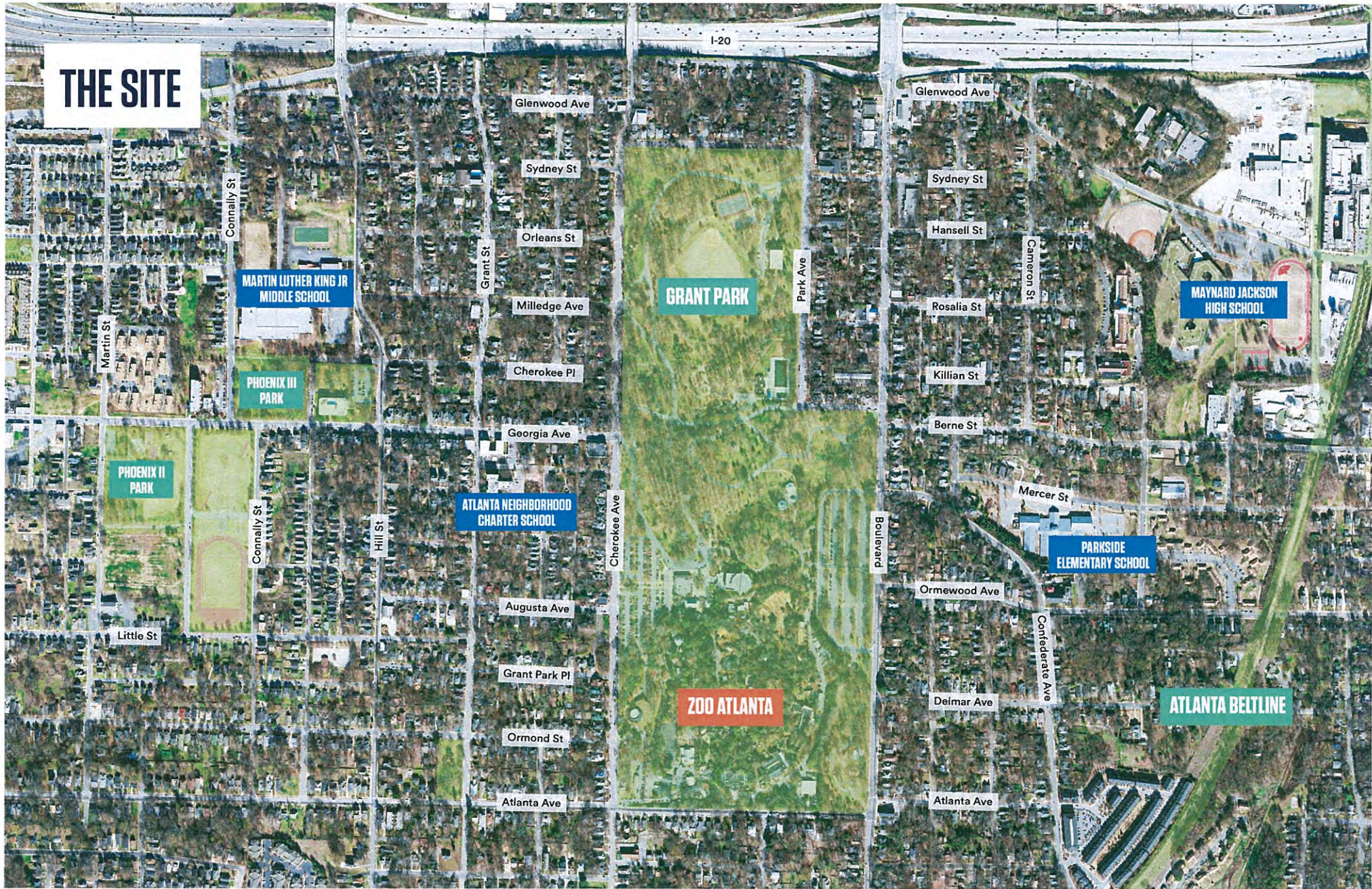
GRANT PARK / ZOO ATLANTA PARKING DESIGN CONCEPTS

AUGUST 30, 2016

ATLANTA
CITY
STUDIO



THE SITE



MARTIN LUTHER KING JR
MIDDLE SCHOOL

PHOENIX III
PARK

PHOENIX II
PARK

ATLANTA NEIGHBORHOOD
CHARTER SCHOOL

GRANT PARK

ZOO ATLANTA

MAYNARD JACKSON
HIGH SCHOOL

PARKSIDE
ELEMENTARY SCHOOL

ATLANTA BELTLINE

I-20

Glenwood Ave

Sydney St

Orleans St

Milledge Ave

Cherokee Pl

Georgia Ave

Augusta Ave

Grant Park Pl

Ormond St

Atlanta Ave

Glenwood Ave

Sydney St

Hansell St

Rosalia St

Killian St

Berne St

Ormewood Ave

Delmar Ave

Atlanta Ave

Connally St

Martin St

Connally St

Little St

Hill St

Grant St

Cherokee Ave

Park Ave

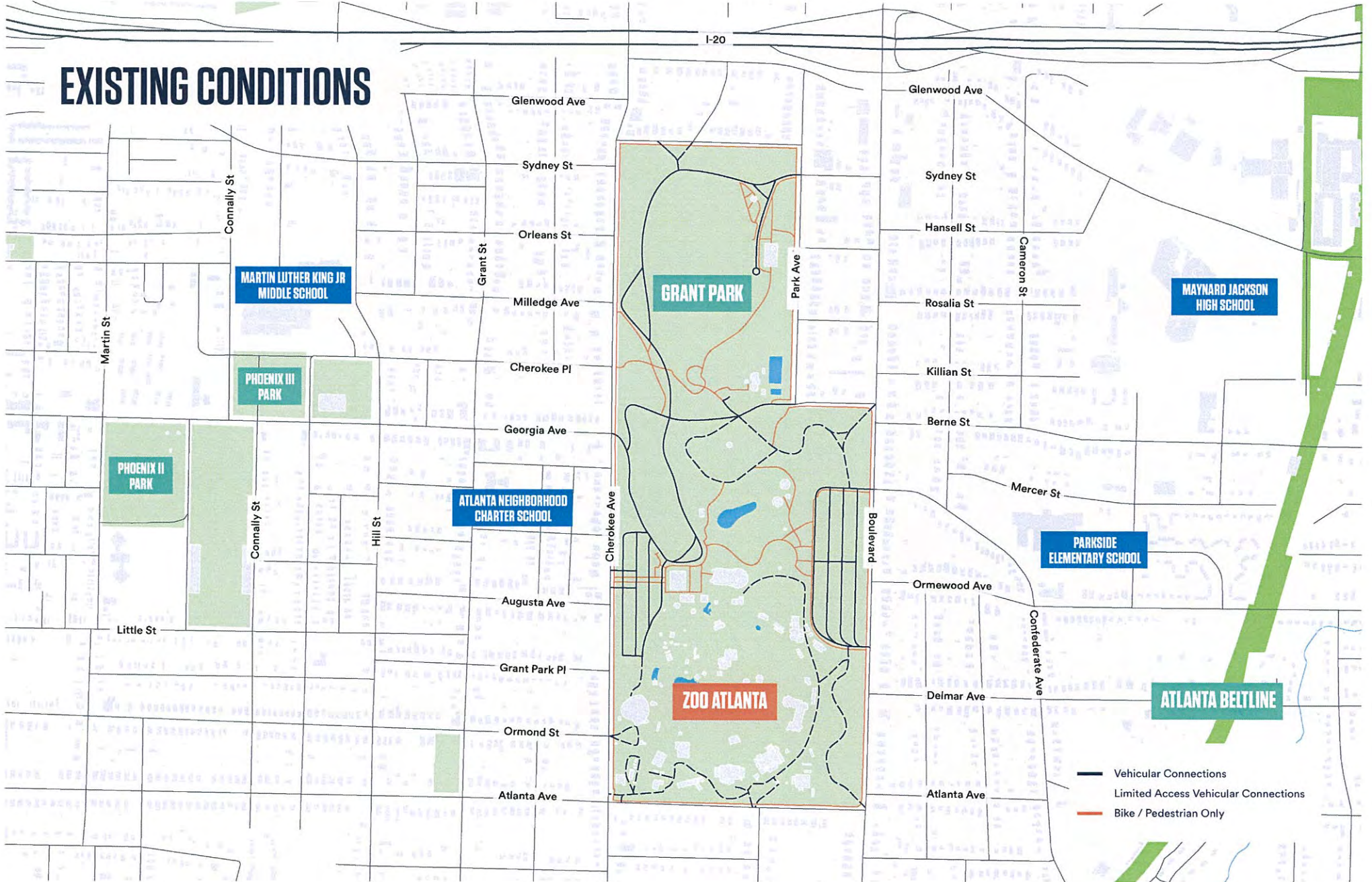
Boulevard

Cameron St

Mercer St

Confederate Ave

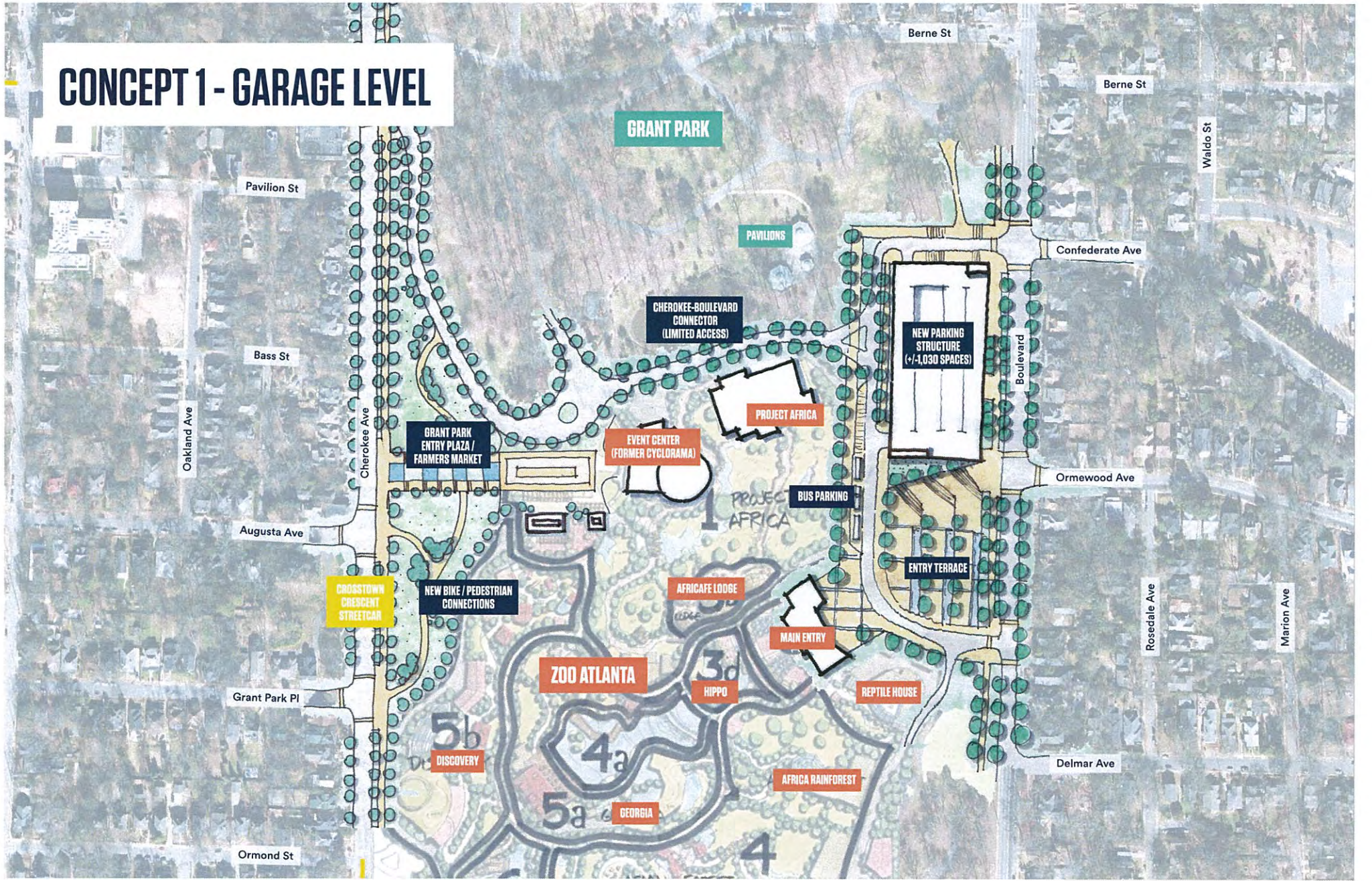
EXISTING CONDITIONS



- Vehicular Connections
- - - Limited Access Vehicular Connections
- Bike / Pedestrian Only

CONCEPT 1
NORTH DECK / ZOO TERRACE

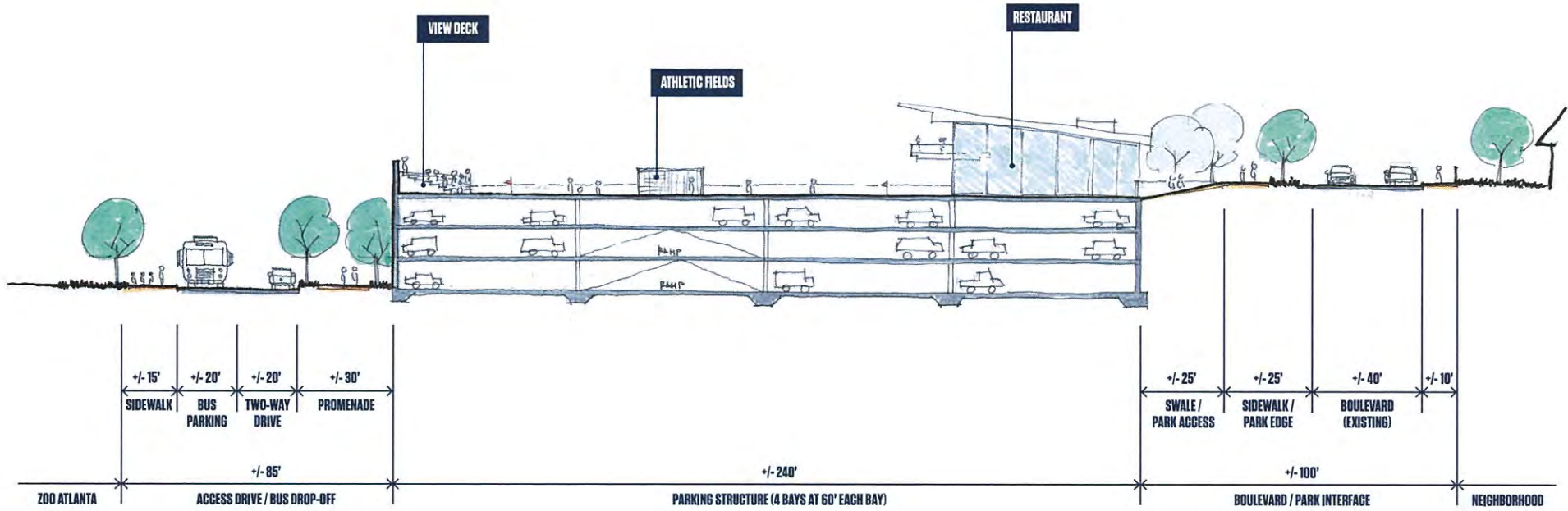
CONCEPT 1 - GARAGE LEVEL



CONCEPT 1 - STREET LEVEL

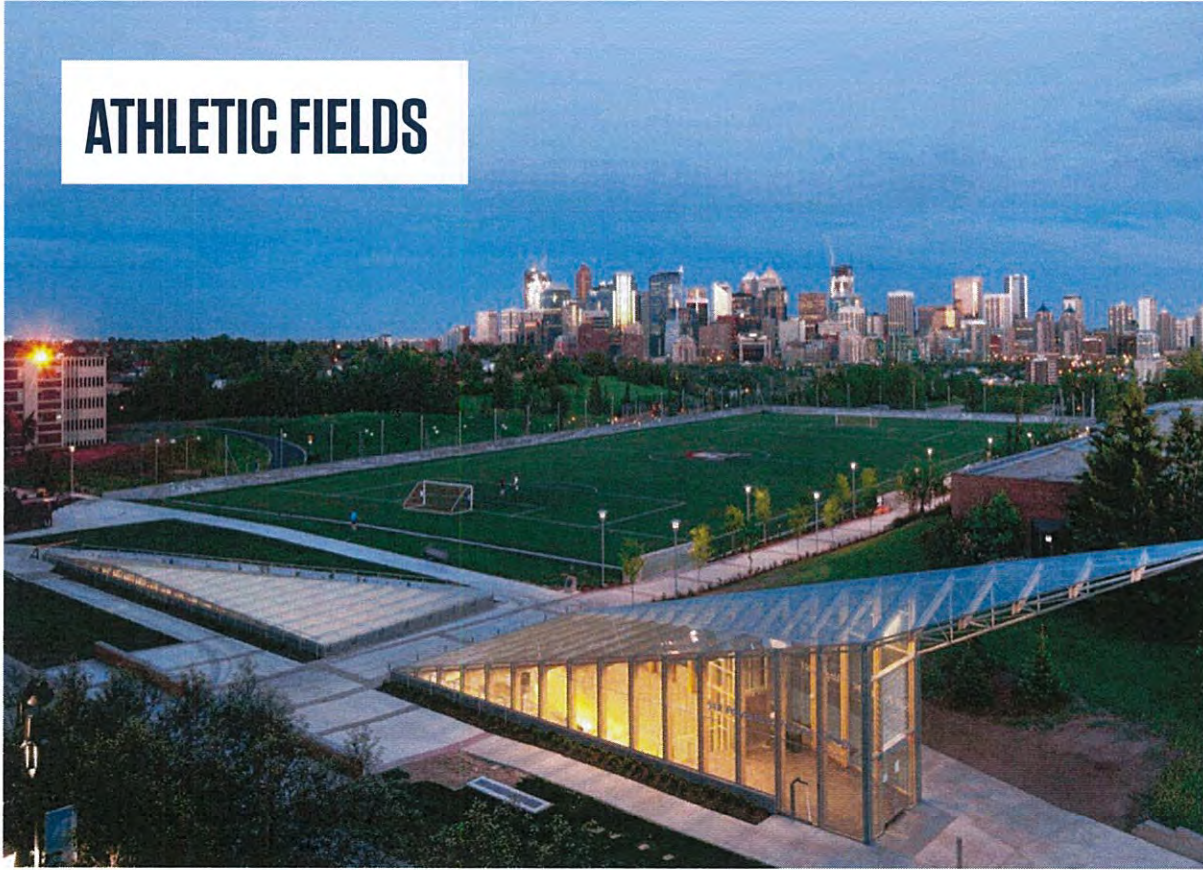


CONCEPT 1 - SITE SECTION



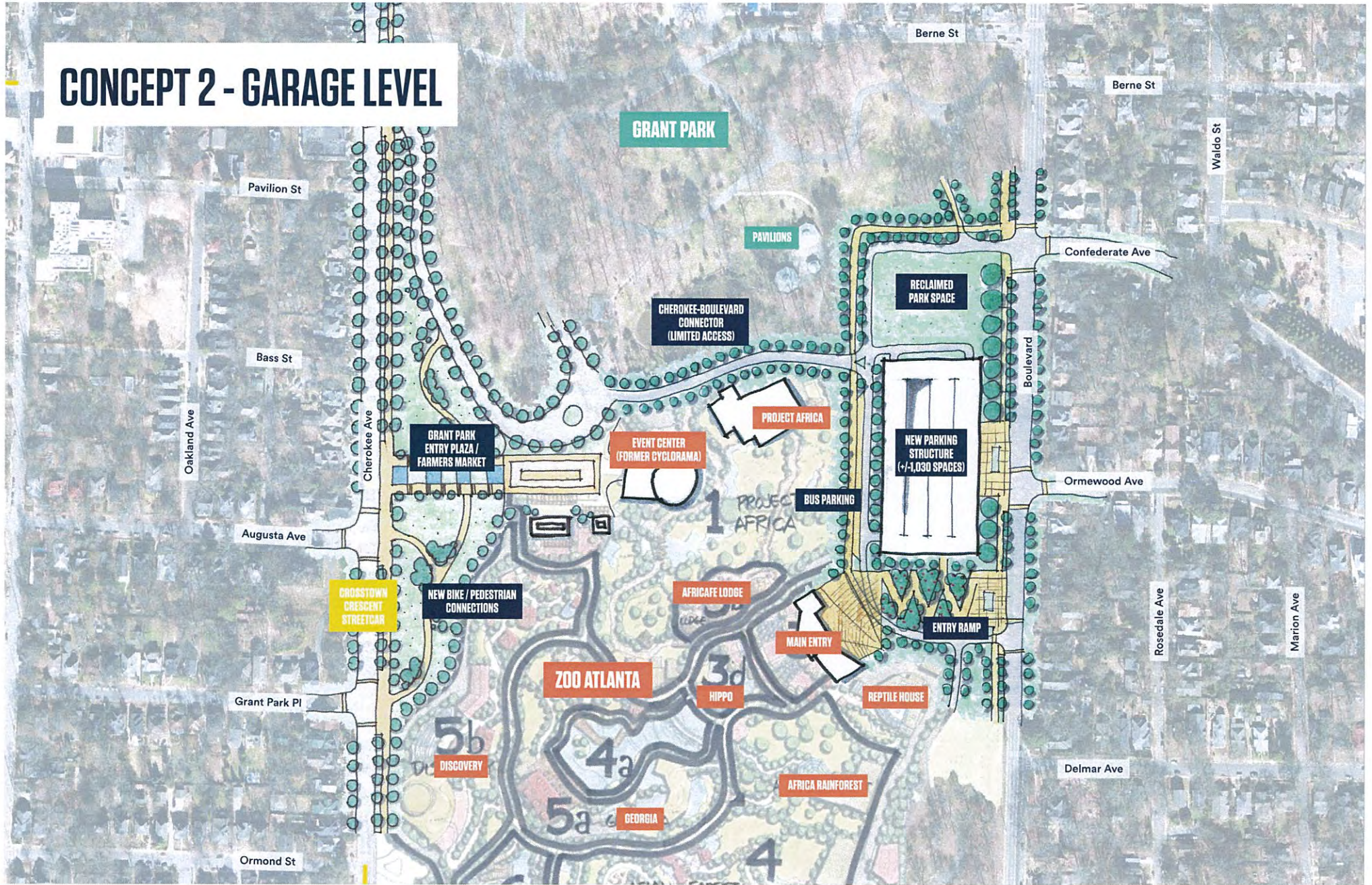


ATHLETIC FIELDS



CONCEPT 2
SOUTH DECK / PARK SPACE

CONCEPT 2 - GARAGE LEVEL

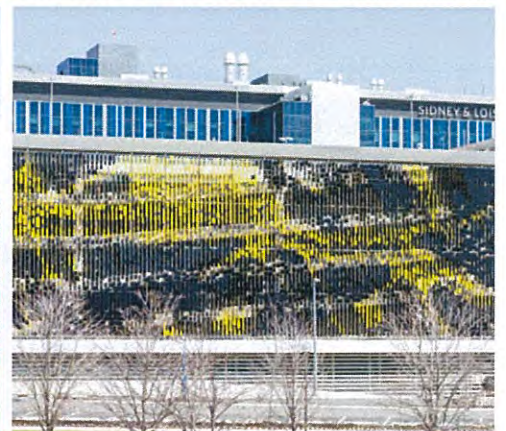


CONCEPT 2 - STREET LEVEL





SCREENING / FACADE TREATMENT



ATLANTA

CITY

STUDIO

